FOREWIND

DOGGER BANK
TEESSIDE A & B

March
2014

Environmental Statement
Chapter 21
Landscape and Visual Impact Assessment

Application Reference: 6.21

Cover photograph: indicative image showing installation of meteorological mast within the Dogger Bank Zone

Document Title	Dogger Bank Teesside A & B Environmental Statement – Chapter 21 Landscape and Visual Impact Assessment
Forewind Document Reference	F-ONL-CH-021_Issue 4.1
Date	March 2014

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Date / initials check			30th January 2014
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Date / initials approval			30th January 2014
Forewind Approval			
Date / Reference approval		Mark Thomas	25 February 2014

Title: Dogger Bank Teesside A & B Environmental Statement Chapter 21 Landscape Visual Impact Assessment		Contract No. (if applicable) Onshore ☒ Offshore ☐
Document Number: F-ONL-CH-021	Issue No: 4.1	Issue Date: March 2014
Status: Issued for 1st Technical Review ☐ Issued for 2nd Quality Review ☐	Issued for PEI 3 ☐ Issued for Submission Application ☒	
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Revision History

Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
1 July 2013	1	Issued for 1st Technical Review	RH	CO	AC
18 July 2013	1.1	Issued for 2nd Technical Review	RH	CO	AH
9 Aug 2013	1.2	Issued for PEI 2 Approval	RH	CO	AH
29 August 2013	2	Issued for Review	RH	CO	AH
19 September 2013	3	Issued for PEI 3 Approval	RH	CO	AH
30 January 2014	4	Pre-DCO submission review	RH	CO	AH
17 February 2014	4.1	Issued for DCO	RH	ST	AH

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1 Introduction

1.1 Background

1.1.1 This chapter of the Environmental Statement (ES) assesses the potential impact of Dogger Bank Teesside A & B on the existing onshore environment with regard to landscape and visual resources. The purpose of this chapter is to provide a detailed characterisation of the existing conditions within the study area, assess the potential impact of the onshore infrastructure, including buried cable systems and converter stations, and propose mitigation measures where necessary to avoid, reduce or minimise potential impacts.

1.1.2 Dogger Bank Teesside A & B is the second stage of development of the Dogger Bank Round 3 Zone development. This second stage will comprise two wind farms (Dogger Bank Teesside A and Dogger Bank Teesside B), each with a maximum installed capacity of 1.2GW. At the start of the project development process for Dogger Bank Teesside in March 2012, Forewind notified the Secretary of State of its intention to undertake an Environmental Impact Assessment (EIA) and provide an ES in respect of Dogger Bank Teesside. At this time, Dogger Bank Teesside was referring to four projects, Dogger Bank Teesside A, B, C and D.

1.1.3 In December 2012 Forewind decided and informed the Planning Inspectorate and all consultees prescribed by the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 that the optimum consenting strategy for Dogger Bank Teesside was to split the development into two separate DCO applications. The first DCO application (this application) is seeking consent for Dogger Bank Teesside A & B, located within Tranches A and B of the Dogger Bank Zone. This Landscape and Visual Impact Assessment (LVIA) considers the onshore elements of Dogger Bank Teesside A & B only.

1.1.4 This ES chapter is supported by **Appendix 21A** LVIA. The assessment of impacts on seascape and visual resources arising from the offshore components of the project (offshore wind turbines) is provided within **Chapter 20 Seascape and Visual Character**.

1.1.5 For further information on legislation and planning policy refer to **Chapter 3 Legislation and Policy**, for terrestrial ecology see **Chapter 25 Terrestrial Ecology,** and for cultural heritage refer to **Chapter 27 Terrestrial Archaeology**.

1.1.6 Potential impacts on landscape, including impacts on landscape resources and character, and visual amenity, and how those changes could affect designated landscapes have been assessed and are described in this chapter.

1.1.7 Potential impacts on landscape and visual amenity which are examined in full are those as a consequence of:

- Installation of the landfall, and the onshore High Voltage Direct Current (HVDC) and High Voltage Alternating Current (HVAC) cable routes; and
- Construction, operation and decommissioning of the converter stations.

1.1.8 The assessment of impacts resulting from the above upon the landscape as a whole, and upon views and visual amenity is broken down into an examination of:

- Direct impacts upon landscape resources (sometimes described as landscape elements);
- Impacts upon landscape character (examined with reference to the landscape character areas which the study area is divided);
- The consequential impacts of changes in character upon any designated landscapes; and
- The consequential impacts of changes in character upon views and visual amenity (examined with reference to assessment viewpoints and illustrated with photomontage visualisations where appropriate).

1.1.9 The landfall and cable route comprise works which once operational will be underground, with the exception of occasional cable markers. There will therefore be no impacts to the landscape or visual amenity arising from their operation, and so these are not considered further. Consideration of short term residual impacts that may occur post-construction are however included (i.e. changes in appearance of the landscape during the time taken for reinstatement of vegetation above the buried infrastructure).

1.1.10 For the same reason, cumulative impacts of the operational landfall and cable route when considered alongside other proposed projects along / near to the cable route during operation will not be considered further. Cumulative impacts of the landfall and cable route during operation will not be significant, as the operational impacts of the landfall and cabling works themselves will not be significant.

1.1.11 Cumulative impacts of the landfall and cable route during construction and decommissioning, and cumulative impacts of the converter stations in relation to construction and decommissioning, are considered within the cumulative section of this chapter (see Section 10).

2 Guidance and Consultation

2.1 Policy

National Policy Statements

2.1.1 The LVIA has been undertaken with reference to the relevant National Policy Statements (NPS) which form the primary national guidance documents for Nationally Significant Infrastructure Projects (NSIPs). These documents set out the assessment requirements for landscape, seascape and visual impact assessment. The relevant NPS for Dogger Bank Teesside A & B are:

- Overarching National Policy Statement for Energy (EN-1) (DECC 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
- NPS for Electricity Network Infrastructure (EN-5) (DECC 2011c).

2.1.2 The assessment requirements and guidance pertaining to LVIA, as they are defined in these documents, are summarised in **Table 2.1**, together with an indication of the paragraph numbers in the ES Chapter where each is addressed. Current legislation and policy relevant to Dogger Bank Teesside A & B is described in full in **Chapter 3**.

Table 2.1 NPS assessment requirements

NPS requirement	NPS reference	ES reference
A requirement for LVIA to make reference to existing landscape character assessments and associated studies.	EN-1 Section 5.9.5	Section 4
Requirements relating to visual amenity are as follows: "*The assessment should include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include light pollution impacts, including on local amenity, and nature conservation*."	EN-1 Section 5.9.7	Sections 6, 7 and 8
Impacts on nationally designated landscapes and landscapes with local amenity value are required to be addressed. "*The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints.*" It also recognises that landscapes outside these areas may be valued locally and protected by local landscape designations. Where relevant, attention should be paid to landscape character assessments on which local development polices and local landscape designations are based.	EN-1 5.9.9 to 5.9.16	Sections 4, 6, 7 and 8

NPS requirement	NPS reference	ES reference
Requires proposals for renewable energy infrastructure *"demonstrate good design in respect of landscape and visual amenity*". This assessment provided details of mitigation measures embedded in the design and how a consideration of landscape and visual amenity has informed the process of site selection and siting of the development.	EN-3 2.4.2	Section 6
Reference to the Holford Rules as appropriate industry guidelines for routeing overhead power lines that should be followed by developers when designing proposals. As described in Section 6 of the assessment, a decision was made early on to underground the Dogger Bank Teesside A & B onshore HVDC and HVAC cable route. The key principles of the Holford Rules have been considered as part of the embedded mitigation measures.	EN-5 2.8.5	Section 6

Local planning policy

2.1.3 EN-1 states at Section 4.1.5 that:

"*Other matters that the Infrastructure Planning Commission (IPC) may consider important and relevant to its decision-making may include Development Plan Documents or other documents in the Local Development Framework*."

2.1.4 **Table 2.2** provides details of the local panning policy documents and the policies contained within these of relevance.

Table 2.2 Relevant local planning policies

Document	Policy / guidance	Policy / guidance purpose
Redcar and Cleveland Local Development Framework (adopted July 2007) (Due to be replaced by new Local Plan)	CS25	This policy, primarily concerned with the protection and enhancement of the built and historic environment, states: *"…The character of the built and historic environment will be protected, preserved or enhanced. Particular protection will be given to the character and special features of:* *a) Conservation Areas;* *b) Listed buildings;* *c) Historic parks and gardens;* *d) Archaeological sites; and* e) *The historic landscape of the Eston Hills…"*
	DP2	*"In assessing the suitability of a site or location, development will be permitted where it:* *c) does not cause significant adverse impact on the amenities of occupiers of existing or proposed nearby properties;* *d) does not result in acceptable loss or significant adverse impact on important open spaces or environmental, built or heritage assets which are considered important to the quality of the local environment;* *e) minimises any adverse impact on the overall character of the streetscape or landscape area;* *f) minimises the loss of best and most versatile agricultural*

Document	Policy / guidance	Policy / guidance purpose
		land…"
	DP3	*"All development must be designed to a high standard. Development proposals will be expected to….respect or enhance the landscape, biodiversity, geological and heritage designations or assets that contribute positively to the site and surrounding area…"*
	DP9	This policy, primarily concerned with the protection and enhancement of the built and historic environment, states: *"Development within or otherwise affecting the setting of a Conservation Area will only be permitted where it preserves or enhances the character or appearance of the Conservation Area…"*

2.2 Other legislation, standards and guidance

2.2.1 The methodology for the LVIA was informed by current guidelines and was undertaken following the approach set out in Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment 2nd Edition 2002) and taking cognisance of the very recent 3rd Edition (2013).

2.2.2 Other guidance documents referred to include:

- Countryside Agency and Scottish Natural Heritage (SNH), (2002) Landscape Character Assessment: Guidance for England and Scotland;
- Countryside Agency and SNH (2004) Landscape Character Assessment: Guidance for England and Scotland – Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity; and
- Landscape Institute (2011). Advice Note 01/11 Use of Photography and Photomontage in Landscape and Visual Assessment.

2.2.3 Reference was also made to the following:

- National Grid Company (NGC) "The Holdford Rules" (1993);
- National Grid Company (NGC) "The Horlock Rules" (undated) National Grid Guidance on Siting of Substations; and
- Highways Agency, Design Manual for Road and Bridges Volume 11 (2012).

2.3 Consultation

2.3.1 To inform the ES, Forewind has undertaken a thorough pre-application consultation process, including the following key stages:

- Scoping Report submitted to the Planning Inspectorate (May 2012);
- Scoping Opinion received from the Planning Inspectorate (June 2012);

- First stage of statutory consultation (in accordance with sections 42 and 47 of the Planning Act 2008) on Preliminary Environmental Information (PEI) 1 (report published May 2012); and
- Second stage of statutory consultation (in accordance with sections 42, 47 and 48 of the Planning Act 2008) on the ES (published November 2013) designed to allow for comments before final application to the Planning Inspectorate.

2.3.2 In addition, consultation associated with the Dogger Bank Creyke Beck application (Forewind August 2013) has been-taken into account for Dogger Bank Teesside A & B where appropriate.

2.3.3 In between the statutory consultation periods, Forewind consulted specific groups of stakeholders on a non-statutory basis to ensure that they had an opportunity to inform and influence the development proposals. Consultation undertaken throughout the pre-application development phase has informed Forewind's design decision making and the information presented in this application. Further information on the consultation process is presented in **Chapter 7 Consultation**. A Consultation Report is also provided alongside this ES as part of the overall planning submission.

2.3.4 Land Use Consultants (LUC) has undertaken specific consultation with statutory consultees to establish the scope of the landscape and visual assessment, the methodology and approach to the LVIA as well as the assessment viewpoints to be used.

2.3.5 A summary of the consultation carried out at key stages throughout the project, of particular relevance to Landscape and Visual Impact, is presented in **Table 2.3**. This table only includes the key items of consultation that have defined the assessment. A considerable number of comments, issues and concerns raised during consultation have been addressed during consultation meetings and hence have not resulted in changes to the content of the ES. In these cases, the issue in question has not been captured in **Table 2.3**. A full explanation of how the consultation process has shaped the ES, as well as tables of all responses received during the statutory consultation periods, is provided in the Consultation Report. Consultation with landowners and tenants is ongoing and will inform the final landscape mitigation plans (see **Section 7**, paragraph 7.4.1 for further details).

Table 2.3 Summary of consultation and issues raised by consultees

Date	Consultee	Summary of issue	ES reference
June 2012 (Scoping Opinion)	Redcar & Cleveland Borough Council (RCBC)	Agreed that the Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA) Guidelines for Landscape and Visual Impact Assessment (2nd edition, 2002) and Landscape Character Assessment: Guidance for England and Scotland (Countryside Agency & Scottish Natural Heritage) are the appropriate guidance to follow.	Relevant guidance set out in Section 2, Other Legislation, Standards and Guidance in this chapter. Reference made to published guidance on landscape character in

Date	Consultee	Summary of issue	ES reference
			Section 4 and Tables 4.1 and 4.2 in this chapter.
June 2012 (Scoping Opinion)	Joint National Consultation Committee (JNCC)	Concerning landscape/seascape and visual impacts of development, the key issues that need to be focussed on will be: 1. Direct impacts, or physical change, to the landscape (i.e. impacts on the fabric/elements of the landscape, for example landform changes, vegetation changes); 2. Indirect impacts on the character and quality of the landscape; 3. Direct impacts on the visual amenity of visual receptors, for example changes in views and their content for stakeholders; and 4. Indirect impacts on visual receptors in different places, for example an altered visual perception leading to changes in public attitude, behaviour and how they value or use a place. Proposals to incorporate measures to help encourage people to access the countryside will be encouraged, and links to other green networks and, where appropriate, urban fringe areas should also be explored. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate. All new development should consider the character and distinctiveness of the area, to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness. The siting and design of the proposed development should demonstrate that local design characteristics and, wherever possible, the use of local materials has been considered.	The assessment considers direct and indirect impacts on the landscape and views, as detailed in Section 3, Methodology. Relevant local authority green infrastructure strategies will be taken account of in the development of the detailed landscape design, post application, if practicable, and in liaison with the local authority. The proposal is located within an industrial complex. As such, public access and provision for recreation is not appropriate in this context. Details of the development of the siting and design as it relates to local landscape character is described in Sections 5 and 6 of this ES chapter.
December 2012 (Non-statutory)	RCBC	Viewpoint selection considered acceptable, giving wide coverage of views.	Further details are provided in paragraph 3.3.3 and **Table 4.4**.
January 2013 (Non-statutory)	Natural England	Viewpoint selection and study area considered to be suitable.	Further details in paragraph 3.3.3 and **Table 4.4**.
August 2013 (Non-statutory)	RCBC	Relevant impacts resulting from the development have been identified with appropriate mitigation being proposed especially based around the sub-station and edge of Lazenby village.	The assessment considers direct and indirect impacts on the landscape and views, as detailed in Section 3,

Date	Consultee	Summary of issue	ES reference
			Methodology.
September 2013 (Non-statutory)	Natural England	Natural England welcomes the use of the approach set out in the Guidelines for Landscape and Visual Impact Assessment. The converter station site is located just over 5km from the North York Moors National Park. We are satisfied that at this distance it is not likely to impact on the purposes of designation of the National Park.	Relevant guidance set out in Section 2.2. Designated landscapes within or close to the study area are discussed within **Section 4** Existing Environment.
December 2013 (Statutory)	RCBC	A meeting held with RCBC to discuss the draft ES. RCBC were pleased to see mitigation proposed for the views to the Wilton complex from the north east edge of Lazenby.	Further details in paragraph 7.4.4 and **Figure 7.1**.
December 2013 (Statutory)	RCBC	The proposed works and mitigation works are considered to be acceptable. The proposed mitigation works at the southern end of the Wilton Site adjacent to Lazenby are considered to provide a suitable level of screening. It is advised that discussions take place with Sembcorp and any tenant of the land on which the mitigation works are proposed.	Further details in Paragraph 6.3.14.
December 2013 (Statutory)	Local resident	A comment received at the exhibition requesting information about whether it is possible to raise the height of the existing mounds.	Extensions to two existing bunds to the north east of Lazenby are proposed as part of the indicative landscape mitigation plan, in order to reduce visual impacts of the Dogger Bank Teesside A & B converter stations. It is not within Forewind's remit to design the bunding for future developer's projects located within the Wilton Complex. Further details on the proposed mitigation measures are provided in paragraph 7.4.4 and **Figure 7.1**.

3 Methodology

3.1 Introduction

3.1.1 This section sets out the methodology used in the assessment, in accordance with current good practice guidance listed in Section 2. The methodology is applicable to the assessment of temporary short term impacts and medium term impacts including those during the construction and decommissioning of the project, and the long term impacts during operation. The assessment includes a series of mitigation measures, including planting, and this section provides an overview of the approach taken.

3.1.2 In this chapter landscape assessment is distinguished from visual assessment. Landscape resources and character are considered to be of importance in their own right and are valued for their intrinsic qualities regardless of whether they are seen by people. Impacts on views and visual amenity as perceived by people are clearly distinguished from, although closely linked to impacts on landscape, and are a consequence of changes in the latter. Landscape and visual assessments are therefore separate, but linked processes.

3.1.3 The methodology adopted for the assessment of the seascape and visual impacts arising from the cable landfall works and the installation offshore sections of the HVDC export system within the inshore waters is provided within the Seascape and Visual Impact Assessment (SVIA) in **Chapter 20**.

3.2 Study area

Landfall, HVDC and HVAC cable routes and Modification Works at the Existing National Grid Electricity Transmission (NGET) substation at Lackenby

3.2.1 The cable route construction working area will include two temporary haul roads, two trenches (one for each of the two buried cable systems), topsoil and subsoil storage. Several construction compounds are proposed along the cable route. Direct impacts on the landscape will be contained within the cable route's 'working width', which encompasses the corridor of land which will be disturbed during construction, including at the location of construction compounds.

3.2.2 The proposed enabling works at the existing NGET substation at Lackenby will be contained within the substation boundary. No new overhead lines or security fencing is proposed. The modification works will be of the same scale, height and nature as the existing infrastructure present. The works will include an extension to the switchgear buildings. At the time of the assessment, this is likely to be located within the south east substation. Visibility of the modification works is therefore likely to be limited to the area immediately surrounding the south east of the existing NGET substation at Lackenby (primarily Crow Lane).

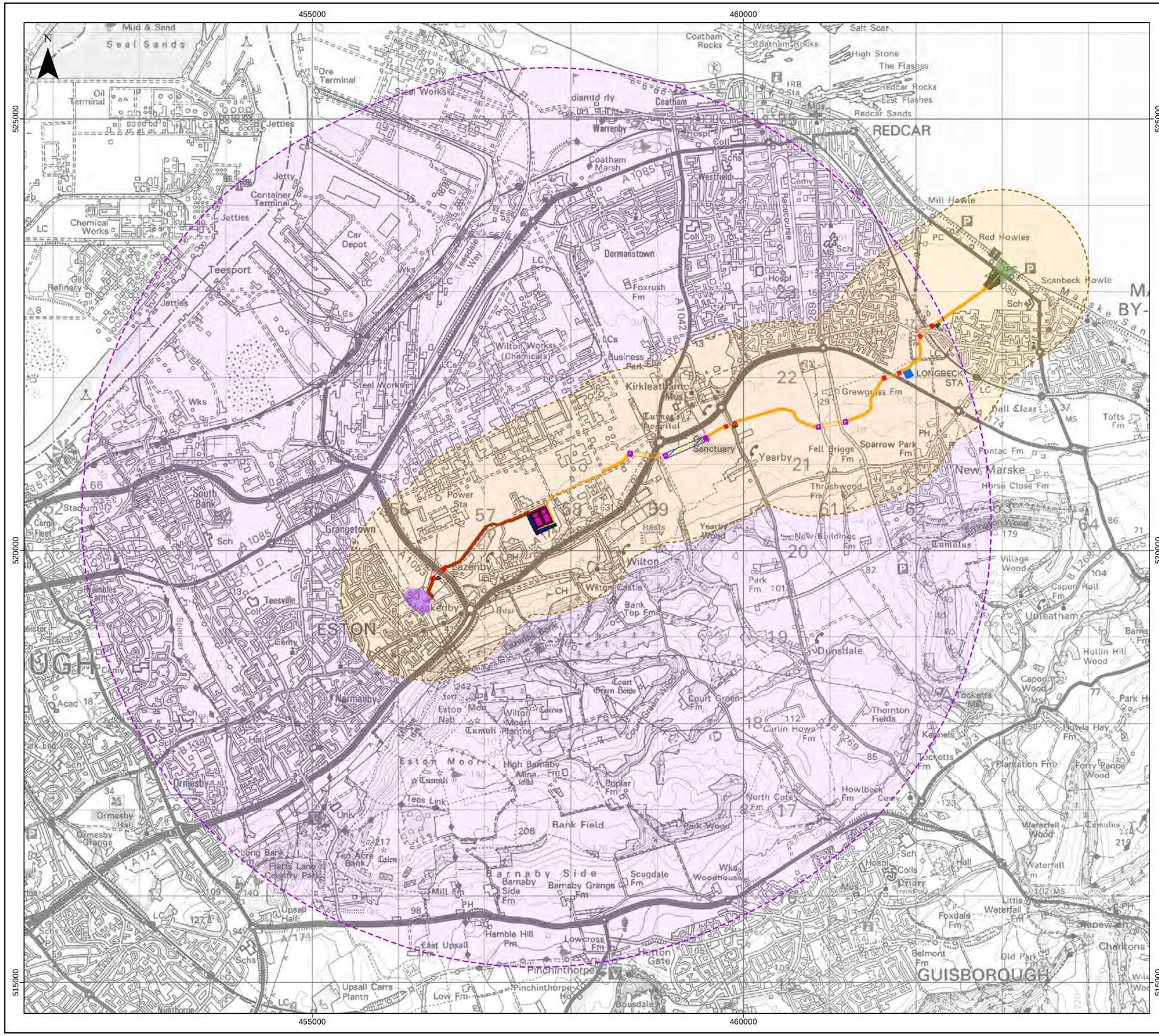
3.2.3 In order to capture potential significant landscape and visual impacts, the study area has been defined as comprising a 2km wide corridor along the length of the cable routes. It is considered that due to the relative simplicity of the landscape and topography and the nature of the development, construction operations associated with the buried cables will be immediately visible from no more than 1km away. The study area for the cable route is therefore taken as comprising a 2km wide study area along the length of the HVDC cable route (between the landfall and the converter stations site) and the HVAC cable route (between the converter stations site and the existing NGET substation at Lackenby), as shown in **Figure 3.1**. This was agreed in consultation with RCBC and Natural England (see **Table 2.3**).

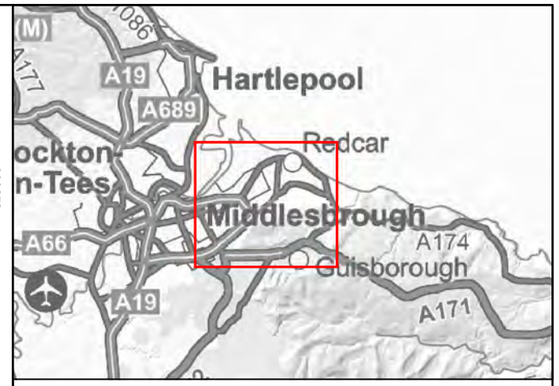
Converter stations site

3.2.4 The converter stations site is located on an area of agricultural land in the south of the Wilton Complex. The site is separated from the settlement of Lazenby and the A174 by agricultural fields containing planted woodland set on top of bunding. Industrial infrastructure is located immediately adjacent to the site to the north. The Wilton Centre to the east comprises a complex of office and laboratory buildings.

3.2.5 The study area was defined based on desk studies and field surveys examining the existing landscape surrounding the proposed converter stations, and with the use of Zone of Theoretical Visibility (ZTV) mapping, as shown in **Figure 3.2 – Figure 3.4** (see paragraph 3.3.8).

3.2.6 Baseline studies and field work indicated that the proposed converter stations would be very unlikely to give rise to significant impacts more than 3km away. This is due to the topography surrounding the site, woodland and bunds to the south, west and east, and industrial development to the north, as well as the nature of the development proposed. However, in order to examine potential impacts, and taking a precautionary approach, the converter stations study area extends to a radius of 5km centred upon the converter stations site, as agreed in consultation with RCBC and Natural England. The location of the study area is shown in **Figure 3.1**.





LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation

0 1
Kilometres

Data Source:
Ordnance Survey © Crown copyright and database right, 2014

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 3.1: Study area

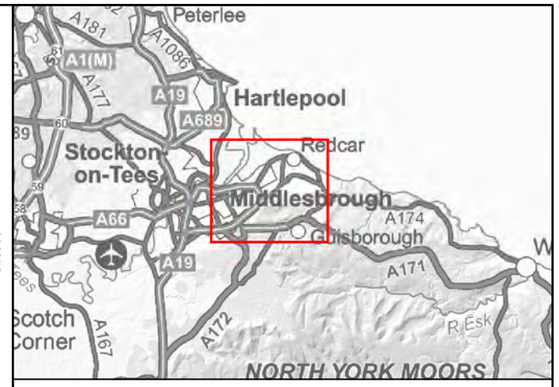
VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
5	20/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-008

SCALE	1:45,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND



LEGEND

- Converter Station LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A converter station hall
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- Potential visibility of Dogger Bank Teesside A converter station hall

Additional features included in the ZTV

- Building or structures
- Woodland

Notes:
The ZTV is calculated from a viewing height of 2m to a development height of 20m above ground level, assuming 21m as the ground level.
The terrain model is derived from OS Profile height data with a resolution of 10m.
Selected landscape features incuding buildings, structures and woodland areas were elevated to an estimated average height and included in the terrain model in order to simulate their potential effect on visibility.
The earth curvature and atmospheric refraction have been taken into account.

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 3.2: ZTV for Dogger Bank Teesside A Converter Station (Scenario I)

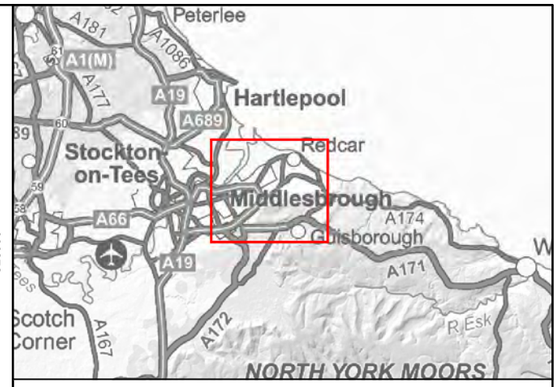
VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	13/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-603

SCALE	1:50,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND



LEGEND

- Converter Station LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside B converter station hall
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- Potential visibility of Dogger Bank Teesside B converter station hall

Additional features included in the ZTV

- Building or structures
- Woodland

Notes:
The ZTV is calculated from a viewing height of 2m to a development height of 20m above ground level, assuming 21m as the ground level.
The terrain model is derived from OS Profile height data with a resolution of 10m.
Selected landscape features incuding buildings, structures and woodland areas were elevated to an estimated average height and included in the terrain model in order to simulate their potential effect on visibility.
The earth curvature and atmospheric refraction have been taken into account.

Data Source:

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 3.3: ZTV for Dogger Bank Teesside B Converter Station (Scenario I)

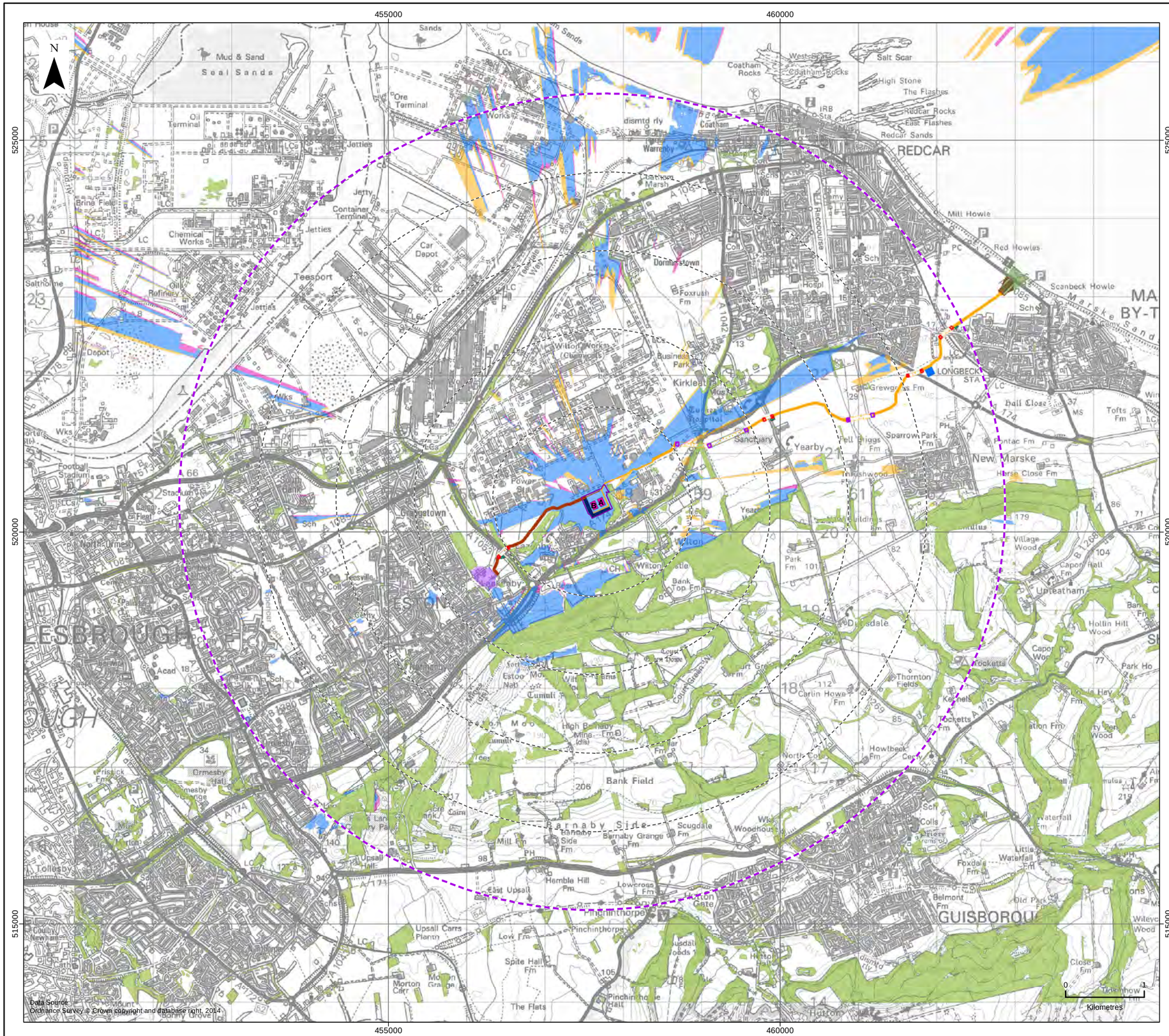
VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	13/02/2014	Pre-DCO submission review	SW	RH

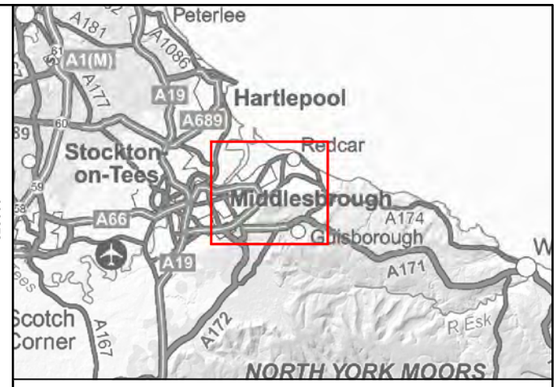
DRAWING NUMBER:

F-ONL-MA-604

SCALE	1:50,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND





LEGEND

- Converter Station LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter station halls
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site

Additional features included in the ZTV

- Building or structures
- Woodland

Potential visibility of the converter stations

- Only A visible
- Only B visible
- Both A and B visible

Notes:
The ZTV is calculated from a viewing height of 2m to a development height of 20m above ground level, assuming 21m as the ground level.
The terrain model is derived from OS Profile height data with a resolution of 10m.
Selected landscape features incuding buildings, structures and woodland areas were elevated to an estimated average height and included in the terrain model in order to simulate their potential effect on visibility.
The earth curvature and atmospheric refraction have been taken into account.

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 3.4:
ZTV for Dogger Bank Teesside A & B Converter Stations (Scenario II)

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
4	13/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-605

SCALE	1:50,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

3.3 Characterisation of existing environment - methodology

Landscape baseline

3.3.1 The Guidelines for Landscape and Visual Impact Assessment (LI and IEMA 2002 and 2013) advise that in order to reach an understanding of the impacts of the development, it is necessary to consider different aspects of the landscape i.e. individual elements or features that make up the landscape, as well as its wider character, and the characteristics which contribute to this. The following are mapped and considered as part of the LVIA baseline:

- Designated landscapes - areas designated for their landscape quality or value at the national, regional or local level, e.g. National Parks, Areas of Outstanding Natural Beauty (AONBs), Heritage Coasts and areas of local landscape value (which may have varying names);
- Landscape resources - the components, elements or features that make up the landscape including landform, trees, hedgerows, woodlands and water features; and
- Landscape character - the distinct and recognisable pattern of elements (for example associations of field patterns) that occur consistently in a particular type of landscape and create a particular sense of place.

Visual baseline

3.3.2 The visual baseline is described in terms of views from representative viewpoints as well as views from other sensitive visual receptors within the study area. A viewpoint will typically represent an area over which a broadly similar perspective of the development site is obtained. The sensitivity of the viewers at a particular viewpoint depends upon the activity of the viewers and the extent to which they could be affected by changes in their view.

Representative viewpoints

3.3.3 Representative viewpoints form the basis of the assessment of impacts on views, in line with The Guidelines for Landscape and Visual Impact Assessment (LI and IEMA 2002 and 2013). Viewpoints within the study area were selected through desk study, field work and in consultation with RCBC and Natural England. The viewpoints were selected because they:

- Include the nearest residents and the clearest viewpoints of the site;
- Provide a representative range of viewing distances (i.e. short, medium, and long range views);
- Represent a range of viewing experience (i.e. static views, from residential properties and points from sequential views, for example from roads and footpaths); and
- Have a reasonably high potential number of viewers or area of particular importance to the viewers affected.

Data sources

3.3.4 The principal sources of information about the landscape designations and the character of the study area used in this assessment are:

- Carl Bro and Golder Associates (2005) Countryside Character of England Volume 1: North East, Character Area 23 Tees Lowland and Character Area 25 North Yorkshire Moors and Cleveland Hills Landscape;
- RCBC (2006) Redcar and Cleveland Landscape Character Assessment; and
- RCBC (2010) Redcar and Cleveland Local Development Framework, Landscape Character SPD.

Mapping

- Ordnance Survey (OS) Maps:
  - Landranger 1:50,000 Scale;
  - Pathfinder 1:25,000 Scale;
- Online map search engines; and
- British Geological Society, 1979. Geological Map, Solid, North.

Modelling

- Landform Panorama Data at 1:50,000 (containing 3-D contour information at 10m intervals, reported as being accurate to ±3m);
- Raster Data at 1:50,000 (to show surface details such as roads, forest and settlement detail equivalent to the 1:50,000 scale Landranger maps); and
- Raster Data at 1:250,000 (to provide a more general location map).

Field survey

3.3.5 Field survey work was carried out during several visits under differing weather conditions between November 2012 and April 2013, and records were made in the form of field notes and photographs. Field survey work included a visit to the site, visits to viewpoints and designated landscapes, and extensive travel around the study area to consider potential impacts on landscape character and on experiences of views seen from routes.

3.3.6 Surveys were undertaken primarily from publically accessible locations. Access was arranged to private land within the Wilton Complex and surrounding agricultural land to undertake survey work and viewpoint photography around the converter stations site.

3.3.7 Surveys within the cable route study area were only undertaken from publically accessible locations and no access was arranged to private land.

Zone of Theoretical Visibility mapping and visualisations

Zone of Theoretical Visibility mapping

3.3.8 A series of ZTV maps were prepared to inform an understanding of the theoretical extent to which the proposed converter stations will be visible. ZTVs

are prepared using specific computer software designed to calculate the theoretical intervisibility between the potential development and their surroundings.

3.3.9 ZTVs provide an initial indication of potential visibility. Actual visibility across the study area is strongly influenced by the presence of screening in the form of localised topography, vegetation (including woodland), buildings and other infrastructure. ZTVs can be used as a tool to help give an understanding of potential visibility, but are not a substitute for examination in the field.

3.3.10 ESRI ArcGIS version 10.1 software with a Spatial Analyst extension was used to generate the ZTV. The programme calculates areas from which the proposed converter stations halls, these being the main visible elements, are potentially visible.

3.3.11 The modelling parameters for the converter stations halls (i.e. structure dimensions and indicative locations) were agreed prior to producing the ZTV. Surface Digital Terrain Model (DTM) data was purchased.

3.3.12 In order to model the converter station halls, a theoretical 'block building' was generated in GIS using a series of points to represent its footprint and height. The theoretical block represents the maximum dimensions of the built components for the converter stations site.

3.3.13 ZTVs were generated based on a 'bare ground' Digital Terrain Model (DTM), with added landscape features elevated to an average height to take account of buildings and woodland areas. The DTM used was gridded Ordnance Survey (OS) Landform Profile data with a resolution of 10m. The additional features were extracted from OS MasterMap for selected nearby features and OS VectorMap District (Woodland and Buildings layers) for the other features. Due to their variable size and potential for screening, hedgerows were not modelled in the ZTV. The computer calculates visibility between the centre point of each 10m x 10m grid square at eye height and key points of the converter halls at roof height.

Visualisations

3.3.14 Visualisations aim to represent an observer's view of a proposed development. The visualisations take the form of photographs and photomontages from representative viewpoints. The methodology for production of the visualisations is based on the Guidelines for Landscape and Visual Impact Assessment (GLVIA) and the Landscape Institute Advice Note 01/11 Photography and photomontage in landscape and visual impact assessment (Landscape Institute 2011).

Photography

3.3.15 The camera used for the photography is a Nikon D90 with a fixed 35mm focal length lens (equivalent to a 52mm focal length lens on a standard 35mm film camera). These focal lengths are in accordance with recommendations contained in the GLVIA and the Landscape Institute's Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment (Landscape Institute 2011).

3.3.16 A tripod with vertical and horizontal spirit levels is used to ensure a level set of adjoining images. The tripod is set to hold the camera at approximately 1.5m above ground level. A panoramic head is used to ensure the camera lens is positioned and rotated on the no-parallax[1] point in order to enable accurate stitching of the successive images. The camera is moved through increments of 15 degrees and rotated covering up to 360 degrees at each viewpoint. This enables a minimum view angle of 90 degrees centred on the view towards the proposed converter stations to be cut from the overall 360 degrees. The OS coordinates of the viewpoint locations, date and time, weather conditions are recorded.

Photo-stitching

3.3.17 Photo-stitching software (Panorama Factory) is used to piece together the adjoining frames to form panoramic images. An image with a horizontal field of view of 90 degrees, centred on the converter station(s), is selected for each viewpoint to reveal the key characteristics of the view.

Digital Terrain Model

3.3.18 A 3D landform model of the study area is created using gridded Ordnance Survey Land-Form Profile data. This data is in OS National Grid coordinates and consists of height values (metres Above Ordnance Datum (AOD)) at each intersection of a 10m horizontal grid. From this model, wireframe views are produced to show the profile of the terrain from the selected viewpoints.

3D model of the development

3.3.19 A 3D digital model is created of the proposed development. All components are modelled to their correct size and designed directly from geo-referenced Computer-Aided Design (CAD) drawings showing the indicative site layout plans and elevations. Additionally, some of the existing structures close to or within the site boundary are modelled as marker points to assist in aligning the views.

3.3.20 Any landform proposals are then integrated into the CAD site drawing and modelled as 3D elements. The 3D model is positioned using OS National Grid X, Y and Z coordinates from the Digital Terrain Model.

3.3.21 The selected viewpoints are added to the model using on site Global Positioning System (GPS) readings to record correct locations and views are created within the software using identical camera parameters. These camera views are then rendered using realistic lighting settings to match the conditions present at the time of photography.

Producing visualisations

3.3.22 Visualisations are created by superimposing both the wireframe views from the Digital Terrain Model and the rendered images from the 3D model onto the panoramic photographs to ensure the landform and existing structures are accurately located.

[1] Parallax = The difference between what is seen through the viewfinder and what the camera records on film.

3.4 Mitigation measures

3.4.1 Mitigation measures to reduce adverse impacts and enhance positive impacts of the project were developed as part of an iterative landscape and visual impact assessment process. Two types of mitigation measures are distinguished:

- Measures embedded into the siting and design, i.e. siting and design decisions made in order to improve the project from a landscape and visual perspective; and
- Proposed additional measures designed to reduce adverse landscape and visual impacts in the short to medium term during construction, and those in the long term during operation (additional to embedded design measures and standard construction practices for avoiding and reducing environmental effects).

3.4.2 Embedded measures include routing of the cabling and siting and design of the converter stations. Proposed additional mitigation includes details of post-construction restoration measures and those which aim to reduce long term landscape and visual impacts during operation, such as soft landscaping (planting), earth works (bunding) and recommendations for potential landscape or habitat enhancement measures. The assessment therefore describes impacts at year 1 and at year 10 to give consideration to the difference in impacts arising from the implementation of additional mitigation measures (as the degree of vegetative screening/filtering will increase as vegetation matures).

3.4.3 The assessment of the significance of the permanent residual landscape and visual impacts assumes that agreed mitigation measures will be implemented and that planted vegetation will grow successfully, reducing potential impacts both on the day of opening, and in the future when new vegetation will be deemed to be reaching maturity.

3.4.4 Therefore, alongside the assessment, options for mitigation of the identified potential adverse impacts which are predicted to arise from the development were considered, and practical measures agreed to avoid, reduce or offset (compensate for) these. Mitigation measures were incorporated into the design, and the assessment reports the residual impacts of the project taking into account these measures, as detailed in Section 5 and Section 6 of this Chapter.

3.5 Assessment of impacts – methodology

3.5.1 The following sections set out the methodology specific to the type of impact being considered, and describe how the sensitivity or 'nature of the receptor' and the magnitude of change or 'nature of the impact' on that receptor were identified and used to judge the significance of impact.

3.5.2 Note that the methodology used for the assessment of landscape and visual impacts, in particular determining sensitivity, magnitude and significance, may differ to a degree from the generic methodology used for other chapters, as it is required to follow the GLVIA Version (Third Edition 2013).

3.5.3 The approach to the LVIA was informed by current good practice guidance prepared by the Landscape Institute and the Institute of Environmental Management and Assessment (2002). Since the work was prepared, the Third Edition of the GLVIA has been published (April 2013). It is recognised that the principles and approach advocated in this latest version of the guidance do not differ from earlier versions, and that its main purpose is to seek to achieve more consistent use of terms between professionals, and to ensure that the process is as transparent as possible. The Landscape Institute has published a statement clarifying that assessments carried out under earlier versions of guidance retain their validity. It has been judged that the application of the new guidance would make no material difference to the conclusions of the landscape and visual impact assessment presented in this chapter.

Sensitivity

Landscape resources

3.5.4 The sensitivity of the receptor is a description of the nature of the receptor, described in terms of:

- The susceptibility to the changes to (or loss of) features (physical changes), or to change in character of its landscape (perceived changes); and
- The value placed on the resource, as described by designation or policy protection, or in terms of judgements regarding issues such as scenic quality and rarity.

3.5.5 Sensitivity of the receptor was classified as being high, medium or low on the basis of evaluation against the criteria set out in **Table 3.1**.

Table 3.1 Sensitivity of receptor: landscape resources

	Criteria trending towards higher or lower sensitivity	
	Higher ⟷ Lower	
Sensitivity to change	Vulnerable to change or loss of features that would alter key landscape characteristics. Complex, rugged, irregular landform with strong topographical features and distinctive skylines. Few modern artefacts present, presence of small scale, historic or vernacular settlement. Remote from visible or audible signs of human activity and development. A landscape with unique characteristics. A landscape which may be designated with national policy level protection.	Robust landscape, able to accommodate change or loss of features without altering landscape characteristics. Simple, regular landform without strong topographical features, non-prominent or screened skylines. Presence of contemporary structures e.g. utility, infrastructure or industrial elements Close to visible or audible signs of human activity and development. Areas or features which may not be designated but could be valued at a community level.

Visual receptors

3.5.6 Changes to views and visual amenity are experienced by people (viewers) at static locations (i.e. viewpoints and settlements) and transitional locations (sequential views from routes).

3.5.7 The sensitivity of the visual resource was considered in terms of the value attached to a view, as indicated by the number and type of viewers or indicated on maps or tourist information.

3.5.8 Sensitivity of the receptor was classified as being high, medium or low on the basis of evaluation of the criteria set out in **Table 3.2**.

Table 3.2 Sensitivity of receptor: visual resources

	Criteria trending towards higher or lower sensitivity	
	Higher ⟷ Lower	
Sensitivity to change	High scenic quality. Unaffected by overt or intrusive man-made elements. Strong inter-visibility with sensitive landscapes. Forms an important part of a view from sensitive viewpoints.	Low scenic quality. View includes overt or intrusive man-made elements. Little inter-visibility with adjacent sensitive landscapes or viewpoints.
Value	Designated viewpoint advertised on OS maps and in tourist information. Location within a designated landscape area.	Viewpoints not advertised on OS maps or tourist information.
Viewers	Residents, visitors or tourists. High numbers of viewers. Viewers whose main focus of activity is on their surroundings.	Working or travelling viewers. Low number of viewers. Viewers whose main focus of activity is not their surroundings.

Magnitude of change

3.5.9 The magnitude of change requires a judgement about the nature of the impact on the receptor. The magnitude of change to the landscape resource relates to:

- The scale of physical and perceived changes. Physical changes were assessed by considering changes to (or loss of) landscape features and the introduction of new landscape features. Perceived changes to landscape were assessed by considering changes to the character of the landscape, including for example the sense of openness or exposure; and
- The geographical extent to which the change would occur.

3.5.10 The magnitude of change to the visual resource relates to:

- The scale of the changes, including the proportion of the view affected; and

- The geographical extent to which the change would affect views (unique to the viewpoint, or similar visual changes over a wider area using the viewpoint to represent the area).

3.5.11 The magnitude of change was classified as being high, medium, low or imperceptible, based on evaluation of the criteria set out in **Table 3.3**.

Table 3.3 Magnitude of change to the landscape and visual resource

	Criteria trending towards higher or lower magnitude	
	Higher ⟷ Lower	
Landscape resource	Large changes or extensive loss of key features. Considerable change in the landscapes key characteristics.	Small changes to key features, little or no loss of features. Small change in the landscapes key characteristics.
Visual resource	Notable changes in view, which may be visible for a long duration, facing the change, or which may be in stark contrast with the existing view, or obstruction of a substantial part or important elements of views towards the development area. Substantial changes seen from a viewpoint used to represent a large area. Substantial changes viewed over a long section of a route. Large proportion of the view affected.	Limited perceptible changes in views, or visible for a short duration, perhaps at an oblique angle, or which may blend to an extent with the existing view. Changes seen from a unique viewpoint, which is not representative of a wider area. Changes viewed over a short section of a route.

Significance criteria

3.5.12 The EIA Regulations require that the significance of each potential impact is identified. In this assessment, four levels of impact are used: major, moderate, minor and negligible.

3.5.13 Major and moderate impacts are judged to be significant in accordance with the EIA Regulations. Minor and negligible impacts are judged not to be significant. The level of impact was assigned through professional judgement, considering both the nature of the receptor or resource (sensitivity) and the predicted nature of the impact (magnitude of change) resulting from the development. A higher level of impact was generally attached to higher magnitude changes affecting higher sensitivity resources or receptors.

3.5.14 The determination of levels of impact requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements are made on a case by case basis, in accordance with published guidance.

3.5.15 The assessment identifies the duration and reversibility of the impacts. Duration in this assessment is defined on a scale of short, medium and long-term impacts, which are broadly understood to correspond to between zero and five years, five to fifteen years, and more than fifteen years respectively. Short term

(temporary) impacts are considered to include construction impacts, and those that can be reversed by mitigation measures. Long term impacts are those that would remain during the operational lifespan of the development. Permanent impacts are also identified where they occur. These include impacts which are those that would remain during after the decommissioning of the development or and are irreversible.

Direction of effects

3.5.16 The direction of effect (positive, negative or neutral) is determined in relation to the degree to which the proposal fits with landscape character or views and the contribution to the landscape and views that the development makes, even if it is in contrast to existing character. To cover the 'maximum case' situation, potential impacts are assumed to be adverse unless otherwise specifically stated in the text.

4 Existing Environment

4.1 Introduction

4.1.1 The baseline environment for the study areas are described in terms of:

- Designated landscapes;
- Landscape character and resources; and
- Visual amenity.

4.2 Landscape baseline

Designated landscapes

4.2.1 The North York Moors National Park is approximately 3.5km to the south of Dogger Bank Teesside A & B onshore elements. The nature of the intervening topography is such that there is no potential visibility of the development from within the National Park, and no potential impacts upon it. Therefore it is not considered further.

4.2.2 The North Yorkshire and Cleveland Heritage Coast is located approximately 3.5km to the southeast of the landfall. Heritage Coasts are not statutory designations, although the North Yorkshire and Cleveland Heritage Coast falls in large part within the North York Moors National Park. Natural England (2013) identify the national purposes of Heritage Coasts are to:

- *"Conserve, protect and enhance the natural beauty of the coasts, their marine flora and fauna, and their heritage features;*
- *Facilitate and enhance their enjoyment, understanding and appreciation by the public;*
- *Maintain and improve the health of inshore waters affecting Heritage Coasts and their beaches through appropriate environmental management measures; and*
- *Take account of the needs of agriculture, forestry and fishing, and of the economic and social needs of the small communities on these coasts."*

4.2.3 This area lies outside the converter stations site, landfall and cable route study area and is not considered as part of this assessment. The North Yorkshire and Cleveland Heritage Coast is however considered within **Chapter 20.**

4.2.4 The location of designated landscapes within the study area is shown on **Figure 4.1**. There are no other national statutory landscape designations or local landscape designations in the vicinity of the study area.

4.2.5 There are a number of cultural heritage designations within the HVDC cable route and converter stations study area. They include the Eston Hills Historic Landscape (EHHL), as identified in the Redcar and Cleveland Local

Development Framework (RCLDF), located to the south of the A714, and three Conservation Areas covering the villages of Wilton, Yearby and Kirkleatham. These are shown on **Figure 4.2**. These areas are noted in the following assessment, but are considered in detail within **Chapter 27** of the ES.

Landscape character and resources

National landscape character areas

4.2.6 At the national scale, the Countryside Character of England (Chris Blandford Associates 1996) classifies the English landscape into 159 National Character Areas (NCAs). The NCA areas are shown on **Figure 4.1**.

4.2.7 The landfall, cable route and converter stations site are located within NCA 23 Tees Lowlands and the study area is located predominantly within this NCA. This character area comprises a broad, low-lying plain of gently undulating, predominantly arable farmland with wide views to distant hills. The character area is divided to the north and south by the River Tees; and is characterised by the contrast of quiet rural areas and extensive urban and industrial development which is concentrated along the lower reaches of the Tees, the estuary and coast.

4.2.8 Large scale chemical and oil refining works along the Tees estuary form a distinctive skyline by both day and night, and overhead transmission lines, pylons, motorway corridors and other infrastructure elements are widespread features. Minor valleys and linear strips of open land extend as 'green corridors' from the surrounding rural farmland into the heart of the Teesside conurbation. This can be seen within the study area, where farmland extends from the foot of the Eston Hills to Redcar and Eston and strips of open farmland separate the settlements of New Marske, Marske-by-the-Sea and Redcar.

4.2.9 Woodland cover is generally sparse, with some local cover along the River Tees corridor and within parkland and managed estates. Extensive areas of mudflats, saltmarsh wetlands and dunes are located at the mouth of the River Tees, providing valuable habitats for wildlife and as such, are designated Sites of Special Scientific Interest (SSSI) and wildlife corridors in the RCLDF.

4.2.10 Part of the study area is also located within the NCA 25 North Yorkshire Moors and Cleveland Hills. NCA 25 is an area of upland plateau landscape which is dissected by a series of dales. The plateau comprises extensive areas of heather moorland that create a sense of space, expansiveness and openness. This landscape is sparsely settled in its interior, with population mainly concentrated within the dales and on the lower-lying landscape fringes. Towards the coast the landscape becomes more distinctive and dramatic, with high cliffs, small coves and bays, coastal towns and fishing villages.

Local landscape character assessment

4.2.11 The landscape of the study area is described and classified in the Redcar and Cleveland Landscape Character Assessment (2006) and the RCBC Local Development Framework Landscape Character Supplementary Planning Document (SPD) (2010). The SPD classifies the landscapes identified in the 2006 landscape character assessment, as either 'sensitive landscapes' (i.e.

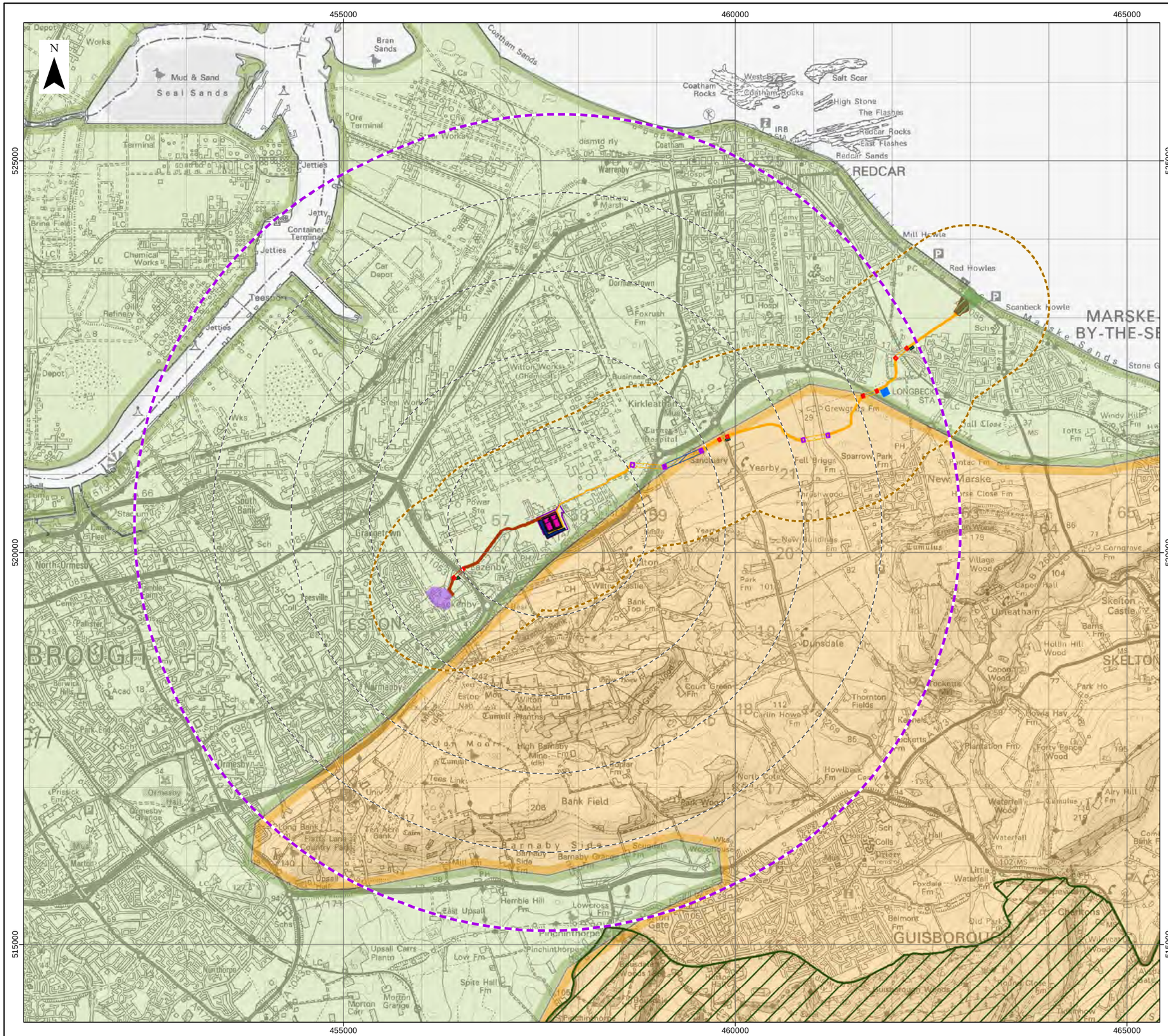
sensitive to change) or 'restoration landscapes' (i.e. where land would benefit from measures to restore landscape structure and character).

4.2.12 The Broad Landscape Areas or Landscape Character Tracts and Landscape Character Units (LCUs) located within the study area, as defined by both the 2006 landscape character assessment and 2010 SPD are shown in **Figure 4.3**. The broad landscape areas and the component LCUs, as defined in the Redcar and Cleveland Landscape Character Assessment, within the HVDC cable route study area include:

- Redcar Flats Broad Landscape Area, comprising:
  - R1: Urbanised Farmland (East of Wilton);
  - R2: Lowland Farmland (South of Redcar and Marske);
  - R3: Park and Estate Land (Kirkleatham); and
  - R6: Coastal Farmland (Redcar to Marske).
- Eston Hills Broad Landscape Area, comprising:
  - E1: Upland (Eston Hills / Eston Moor);
  - E2: Escarpment (Eston Hills);
  - E3: Parkland (Wilton Castle);
  - E5: North east Slopes (Eston Hills); and
  - E6: South east Slopes (Eston Hills).

4.2.13 For the purpose of this study, the Wilton Complex has also been included.

4.2.14 The sensitivity of the LCUs is described in **Table 4.1** and **Table 4.2**, based on judgements made using the criteria contained in **Table 3.1** and informed by the evaluations provided within the SPD.



LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- North York Moors National Park

National Character Areas

- North Yorkshire Moors and Cleveland Hills
- Tees Lowlands

0 1
Kilometres

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.1: National Character Areas and National Landscape Designations

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/03/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

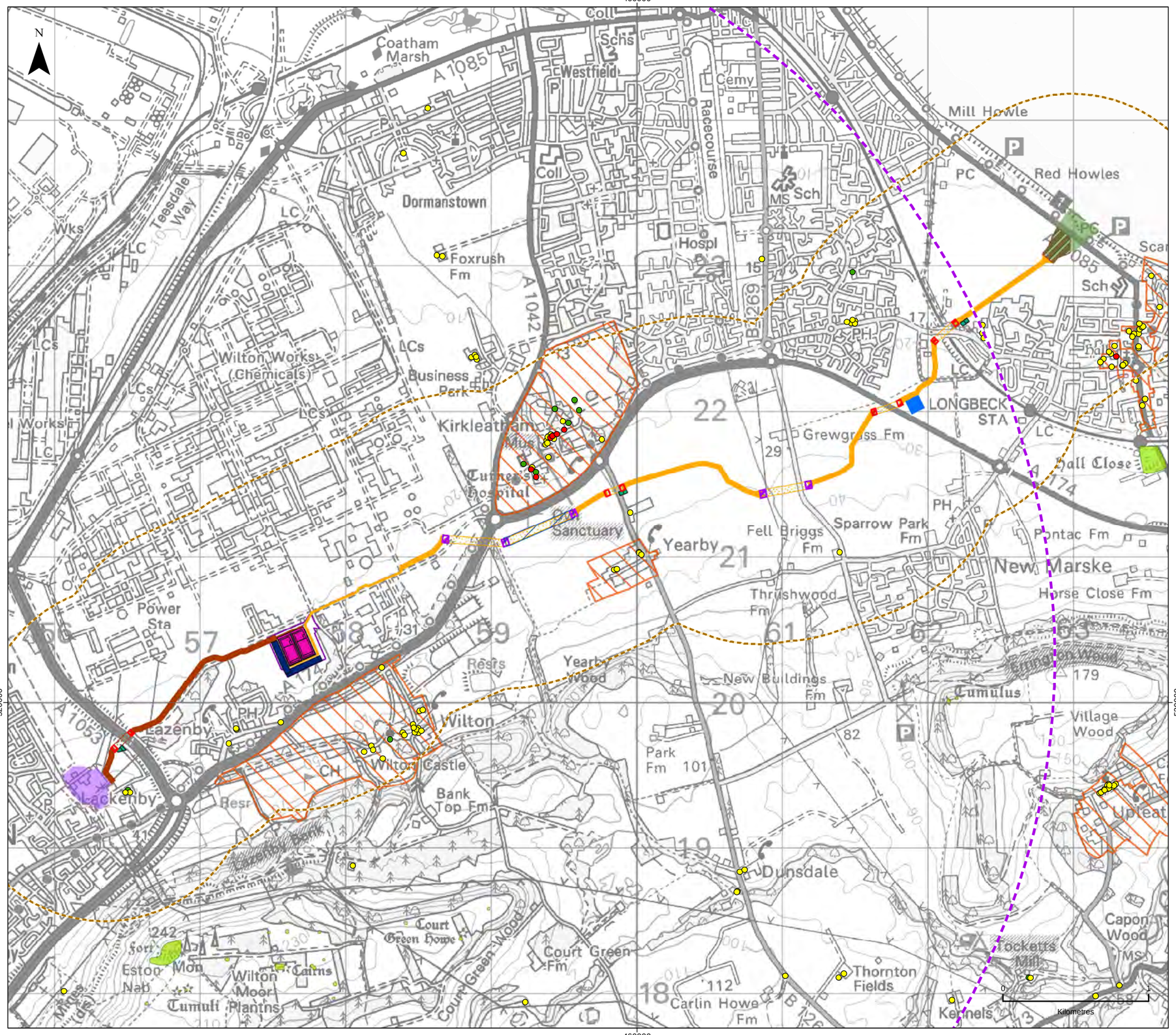
F-ONL-MA-606

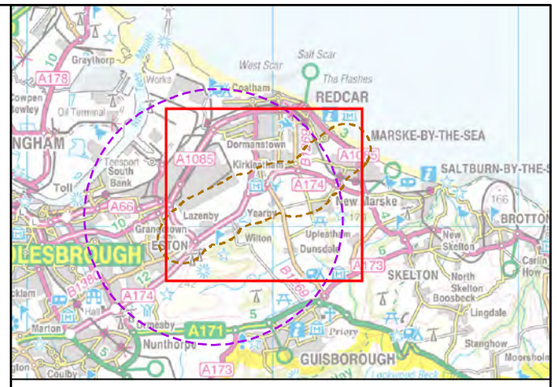
SCALE	1:50,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

460000

520000





LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site

Listed Building

- Grade I
- Grade II
- Grade II*
- Conservation Area
- Sheduled Monument

Data Source:
Forewind, Redcar & Cleveland, English Heritage, LUC
Ordnance Survey © Crown copyright and database right, 2014

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.2: Historic environment

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-607

SCALE	1:27,500	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

455000 460000 465000

525000 520000 515000

N

Local Landscape Area

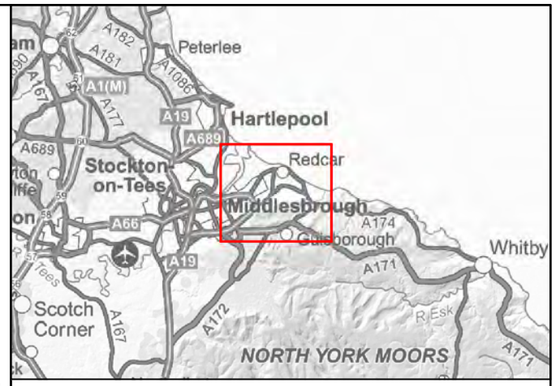
E1. Upland (Eston Hills/Eston Moor)
E10. Valley Sides (Upleatham)
E11. Hillfoot Farmland (Skelton)
E2. Escarpment (Eston Hills)
E3. Parkland (Wilton)
E4. Wooded Valley (Tocketts Beck)
E5. Northeast slopes (Eston Hills)
E6. Southeast slopes (Eston Hills)
E7. Upland (Upleatham)
E8. Upland (Skelton)
E9. Eastern slopes (Upleatham)
R1. Urbanised Farmland (East of Wilton)
R2. Lowland Farmland (South of Redcar and Marske)
R3. Park and estate land (Kirkleatham)
R4. Coastal Marsh (Coatham Marsh)
R5. Sandy Shoreline (Coatham Sands)
R6. Coastal Farmland (Redcar to Marske)
R7. Incised wooded valley (Hazel Grove)
U. Urban
W1. Wilton Works
W2. Teesport

Redcar Flats Broad Landscape Area

Eston Hills Broad Landscape Area

Guisborough Lowlands Broad Landscape Area

East Cleveland Plateau Broad Landscape Area



LEGEND

- Converter Station LVIA Study
- Cable Route LVIA Study
- Teesside A&B cable landfall
- Teesside A&B landfall construction
- Teesside A&B HVDC, Open
- Teesside A&B HVDC,
- Teesside A&B HVAC, Open
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound
- Teesside A&B intermediate construction compound
- Teesside A&B converter
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- **Broad Landscape Area**
  - Redcar Flats
  - Eston Hills
  - Guisborough Lowlands
  - East Cleveland Plateau
- Local Landscape Area

0 1
Kilometres

Data Source:
Forewind, Redcar & Cleveland, English Heritage, LUC

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.3: Local Landscape Character Units

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-608

SCALE	1:55,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

Table 4.1 Landscape character of the Redcar Flats

Redcar Flats	
Key characteristics: • Contained by the escarpment of the Eston Hills to the South and the coast to the north; • Intensive arable cultivation and enlarged fields; • Sparse hedgerow pattern and few landscape features to interrupt the open gently sloping landscape; • Long views, with skyline features taking on particular importance; • Towards the coast, the land has an open character due to maritime exposure however further inland, the open character derives from hedgerow decline and loss, resulting in a weak landscape structure; and • Industry at the Wilton Complex, and the abrupt urban edges of the surrounding settlements, the A174 and railway corridors have a strong local influence on landscape character. Landscape Character Assessment: • The broad landscape area is classified as Restoration Landscape within the Landscape Character SPD (2010), where "existing features in this open landscape are relatively sparse and their retention is important to 'place' new development…"	
Character Unit R1 Urbanised Farmland (East of Wilton)	
Description	Gently sloping, north facing topography located at the foot of the steeply sloping Wilton Woods, comprising pastoral fields and a number of reservoirs with occasional field trees. The area is enclosed by woodland and tree belts, limiting views in and out of the area. The reservoirs are set within engineered landforms and bound by tall fencing. Buildings within the area are small and associated with the reservoirs rather than farm buildings or residential properties. The area is bound to the north by the A174, with tree belts separating the two.
Sensitivity	This landscape is identified as 'Restoration Landscape' in the Landscape Character SPD (2010), indicating a landscape in which the landscape structure is generally weak and diminished. The area contains features of some sensitivity, including tree belts, but overall is considered to be of **low** sensitivity given the modified nature of the reservoirs which occupy much of the area.
Character Unit R6 Coastal Farmland (Redcar to Marske)	
Description	Gently sloping foreshore and low cliff banks backed by large agricultural field. The coastal character is a key feature of this LCU. This landscape character unit covers an area of land located between the Longbeck to Redcar East railway line and the seafront. The landform comprises a gently sloping foreshore and low cliff banks, backed by an essentially flat agricultural field. This landscape is defined by its long beach, sea views and open, coastal character combined with abrupt urban edges to Redcar and Marske and large agricultural fields.
Sensitivity	The coastal edge at this location creates a strong sense of landscape character. It provides a recreational resource, with a number of parking points indicating immediate access to the shore from the A1085. Open views are available across the character area, including from both the A1085 and railway line as a result of flat landform and very limited hedgerow and tree cover within the landscape as a result of maritime exposure. This landscape is identified as a 'sensitive' landscape in the Landscape Character SPD (2010), indicating a landscape in which much landscape structure is present to give high 'strength of character' which is sensitive to change. Whilst the landscape has a distinctive coastal character, the wider industrialised setting of the area to the north and the degraded nature of much of the agricultural land reduces the

Redcar Flats	
	overall sensitivity of the area. The sensitivity of the landscape unit to this scale of development is therefore considered to be medium overall.
Character Unit R2 Lowland Farmland (South of Redcar and Marske)	
Description	This landscape character unit comprises predominantly flat or gently sloping farmland located between the urban areas of Redcar, Marske-by-Sea and New Marske. This landscape is intensively farmed due to the high quality of the agricultural land and this is reflected in the large field sizes located on more undulating farmland that gently rises towards the steep wooded scarp and Wilton Moor in the south. Extensive views are available from within this landscape to the wider area, including the coast although these are locally limited by well-maintained hedgerows bounding roads. In addition, linear tree and scrub vegetation is also associated with Roger Dikes, Cat Flatt Lane and Fishpond Road, offering both wildlife and visual value. This is a largely open landscape resulting in the hard industrial and urban edges, of New Marske in particular, being relatively intrusive in this landscape.
Sensitivity	This landscape is identified as 'Restoration Landscape' in the Landscape Character SPD (2010), indicating a landscape in which the landscape structure is generally weak and diminished. This character unit comprises predominantly intensively farmed, large arable fields separated by a sparse and fragmented hedgerow pattern, with a general absence of hedgerow trees. Although views towards the coast are available, the character of this unit is influenced by the adjacent industrial and urban development. As such, sensitivity of the area is considered to be low.
Character Unit R3 Park and Estate Land (Kirkleatham)	
Description	This landscape character unit is a largely flat, open arable farmland with some minor, broad undulations that generally equates to the Kirkleatham village Conservation Area. Kirkleatham village is a small, attractive settlement with a number of historic buildings including Grade 1 Listed alms houses and Sir William Turner's Hospital. Outside the village itself, land use is mixed, with woodland forming a dominant element of the land use and enclosure to a series of open spaces, the larger ones used for recreation. Where the historic landscape and buildings of the village remain intact, the landscape is considered to be of higher sensitivity, reducing in towards the Wilton Complex and Kirkleatham Business Park edges. Kirkleatham Business Park is located just to the north of Kirkleatham village, comprising new prefabricated metal units which fragment the original farmland. The landscape within the vicinity of Kirkleatham Business Park is strongly influenced by the Wilton Complex.
Sensitivity	This landscape character unit largely corresponds to the Kirkleatham Conservation Area, which covers the historic village and surrounding landscape. In this area, considered to be of high quality, the landscape is of high sensitivity. There is also a museum and owl sanctuary located within Kirkleatham, suggesting high recreational value. Sensitivity of the landscape character unit reduces towards the edges adjacent to the Wilton Complex and Kirkleatham Business Park, where the landscape quality diminishes. Overall the sensitivity is considered to be high.

Redcar Flats	
Wilton Complex (Converter Stations site is located within this LCU)	
Description	This is a large scale, flat industrial area set out on a grid pattern. Wilton Complex comprises towers, stacks, depots and offices which are separated by roads, hard-standing and mown grass, all of which is contained within security fencing. In places around the perimeter there are wooded bunds, helping to screen views into the plant from the surrounding road network. There are a number of green field sites located around the periphery of the works; and a number of brownfield sites which contain some disused industrial development and concrete hardstanding, with areas of grass, perennial weeds and some regenerating birch.
Sensitivity	The landscape of the Wilton Complex is generally of low landscape quality as a result of the high concentration of industrial buildings. The sensitivity of this landscape unit is considered to be low.

Table 4.2 Landscape character of the Eston Hills

Eston Hills	
Key characteristics: • Characterised by a complex of prominent, steep-sided hills which are linked by low saddles and form a parallel series of foothills to the main escarpment of the Cleveland Hills, which lie within the North York Moors National Park; • Distinctive areas of open moorland and wooded hill slopes and escarpments; and • Views to the south are to the Cleveland Hills; views to the north are over the urban and industrial developments of Teesside and Redcar. Landscape Character Assessment: • The elevated areas of Eston Hills area, including the escarpment to the north and open Eston Moor are classified within the Landscape Character SPD (2010) as Sensitive Landscapes due to the distinctive woodland pattern, landform as well as biodiversity, historical and recreational value. • The lower-lying areas to the south of the hills (outwith the study area) are classified as Restoration Landscapes.	
Character Unit E1 Upland (Eston Hills/Eston Moor)	
Description	A large character area containing dominant landform where scarp slope presents marked contrast to the Tees Lowlands, offering accessible recreational routes to the public and extensive views over a variety of landscapes.
Sensitivity	This is a visually prominent area, widely available from the lower lying valley to the north, forming a visual setting to the Tees lowland. The area is popular for recreation and contains a range of habitats with biodiversity value. The surrounding area to the north consists of heavily industrialised and developed lowlands and therefore the sensitivity of the area to development out-with it is considered to be medium.
Character Unit E2 Escarpment (Eston Hills)	
Description	An undulating scarp slope on northern edge of Eston Hills, presenting a prominent landform in sharp contrast to the adjacent lowland; steeper at higher altitudes and becoming more gentle as altitude drops. Land use is varied, including dense deciduous woodland, agricultural fields, rough grassland and amenity space.

Eston Hills	
Sensitivity	This area is important as a visual backdrop to the lower-lying and highly developed areas to the north. Overall the sensitivity of the area is considered to be high.
Character Unit E3 Parkland (Wilton Castle)	
Description	A small landscape character unit with strong character covering small planned estate village with church, castle and wooded parkland located on gently sloping and level land at the foot of the Eston Hills slopes. Much of this unit is designated as a Conservation Area although the A174 is a visual intrusion. The historic estate of Wilton Castle is located to the southwest of the village of Wilton which is used for recreation, including a golf course
Sensitivity	The area of parkland at Wilton is identified as of particular importance within the Eston Hills broad landscape area, contributing to the distinctive character of the area, created by a combination of wooded hillsides and escarpments. It is popular locally for recreation, including a golf course and numerous Public Rights of Way (ProW). Overall the sensitivity is considered to be high.

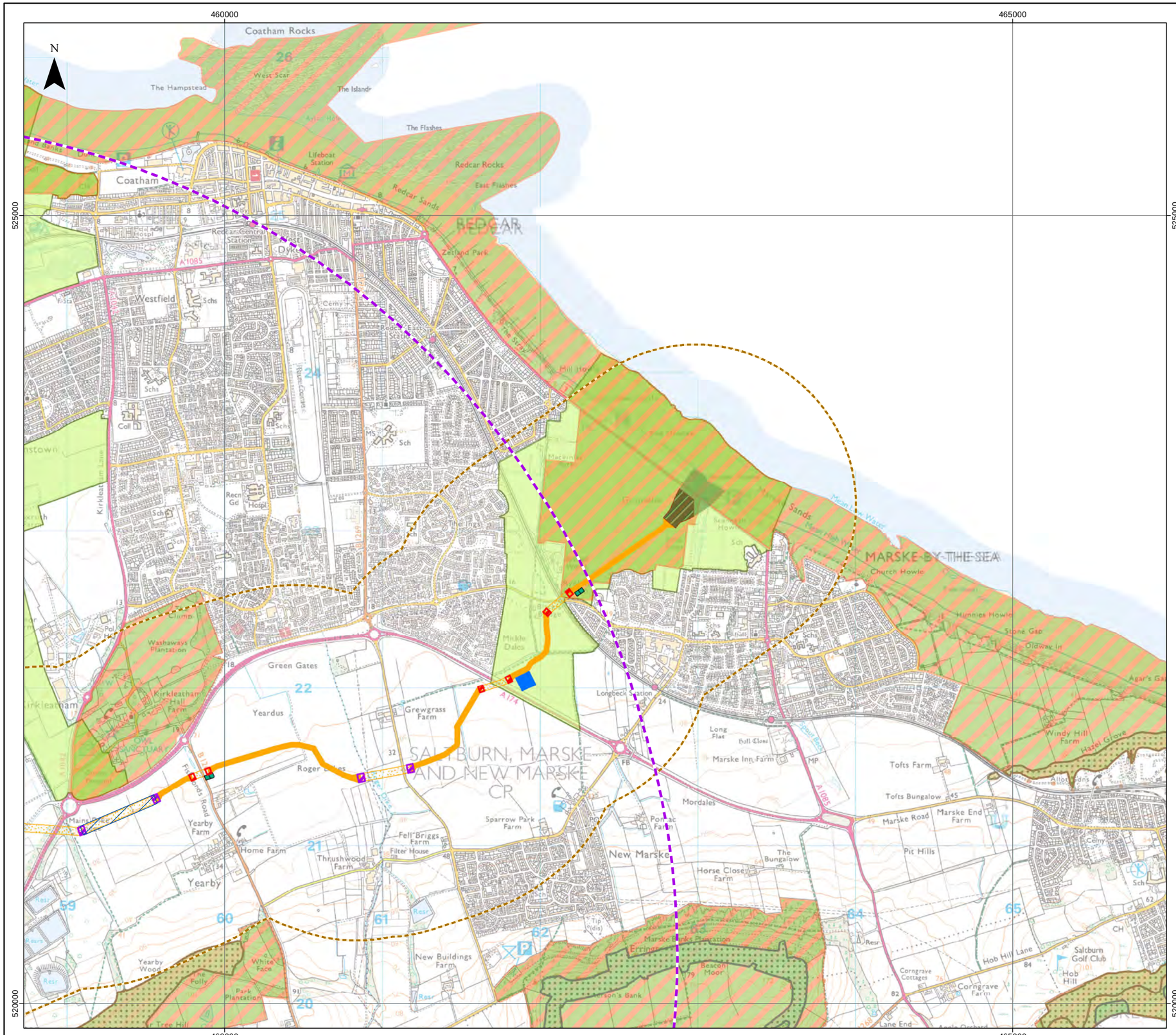
Landscape character and resources within the development areas

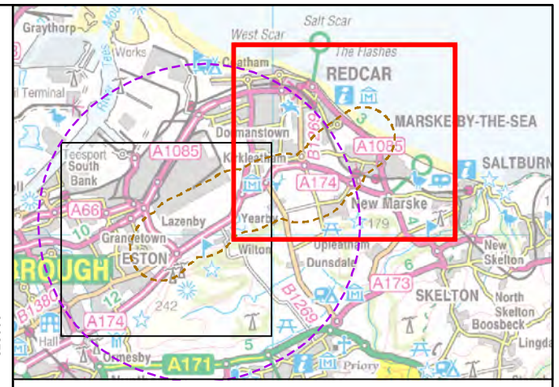
Landfall and HVDC cable route

4.2.15 Landscape resources and character that may be directly or indirectly affected by the proposed works are described in further detail below, in order to draw out the specific characteristics of the areas through which the cable route passes and their immediate setting. They are organised according to the local LCUs, in sequence from the landfall at Marske Sands through to the proposed converter stations site within the south of the Wilton Complex.

4.2.16 Landscape resources along the cable route, their immediate settings and surroundings which will be affected by the installation of the buried cable systems and associated construction compounds are identified. Features and designations indicating more sensitive landscape resources, including woodland (ancient, semi-natural and replanted), woodland pasture and parkland, and areas identified as sensitive landscapes within the SPD (RCBC 2010) are shown on **Figure 4.4a**. The baseline description and evaluation of landscape resources and character have also been informed by the CPRE Tranquillity Mapping and Lighting data, presented in **Figure 4.5**.

4.2.17 The overall sensitivity of the landscape resources and landscape character of each section of the HVDC cable route and immediate surroundings are evaluated and stated, based on judgements made using the criteria in **Table 3.1**.





LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)

Natural designations

- Ancient & semi-natural woodland
- Ancient replanted woodland

Redcar & Cleveland designations and policies

- Sensitive landscape
- Green infrastructure green wedge

0 — 1
Kilometres

Data Source:
Forewind, Redcar & Cleveland, LUC© Natural England
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PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.4a:
Landscape Resources and Designations
(Landfall and Cable Route)

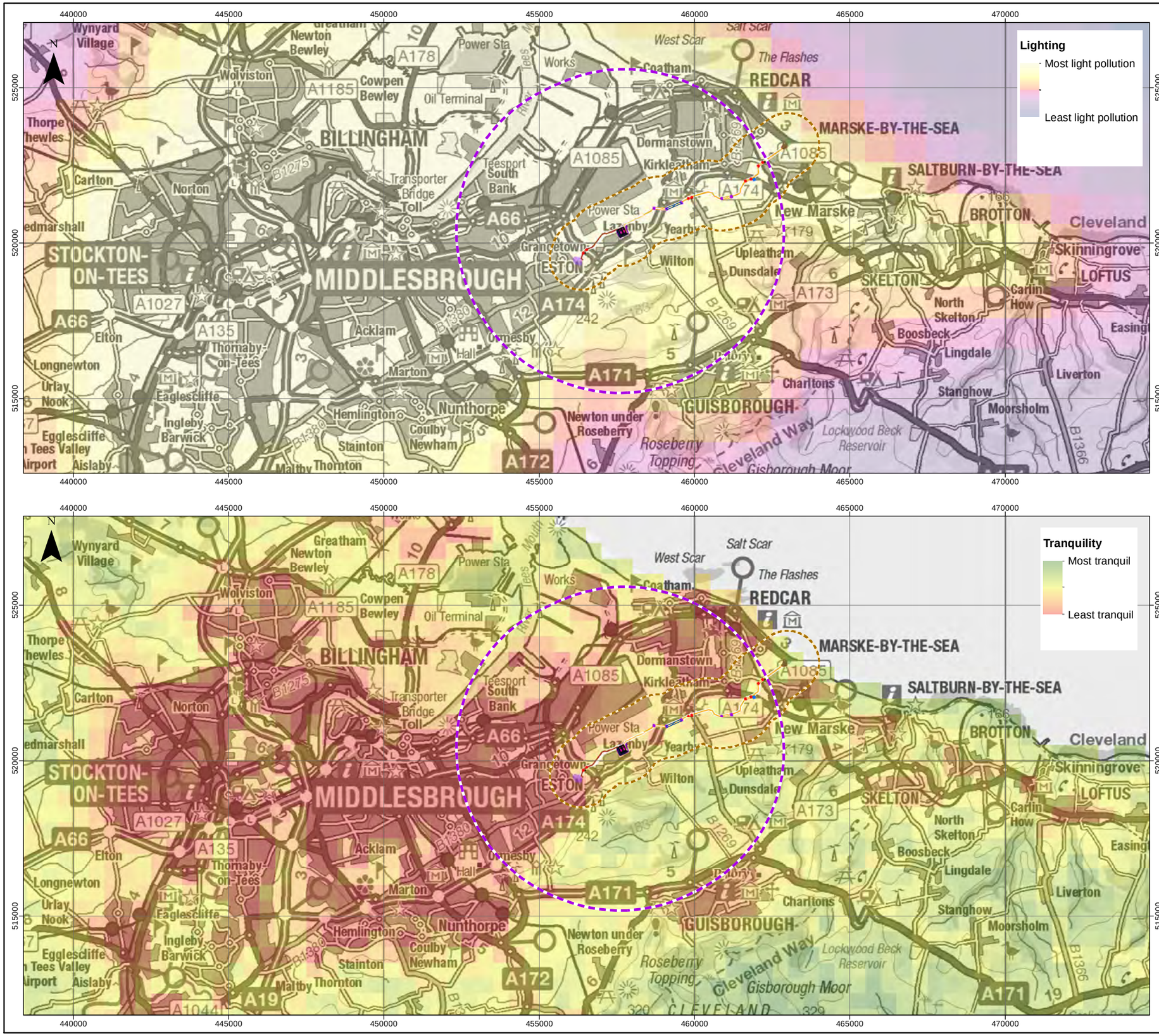
VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-609

SCALE	1:25,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND



LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site

0 5
Kilometres

Source: Forewind, LUC
Tranquility data: Reproduced courtesy of The Campaign to Protect Rural England (CPRE), Natural England and Northumbria University. OS Licence number 100018881
Light pollution data: CPRE/LUC night time satellite imagery. Data obtained and manipulated/analysed by and on behalf of CPRE
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PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.5: Lighting and Tranquility

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-611

SCALE	1:125,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

Marske Sands and Redcar Flats Coastal Farmland (LCU R6)

4.2.18 Marske Sands comprises an intertidal sandy beach backed by low sandy cliff banks and remnant sand dunes. The A1085 follows the line of the coast, offset from the cliff edge by a narrow margin of grass and remnant dunes, and forms a prominent feature by virtue of the movement of cars. The beach is largely visually obscured from the flat agricultural land inland, away from the cliff edges. The beach is accessible from two car parks, at Millclose Howie and Bydale Howie and is heavily used for recreation.

4.2.19 The landfall is located towards the southern end of the sands, to the edge of Marske, immediately north of Long Beck, a small beck that is culverted at the A1085 and flows into the sea just north of the Bydale car park.

4.2.20 Long views are available from the cliff banks and the beach to the south towards the headland at Warsett Hill and Huntcliff, where the North York Moors meets the coast. The headland forms the visual focus from this section of the coast, the dramatic high cliffs contrasting with the lower, densely developed coast to the north at Redcar and the mouth of the Tees.

4.2.21 The beach is an integral part of the character of the landscape within the R6: Coastal Farmland (Redcar to Marske) landscape unit as the low relief between the coast and the adjacent farmland result in the open, coastal character and sea views as being defining characteristics. Although views to Redcar and Marske are obtrusive within this flat landscape, the open character of the landform remains sensitive to further change. The Marske Sands are therefore considered to be of medium sensitivity.

4.2.22 Inland, the coastal edge is separated from the agricultural hinterland by the A1085, and the traffic movement along this is a prominent visual and audible influence on the surrounding area. The coastal farmland comprises gently sloping agricultural land, with an open character further emphasised by the very large scale of the fields and by very limited hedgerow and tree cover.

4.2.23 Abrupt urban edges of Marske and Redcar enclose the area, softened at the edge of Marske by low vegetation following Long Beck, which are sensitive features within otherwise intensively farmed arable fields. Field boundaries are degraded, with wooden fencing bounding the field and the road in limited sections. Sewage works located immediately adjacent to the proposed cable route to the northwest of Marske-by-the-Sea are largely visually screened and not widely discernible. To the west of Ryehills Farm, the proposed cable route crosses a minor road, connecting Redcar with Marske. At this point, Black's Bridge, the road is slightly elevated as it crosses over a railway line, allowing views over the surrounding farmland and settlements as well as the coast to the northeast. The railway line is enclosed by embankments and vegetation.

4.2.24 Overall sensitivity is judged to be medium.

Redcar Flats: Lowland Farmland south of Redcar and Marske (LCU R2)

4.2.25 To the south of Black's Bridge, the cable route bisects a flat arable field, bound by tall hedgerows and a narrow track, Cat Flatt Lane, which forms a PRoW to the west. The proposed cable route crosses Cat Flatt Lane, crossing a tall,

dense hedgerow and continues southwest across an arable field until it reaches the A174, which is elevated slightly above the level of the surrounding landscape. South of the A174 the cable routes crosses agricultural land which becomes increasingly more varied in topography, with the landform becoming more undulating and rising to the south as it approaches the foot of the Eston Hill escarpments. Views are locally shorter where more rolling landform limits views, although the large agricultural fields through which the cable routes passes are mostly large in scale and intensively farmed.

4.2.26 Generally the structure of hedgerows is stronger in this area, often tall with some small hedgerow trees, in contrast with the more exposed coastal farmland. A sparse and fragmented hedgerow pattern does however predominate within the fields immediately south of the A1074. The more intact and denser hedgerows and occasional hedgerow trees are more sensitive features particularly in an area of intensive farming where much of the pattern and structure has been degraded.

4.2.27 Within the north of the area, the railway line and traffic movement on the A174 are notable features. The A174 is highly visible and prominent from much of the area, which is slightly elevated above the surrounding fields in places and largely unscreened. The margins of the surrounding settlements are characterised by incremental development, including glass houses associated with a plant nursery south of Black's Bridge and allotments north of New Marske. Paddocks and some pastures lie to the south of the area, with young tree belts and groups of trees contributing to a stronger structure around Longbeck Lane and the southern extents of Yearby Bank.

4.2.28 The level of development within the wider area is such that the urban edges of Redcar to the north, Marske-by-the-Sea to the east, and New Marske to the south are highly visible, and the stacks and chimneys of the Wilton Complex are a constant feature of the skyline to the northwest. The Eston Hills form a distinctive backdrop to views inland, whilst to the northeast the sea is frequently visible, including the large container ships and tankers anchored at the mouth of the Tees.

4.2.29 The area forms a recreational resource as an area of open green space between settlements. A number of PRoWs converge on Cat Flatt Lane and to the west of Yearby, and several permissible bridleways cross the area. The strong network of paths link between the settlements to the hills.

4.2.30 Due to the industrialised context and the urban fringe character of much of the area, the sensitivity overall is considered to be **medium**.

Wilton Complex (LCU W1)

4.2.31 The final sections of the proposed cable route are located within the Wilton Complex. This landscape is considered to be of low sensitivity overall as a result of the prevalent large scale industrial landscape comprising oil refinery and chemical works.

Converter stations site

4.2.32 The proposed converter stations site lies within the Wilton Complex landscape unit, as defined in **Table 4.1**. The Wilton Complex is a former chemical works and currently zoned for industrial development. The complex consists of a mixture of operational heavy and light industrial works as well as derelict brownfield and arable land.

4.2.33 The site covers an area of approximately 9ha and comprises a flat agricultural field, bound by access roads within the Wilton Complex to the north and east and to the south by smaller arable fields. A dense shelterbelt lies to the east, separating the site from the access road and the Wilton Centre beyond.

4.2.34 The smaller arable fields to the south are enclosed to the south, east and west by deciduous tree belts on high bunds of up to 10m in height. The bunds and tree belts serve in part to screen views into the Wilton Complex from the small settlement of Lazenby, located to the southwest, and from the A174.

4.2.35 The western boundary of the site is marked by an existing field boundary, open to the southern end and marked by hedgerow at the northern end. The neighbouring land to the west comprises arable fields and scrub interspersed with wide shelter belts and bunds.

4.2.36 Overall the sensitivity of the landscape character and resources of the site and immediate surroundings is considered to be low.

HVAC cable route and modification works at the existing NGET substation at Lackenby

4.2.37 The cable route extends across the LCUs of the Wilton Complex (LCU W1) and the settlement edge of Lackenby, within which the existing NGET substation at Lackenby is located. Features and designations indicating more sensitive landscape resources, including woodland (ancient, semi-natural and replanted), woodland pasture and parkland, and areas identified as sensitive landscapes within the SPD (RCBC 2010) are shown on **Figure 4.4b**.

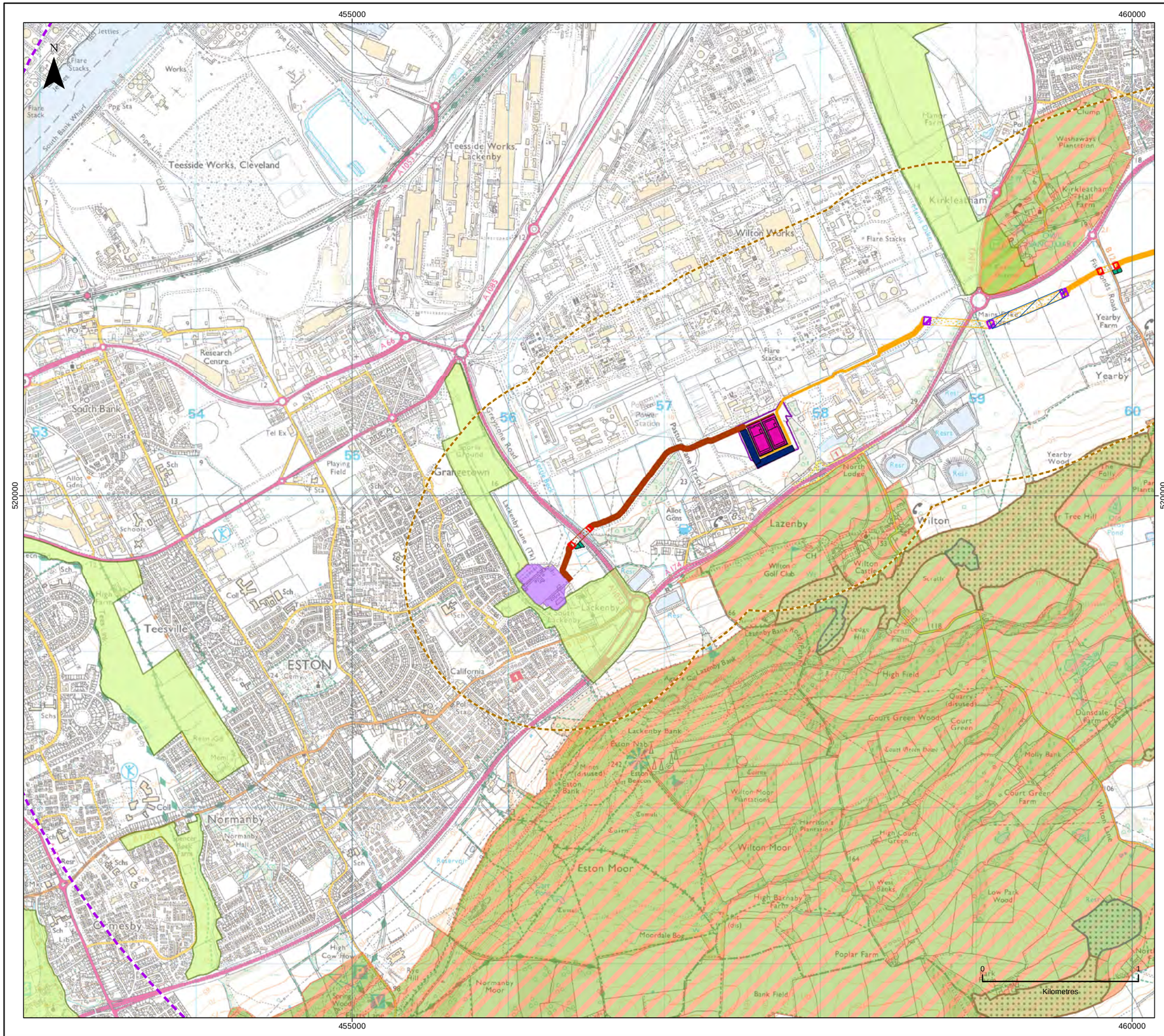
4.2.38 The landscape through which the cable route passes is flat, largely comprising intensely managed agricultural farmland, with scrub and woodland. The cable route runs to the north of a paved track within the Wilton Complex for a short section to the northwest of the converter stations site. The track is unbound with no hedgerows. The cable route crosses the track where it bends to the southwest and continues to run parallel to the north of the track. The character of the area is strongly influenced by the presence of large buildings and tall structures within the Wilton Complex to the north. An overhead power line crosses the large fields to the north of the track.

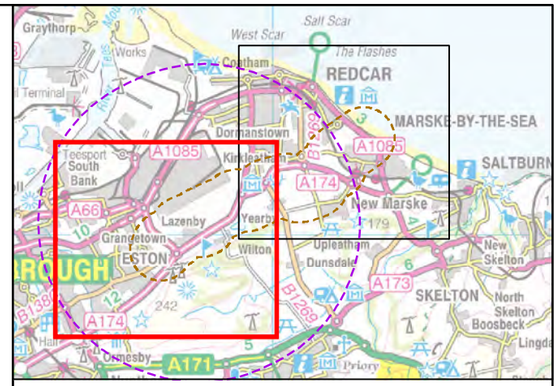
4.2.39 More sensitive features present along the cable route include tree belts either side of the A1053, which serve to screen views of the existing NGET substation at Lackenby and the Wilton Complex from the road, and hedgerows and areas of woodland to the north of Lazenby, which screen views of the Wilton Complex from the settlement. The landscape surrounding the existing NGET substation at Lackenby through which the cable route passes is of **low** sensitivity overall.

4.3 Visual baseline

HVDC cable route study area

4.3.1 In order to assess short term visual impacts during the construction phase, potential visual receptors along the length of the buried cable route within the study area were identified. These are listed in **Table 4.3** and their locations are shown on **Figure 4.6**. The sensitivity of the receptors is also listed, based on the criteria set out in **Table 3.2**.





LEGEND

- Converter Station LVIA Study Area
- Cable Route LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
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- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site

Natural designations

- Ancient & semi-natural woodland
- Ancient replanted woodland

Redcar & Cleveland designations and policies

- Sensitive landscape
- Green infrastructure green wedge

Data Source:
Forewind, Redcar & Cleveland, LUC© Natural England
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PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.4b:
Landscape Resources and Designations
(Cable Route and Lackenby Substation)

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	29/01/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-610

SCALE	1:25,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

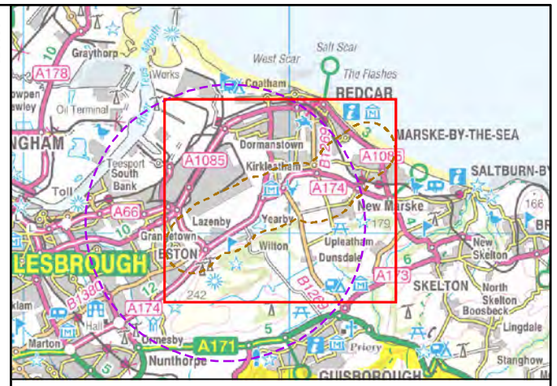
460000

525000

520000

Visual receptors:

1: Millclose Howle Car Park
2: Bydale Howle Car Park
3: North East Corner of the Marske-by-the-Sea allotments
4: Bydales School
5: Oak Road
6: Mackinlay Park
7: Beardmore Avenue
8: Ryehills Farm
9: Marked path adjacent to the Ings
10: PRoW near Mickle Dales
11: Longbeck Station
12: Junction of A174 & PRoW at Tunstall Gdns.
13: Grewgrass Farm
14: New Marske Methodist Church & St. Thomas' Church
15: Sparrow Park Farm
16: Junction of Lindrick Road, Longbeck Lane and Fell Briggs Farm
17: The Filter House and Thrushwood Farm
18: Errington Wood
19: Junction of Larkswood Road, Plantation Road & A174
20: Turners Arms Farm
21: Conservation Area village of Yearby
22: Kirkleatham Old Hall Museum & Owl Sanctuary
23: PRoW adjacent to Mains Dike
24: Pasture Lane, Lazenby
25: A1053 Greystone Road
26: Lackenby Lane PRoW
27: Crow Lane, Lackenby
28: Wilton Way
29: South Lackenby



LEGEND

- Cable Route LVIA Study Area
- Converter Station LVIA Study Area
- Teesside A&B cable landfall envelope
- Teesside A&B landfall construction envelope
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- Visual receptor location

0 1
Kilometres

Data Source:
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PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.6: Cable Route Visual Receptors

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
3	14/02/2014	Pre-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-612

SCALE	1:30,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

Table 4.3 Landfall and HVDC cable route visual receptors

No.	Location	Receptor type and sensitivity H: Residential R: Recreational T: Travelling	Description
1	Millclose Howie Car Park	R, T Medium	Public car park located between the Marske Sands foreshore and the A1085. This receptor is also a proxy for travelling receptors along the A1085. The location is considered to be of medium sensitivity, as although the beach is a popular local recreational destination, where there are open marine views, the close proximity of Redcar to the northwest, and the industrialised context of the views to the north and inland reduces the overall sensitivity.
2	Bydale Howie Car Park	R, T Medium	Public car park located between the Marske Sands foreshore and the A1085, to the south of the Bydale Howle car park. This receptor is also a proxy for travelling receptors along the A1085. The location is considered to be of medium sensitivity, as although the beach is a popular local recreational destination, where there are open marine views, the industrialised context of the views to the north and inland reduces the overall sensitivity.
3	North East Corner of the Marske-by-the-Sea allotments	R Medium	Recreational receptor located at the northeast of allotment gardens on the northern edge of Marske-by-the-Sea. The location is considered to be of medium sensitivity as it is frequented by recreational and travelling viewers with a moderate interest in their environment at a recreational facility when the main focus of activity is not on the surroundings.
4	Bydales School	H, R Medium	Newly constructed secondary school located on the northern edge of Marske-by-the-Sea, adjacent to the A1085. The location is considered to be of medium sensitivity as it is frequented by viewers at the school with a moderate interest in their environment.
5	Oak Road	H High	Residential receptor located on cul-de-sac on the eastern edge of Redcar. Houses oriented away from existing residential development, towards the coast. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
6	Mackinlay Park	R, T Medium	Recreational receptor located at park which serves as Redcar Rugby Union Football Club. This receptor is also a proxy for PRoW (bridleway) located adjacent to the park. The location is considered to be of medium sensitivity as it is used locally for recreation by viewers that are likely to have a moderate interest in their environment.
7	Beardmore Avenue	R High	Residential receptor located at western edge of housing development in west Marske-by-the-Sea, including allotment plots. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.

No.	Location	Receptor type and sensitivity H: Residential R: Recreational T: Travelling	Description
8	Ryehills Farm	H, T High	Two storey farmhouse and associated stone outbuildings located to the west of Marske-by-the-Sea. Located adjacent to the Redcar Road 'B' road. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
9	Marked path adjacent to the Ings	H, R, T High	Footpath marked on OS mapping running through park at the centre of The Ings housing development to the east of Redcar. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities as well as being used locally for recreation.
10	PRoW near Mickle Dales (Cat Flatt Lane)	R, T Medium	Residential and travelling receptor located on PRoW on Cat Flatt Lane, amid agricultural fields between Marske-by-the-Sea and Redcar. The location is considered to be of medium sensitivity as it is used locally for recreation by viewers that are likely to have a moderate interest in their environment.
11	Longbeck Station	T Low	Railway station located near level crossing over Longbeck Road on the southern edge of Marske-by-the-Sea. The location that is considered to be of low sensitivity as the travelling viewers at the train station or on trains passing through it are likely to have a passing interest in their surroundings.
12	Junction of A174 and PRoW at Tunstall Gdns.	H, R, T High	Receptor located on A174 at boundary with PRoW that runs from Mickle Dales to Grewgrass Farm. This receptor is also a proxy for views from Tunstall Gardens and the surrounding residential development to the southeast of Redcar. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities as well as being used locally for recreation.
13	Grewgrass Farm	H, T High	Two storey farmhouse set within well-established gardens, together with associated outbuildings located on both sides of Grewgrass Lane, a 'B' road running south from the A174, south of Redcar. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
14	New Marske Methodist Church and St. Thomas' Church	H, R High	Representing properties and two nearly adjacent churches located on elevated land to the northeast of New Marske, as well as allotments located here. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities as well as being used locally for recreation.
15	Sparrow Park Farm	H, T High	Two storey traditional farmhouse and associated outbuildings located on Longbeck Lane, a 'B' road on the northern edge of New Marske. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and

No.	Location	Receptor type and sensitivity H: Residential R: Recreational T: Travelling	Description
			prolonged viewing opportunities.
16	Junction of Lindrick Road and Longbeck Lane and Fell Briggs Farm	H, T High	Residential and travelling receptor representative of views from dwellings located on the northern edge of New Marske, which afford open views across the landscape to the north. Also a proxy for Longbeck Lane, 'B' road bounding New Marske to the north. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
17	The Filter House and Thrushwood Farm	H, T High	New build farmhouse set within complex of working farm buildings, set on either side of unclassified road connecting Grewgrass Lane in the east to the B1269 in the west. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
18	Errington Wood	R Medium	Representing recreational receptors at the picnic area, car park and play area at the northern edge of Errington Wood. Located in an open area of the woodland, on the hill slope to the south of New Marske, long views are available to the north over Teesside, including Redcar, Marske and the farmland stretching between the settlements and the Wilton Complex.
19	Junction of Larkswood Road, Plantation Road and A174	H, T High	Representative of views from footpath connecting housing on Larkswood Road / Plantation Road with the A174. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
20	Turners Arms Farm	H, R, T High	Substantial three storey brick farmhouse located in elevated position, on the east side of Fishponds Road (B1269). Extensive outbuildings are located to the east of the farmhouse. The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
21	Conservation Area village of Yearby	H, T High	Residential receptors at small village of Yearby, located to the west of Fishponds Road (B1269) which is designated as a Conservation Area in the Redcar and Cleveland Local Development Framework (2007). The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities.
22	Kirkleatham Old Hall Museum and Owl Sanctuary; Conservation Area village of Kirkleatham	H, R High	Residential receptors at village of Kirkleatham, located to the south west of Redcar, between the A1042 and A174. This village is designated as a Conservation Area in the Redcar and Cleveland Local Development Framework (2007). The location is considered to be of high sensitivity as a residential property, frequented by viewers with proprietary interest and prolonged viewing opportunities as well as being a popular recreational destination locally.

Converter stations study area

4.3.2 The area immediately north of the site is dominated by the extensive industrial works of the Wilton Complex, which extend some distance to the north, across the River Tees to Seal Sands. Views from the wider landscape to the north will be constrained by this industrial development, and views to the north will therefore be available only from within the Wilton Complex. Given that access to the Wilton Complex is limited, it is not considered likely that there will be any recreational or other receptors at this location to the north or east.

4.3.3 From the west, views towards the site are available from a network of farm access tracks, some of which are used informally for recreation. The bunds and tree belts located to the west help to screen views into the southern part of the Wilton Complex. Glimpsed views towards the site are available from the A1053, where views are possible across the bunds and tree belts to the northwest of Lazenby.

4.3.4 From the south, views from the A174 towards the site are likely to be mostly screened by vegetation during the summer months, with greater visibility available in winter. An embankment located immediately to the north of the road is likely to provide further screening of views to the site from ground level.

4.3.5 The landform rises in a distinctive scarp form (Wilton Wood, Castle Bank, Lazenby Bank etc.), approximately 200m in height to the south of the study area. To the south of this scarp any visibility towards the site is screened by the existing landform. This landscape to the south of the scarp is both locally undulating and densely wooded which provides some screening of views to the wider landscape, however glimpsed views are available from a number of PRoWs located within this area and from Eston Nab, a locally prominent outcrop and viewpoint.

Residential receptors

4.3.6 Views towards the Wilton Complex and the site are available from localised areas at the northeast edge of Lazenby. Views from ground level are intermittently screened by houses and garden vegetation, and by the bunds and woodland planting to the north and east. Views to the northeast towards the site are available from some upper storey windows where intervening buildings and the bunds allow. Views are also available from gardens bounding the northern and north-eastern edge of the settlement, screened to varying degrees by the bunds and woodland planting to the north and east. All viewpoint locations are shown in **Figure 4.7** and the views from the northern edge of Lazenby are represented in **Figure 4.8a** – **Figure 4.8d**.

4.3.7 From within the larger part of Lazenby, views from ground level are screened by the topography of the intervening bunds and tree planting between the village and the site, which also screen views towards the Wilton Complex. Some views may be available towards the site from upper storey windows of properties within the northern and eastern parts of the settlement.

4.3.8 A number of individual properties are located within approximately 1km of the converter station(s): Wilton Castle, converted c.19th castle located

approximately 500m to the southeast; North Lodge, two storey Victorian cottage located immediately to the south of the A174; Bank Top Farm, located on elevated land to the south of the village of Wilton; and South Lackenby, a farm complex located immediately to the south of the existing NGET substation at Lackenby. The ZTV indicates that visibility from these properties, with the exception of Wilton Castle, will be very limited due to the wooded nature of their landscape setting, and are therefore not considered further. Views are available to the north from localised parts of the land surrounding Wilton Castle, represented by **Figure 4.9**.

4.3.9 Settlements within the surrounding landscape include Wilton, Lazenby, Lackenby, Kirkleatham and Yearby. Wilton, Kirkleatham and Yearby are designated as Conservation Areas. Wilton and Kirkleatham are set within well-established landscape settings, with very limited views to the either the proposed cable route or converter stations. The northern extent of Yearby is more open in nature, but the ZTV indicates that there is no potential visibility of the converter stations. Potential visibility is limited from within Lackenby, although some views towards the site are available from the eastern edge of the settlement, which are represented by **Figure 4.10a** – **Figure 4.10c**.

4.3.10 There are five towns located within the wider study area: New Marske, Marske-by-the-Sea, Redcar, Eston and Guisborough. There is no or very limited potential visibility from these areas due to screening by woodland, landform and buildings surrounding the site and therefore they are not considered further.

Recreational receptors

4.3.11 Close range views towards the site are available from informal recreational areas to the north of Lazenby, from along Pasture Lane. The views are intermittently screened by vegetation along the lane and bunds to the east. These views are represented by **Figure 4.11a** - **Figure 4.11c**.

4.3.12 Elevated vantage points, accessible from a number of PRoWs, are located on the northern ridge of the Eston Hills, affording wide views over the Tees Valley below. Views are represented by **Figure 4.9** and **Figure 4.12a** - **Figure 4.12c**.

Travelling receptors

4.3.13 The A174 passes to the south of the site and the A1053, Greystone Road to the west. The ZTV indicates very limited potential visibility from the A1053 due to screening by existing woodland planting, bunding and road-side embankments, and potential visibility from some short sections of the A174 immediately to the south of the site. The ZTV also indicates that visibility from the A1085 to the north of the Wilton Complex will be very limited and therefore this road is not considered further.

4.3.14 The Saltburn to Redcar railway line is located approximately 3km to both the north and east of the converter stations. At this distance and due to much of the railway line being enclosed by cuttings and vegetation, views are unlikely to be available of the converter stations. This is therefore not considered further in this assessment.

Representative viewpoints

4.3.15 Viewpoints around the study area were selected as described in Section 3. Seven viewpoints were selected, in consultation with RCBC and Natural England, to represent important views from key sensitive receptors, public places and recreational areas or paths. Viewpoints were chosen to reflect a range of locations at varying distances and directions from the converter stations, where the presence of hedgerows, trees and woodland would not restrict views. Their locations are shown in **Figure 4.7**. A summary of the reason for selection and any relevant designations is provided in **Table 4.4**. Existing views from the representative viewpoints are described, visual receptors identified and a judgement about sensitivity of each viewpoint made according to the criteria set out in **Table 3.2**.

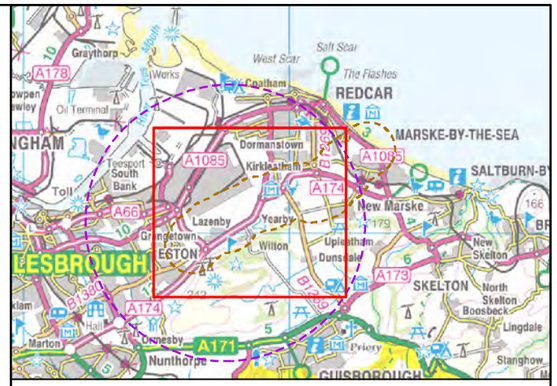
455000

460000

520000

Viewpoint Locations

1: Lazenby, northern edge
2: Pasture Lane, Lazenby
3: Wilton Castle, Wilton
4: Lazenby Bank
5: A1042, southwest of Kirkleatham
6: South Lackenby
7: Eston Nab



LEGEND

- Cable Route LVIA Study Area
- Converter Station LVIA Study Area
- Teesside A&B HVDC, Open trench
- Teesside A&B HVDC, HDD
- Teesside A&B HVAC, Open trench
- Teesside A&B HVAC, HDD
- Teesside A&B major horizontal directional drill entry or exit locations (2,000m²)
- Teesside A&B minor horizontal directional drill entry or exit locations (1,200m²)
- HDD or open trench to be confirmed
- Teesside A&B cable route primary construction compound (10,000m²)
- Teesside A&B intermediate construction compound (784m²)
- Teesside A&B converter stations
- Teesside A&B converter stations construction compounds (10,000m² per project)
- Lackenby 400kV substation
- Converter stations site
- Viewpoint location

0 1
Kilometres

Data Source:
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PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.7: Converter Stations Viewpoints

VER	DATE	REMARKS	Drawn	Checked
1	17/07/2013	Draft	SW	RH
2	29/08/2013	Submit for PEI3	SW	RH
4	14/02/2014	PRe-DCO submission review	SW	RH

DRAWING NUMBER:

F-ONL-MA-613

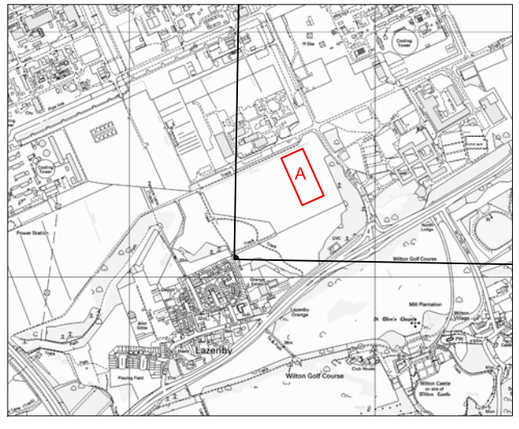
SCALE	1:25,000	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

FOREWIND

Photograph

Photomontage

view horizon



Viewpoint information

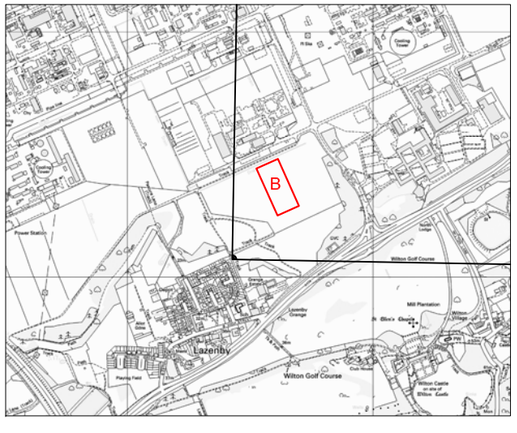
OS Reference:	457427, 520070
Approximate distance to development:	354 m

Photography information

Date:	14th March 2013
Time:	13:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	46°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.8a Viewpoint 1: Lazenby northern edge - Dogger Bank Teesside A



Viewpoint information

OS Reference:	457427, 520070
Approximate distance to development:	257 m

Photography information

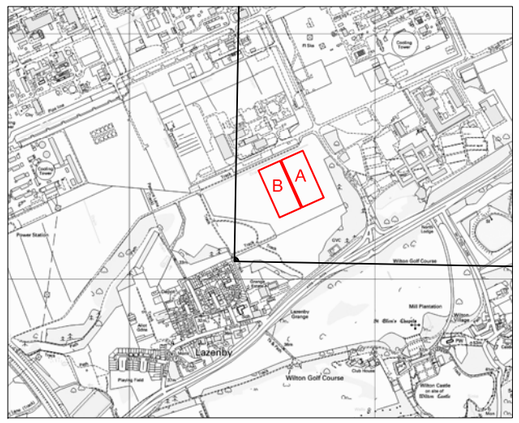
Date:	14th March 2013
Time:	13:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	46°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.8b Viewpoint 1: Lazenby northern edge - Dogger Bank Teesside B

Photograph

Photomontage



Viewpoint information

OS Reference:	457427, 520070
Approximate distance to development:	257 m

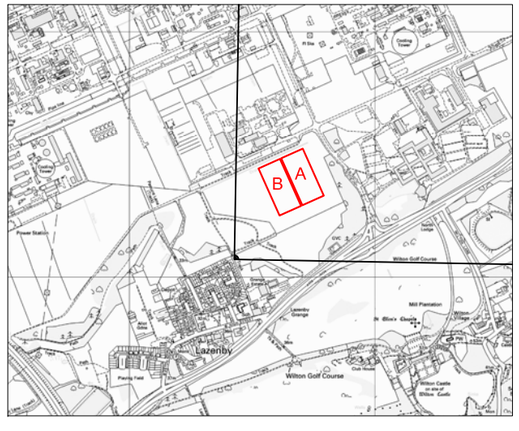
Photography information

Date:	14th March 2013
Time:	13:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	46°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.8c Viewpoint 1: Lazenby northern edge - Dogger Bank Teesside A & B (without mitigation)

Photomontage



Viewpoint information

OS Reference:	457427, 520070
Approximate distance to development:	257 m

Photography information

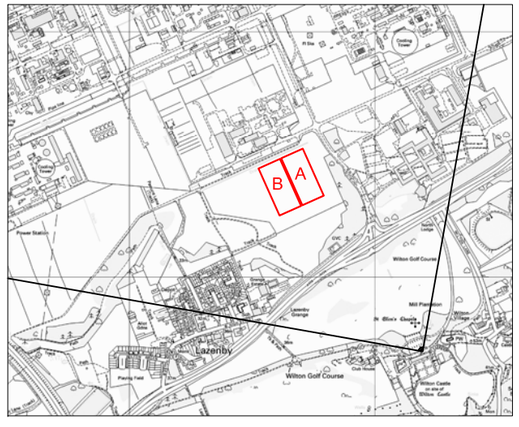
Date:	14th March 2013
Time:	13:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	46°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.8d Viewpoint 1: Lazenby northern edge - Dogger Bank Teesside A & B (with mitigation at year 10)

Photograph

Photomontage



Viewpoint information

OS Reference:	458190, 519702
Approximate distance to development:	752 m

Photography information

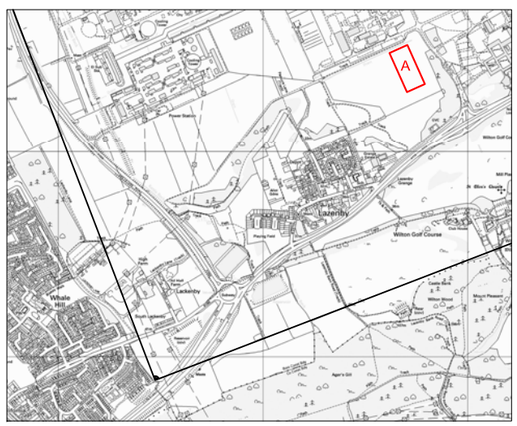
Date:	17th April 2013
Time:	18:15
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	325°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.9 Viewpoint 3: Wilton Castle - Dogger Bank Teesside A & B

Photograph

Photomontage



Viewpoint information

OS Reference:	456472, 518882
Approximate distance to development:	1872 m

Photography information

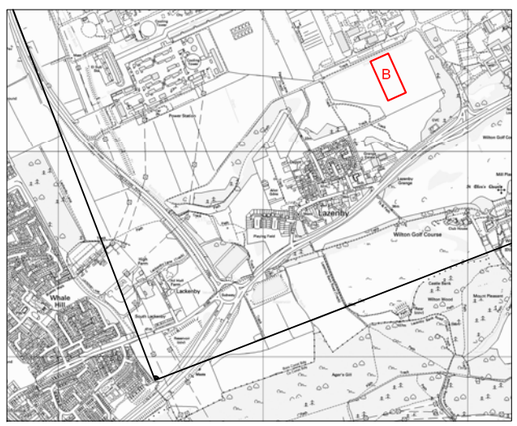
Date:	14th February 2013
Time:	13:00
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	24°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.10a Viewpoint 6: South Lackenby - Dogger Bank Teesside A

Photograph

Photomontage



Viewpoint information

OS Reference:	456472, 518882
Approximate distance to development:	1780 m

Photography information

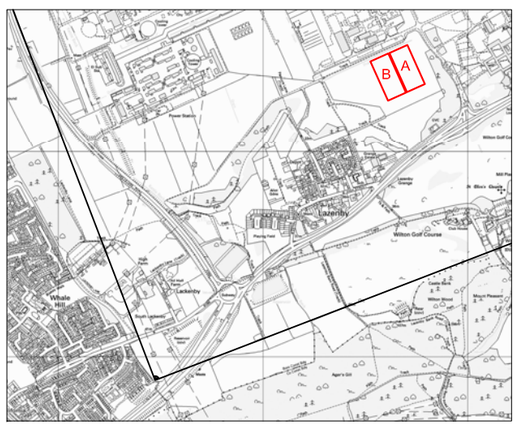
Date:	14th February 2013
Time:	13:00
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	24°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.10b Viewpoint 6: South Lackenby - Dogger Bank Teesside B

Photograph

Photomontage



Viewpoint information

OS Reference:	456472, 518882
Approximate distance to development:	1780 m

Photography information

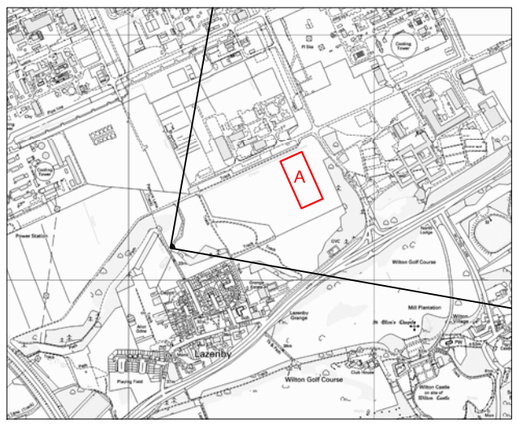
Date:	14th February 2013
Time:	13:00
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	24°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.10c Viewpoint 6: South Lackenby - Dogger Bank Teesside A & B

Photograph

Photomontage



Viewpoint information

OS Reference:	457170, 520129
Approximate distance to development:	555 m

Photography information

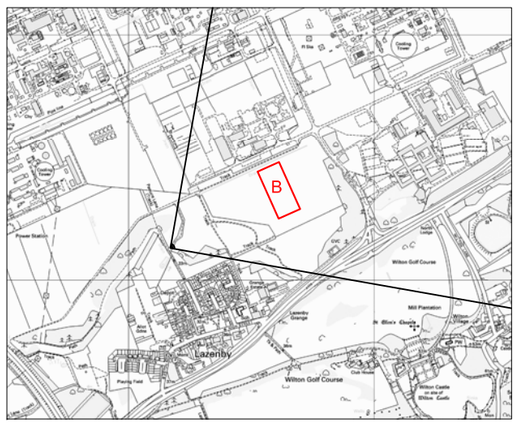
Date:	14th March 2013
Time:	12:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	55°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.11a Viewpoint 2: Pasture Lane - Dogger Bank Teesside A

Photograph

Photomontage



Viewpoint information

OS Reference:	457170, 520129
Approximate distance to development:	453 m

Photography information

Date:	14th March 2013
Time:	12:30
Camera type:	Nikon D7000
Focal length:	35 mm
Equivalent Focal length:	52 mm

Bearing to centre of view:	55°
Horizontal field of view:	90°
Recommended viewing distance at A3:	25 cm

Figure 4.11b Viewpoint 2: Pasture Lane - Dogger Bank Teesside B