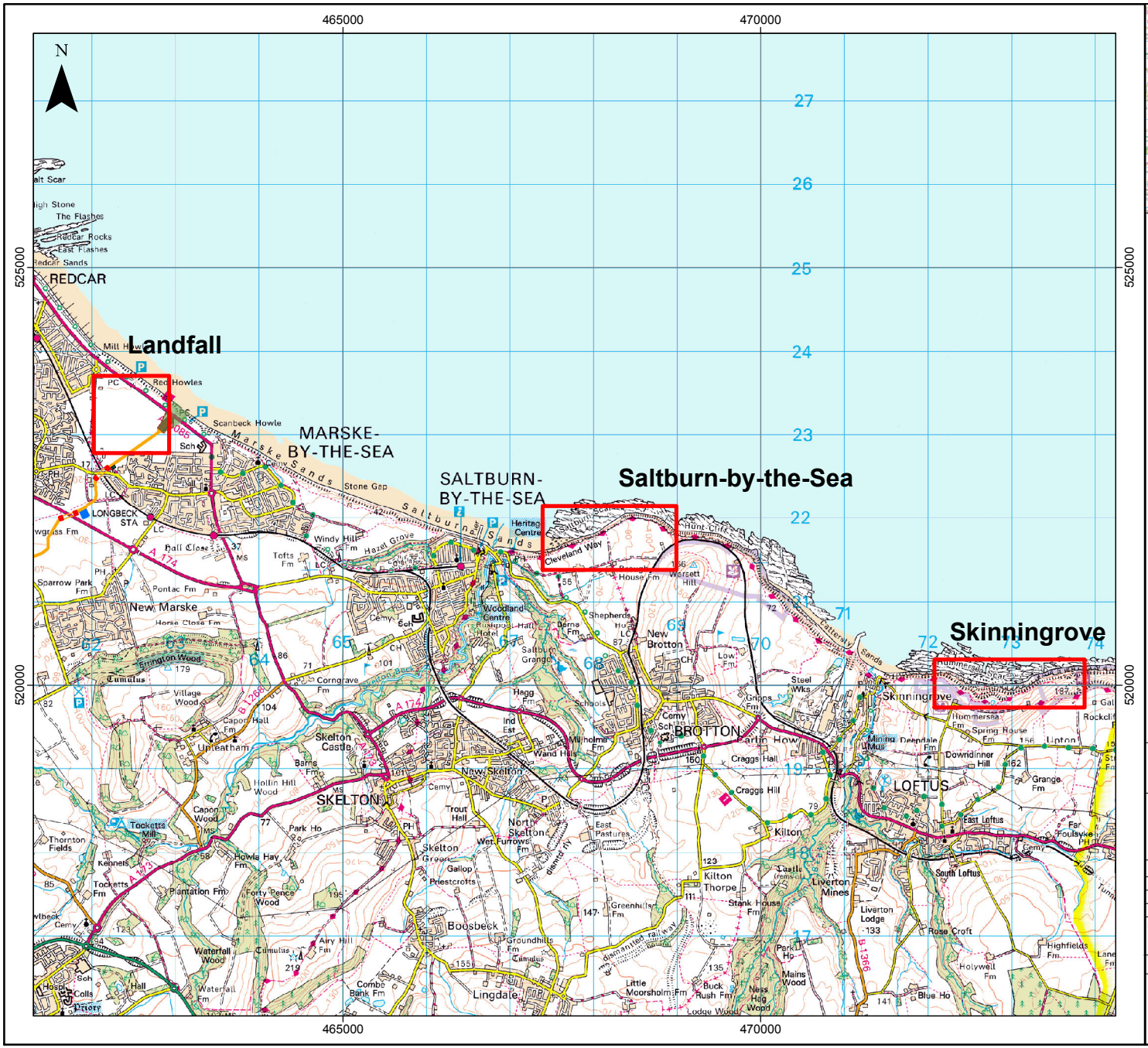
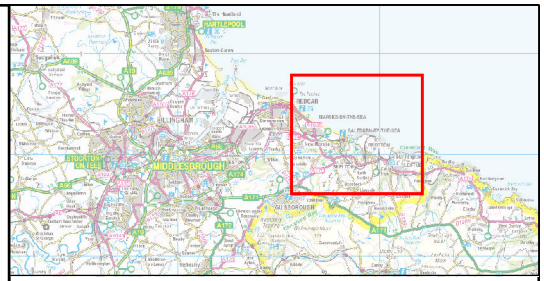




LEGEND

- 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
- Locations for potentially available alternative habitats

0 2

Kilometres

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

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.23: Locations for potentially available alternative habitats

VER	DATE	REMARKS	Drawn	Checked
1	24/02/2014	Pre-DCO submission review	SW	SDS

DRAWING NUMBER:

F-ONL-MA-223

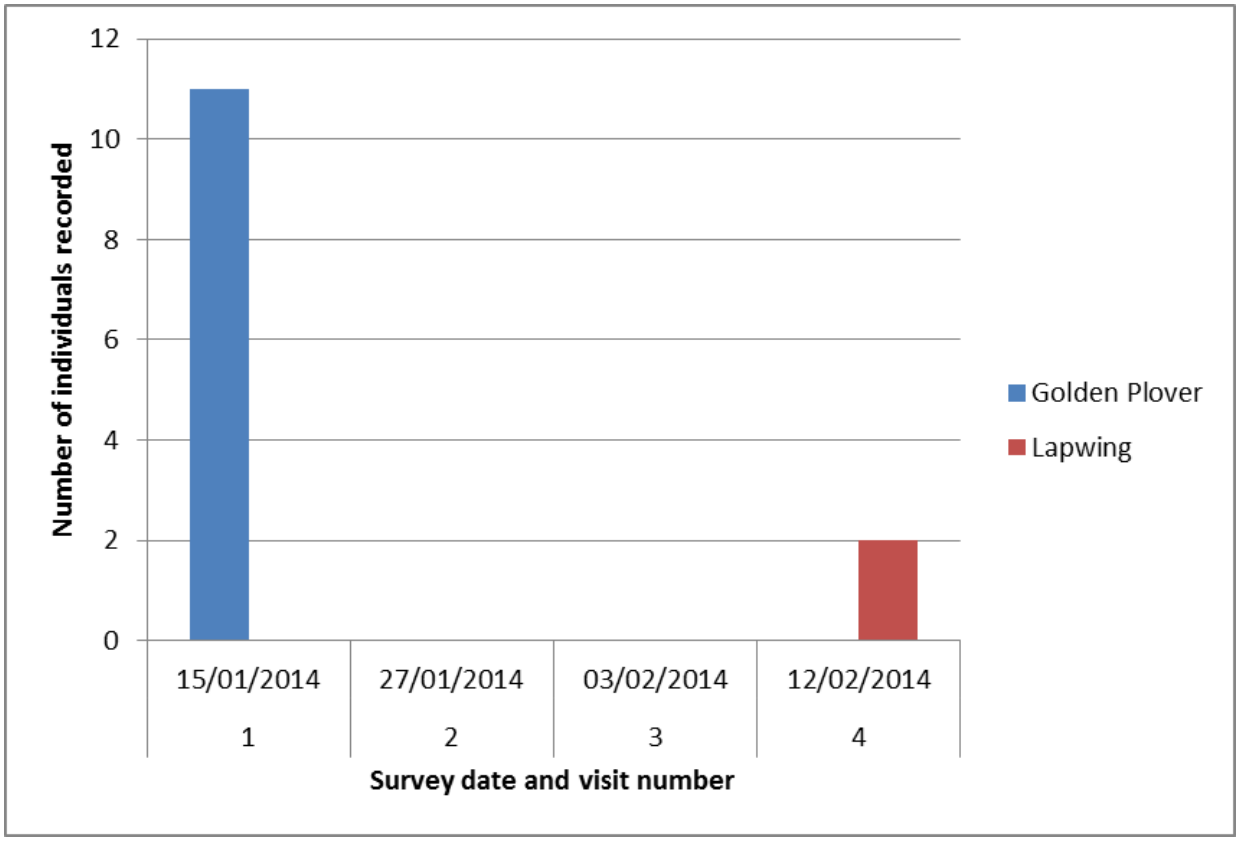
SCALE	1:70,000	PLOT SIZE	A4	DATUM	OSGB36	PROJECTION	BNG

FOREWIND

Review of field surveys 2014

4.6.48 A total of four survey visits were conducted between January and February 2014 (two in January 2014 and two in February 2014). The surveys revealed very low numbers of both golden plover and lapwing. **Graph 4.5** below provides the results of each of the survey visits at Site 1, whilst **Figure 4.20** shows the locations of each of the golden plover and lapwing registrations.

4.6.49 During visits 1, 2 and 4 to Site 1, lapwing were recorded adjacent to the fields, on amenity grassland at the rugby club and Bydales School. Two lapwing were recorded at each of visits 1 and 2, while 12 lapwing were recorded on visit 4.



Graph 4.5 Numbers of individual golden plovers and lapwings recorded during surveys undertaken during 2014

Evaluation

4.6.50 The survey results indicate that much of the autumn passage and wintering bird interest within the study area is centred on the arable fields at the landfall, located between Redcar and Marske-by-the-Sea (covered by surveys of Site 2 during 2011 - 2012 surveys and Site 1 during 2012 – 2013 and 2014). The fields further inland were limited in the number of birds they supported with many species recorded only as flying over the site.

4.6.51 Large flocks of golden plover and lapwing move around and utilise the large arable fields at the landfall; this is probably dictated by the state of the arable field at the time. Golden plover prefer open, short vegetation (less than 10cm), for example fields left as stubble during autumn and winter. These provide an

abundance of food in the form of soil and ground-surface invertebrates, including earthworms, leatherjackets, beetles and spiders (Kirby *et al*. 2000).

4.6.52 The number of golden plover recorded during the winter of 2011 – 2012 was far higher than during the winter of 2012 – 2013. Although the peak numbers recorded were lower during the 2012 – 2013 surveys their presence was recorded over a longer duration. Speculatively, this could be due to the elevated number of golden plover consuming the ground invertebrates available in a much shorter time, therefore depleting potential food resources quickly, and forcing the birds to move on to other foraging areas.

4.6.53 During the surveys undertaken in 2014 at the Redcar to Marske Coastal Fields, golden plovers were present on only one of the four survey visits, and a total of 11 birds were recorded altogether. Similarly lapwings were present within the fields on only one of the four survey visits, and 2 birds were recorded altogether. In addition, lapwings were recorded in amenity grassland adjacent to the fields, and 16 birds were recorded in total over four survey visits. By combining the numbers for golden plover and lapwing recorded in 2014, surveys in 2011-2012 and 2012 – 2013, the average numbers of these birds is reduced to 28 birds for golden plover and 74 birds for lapwing.

4.6.54 In both survey seasons, the highest counts of golden plover and lapwing occurred in the months of November and December. A similar finding was recorded at nearby Saltholme in 2008 (Joynt *et al*. 2008). In addition, the desk study and surveys undertaken for golden plover and lapwing in 2014 provided evidence of low numbers of both species from January to March generally in the Redcar to Marske Coastal Fields.

4.6.55 Teesmouth Bird Club reported that the WeBS recorded a maximum of 1,200 golden plover in the early months of 2008 on the arable fields at the landfall, with 2000 and 2300 golden plover recorded in November and December 2008 at Saltholme Pools (Joynt *et al.* 2008), showing that there are other areas close by which also appear to support large numbers of golden plover. The site falls within an area of interest for the Teesmouth Bird Club. The site is known to the club as the ‘Redcar to Marske Coastal Fields Important Bird Area’. It should be noted that this is not associated with the RSPB and BirdLife International Important Bird Area protected area network.

4.6.56 With regards to lapwing and golden plover, the JNCC selection guidelines for SPAs under the European Union Birds Directive, for non-breeding birds, work on a 1% of UK population threshold. The UK population of lapwing is thought to be in the region of 1,500,000 birds and so the peak count of 800 birds represents 0.05%, i.e. 5/100th of the 1% threshold (Stroud *et al*. 2001).

4.6.57 However, the UK population of golden plover is thought to be in between 200,000 and 250,000 birds and so the 3,500 birds recorded during 2011 - 2012 represent 1.4% to 1.7% of the UK population, and in 2012 - 2013 having recorded 950, 0.4% to 0.5% of the UK population (Stroud 2001). In practice, non-breeding populations of over 2,500 birds have been interpreted by JNCC as qualifying for SPA status. Of the 22 UK SPAs for which non-breeding golden

plover is a qualifying species, the average number of birds is 3,056 (Stroud *et al.* 2001).

4.6.58 The closest SPA to the study area is the Teesmouth and Cleveland Coast SPA, and neither lapwing nor golden plover are qualifying species for this site. The coastal fields close to the landfall are also not included within the boundary of any nearby SSSIs. The closest of which is the Redcar Rocks SSSI which is over 2km north west of the study area.

4.6.59 The survey results indicate that there is significant variation between years, but on a precautionary basis, the wintering bird fauna associated with the coastal fields at the landfall is considered to be of Regional value.

4.7 Species of principal importance – badgers

4.7.1 Whilst there was evidence of badgers within the study area the overall level of badger activity was low. Two records for badger were located within 500m of the cable route corridor, south of the A174 and north of Wilton village.

4.7.2 A main sett was recorded on the west side of Mains Dike, approximately 200m from the study area (Peak Ecology 2013c). Due to the distance of the sett from the proposed works, no impacts are anticipated on the sett and badgers are not taken forward to the impact assessment stage. However best practice mitigation has been included in Section 6.5.

4.8 Species of principal importance – great crested newts

Overview

4.8.1 Existing records of great crested newts were supplied by ERIC within the study area and a total of 13 water bodies were identified within the study area. Field surveys (including Habitat Suitability Index (HSI) assessment and presence/likely absence surveys) were undertaken on the waterbodies and the results of the surveys are provided in the 'Great Crested Newt Survey Technical Report' (Peak Ecology 2013d).

4.8.2 The location of the waterbodies and desk study records are shown on **Figure 4.24**.

Existing Records

4.8.3 No records for great-crested newts were provided within 1km of the cable route corridor.

Field surveys

4.8.4 In total, 13 water bodies were identified, made up of 11 ponds and two ditches. The ponds varied from farm ponds and hollows to large man-made storage ponds or reservoirs. The ditches were drainage channels in and around the arable fields, well managed and re-trenched regularly.

4.8.5 The majority of terrestrial habitat surrounding water bodies was of low suitability for great crested newts. Suitable terrestrial habitat within the study area included hedgerows, treelines, scrub, broadleaved woodland and semi-

improved grassland, and in places these habitats form small corridors of connective habitat between waterbodies.

4.8.6 Due to access restrictions, HSI assessments were only undertaken for ten of the 11 ponds. Owing to difficulties in applying the HSI to ditches, the two ditches were assessed less formally. Of the 10 ponds assessed, three were classed as 'Good', two as 'Average', one as 'Below Average' and four as 'Poor'. Both ditches were classed as being of 'Low Potential'. Ponds with high HSI scores are more likely to support great crested newts than those with low scores.

4.8.7 Following the HSI surveys, presence/likely absence surveys were undertaken of 12 waterbodies. Surveys followed standard survey guidance (English Nature 2001) and no great crested newts were detected during any of the surveys.

4.8.8 Due to the likely absence of great crested newts within the study area, great crested newts are not considered further within this assessment.

4.9 Species of principal importance – reptiles

Overview

4.9.1 Desk study records of reptiles were provided by the ERIC and North East Reptile and Amphibian Group, and field surveys were undertaken of eight areas in spring 2013. The results of the surveys are provided in the 'Reptile Survey Technical Report' (Peak Ecology 2013f).

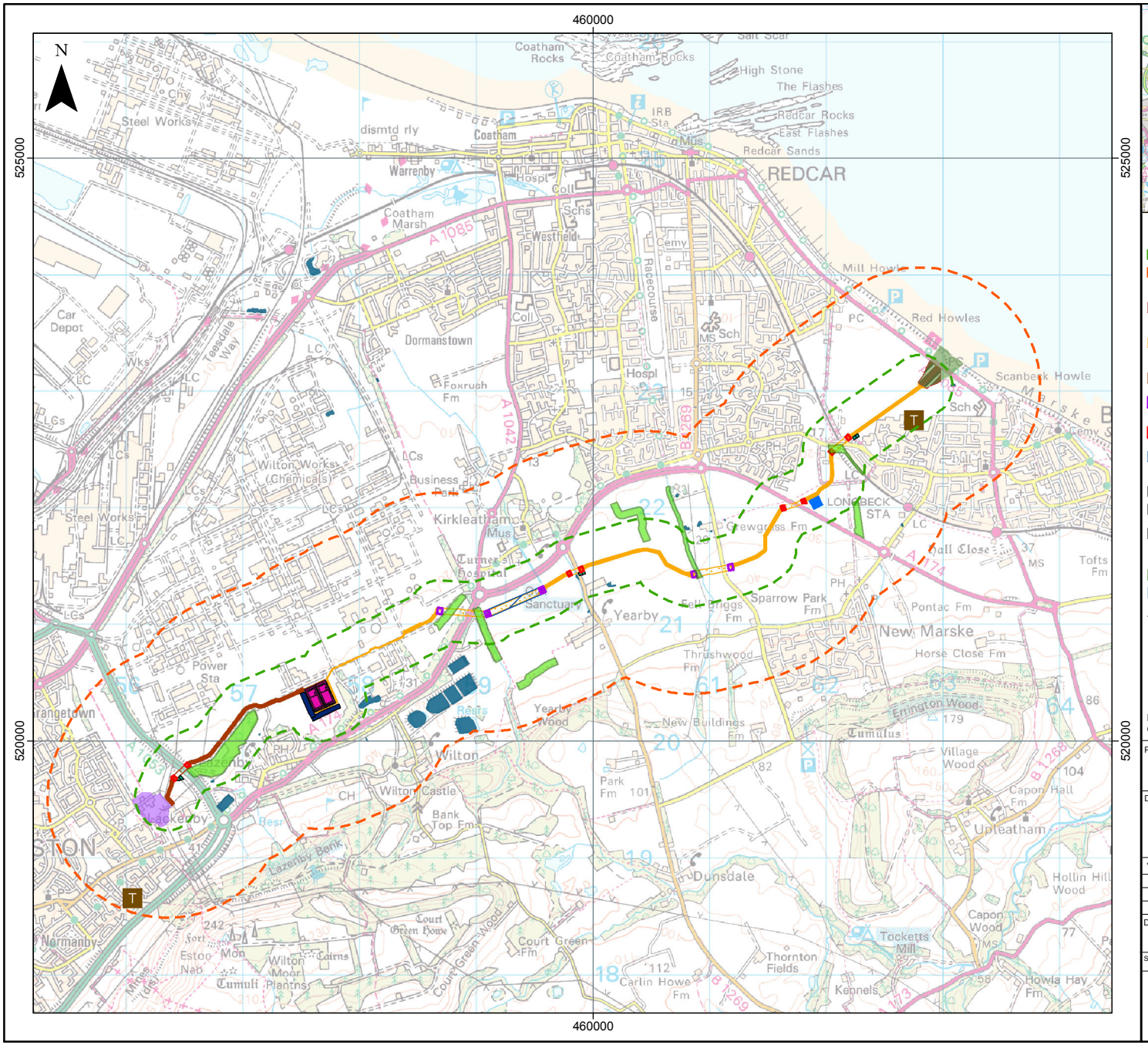
Existing records

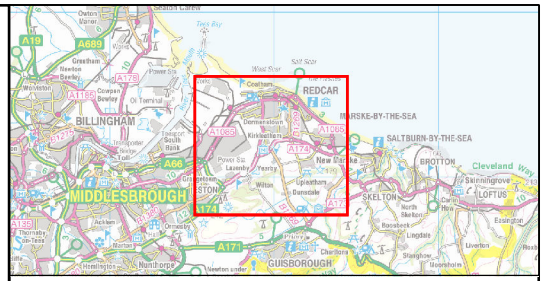
4.9.2 The ERIC and North East Reptile and Amphibian Group provided a total of 19 records of common species of reptiles (slow worm *Anguis fragilis,* viviparous (or common) lizard *Zootoca vivipara* and adder *Vipera berula*); however no records were from within the 1km study area.

Field survey results

4.9.3 Habitats with the potential to support reptile populations were relatively limited in extent, although there were small areas scattered throughout the study area. A total of eight areas (**Figure 4.24**) were selected for reptile field survey using artificial refugia. The surveys were undertaken following standard survey guidance in suitable weather conditions and were checked seven times between mid-March to mid-June 2013.

4.9.4 No reptiles were found during the reptile surveys. Reptiles are considered likely to be absent from the study area and are not considered further within this assessment.





LEGEND

- Onshore cable route 250m buffer
- Amphibian and reptiles desk 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
- Reptile survey area
- Great Crested Newt Ponds Surveyed

Amphibian and reptile records

- T Common Toad

0 — 2

Kilometres

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

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 4.24: Amphibian (including great crested newts) and reptile records and survey locations

VER	DATE	REMARKS	Drawn	Checked
2	31/07/2013	Draft	SW	SDS
3	22/01/2014	Submit for PEI3	SW	SDS
5	21/02/2014	Pre-DCO submission review	SW	SDS

DRAWING NUMBER: **F-ONL-MA-209**

SCALE	1:50,000	PLOT SIZE	A4	DATUM	OSGB36	PROJECTION	BNG

FOREWIND

Identification of VER (Species)

4.9.5 Based on the desk study and field survey results to date, a valuation of species and species groups, using an estimation of the geographical scale of importance is presented in **Table 4.11**.

4.9.6 Only those receptors considered important at or above the County level are taken forward as VERs.

Table 4.11 Identification of Valued Ecological Receptors (Species)

Receptor	Key features	Geographical scale of importance	Rationale
Wintering birds	The Redcar to Marske Coastal Fields.	Regional	The wintering bird fauna at Redcar to Marske Coastal Fields included peak counts of 3,500 golden plover which represents over 1% of the UK wintering population. However, this area has not been included within the internationally important Teesmouth and Cleveland Coast SPA or within any of the multiple nationally important SSSIs within the Teesside area.
Breeding birds	The mosaic of habitat present, including woodlands, grassland, agricultural land, scrub and wetland features throughout the study area.	County	The breeding bird fauna contains Red and Amber list BoCC such as grey partridge, skylark, linnet, bullfinch, marsh tit, grasshopper warbler and yellowhammer.
Bats	A small number of hedgerows, woodland and watercourses have been identified as being important to bats.	County	The bat species recorded were all common, and activity levels have been variable but in general, the landscape in the survey areas provided numerous opportunities for foraging and commuting bats. All species (except common pipistrelle) are listed as priority species on the LBAP. All bat species are listed on the UKBAP and on Section 41 of the NERC Act 2006.

4.9.7 The VER that have been taken forward to the impact assessment phase include receptors valued as a minimum at County level and include:

- Wintering birds;
- Breeding birds; and
- Bats.

4.9.8 Mitigation for badgers and otter have been outlined in Section 6.5 due to the legal protection afforded to the species and animal welfare considerations.

5 Assessment of Impacts – Worst Case Definition

5.1 Introduction

5.1.1 This section establishes the realistic worst case scenario for each category of impact as a basis for the subsequent impact assessment. This involves both a consideration of the relative timing and phasing of construction and operation of the two projects, as well as the particular design parameters of each project that define the Rochdale Envelope for this particular assessment.

5.1.2 Full details of the range of development options being considered by Forewind are provided within **Chapter 5**. For the purpose of the EcIA, the key project parameters which form the realistic worst case are set out in **Table 5.1**.

5.1.3 Only those design parameters with the potential to influence the level of impact are identified.

5.1.4 The realistic worst case scenarios identified here are also applied to the Cumulative Impact Assessment. When the worst case scenarios for the project in isolation do not result in the worst case for cumulative impacts, this is addressed within the cumulative section of this chapter (see Section 10) and summarised in **Chapter 33 Cumulative Impact Assessment**.

5.2 Construction phasing scenarios

5.2.1 **Chapter 5** provides details of the nine representative construction phasing scenarios associated with the onshore construction of Dogger Bank Teesside A & B.

5.2.2 The specific timing and phasing of the construction of the two projects will be determined post consent, and therefore a Rochdale Envelope approach has been undertaken for the Environmental Impact Assessment (EIA). There are four key principles that form the basis of the Rochdale Envelope, relating to how the projects will be built. These are:

- The two projects may be constructed at the same time, or at different times;
- If built at different times, either project could be built first;
- If built at different times, the duration of the gap between the end of the first project to be built, and the start of the second project to be built may vary from overlapping, to up to five years; and
- Partial installation of elements of the second project may be completed during the construction of the first project, e.g. through the use of ducts to provide conduits for a later cable installation.

5.2.3 To determine which construction phasing scenario is the worst realistic case for a given receptor, two types of effect exist with the potential to cause a maximum level of impact on a given receptor:

- Maximum duration effects; and
- Maximum peak effects.

5.2.4 To ensure that the Rochdale Envelope incorporates all nine of the possible onshore construction phasing scenarios (as outlined in **Chapter 5**), both the maximum duration effects and the maximum peak effects are assessed for each onshore receptor.

5.2.5 Furthermore, the option to construct each project in isolation is also considered ('Build A in isolation' and 'Build B in isolation'), enabling the assessment to identify any differences between the two projects. The four construction phasing scenarios for Dogger Bank Teesside A & B considered within the assessment for land use and agriculture are therefore:

i. Build Dogger Bank Teesside A or build Dogger Bank Teesside B in isolation – either project is considered to have the same impact as the land take footprint will be identical for either project;

ii. Build Dogger Bank Teesside A & B concurrently – provides the worst 'peak' impact and maximum working footprint;

iii. Build Dogger Bank Teesside A, gap of up to five years, build Dogger Bank Teesside B (sequential) – provides the worst 'duration' of impact. The length of gap is considered to represent the worst case is defined in **Table 6.1**; and

iv. Build Dogger Bank Teesside A and install conduits for Dogger Bank Teesside B, gap of up to five years, install cables for Dogger Bank Teesside B in conduits.

5.2.6 For scenario (i) the only material difference between Dogger Bank Teesside A & B relates to the location of the converter stations. As such, a single assessment is presented for the single project but where differences occur, e.g. distances to nearest receptors, these are identified.

5.2.7 Within the sequential scenario (scenario iii) there is not considered to be any material difference whether Dogger Bank Teesside A is built first or whether Dogger Bank Teesside B is built first. As such, a single assessment is presented for this sequential scenario.

5.2.8 For the conduits scenario (iv) there is no significant difference in the working width or scale of the impact compared to the concurrent scenario (ii) but there is a requirement for impacting small areas of land twice (when access to the conduits is required for the second project). Thus there is the potential for an extended period of disturbance or a second separate disturbance event, depend on the timing. However, the ecological effects of the conduits option are considered to always be less than the maximum duration attributable to

sequential construction (scenario iii) or the maximum peak (scenario ii). Thus the conduits option is not considered further.

5.2.9 For each potential onshore impact only the worst case construction phasing scenario for 'two projects' is presented, i.e. either concurrent or sequential. The justification for what constitutes the worst case is provided in the impact assessment discussion (Sections 6 – 8).

5.2.10 As such, the construction scenarios presented within the impact assessment sections of this chapter (Sections 6 – 8) are:

i. Single project; and

ii. Two projects – concurrent or sequential.

5.3 Operating scenarios

5.3.1 **Chapter 5** provides details of the operational scenarios for Dogger Bank Teesside A & B. Flexibility is required to allow for the following three scenarios:

- Dogger Bank Teesside A to operate on its own;
- Dogger Bank Teesside B to operate on its own, and
- For the two projects to operate concurrently.

5.3.2 For the terrestrial ecology assessment there is not considered to be a material difference between either Dogger Bank Teesside A or Dogger Bank Teesside B operating on its own. As such, only one assessment for the single project scenario is presented and is considered representative for whichever project is operating in isolation.

5.4 Decommissioning scenarios

5.4.1 **Chapter 5** provides details of the decommissioning scenarios for Dogger Bank Teesside A & B. Exact decommissioning arrangements will be detailed in a Decommissioning Plan (which will be drawn up and agreed with DECC prior to construction), however for the purpose of this assessment it is assumed that decommissioning of Dogger Bank Teesside A & B could be conducted separately, or at the same time.

Table 5.1 Realistic worst case scenario for ecological impact assessment

Impact	Realistic worst case scenario	Rationale
Construction		
All impacts	*All scenarios* • Where there is flexibility in the type of ditch crossing to be used (either HDD or open trench) an open trench method has been assumed for the worst case.	Trenching will always represent a worst case compared to avoiding the feature.
	Single project • Maximum construction period of converter station = 36 months; • Maximum construction period of cable route	Maximum ranges provided within **Chapter 5 Project Description**.

Impact	Realistic worst case scenario	Rationale
	(high voltage directional current (HVDC) cable system) of 24 months; • Maximum construction period of cable route (high voltage alternating current (HVAC) cable system of 18 months; • Maximum HVDC corridor = approximately 7km x 18m; • Maximum HVAC corridor = approximately 2km x 20m; • Maximum HVDC primary site compounds = 1 x 5000m^2; • Maximum HVDC intermediate site compounds = 2 x 784m^2; • Maximum HVAC intermediate site compounds = 1 x 784m^2; • Maximum HVDC HDD major compounds = 5 x 2000m^2; • Maximum HVDC HDD minor compounds = 6 x 1200m^2; • Maximum HVAC HDD minor compounds = 2 x 1200m^2; and • Maximum converter station site (during construction) = 5ha.	
	Sequential build • Maximum construction period of converter station of 36 months x 2 = 72 months (with no gap); • Maximum construction period of cable route (HVDC cable system) = 24 months x 2 = 48 months; • Maximum construction period of cable route (HVAC cable system) = 18 months x 2 = 36 months; • Maximum HVDC corridor = approximately 7km x 36m; • Maximum HVAC corridor = approximately 2km x 39m; • Maximum HVDC primary site compounds = 2 x 5000m^2; • Maximum HVDC intermediate site compounds = 4 x 784m^2; • Maximum HVAC intermediate site compounds = 2 x 784m^2; • Maximum HVDC HDD major compounds = 10 x 2000m^2; • Maximum HVDC HDD minor compounds = 12 x 1200m^2; • Maximum HVAC HDD minor compounds = 4 x 1200m^2; • Maximum converter station site (during construction) = 10ha; and • Land surrounding the jointing pits for the second project will be excavated twice.	Maximum values provided

Impact	Realistic worst case scenario	Rationale
	Concurrent build • Maximum construction period of converter station of 36 months; • Maximum construction period of cable route (HVDC cable system) of 24 months; • Maximum construction period of cable route (HVAC cable system) of 18 months; • Maximum HVDC corridor = approximately 14km x 36m; • Maximum HVAC corridor = approximately 4km x 39m; • Indicative maximum duration of construction works at landfall 38 weeks; • Maximum HVDC primary site compounds = 2 x 5000m^2; • Maximum HVDC intermediate site compounds = 4 x 784m^2; • Maximum HVAC intermediate site compounds = 2 x 784m^2; • Maximum HVDC HDD major compounds = 5 x 4000m^2; • Maximum HVDC HDD minor compounds = 6 x 2400m^2; and • Maximum HVAC HDD compound = 2 x 2400m^2.	
Operation		
All impacts	*Single project* • Maximum total operational land take = approximately 4ha (approximately 2ha converter site and approximately 2ha mitigation screening).	Maximum ranges provided within **Chapter 5 Project Description**.
	Concurrent or sequential • Maximum total operational land take = approximately 8ha (approximately 4ha converter stations and approximately 4ha screening).	Maximum ranges provided within **Chapter 5 Project Description**.
Decommissioning		
All impacts	• Buried cable system left *in situ*; • Dismantling and removal of above ground electrical equipment; • Removal of any building services equipment; • Demolition of the buildings and removal of security fences; and • Landscaping and reinstatement of the site.	N/A

6 Assessment of Impacts During Construction

6.1 Introduction

6.1.1 Reference should be made to **Chapter 5** of the ES for details of the activities proposed during the construction phase. However, in summary, the activities considered likely to impact on terrestrial ecology are:

- Construction associated with the onshore transition bays;
- Construction of onshore cable system including jointing bays – installation techniques include open cut trenching and HDD;
- Construction of new onshore converter stations, associated infrastructure and landscaping;
- Temporary construction compounds / laydown areas; and
- Temporary construction of access tracks and haul roads.

Embedded mitigation

6.1.2 The site selection process has identified a preferred onshore cable route and converter stations site which minimises direct impacts to known environmental constraints. This has resulted in the avoidance of ecological features wherever possible and reduced the overall extent of potential ecological impacts. In particular:

- The routing of the cable deliberately avoided statutory designated sites and any woodlands or ponds visible on Ordnance Survey mapping;
- The project has benefitted from early ecological input and an iterative EIA process, where emerging survey findings have fed into ongoing design work. In a number of instances minor route shifts have been made on ecological grounds;
- Extensive consultation with statutory and non-statutory consultees has taken place, and consultee comments and feedback have been properly considered during the design process; and
- Forewind's ecologists and landscape architects have liaised in order to ensure an integrated design approach to the landscaping of the permanent converter stations site. This collaboration will extend to the detailed design of general (re)planting schedules; see also Section 7.4 of **Chapter 21 Landscape and Visual Impact Assessment**.

6.1.3 The embedded mitigation measures are not listed or considered further within this chapter. For example, where the cable has been routed around woodland, the potential effects of routing through the woodland have not been considered because this is not part of the final scheme.

6.2 Assessment of impacts (habitats)

Designated sites – Redcar to Saltburn Coast LWS

Single project

6.2.1 Redcar to Saltburn Coast LWS covers both the sandy foreshore and the low boulder clay cliffs with maritime vegetation and is considered to be of County level importance. The latter are included due to their vascular plants and coastal grassland and the foreshore is included within the designation due to its wintering bird assemblage. Impacts on the wintering bird assemblage are considered in paragraph 6.3.16.

6.2.2 The cable route will come ashore and cross a section of the non-statutory designated site. HDD will be undertaken to avoid impacts on the majority of the site and the coastal grassland and maritime vegetation would be unaffected. It is anticipated that the HDD will start from the transition bay in the coastal fields (outside the boundary of the LWS) and exit in the seabed in the sub-tidal area (outside the boundary of the LWS). However, if this is not possible, it will be necessary for the exit point for the HDD to be located in the inter-tidal area (sandy foreshore). It this case, it may be necessary for a degree of open trenching and the installation of two cofferdams (10x10x3m) to maintain the joint transition bays, within the inter-tidal area, which will directly impact on the beach area within the LWS.

6.2.3 Incidental impacts could result during HDD operations including contractor encroachment outside the working area resulting in trampling of vegetation. There is also the potential for dust generation from the works resulting from excavations, construction and earthworks which could be deposited on the vascular plants within the designated site. The impacts of dust on receptors are considered in **Chapter 30 Air Quality** in the ES.

6.2.4 The magnitude of the impacts is considered to be low (0.1% of the overall area of the LWS) and temporary. The mitigation measures outlined below in **Table 6.1** will be undertaken to minimise the construction impacts on the habitats within the designated site.

Table 6.1 Habitats within the Redcar to Saltburn Coast LWS – mitigation measures

Mitigation measures
• Construction working areas will be minimised as far as practicable, especially at the foreshore, and will be fenced to ensure there is no encroachment outside of the agreed working areas; • No storage of materials or machinery will be permitted outside the working width and within the boundary of the LWS; • An Ecological Clerk of Works (ECW) will provide toolbox talks to contractors, supervise vegetation clearance prior to construction and oversee key construction activities; • Inform Tees Valley Wildlife Trust in advance of works taking place; • Strict adherence to all mitigation measures outlined for dust in **Chapter 30 Air Quality**, including damping down dusty surfaces, temporary covering of earthworks and the implementation of a 'Dust Management Plan'; and • Reinstatement of habitats affected by the works following construction.

6.2.5 When the size of the LWS site is considered and with the implementation of the mitigation measures, the magnitude of the impact will reduce to negligible and **negligible** residual impacts are predicted on the habitats within the designated site.

Two projects – concurrent

6.2.6 The worst case scenario is considered to be Dogger Bank Teesside A & B being constructed at the same time due to the additional area that will be required for the section of cable trenching and for the installation of four cofferdams (10x10x3m) within the sandy foreshore. The impacts on beach habitat will be temporary with all areas reinstated on completion of the works.

6.2.7 Similar potential impacts are anticipated with incidental encroachment outside the working area and dust generation during the works. The increased area of temporary habitat damage will result in a slightly higher magnitude of effect (medium), however, the overall impact is still predicted to be temporary and only a small area affected in the context of the total area of the site.

6.2.8 The mitigation measures detailed in **Table 6.1** will be implemented, reducing the magnitude to low and overall the additional area will result in a **minor adverse** residual impact on the habitats within the designated site.

6.3 Habitats with biodiversity value

Hedgerows

Single project

6.3.1 Hedgerows were identified as being important at the County scale. Predominantly, they are species-poor and none qualified as 'important' under the Hedgerow Regulations. They are considered an integral part of the agricultural landscape and help to provide connectivity between semi-natural habitat features and habitat resources for such species as bats and farmland birds.

6.3.2 The construction phase of the project will require removal of sections of hedgerow to allow the cable route to pass through. Within the study area, a total of 96 hedgerows totalling 22.3km were recorded. Throughout the whole length of the route, a total of 15 hedgerows will be crossed by the cable. This will include 12 crossings for the HVDC cable route (18m wide) and three crossings for the HVAC which has a working width of 20m. HDD will avoid all impacts on three of the hedgerows along the HVDC cable route. The cable route crosses some hedgerows on a diagonal angle and overall, approximately 300m of hedgerow will require removal. The impact is certain to occur, will be highly localised, temporary and reversible. The magnitude of the impact is considered to be low.

6.3.3 To reduce construction impacts, mitigation outlined in **Table 6.2** will be adhered to.

Table 6.2 Hedgerows – mitigation measures

Mitigation measures
• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance shall be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests. Any active nests will be left *in situ* with an appropriate buffer within which no works will be undertaken until the nest is no longer occupied; and • Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with native, regionally appropriate, species rich planting grown locally.

6.3.4 With the implementation of the mitigation above, the magnitude of the impact will reduce to negligible and it is considered that the construction of a single project is anticipated to have **negligible** residual impacts on hedgerows which are of importance at the County Level. In the long-term, once the hedgerows are reinstated and mature, with the inclusion of the species rich planting, a **minor beneficial** impact is anticipated.

Two projects – concurrent and sequential

6.3.5 With either project scenario, double the length of hedgerow would require removal to allow for cable crossings, i.e. approximately 600m. No additional impacts are anticipated as a result of the construction of both projects. The magnitude of effect is considered to rise but remain as low.

6.3.6 Providing the mitigation in **Table 6.2** is implemented, the doubling in extent of temporary hedgerow loss is considered to be a **minor adverse** impact in the short term and similarly to the single project scenario, a **minor beneficial** impact in the long-term, with reinstatement of all stretches.

6.4 Assessment of impacts (species)

Bats

Single project

6.4.1 The bat species recorded were common and widespread species, and activity levels were variable but it is clear that overall, the hedgerow network is used by bats for feeding and commuting. Overall, bats have been valued as of County importance. No roosts were identified during surveys within the study area and no impacts are therefore anticipated on roosting bats.

6.4.2 The construction impacts are limited to indirect effects associated with the temporary loss of hedgerows (total of approximately 300m across the 15 crossings) and night-time security lighting of the converter stations and site compounds. Standard construction works along the cable corridor will be conducted during daylight hours and under normal circumstances no task lighting will be required. Some specific construction works will need to be performed continuously and may need to be carried out outside of daylight hours. For such occasions, suitable task lighting will be required.

6.4.3 Bats are known to utilise linear features which offer protection from predators, and shelter from the wind, making them important as both commuting and foraging routes through a landscape (Garland and Markham 2007). Research has indicated that bats will cross gaps in hedgerows or treelines (e.g. Verboom & Huitema 1997; Natural England 2012).

6.4.4 The lighting could deter bats from foraging or commuting around the periphery of the converter stations site. Many night flying insects are attracted to light and studies have found that certain species (including pipistrelles) swarm around white mercury street lights, whilst other species such as Daubenton's generally avoid it (Bat Conservation Trust 2009). It is also believed that artificial lighting can increase the chance of bats being preyed upon (Bat Conservation Trust 2009). The overall area requiring lighting is small and is on the edge of the already well lit Wilton Complex.

6.4.5 Overall, the effect of temporary hedgerow loss and night-time security is an effect of low magnitude.

6.4.6 The mitigation detailed in **Table 6.3** will be implemented in order to reduce construction impacts.

Table 6.3 Bats – mitigation measures

Mitigation measures
• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • For night-time lighting at the converter stations site, cable route construction corridor and for any occasions where task lighting is required, low pressure sodium lamps will be used (instead of mercury or metal halide lamps). The lighting should be directional and spill minimized through the use of hoods, cowls, louvres or shields. Ideally, movement sensors will be used to reduce the overall duration that lighting is on each night; • Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with regionally appropriate, species rich planting; • Should any trees require removal, a bat visual assessment and surveys (if required) will be undertaken. Mitigation will be designed and a licence (if required) obtained from Natural England prior to works; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter site and provide further opportunities for foraging bats.

6.4.7 Following the implementation of the mitigation above, the magnitude will reduce to negligible and the temporary loss of hedgerows and the lighting of the converter stations and site compounds are considered to have a **negligible** residual impact on bats.

Two projects – sequential

6.4.8 With either of the two project scenarios, twice the length of hedgerow would require removal to allow for cable crossings, i.e. approximately 600m. With the sequential scenario, with no time interval between the construction projects, the cable route installation could take up to 48 months and up to 72 months for works at the converter stations. This construction duration is for the installation

of the entire length of cable (approximately 9km for each project) and in reality, the disruption to a local bat population within an area of the cable corridor would be for a much shorter duration. The increased duration of the effect and increased loss of hedgerow increases the magnitude of the effect to medium.

6.4.9 Providing the mitigation in **Table 6.3** is implemented, the magnitude will decrease to low and overall there is considered to be a **minor adverse** residual impact on bats.

Wintering birds

Single project

6.4.10 The wintering birds fauna utilising the agricultural fields on the coast and immediately inland in the vicinity of the landfall, represent the most important aspect of the ecology within the study area. The agricultural fields close to the landfall are a popular local bird watching area (Britton and Day 2004) and the foreshore along the Redcar to Saltburn Coast LWS was included within the LWS designation on account of its wintering bird's fauna.

6.4.11 Based on the comprehensive desk study received from Teesmouth Bird Club (Peak Ecology 2013g) and the findings of the wintering birds studies carried out over the winter of 2011 – 2012 and autumn and winter of 2012 - 2013, as well as additional studies undertaken for golden plover and lapwing in 2014, this fauna has been evaluated as of Regional importance.

6.4.12 Farmland is by definition a constantly disturbed habitat and the birds are habituated to a changing environment and large agricultural machinery. The area of foreshore is also recognised as being popular with surfers (Marine Conservation Society 2013) and dog walkers. There is also the busy Coast Road (A1085), within close proximity of the coastal fields and therefore birds within this area are subject to a certain degree of disturbance from these activities.

6.4.13 It is likely that a series of habitat areas are utilised by the wintering birds, with year to year variation in use depending on the weather, agricultural use food availability and other such factors. A network of protected sites in the Teesside area has been established in order to provide habitat for foraging and roosting birds and therefore, there are a number of alternative fields available. Seven SSSIs are included within the Teesmouth and Cleveland Coast SPA which totals over 12.4km^2 in extent.

6.4.14 The coastal fields are essentially 70ha of arable fields of low ecological value in a strategic location between the North York Moors to the south (where the birds are likely to breed) and a series of valuable protected bird sites to the immediate north.

6.4.15 As suggested, it is highly likely that there is year on year variation in field use. For example, one year the fields might be freshly ploughed the next left as stubble, the year after that sown with winter wheat. The fields are also known to be subject to periodic flooding (Peak Ecology 2013a). Overall, an assemblage of birds would not be able to rely on them being available in a particular

condition each and every year and it is considered that they play a supporting role with regard to the wintering birds of Teesside, as opposed to a critical one.

6.4.16 As described in Section 6.2, the works at the landfall will comprise an HDD under the coastal grassland and low cliffs, together with the Coast Road. It is anticipated the HDD will begin at sea, however if that is not a viable option, open trenching and cofferdams will be required within the beach area. Either way, a joint transition bay (48m^2 in extent) within the HDD compound (2,500m^2) will be required, inland from the mean high water mark. The onshore cable will run through the fields from the joint transition bay to a second HDD located in the south west corner of the fields. There would also be a minor HDD compound (1,200m^2) and small site construction compound (784m^2) in the far south west corner of the fields, near to the Redcar Road and railway. The length of cable through this section of fields is approximately 980m and 18m wide (1.8ha) for each project.

6.4.17 All of the impacts associated with the scheme in this area would be temporary in nature. Given that the birds are using actively farmed fields (and in close proximity to a busy road), it seems reasonable to assume they would be resistant to a degree of disturbance by agricultural machinery, and nearby road traffic. Thus, the birds may continue to use the fields during the construction period, although perhaps in reduced numbers or for a reduced period of time.

6.4.18 There have been various studies on anthropogenic disturbance on wintering wading birds on coastal sites, although most of these relate to the mudflats and shorelines (e.g. Goss–Custard & Verboven 1993 and Burton *et al.* 2002). Some of these studies have looked at different types of disturbance, from walking, dog walking, water sports, aircraft noise, military shooting ranges etc. including calculated disturbance - flight distances of different species of waders and waterfowl to the various types of activities. For example, Tensen and Van Zooest (1983) (in Smit & Visser 1993), state that golden plover were “fairly tolerant” of walking disturbance compared with for example, redshank and curlew with a ‘take-flight’ mean distance of approximately 45m. A study in North Kent by Liley & Fearnley (2011), gave a no reaction response distance of 137.5m (range 50-190m) for golden plover and 100m (range 20-175m) for lapwing; this was averaged over all the types of disturbance encountered.

6.4.19 It is also noted that, between the last survey visit in December 2012, and the first visit in January 2013, development relating to the sewage treatment works to the south of Redcar to Marske Coastal Fields resulted in low level disturbance to birds to the northern part of the fields, whilst an open trench was dug to lay a pipeline from the sewage treatment works to the coast. Works in this area continued throughout the remaining survey visits. This observation showed to have little effect on the number of golden plovers or lapwings, however other birds such as feral pigeon and gull species reduced in number slightly.

6.4.20 The total working area for all activities within the fields is approximately 2ha. This equates to approximately 3% of the field being directly affected by the works. The remaining 97% of the field does not fall within the footprint of the works. There would be other potential impacts outside the working area

including visual and noise disturbance from the construction machinery and personnel. Disturbance may reduce the feeding efficiency of a species and either displace them into other feeding areas or decrease their food intake rates. The impacts of disturbance effects during construction are also likely to be influenced by the presence of locally available alternative feeding and roosting areas (Environment Agency 2006).

6.4.21 Given the disturbance distances found in the studies cited above and the proposed cable route running through the southern extent of the coastal fields, utilising the median figures of the Liley & Fearnley's (2011) results, approximately 34.4ha of habitat would be unsuitable for either species, leaving approximately 53% of the field area to the north of the route still available to golden plover and lapwing during the construction period.

6.4.22 The disturbance effects will remain throughout the construction period which will be two weeks for cable installation, two months for the HDD works and 24 weeks for works within the landfall envelope. Therefore, for up to two weeks, approximately 47% of the field will remain unavailable to wintering birds. For up to 22 weeks, the foreshore area around the landfall and the coastal fields in the vicinity of the joint transition bay will remain unavailable along with the HDD area close to the railway line, however this working footprint is far less associated with these works only, with the majority of the field being unaffected.

6.4.23 Overall, the small area of habitat that will be unavailable during the construction period and the additional disturbance effects are considered to be an effect of low magnitude.

6.4.24 The measures outlined in **Table 6.4** will reduce construction impacts on wintering birds in the coastal fields and within the foreshore of the LWS.

6.4.25 Overall, the area of coastal grassland and foreshore within the LWS are of Regional value for wintering birds. The coastal fields do not fall within the boundary of any statutory designated sites. The works will be temporary in nature and there is alternative habitat along the coast, relatively close to the scheme. With the implementation of the mitigation outlined in **Table 6.4**, the magnitude will reduce to negligible and a **negligible** residual impact is anticipated on wintering birds.

Two projects - sequential

6.4.26 The worst case scenario for wintering birds would be the sequential construction of Dogger Bank Teesside A & B, especially with no time interval between the construction projects and disturbance across consecutive winters. This would equate to 6% of the arable fields being directly affected by the works, leaving 94% of the fields available for wintering birds. The duration of works at the landfall is anticipated to be 24 weeks for each project, so with no gap between works, up to 48 weeks. The cable installation period within the coastal fields will be up to one month for the sequential build scenario. The HDD works remain the same duration of up to two months. Therefore, whilst the area around the landfall will not be available for up to 48 weeks, the works and reinstatement within the majority of the remainder of the field will be completed within one

month. The additional duration of effects is considered to increase the magnitude of effect to medium.

6.4.27 A combination of mitigation measures, as outlined in **Table 6.4** will be implemented to reduce all construction impacts. The additional duration of disturbance at the landfall would increase the magnitude of the effect to low and a **minor adverse** effect is anticipated on wintering birds.

Table 6.4 Wintering birds – mitigation measures

Mitigation measures
• Construction activities within the coastal fields and at the landfall location, which could potentially directly affect 6% of the fields, will be avoided during the key months of November – December. A combination of the following mitigation measures shall be implemented during the remaining autumn/winter months (October, January – March inclusive) in order to reduce impacts further: o Clear fencing of the working area and restriction of personnel movements outside the working area; o Installation of hoarding along the edge of the working area to reduce visual disturbance; o Strict adherence to all mitigation measures outlined in **Chapter 29 Noise and Vibration**; o Noise levels will be kept to a minimum and wherever possible silenced equipment and sound mufflers will be used; o Following construction, reinstatement of all land within the working footprint; and o Supervision of key stages of the works by an Ecological Clerk of Works (ECW).

Breeding birds

Single project

6.4.28 Following the survey work carried out in 2012, the breeding bird fauna proved to be relatively species rich and contained a number of Red and Amber listed BoCC. Given the landscape setting within which these transects are located, i.e. primarily industrial and intensive agricultural land, this breeding bird fauna is considered to be of County value.

6.4.29 At the converter stations site, there would be permanent loss of up to 4ha of arable land. However the habitat within the converter stations site is not considered to be of value to breeding birds since it is located within a featureless arable field on the edge of the Wilton Complex, and no notable birds were identified during surveys.

6.4.30 The installation of the cable systems will require 15 hedgerow crossings to allow the trenching installation work to progress. If the hedgerow removals were undertaken within the bird nesting season, this could potentially lead to the loss of nest, eggs and chicks. Overall, a total of 300m of hedgerow will require removal prior to works being undertaken. A total of 22.3km of hedgerow was recorded within the study area.

6.4.31 The construction works could lead to disturbance from noise and visually from the presence of machinery and personnel which could deter birds from nesting close to the working area. The works within the converter stations site are anticipated to take up to 36 months in duration, with the cable installation taking up to 24 months to complete across the project.

6.4.32 The overall magnitude of the construction effects is considered to be low.

6.4.33 The mitigation detailed in **Table 6.5** will be implemented in order to reduce the overall construction impacts on breeding birds.

Table 6.5 Breeding birds – mitigation measures

Mitigation measures
• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance will be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests; • Should an active nest be found during construction, works will cease immediately and an exclusion zone of 10m will be set up around the nest until the young have fledged; • If the bird is a Schedule 1 species (not anticipated since none have been recorded during surveys), then work will cease and Natural England consulted with regard to an appropriate course of action to avoid disturbance to this species; • Ensure construction plant and traffic activity is kept to designated access road to avoid disturbance to ground nesting birds; • Following construction, reinstatement to its former condition of all habitats including hedgerow re-planting with regionally appropriate, species rich planting; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter site and provide further opportunities for breeding birds.

6.4.34 With the implementation of the mitigation outlined in **Table 6.5**, the temporary nature of works and the long-term habitat reinstatement works, the magnitude will reduce to negligible and the overall residual impact on breeding birds is considered to be **negligible**.

Two Projects – sequential

6.4.35 With either of the two project scenarios, twice the length of hedgerow would require removal to allow for cable crossings, i.e. 600m. With the sequential scenario, with no time interval between the construction projects, the cable route installation could take up to 48 months and up to 72 months for works at the converter stations. The installation of the cable will be in sections and therefore disturbance will be restricted to the birds within the locality of the working area at the time, rather than along the entire cable route corridor.

6.4.36 Providing the mitigation in **Table 6.5** is implemented, the doubling in extent of temporary hedgerow loss and additional duration of disturbance is considered to be a low magnitude effect and a **minor adverse** residual impact.

Table 6.6 Summary of construction impacts and associated mitigation measures

Valued ecological receptor	Geographical scale of importance	Impacts in the absence of mitigation						Confidence in EcIA predictions*	Mitigation measures	Residual impacts**	Confidence in mitigation predictions***
		Impact	Construction scenario	Impact magnitude	Duration of impact	Reversibility	Timing and frequency				
Redcar to Saltburn Coast LWS	County	Habitat damage or loss	Single project	Low	Temporary	Reversible in up to 2 -3 years	N/A	Probable	Table 6.1	Negligible	Certain/ near-certain
			Two projects - concurrent	Low	Temporary	Reversible in up to 2 -3 years	N/A	Probable		Minor adverse	Certain/ near-certain
Hedgerow	County	Habitat loss and fragmentation	Single project	Low	Temporary	Reversible in 10 – 15 years	Impact less in winter	Certain/ near- certain	Table 6.2	Negligible/ Minor beneficial	Certain/ near-certain
			Two projects – concurrent or sequential	Low	Temporary	Reversible in 10 – 15 years	Impact less in winter	Certain/ near- certain		Minor adverse/ Minor beneficial	Certain/ near-certain
Wintering birds	Regional	Disturbance	Single Project	Low	Temporary	Reversible in up to 2 - 3 years	Impact only occurs in winter	Probable	Table 6.3	No impact/ Negligible	Probable
			Two projects – sequential	Medium	Temporary	Reversible in up to 4 - 5 years	Impact only occurs in winter	Probable		No impact/ Minor adverse	Probable
Breeding birds	County	Damage or destruction of bird's nests and disturbance	Single project	Low	Temporary	Reversible in 2-3 years	Reduced impact if breeding season avoided	Probable	Table 6.4	Negligible	Probable

Valued ecological receptor	Geographical scale of importance	Impacts in the absence of mitigation						Confidence in EcIA predictions*	Mitigation measures	Residual impacts**	Confidence in mitigation predictions***
		Impact	Construction scenario	Impact magnitude	Duration of impact	Reversibility	Timing and frequency				
			Two projects – sequential	Low	Temporary	Reversible in 4-5 years	Reduced impact if breeding season avoided	Probable		Minor Adverse	Probable
Bats	County	Habitat loss and fragmentation and disturbance	Single project	Low	Temporary	Reversible in 10 – 15 years	Impact less in winter	Probable	**Table 6.5**	Negligible	Probable
			Two projects – sequential	Medium	Temporary	Reversible in 10 – 15 years	Impact less in winter	Probable		Minor adverse	Probable

* Confidence that the evaluation and assessment of impact is correct given that certain parameters may be estimated (and difficult to estimate). Certain/near certain is ≥95%. Probable is 50 – 94%. Unlikely is 6 – 49%. Extremely unlikely is ≤5%.

** 'Residual impacts' are assessed on the assumption that the mitigation suggested is adopted and implemented fully. It is the residual impacts that are described in the text in Sections 5.2 and 5.3 above.

*** Confidence that the mitigation suggested will go ahead, be successful within the predicted timeframes and that the prediction of residual impacts is accurate. Confidence 'bands' as above.

6.5 Other receptors requiring mitigation during construction

6.5.1 Whilst the VER have been taken through the impact assessment process, mitigation for other species (otters and badgers) will be undertaken due to the legal protection afforded to the species and animal welfare considerations.

Badgers

6.5.2 Badgers are known to be present in the local area and the construction phase of works is not programmed to begin (earliest) until mid-2015. There is the potential for further setts to have been constructed within or close to the working area. The following mitigation measures are proposed in **Table 6.7**.

Table 6.7 Badger mitigation measures

Mitigation measures
• A brief walkover survey will be undertaken of the proposed works area (including cable route, compounds, HDD locations, access points etc.) and up to 50m around, to ensure that no new badger setts have been constructed prior to works beginning; • Should a badger sett be identified, appropriate mitigation (e.g. licensing) would be implemented prior to works commencing; and • A means of escape (e.g. plank of wood) will be provided in any excavations left open overnight.

Otters

6.5.3 Otters are a protected by UK and European legislation (under the Conservation of Habitats and Species Regulations (2010) and Wildlife and Countryside Act (1981) as amended). They are also listed as UK BAP and LBAP priority species. No signs of otter were recorded during the surveys, however on a precautionary basis and for reasons of legal compliance; mitigation will be undertaken for the species (**Table 6.8**).

Table 6.8 Otter mitigation measures

Mitigation measures
• During the construction phase of works, the site compounds will be securely fenced to prevent otters entering the compounds. There will be strict adherence at all times to pollution prevention guidelines, in order to minimise the risk of pollution; • During the brief walkover survey for otters, the watercourses that will be crossed by the cable will be re-assessed for their potential to support otter; and • Should any watercourse be considered suitable for the species, an otter survey will be undertaken and if otter signs are detected, appropriate mitigation would be implemented in advance of works taking place.

7 Assessment of Impacts During Operation

7.1 Introduction

7.1.1 This section identifies the potential effects upon terrestrial ecology receptors associated with the operation of Dogger Bank Teesside A & B.

7.2 Assessment of impacts

7.2.1 The majority of the ecological effects of the onshore electrical connections for Dogger Bank Teesside A & B will be associated with the construction phase of cable installation. The cable route will be buried below ground and therefore not affect any terrestrial ecology receptors. Only those receptors close to the converter stations site (bats) are considered to be potentially affected due to lighting.

7.2.2 No impacts are anticipated on any habitats of biodiversity value, breeding or wintering birds during the operational phase of Dogger Bank Teesside A & B.

Bats

All scenarios

7.2.3 The converter stations site will require operational low-level lighting and night-time motion sensitive security lighting which could disrupt foraging or commuting bats utilising the woodland band around the site. Assuming that sympathetic lighting is used (as outlined in **Table 6.3**), and once the landscape planting is established, the additional woodland will provide further foraging and in the long-term, potentially roosting opportunities. Overall, in the short-term, there would be a **negligible** impact on bats but in the long-term; **no impacts** on bats are anticipated during the operational phase of the Dogger Bank Teesside A & B.

8 Assessment of Impacts During Decommissioning

8.1 Assessment of impacts during decommissioning

8.1.1 In terms of decommissioning, it is understood that these would comprise:

- The majority of the buried cable system left *in situ*, although it may have to be removed from the landfall area;
- Dismantling and removal of above ground electrical equipment;
- Removal of any building services equipment;
- Demolition of the buildings and removal of security fences; and
- Landscaping and reinstatement of the site.

8.1.2 The decommissioning works would form part of an overall 'Decommissioning Plan', for which a full EIA will be carried out in advance of any decommissioning works taking place.

8.1.3 It is anticipated that whilst decommissioning the project would cause ecological impacts it is reasonable to suggest that these would always be no worse than those caused by construction. It is likely that protected species surveys of the converter stations site and other sensitive locations would be required to identify any new constraints to the works.

9 Inter-Relationships

9.1 Inter-relationships

9.1.1 In order to address the environmental impact of the proposed development as a whole, this section establishes the inter-relationships between terrestrial ecology and other physical, environmental and human receptors. The objective is to identify where the accumulation of impacts on a single receptor, and the relationship between those impacts, may give rise to a need for additional mitigation.

9.1.2 **Table 9.1** summarises the inter-relationships that are considered of relevance to terrestrial ecology and identifies where they have been considered within the ES.

Table 9.1 Inter-relationships relevant to the assessment of terrestrial ecology

Inter-relationship	Section where addressed	Linked chapter
All phases		
Influence of construction noise disturbance on protected species.	Section 6	**Chapter 29 Noise and Vibration**
Influence of surrounding landscape in relation to the greater context of habitats and supported species, landscaping mitigation measures.	Section 6	**Chapter 21 Landscape and Visual Impact Assessment**
Influence of dust upon Redcar to Saltburn LWS and production of a Dust Management Plan.	Section 6	**Chapter 30 Air Quality**
Influence of ground disturbance, handling of soil, loss of substrate and contaminated land upon habitats and species.	Section 6	**Chapter 24 Onshore Geology, Water Resources and Land Quality**

9.1.3 **Chapter 31 Inter-Relationships** provides an overview of all the inter-related impacts associated within the proposed development.

10 Cumulative Impact Assessment

10.1 Introduction

10.1.1 This section describes the cumulative impact assessment (CIA) for terrestrial ecology, taking into consideration other plans, projects and activities. A summary of the CIA is presented in **Chapter 33**.

10.2 Cumulative Impact Assessment strategy and screening

10.2.1 Forewind has developed a strategy for the assessment of cumulative impacts in consultation with statutory stakeholders including the Marine Management Organisation (MMO), the JNCC, Natural England and the Centre for Environment, Fisheries and Aquaculture Science (Cefas). Details of the approach to CIA adopted for this ES are provided in **Chapter 4 EIA Process**.

10.2.2 The strategy recognises that data and information sufficient to undertake an assessment will not be available for all potential projects, activities, plans and/or parameters, and seeks to establish the confidence in the data and other information that is available.

10.2.3 The CIA onshore involves consideration of whether impacts on a receptor can occur on a cumulative basis between the onshore elements of Dogger Bank Teesside A & B and other activities, projects and plans for which sufficient information regarding location and scale exist.

10.2.4 The onshore projects, activities and plans relevant to terrestrial ecology are presented in **Table 10.1** along with the screening exercise to identify whether there is sufficient confidence in the project details to take these forward to the assessment.

Table 10.1 Cumulative impact assessment screening for terrestrial ecology

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Commercial plant	Tees Renewable Energy Plant	Expected Operational in 2015	Present - 2015	>2km	High	High	Outside onshore study area
Offshore wind farm cable	Tees Renewable Energy Plant underground cable	In construction	Present – 2015	0m	High	High	N/A – carried forward to CIA
Pipeline	York Potash Project	In planning	No indication	0m	Medium	Medium	N/A – carried forward to CIA
Anemometry Mast	Anemometry Mast at The Wilton Centre	Planning permission granted in 2011. Construction to be completed within 3 years	Construction must begin between 2011 - 2014	10m	High	High	Small scale project, no cumulative impacts anticipated.
Terminal	Northern Gateway Terminal	Outline permission given in 2007. October 2012 decision: Grant Reserved Matters	No indication	>2km	Medium - High	Medium - High	Outside onshore study area

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Pipeline	Breagh Pipeline	Planning permission granted, April 2012, development must begin within 3 years.	Present - 2015	>2km	High	High	Outside onshore study area
Erection of residential buildings	Two storey 2, 3 and 4 bedroom dwelling houses and garages	Public consultation ends March 2013	No indication	>2km	Medium - High	Medium - High	Outside onshore study area
Single pole installation	Installation of single pole to house transformer unit (application submitted under section 37 of the electricity act 1989)	Public consultation end February 2013	Construction must begin within 2013 – 2016	>3km	Medium - High	Medium - High	Outside onshore study area
Redevelopment of residential buildings	Redevelopment comprising the erection of 288 dwellings and ancillary works (amended scheme)	Granted planning permission	Construction must begin within 2013 – 2016	1.9km	High	High	Outside onshore study area

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Demolition	Demolition of various buildings	Granted deemed consent February 2013	Destruction must begin within 2013 – 2016	<500m	Medium - High	Medium - High	Within study area however separated by the A174 so no cumulative impacts anticipated.
Erection of residential buildings	Erection of 6 dwellings	Granted planning permission	Construction must begin within 2013 – 2016	<1km	High	High	Within study area however in Redcar town and so no cumulative impacts on terrestrial ecology are anticipated.
Power station	Teesside Power Station	Permission not required December 2012	No indication	<500m	Medium	Medium	N/A – carried forward to CIA
Erection of residential buildings	Three storey 72 bedroom care home	Granted planning permission March 2013	Construction must begin within 2013 – 2016	>3km	High	High	Outside onshore study area
Commercial plant	Screening opinion request for new biomass import facility	EIA not required, Nov 2012	No indication	>2km	Low - Medium	Low - Medium	Outside onshore study area
Commercial plant	Screening opinion for proposed potash processing plant	Insufficient info in planning application, November 2012	No indication	1.9km	Low - Medium	Low - Medium	Outside onshore study area

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Erection of commercial buildings	Two storey management block with associated 92 space car park	Planning permission granted December 2012. Development must begin within 3 years.	2012 – 2015	595m	High	High	Located in highly industrial area, no receptors identified.
Offshore wind farm onshore electrical connection	Dogger Bank Teesside C & D	Application expected in 2015	2016	0m	High	High	N/A – carried forward to CIA
Onshore renewables	Scoping request for two wind turbines	Scoping Opinion requested	Five month construction period but unknown date	0m	High	High	N/A – carried forward to cumulative impact assessment
Onshore renewables	One wind turbine	Withdrawn	Unknown	130m	High	High	Not carried forward to cumulative impact assessment
Waste Treatment facility	Teesport Waste Treatment Facility	Planning permission granted 11 December 2013	Construction must begin between 2013-2016	>3km	High	High	Outside onshore study area
Commercial plant	Elring Klinger (GB) Ltd Extension to factory	Planning permission granted 22 October 2013. Development to	Construction must begin between 2013-2016	670m	High	High	Application site is separated from study area by roads and therefore no cumulative

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
		begin within 3 years of permission					impacts are anticipated.
Demolition of a Power station	Teesside Power Plant	Permission not required (decision made on 26 June 2013)	From approximately 2nd October 2013 to 30th September 2014	200m	Low	Low	N/A – carried forward to CIA
Power Plant	Earthly Energy Group: Anaerobic power plant	Planning permission granted 24 July 2013. Development to begin within 3 years of permission	Construction must begin between 2013-2016	>2km	High	High	Outside onshore study area
Onshore renewables	Erection of single wind turbine, maximum height 80m (Elring Klinger)	Planning permission granted 6 Jun 2013. Development to begin within 3 years of permission.	Construction must begin between 2013-2016	590m	High	High	N/A – carried forward to CIA

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Waste water	Northumbrian Water: Effluent main pipe	Planning permission granted 29 Aug 2013. Development to begin within 3 years of permission.	Construction must begin between 2013-2016	>2km	High	High	Outside onshore study area
Onshore renewables	Bankfield Wind Farm	Public consultation ends 30 Nov 2013	Unknown	>2km	High	High	Outside onshore study area
Onshore renewables	Land at Court Green Farm: Single wind turbine	Public consultation end date 2 Sept 2013	Unknown	>2km	High	Medium-High	Outside onshore study area
Residential	Change to house type: Substitution of 30 approved house types of planning permission with 28 new house types, boundary treatments and associated landscaping	Planning permission granted 2 August 2013	Construction must begin between 2013-2016	>2km	High	Medium-High	Outside onshore study area

Type of project	Project title	Project status	Predicted construction period	Distance from Dogger Bank Teesside A & B	Confidence in project details	Confidence in project data	Rationale for where no cumulative impacts are expected
Residential	Four bungalows: Yew Tree Care Centre	Planning permission granted 1 Jul 2013. Development to begin within 3 years of permission	Construction must begin between 2013-2016	1.4km	High	High	Outside onshore study area
Residential	1000 Dwelling development	Public consultation end date 26 Nov 2013	Unknown	1.4km	High	High	Outside onshore study area
Agricultural	Erection of agricultural building	Planning permission granted 5 July 2013	Construction must begin between 2013 – 2016	0m	High	Medium	Small scale project, no cumulative impacts anticipated
Residential development	Development of 14 two storey detached dwellings	Planning permission granted 4 Nov 2013. Development to begin within 3 years of permission	Construction must begin between 2013-2016	1.1km	High	Medium	Outside onshore study area

10.3 Cumulative Impact Assessment

Tees Renewable Energy Plant Underground Cable (TREPUC)

10.3.1 This project consists of a 400kv cable for connection of the Tees Renewable Energy Plant and the existing NGET substation at Lackenby and runs from Tees Dock down western edge of Wilton Complex to Lackenby substation.

10.3.2 The project is considered to have potential cumulative impacts upon the following receptors: hedgerows, breeding birds and bats. The potential impacts and additional, further mitigation measures are outlined below.

Hedgerows – temporary loss of hedgerows

10.3.3 Where the TREPUC runs down the western side of the Wilton Complex it enters the far western end of the Dogger Bank Teesside A & B study area. This would result in a minor increase in hedgerow loss.

10.3.4 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.2**. Post-mitigation impacts of a single project are **negligible** and of two projects built concurrently or sequentially, **minor adverse**. In the longer term, replacing species poor hedgerows with species rich planting will lead to minor beneficial impacts under both scenarios. Assuming TREPUC adopt similar mitigation to that shown in **Table 6.2**, no additional mitigation would be required and overall no additional cumulative impact is anticipated.

Breeding birds – damage or destruction of birds' nests and disturbance

10.3.5 Where the TREPUC runs down the western side of the Wilton Complex it enters the far western end of the Dogger Bank Teesside A & B study area. This would result in a minor increase in hedgerow loss and construction disturbance in an area of apparently lower value for breeding birds.

10.3.6 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.5**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.7 It can be assumed that TREPUC will adopt similar mitigation measures to Dogger Bank Teesside A & B (**Table 6.5**), due to the legal protection afforded to nesting birds. Therefore, no additional mitigation would be required and overall, no additional cumulative impact is predicted.

Bats – habitat loss and fragmentation and disturbance

10.3.8 Where the TREPUC runs down the western side of the Wilton Complex it enters the far western end of the Dogger Bank Teesside A & B study area. This would result in a minor increase in hedgerow loss, and construction disturbance in an area of apparently lower value for bats.

10.3.9 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.3**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.10 The mitigation measures proposed (**Table 6.3**) are to ensure the project follows best practice guidelines and that the project is legally compliant. Assuming that TREPUC will take similar steps, then no additional mitigation would be required and overall no additional cumulative impact is anticipated.

York Potash Project

10.3.11 York Potash Project will be located down the eastern edge of Wilton Complex, then south east, and will cross the Dogger Bank Teesside A & B cable route to the east of Wilton Complex.

10.3.12 The pipeline consists of two 625mm bore steel pipes to transport potash ore 45km from new potash mine south of Whitby to new processing plant on Teesside. A working width of 45m will be required for installation.

10.3.13 Further information on the construction schedule for the pipeline is not available at the time of writing. An assumption can be made that typically, it takes between 12-18 months following submission for consent to be granted. Therefore, there is the potential for the construction phase to overlap with Dogger Bank Teesside A & B.

10.3.14 The only potential receptors initially identified as potentially being cumulatively effected are hedgerows, breeding birds and bats.

Hedgerows - temporary loss of hedgerows

10.3.15 Where the York Potash Project crosses the Dogger Bank Teesside A & B study area, there would potentially be a significant increase in the degree of hedgerow loss.

10.3.16 Key mitigation for Dogger Bank Teesside A & B is hedgerow re-planting (**Table 6.2**). In the short term, post-mitigation impacts of single project are negligible and of two projects built concurrently or sequentially, minor adverse. In the longer term, replacing species poor hedgerows with species each planting will lead to minor beneficial impacts under both scenarios. It is assumed that York Potash Project would follow best practice guidelines and adopt similar mitigation to **Table 6.2**. Therefore no additional mitigation would be required, and overall no additional cumulative impact is anticipated.

Breeding birds – damage or destruction of birds' nests and disturbance

10.3.17 Where the York Potash Project crosses the Dogger Bank Teesside A & B study area, there would potentially be a significant increase in the degree of hedgerow loss and construction disturbance.

10.3.18 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.5**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.19 It can be assumed that the York Potash Project will adopt similar mitigation measures to Dogger Bank Teesside A & B (**Table 6.5**), due to the legal protection afforded to nesting birds. Therefore no additional mitigation would be required, and overall no additional cumulative impact is anticipated.

Bats – habitat loss and fragmentation and disturbance

10.3.20 Where the York Potash Project crosses the Dogger Bank Teesside A & B study area, there would potentially be a significant increase in the degree of hedgerow loss and construction disturbance which could impact on foraging and commuting bats.

10.3.21 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.3**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.22 The mitigation measures proposed (**Table 6.3**) are to ensure the project follows best practice guidelines and that the project is legally compliant. Assuming that the York Potash Project will take similar steps, then no additional mitigation would be required and overall no additional cumulative impact is anticipated.

Dogger Bank Teesside C & D

10.3.23 This project is the third and fourth projects of the second stage of the Dogger Bank development. Dogger Bank Teesside C & D will comprise two wind farms, each with a generating capacity of up to 1.2GW, which is expected to connect into the National Grid just south of the Tees Estuary.

10.3.24 The landfall and HVDC are broadly in parallel with Dogger Bank Teesside A & B as far as the C & D converter stations in the south eastern corner of the Wilton Complex. Here, the HVAC may head north towards National Grid substation at Tod Point.

10.3.25 The potential receptors of the project are considered to be the same as those identified within this chapter. The anticipated effects from the Dogger Bank Teesside C & D are effects to the Redcar and Saltburn LWS, hedgerows, wintering birds, breeding birds, and bats.

10.3.26 As a worst case scenario, should Dogger Bank Teesside A & B and Dogger Bank Teesside C & D all be constructed at the same time, it would result in an increase in magnitude of impacts already identified. Mitigation for receptors identified would be similar as for Dogger Bank Teesside A & B, e.g. consultation, undertaking construction works outside of sensitive times, minimisation of working areas, and reinstatement of features on completion of the works. In addition, it may be possible to phase the construction works wherever possible to reduce the impacts. Overall, whilst the implementation of mitigation will reduce the impact on terrestrial ecological receptors, a cumulative impact is likely to remain on receptors.

Redcar to Saltburn Coast LWS – habitat damage or loss

10.3.27 Two landfalls would be required within the LWS, essentially doubling the level of impact.

10.3.28 Mitigation for Dogger Bank Teesside A & B is given in **Table 6.1**. Although all four projects together would result in a doubling of the level of impact, assuming similar mitigation for Dogger Bank Teesside C & D, there should be no requirement for further mitigation and **no** additional cumulative impact.

Hedgerows - temporary loss of hedgerows

10.3.29 The temporary loss of hedgerows will represent a loss of habitat for numerous species, and in particular may cause impacts upon breeding birds and bats within the Dogger Bank Teesside A & B study area; there would potentially be a significant increase in the degree of hedgerow loss.

10.3.30 Key mitigation for Dogger Bank Teesside A & B is hedgerow re-planting (**Table 6.2**). In the short term, post-mitigation impacts of single project are negligible and of two projects built concurrently, minor adverse. In the longer term, replacing species poor hedgerows with species each planting will lead to **minor beneficial** impacts under both scenarios. Assuming similar mitigation to **Table 6.2**, is implemented for Dogger Bank Teesside C & D, no additional mitigation would be required and therefore **no** additional cumulative impact.

Wintering birds

10.3.31 The key area for both Dogger Bank Teesside A & B and Dogger Bank Teesside C & D is the arable fields near the landfall. Primarily, the level of impact would be doubled by having four projects compared with two. Cumulative impacts are predicted depending on timings and project specifics. It is understood that it is unlikely that all four projects will be built concurrently, and that sequential build scenarios are more likely.

10.3.32 **Table 6.4** shows mitigation for wintering birds for Dogger Bank Teesside A & B. As a minimum, similar mitigation will be required for Dogger Bank Teesside C & D. For either Dogger Bank Teesside A & B or Dogger Bank Teesside C & D on its own, this would result in **minor adverse** post-mitigation impacts. However this relies on the possibility of displacing wintering birds to other parts of the arable field. With both Dogger Bank Teesside A & B and Dogger Bank Teesside C & D being built at either end of the field, there is the potential for an increased magnitude of effect. Thus additional mitigation will be required.

10.3.33 A construction coordination plan for the projects will be required, to include detailed consideration of how best to minimise impacts on wintering birds. As a preliminary illustrative example, works on Dogger Bank Teesside A & B might take place in September and October, November and December might be avoided, and works on Dogger Bank Teesside C & D take place in January and February.

10.3.34 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.4**. Impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

Bats – habitat loss and fragmentation and disturbance

10.3.35 Along the HVDC routes, the combined projects (Dogger Bank Teesside A & B and Dogger Bank Teesside C & D), would result in a significant increase in the degree of hedgerow loss and construction disturbance, as the working width would be doubled, resulting in hedgerow gaps of 72m (four projects) instead of 36m (two projects).

10.3.36 Additional mitigation would be required in the form of introducing semi-mature, plant grown shrubs in small clusters, within the hedgerow re-planting. This would reduce the functional length of gaps more quickly, and maintain the overall level of impact as **minor adverse**.

Teesside Power Station

10.3.37 This project includes the demolition of eight off heat recovery system generator exhaust stacks and is located off the A1053, Greystone Road. Planning permission is not required for this project and the following comment was made on the planning application :

"The exhaust stacks to be demolished are located within a predominately industrial area. It is not considered the demolition of the exhaust stacks and retention of the other equipment on the site will have not a significantly detrimental effect on the surrounding area. The proposed method of demolition and restoration of the site is considered to be acceptable. Prior Approval of the Local Planning Authority is not therefore required".

10.3.38 It is therefore not considered likely that the works will have a cumulative impact on any of the receptors identified within this chapter.

Scoping request for two wind turbines

10.3.39 This project involves the installation of two wind turbines within land 680m west of Yearby and 650m north of Wilton.

10.3.40 At this stage, very little project information concerning the construction programme or timing has been made available. Therefore an assumption has been made that the construction programme will overlap with Dogger Bank Teesside A & B.

10.3.41 The only potential receptors initially identified as potentially being cumulatively effected are hedgerows, breeding birds and bats.

Hedgerows - temporary loss of hedgerows

10.3.42 The scoping envelope overlaps with the cable corridor and on a worst case scenario, assuming this stretch of hedgerow requires removal, it would result in a minor increase in the length of hedgerow lost.

10.3.43 Key mitigation for Dogger Bank Teesside A & B is hedgerow re-planting (**Table 6.2**). In the short term, post-mitigation impacts of single project are **negligible** and of two projects built concurrently or sequentially, **minor adverse**. In the longer term, replacing species poor hedgerows with species each planting will lead to **minor beneficial** impacts under both scenarios. It is assumed that this project would follow best practice guidelines and adopt similar mitigation to **Table 6.2**. Therefore no additional mitigation would be required, and overall no additional cumulative impact is anticipated.

Breeding birds – damage or destruction of birds' nests and disturbance

10.3.44 Where the scoping envelope crosses the Dogger Bank Teesside A & B study area, there would potentially be a significant increase in the degree of hedgerow loss and construction disturbance to nesting birds.

10.3.45 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.5**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.46 It can be assumed that this project will adopt similar mitigation measures to Dogger Bank Teesside A & B (**Table 6.5**), due to the legal protection afforded to nesting birds. Therefore no additional mitigation would be required, and overall no additional cumulative impact is anticipated.

Bats – habitat loss, fragmentation, disturbance and collision risk

10.3.47 Within the area close to where the scoping envelope crosses the cable corridor, bats could suffer from foraging and commuting habitat loss, and potentially collision risk with the turbines.

10.3.48 Mitigation for Dogger Bank Teesside A & B is shown in **Table 6.3**. Post-mitigation impacts of single project are **negligible** and of two projects built sequentially, **minor adverse**.

10.3.49 The mitigation measures proposed (**Table 6.3**) are to ensure the project follows best practice guidelines and that the project is legally compliant. Therefore, assuming that the project adopts similar mitigation measures and best practice guidelines are followed in relation to siting turbines in proximity to hedgerows, then no additional mitigation would be required and overall no additional cumulative impact is anticipated.

Installation of a single turbine (Cirrus Energy)

10.3.50 A single wind turbine is proposed on land approximately 600m south of Turners Arms Farm. A transformer/substation compound including new vehicle access roads would also be required. The construction programme for the project is not currently known and therefore it has been assumed that the construction programme will overlap with Dogger Bank Teesside A & B.

10.3.51 The scoping envelope falls outside the cable corridor, but within the wider study area and therefore the only potential receptor initially identified as potentially being cumulatively effected are bats.

Bats – habitat loss, fragmentation, disturbance and collision risk

10.3.52 Bats within the study area may suffer from a loss of foraging habitat, disturbance from the works and potentially collision with turbines.

10.3.53 The mitigation measures proposed (**Table 6.3**) are to ensure the project follows best practice guidelines and that the project is legally compliant. Therefore, assuming that the project adopts similar mitigation measures and best practice guidelines are followed in relation to siting turbines in proximity to hedgerows, then no additional mitigation would be required and overall no additional cumulative impact is anticipated.

Teesside Power Station: demolition of a power station

10.3.54 At Teesside Power Station, it is proposed for the demolition of the power station and the associated structures and equipment. Planning permission is not

required for the scheme and the following comment was made on the planning application website:

"The power station and other associated structures to be demolished are located within a predominately industrial area. It is not considered the demolition will have a significantly detrimental effect on the surrounding area. The proposed method of demolition and restoration of the site is considered to be acceptable. Prior Approval of the Local Planning Authority is not therefore required."

10.3.55 It is therefore not considered likely that the works will have a cumulative impact on any of the receptors identified within this chapter.

Elring Klinger: Erection of a single wind turbine

10.3.56 Elring Klinger propose to install a single wind turbine (maximum height: 80m) and the associated infrastructure including access tracks, hardstanding, control buildings and cabling. The site is located on land to the west of Kirkleatham Business Park.

10.3.57 The project is at the scoping stage and the scoping envelope falls outside the cable corridor, but within the wider study area and therefore the only potential receptor initially identified as potentially being cumulatively effected are bats.

Bats – habitat loss, fragmentation, disturbance and collision risk

10.3.58 Bats within the study area may suffer from a loss of foraging habitat, disturbance from the works and potentially collision with turbines.

10.3.59 The mitigation measures proposed (**Table 6.3**) are to ensure the project follows best practice guidelines and that the project is legally compliant. Therefore, assuming that the project adopts similar mitigation measures and best practice guidelines are followed in relation to siting turbines in proximity to hedgerows, then no additional mitigation would be required and overall no additional cumulative impact is anticipated.

11 Transboundary Effects

11.1 Transboundary effects

11.1.1 No transboundary effects have been identified in relation to terrestrial ecology.

12 Summary

12.1 Summary

12.1.1 This chapter of the ES has assessed the potential impact of Dogger Bank Teesside A & B on the baseline terrestrial ecology environment in the identified study areas.

12.1.2 It has provided a characterisation of the existing environment for terrestrial ecology based on existing data, which has established that, using the worst-case scenarios, there are minor adverse residual impacts to: Redcar and Saltburn LWS, hedgerows, wintering birds, breeding birds, and bats during construction and negligible impacts to bats during operation.

12.1.3 These impacts are minimised as far as possible through embedded mitigation, including the avoidance of all statutory designated sites, woodlands and ponds. Mature trees have also been avoided, and throughout the iterative process, minor adjustments to the cable route have been made for reasons of safeguarding ecological features.

12.1.4 Key additional mitigation includes maintaining a strict construction footprint, adhering to standard construction practices and pollution prevention guidance, undertaking construction outside sensitive times (such as breeding periods) where possible, reinstating features to their baseline condition or better. An ECW will also be used to provide toolbox talks and oversee key construction activities.

12.1.5 **Table 12.1** provides a summary of the potential impacts on terrestrial ecology arising from the realistic worst case scenarios set out in Section 5 of the chapter.

Table 12.1 Summary of predicted impacts of Dogger Bank Teesside A & B on terrestrial ecology

Description of impact	Key mitigation measures	Residual impact (worst case scenario)
Construction phase		
Redcar to Saltburn Coast LWS	• Construction working areas will be minimised as far as practicable, especially at the foreshore, and will be fenced to ensure there is no encroachment outside of the agreed working areas; • No storage of materials or machinery will be permitted outside the working width and within the boundary of the LWS; • An ECW will provide toolbox talks to contractors, supervise vegetation clearance prior to construction and oversee key construction activities; • Inform Tees Valley Wildlife Trust in advance of works taking place; • Strict adherence to all mitigation measures outlined for dust in **Chapter 30 Air Quality**, including damping down dusty surfaces, temporary covering of earthworks and the implementation of a 'Dust Management Plan'; and • Reinstatement of habitats affected by the works to their former condition following construction.	**Minor adverse**
Hedgerow	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance will be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests. Any active nests will be left *in situ* with an appropriate buffer within which no works will be undertaken until the nest is no longer occupied; and • Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with regionally appropriate, species rich planting.	**Minor adverse (short-term)/ Minor beneficial (long-term)**
Wintering birds	• Construction activities within the coastal fields and at the landfall location, which could potentially directly affect 6% of the fields, will be avoided during the key months of November – December. A combination of the following mitigation measures shall be implemented during the remaining autumn/winter months (October, January – March inclusive) in order to reduce impacts further: o Clear fencing of the working area and restriction of personnel movements outside the working area; o Installation of hoarding along the edge of the working area to reduce visual disturbance; o Strict adherence to all mitigation measures outlined in **Chapter 29 Noise and Vibration**; o Noise levels will be kept to a minimum and wherever possible silenced equipment and sound mufflers will be used; o Following construction, reinstatement of all land within the working footprint; and Supervision of key stages of the works by an Ecological Clerk of Works (ECW).	**Negligible (single project) Minor adverse (two projects)**

Description of impact	Key mitigation measures	Residual impact (worst case scenario)
Breeding birds	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • Ideally, any vegetation clearance will be undertaken outside the breeding bird season (early March to end of August inclusive, with seasonal variation). If this is not possible, an ecologist will check the area prior to clearance for active nests; • Should an active nest be found during construction, works will cease immediately and an exclusion zone of 10m will be set up around the nest until the young have fledged; • If the bird is a Schedule 1 species (not anticipated since none have been recorded during surveys), then work will cease and Natural England consulted with regard to an appropriate course of action to avoid disturbance to this species; • Ensure construction plant and traffic activity is kept to designated access road to avoid disturbance to ground nesting birds; • Following construction, reinstatement to its former condition of all habitats including hedgerow re-planting with regionally appropriate, species rich planting; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter site and provide further opportunities for breeding birds.	**Minor adverse**
Bats	• The working areas will be clearly marked out on site to prevent any unnecessary damage or disturbance to land outside the development footprint; • For night-time lighting at the converter stations site, cable route construction corridor and for any occasions where task lighting is required, low pressure sodium lamps will be used (instead of mercury or metal halide lamps). The lighting should be directional and spill minimized through the use of hoods, cowls, louvres or shields. Ideally, movement sensors will be used to reduce the overall duration that lighting is on each night; • Following construction, the hedgerow will be reinstated as soon as possible. Hedgerows will be re-planted with regionally appropriate, species rich planting; • Should any trees require removal, a bat visual assessment and surveys (if required) will be undertaken. Mitigation will be designed and a licence (if required) obtained from Natural England prior to works; and • At the converter stations site, as part of screening, areas of additional native woodland and copses will be planted. This will improve the existing woodland habitat within the converter site and provide further opportunities for foraging bats.	**Minor adverse**

Description of impact	Key mitigation measures	Residual impact (worst case scenario)
Operational Phase		
Bats	• Establish sympathetic lighting (as outlined in **Table 6.5**); and • Maintain landscape planting.	**Negligible**
Decommissioning Phase		
As per construction phase	• As per construction phase.	**As per construction phase**

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