

10 Landscape and Visual Amenity

10.1 Introduction

1 The Landscape and Visual Impact Assessment (LVIA) considers the potential effects of the Neart na Gaoithe onshore grid connection works on the landscape and on views. The grid connection works include installation of an underground cable and above ground substation (hereafter referred to as the 'Onshore Works').

2 These works are described fully in **Chapter 5: Project Description**, and comprise: two transition pits near the cable landfall; cables buried in a trench approximately 12.3 km in length; and a new electrical substation adjacent to the existing Crystal Rig II substation. The assessment considers potential effects during construction of the whole of the Onshore Works, and during operation of the substation. The LVIA was undertaken by landscape architects at LUC.

3 The following chapters contain some information relating to landscape and visual amenity and are referenced throughout this chapter where relevant:

- **Chapter 6: Legislation and Planning Policy;**
- **Chapter 8: Terrestrial and Inter-tidal Ecology and Ornithology;**
- **Chapter 9: Cultural Heritage; and**
- **Chapter 13: Soils, Agriculture and Land Use.**

10.1.1 Effects Assessed in Full

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

- construction and decommissioning of the landfall and buried cable; and
- construction, operation and decommissioning of the substation.

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

- direct effects upon landscape resources (sometimes described as landscape elements);
- direct and indirect effects upon landscape character (examined with reference to the landscape character areas into which the study area is divided);
- the consequential impact of direct and indirect effects upon resources and character on any designated landscapes; and
- the consequential impact of the direct and indirect effects upon resources and character on views and visual amenity (examined with reference to assessment viewpoints and illustrated with photomontage visualisations where appropriate).

10.1.2 Effects Scoped Out

6 The landfall and Cable Corridor comprise works which once operational will be underground, with the exception of a landfall marker, occasional small cable markers and manholes. The landfall marker is a large feature, but there are unlikely to be any significant landscape and visual effects arising from the other elements, and so these are scoped out of the assessment.

7 Therefore, the effects of operation of the landfall and Cable Corridor were scoped out of the EIA process, other than a brief consideration of short term residual effects (i.e. changes in appearance of the landscape during the time taken for reinstatement of vegetation above the buried infrastructure).

10.2 Guidance on LVIA

8 The LVIA was undertaken following the approach set out in:

- Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA) (2002) *Guidelines for Landscape and Visual Impact Assessment: Second Edition* (GLVIA).

9 Other guidance documents referred to include:

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

10.3 Data Sources

10 The following data sources were used in the compilation of this assessment:

- Ordnance Survey (OS) Maps at 1:50,000, 1:25,000 and 1:10,000;
- Aerial photography;
- City of Edinburgh Council, East Lothian Council, Midlothian Council and West Lothian Council (2004) *Edinburgh and the Lothians Structure Plan 2015*;
- East Lothian Council (2008) *East Lothian Local Plan 2008*;
- East Lothian Council (2010) *Planning Guidance for the Location and Design of Wind Turbines in the Lowland Areas of East Lothian*¹;
- ASH Consulting Group (1998) *The Lothians Landscape Character Assessment*. Scottish Natural Heritage Review no.91; and
- ASH Consulting Group (1998) *The Borders Landscape Character Assessment*. Scottish Natural Heritage Review no.112.

10.4 Engagement

11 Consultation with SNH and relevant local authorities was carried out in July and December 2011, and January 2012 to agree the selection of representative viewpoints.

12 A Scoping Report was published in January 2012, and a Scoping Opinion was issued in response (dated 14 February 2012). Recommendations relevant to LVIA are included in **Table 10.1**.

13 Follow-up consultation was held with East Lothian Council (ELC) to discuss site-specific landscape issues, and to develop detailed mitigation measures to be included in the ES.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
ELC	Email correspondence between ELC Principal Landscape and Projects Officer (Archibald Martin) and LUC on 19 December 2011	No comments on proposed viewpoints.	No action required.
	Email correspondence between ELC Landscape Project Officer (Dervilla Gowan) and LUC on 12 September 2011	Confirmed no Tree Preservation Orders within Cable Corridor. Methodology required on minimising disturbance to vegetation and stone walls or fences along the route.	Mitigation measures have been developed and are set out in Section 10.10, Mitigation Measures, and in Appendices 8.7 and 8.8: Arboricultural Implications Assessment and Arboricultural Method Statement .
	Scoping Opinion	Identification of significant areas of trees affected to be recorded in ES.	Refer to Section 10.11 Assessment of Residual Effects on Landscape and Visual Amenity

¹ With reference to planning policy and key landscape considerations.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
ELC	Scoping Opinion	Removal of natural features to be indicated on a plan.	Plan to be produced once exact location of Onshore Works is finalised.
	Scoping Opinion	Before and after information required on natural features (including walls etc) affected.	Refer to Section 10.6 Landscape Baseline for information on existing natural features. Details of replacement and/or reinstatement post-construction to be provided once exact location of Onshore Works is finalised.
	Scoping Opinion	A programme of replacement planting and a maintenance schedule should be submitted.	Details of replacement planting to be provided once exact location of Onshore Works is finalised.
	Scoping Opinion	Method statements required on ground protection in terms of trees and soils.	Refer to Appendices 8.7 and 8.8 for Arboricultural Implications Assessment and Arboricultural Method Statement, and to Chapter 13: Soils, Agriculture and Land Use .
	Scoping Opinion	Consideration to be given to adjusting route should it affect significant trees or ancient woodlands.	Refer to Section 10.10 Mitigation Measures. Effects on mature trees and woodland have been avoided where possible through the route design process.
	Meeting with ELC Landscape Project Officer on 12 March 2012	General discussion on methodology following Scoping Opinion.	Positioning of Onshore Works to avoid Root Protection Area of mature beech trees near High Wood.
	Email correspondence between ELC Landscape Project Officer and LUC, 4 April -13 June 2012	Discussion of mitigation measures around substation. Cumulative consideration of other substation proposals required. Require commitment to produce details of landscape resources affected and to replace / reinstate.	Refer to Section 10.10 Mitigation Measures for details of berms and planting at substation site. Refer to Section 10.11 Assessment of Residual Effects on Landscape and Visual Amenity, for cumulative assessment. ELC agreed that commitment to produce details of landscape resources affected and to be replaced / reinstated is

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
			acceptable, once exact location of Onshore Works is finalised.
Scottish Borders Council (SBC)	Email correspondence between SBC Principal Landscape Officer and LUC on Thursday 22nd December 2011 and Friday 20 January 2012.	No comments on proposed viewpoints.	No action required.
SNH	Email correspondence between SNH Operations Officer and LUC on 16 January 2012.	Requested a viewpoint closer to the landfall location.	Viewpoint 1 located on Thorntonloch Beach within 50 m of transition pits as requested.

Table 10.1: Consultation Responses

10.5 Assessment Methodology

14 This section sets out the methodology used in the assessment, in accordance with current good practice guidance. The methodology is applicable to the assessment of short term (temporary) effects during the construction of the project, and the long term (permanent) effects during operation of the substation. The assessment includes a series of mitigation measures, which have been developed and agreed to reduce effects where possible.

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

10.5.1 Study Area

16 Based on examination of the existing landscape and the nature of the development proposed, it is considered unlikely that the proposed substation will be clearly visible from more than 5 km away. In addition, construction work associated with the landfall and buried cable is only likely to be experienced to the extent that it could significantly affect views within much closer proximity (typically no more than 500 m - 1 km away). The selected representative viewpoints are all located within 2 km of the Application Boundary (**Figure 10.3**) to focus on the areas in which significant effects are most likely to arise.

17 Direct effects on the landscape were examined across the entire physical land take, as shown in **Figure 5.1**. This includes the landfall, the working width of the Cable Corridor (up to 30 m wide), construction compounds, laydown and storage areas, access roads and fencing, and the footprint and working areas associated with the substation.

10.5.2 Field Survey Methodology

18 Field survey work was carried out in June 2011 and August 2011 and involved travel around the study area by two landscape architects to survey the onshore landfall, Cable Corridor and substation site, and the wider landscape. Information about landscape resources (including its constituent elements and features), as well as the landscape character of the wider area was collected. Representative viewpoints were selected, for use as a tool to inform the examination of effects on views. Records were made in the form of field notes and photographs.

10.5.3 Method for Recording and Evaluating the Landscape Baseline

19 The *GLVIA* advises that in order to reach an understanding of the effect of development on landscape resources, it is necessary to consider different aspects of the landscape i.e. the individual elements or features that make up the landscape, as well as its wider character, and the characteristics which contribute to that character. For the purposes of this assessment, the consideration of impacts upon landscape includes effects on:

- landscape resources: the components, elements or features that make up the landscape including aspects such as landforms, trees, hedgerows and woodlands, walls and burns;

- landscape character: the distinct and recognisable pattern of elements (for example associations of field patterns) that occurs consistently in a particular type of landscape and creates a particular sense of place; and
- designated landscapes: areas designated for their landscape quality or value at the national, regional or local level, including Gardens and Designed Landscapes² (GDLs) and Areas of Great Landscape Value (AGLVs).

10.5.4 Landscape Sensitivity

20 The sensitivity of the landscape is evaluated as part of the baseline studies. Sensitivity is judged based on the extent to which a landscape can accept change of the type and scale proposed, without adverse effects on its character. Assessments of sensitivity made in this chapter are specific to the proposed development, in accordance with the approach set out in *Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity* (SNH and the Countryside Agency, 2004).

10.5.4.1 Landscape Resources and Sensitivity

21 Determining the sensitivity of landscape resources is based upon an understanding of “*quality, value, contribution to landscape character, and the degree to which the particular element ... can be replaced or substituted*” (GLVIA, LI and IEMA, 2002). Landscape resources relate to local variations in landscape characteristics and are specifically linked to the key areas and landscape elements likely to be directly affected by the proposed works. Landscape resources within the substation site and Cable Corridor were recorded using OS maps, aerial photography and field survey, and sensitivities were assigned with reference to **Table 10.2**.

10.5.4.2 Landscape Character and Sensitivity

22 The GLVIA state that: “*The degree to which a particular landscape type or area can accommodate change arising from a particular development, without detrimental impacts on its character, will vary with:*

- *existing land use;*
- *the pattern and scale of the landscape;*
- *visual enclosure/openness of views;*
- *the scope for the effective implementation of mitigation, which would be in character with the existing landscape; and*
- *the value placed on the landscape.*

23 *Variations of these characteristics within the local landscape need to be identified. The determination of the sensitivity of the landscape resource is based upon an evaluation of each key element or characteristic of the landscape likely to be affected.*”

24 The landscape character of the areas in which the Onshore Works are located were described and mapped with reference to existing landscape character assessments, published by SNH, and sensitivities were assigned with reference to **Table 10.2**.

10.5.4.3 Landscape Designations and Sensitivity

25 Landscape designations can be an indicator of the recognised value of a landscape. National and local designations within the study area were identified. In the case of designated landscapes, sensitivity may be determined by considering:

- the characteristics of the area;
- the reasons for the designation; and
- the policy importance of the designation.

26 Definitions used in relation to the sensitivity of designated landscapes are set out in **Table 10.2**.

Sensitivity		Definition
High (Note that not all aspects noted are required to apply concurrently to result in a high sensitivity.)	Resources	Highly valued landscape resource in good condition, which makes a strong positive contribution to landscape character and would take considerable time to replace, e.g. mature trees or woodland that make a strong positive contribution to the local landscape.
	Character	Attributes that make up the character of a landscape offer very limited opportunities for the accommodation of change, or development of successful mitigation. Key characteristics of this landscape type/area are fragile and would be adversely affected by this type of development. High sensitivity may reflect a particularly distinctive or rare character type.
	Designated Landscapes	The special attributes and characteristics of this designated landscape are highly likely to be adversely affected by development of the type proposed. The designation may be of national policy importance, and/or would be vulnerable to the type of change being proposed.
Medium (Note that not all aspects noted are required to apply concurrently to give medium sensitivity.)	Resources	Moderately valued landscape resource in fair condition, which makes some positive contribution to landscape character. Elements are replaceable but maturity would take some time, e.g. trees that contribute less positively to the local landscape, or hedgerows that contribute positively to the site, but would be replaceable over time.
	Character	Attributes that make up the character of the landscape offer some opportunities for the accommodation of change, or for development of successful mitigation. The landscape may be valued locally.
	Designated Landscapes	The special attributes and characteristics of designated area could be vulnerable to some extent to change from this type of development. The area may be regionally or locally designated and would be vulnerable to the type of change being proposed, or a nationally important landscape that is less likely to be affected by the type of change being proposed.
Low (Note that not all aspects noted are required to apply concurrently to result in a low sensitivity.)	Resources	Landscape resource of limited/low value which may be in poor condition and does not contribute positively to landscape character. Elements would be easily replaced, e.g. a gapped hedgerow that does not contribute especially to the landscape, or young planting that could easily be replaced over a short time.
	Character	Attributes that make up the landscape are tolerant of change and offer opportunities for successful mitigation.
	Designated Landscapes	The special attributes and characteristics of this designated landscape are unlikely to be affected by development of the type proposed. The landscape may be regionally or locally important, but is unlikely to be affected by the type of change being proposed.

Table 10.2: Definitions of Landscape Sensitivity

10.5.5 Method for Recording and Evaluating Visual Baseline

27 The visual baseline is described in terms of views from representative viewpoints within the study area, including views from settlements. A viewpoint will typically represent an area over which a broadly similar perspective of the

² GDLs are assessed in this chapter in terms of landscape and visual amenity only.

development site is obtained. The sensitivity of the viewers at a particular viewpoint depends upon the activity of the viewers and the extent to which they are affected by changes in their view.

10.5.5.1 Representative Viewpoints

28 Representative viewpoints form the basis of the assessment of the potential effects of the Onshore Works on views, in line with the GLVIA (LI and IEMA, 2002). Viewpoints were selected through desk study, site work and consultation with ELC, SBC and SNH. The viewpoints were selected because they:

- are publicly accessible;
- are representative of the nearest residents and the clearest viewpoints of the site;
- provide a representative range of viewing distances (i.e. short, medium, and long range views within 2 km of the Cable Corridor and substation);
- represent a range of viewing experiences (i.e. static views, from residential properties and points from sequential views, for example from roads and footpaths); and
- have a reasonably high potential number of viewers or are of particular importance to the viewers affected.

10.5.5.2 Visual Sensitivity

29 For the purposes of this assessment, visual sensitivity is dependent upon:

- the existing scenic qualities of the view, including the presence of other existing man-made elements in the view;
- the number of viewers³ likely to experience views from that particular viewpoint;
- the activity of viewers likely to experience views from that particular viewpoint (for example residential viewers, and viewers in nationally designated landscapes are generally considered to have a higher sensitivity to their visual environment than viewers in non-designated areas, people at work or viewers in vehicles passing through the landscape);
- whether the location represents views from an advertised viewpoint i.e. marked as a viewpoint on the 1:50,000 or 1:25,000 OS map, and by tourist signs.

30 For the purposes of this assessment, the following definitions of sensitivity are used, as set out in **Table 10.3**.

Sensitivity	Definition
High (Note that not all aspects noted are required to apply concurrently to result in a high sensitivity.)	There are few overt or intrusive man made elements in the view. The view is experienced by a large number of viewers and/or is of particular importance to the viewers affected (e.g. located in a residential area, on a National Cycle Network Route, or National Trail). A mapped or signposted viewpoint from which there is a view with high scenic quality (this may include views across or within a Garden and Designed Landscape).
Medium (Note that different combinations of aspects noted in the high and low sensitivity categories may combine to produce a medium viewpoint sensitivity.)	A view with some scenic quality (this may include views across, or within, a locally designated landscape such as an Area of Great Landscape Value (AGLV). Some overt or intrusive man made elements in the views. A view experienced by a moderate number of viewers and/or located in a recreational area (e.g. on a local footpath).

³ The likely number of viewers is judged on factors such as the size and the function of roads, settlements or places rather than numerical data. For example main roads, large settlements and tourist or visitor attractions are judged to have relatively high numbers of viewers, while minor roads, hamlets or open countryside are judged to have lower numbers of viewers.

Sensitivity	Definition
Low (Note that not all aspects noted are required to apply concurrently to result in a low sensitivity.)	A view with low scenic quality. A number of overt or intrusive man-made elements already in the view. A view experienced by a small number of viewers, or a larger number of viewers with passing interest in their visual environment (e.g. motorists and people at work).

Table 10.3: Definitions used for Visual Sensitivity

10.5.6 Method for Assessing Effects

31 The assessment of landscape and visual effects is based on three stages:

- evaluation of the sensitivity of the landscape and visual receptors to the proposed change as set out above;
- prediction of the magnitude of change in the landscape or the view as a consequence of the proposed change; and
- evaluation of the level and significance of landscape and visual effects.

10.5.6.1 Magnitude of Change to the Landscape

32 The assessment considers magnitude of change to landscape resources and character, and where relevant to those parts of the landscape which may be designated during construction and operation. The assessment allows consideration of residual effects once mitigation measures (such as berms around the substation and replanting of hedgerows along the Cable Corridor) have had time to reach a degree of maturity.

33 The magnitude of change depends on the nature and scale of change that is expected to occur. In a landscape, the magnitude of change will depend on the loss, change or addition of any feature, or any change in the backdrop to, or outlook from, a landscape that affects its character.

34 Magnitude of landscape change is described as high through to imperceptible. Definitions are provided in **Table 10.4**.

Magnitude	Definition
High	Extensive or widespread, long term or irreversible loss of landscape resources or displacement with large scale new elements. An obvious change in landscape character. An obvious change to the quality/value of a designated landscape or which may affect the objectives or attributes for which it was designated.
Medium	Partial loss of, or damage to landscape resources. May be partly reversible. Discernible changes in landscape character. Discernible but not obvious change to the character of a designated landscape or the objectives or attributes for which it was designated.
Low	Small or localised, or reversible change to landscape resources. A small change in character of the landscape. Minor change to the character of a designated landscape or the objectives or attributes for which it was designated.
Imperceptible	Negligible, fully reversible or no change to landscape resources.

Magnitude	Definition
	A virtually imperceptible change in character of the landscape. Imperceptible change to the character of a designated landscape or the objectives or attributes for which it was designated.

Table 10.4: Magnitude of Change to Landscape Resources and Character

10.5.6.2 Magnitude of Change to Views

35 The magnitude of the change in the view and the degree of contrast or integration of any new features with existing features is considered, as well as the extent of the change (angle and proportion of the view occupied by the development, and distance away), and the reversibility of the change. Magnitude of visual change is described as high through to imperceptible, as indicated in **Table 10.5**.

Magnitude	Definition
High	The proposed development has a defining influence on the view and becomes a key focus in the view. It does not integrate well with existing features. It may be an irreversible change.
Medium	The proposed development is clearly visible in the view and forms an important but not defining element of the view. The feature may integrate partially. It may be a partially reversible change.
Low	The proposed development is visible, but forms a small element of the view. It integrates well with existing features. It may be a reversible change.
Imperceptible	The proposed development may go unnoticed as a small element in the view, or is not visible. It may be a fully reversible change.

Table 10.5: Magnitude of Change to Views

10.5.7 Significance Criteria

36 The severity (or significance) of effect depends on both the sensitivity of the resource or viewer and the magnitude of change. A higher level of significance is generally attached to large scale changes affecting sensitive or high value resources or viewers. **Illustration 10.1** represents the process, ultimately a matter of judgement by which the

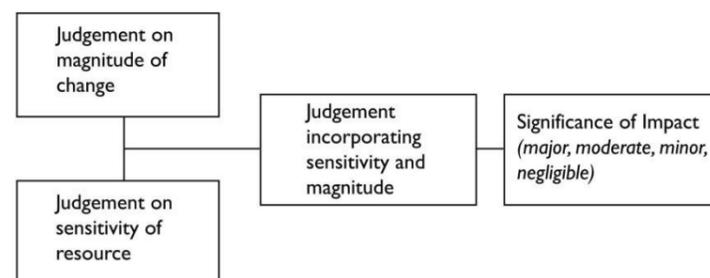


Illustration 10.1: Process for Determining Significance of Effects

37 In accordance with the GLVIA, significance is determined by considering the sensitivity of the landscape or visual receptor and the magnitude of change expected as a result of the development. Professional judgement and

experience are applied on a case by case basis in order to identify levels of significance for each receptor. Each case is assessed on its own merits, but broadly speaking, higher levels of significance will result from greater change to higher sensitivity receptors, in accordance with **Illustration 10.2**.

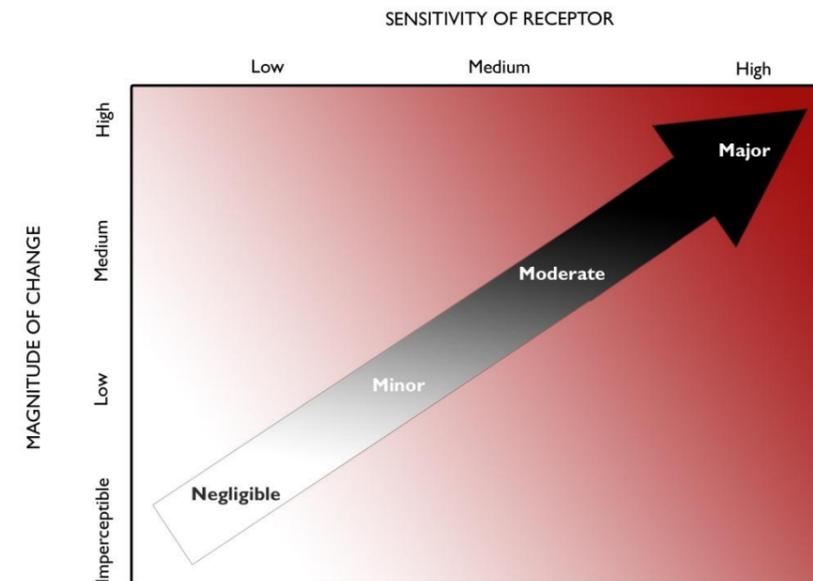


Illustration 10.2: Significance of Effects

38 The level of significance of effect is described as being *negligible*⁴, *minor*, *moderate* or *major*. There is a gradual, blurred transition between levels of significance.

39 Effects which are graded as being major are those which should, relatively speaking, be given greatest weight in decision making, and are considered significant in the context of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. They usually concern the immediate landscape around the site and close views from sensitive locations. Moderate levels of effect are also significant in EIA terms, but they are of progressively reducing importance. Effects graded as minor are those which the decision maker should be aware of, as they constitute noticeable changes in the landscape or views, but are unlikely to warrant much weight in the decision making process, and in this ES are not considered to be significant.

10.5.8 Cumulative and In Combination Effects

40 Cumulative assessment is concerned with identifying the *additional* effects that may arise from the proposed development, in conjunction with other developments present or proposed. The purpose of cumulative effects assessment is not to examine the total significance of all effects, but is focussed upon identifying additional effects resulting from the proposed development when experienced in combination with others.

41 Cumulative effects occur where developments occur in the same or nearby location and/or at the same time. It was necessary to review ongoing and proposed developments in the study area and consider whether the grid connection works would give rise to cumulative effects in combination with these.

⁴ Negligible is also used where no effect is predicted.

- 42 No proposed works have been identified which are in the vicinity of the landfall or Cable Corridor, and which would be ongoing at the same time. As the landfall is the point at which the offshore and Onshore Works for Neart na Gaoithe meet, construction activity of the two will coincide during the inter-tidal works.
- 43 The existing Crystal Rig II substation covers around 1.9 ha. An extension to the existing substation will be required to accommodate the proposed Crystal Rig III Wind Farm, should this be consented. The substation extension for Crystal Rig III would be located within the existing substation compound footprint, but would require additional infrastructure. A further extension will be required to accommodate the proposed Aikengall II Wind Farm, should this be consented, and would be located to the south of the Crystal Rig substation. Additionally, there are compound extension proposals currently being produced by Scottish Power Transmission (SPT), in order to facilitate the connection of Neart na Gaoithe. Details of this proposal are yet to be finalised; however, a map of all proposals around the substation is provided on **Figure 10.8**.
- 44 The permanent Neart na Gaoithe substation will have the maximum dimensions of 255 m x 166 m, with a maximum height of 15 m, including lightning conductor masts (number of masts required to be confirmed). It will be located to the north of the proposed northern extension of the existing Crystal Rig II substation, as shown on **Figure 10.8**. The extent and location of the other proposed substations have been considered as part of the cumulative assessment set out in Section 10.11.
- 45 Construction of the proposed substation may potentially take place alongside construction of the other substations, and construction of the proposed wind farms. Potential construction-phase cumulative effects are also considered in Section 10.11.7.3, and include consideration of cumulative effects arising in combination with construction of the Neart na Gaoithe offshore works.

10.6 Landscape Baseline

- 46 The landscape baseline for the Cable Corridor and substation site is described in terms of:

- landscape resources (comprising elements, features or components);
- landscape character; and
- designated landscapes.

10.6.1 Landscape Resources

- 47 Landscape resources relate to local variations in landscape characteristics and are specifically linked to the key areas likely to be directly affected by the proposed works. Landscape resources are described in terms of variations of characteristics within the local landscape of the Cable Corridor. Each localised area comprises a number of elements, features or components which together constitute the landscape resource.
- 48 The Cable Corridor largely crosses arable fields and areas of upland grazing. The more sensitive features along the route include the foreshore, stone walls, hedgerows, deciduous shelterbelts, small woodlands, individual trees and semi-natural grassland. The substation site lies within an upland region of the Lammermuir Hills, adjacent to an existing substation at Crystal Rig wind farm.
- 49 Landscape resources are described below in localised areas within the development boundary of the Onshore Works, from the landfall at Thorntonloch Beach, to the proposed substation between Watch Law and Bransly Hill in the Lammermuir Hills. These were recorded through field survey, use of aerial photography and 1:10,000 scale OS mapping. Landscape resources within the Cable Corridor which will be directly affected by the works are identified. The sensitivity of each localised landscape resource area is stated, having been determined according to the criteria contained in **Table 10.2**.

10.6.1.1 Thorntonloch Beach

- 50 A wide sandy beach, backed by shallow dunes, Thorntonloch is used recreationally including for activities such as swimming, fishing and surfing. Thorntonloch Caravan Park is located directly next to the beach and offers parking and facilities to those visiting the beach. Thorntonloch Beach is designated as Open Space under East Lothian Local Plan Policy C3: Protection of Open Space. It is a highly valued and an integral part of the local character. It is therefore considered to be of high sensitivity.

10.6.1.2 Thorntonloch Beach to the A1 Road

- 51 The agricultural land to the west of the beach comprises arable fields either side of Thornton Burn, the burn having a swathe of semi-natural broadleaved trees on its northern bank, around 15 m in width, and with some existing gaps. While the arable land is of lower value and easy to reinstate, the Thornton Burn comprises elements which are more distinctive and may take longer to reinstate (if removed or disturbed). For this reason, the agricultural land to the west of the beach is considered to be of medium sensitivity.

10.6.1.3 The A1 Road to East Coast Main Line Railway

- 52 South of the A1 road, and north of the East Coast Main Line railway, is a flat to gently rolling agricultural plain comprising three arable fields separated by post and wire fence. The A1 road and the East Coast Main Line railway as transport corridors are notable manmade elements. Both arable field and post and wire fence are elements of low value, contributing little to landscape character, and easily replaced over a short period of time. Equally the short sections of the A1 road and East Coast Main Line railway located within the Application Boundary, are not considered to positively contribute to landscape character. The localised landscape resource of the A1 road to East Coast Main Line railway is therefore considered to be of low sensitivity.

10.6.1.4 East Coast Main Line Railway to West of Innerwick

- 53 The principal landscape resource between the East Coast Main Line railway and west of Innerwick is arable land. The arable land is of low landscape value and is easy to reinstate, but between fields are some distinctive elements in fair condition, such as small burns, hedgerows, stone walls and fences. The localised area between the East Coast Main Line railway and west of Innerwick is considered to be of medium sensitivity.

10.6.1.5 West of Innerwick to Tripslaw Hill Plantation

- 54 West of Innerwick, the landscape resource comprises a mix of both arable and pastoral land, within a smaller scale field pattern compared to that north and east of Innerwick. As the Cable Corridor passes from east to west it crosses numerous field boundaries. The elements forming field boundaries include components of differing sensitivities. Fences are considered of low sensitivity; hedgerows, stone walls and ditches of medium sensitivity; and broad-leaved shelterbelts are considered of high sensitivity (and include some ancient woodland). Due to the presence of several significant woodland shelterbelts in good condition and which would take considerable time to replace, the landscape resource west of Innerwick to Tripslaw Hill Plantation is considered to be of high sensitivity.

10.6.1.6 Tripslaw Hill Plantation to Crystal Rig II Substation

- 55 From Tripslaw Hill Plantation, the development boundary of the Onshore Works follows a private access track up to the Crystal Rig II substation, the course of which broadly follows a line of existing pylons. The access track itself is of low sensitivity due to its ease and speed of replacement. Other elements within the development boundary forming the landscape resource of this area include some pasture and various types of marshy grassland, scrub, and heath associated with moorland. While the pasture is considered to be of low sensitivity, the other elements are considered to have medium sensitivity due to their role in contributing to upland landscape character, and the length of time required for their restoration. Overall, the landscape resource between Tripslaw Hill Plantation and the Crystal Rig II substation is considered to be of medium sensitivity.

- 56 It should be noted that there are some significant areas of woodland or trees which border this area, such as at High Wood, which are considered to be of high sensitivity.

10.6.1.7 Crystal Rig II Substation

- 57 The landscape resource of the proposed substation location, directly north of Crystal Rig II substation, similarly includes elements which contribute to the upland moorland landscape character of the area, within a context of moorland which has been heavily modified by the presence of the existing Crystal Rig Wind Farm development and substation. Elements are predominantly marshy grassland and bog. In the context of the neighbouring wind energy development, the landscape resource is considered to be of low sensitivity.

10.6.2 Landscape Character

- 58 The principal source of information about the character of the study area is the landscape character assessments commissioned by SNH. The landscape of the study area is described and classified in *The Lothians Landscape*

Character Assessment (ASH Consulting Group, 1998a) and *The Borders Landscape Character Assessment* (ASH Consulting Group, 1998b).

59 Landscape character types (LCT) within the study area are shown in **Figure 10.1**.

60 The Onshore Works will be located within the following landscape character areas (LCAs), defined in *The Lothians Landscape Character Assessment*:

- 23 Dunbar Plain (Coastal Margins LCT);
- 8 Eastern Lammermuirs (Upland Fringes LCT);
- 1 Lammermuirs Plateau (Uplands LCT).

61 The landfall is located within *Dunbar Plain* LCA. The substation is proposed within *Lammermuirs Plateau* LCA, defined in *The Lothians Landscape Character Assessment*, and is close to the edge of the Council boundary. The landscape on the Scottish Borders side of the boundary is also characterised as the *Lammermuir Plateau*⁵ LCA (ASH Consulting Group, 1998b), and has not therefore been considered separately.

62 The three LCAs are described in **Tables 10.6-10.8**. It is not expected that the Onshore Works will give rise to any significant indirect effects upon the character of other LCAs within the study area.

63 The *Lothians Landscape Character Assessment* does not assess sensitivity *per se*. However it describes the characteristics of the landscape in which construction of the project will take place. From this description, and through field surveys, it is possible to identify which characteristics may be sensitive to the proposed grid connection works, using the criteria in **Table 10.2**.

64 It should be noted that the publication of both *The Lothians Landscape Character Assessment* and *The Borders Landscape Character Assessment* were carried out prior to the construction of the Crystal Rig (I and II), and Aikengall II wind farms. The reports therefore do not take account of the existing presence of wind energy development within the study area. It follows that there is now considerable variation to the character of the following areas as described by the 1998 Landscape Character Assessment, as they are now influenced by the presence of these operational wind farms.

65 Key sections of the character description quoted directly from the publication are shown in italics. Attributes, guidelines and the key strategic aim for the LCA are also quoted from the publication and shown in italics.

LCA	23 Dunbar Plain
Character Description	<p><i>This band of coastal plain skirts the north-eastern fringes of the Lammermuir Hills and forms a transition between the hill-slopes and the sea. Along the southern perimeter the area is composed of rolling lowlands, the smooth convex curves of which are engraved by numerous steep-sided stream valleys. Towards the coast, the terrain gradually opens out into a broad, gently undulating plain. The northern boundary terminates in a series of rounded headlands which are bounded by extensive rocky cliffs. Small sand and pebble beaches, backed by grass-turved dunes, nestle in sheltered coves between the headlands.</i></p> <p><i>Medium to large scale arable fields are the dominant land cover of the coastal plain, interspersed with small stretches of improved grassland. Stream courses are delineated by scrub and broadleaved woodland. Elsewhere woodland is mainly restricted to tree clumps and shelterbelts associated with farmsteads.</i></p> <p><i>Clipped, occasionally intermittent thorn hedgerows and post-and-wire fences contain the fields, with some isolated hedgerow trees. Low pink or grey stone walls edge the roadsides and form occasional field boundaries on higher ground.</i></p> <p><i>The parallel routes of the A1 trunk road and the rail line sweep along the open plain. The embankments, bridges and structures are often highly visible features. Several concentrations</i></p>

⁵ In the Borders Landscape Character Assessment, the Lammermuir Plateau LCA is located within the *Dissected Plateau Moorland* LCT.

LCA	23 Dunbar Plain
	<i>of industrial development are located along the coast, the most prominent being the extensive, unscreened cement works at Oswell Mains, and the massive monolithic structure of Torness Power Station. The coastline is also a popular recreational resource and is fringed by a number of sites for picnics, caravans and camping.</i>
Attributes	<p><i>Agricultural character relatively unfragmented;</i></p> <p><i>Diversity of coastal scenery and habitats – prominent headlands and quiet coves;</i></p> <p><i>Proximity of Lammermuir uplands to the coast;</i></p> <p><i>Generally extensive views due to flat terrain and few woodlands;</i></p> <p><i>Major localised visual impacts of cement works, Torness Power Station, and power lines;</i></p> <p><i>Transport routes form prominent linear features.</i></p>
Guidelines	<p><i>Encourage increase in small farm woodland cover on steep slopes and in deans;</i></p> <p><i>Promote judicious increase in roadside planting to reduce impact of major visual detractors;</i></p> <p><i>Take particular account of vulnerability of coastline to further visual intrusion from all types of development.</i></p>
Key Strategic Aim	<i>Conserve integrity of agricultural character.</i>
Sensitivity	<p>This is an open landscape, therefore the construction of a linear development is likely to be visible in the landscape particularly as views are generally open.</p> <p>The landscape is cultivated with generally medium to large scale arable fields which are relatively easy to restore. Elsewhere small woodland groups and shelterbelts are more difficult to restore.</p> <p>There are a number of existing industrial/infrastructure elements within the landscape, concentrated along the coast. Torness Power Station is located close to the proposed landfall. Part of the Cable Corridor follows the existing line of the A1 trunk road.</p> <p>Coastal parts of the LCA are locally designated, as an AGLV, in recognition of its scenic quality.</p> <p>The landscape is considered to have medium sensitivity to construction of the landfall and Cable Corridor.</p>

Table.10.6: Dunbar Plain Landscape Character Area

LCA	8 Eastern Lammermuir
Character Description	<p><i>This broad sweeping apron of land fringes the Lammermuir Hills... a complex configuration of extensive hill-slopes, rising from west to east. The strongly moulded landform is composed of an intricately interwoven series of smooth and rounded low hills and slopes, dissected by an abundance of streams. Deeply incised steep-sided valleys have winding routes often edged by craggy rock outcrops and exposed slopes.</i></p> <p><i>The land cover of the area undergoes a transition from south to north, changing from large-scale fields of improved pasture and some good rough grassland to arable ground as the hill-slopes begin to merge with the coastal plain. Trim stone walls and post-and-wire fences, interspersed with occasional hedgerows, define the field network. Hedgerow trees although infrequent, are widely scattered throughout the lower arable slopes. The steep valley sides are uncultivated, and are clothed by deciduous woodland or areas of scrub. Extensive stretches of ancient sessile oak woodland occur in along several deans, including Woodhall and Lammermuir Deans. Medium-scale coniferous plantations, shelterbelts, tree clumps and areas of mixed woodland are evident across the hill-slopes and close to farm buildings.</i></p> <p><i>Two highly visible pylon lines extend from east to west across the hill-slopes. Numerous minor</i></p>

LCA	8 Eastern Lammermuir
	roads, often edged by stone walls or hedgerows, follow winding courses through the area, leading to a scattering of mainly traditional farmsteads. The large-scale open landscape affords extensive views towards the coast from the smooth domed hill-tops.
Attributes	Sharp contrast in landform between smooth upland slopes and steep sided deans; Close affinity with North Sea coast, including fine open views; Significant areas of ancient oak woodland; Distinctive character of dense rural road network, including local features such as fords and bridges; Visual intrusion from new farm buildings.
Guidelines	Reinforce visual and ecological contrasts between open hill slopes and steep valley sides; Encourage appropriate management of ancient oak woodland; Encourage further woodland expansion within deans, including fencing to promote natural regeneration; Retain character of dense minor road network, including characteristic features such as fords and small bridges.
Key Strategic Aim	Retain distinctive strong local relationships between land cover and topography, emphasising the transition from upland to coastal plain.
Sensitivity	Views from within this landscape change with the position of the viewer in relation to the varying topography of smooth hills and steep-sided valleys. The landscape is cultivated with generally medium to large scale improved pasture and arable fields which would be relatively easy to restore. Elsewhere, scattered trees and larger areas of deciduous and mixed woodland would be more difficult to restore. The Cable Corridor passes between two prominent pylon lines and follows the route of the more southerly pylon line towards the existing substation at Crystal Rig II. In the area local to the application boundary, views of existing wind farms are often available. Some southern parts of the landscape character area are locally designated as an AGLV, in recognition of its scenic quality. The landscape is considered to have medium sensitivity to construction of the Cable Corridor.

Table 10.7: Eastern Lammermuirs Landscape Character Area

LCA	1 Lammermuir Plateau
Character Description	The Lammermuirs range in height between 348m and 527m, and rise gradually westwards to culminate in the summit of Lammer Law. The serried hills and ridges interweave to form a gently undulating upland plateau. The smooth, convex hill-slopes are dissected by a complex tracery of valley landforms which vary in scale and appearance from narrow incised gullies formed by minor burns to the wider, flat-bottomed valleys of larger rivers such as the Whiteadder Water. Large expanses of dense, tussocky heather moorland, dappled by rough grasses, form the predominant vegetation cover of hillsides. Tree cover is generally absent. A few large-scale blocks of coniferous plantation intrude upon open moorland along the Monynut Water. Elsewhere, infrequent clumps of mature deciduous trees, and small coniferous and broadleaved shelterbelts, occur in association with farmsteads or reservoir margins. Field boundary features are uncommon, although post-and-wire fences frequently line roads and access tracks, and farmsteads are occasionally enclosed by low stone walls.

LCA	1 Lammermuir Plateau
	Several minor roads wind through the hills. Paths and access tracks leading off these roads may be locally prominent, where bare soil has been eroded by grading earthworks. Striding across the hill plateau, and often silhouetted against the sky-line, a major pylon-line is highly visible. Visually, the closely-knit hill landforms generally coalesce to form an open, exposed plateau, the isolated character of which is emphasised by a lack of settlement or woodland, although internal views within the hill-groups may occasionally be constrained along valleys. Towards the northern periphery of the area, as the upland landform recedes, panoramic views can be obtained across the hill fringes and coastal plain towards the Forth Estuary and Fife.
Attributes	'Wild land' ⁶ quality derived from high degree of perceived naturalness of land cover, and relative lack of fragmentation by roads, settlements and other urban features; Distinctive visual qualities including grandeur of scale and unobstructed long distance views; High visual sensitivity adjacent to roads, and on northern margins; Visual intrusion of pylon line and some coniferous plantations.
Guidelines	Promote management of mature broadleaved tree groups and small plantations; Encourage limited expansion of woodland cover through shelterbelts and small woodland particularly in deans and valleys, and around farmsteads and other building groups; Retain small-scale variation in visual character of minor roads and in any upgrading schemes; Preservation against further hill tracks on visually-sensitive slopes; Protect/conservate important peatland vegetation communities; Protect visually sensitive areas from potential threat of wind farm development.
Key Strategic Aim	Conserve open, 'wild land' character.
Sensitivity	Views from within this landscape change with the position of the viewer in relation to the varying topography of smooth hills and steep-sided valleys. The substation site and Cable Corridor are visually contained between low rounded hills. The landscape has character of perceived wildness, with a lack of settlement. However, the area local to the Cable Corridor and substation is locally affected by a pylon line, wind turbines and a substation, resulting in locally reduced wildness. The landscape is considered to have medium sensitivity to construction of the Cable Corridor and extension to the existing substation.

Table 10.8: Lammermuirs Plateau Landscape Character Area

10.6.3 Designated Landscapes

66 The following national and local designated landscapes lie within 5 km of the Application Boundary. Relevant designations are shown on **Figure 10.2**. Sensitivity of designated areas is determined according to the criteria contained in **Table 10.2**.

10.6.3.1 Gardens and Designed Landscapes

67 The Inventory of Gardens and Designed Landscapes in Scotland is compiled and maintained by Historic Scotland on behalf of Scottish Ministers. Scottish Planning Policy (The Scottish Government, 2010) states that "the effect of a proposed development on a garden or designed landscape should be a consideration in decisions on planning applications. Change should be managed to ensure that the significant elements justifying designation are protected or enhanced".

⁶ The LCA describes a 'wild land' quality, a perceived wildness, rather than the area being designated as Wild Land.

- 68 The *East Lothian Local Plan Policy ENV8* (ELC, 2008) states that “development that would harm the conservation objectives of areas included within ‘The Inventory of Gardens and Designed Landscapes’ will not be permitted”.
- 69 Gardens and Designed Landscapes (GDLs) are considered in this chapter in terms of their landscape and visual amenity only, as landscapes of quality and value at a national level which are often associated with the presence of visitors, who may view the proposals. GDLs are also examined in **Chapter 9: Cultural Heritage**.
- 70 Inventory-listed Gardens and Designed Landscapes that are located within 5 km of the project are set out in **Table 10.9**.

Name	Description
Dunglass Approximately 1 km south of the Cable Corridor.	Located 6 km southeast of Dunbar and 1 km northwest of Cockburnspath, Dunglass is valued as an example of the late 18 th century picturesque style of landscape design. The present designed landscape has high historical and “work of art” value, and some scenic value. Of particular value are the gorges, woods, rocks and water features seen as early features of picturesque design. Views are limited by surrounding woodland, but at high points are focussed towards the coast. The East Coast Main Line railway runs along the northern boundary of the site.
Broxmouth Park Approximately 2.5 km northwest of the Cable Corridor.	Located on the coast 3 km southeast of Dunbar, Broxmouth Park is valued as an example of late 17 th /early 18 th century, extensive formal landscape associated with the Battle of Dunbar. The present designed landscape has outstanding historical, architectural, archaeological, scenic and “work of art” value. Of particular value is: the association with the Battle of Dunbar; a number of significant category A and B listed architectural features; a number of archaeological features, including a Baroque garden and pillow mound; the role of the woodland in providing screening between Dunbar and the Cement Works; and the intactness of the design. The A1087, the Dunbar to Berwick road, forms the boundary of the site to the south and west.

Table 10.9: Gardens and Designed Landscapes

- 71 The sensitivity of these GDLs is considered to be high because their special qualities are vulnerable to change and the inventory listing is of national importance.

10.6.3.2 Local Landscape Designations

- 72 *Scottish Office Circular 2/1962* gave authority to Councils to designate outstanding areas of scenic attraction as Areas of Great Landscape Value (AGLV). Within East Lothian, there are a number of AGLVs, many of which in this area were initially designated in the 1970s. There is little written justification available for the designation of particular areas. Rather, there is a general statement that development which harms the character or appearance of these areas will not be permitted.
- 73 Within the Scottish Borders, newly-defined Special Landscape Areas (SLA) were adopted in August 2012 (SBC, 2012), replacing earlier AGLVs. The SLAs are accompanied by statements of importance which set out the reasons for their designation.
- 74 **Table 10.10** lists the local landscape designations within the study area, and a description of their scenic quality is given based on the local plan descriptions, landscape character assessments, and observations in the field. For the Lammermuir SLA, reference is made to the statement of importance given in SBC (2012).

Name	Local Authority	Description
Coastal	ELC	The coast of East Lothian comprises an alternating mix of broad sandy beaches, rugged cliffs, raised shore platforms and dune systems, presenting a range of different values. The settlement of Dunbar is influenced by the underlying raised platform. Sandy beaches offer traditional recreation value. Cliffs and dune systems provide important habitat. The coast line is popular recreationally, with picnic spots, caravan parks and walking routes, including the John Muir Way.
Woodland	ELC	Several small areas of mixed woodland are designated, including at Woodhall Dean, Pressmennan and west of Bransly Hill. These semi-natural woodlands are generally limited to the steep slopes of river valleys. Woodhall Dean is valued for its almost pure stands of sessile oak, a rare local habitat. Pressmennan Wood was formerly part of the Biel and Dirleton Estate.
Lammermuir Hills	ELC	The northern extents of the Lammermuir Hills are located in East Lothian, and mark a division between the land to the north, a low-lying landscape with strong coastal associations, and the enclosed hilltop plateau moorland to the south, with its perceived wildness quality and scenic value. On the northern periphery, expansive views are available across the coastal plain towards the Forth estuary and Fife. The Lammermuir Hills themselves extend south into the Scottish Borders, in a smooth and wide, gently rolling plateau of heather moorland and rough grassland. This gives the area a sense of wildness, separated from the major roads, settlements and industrial features of the coast. The area is popular with walkers and includes a number of publically accessible paths and tracks.
Lammermuir Hills	SBC	“This large area of open upland is representative of the moorlands and valleys of the northern Borders. It is the largest area of moorland in the Borders, with remote, wild qualities, despite its managed nature. Within the plateau, there is little visual diversity aside from the mottled patchwork resulting from muirburn, and views often present a seemingly endless succession of moorland ridges. The extent and uninterrupted openness of the landscape lend scenic value. To the south the moorland extends onto the striking conical Dirlinton Lows, unique landscape features. The upper Whiteadder is a broad, relatively shallow upland valley, which serves as a visual foreground to the Lammermuir Plateau. The landscape becomes more intricate in the east, around Abbey St Bathans and the incised cleughs of the Monynut valley. Forestry and wind turbines are prominent around the valley of the Bothwell Water.” “The area is popular with recreational users, with the Southern Upland Way passing through the area. The B6356, following the Whiteadder, is the main access into and through the hills. The area is valued especially for its upland and heathland habitats. Although the area is very sparsely settled, the wider Lammermuir plateau forms an important part of the setting of settlements in East Lothian. Visually, the edges of the hills are important to the Leader and Whiteadder valleys.”

Table 10.10: Areas of Great Landscape Value

75 The sensitivity of local landscape designations is considered to be medium because their scenic qualities are vulnerable to some extent to change from this type of development, and the designation is of local and regional importance.

10.7 Visual Baseline

76 The field survey revealed that views of the substation would be restricted by surrounding topography. Viewpoints around the substation were selected to represent the nearest views from public places and key recreational areas or paths. The field survey revealed that there are no nearby residents with views of the existing substation. Viewpoints were chosen to reflect a range of locations at varying distances and directions from the substation site.

77 Fieldwork also revealed that the character of views varies along the length of the Cable Corridor, in response to changing landscape character (see **Figure 10.1**). The viewpoints were selected to cover a representative sample of landscape types/character areas along the length of the route.

78 Along the whole route, the presence of hedgerows, trees and woodland often means that views of construction activities would be restricted, particularly during summer when deciduous vegetation is in leaf. The viewpoints selected therefore concentrate on the nearest settlements to the route, notable recreational interests close to the route (e.g. the beach at Thorntonloch), and viewpoints with high numbers of receptors (e.g. main roads).

10.7.1 Visual Receptors

79 Likely viewers or visual receptors of the Cable Corridor and substation include:

- residents living in settlements or individual residences near to the Cable Corridor;
- tourists visiting, staying in, or travelling through the area;
- recreational users of the landscape, including those using Thorntonloch Beach, cycle routes and footpaths;
- recreational users of the marine environment near to the coast, including those involved in yachting or angling;
- travellers (tourists, workers, visitors or local people) using transport (road and rail) routes passing through the study area; and
- people working in the countryside or in any of the towns, villages or settlements and residences near to the Cable Corridor.

10.7.2 Representative Viewpoints

80 Ten representative viewpoints were selected along the Cable Corridor, based on criteria set out in the methodology, and agreed with ELC, SBC and SNH. Their locations are shown in **Figure 10.3**. The viewpoints, together with a summary of the reasons for their selection are provided in **Table 10.11**.

No.	Location	Grid Ref.	Rationale for Inclusion
1	Beach at Thorntonloch	NT753741	Beach south of caravan park, near to John Muir Way long-distance coastal footpath and outflow of Thornton Burn, immediately adjacent to the proposed landfall. Representative of coastal views from a recreational area.
2	Railway bridge, north of Thornton Mill	NT741743	Minor road over railway, overlooking the Cable Corridor, as it passes along the A1. Representative of views from the East Coast Main Line railway, minor road to Crowhill and Innerwick and nearby residential property.
3	Innerwick, north edge of the village	NT720741	Small village in Conservation Area close to the Cable Corridor, overlooking the parts of the route passing through arable land west of Innerwick. Representative of residential views and views from this minor road.
4	Thurston Manor, site	NT713742	Caravan park located adjacent to the Cable Corridor.

No.	Location	Grid Ref.	Rationale for Inclusion
	entrance		Representative of residential and recreational views, and views from a minor road.
5	Ogle Lodge, north of Thurston Mains	NT710734	Point in close proximity to the Cable Corridor, near to the entrance of Ogle Lodge, a residential property.
6	Blackcastle Hill	NT715718	Hill-top location to the south of the Cable Corridor, on a Core Path. Representative of wide views from a recreational route.
7	Tripslaw Hill	NT692723	Elevated point on minor road, overlooking the central part of the Cable Corridor. Representative of views from this minor road.
8	Tay Burn	NT666690	Point on footpath close to substation site. Representative of open views from a recreational route.
9	Bransly Hill, ruin on west side of hill	NT671696	Hill-slope location close to the substation site. Representative of open views from a recreational route.
10	Watch Law	NT658702	Hill-top location close to the substation site, on a Public Right of Way. Representative of open views from a recreational route.

Table 10.11: Assessment Viewpoints and Reason for Selection

10.8 Zone of Theoretical Visibility

81 A Zone of Theoretical Visibility (ZTV) map has been produced to indicate the maximum visibility of the proposed substation within a 5 km radius. The ZTV is illustrated in **Figure 10.4**, and indicates that visibility will be limited to the area between Watch Law and Bransly Hill, extending south to Crystal Rig, as well as areas of Dunbar Common to the west, Spartleton Edge to the south, and Brunt Hill to the north. The ZTV confirmed that there are no nearby residents with potential views of the proposed substation.

82 The ZTV has been calculated to indicate visibility of a 15 m high structure located across the proposed footprint of the substation. The actual extent of the substation structure is likely to be less than this, with only the highest busbars and lightning conductors reaching to 15 m. The ZTV is generated based on a 'bare ground' digital terrain model, which does not take account of screening or filtering by vegetation and localised variations in topography. It therefore illustrates a maximum visibility scenario, which would be reduced in the field. It should also be noted that theoretical visibility does not equate to a significant effect on views.

10.8.1 Existing Visual Amenity from Viewpoints

83 The Onshore Works, and the associated construction activities, are likely to be visible across a limited area of East Lothian and the Scottish Borders. Examination of the substation site indicates that the location is well screened by surrounding landform and it would not be visible from residential properties, as indicated by the ZTV (**Figure 10.4**). Existing views from the representative viewpoints are described in **Table 10.12** and a panoramic photograph of each is included in **Appendix 10.1**. Visual receptors are identified and a judgement about sensitivity of each viewpoint made, according to the criteria set out in **Table 10.3**.

Viewpoint	Description of View and Receptors	Viewpoint Sensitivity
1. Thorntonloch Beach	This viewpoint is located on the beach with views out across the North Sea, along the coastline northwest to Thorntonloch Caravan Park and Torness Power Station, and southeast towards Fast Castle Head. Visual receptors are recreational users of the beach and walkers on the nearby John Muir Way long distance footpath. Thorntonloch Caravan Park is located nearby to the north of the Thornton Burn. Inland views are locally restricted by coastal grassland, which screen the flat arable fields either side of Thornton Burn. Nearby residential properties include Thornton House (Bed and Breakfast) and Thornly. There are two telecoms masts on higher ground to the south.	Thorntonloch Beach is designated as Open Space, under East Lothian Local Plan Policy C3: Protection of Open Space. The viewpoint is experienced by a moderate number of recreational users, on the beach, on the John Muir Way, and at the caravan park, within an area of locally designated scenic quality. It is representative of residential viewers nearby. There are a number of overt or intrusive man made elements in the wider view. Recreational and residential viewers at this location are considered to have a high sensitivity to change.
2. Thornton Mill	This open and slightly elevated position on the east side of the railway bridge, faces north in the direction of Torness Power Station and the coastline. Visual receptors include passengers passing along the East Coast Main Line railway and motorists travelling on this minor road. This view is also representative of views from the 2-storey residential property west of the bridge. The foreground comprises medium to large scale open arable fields, interrupted in the middle ground by the A1 road and associated traffic. Beyond the A1, Torness Power Station can be seen set against the sea and sky. Looking northeast, views are available down a long linear stretch of railway towards the cement works. An electrical substation adjacent to the property on the west side of the bridge (and associated with the railway) is also visible.	The viewpoint is experienced by railway passengers, motorists using this minor road, and is representative of views experienced by residents in the property to the west of the bridge. Residential viewers at this location are considered to have a high sensitivity to change.
3. Innerwick	This open view faces west in the direction of Hunter Steadings (residential development) and Thurston Manor (caravan park). Facing southwest in the view, properties on the northern edge of the village of Innerwick are visible and oriented with an outlook north. Visual receptors include local residents, farm workers and motorists on this minor road. Medium to large scale open arable fields make up the foreground, contained by the woodland associated with Dry Burn in the middle ground, in front of which a number of residential properties can be seen less than 1 km away. In the background low rolling pasture is visible, comprising Pinkerton Hill and Brunt Hill. Looking northwest, the cement works are visible, viewed through and above deciduous woodland.	The viewpoint is experienced by motorists using this minor road, and is representative of views experienced by residents in the properties on the northern edge of Innerwick. Residential viewers at this location are considered to have a high sensitivity to change.
4. Thurston Manor	This open view facing east is located around 500 m west of the proposed Cable Corridor, on a minor road. Visual receptors include residents in cottages and at nearby Hunter Steadings, and motorists on this minor road. Additionally, those travelling to and from Thurston Manor caravan and camp site will experience visibility, although from within the park, views are limited due to earth bunding. In the foreground are medium to large scale arable fields. Torness Power Station is set against a backdrop of sea and sky in the distance, and the village of Innerwick is located at the centre of the view. Looking southeast, two masts are visible on the flat plateau of the Lammermuirs, set above a middle ground of mature mixed woodland and pylons to the south. Railway infrastructure can be seen by the coast, north of the power station.	This viewpoint is experienced by residents in cottages set alongside this minor road, residents in Hunter Steadings, by motorists using this minor road, and by visitors passing to and from Thurston Manor caravan and camp site. Residential viewers and tourists at this location are considered to have a high sensitivity to change.
5. Ogle Lodge	This viewpoint is located next to the Cable Corridor as it passes across the minor road which runs between Thurston Manor and Thurston Mains. Located south of nearby residential property of Ogle Lodge, it faces west across an open pastoral field towards a long woodland shelterbelt. Visual receptors include residents of Ogle Lodge and motorists on this minor road. The view is relatively contained by local topography. Pylons are visible to the northwest and southwest, and to the southwest, several turbines of operational Aikengall II Wind Farm can be seen on the horizon. Views from Thurston Mains and Thurston Main Cottages south of the route are considered unlikely due to screening provided by surrounding topography and vegetation.	The viewpoint is experienced by motorists using this minor road, and is representative of views experienced by residents in Ogle Lodge. Residential viewers at this location are considered to have a high sensitivity to change.
6. Blackcastle Hill	This viewpoint is located on a farm track crossing Cocklaw and Blackcastle hills, part of Oldhamstocks local path network. The surrounding area is principally rough pasture, with some shelterbelt woodland on lower ground. Visual receptors are users of this Core Path. This elevated panoramic view has far reaching views focussing north towards the coastline. Two masts are located nearby on this hill and further industrial structures are visible in the form of pylons, the cement works, power station, road and rail infrastructure. Also visible are Berwick Law and Bass Rock. The middle ground is predominantly arable and pastoral farmland, with small villages and associated mixed woodland and shelterbelts.	The viewpoint is experienced by a small number of recreational users on this local path, who visit to enjoy the broad panorama. There are a number of overt or intrusive man made elements already in the view. Recreational viewers at this location are considered to have a medium sensitivity to change.
7. Tripslaw Hill	This viewpoint is located on a minor road, just south of Woodhall Farm, at the entrance to Crystal Rig Wind Farm access track. Located next to the Cable Corridor, and on the northern edge of the Lammermuir Hills, visual receptors are users of this minor road. Looking east, along the line of pylons, visibility is limited by a small, steep hill characteristic of this	The viewpoint is experienced by motorists on local roads with passing interest in their surroundings and there are a number of overt or intrusive man-made elements already in the view.

Viewpoint	Description of View and Receptors	Viewpoint Sensitivity
	area – mainly rough pasture, with gorse scrub on steeper faces. Looking west along the line of pylons and along the access track to Crystal Rig, mature beech trees line the track on the south side, and contain High Wood, an area of coniferous forest. Visibility is generally localised, however on this elevated position on the road, views of Brunt Hill are possible.	Passing motorists at this location are considered to have a low sensitivity to change.
8. Tay Burn	This viewpoint is located on a Core Path which crosses the Crystal Rig Wind Farm, close to and southeast of the existing substation. Visual receptors are those using this path recreationally. Wind turbines and access tracks can be seen in all directions in this view. They are set within a simple and large scale landscape of wide, open moorland plateau with scattered blocks of coniferous plantation forest. Between turbines to the northwest, the substation and pylon line can be seen. The substation appears as a grey cluster of short vertical metal elements and low industrial sheds, surrounding by a steel palisade fence.	<p>The viewpoint is experienced by a small number of recreational users in this local path and there are a number of overt or intrusive man-made elements already in the view.</p> <p>Recreational viewers at this location are considered to have a medium sensitivity to change.</p>
9. Bransly Hill	This viewpoint is located by a ruin nearby the Core Path which crosses Bransly Hill. It is located on the southwest side of the hill just north of a small pocket of coniferous forest. Visual receptors are those using this path recreationally, who experience an open view across the Crystal Rig Wind Farm. Wind turbines and access tracks can be seen set on lower ground to the south and west. They are set within a simple and large scale landscape of wide, open moorland plateau with scattered blocks of coniferous plantation forest. Close to the northern extent of the turbines, the substation can be seen with a line of pylons extending further north alongside the main access track. The substation appears as a grey cluster of short vertical metal elements and low industrial sheds, surrounding by a steel palisade fence.	<p>The viewpoint is experienced by a small number of recreational users in this local path and there are a number of overt or intrusive man-made elements already in the view.</p> <p>Recreational viewers at this location are considered to have a medium sensitivity to change.</p>
10. Watch Law	This viewpoint is located on a Core Path which crosses the Crystal Rig Wind Farm, at the top of Watch Law Hill. Located next to information boards for the wind farm, the substation is in clear view to the east. Visual receptors are those using this path recreationally. Wind turbines and access tracks can be seen; the majority located looking south and east. They are set within a simple and large scale landscape of wide, open moorland plateau with scattered blocks of coniferous plantation forest. Between turbines to the east, the substation and pylon line can be seen. The substation appears as a grey cluster of short vertical metal elements and low industrial sheds, surrounding by a steel palisade fence.	<p>The viewpoint is experienced by a small number of recreational users in this local path and there are a number of overt or intrusive man-made elements already in the view.</p> <p>Recreational viewers at this location are considered to have a medium sensitivity to change.</p>

Table 10.12: Existing Visual Amenity and Viewpoint Sensitivity

10.8.2 The 'Do Nothing' Scenario

84 If the Onshore Works were not implemented, then it is likely that there would be no change to the landscape and visual qualities of this area other than those potentially arising through climate change, or changing land management practices. The land around the substation site is likely to be of interest for development of wind farm extensions, and it is possible that the Cable Corridor and particularly the grid connection point at Crystal Rig would be of interest to other developers. Should the proposed Crystal Rig III and Aikengall II wind farms be consented, additional substations will be developed next to the existing Crystal Rig II substation.

10.9 Routing and Design Considerations

85 A description of the construction programme, activities and proposed machinery is provided in **Chapter 5: Project Description**. The Onshore Works are expected to take around 18-24 months to build in total. The implementation of the Onshore Works in this predominantly rural environment has the potential to result in significant landscape and visual effects.

86 Following baseline study and initial field surveys, potential sources of effects were considered as a means of identifying mitigation or enhancement of the Onshore Works. This was an iterative process, in which potential effects were reconsidered as the design developed in order to prevent, reduce, and where possible offset potential significant effects.

87 Sources of potential effects are identified below, followed by agreed mitigation measures. The assessment of residual effects has been carried out on the basis that these mitigation measures will be implemented.

10.9.1 Sources of Potential Effects

88 Potential landscape and visual effects can arise from a variety of sources throughout the life cycle of the development; from construction, operation and decommissioning.

89 The Cable Corridor and Landfall comprise works which, when operational, shall be underground. Therefore it is anticipated that potential effects arising from the Cable Corridor and Landfall will be from construction and decommissioning only, with the exception of the permanent landfall marker. Landscape and visual effects arising during the construction and decommissioning period are likely to vary in intensity and duration from location to location, depending on the focus of activities at different times.

90 Due to the lasting presence of the substation as a new feature in the landscape, it is anticipated that potential effects may arise during construction, operation and decommissioning.

10.9.1.1 Landfall and Cable Corridor

91 The construction of the Landfall and Cable Corridor includes: inter-tidal works; the installation of landfall transition pits for connection between offshore and onshore cabling; Open Cut Trenching (OCT) and trenchless techniques to install cables; a temporary construction compound; and temporary access points. A permanent landfall marker will be installed.

92 Potential key landscape and visual effects arising during the construction phase of the Landfall and Cable Corridor may result from the following:

- connection of offshore and onshore cables, either by a trenchless technique, such as Horizontal Direction Drilling (HDD), or by OCT in the inter-tidal area of the beach (further investigations are required to establish whether a trenchless technique is technically possible in this area, depending on the ground conditions encountered it may not be possible).

- establishment of the site access points, a 30 m wide application boundary (for the majority of the route, wider in some places) including haul roads, along the length of the Cable Corridor, and use of local roads as part of the Construction Traffic Route, between the A9 north of Innerwick to Tripslaw Hill Plantation (**Figure 5.4 Construction Access Route and Access Points**);
- site construction compound with maximum dimensions of 50 m x 110 m, including office, mess room, toilets, stores and lay down areas, located at OS Grid Ref 370607, 673622 east of Birky Bog Plantation and north of Thurston Mains;
- additional lay down areas at appropriate locations along the Cable Corridor;
- installation and movement of construction vehicles and machinery including but not limited to HGV, special load transport, excavators, winches, drilling plant, cranes, jacks, and bowsers;
- removal of vegetation and other landscape features including stone boundaries, soil stripping, and storage of excavated materials (including locations identified on **Figures 10.9a to 10.9d**);
- temporary container and temporary bridge used during construction of two transition pits located at OS Grid Ref 375274,674175, at the landfall area above Mean High Water Springs;
- on site signage, fencing and lighting;
- post-construction, reinstatement of stone boundaries and removed vegetation;
- post-construction, removal of temporary compound and haul roads and restoration of hard standing and access roads.

93 Potential landscape and visual effects arising during the operational phase of the landfall and Cable Corridor may result from the following:

- presence of a permanent landfall marker, which will be a yellow diamond-shaped sign, 2.5 m by 1.5 m, mounted 4 m above ground. A yellow flashing light will be mounted at the top of the sign, and will be screened from landward.

94 Potential landscape and visual effects arising during decommissioning of the landfall and Cable Corridor are expected to be similar to those identified above during construction. The area disturbed should be no more than the area disturbed during construction. Where cable ducts are in place, the cables would be pulled through rather than disturbing the ground above. Where ducts are not in place, the ground would be opened up to remove the cables.

10.9.1.2 Substation

95 The construction of the substation includes: scraping and temporary bunding of topsoil and surface peat and levelling of the area, in accordance with best practice guidelines; installation of plinths; oil containment bunding; on or offsite fabrication work; installation of transformers; security fencing; and the establishment of a temporary site compound. The substation itself will be a visible industrial feature in the landscape during operation. The maximum dimensions of the substation footprint occupied during construction, and including compound area, are 255m x 166m. The decommissioning of the substation is likely to involve the removal of all electric plant from their foundations. The control building would be demolished, and foundations may also be removed.

96 Potential key landscape and visual effects arising during the construction, operation and decommissioning phases of the substation may result from the following:

- preparation of the site, compound area and access roads, including removal of vegetation, soil and peat stripping, excavation and levelling works, and storage of excavated materials;
- the presence of a site compound including office, store, delivery and off-loading areas, welfare facilities, parking areas, security accommodation, wheel wash, fencing and signage;
- installation and/or movement of construction vehicles and machinery including but not limited to HGV, special load transport, excavators, winches, cranes, and bowsers;
- on site signage, fencing and lighting;
- post-construction, removal of temporary compound and haul roads and restoration of the landscape;
- during operation, presence of the substation as a new feature within the Lammermuir Plateau, in the context of the existing substation and wind turbines; and

- during decommissioning, the demolition and removal of electric plant and foundations, transportation of material offsite, and the restoration of the landscape.

10.10 Mitigation Measures

97 This section sets out agreed mitigation measures which will reduce, and where possible remedy or offset, landscape and visual effects. The development of mitigation measures was an iterative process which has informed the engineering design of the scheme, and the detailed landscape design proposals which will be implemented as part of the works.

98 The baseline studies and initial field surveys have highlighted specific areas for mitigation or enhancement.

99 Locations of specific proposals for retention of vegetation are identified on **Figures 10.9a to 10.9d**.

10.10.1 Design Principles for the Permanent Works

100 The location and orientation of the Onshore Works are designed to prevent, reduce, and where possible offset potential significant landscape and visual effects. The approach adopted throughout the development of the design ensured that adjustments and alterations could be made in response to constraints and opportunities, ensuring a considered and tailored fit within the landscape.

101 The following design principles were adopted in developing the design and mitigation of the Onshore Works:

- the route was selected to be an underground cable rather than an overhead line;
- the route was steered away from identified sensitive viewpoints or highly visible locations;
- a number of locations where the Cable Corridor intercepted sensitive landscape features such as trees and woodlands were identified. Where possible, the route was adjusted to avoid these locations;
- where relocation of the route was not possible and the Cable Corridor presented a significant threat to key sensitive landscape features, an alternative method of installation (a trenchless technique such as HDD, rather than OCT) was agreed in order to retain and protect these features;
- the methods of protection required for landscape features were considered in ensuring sufficient space and resources are made available to successfully implement protection measures;
- a high standard of design shall be applied to all above-ground structures, with materials and finishes that fit well into the existing landscape character, as far as practicable;
- prior to construction all built landscape features (stone walls, fences) that are removed as part of the works will be measured and recorded by photograph and in writing by a qualified landscape architect, and the materials retained for reuse. Upon completion of the construction works, these features shall be reinstated as far as possible, reusing original materials, and repairing any associated damage;
- prior to construction all natural features that will be disturbed, removed or felled as part of the works (including but not limited to trees, hedgerows, pasture and arable land), will be measured and recorded by photograph and in writing by a qualified landscape architect. Upon completion of construction works, these features will be restored as appropriate to their original character. Where it is not possible to restore a feature to its original character, every effort will be made to arrange appropriate mitigation in an alternative location by agreement with the landowner;
- areas of disturbed earth will be cultivated and seeded or planted to match the existing flora, as soon as possible after works are complete. Restoration of the arable and pasture areas will aim to achieve the same soil profiles, and in the case of pasture, seeding with similar grass mixes as found on adjacent undisturbed ground will be undertaken; and
- detailed design of permanent lighting required at the substation shall ensure that it is kept to a minimum necessary for security and safety. It shall be designed to minimise glare and light spillage offsite, to the sky and to adjacent areas.

10.10.2 General Mitigation during Construction (all areas)

102 The following mitigation measures will be implemented during the construction phase of the project:

- prior to construction, trees, shrubs and hedges, and built landscape features such as stone walls and fences, that are considered to be significant in landscape and visual terms, and require retention and protection, will be

measured and recorded by photograph and in writing by a qualified landscape architect. This will include those within and adjacent to the Application Boundary;

- the retention and protection of identified trees, shrubs and hedges, as above and by reason of landscape or visual importance, shall be carried out in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations';
- further details on the protection of trees and other vegetation, including ground protection methods, are included in **Chapter 8: Terrestrial and Inter-tidal Ecology** and **Chapter 13: Soils, Agriculture and Land Use**. Please also refer to **Appendices 8.5 and 8.7 for Arboricultural Implications Assessment and Arboricultural Method Statement**;
- where the Onshore Works involve OCT through an existing hedge or tree belt, existing gaps will be used where possible so that vegetation removal is minimised. No unnecessary tree or shrub removal will be undertaken, and vegetation which is to be removed will be marked and agreed on site prior to any felling;
- no tree removal shall be undertaken if outside the approved application boundary. If any removal occurs which has not been anticipated (e.g. trees that may fall on the site and need to be removed for safety reasons), additional new planting will be undertaken to offset the loss with agreement from the landowner;
- best practice soil handling procedures, relating to handling in inappropriate weather conditions, stockpiling and the replacement of material, shall be followed during construction. A Soil Resource Management Plan (SRMP) will be developed in detail prior to construction to ensure that soil resources are managed in accordance with best practice⁷ and soil mitigation measures are fully implemented on a specific basis within each section of the route corridor. Refer to **Chapter 13: Soils, Agriculture and Land Use** for further detail;
- stockpile soil mounds will generally be used to screen the temporary construction compounds from sensitive areas where practicable;
- contractor compounds shall be located in a place of lowest sensitivity (i.e. away from residential properties and areas of valued trees and shrubs, or wetland). Materials and machinery will be stored tidily during the works;
- roads providing access to site compounds and works areas will be maintained to minimise dust and mud;
- works will be conducted during daylight hours and, under normal circumstances, no lighting will be required during construction (with the exception of 24 hour lighting at contractor compounds). However, some construction works will need to be performed continuously and may need to be carried out outside of daylight hours. Should this be the case, suitable task lighting will be employed. Construction lighting will be designed so that it does not impinge into sensitive views, such as close views from bedroom windows of residential properties.
- low level lighting will be used where possible, rather than lighting on tall columns; and
- on completion of construction, all remaining construction materials will be removed from the site and work compounds; hard standing and temporary access roads will be reinstated.

10.10.3 Landfall and Cable Corridor Mitigation

- 103 The initial Cable Corridor alignment avoided most sensitive landscape and visual features. However, a number of locations were identified where the Cable Corridor intersected sensitive landscape features such as trees and woodlands. Where possible, the route was adjusted to avoid these locations.
- 104 Locations were highlighted where the Cable Corridor was in close proximity to sensitive groups of trees, such that it may pose a risk to the protection of underground root systems. Where possible, the route was adjusted to provide an increased buffer between the Cable Corridor and landscape feature. As a result, there were a number of iterations of the Cable Corridor which are described in **Chapter 4: Site Selection and Alternatives** of the ES.
- 105 In addition, trenchless techniques (such as HDD) are proposed at number of locations along the Cable Corridor to avoid affecting surface features. These include at Thornton Burn, the East Coast Main Line railway, a small area of mixed woodland, and three broadleaf woodland shelterbelts designated as ancient woodland. The locations of ancient woodland are shown on **Figure 8.2 Nature Conservation Designations**.

⁷ Including DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites and British Standards Institute (2012) BS 5837:2012 Trees in relation to design, construction and demolition –Recommendations'.

106 **Appendices 8.7 and 8.8: Arboricultural Implications Assessment and Arboricultural Method Statement** include details of how trees will be protected through the use of trenchless techniques. Pits required for starting and receiving drilling machinery will be located outside Root Protection Areas, and bores will be made at a minimum depth of 60 cm below ground level to avoid tree roots.

107 Use of a trenchless technique will specifically prevent tree loss in the locations shown in **Table 10.13** below (see also **Chapter 5: Project Description**):

Location (OS grid reference)	Protected feature as a result of using a trenchless technique
375016, 674187	Vegetation associated with Thornton Burn, between beach and A1 road.
373109, 674846	Mixed shelterbelt planting on field boundary, south of Skateraw and A1
370629, 673494	Broad-leaved semi-natural shelterbelt, designated as ancient woodland
369724, 673345	Broad-leaved semi-natural shelterbelt, designated as ancient woodland (labelled Birky Bog Plantation on OS mapping)
369330, 673229	Broad-leaved semi-natural shelterbelt, designated as ancient woodland (labelled Whittly Strip on OS mapping)

Table 10.13: Locations where Trenchless Technique will prevent Tree Loss

10.10.4 Substation Mitigation

- 108 The substation will be constructed within the immediate vicinity of the existing Crystal Rig II substation.
- 109 The equipment used for the new substation will be similar to the electrical infrastructure already in place, within an outdoor compound. Materials and finishes used will be similar to those used in the existing substation.
- 110 Where possible, screening of the substation will be created by use of berms, and additional tree and scrub planting appropriate to the character of the landscape. Berms shall be shaped appropriately to ensure integration with the existing landscape character and topography. Substation planting proposals, including plant schedule and notes are provided in **Appendix 10.2**, and illustrated in **Figure 10.8**, and have been prepared following detailed advice given by East Lothian Officers for Landscape and Biodiversity.
- 111 Should the proposed Crystal Rig III and Aikengall II wind farms be consented, extensions to the existing substation will be required. It will be necessary to ensure compatibility between these extensions and the Neart na Gaoithe substation, in terms of site design, and also in terms of proposed mitigation. Agreement will be reached with other developers, where possible, on the timing of construction work, the detailed extent and appearance of berms, and the content of planting proposals, to ensure the various substations appear as a coherent element in the landscape. Additionally, consideration will be given to the compound extension currently being proposed by SPT, once more details are available.

10.11 Assessment of Residual Effects on Landscape and Visual Amenity

- 112 This section considers residual landscape and visual effects taking into account the mitigation measures outlined above, and assuming this work is successfully implemented.
- 113 As outlined in the methodology, landscape and visual assessments are separate but interlinked processes. Effects are described on the basis of the sensitivity of the receptor (landscape or viewer) and the nature and magnitude of the change to that receptor (including, when relevant, reference to them being long or short term, intermittent or continuous, direct or indirect, widespread or localised etc). The variables are all considered and brought together in order to make a judgement as to the overall **significance** of each effect. Sensitivities are assessed in Section 10.6 as part of the landscape baseline.

114 Effects on the landscape as a whole are considered in terms of landscape resources, landscape character and designated landscapes. These are composite attributes of landscape which intersect, rather than operate in isolation. As such effects on landscape resources, landscape character and designated landscapes are interrelated, and represent layers of the same landscape. For example, an overall effect on landscape character may be the result of a direct effect on a landscape resource, and in turn could affect a landscape designation; they are composite parts of the same overall landscape effect.

10.11.1 Effects on the Landscape during Construction and Decommissioning

10.11.1.1 Direct Effects upon Landscape Resources

115 The Cable Corridor works will predominantly involve OCT, with trenchless techniques (e.g. HDD) specifically employed to avoid the most sensitive landscape elements within each resource, including at woodland shelterbelts and areas of ancient woodland. Within all local landscape resource areas, effects will be localised, temporary and reversible, and therefore of a low magnitude of change.

116 Effects on landscape resources of Thorntonloch Beach will vary depending on whether a trenchless method (HDD) or the OCT method is used in connecting offshore and onshore cabling in the landfall area (inter-tidal works). Further investigations are required to establish whether a trenchless technique is technically possible in this area; this may not be possible depending on the ground conditions encountered. For both scenarios, effects will be localised, temporary and reversible and therefore of a **low** magnitude of change. If OCT is used the beach will be directly affected by excavation and burial works (and potentially by rock-breaking works). The length of this short-term effect will vary depending on the findings of ground investigations, but will be of **moderate** significance. If HDD is used, the drill will pass from the agricultural land to the west of the beach, to below Mean Low Water Springs, i.e. beneath the seabed/land surface, avoiding any effects on the landscape resource of the beach, in this instance, with an effect of **negligible** significance.

117 Between Thorntonloch Beach and the A1 road, disruption to the agricultural land to the west of the beach will be localised, resulting in temporary effects of locally **moderate** significance, based on the assumption that some semi-mature broad-leaved woodland associated with Thornton Burn will be removed for the installation of a temporary bridge, and will take time to fully reinstate.

118 The Cable Corridor then runs from the A1 Road to the Crystal Rig II substation, through the following localised landscape resource areas of varying sensitivity (see Section 10.6):

- the A1 road to East Coast Main Line railway;
- the East Coast Main Line railway to west of Innerwick;
- west of Innerwick to Tripslaw Hill Plantation; and
- Tripslaw Hill Plantation to Crystal Rig II substation.

119 Between the A1 road to the East Coast Main Line railway, sensitivity is low and the effect will be of **negligible** significance. From the East Coast Main Line railway to west of Innerwick, a shelterbelt will be avoided by use of a trenchless technique and other elements affected (arable land, hedgerows, a single stone wall and fences) will be restored, giving rise to an effect of **minor** significance.

120 Between west of Innerwick to Tripslaw Hill Plantation, there are a number of sensitive ancient woodland shelterbelts (with associated ditches/burns), each of which will be avoided through use of a trenchless technique. Other elements which will be affected include pasture and arable land, hedgerows, a single stone wall and fences. These will be restored, giving an overall effect of **minor** significance.

121 The Cable Corridor will follow the line of an existing private access track through the upland local landscape resource area between Tripslaw Plantation and the Crystal Rig II substation. There are some trees of high sensitivity either within or adjacent to the Application Boundary and the width of works in these locations has been designed to accommodate the protection and retention of mature trees of landscape and visual significance in this area. Affected resources include pasture and various types of marshy grassland, scrub and heath, which will be restored (by reseeded, promotion of natural recolonisation, or re-turfing). The effect on this landscape resource is of **minor** significance.

122 At the proposed location of the substation, next to the existing Crystal Rig II substation, the local landscape is of moorland character, comprising marshy grassland and bog. In the context of the adjacent existing development,

the landscape sensitivity is considered low as described in Section 10.6. Parts of the landscape resource in this area will be changed in the long-term, from moorland to a substation, and parts will be reinstated and the landform slightly modified to include a landscaped berm and some tree and scrub planting. The magnitude of change is therefore considered to be high. Overall, the effect on the landscape resource at the site of the proposed substation will be of **moderate** significance.

123 The effects arising from decommissioning of the Landfall and Cable Corridor on Landscape Resources is unlikely to be any worse than those predicted during construction. Removal of the cable in and around sensitive woodland (e.g. Ancient Woodland sites) would be undertaken with care to avoid damage to root systems. Landscape features damaged during decommissioning would be reinstated to their original condition.

124 The effect of decommissioning the substation is considered separately.

10.11.1.2 Direct and Indirect Effects upon Landscape Character

125 In the context of landscape character areas (LCAs), the construction of the landfall, Cable Corridor and substation will have a small and temporary influence on the overall landscape. Construction will directly affect localised areas within the *Dunbar Plain*, *Eastern Lammermuirs* and *Lammermuirs Plateau* LCAs as it passes through each. These small, localised changes in landscape character represent a low magnitude of change.

126 Within *Dunbar Plain* LCA, effects will arise from the inter-tidal works lasting between 4-7 months, and OCT next to the A1 and near to Innerwick. The effect on landscape character will be locally of **moderate** significance in the short term, but when considered as part of the whole character unit effects will be **negligible**.

127 Within the *Eastern Lammermuirs* LCA, effects will arise from the excavation of trenches and the burial of cables. Trenching will take place in sections of 500-1200 m. The cable installation rate (including construction of the haul road, excavation of the trench, cable laying and reinstatement) is estimated at 160m of cable per week. The effect on the character of the *Eastern Lammermuirs* LCA will be locally of **moderate** significance in the short term, but when considered as part of the whole character unit the effect will be **negligible**.

128 Within the *Lammermuirs Plateau* LCA, effects will arise from the Cable Corridor and from the construction of the substation. The construction of the substation is expected to take around 18 months and includes the removal of surface topsoil and peat, and levelling of the area (including berms), the installation of plinths, fabrication work, the installation of transformers, and the establishment of a site compound. The part of the *Lammermuirs Plateau* LCA which will be affected during construction is locally modified by the presence of the existing Crystal Rig I and II wind farms and substation. Due to the level of local activity during construction and length of construction programme, the effect on the character of *Lammermuirs Plateau* LCA will be locally of **moderate** significance, but **negligible** when considered as part of the whole character unit.

129 The effects arising from decommissioning of the Landfall and Cable Corridor on Landscape Character are not anticipated to any worse than those predicted during construction. The effect of decommissioning the substation is considered separately.

10.11.1.3 Consequential Effects as a result of Direct and Indirect Changes in Resources and Character upon Designated Landscapes

130 Views from Dunglass GDL are limited by the woodland which encloses the area. There are more open areas at the northwest fringe of the inventory-listed landscape, with views to the sea and along the coast. Within these views, construction works associated with the Onshore Works will be a minor element giving rise to a low magnitude of change, and a **negligible** effect on the listed landscape is predicted.

131 Broxmouth Park GDL is located 2.5 km north of the proposals. There will be no views of the construction works due to intervening topography and woodland. The magnitude of change is therefore imperceptible and a **negligible** effect is predicted.

132 The Woodland AGLV areas will not be directly affected by the Onshore Works. The magnitude of change will be **low** as there may be some indirect perception of the Onshore Works from within the Woodland AGLV. A **negligible** effect on the Woodland AGLV is predicted.

133 The Coastal AGLV designation covers Thorntonloch Beach and includes the John Muir Way above the high water mark. The degree to which the AGLV is directly affected depends on the method employed in joining offshore and

onshore cables as discussed in Section 11.11.1.1 'Direct effects upon landscape resources'. In either case, the magnitude of change will be low. As AGLVs are designated as outstanding areas of scenic attraction, it follows that the perceived scenic quality will be locally diminished during construction giving rise to a short-term effect of **moderate** significance. When considering the AGLV as a whole, there will be a **negligible** effect due to the scale and duration of the effect.

134 The Lammermuirs Hills AGLV and SLA together cover an area of upland moorland, with coastal views looking north from some locations. The perceived scenic quality will be locally diminished during construction giving rise to a short-term effect of **moderate** significance. When considering the designated areas as a whole, the magnitude of change will be medium since there will be a small but discernible change over a period of 18-24 months. Overall, there will be a **minor** effect due to the scale and duration of the effect.

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Landscape resources (direct, localised, temporary effects)			
Thorntonloch Beach	High	Low	Moderate (if OCT) Negligible (if HDD)
Thorntonloch Beach to the A1 road	Medium	Low	Moderate
The A1 road to East Coast Main Line railway	Low	Low	Negligible
East Coast Main Line railway to west of Innerwick	Medium	Low	Minor
West of Innerwick to Tripslaw Hill Plantation	High	Low	Minor
Tripslaw Hill Plantation to Crystal Rig II substation	Medium	Low	Minor
Crystal Rig II substation	Low	High	Moderate
Landscape character (overall direct and indirect, temporary effects)			
Dunbar Plain	Medium	Low	Negligible (when considered in context of character area as a whole)
Eastern Lammermuirs	Medium	Low	Negligible (when considered in context of character area as a whole)
Lammermuirs Plateau	Medium	Low	Negligible (when considered in context of character area as a whole)
Designated landscapes (overall direct and indirect, temporary effects)			
Dunglass GDL	High	Low	Negligible
Broxmouth Park GDL	High	Imperceptible	Negligible
Woodland AGLV	Medium	Low	Negligible
Coastal AGLV	Medium	Low	Negligible

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
			(when considered in context of AGLV as a whole)
Lammermuirs Hills AGLV and SLA	Medium	Medium	Minor (when considered in context of AGLV/SLA as a whole)

Table 10.14: Summary of Effects on the Landscape during Construction and Decommissioning

10.11.2 Effects on Visual Amenity during Construction and Decommissioning

135 At the landfall area, construction activity associated with the connection of offshore and onshore cables (whether by OCT or HDD) will be experienced by a number of different visual receptors (viewers), including by local residents at Thornton House Bed and Breakfast, Thornly and Thorntonloch, visitors to the caravan park, and users of the beach and John Muir Way. The inter-tidal works pose a short-term but obvious change in the character and quality of visual amenity, resulting in a high magnitude of change. Construction works will not integrate well with existing features in views and will become a focus for a short period of time. Temporary effects of **major** significance will therefore be experienced by viewers at Viewpoint 1 Thorntonloch, and in the localised area surrounding the construction works.

136 As the Cable Corridor passes alongside the A1 road, close views of the Cable Corridor construction activity will be experienced by motorists, as well as a number of local residents from scattered properties along the road. The process of OCT will be carried out in sections and will involve temporary disturbance to arable land, the presence of an open trench and movement of machinery and equipment. The cable installation rate (including construction of the haul road, excavation of the trench, cable laying and reinstatement) is estimated at 160m of cable per week. For motorists, views will be fleeting and in some places vegetation associated with motorway embankments will screen the works. Residential viewers will tend to experience the construction works in views alongside those of the A1 road, the East Coast Main Line railway (and infrastructure) and Torness Power Station and as such, the proposed works will result in a medium magnitude of change. Viewers at Viewpoint 2 Thornton Mill will therefore experience temporary effects of **moderate** significance.

137 Between the A1 and the north side of Blackcastle Hill, the Cable Corridor will pass through large scale arable and pastoral fields, crossing a number of minor roads, remnant hedgerows, stone walls and fences. OCT will be used to install cables in sections (though trenchless techniques will also be used in some localised areas). A number of recreational and residential receptors will be affected, including the village of Innerwick, Hunter Steadings, cottages and a caravan park at Thurston Manor and Ogle Lodge, north of Thurston Mains. At Viewpoint 3 Innerwick, representative of views of Innerwick, construction activity will be clearly visible a short distance away from the village, resulting in a medium magnitude of change and a short-term effect of **moderate-major** significance. At Viewpoint 4 Thurston Manor, construction activity will be viewed in the middle ground and in the context of wide views, resulting in a low magnitude of change and a short-term effect of **moderate** significance. At Viewpoint 5 Ogle Lodge, the Cable Corridor runs directly adjacent to the property and viewers will experience a high magnitude of change, giving rise of a short-term effect of **major** significance.

138 From Blackcastle Hill, wide panoramic views across the coastline are available to recreational viewers, and construction activity will be viewed as a narrow linear element in the view, partially screened by undulating topography and woodland. Viewers at Viewpoint 6 Blackcastle Hill would therefore experience a low magnitude of change and short-term effects of **minor** significance.

139 West of Ogle Lodge, the Cable Corridor continues to pass through agricultural land which contains few visual receptors. Mitigation measures include the use of a trenchless technique to pass beneath areas of significant woodland in this area, thereby avoiding long-term visual effects associated with the loss of the woodland, though the presence of the drilling rig would have short-term effects. Visual receptors will include users of minor roads, and farm workers. Residential receptors directly adjacent to the Cable Corridor are limited to those at Woodhall Farm who will locally experience a high magnitude of change, giving rise of a short-term effect of **major** significance. Viewpoint 7 Tripslaw Hill, located south of Woodhall Farm is located directly adjacent to the Cable

Corridor, at the point where the route follows an existing pylon line running southwest. Viewers here will experience a medium magnitude of change, resulting in short-term effects of **minor-moderate** significance.

140 From this point, the Cable Corridor follows a private access road to the existing Crystal Rig substation, through pasture, upland and culminating in the proposed substation located between Watch Law and Bransly Hill. The property of Weatherly, west of High Wood, is located around 100 m north of the Cable Corridor. Weatherly is situated on low ground with views south screened by rising topography, and is therefore unlikely to experience any effect. The derelict remains of a property are located at Boonslie.

141 Views of substation construction activity will be viewed in the context of the existing Crystal Rig II substation and turbines. At Viewpoint 8 Tay Burn, construction activity will be viewed at roughly the same level as the proposed substation, from a Core Path next to the Tay Burn. Due to the nature, scale and duration of the construction works, the magnitude of change will be medium, resulting in effects of **moderate** significance. Movement associated with construction activity will be seen in combination with the motion of the turbines. At Viewpoint 9 Bransly Hill, construction activity will be clearly visible in wide views of the area resulting in a medium magnitude of change and effect of **moderate** significance. At Viewpoint 10 Watch Law, construction activity will also be clearly visible from a distance, resulting in a medium magnitude of change and effect of **moderate** significance.

142 Generally, the effect of decommissioning on visual amenity is not anticipated to be any worse than predicted for construction. The effect of decommissioning the substation is considered separately.

Receptor	Name of Viewpoint	Sensitivity	Magnitude of Change	Significance of Effect
Viewpoint 1	Thorntonloch	High	High	Major
Viewpoint 2	Thornton Mill	High	Medium	Moderate
Viewpoint 3	Innerwick	High	Medium	Moderate-Major
Viewpoint 4	Thurston Manor	High	Low	Moderate
Viewpoint 5	Ogle Lodge	High	High	Major
Viewpoint 6	Blackcastle Hill	Medium	Low	Minor
Viewpoint 7	Tripslaw Hill	Low	Medium	Minor-Moderate
Viewpoint 8	Tay Burn	Medium	Medium	Moderate
Viewpoint 9	Bransly Hill	Medium	Medium	Moderate
Viewpoint 10	Watch Law	Medium	Medium	Moderate

Table 10.15: Summary of Effects on Visual Amenity during Construction and Decommissioning

10.11.3 Temporary Residual Effects on Landscape and Visual Amenity Post Construction/Decommissioning

143 There will be some residual effects on landscape and visual amenity post-construction/decommissioning, during the time taken to reinstate landscape features directly affected by such activities. Landscape features directly affected, and which will take varying periods of time to reinstate post-construction/decommissioning, include: agricultural land, stone walls, fences, sections of hedgerow, semi-natural grassland and semi-mature trees. Features such as agricultural land, stone walls and fences will be fully reinstated by Year 1 post-construction/decommissioning. Replacement of hedgerow will be fully reinstated by Year 5. Should replacement of semi-mature trees be required, it is anticipated that they would be fully reinstated by Year 10-15.

144 Effects on landscape character, designated landscapes and visual amenity will be of **minor** or **negligible** significance during this period. Effects on landscape resources will be of locally **moderate** significance during the reinstatement period.

10.11.4 Effects on Landscape during Operation

10.11.4.1 Direct Effects upon Landscape Resources

145 The installation of the landfall marker will not result in the loss of any significant landscape features, but will result in introduction of a new large sign within the context of a developed coast. The Thorntonloch Beach area of landscape is considered to be of high sensitivity. The sign will represent a low magnitude of change, and **minor** effects are predicted.

146 At the proposed location of the substation, next to the existing Crystal Rig II substation, the local landscape is of moorland character, comprising marshy grassland and bog. In the context of the adjacent existing development, the landscape sensitivity of the landscape resource is considered low as described in Section 10.6. Parts of the landscape resource in this area will be changed in the long-term, from moorland to a substation, and parts will be reinstated and slightly modified to include some changes to the landform, tree and scrub planting. The magnitude of change is therefore considered to be high. Overall, the effect on the landscape resource at the site of the proposed substation will be of **moderate** significance.

10.11.4.2 Direct and Indirect Effects upon Landscape Character

147 Assessment of effects on *Dunbar Plain* and *Eastern Lammermuirs* LCAs during operation of the landfall and Cable Corridor has been scoped out, as the cable will be underground.

148 The operation of the substation directly affects *Lammermuirs Plateau* LCA. The operation of the substation effectively extends the existing Crystal Rig II substation, by being positioned next to it (but as a new separate structure). This will intensify the influence of these man-made features on the character of the landscape and locally further reduce the open wildness qualities of the *Lammermuirs Plateau* LCA. Associated effects include the presence of permanent lighting and occasional movement of service vehicles to and from the area. Due to the local containment of the influence of the substation on character, in the context of the whole character unit, the magnitude of change will be low and the effect will be of **minor** significance.

10.11.4.3 Consequential Effects as a result of Direct and Indirect Changes in Resources and Character upon Designated Landscapes

149 The assessment of effects on *Dunglass* and *Broxmouth Path* GDLs during operation of the underground landfall and Cable Corridor has been scoped out, as well as the assessment of effects on *Coastal* and *Woodland* AGLVs.

150 The operation of the substation will directly affect the *Lammermuirs Hills* AGLV by locally reducing the scenic quality of the designated landscape. Due to the local containment of the influence of the substation on the designated qualities of the AGLV, the magnitude of change will be low and the effect will be of **minor** significance.

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Landscape resources (direct, long-term effect)			
Thorntonloch Beach	High	Low	Minor
Crystal Rig II substation	Low	High	Moderate
Landscape character (overall direct and indirect, long-term effect)			
Lammermuirs Plateau LCA	Medium	Low	Minor
Designated landscapes (overall direct and indirect, long-term effect)			
Lammermuirs Hills AGLV	Medium	Low	Minor

Table 10.16: Summary of Effects on the Landscape during Operation

10.11.5 Effects on Visual Amenity during Operation

151 The proposed landfall marker will be located at the landfall point, close to Viewpoint 1 and around 200 m from properties at Thorntonloch. Recreational users of the beach and coastal path will see the landfall marker within the

context of the developed coastline. At night a flashing yellow light will be visible, though this will be screened from landward, and there are unlikely to be viewers on the beach during darkness. Overall, the marker is considered a low magnitude of change, and the effect will be **minor**.

152 There are no residential viewers in the vicinity of the proposed substation, and visual receptors are limited to recreational users of the landscape, and those visiting the area when working. During operation of the substation, it will be viewed as an extension of existing energy infrastructure. Viewers at Viewpoints 8-10 will experience an increase in the influence of this infrastructure as the proportion of views occupied by the substation will expand into an open area of moorland. In the context of the existing substation and wind energy development, the magnitude of change will therefore be low, and as such the effect will be **minor**.

153 Due to the mitigation measures in the form of the berms and planting proposals to the north and west of the substation, viewers at Viewpoint 10 Watch Law will experience some screening of the substation by berms and increasingly by planting as it matures.

154 **Figures 10.5-10.7** provide visualisations of the proposed substation from these viewpoints, including berms. **Figures 10.7b1** and **10.7b2** have been produced to illustrate how the berm and planting will influence the view from Watch Law at Year 10 of operation. As viewpoints 8 and 9 are located to the east and south of the substation, and mitigation measures are located to the north and west of the substation, it is not anticipated that the implementation of berms and planting will alter these views.

Receptor	Name of Viewpoint	Sensitivity	Magnitude of Change	Significance of Effect
Viewpoint 1	Thorntonloch	High	Low	Minor
Viewpoint 8	Tay Burn	Medium	Low	Minor
Viewpoint 9	Bransly Hill	Medium	Low	Minor
Viewpoint 10	Watch Law	Medium	Low	Minor

Table 10.17: Summary of Effects on Visual Amenity during Operation

10.11.6 Effects on Landscape and Visual Amenity during Decommissioning of the Substation

155 The decommissioning of the substation will involve the demolition and removal of electric plant and foundations, transportation of material offsite, and the restoration of the landscape. Effects during the decommissioning of the substation are expected to be similar to those identified on receptors during the construction phase of substation works. Similarly, there will be some residual effects on landscape and visual amenity post construction, during the time taken to reinstate landscape features directly affected by decommissioning of the substation (refer to Section 10.11.3).

10.11.7 Cumulative and In Combination Effect

156 Cumulative effects are those additional (or in some cases reduced) effects which may result if their levels are greater than would result from each individual project alone. It is not an assessment of the total effects. Additional effects may arise when other parts of the project (in this case the Neart na Gaoithe Onshore Works), or other projects (in this case the Neart na Gaoithe Offshore Works), are constructed or co-exist concurrently.

157 Combined effects can result from separate parts of the project (i.e. Onshore and Offshore Works), when they are ongoing concurrently, potentially increasing the overall total magnitude and hence the total significance of the effect. They can also result from sequential works associated with separate parts of the project, thus increasing the overall duration of effects.

10.11.7.1 Cumulative and In Combination effects between Onshore and Offshore Works during construction

158 The Offshore and Onshore Works for Neart na Gaoithe will coincide at the landfall for the relatively short period of the inter-tidal works (a maximum of 4-7 months). Offshore and Onshore Work as a whole will be ongoing

concurrently/will occur in sequence for in the order of 18 months. As such, the combined duration of the works will remain short term.

159 Inter-tidal and wider onshore construction activity (whether by OCT or HDD) will be seen concurrently for a short period of time from Thorntonloch Beach (Viewpoint 1). Being close together, coincident work in the offshore and onshore inter-tidal areas will be experienced as being part of the same overall project, and will be seen in this same angle of view. Short term changes in views will be seen from parts of the Dunbar Plain LCA, and areas of the Coastal AGLV within it, but significant cumulative effects upon character are considered unlikely.

160 The Onshore Works will also be seen at the same time as the construction of the offshore wind turbines, further out at sea, from or near to Viewpoints 1-6 and Viewpoint 10. It will not be readily apparent to onshore viewers that the works are part of the same overall project, as they will be widely separated by distances of 25-40 km. Additionally, in some cases the Offshore Works may not be visible in the same direction of view as the Onshore Works, for example where Onshore Works appear in views south, and Offshore Works appear in views north.

161 The combined effects on the landscape and on views arising from the Onshore and Offshore Works will be no greater than those affecting the areas as a consequence of the Onshore Works when considered in isolation.

162 In a regional context, the additional cumulative effects will be **negligible**, a result of a low additional magnitude of change. This will be reduced further if HDD is used instead of OCT.

10.11.7.2 Cumulative and In Combination effects between Onshore and Offshore Works during operation

163 When operational, and once the traces of ground disturbance resulting from construction have blended back into the landscape, the buried inter-tidal works, and the on and offshore cabling will not result in any significant landscape and visual effects, either individually or in combination. As a consequence, no combined effects will result when considered alongside the operational wind turbines. Potential combined effects could only result from the offshore turbines and on and offshore substations.

164 The offshore wind turbines and onshore substation will be very widely separated by a minimum distance of 35 km. The turbines will be associated with the views from the coast and the open sea, whilst the substation will be associated with upland moorland in the vicinity of Crystal Rig Wind Farm. Different landscapes and viewers will be affected by each.

165 Although both the turbines and substations will exist concurrently for 25 years, it is not considered that there will be any additional cumulative effects on landscapes or viewers located between the two, over and above those resulting from the projects in isolation.

10.11.7.3 Cumulative Effects with Other Schemes

166 Construction of the proposed substation may potentially take place alongside construction of substations for the Crystal Rig III and Aikengall II wind farms, should they be consented. The combination of construction projects would result in multiple construction compounds within the immediate vicinity of the proposals. The construction of the wind farms may result in the addition of further construction activity into the wider landscape of the area. A large amount of construction activity will be visible from the footpaths which cross the area, including from viewpoints 8, 9, 10.

167 As set out with mitigation measures in Section 10.10, the timing of construction works will be agreed with other developers. This will reduce the potential for significant cumulative effects.

168 It is likely that there will be some shared use of the working area and compound within the development boundary around the proposed substation, giving rise to a high magnitude of change. The effect on the localised landscape resource area at the Crystal Rig II substation will be **moderate**, during both construction and operation due to the permanence of the change. The shared use of this area serves to avoid unnecessary additional damage to the surrounding landscape resource.

169 During construction, the cumulative effect of the proposed substation works in the context of other construction activities around the substation is considered to be **minor** overall for both *Lammermuirs Plateau* LCA and *Lammermuir Hills* AGLV, due to the level of local activity during construction and length of construction programme, when considered as whole units.

170 During the operational phase, the proposed substation will be present in the landscape along with the existing substation, substations for the Crystal Rig III and Aikengall II wind farms, should they be consented, and the additional SPT compound extension proposals for the connection of Neart na Gaoithe, should it also be consented (details to be finalised). Assuming a consistent approach to site design and mitigation will be taken, the substations would appear together as a large but coherent development within the landscape. In the context of existing and planned operational wind energy development in the area, the magnitude of change for *Lammermuirs Plateau* LCA is considered to be low, and for *Lammermuir Hills* AGLV is considered to be medium. The cumulative effect on both, during operation, is considered to be **minor**.

171 **Moderate** cumulative effects on views from viewpoints 8, 9, 10, will arise as a result of construction activities, due to the extent of the area affected and the length of time in which construction works will be ongoing, based on a low magnitude of change. Minor cumulative effects on views from viewpoints 8, 9, 10, are predicted during the operational phase, in the context of existing and planned operational wind energy development in the area.

172 Due to the inherent uncertainty associated with predicting the likely effects of decommissioning multiple schemes (and due to limited information being available), no assessment of the cumulative effects arising from decommissioning has been made.

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
During construction (direct and indirect, temporary effects)			
In Combination effects with Offshore Works			
Dunbar Plain LCA	Medium	Low	Negligible
Coastal AGLV	Medium	Low	Negligible
Viewpoint 1: Thorntonloch Beach (if HDD or OCT is used)	High	Low	Negligible
Viewpoint 2: Thornton Mill	Medium	Low	Negligible
Viewpoint 3: Innerwick	Medium	Low	Negligible
Viewpoint 4: Thurston Manor	Low	Low	Negligible
Viewpoint 5: Ogle Lodge	High	Low	Negligible
Viewpoint 6: Blackcastle Hill	Low	Low	Negligible
Viewpoint 10: Watch Law	Medium	Low	Negligible
Cumulative effects with other schemes			
Landscape resource: Crystal Rig II substation	Low	High	Moderate
Lammermuirs Plateau LCA	Medium	Low	Minor (when considered in context of LCA as a whole)
Lammermuirs Hills AGLV	Medium	Medium	Minor (when considered in context of AGLV as a whole)

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Viewpoint 8: Tay Burn	Medium	Low	Moderate
Viewpoint 9: Bransly Hill	Medium	Low	Moderate
Viewpoint 10: Watch Law	Medium	Low	Moderate
During operation (direct and indirect, long-term effects)			
In Combination effects with Offshore Works			
None identified			
Cumulative effects with other schemes			
Landscape resource: Thorntonloch Beach	High	Low	Negligible
Lammermuirs Plateau LCA	Medium	Low	Minor (when considered in context of LCA as a whole)
Lammermuirs Hills AGLV	Medium	Medium	Minor (when considered in context of AGLV as a whole)
Landscape resource: Crystal Rig II substation	Low	High	Moderate
Viewpoint 8: Tay Burn	Medium	Low	Minor
Viewpoint 9: Bransly Hill	Medium	Low	Minor
Viewpoint 10: Watch Law	Medium	Low	Minor

Table 10.18: Summary of Cumulative Effects

10.12 Summary of Residual Landscape and Visual Effects

173 The duration of effects can vary, as can the extent of the affected area. Effects arising during different phases of the project can be either short term (e.g. visibility of machinery, or routine maintenance procedures), or long term (e.g. loss of woody vegetation, or the permanent presence of a new structure). Similarly, effects may be localised (e.g. affecting the character of a small part of a geographic area, or specific to a single view), or may affect a wider area (e.g. with consequential effects on the overall quality of a designated landscape, or visible across a wide area). They can also be direct and indirect.

174 The following text provides a summary of the findings of the landscape and visual impact assessment and of the nature of effects expected as a result of this project.

175 Effects arising from the Onshore Works will vary according to the different phases of the works. It is considered that significant effects will arise during construction (and potentially during decommissioning of the landfall and Cable Corridor), but not during operation. The substation will be visible throughout operation and will be removed

during decommissioning. It is considered that the key longer term effects of the Onshore Works will arise during operation of the substation.

- 176 Effects on landscape character arising from the construction (and decommissioning) of the cable will be localised and temporary, affecting *Dunbar Plain*, *Eastern Lammermuirs* and *Lammermuirs Plateau* LCAs as it passes through each. Effects will be locally of **moderate** significance in the short term (i.e. during construction/decommissioning). There will be a **negligible** effect during construction (and decommissioning) on these character units as a whole.
- 177 The substation is proposed within *Lammermuirs Plateau* LCA. Effects on landscape character arising during construction and decommissioning will be locally of **moderate** significance. During long term operation, the presence of the substation will be seen as an extension to the existing Crystal Rig II substation and the associated existing wind farm. Its effect on landscape character during operation is therefore considered to be of **minor** significance.
- 178 The Onshore Works are designed to minimise direct disturbance of landscape elements such as distinctive landforms, more visually important vegetation such as shelterbelts, burns etc. During construction of the inter-tidal works, if OCT is used, there will be **moderate** effects on the landscape resource of Thorntonloch Beach. During construction of the Cable Corridor, the loss of vegetation and activity next to Thornton Burn will result in some localised effects of **moderate** significance to the landscape resources between Thorntonloch Beach and the A1 road. Decommissioning effects are expected to be similar.
- 179 Direct effects relating to landscape resources along the Cable Corridor will be temporary, but the remaining gaps in areas of scrub and hedgerows will give rise to longer term residual effects, until new planting has grown to maturity (5-15 years). Disturbed areas of fields will quickly tie back into adjacent areas. The associated built infrastructure (cable route markers and manholes) will be very small components of the landscape.
- 180 At the proposed location of the substation, the effect on local landscape resources north of the existing Crystal Rig II substation will constitute a permanent change. This moorland area will be partly taken over by the substation itself, and the remaining working area will be slightly modified by the introduction of berms and native planting. To this end, the effect on the landscape resource in this location during both construction and operation will be of **moderate** significance.
- 181 The Onshore Works will not affect any nationally designated sites. The Cable Corridor and substation are proposed within two Areas of Great Landscape Value (AGLVs); the Coastal and Lammermuir Hills AGLVs. Effects arising from construction (and potentially decommissioning) will be locally of temporary **moderate** significance (relating to direct effects on landscape resources). Considered as a whole, the effect on the Coastal AGLV will be **negligible** during construction, operation and decommissioning. The effect on the Lammermuir Hills AGLV will be **minor** during construction, operation and decommissioning due to the permanence of the substation.
- 182 Visual effects on residential receptors will relate to the construction (and potentially decommissioning) of the Cable Corridor, and the direct loss and subsequent reinstatement of landscape resources, and will be temporary. As a consequence of the proposed location of the substation, long-term visual effects arising from this aspect of the project will tend to affect receptors on recreational routes, rather than those in residential properties.
- 183 Short term visual effects of **major** or **moderate-major** significance arising during construction (and potentially decommissioning) will occur in views at: Thorntonloch (Viewpoint 1), including from the beach, caravan park and other nearby properties; from Innerwick (Viewpoint 3); Ogle Lodge (Viewpoint 5); and additionally from Woodhall Farm, north of Viewpoint 7.
- 184 Short term visual effects of **moderate** or **minor-moderate** significance arising during construction (and potentially decommissioning) will occur in views at: Thornton Mill (Viewpoint 2), Thurston Manor (Viewpoint 4), Tripslaw Hill (Viewpoint 7), and in viewpoints in the Lammermuir Hills (Viewpoints 8, 9, 10).
- 185 Cumulative and in combination effects may arise from the proposed substation in addition to construction and operation of other proposed substation extensions, should these be consented. The increased size and scale of the substation will give an impression of continued energy infrastructure development in the area, and will reinforce the established characteristics associated with this type of development. Some **moderate** effects are predicted at construction stage, reducing to **minor** (or lower significance) effects during operation.
- 186 **Table 10.19** below summarises the predicted effects.

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Construction and decommissioning (short-term and temporary effects)			
Landscape resource: Thorntonloch Beach	High	Low	Moderate (if OCT) Negligible (if HDD)
Landscape resource: Thorntonloch Beach to the A1 road	Medium	Low	Moderate
Landscape resource : The A1 road to East Coast Main Line railway	Low	Low	Negligible
Landscape resource: East Coast Main Line railway to west of Innerwick	Medium	Low	Minor
Landscape resource: West of Innerwick to Tripslaw Hill Plantation	High	Low	Minor
Landscape resource: Tripslaw Hill Plantation to Crystal Rig II substation	Medium	Low	Minor
Landscape resource: Crystal Rig II substation	Low	High	Moderate
Dunbar Plain LCA	Medium	Low	Negligible (when considered in context of Character Area as a whole)
Eastern Lammermuirs LCA	Medium	Low	Negligible (when considered in context of Character Area as a whole)
Lammermuirs Plateau LCA	Medium	Low	Negligible (when considered in context of Character Area as a whole)
Dunglass GDL	High	Low	Negligible
Broxmouth Park GDL	High	Imperceptible	Negligible
Woodland AGLV	Medium	Low	Negligible
Coastal AGLV	Medium	Low	Negligible (when considered in context of AGLV as a whole)

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Lammermuirs Hills AGLV and SLA	Medium	Medium	Minor (when considered in context of AGLV/SLA as a whole)
Viewpoint 1: Thorntonloch	High	High	Major
Viewpoint 2: Thornton Mill	High	Medium	Moderate
Viewpoint 3: Innerwick	High	Medium	Moderate-Major
Viewpoint 4: Thurston Manor	High	Low	Moderate
Viewpoint 5: Ogle Lodge	High	High	Major
Viewpoint 6: Blackcastle Hill	Medium	Low	Minor
Viewpoint 7: Tripslaw Hill	Low	Medium	Minor-Moderate
Viewpoint 8: Tay Burn	Medium	Medium	Moderate
Viewpoint 9: Bransly Hill	Medium	Medium	Moderate
Viewpoint 10: Watch Law	Medium	Medium	Moderate
Operation (direct, long-term effect)			
Landscape resource: Thorntonloch Beach	High	Low	Minor
Landscape resource: Crystal Rig II substation	Low	High	Moderate
Lammermuirs Plateau LCA	Medium	Low	Minor
Lammermuirs Hills AGLV	Medium	Low	Minor
Viewpoint 1: Thorntonloch	High	Low	Minor
Viewpoint 8: Tay Burn	Medium	Low	Minor
Viewpoint 9: Bransly Hill	Medium	Low	Minor
Viewpoint 10: Watch Law	Medium	Low	Minor
In Combination effects with Offshore Works			
Construction (short-term and temporary effects)			
Dunbar Plain LCA	Medium	Low	Negligible
Coastal AGLV	Medium	Low	Negligible

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Viewpoint 1: Thorntonloch Beach (if HDD or OCT is used)	High	Low	Negligible
Viewpoint 2: Thornton Mill	Medium	Low	Negligible
Viewpoint 3: Innerwick	Medium	Low	Negligible
Viewpoint 4: Thurston Manor	Low	Low	Negligible
Viewpoint 5: Ogle Lodge	High	Low	Negligible
Viewpoint 6: Blackcastle Hill	Low	Low	Negligible
Viewpoint 10: Watch Law	Medium	Low	Negligible
During operation (direct and indirect, long-term effects)			
None identified			
Cumulative Effects with Other Schemes			
Construction (short-term and temporary effects)			
Landscape resource: Crystal Rig II substation	Low	High	Moderate
Lammermuirs Plateau LCA	Medium	Low	Minor (when considered in context of LCA as a whole)
Lammermuirs Hills AGLV	Medium	Medium	Minor (when considered in context of AGLV as a whole)
Viewpoint 8: Tay Burn	Medium	Low	Moderate
Viewpoint 9: Bransly Hill	Medium	Low	Moderate
Viewpoint 10: Watch Law	Medium	Low	Moderate
During operation (direct and indirect, long-term effects)			
Landscape resource: Thorntonloch Beach	High	Low	Negligible
Landscape resource: Crystal Rig II substation	Low	High	Moderate

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
Lammermuirs Plateau LCA	Medium	Low	Minor (when considered in context of LCA as a whole)
Lammermuirs Hills AGLV	Medium	Medium	Minor (when considered in context of AGLV as a whole)
Viewpoint 8: Tay Burn	Medium	Low	Minor
Viewpoint 9: Bransly Hill	Medium	Low	Minor
Viewpoint 10: Watch Law	Medium	Low	Minor

Table 10.19: Summary of Predicted Residual Effects

10.13 References

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