

9 Cultural Heritage

9.1 Introduction

1 This chapter considers the potential effects of the proposed Onshore Works for the Neart na Gaoithe Offshore Wind Farm, on cultural heritage assets (defined in paragraphs 12 and 13 below). The cultural heritage assessment was undertaken by CFA Archaeology Ltd (CFA), informed by comments and information provided by Historic Scotland (HS) and the East Lothian Council Archaeology Service (ELCAS).

9.1.1 Study Area

2 The cultural heritage study area was divided into two zones: a Core Study Area and an Outer Study Area.

3 The Core Study Area consists of a corridor, generally 500 m wide but expanded locally where necessary (for example around the proposed substation infrastructure at Crystal Rig, where the Application Boundary is wider than elsewhere, and at other locations where proposed development features such as construction compounds are located to one side of the proposed cable route). It is centred along the Cable Corridor between the landfall at Thorntonloch and the Substation Site at Crystal Rig wind farm, except for a short section south of Ogle Lodge, where the route was revised after the study had been completed but remained within the Core Study Area and readjustment of its boundary was not considered necessary (Figures 9.1 and 9.2). The Core Study Area also includes part of the intertidal area where the application boundary extends onto Thorntonloch beach. The Core Study Area was felt to be sufficiently wide to identify cultural heritage sites and features close to, or within, the proposed Application Boundary, and to provide additional background information on the archaeological potential of the land within the Application Boundary.

4 The Core Study Area is divided into two parts (Figure 9.1):

- An Inner Corridor, generally 200 m wide, centred on the proposed Onshore Works, for which detailed desk-based assessment and reconnaissance field survey were conducted; and
- A buffer generally 150 m wide to either side of the Inner Corridor centred on the proposed Onshore Works, for which less detailed desk-based information only was gathered. The sites identified within the buffer provided background information used for assessing the archaeological potential of the land within the Application Boundary.

5 Figure 9.2a-d depicts the proposed cable route and substation, together with the locations of archaeological sites and features identified by the cultural heritage study within the Core Study Area. A gazetteer of those sites located in the Inner Corridor detailing the current baseline condition and an assessment of the sensitivity of each site, is provided in Appendix 9.1. A list of cultural heritage sites and features within the buffer of the Core Study Area is in Appendix 9.2.

6 The Outer Study Area consists of an area extending for 5 km from the proposed substation, and is an area within which the potential effects of the proposals on the setting of cultural heritage assets were assessed. This area was selected as the proposed substation would form the only substantial permanent upstanding element of the proposed Onshore Works. A proposed Cable Marker to be located close the Landfall point is considered to be of insufficient scale to have any potentially significant effects on the setting of cultural heritage assets. Figure 9.3 shows the proposed substation and Outer Study Area boundary together with the zone of theoretical visibility (ZTV) and key cultural heritage receptors. Appendix 9.3 contains a list of external receptors present within 5 km of the proposed substation for reference purposes.

7 This chapter makes use of the ZTV mapping produced as part of the Landscape and Visual Impact Assessment (Chapter 10: Landscape and Visual Amenity). The assessment of effects on ancient woodland is included in Chapter 8: Terrestrial and Inter-tidal Ecology and Ornithology.

9.1.2 Effects Assessed in Full

8 The following effects have been assessed in full:

- Direct effects on all cultural heritage interests, either designated or non-designated;

- Indirect effects on the setting of designated cultural heritage sites, including: Scheduled Monuments; Listed Buildings; Conservation Areas; Historic Battlefields; and Gardens and Designed Landscapes (GDL) within a 5 km radius of the proposed substation infrastructure;
- Cumulative effects on cultural heritage resources of the Onshore Works in combination with other developments in the planning system.

9.1.3 Effects Scoped Out

9 On the basis of the desk-based assessment and reconnaissance field survey work undertaken, the professional judgement of the EIA team and experience from other relevant projects, the following topic areas have been 'scoped out', as proposed in the Scoping Report:

- Disturbance from vibration, dewatering or changes in hydrology resulting in indirect effects on cultural heritage features and sites;
- Temporary effects on the setting of nearby cultural heritage features during construction (Chapter 10: Landscape and Visual Amenity) assesses the effect on GDLs within 3 km of the Application Boundary in terms of landscape amenity.

9.2 Guidance and Legislation

10 Scotland's historic environment contributes to the Scottish Government's strategic objectives and to the target of improving the state of Scotland's historic buildings, monuments and environment, which is identified as a national indicator and target under the National Performance Framework (Scottish Government, 2011a). The Scottish Historic Environment Policy (SHEP) sets out Scottish Ministers' policies for the historic environment, and provides policy direction for Historic Scotland and a framework that informs the day-to-day work of a range of organisations that have a role and interest in managing the historic environment (Historic Scotland, 2011b). Through the implementation of the SHEP, Scottish Ministers wish to achieve three outcomes for Scotland's historic environment:

1. That the historic environment is cared for, protected and enhanced for the benefit of our own and future generations;
2. To secure greater economic benefits from the historic environment; and
3. That the people of Scotland and visitors to our country value, understand and enjoy the historic environment.

11 Cultural heritage resources include sites with statutory and non-statutory designations as set out in Scottish Planning Policy (SPP) (Scottish Government, 2010).

12 Sites with statutory designations include:

- Scheduled Monuments;
- Listed Buildings;
- Conservation Areas;
- Historic Battlefields;
- Gardens and Designed Landscapes; and
- Designated Shipwrecks.

13 Sites with non-statutory designations include:

- World Heritage Sites;
- Archaeology; and
- Other Historic Environment Interests.

14 SPP requires that planning authorities ensure that Development Plans provide a framework for the protection, conservation and enhancement of the historic environment to allow the assessment of the effect of proposed development on the historic environment and its setting (para 112). Planning Advice Note (PAN) 2/2011: Planning and Archaeology (Scottish Government, 2011b) advises that, in determining planning applications, planning authorities should take into account the relative importance of archaeological sites (para 5). It also notes that in determining planning applications that may affect archaeological features or their setting, planning authorities may

on occasion have to balance the benefits of development against the importance of archaeological features (para 6). The desirability of preserving a monument (whether scheduled or not) is a material consideration and the objective should be to assure the protection and enhancement of monuments by preservation *in situ*, in an appropriate setting. When preservation *in situ* is not possible, recording and/or excavation followed by analysis and publication of the results may be an acceptable alternative (para 14).

15 Those asset designations relevant to this assessment are Scheduled Monuments, Listed Buildings, Conservation Areas, and archaeology and other historic environment interests as there are no other asset classifications present within the Core Study Area or Outer Study Area.

9.2.1 Sites with Statutory Designations

9.2.1.1 Scheduled Monuments

16 Under the Ancient Monuments and Archaeological Areas Act 1979, Scottish Ministers are required to compile and maintain a schedule of monuments considered to be of national importance. The consent of Scottish Ministers is required before any works are carried out which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument. In addition, effects of proposed development works upon the setting of a Scheduled Monument form an important consideration in the granting or refusal of planning consent to conduct development works.

9.2.1.2 Listed Buildings and Conservation Areas

17 Under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, the Scottish Ministers are required to compile a list of buildings of special architectural or historic interest. Such buildings are classified into Categories A, B and C(S), in decreasing order of importance. Planning authorities and the Scottish Ministers are required to have special regard for the desirability of preserving Listed Buildings and their settings, and any features of special architectural or historic importance they possess.

18 The same Act provides for planning authorities (and exceptionally the Scottish Ministers) to designate and protect Conservation Areas, which are areas of special architectural or historic interest which merit preservation or enhancement.

9.2.2 Sites with Non-Statutory Designations

9.2.2.1 Archaeology and Other Historic Environment Interests

19 There is a range of other non-designated archaeological sites, monuments and areas of historic interest, including, historic landscapes, other gardens and designed landscapes, battlefields, woodlands and routes such as drove roads that do not have statutory protection. Sites without statutory protection are curated by the local planning authority, and SPP and PAN 2/2011 provide national planning policy guidance and advice on the treatment of such resources.

9.2.3 Data Sources

20 A desk-based study and a reconnaissance field survey were undertaken to assess the potential cultural heritage sensitivity of the proposed Onshore Works. No intrusive site investigation work was undertaken during the assessment.

21 This assessment has been conducted in accordance with the Institute for Archaeologists Code of Conduct (IfA, 2010), and Standard and Guidance for Archaeological Desk-based Assessment (IfA,2011).

9.2.4 Desk-Based Study

22 Up-to-date information was obtained from appropriate sources (see below) on the locations and extents of cultural heritage sites with statutory protection and non-statutory designations within the Core Study Area.

23 Details of the locations and extents of Scheduled Monuments, Listed Buildings, Conservation Areas, Gardens and Designed Landscapes and Historic Battlefields were downloaded from the Historic Scotland Spatial Data Warehouse (Historic Scotland, 2011a). Additional information was obtained on known archaeological sites and features from the East Lothian Council Historic Environment Record (HER).

24 Information on the character and condition of known archaeological sites and features within the Core Study Area was obtained from the National Monuments Record of Scotland (NMRS) (RCAHMS, 2011a).

25 Ordnance Survey maps and other early maps held by the Map Library of the National Library of Scotland were examined, to provide information on sites of potential archaeological significance and on historic land-use within the Inner Corridor.

26 For the Inner Corridor, an assessment was made of the most relevant vertical aerial photograph collections held by The Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS); sorties dating from 1946 to 1981 were examined. In addition, available modern online aerial photography images (Google™ 2011) were examined.

27 Bibliographic references were consulted to provide background and historical information.

28 The online Historic Land-Use Assessment Data for Scotland (HLAMap) (RCAHMS, 2011b), maintained by the RCAHMS, was consulted for information on the historic land-use character of the Core Study Area.

29 The Scottish Palaeoecological Archive Database (SPAD) (Coles *et al*, 1998) which records the distribution of known palaeoenvironmental sites across Scotland was consulted for information on palaeoenvironmental data within or adjacent to the Inner Corridor.

30 A list of all sources consulted during the assessment is provided at the end of this report.

9.2.5 Reconnaissance Field Survey

31 A RCAHMS Level 1 (RCAHMS, 2004-9) walk-over reconnaissance field survey was undertaken within the Inner Corridor to:

- Assess the present baseline condition of the known archaeological and heritage features, identified through the desk-based assessment;
- Identify any further sites or features of cultural heritage interest not detected from the desk-based studies; and
- Assess the Inner Corridor for its potential to contain currently unrecorded, buried archaeological remains.

32 Areas of dense forestry or woodland were not surveyed in detail due to the inaccessible nature of the ground cover.

33 Identified sites were recorded on pro-forma monument recording forms and by digital photography, and their positions (and where appropriate their extents) were logged using a Global Positioning System (GPS).

9.3 Engagement

34 Scoping responses raising cultural heritage issues were received from Historic Scotland and ELCAS, who were consulted as part of the pre-application consultation process. A summary of consultation responses is outlined in **Table 9.1**.

35 A meeting between CFA, Mainstream and HS was held on the 26th October 2011 concerning proposed construction works close to Thurston enclosures and ring ditch (Scheduled Monument Index No.5870, Sites 23 and 24 below). The proposed cable route was later revised and the Scheduled Monument area completely avoided (see below).

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
Historic Scotland (31.01.12)	Scoping	Stated that potential direct and indirect impacts to Scheduled Monuments, Category A Listed Buildings, Inventory GDLs and designated wreck sites should be considered in the ES, and that all elements of the development should be planned to avoid adverse direct and indirect impacts on these features. Direct impacts from the proposed development should be considered for the following sites: Thornton Mill (Index No. 3990); Skateraw, ring ditches and cropmarks	Noted. No effects identified.

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		<p>(Index 4040); Dryburn Bridge, enclosure (Index No. 4038); Thurston enclosures and ring ditch (Index No. 5870); Corsick Hill (Index No. 5769); Thurston Home Farm (HB NUM 7711); Thurston Mains enclosure (Index No. 5845); Woodhall Farm enclosure (Index No. 5930); Dunbar II Historic Battlefield.</p> <p>Noted the meeting between HS and CFA concerning the proposed construction works close to Thurston enclosures and ring ditch (Index No.5870), and noted that there is no planned direct impact on the Scheduled Area. Any measures taken to protect accidental damage to the Scheduled Area should be set out in the ES and Construction Management Plan.</p> <p>Stated that given that the substation is the only upstanding element of the proposed development, the proposed 3 km assessment area for the identification of external receptors is reasonable.</p> <p>Were generally happy with the proposed methodology but had concerns regarding cultural heritage features whose immediate surroundings are single species woodland such as commercial forestry. Such surroundings are temporary; indirect impacts on cultural heritage features within forestry should also be assessed.</p> <p>Stated that impacts on marine cultural heritage should also be considered as the survey corridor includes an offshore area</p>	<p>Noted. No direct effects identified (See Figures 9.2a-d)</p> <p>Cable Corridor now entirely avoids Scheduled Area (see Figure 9.2b)</p> <p>Noted, but see ELCAS response below</p> <p>Noted, but not applicable to this assessment as there is no predicted intervisibility between the substation and any designated cultural heritage site within the Outer Study Area.</p> <p>Development does not extend into marine zone – for effects on marine cultural heritage refer to the Offshore EIA, (Neart na Gaoithe Offshore Wind Farm Environmental Statement, July 2012, Chapter 19 ‘Maritime Archaeology and Cultural Heritage’).</p>
ELCAS (31.01.12)	Scoping	<p>Confirmed that the proposed methodology is acceptable.</p> <p>Noted that the EIA should seek to identify sites or areas that may need to be mitigated for prior to commencement of construction</p>	<p>Noted. See Assessment section of chapter</p>

Consultee	Scoping/Other Consultation	Issue Raised	Response/Action Taken
		<p>works. Provision should also be made for uncovering previously unknown but significant remains during construction, and should not be dealt with solely by watching brief.</p> <p>Stated that 5 km is their recommended assessment distance for the identification of external receptors whose settings may be affected by the proposed development. Relevant key receptors outwith this assessment zone should also be identified and assessed as part of the EIA.</p>	<p>Noted, 5 km limit was used for identification of external receptors (Figure 9.3). No receptors at greater distance identified.</p>
Historic Scotland (10.01.12)	Other consultation	As for Scoping Response	
ELCAS (27.01.12)	Other Consultation	As for Scoping Response	
ELCAS (20.08.12)	Other Consultation (meeting)	<p>The meeting confirmed that a draft version of this chapter circulated for discussion at the meeting met the requirements of ELCAS in most respects. The following issues were identified as requiring further consideration:</p> <p>In areas of high archaeological sensitivity along the development route, archaeological issues need to be identified and dealt with before construction works commence. Archaeological evaluation, followed by avoidance by micrositing and/or further archaeological investigation and recording, was highlighted as an appropriate approach to mitigation in these areas.</p> <p>The historic farming settlement at Boonslie has been nominated by ELC as a potential candidate for scheduling. Historic Scotland is presently assessing whether this site fulfils the criteria of ‘national importance’ to justify scheduling it.</p> <p>The beach at Thorntonloch does not appear to be an area of archaeological sensitivity.</p>	<p>Section 9.6 is intended to fulfil the requirements of ELCAS as regards archaeological mitigation strategy.</p> <p>This chapter takes into account this information, and treats the remains within the Core Study Areas as most likely to relate to Boonslie as being of high sensitivity (national importance), and as if they were scheduled.</p> <p>Noted.</p>

Table 9.1: Consultation Responses

9.4 Assessment Methodology

9.4.1 Assessing Significance

36 The assessment of sensitivity of archaeological and heritage assets has been determined from the relative weight which statute and policy attach to them, principally as published in SPP and SHEP. **Table 9.2** summarises the relative sensitivity of relevant cultural heritage resources.

Sensitivity	Definition/Criteria
High	Sites of national or international importance, including: Scheduled Monuments, and sites proposed for scheduling; Undesignated archaeological sites and areas of likely national importance identified in the HER; and Category A Listed Buildings
Medium	Sites of regional importance, including: Archaeological sites and areas of distinctive regional importance; Category B Listed Buildings; and Conservation Areas
Low	Sites of local importance, including: Archaeological sites of local importance; Category C(S) Listed Buildings; and Unlisted historic buildings and townscapes with local (vernacular) characteristics
Negligible	Sites of little or no importance, including: Find-spots; Unlisted buildings of minor historic or architectural interest; and Poorly preserved examples of particular types of feature

Table 9.2: Sensitivity of Cultural Heritage Assets

9.4.2 Assessment of Direct Effects

37 Direct effects of the proposed Onshore Works on cultural heritage assets are assessed on the basis of their nature (beneficial, neutral or adverse), longevity (reversible, short-term or long-term; irreversible, permanent) and significance (magnitude of change and sensitivity of asset). Mitigation measures designed to prevent, reduce or offset significant adverse effects are proposed, and residual effects are assessed taking into account the likely effectiveness of the mitigation proposed.

38 The magnitude of change has been assessed using the following definitions outlined in **Table 9.3**. The definitions outlined measure the degree of change to the baseline condition of a feature that would result from the construction of one or more elements of the Onshore Works.

Level of Magnitude	Definition
High	A fundamental change to the baseline condition of the receptor, leading to total or major alteration of character.
Medium	A material, partial alteration of character.
Low	Slight, detectable alteration of the baseline condition of the receptor.
Imperceptible	A barely distinguishable change from baseline conditions.

Table 9.3: Magnitude of Direct Effects

39 The predicted significance of the effect was determined through a standard method of assessment. The assessment was based on professional judgement, considering both sensitivity and magnitude of change, as outlined in **Table 9.4** below.

Magnitude of Effect ▼	Value/Sensitivity of Asset ►			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Imperceptible	Minor	Negligible	Negligible	Negligible

Table 9.4: Significance of Direct Effects

40 The significance of effect is classified in **Table 9.4** as major, moderate, minor or negligible; definitions of the terms used in **Table 9.4** are provided in **Table 9.5**. Major and moderate effects are considered significant in the context of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. Where no effect has been predicted, the terms 'negligible (no effect)' is used to indicate this.

Significance of Effect	Description
Major	A change to the fabric that leads to a substantial material effect on the character, quality or context of a receptor
Moderate	Changes to the fabric that leads to a partial material effect on the character, quality or context of a receptor
Minor	Changes to the fabric that leads to a detectable but non-material effect on the character, quality or context of a receptor.
Negligible	Changes to the fabric that leads to, at most, a negligible effect on the character, quality or context of a receptor (Includes sites for which there will be no effect)

Table 9.5: Significance Criteria

9.4.3 Identification of External Receptors and Assessment of Potential Effects on their Setting

41 As was stated in the Scoping Report (January 2012), the proposed substation infrastructure is the only major permanent upstanding element of the Onshore Works, and the effects on setting to significant receptors present, have been assessed only in relation to this, and not the underground cable works. Temporary effects on the setting of Innerwick Conservation Area and other nearby designated sites, resulting from construction work, have also been scoped out of the assessment as these would be short-term and not significant.

42 An Outer Study Area with a radius of 5 km and centred upon the proposed substation infrastructure was applied to identify any designated features for which their setting may be affected, and this has taken into account potential intervisibility according to the ZTV model.

43 Details were obtained of Scheduled Monuments and Listed Buildings (there was no Conservation Area, GDL or Historic Battlefield present within that area). The locations of these receptors were plotted against the ZTV to assess whether or not there would be theoretical visibility of the substation from each receptor.

44 The above analysis indicated that there would be no receptor with theoretical visibility of the proposed substation (**Figure 9.3**). Further appraisal indicated that there was no case where both the receptor and the proposed substation would be co-visible in important views from a different location to that of the receptor. For this reason, no further assessment of indirect effects was undertaken, and the relevant methodology for undertaking such assessment has been omitted here. However, the methods were provided to Historic Scotland and ELCAS as part of the earlier consultation process (see above).

9.4.4 Cumulative and In-combination Effects Assessment Approach

- 45 The assessment of cumulative effects on cultural heritage considers the construction (direct) and operational (indirect) effects of the Onshore Works on cultural heritage, in combination with other schemes currently in the planning system. The following developments have been assessed for cumulative effects: Aikengall II wind farm, Aikengall II substation; Crystal Rig III wind farm, and the SPT NnG scheme.
- 46 A cumulative direct effect would be predicted where the Onshore Works and one or more of the other developments being considered are predicted to have a direct effect on the same cultural heritage asset. A cumulative indirect effect would be predicted where the Onshore Works and one or more of the other developments being considered are predicted to have operational (indirect) effects on the setting of a cultural heritage receptor within 5 km of the proposed Onshore Works substation.
- 47 The assessment of in-combination effects on cultural heritage considers the cumulative construction and operational effects arising from the Onshore Works in combination with the Offshore Works.

9.5 Baseline Description

9.5.1 Existing Conditions

- 48 This section presents:
- A summary of the type and quantity of cultural heritage sites and features identified through desk-based resources and reconnaissance field survey within the Inner Corridor;
 - The current baseline condition of designated and non-designated cultural heritage sites and features within the Inner Corridor; and
 - An assessment of the archaeological potential of the Core Study Area as a whole.
- 49 Numbers in brackets in the following sections, refer to site numbers identified within the Core Study Area and depicted on **Figures 9.2a-d**
- 50 Numbering does not run sequentially as the study corridor boundaries have been modified since the desk-based study was first undertaken, reflecting design changes. Several sites originally identified are no longer within the Core Study Area, and others have moved from the Inner Corridor to the buffer.
- 51 Forty-one cultural heritage sites and features have been identified within the Inner Corridor.

9.5.2 Cultural Heritage Resources within the Inner Corridor

- 52 There are no Scheduled Monuments, Listed Buildings or Gardens and Designed Landscapes present within the Inner Corridor. Innerwick Conservation Area (108) projects marginally into the Inner Corridor, but does not extend into the Application Boundary.
- 53 The NMRS and HER contain records for 22 cultural heritage sites and features. Additional information on the character and preservation of nine of these sites was provided from documentary sources, including previous field survey reports (Dunwell, 2002; Jones, 2008).
- 54 A review of historical maps identified an additional five sites, and a further two sites were identified from examination of aerial photographs.
- 55 Field survey provided further information on the baseline condition of the sites identified through the desk-based assessment, and identified 14 additional sites.
- 56 The Scottish Palaeoecological Archive Database (SPAD) provided no relevant information specific to the Inner Corridor.
- 57 The Historic Land-use Assessment map (HLAMap) shows the southern part of the Core Study Area to be largely unchanged through time, consisting primarily of moorland utilised for pasture. The area around Boonslie is shown as preserving medieval or later settlement and agricultural remains (identified in this study as sites 34 and 49-52). In addition, an area of woodland (High Wood), also at the southern end of the study corridor, is shown as being of at least 19th century in origin. Further north, towards the coast, the area is shown by HLAMap as preserving 18th-19th century relict fields and agricultural land.

- 58 The sites and features recorded within the Inner Corridor span a considerable period from prehistory, through the medieval period and into the 20th century. The majority of sites and features are associated with medieval or later settlement and pastoral/agricultural activity. Detailed descriptions are provided in **Appendix 9.1** and the sites are discussed thematically below.

9.5.2.1 Prehistoric Sites

- 59 The majority of prehistoric sites recorded in the study corridor are cropmark sites (7, 8, 9, 10, 11, 13, 14, 16 and 27) visible on oblique aerial photographs held by RCAHMS. These are all located within arable farmland at the northern end of the Inner Corridor, between Thorntonloch and Thurston House. Two cropmark sites (17 and 63) have been recorded by the NMRS and HER as being of geological and agricultural in origin respectively.
- 60 An additional site potentially of prehistoric date, an area of possible cord-rig cultivation (53), was identified during the field survey. However, this feature is considerably more likely to be of more recent agricultural origin and is considered to be of low sensitivity.

9.5.2.2 Cropmark Sites

- 61 The NMRS and the HER record that a fort (7/8) and an enclosure (9) are visible on aerial photographs on opposing sides of Thornton Burn. The fort (7), which is situated on the south terrace of the Thornton Burn, was visible as an upstanding earthwork enclosure in the 1920s but has since been levelled by ploughing and the full extent of the site has been obscured by erosion of the river terrace.
- 62 A further group of cropmark sites are visible on aerial photographs at Skateraw, including: a possible settlement site (13), a ring-ditch (10), an enclosure (11), and a series of indeterminate cropmarks (14). In addition, the cropmarks of a pit alignment (27) are visible within arable land to the northeast of Thurston Mains, and another enclosure (16) is visible within arable land to the north of Innerwick.
- 63 Given the morphologies of the cropmark sites, it is likely that they are of prehistoric date and represent areas of extensive prehistoric settlement, particularly within the low lying arable fields. These cropmark sites form part of a large group of prehistoric sites that survive within the coastal plain of East Lothian and it is therefore considered that they are of medium sensitivity.

9.5.2.3 Other Potentially Prehistoric Remains

- 64 A small area of rig and furrow cultivation was identified on a sloping bank to the south of Weatherly Farm. The rig is very narrow, measuring 0.8–1 m wide, and may potentially be the remains of prehistoric cord-rig cultivation (53), where spades were used to excavate raised beds (rigs) for cultivation purposes. However, the rig area is surrounded by what appears to be later, wider and straighter rig and furrow remains of potentially post-medieval date, suggesting that the narrow rigs are also more likely of post-medieval origin. The rig and furrow remains are considered to be of low sensitivity.

9.5.2.4 Medieval and Later Settlement and Agrarian Remains

- 65 The majority of the medieval and post-medieval sites recorded within the Inner Corridor are associated with settlement and agricultural activity, including several buildings or settlements whose origins date back to at least the mid-18th century.

9.5.2.5 Farmsteads and Other Buildings

- 66 A village, annotated as 'Thorntonloch' (40) is depicted on Roy's map (1747-55), and on subsequent maps. On the Ordnance Survey 1st Edition map (1854) the village is shown as 22 roofed buildings and two unroofed buildings adjacent to the shore of Thorntonloch Bay. Later Ordnance Survey maps (1895, 1995) indicate that during the 19th and 20th century, the village became much reduced in size. Today, the northern part of the village has made way for Thorntonloch Caravan Park, although some of the earlier village buildings in this area, namely Ingleneuk buildings and Thorntonloch Cottage (41), which are both Category B Listed Buildings, still exist and are still in use; other elements of the village are partly extant and have been incorporated into Thorntonloch Farm. Although many of the remaining village buildings have been modified during the 20th century, the 19th century character and layout of the village is still apparent. The village remains (40) are of low sensitivity given their more modern elements.
- 67 The NMRS and HER record that an extensive area of earthworks (34), probably the remains of a farmstead, with associated enclosures and cultivation remains, are visible on aerial photographs on the west side of Boonslie Burn. Field survey identified the earthwork remains which are generally well-preserved, upstanding in some places to 1 m

high. The remains of several additional buildings and associated enclosures (49, 50, 51 and 52) were also recorded, grouped together on the eastern side of Boonslie Burn, within an area of improved pasture. Together, these sites form a well-preserved relict agrarian landscape. None of the structures are depicted on historic maps, suggesting that these remains are of at least early-18th century date, and may have earlier origins. East Lothian Council has nominated the Boonslie settlement as a potential candidate for scheduling to Historic Scotland, which is presently assessing whether this monument should be scheduled. The extent of any future potential scheduling is not presently confirmed. Following advice received from East Lothian Council (**Table 9.1**) the features of Boonslie are treated presently as if they were of schedulable quality and national importance, and hence are considered to be of high sensitivity.

68 A building (33) is depicted on Armstrong's map (1773) at Croft Angry, but has since been demolished. The location of this former building is not known precisely, although it was in proximity to the Cable Corridor. No surface trace of the building or any associated features were identified by this study. The site is considered to be of low sensitivity. What may be a group of three shielings (54) was identified by field survey close to the Weatherly Burn.

9.5.2.6 Relict Agrarian features

69 Two rectangular turf-banked enclosures (55 and 62), are present at Boonslie and Friardykes respectively. The enclosure at Boonslie (55) is associated with two denuded banks (56), and is overlain on its southwest side by a modern post and wire fence. The second enclosure, at Friardykes (62), was recorded by Jones (2008), but no upstanding remains of the enclosure were visible during the field survey. Neither the enclosures nor the field banks are depicted on early maps, and may be remnants of pre-improvement field systems. The enclosures and the field bank remains are considered to be of low sensitivity.

70 The remains of two clearance cairns (18 and 47) were identified at Birky Bog within woodland shelter belts. The clearance cairns include both sandstone rubble and smaller field clearance stones. The presence of the sandstone rubble suggests that some building demolition material may have been dumped along with the field clearance stone. The clearance cairns are likely to be relatively recent and are considered to be of negligible sensitivity.

71 A large, partially turfed over dump of sandstone rubble, with a much smaller dump to the northwest (19), was identified on the edges of an arable field. The features are likely to represent the remains of relatively recent stone clearance and wall demolition and are considered to be of negligible sensitivity.

9.5.2.7 Trackways

72 Two trackways (1 and 2) were identified from the Ordnance Survey 1st Edition map (1854) and subsequent editions. The northernmost track (1) runs northwards from Innerwick alongside a burn and is still visible as a grassy path and in use as a farm-track and public pathway, although the section of the trackway formerly intersecting the Inner Corridor is no longer visible in the field. The southern trackway (2) curves through a field of improved pasture and is visible as slight raised grassy terrace still in use as a farm-track.

73 A length of trackway (57) was identified at Boonslie, adjacent to, and following a similar alignment to that of the current road/track through Crystal Rig II Wind Farm. The trackway is 1 m deep where it has been terraced into the slope. The trackways are considered to be of low (1 and 2) or negligible (57) sensitivity.

9.5.2.8 Quarries

74 The NMRS and HER record that the cropmark of a large quarry and adjacent spoil heap (12) are visible on oblique aerial photographs (1996), in arable land to the south of Skateraw. The quarry is considered to be of negligible sensitivity. An area of small circular, linear and irregularly shaped quarry scoops is visible on aerial photographs nearby, close to Skateraw (15). These features are of indeterminate age and are considered to be of low sensitivity.

9.5.2.9 Miscellaneous Features

75 A short section of revetment wall (20) was identified running along the eastern side of a burn. The wall is mortared where it meets a modern, cement-fixed culvert that takes the burn under the entrance to an arable field and the A1 road to the north. The revetment wall is considered to be of negligible sensitivity.

76 A small square building (39) annotated 'pump' is depicted on the Ordnance Survey 1st Edition map (1854) at Skateraw Gate. The building stands within an arable field and is in use as a residential building. The pump house is of low sensitivity.

77 A mill lade (32) is depicted on the Ordnance Survey 1st Edition map (1854) at Woodhall Farm. A small section of the mill lade ditch is visible crossing the road junction to the east of Woodhall, and is in use as a road side ditch. A small section of the lade on the western side of the road, closest to Woodhall, has been piped and concreted. The lade is of low sensitivity.

78 A sluice and pond (38) are depicted on the Ordnance Survey 1st Edition map (1854) to the southwest of Skateraw. The route of the A1 carriageway now crosses this location and the sluice and pond are no longer visible. The site is of negligible sensitivity.

79 Several areas of field drainage (25) are visible on aerial photographs dating to 1946 within areas of improved pasture. Another area of drainage (45) was identified during a trial trenching evaluation (Hill & Suddaby, 2007). The drainage is of negligible sensitivity.

9.5.2.10 Modern/20th Century Structures

80 Field survey identified a linear arrangement of anti-tank blocks (36) to the north of Thornton Burn. A number of these blocks appear to remain in-situ, whilst others appeared to have been moved and used torevet the shore and Thornton Burn (36.1) against erosion. These anti-tank blocks are considered to be of low sensitivity. Some of the blocks may be those recorded by the NMRS on aerial photographs further to the south (5).

81 Field survey identified the remains of a rectangular concrete building platform (59), in improved pasture at Weatherly Farm. The remains are likely to represent a modern farm building, associated with animal housing, and are of negligible sensitivity.

9.5.2.11 Assessment of Archaeological Potential of the Core Study Area

82 The current land-use character of the Core Study Area is predominantly farmland, particularly arable around Thorntonloch and Thurston, with areas of both improved and rough pasture located between Woodhall and Boonslie, and moorland at Dunbar Common.

83 Evidence for prehistoric settlement is generally confined to the lowland, arable farmland, predominantly in the form of cropmarks sites. These sites suggest a range of prehistoric occupation and land-use in the area dating from at least the Bronze Age, if not earlier, and indicate that these areas have been a focal point for prehistoric settlement.

84 Settlement in the area is depicted on Roy's Military Survey map (1747-55) with a village shown at Thorntonloch. The remains of several medieval or later farmstead buildings and relict field banks / enclosures are also preserved in the more upland areas, between Woodhall and Boonslie (for instance 34, 49-52).

85 More recently, the foreshore area around Thorntonloch has formed part of coastal defences constructed and utilised during WWII with the identification of several anti-tank blocks in the area (36). In addition, the NMRS records a probable military camp (4) and a tank trap (104) at Torness Point.

86 The northern part of the Core Study Area has not been extensively developed in recent times, but it has been progressively enclosed and improved as arable farmland. Taking into consideration the numerous potentially prehistoric cropmark sites and other settlements remains, of at least mid-19th century date, which still survive in this area, it is considered that there is a high potential of as yet, undetected, burial remains surviving within the application boundary in this area.

87 The more upland parts of the Core Study Area, from Woodhall southwards, have principally been used for grazing animals, during the 19th and 20th centuries. Given the large quantity of archaeological features, of at least 18th century or earlier date, identified in close proximity to the proposed Onshore Works, it is considered that there is also a moderate to high potential of as yet undetected features being present within the application boundary in this area.

88 The archaeological potential of the central section of the Core Study Area, between Innerwick and Woodhall, is less readily established, since fewer cultural heritage features have been discovered there than elsewhere within the Core Study Area. However, this may reflect the greater proportion of improved pasture land-use, which militates against the survival of upstanding archaeology, the discovery of stray artefacts, and the production of cropmark imagery of buried archaeological remains.

9.5.3 External Receptors

89 **Appendix 9.3** contains a list of relevant external receptors within 5 km of the proposed substation. Ten Scheduled Monuments, one Category A Listed Building, five Category B Listed Buildings and three Category C(S) Listed Buildings have been identified.

90 None of the receptors identified has theoretical visibility of the proposed substation (**Figure 9.3**).

9.5.4 The ‘Do nothing’ Scenario

91 If the Onshore Works was not to proceed, there would likely be little or no short-term change to the baseline condition of the various cultural heritage sites and features identified within the Core Study Area. In the longer term, the current pasture land-use would likely continue, limiting the disturbance to cultural heritage assets and primarily natural decay (weathering and erosion) would affect the surviving remains. Archaeological sites within arable land would likely continue to erode very gradually as a result of attrition from ploughing. Historic buildings could be altered through a wide range of potential causes, including natural decay, extension/alteration and demolition (subject where necessary to appropriate consenting requirements).

9.5.5 Routeing and Design Considerations

92 The results of the desk-based study and reconnaissance field survey were digitised and provided as GIS data shapefiles to LUC. Identified features were recorded as either point locations (given for small individual features such as the small clearance cairns (e.g. 47); linear representation (for trackways and field boundaries (e.g. 1 and 2); and areas, where a number of related features form integrated sites, such as the Boonslie settlement (34), and Thorntonloch village (40), or where a site extends over a wide area such as many of the cropmark sites (e.g. 7, 9 and 11).

93 The Application Boundary has been selected to avoid Scheduled Monument 5870 at Thurston (23 and 24) and its associated features, and also the WWII military camp (4) at Thorntonloch.

94 The Application Boundary has also been selected to avoid many of the sensitive prehistoric cropmark sites and the majority of the more extensive historic settlement remains at Boonslie (34). The cropmark of a prehistoric enclosure (9), although within the Application Boundary, will be avoided by inserting the cable using direct drilling (HDD) at an appropriate depth underneath the full extent of the feature. Boards will be placed over the topsoil across the site to prevent any accidental damage occurring to the surface of the feature through vehicle movement during construction works.

9.6 Assessment of Effects

9.6.1 Construction

9.6.1.1 Predicted Effects

95 Using the criteria detailed in **Tables 9.2** and **9.3**, **Appendix 9.1** summarises the predicted direct effects of the proposed Onshore Works construction on the features identified within the Inner Corridor. It is assumed for the purposes of this assessment that all land within the Onshore Works application boundary will be disturbed by the construction of the proposed development. All direct effects are considered to be permanent, irreversible and adverse.

96 Direct effects are predicted on the following sites as a result of the construction of the Onshore Works: the northern terminal end of a trackway (2); a putative ring-ditch (10); the northern end of a putatively prehistoric enclosure (11); a quarry (12); a dump of sandstone and stone rubble (19); a section of revetment walling (20); several areas of drainage recorded on aerial photographs (25.1, 25.3-4, 25.6); the northwestern terminal end of the recorded extent of a possible prehistoric pit alignment (27); a small section of a mill race (32); part of an enclosure (34.13) forming part of Boonslie settlement (34); an area of drainage recorded during a previous archaeological evaluation (45); two turf banked rectangular enclosures (49 and 55); the westerly extent of an area of post-medieval rig and furrow cultivation associated with a field bank (52.1); and a section of trackway (57).

97 A potential effect is predicted at the location of a medieval/post-medieval building at Croft Angry (33), where it is unclear as to the exact location of the former building, and if any sub-surface remains still survive (the feature was not shown on any maps from the Ordnance Survey 1st Edition map (1854) onwards, so its precise location cannot be determined at this stage, and it may lie outside the application boundary). Similarly there is a potential effect of

construction works upon the site of a former pond and sluice (38), but the nature of the effect is unknown as it is not known whether any remains of the site survive.

9.6.1.2 Significance of Predicted Effects

98 Effects of at least moderate significance are predicted on seven sites prior to mitigation:

- The cropmark of a ring-ditch (10) of medium sensitivity lies wholly within the Application Boundary. Without mitigation the proposed development is likely to lead to substantial disturbance of this site, leading to an effect of high magnitude and major significance.
- The northern part of a cropmark of a prehistoric enclosure (11) lies within the Application Boundary. The feature is considered to be of medium sensitivity and it is predicted that the effect of construction works on the enclosure will be of medium magnitude and moderate significance.
- The southeastern corner of a rectangular enclosure (34.13) forming part of the historic settlement of Boonslie (34) lies on the western edge of the Application Boundary. Boonslie (34) is considered to be of high sensitivity. Only part of the enclosure would be disturbed by the construction of the Onshore Works, and it is considered that the predicted effect on the enclosure would be of medium magnitude and of major significance.
- The southeastern end of a rectangular turf banked enclosure (49) lies partly within the Application Boundary. The enclosure is considered to be of high sensitivity, but as only part of the enclosure would be affected by the construction of the development without mitigation, it is predicted that the effect on the enclosure will be of medium magnitude and of major significance.
- The western part of the recorded extent of an area of rig and furrow forming part of site 52 and associated with a field bank (52.1) lies within the Application Boundary. Site 52, comprising a possible shieling hut (52), structures (52.2) and a field bank (52.1), is considered to be of high sensitivity as it forms part of the historic settlement at Boonslie. However, it is predicted that, given the area that would be disturbed by the construction works and the nature of the remains to be disturbed (rig and furrow), the effect on the site area will be of low magnitude and of moderate significance.
- The majority of a small rectangular turf banked enclosure (55) lies within the Application Boundary. The enclosure is considered to be of low sensitivity, but as the majority of this site will be affected by the construction of the Onshore Works without mitigation, it is predicted that the effect on the enclosure will be of high magnitude and therefore of moderate significance.
- Should sub-surface remains of the building at Croft Angry (33) survive in the area to be disturbed by construction of the Onshore Works, it is considered that direct effects would occur. The exact location and extent of Croft Angry (33) are not known. However, should sub-surface remains of the farmstead survive, they would likely be considered to be of low sensitivity, and any direct effects on the remains, should they survive within the Application Boundary, could potentially be of high magnitude and therefore of moderate significance. However, it is considered more likely that no remains of the site survives within the Application Boundary, and that no effect will arise.

99 The remaining direct effects are predicted to be of no more than minor significance:

- The northern terminal end of a trackway (2) lies within the Application Boundary; a northeast-southwest section of the same trackway runs along the southeastern side of the Application Boundary. The trackway, of mid-19th century date, is considered to be of low sensitivity. As only a small section of the trackway will be affected by the construction works, it is predicted that the effect on the trackway will be of low magnitude and of negligible significance.
- The recorded location of the cropmark of a quarry (12) lies partly within the Application Boundary. The quarry is considered to be of negligible significance and the predicted effect of the construction of the Onshore Works on the quarry, although considered to be of medium magnitude, is of negligible significance.
- Two small stone dumps (19) lie within the Application Boundary. The stone dumps are considered to be of negligible sensitivity, of relatively recent origin. The predicted effect upon the feature caused by development construction, although considered to be of high magnitude, is therefore considered to be of **minor** significance.
- A section of revetment wall (20) lining part of the eastern side of a burn lies partly within the Application Boundary. The wall has been relatively recently modified, and is considered to be of negligible sensitivity. It is predicted that the effect of construction works upon the wall will be of medium magnitude, but of negligible significance.

- The areas of drainage (25) are of negligible sensitivity and in all cases (apart from 25.6), are now within improved pasture fields, and are likely to be of recent origin. The drainage recorded in a previous evaluation (45) has already been mitigated for, and the drainage recorded as area 25.6 is likely to be a continuation of the drainage system recorded as site 45. In each case, only parts of the overall areas of drainage will be disturbed by the proposed development construction works, and potentially by vehicle turning areas (25.1), and the predicted effect of development construction upon the drainage is considered to be of no more than medium magnitude and negligible significance, apart from at the substation site where the effect on sites 25.6/45 is predicted to be high magnitude, leading to an effect of minor significance;
- Only a small section of the recorded extent of the cropmark of a possible pit alignment (27) is within the Application Boundary. The cropmark is of medium sensitivity and it is predicted that the effect of construction works on the site will be of low magnitude and of minor significance;
- A small section of the mill race (32) is within the Application Boundary. The mill race is of low sensitivity and it is predicted that the effect of construction works upon the feature will be of low magnitude and of negligible significance.
- A trackway (57) of negligible sensitivity will be intersected by the Application Boundary. It is considered that there will be an effect of high magnitude and of minor significance on the trackway.

100 Should sub-surface remains of the pond and sluice near Skateraw (38) survive in the area to be disturbed by the development, it is considered that direct effects would occur. The location of the former pond and sluice (38) are known from Ordnance Survey 1st mapping. Should any sub-surface remains of the features survive, they would likely be considered to be of negligible significance. As only part of the sluice and pond would have the potential to be affected by the development, it is considered that the predicted effect of construction work on the features would be of medium magnitude but of no more than negligible significance.

9.6.1.3 Proposed Mitigation

101 The emphasis in the Scottish Government's Planning Advice Note (PAN) 2/2011: Planning and Archaeology is the preservation of important remains *in situ* where practicable and by recording, excavating and analysing where preservation is not possible. The mitigation measures presented below take account of this planning guidance and offer various options for recording and ensuring that, where practical, upstanding sites and features are preserved intact to retain the present historic elements of the landscape.

102 All mitigation works presented in the following paragraphs will take place prior to, or during, the construction of the Onshore Works. All fieldwork will be conducted by a professional archaeological organisation, and the scope of works will be detailed in a Written Scheme of Investigation (WSI). The WSI will make provision for appropriate investigation, post-excavation analysis, and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records. The WSI will be subject to the approval of the ELCAS.

103 No specific mitigation is considered to be merited for eight sites: the trackway (2); a small area of recent stone dumping/demolition (19); a small section of revetment walling (20); the areas of recorded drainage (25 and 45); the mill race (32); the location of a former sluice (38); and a trackway (57). In the majority of cases, the features are of no more than low sensitivity, and the predicted direct effects on all sites are considered to be of no more than minor significance.

9.6.1.4 Preservation in situ

104 It is proposed to route the cable so as to avoid sites 10 (the cropmark of a ring ditch); 34.13 (a rectangular enclosure, part of site 34); 49 (a rectangular agricultural enclosure); 52 (rig and furrow cultivation); and 55 (a rectangular agricultural enclosure). The Onshore Works have been designed to avoid and protect site 9 (see paragraph 91 above).

105 In accordance with the requirements of planning policy, where heritage features lie in close proximity to one or more construction elements of the Onshore Works they will be avoided to ensure their preservation *in situ*. Where appropriate, heritage features will be either entirely fenced-off or visibly marked-out to prevent accidental damage occurring to the remains during construction activities in the vicinity. Sites to be marked off include those to be avoided (10, 34.13, 49, 52 and 55; see previous paragraph). Consideration will also be given to protecting features located on or outside, but close to, the Onshore Works application boundary, where there is a risk that unintended damage could occur during construction operations (e.g. 36.1, 50-51, 53 and 62).

106 These features will be visibly marked out to signal their presence and thereby avoid accidental damage from vehicle movement during the construction period. The markers will be placed at an appropriate distance from the outer edges of the features facing the Onshore Works.

9.6.1.5 Archaeological Excavation/Evaluation by Trial Trenching/Watching Brief

107 An archaeological evaluation will be undertaken in areas of perceived high archaeological potential within the Application Boundary, prior to construction works commencing. This will include the examination of archaeological sites already known and identified in this study (10-12, 27; see below), and other areas where there is high potential for other as yet undetected buried archaeological remains to be present. The strategy for the evaluation (i.e. investigation locations and investigation methods including sampling strategy) will be developed in consultation with ELC and will be set out in an agreed WSI.

108 Due to the nature of other constraints placed on the routing of the Onshore Works, particularly the presence of underground high voltage electricity cables linking to Torness Power Station, it is not possible for the cable route to avoid both sites 10 and 11. Archaeological recording work would therefore be required prior to construction work commencing on site at this location. This area is also of high archaeological potential, with several other cropmark sites located nearby (e.g. 12-14). A trial trenching evaluation will be conducted along the Cable Corridor in the locations of sites 10 and 11 (and 12, which is located at the same location as 11) in order to fully understand the value of this group of features prior to construction and to better inform further targeted mitigation and guide the fixing of the cable route in this area. Should the remains of site 10 reveal the feature to be of a lower significance than has been stated thus far, and that of site 11 to be of higher significance, there is flexibility for the cable to be routed to avoid (preserve in situ) site 11, and to pass through site 10. In this scenario site 10 may then require further mitigation (excavation), as opposed to site 11.

109 Trial trenching will also take place where the Cable Corridor intersects with the northern terminal end of the cropmark of a pit alignment (27), to determine the character of the remains and the requirements if any for further mitigation.

110 The outcome of the pre-construction works will be a report that forms the basis for the agreement with ELC for the further treatment of archaeological remains identified by the evaluation, such as micro-siting of development features to avoid archaeological remains and allow for their preservation in-situ, or additional investigation and recording of archaeological remains in advance of construction works commencing, where they cannot be preserved in-situ.

111 In addition, the report will form the basis for agreeing with ELC a strategy for an archaeological watching brief to be conducted during construction works. The scope and strategy of the archaeological watching brief will be agreed with ELCAS and set out in the WSI.

9.6.1.6 Construction Guidelines

112 Written guidelines will be issued for use by all construction contractors, outlining the need to avoid causing unnecessary damage to known sites. That document will contain arrangements for calling upon retained professional support in the event that buried archaeological remains of potential archaeological interest (such as building remains, human remains, artefacts, etc.) should be discovered in areas not subject to archaeological monitoring. The guidance will make clear the legal responsibilities placed upon those who disturb artefacts or human remains.

9.6.1.7 Residual Effects

113 The completion of a programme of archaeological mitigation works as set out above will minimise the loss of the archaeological resource that would occur as a result of the construction of the Onshore Works. Taking the mitigation into account, one **moderate** significant residual effect is anticipated, in relation to the disturbance of the cropmark of enclosure (11) to the southeast of Skateraw; the proposed mitigation would offset, but not reduce, the effect as predicted before mitigation since the physical effect would still occur. A potential **moderate** worst case significant residual effect is predicted for any sub-surface remains that may survive of Croft Angry farmstead (33) within the Application Boundary, but the predicted likely effect is that no effect will arise. **Minor** residual effects are anticipated in relation to sites 19, 27, 25.6/45, and 57; in four cases no mitigation is proposed, and in the other (27) the proposed mitigation will offset but not reduce the effect as predicted before mitigation. **Negligible** residual effects are predicted in relation to sites 2, 12, 20, 25.1-5, 32, 38, 52 and 55; no specific mitigation has been

proposed, apart from site 12, which will be evaluated together with sites 10 and 11. Residual effects of construction works on currently unidentified buried archaeological remains cannot be established reliably at this stage.

9.6.2 Operation

9.6.2.1 Assessment of Effects

114 None of the receptors identified has theoretical visibility of the proposed substation, and no indirect effect is anticipated to arise on the setting of any relevant receptor.

9.6.2.2 Mitigation

115 No mitigation is proposed.

9.6.2.3 Residual Effects

116 No residual operational effect is predicted.

9.6.3 Decommissioning

117 The assessment of decommissioning is based upon the removal of the substation, the cable, transition pits and all other related components. The effect of decommissioning on cultural heritage and archaeology is assessed below.

9.6.3.1 Decommissioning of the Cable, Transition Pits and Other Related Components

118 Decommissioning is not predicted to affect the prehistoric cropmarks (sites 10-12) at the eastern end of the scheme; trial trenching and recording undertaken during construction will have already mitigated for direct effects on these features. Aspects of these features which were not disturbed during construction will be marked off to avoid potential direct effects during decommissioning.

119 Effects on the pit alignment cropmark (27) and any surviving sub-surface remains of Croft Angry (33) will also have been mitigated during construction by way of recording and a Watching Brief during construction. Therefore, no effects are predicted during decommissioning.

120 Other sites (19; 57; 2; 20; 25.1-5; 32 and 38) would have been directly affected during construction (with effects of no more than minor significance predicted) and hence no effects are predicted during decommissioning.

121 Potentially significant direct effects on enclosures (34.13; 49; 55) and a small area of rig and furrow associated with a field bank (52) would be avoided (as per the construction phase) by marking off the sites.

9.6.3.2 Decommissioning of the Substation

122 No effect is anticipated as likely to arise from the decommissioning of the proposed substation. Any archaeological remains present within the substation site, including drainage (25.6, 45) and potentially undiscovered buried archaeological remains, would be removed during construction works, and would be subject to archaeological mitigation responses as appropriate prior to their disturbance by construction operations. As the construction of the proposed substation is anticipated to have no indirect effect on the setting of cultural heritage assets, equally none is anticipated to arise from the decommissioning of the proposed substation.

9.7 Monitoring

123 No monitoring is proposed beyond the archaeological watching brief identified above.

9.8 Assessment of In-combination Effects

9.8.1 Construction

9.8.1.1 Assessment of Effects

124 No cultural heritage assets have been identified by the Offshore Works EIA (Neart na Gaoithe Offshore Wind Farm Environmental Statement, July 2012, Chapter 19 'Maritime Archaeology and Cultural Heritage') in the intertidal/Thorntonloch beach area, where the Onshore and Offshore development areas overlap. There are no in-combination direct effects predicted for any cultural heritage asset as a result of the construction of the Onshore Works in combination with the Offshore Works, either within the inter-tidal area or elsewhere. In consultation (Table 9.1) ELCAS indicated that the beach area had little archaeological potential.

9.8.1.2 Mitigation

125 As there are no in-combination effects predicted, no mitigation is proposed.

9.8.1.3 Residual Effects

126 No residual effect is predicted.

9.8.2 Operation

9.8.2.1 Assessment of Effects

127 As there is no theoretical visibility of the proposed Onshore Works substation from any of the external receptors identified within 5 km, there will therefore be no predicted in-combination indirect effects on the settings of these receptors.

9.8.2.2 Mitigation

128 As there are no in-combination effects predicted, no mitigation is proposed.

9.8.2.3 Residual Effects

129 No residual effect is predicted.

9.9 Assessment of Cumulative Effects

9.9.1 Construction

9.9.1.1 Assessment of Effects

130 Potential direct cumulative effects have been identified in relation to an area of drainage (25.3) of negligible sensitivity, identified from aerial photographs. The area of drainage will be directly affected during the construction period of both the Onshore Works and of part of the Crystal Rig III track layout.

131 A direct effect of medium magnitude and negligible significance is predicted on the area of drainage (25.3) as a result of the construction of the Onshore Works; the predicted cumulative direct effect on the drainage is also considered to be of medium magnitude and of **negligible significance** as the drainage is considered to be of negligible sensitivity and the additional disturbance to the drainage will be minimal, limited to a small section of the Crystal Rig III access track.

132 No cumulative effects have been identified in relation to the Onshore Works and the proposed Aikengall II wind farm, Aikengall II substation extension or the SPT NnG scheme.

9.9.1.2 Mitigation

133 Only a small part of an area of drainage (25.3) will be affected by the Onshore Works and Crystal Rig III trackway. As the site is of negligible sensitivity, no mitigation is proposed.

9.9.1.3 Residual Effects

134 A cumulative residual effect of negligible significance is predicted for an area of drainage (25.3).

9.9.2 Operation

9.9.2.1 Assessment of Effects

135 As there is no theoretical visibility of the proposed Onshore Works substation from any of the external receptors identified within 5 km, there will therefore be no cumulative effects on the settings of these receptors.

9.9.2.2 Mitigation

136 No mitigation is proposed.

9.9.2.3 Residual Effects

137 No residual cumulative operational effect is predicted.

9.9.3 Decommissioning

138 No cumulative direct effects are anticipated to arise from the decommissioning of the proposed substation, as the location will have no archaeological sensitivity by that stage (see paragraph 118). As there is no theoretical visibility of the proposed Onshore Works substation from any of the external receptors identified within 5 km, there will therefore be no predicted cumulative effects on the settings of these receptors from the decommissioning of the proposed substation. No mitigation is proposed, and no residual effect is predicted.

139 In respect of the other components of the Onshore Works (i.e. the cable, transition pits etc), cumulative effects are considered unlikely, however, there is a high level of uncertainty associated with this judgement.

9.10 Summary

140 **Table 9.6** below summarises the predicted effects of the development on cultural heritage.

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Construction			
Direct effect on prehistoric cropmark of ring-ditch and pit (10)	Major	Site avoidance and marking off. Trial trenching and further recording strategy (if necessary) to be agreed with ELCAS	Negligible (no effect)
Direct effect on prehistoric cropmark enclosure (11)	Moderate	Trial trenching and further recording strategy to be agreed with ELCAS	Moderate
Direct effect on the cropmark of a quarry (12)	Negligible	Area will be trial trenched as part of investigation of sites 10 and 11	Negligible
Direct effect on northwestern terminal end of pit alignment cropmark (27)	Minor	Recording to a strategy to be agreed with ELCAS	Minor
Direct effect on recent stone dumps (19); an area of drainage (25.6/45); and the northern terminal end of a trackway (57)	Minor	None	Minor
Direct effects on a section of trackway (2); a section of revetment walling (20); areas of drainage (25.1-5); and a section of mill race (32)	Negligible	None	Negligible
Direct effects (possible) on any surviving sub-surface remains of Croft Angry (33).	Unknown (Moderate worst-case scenario)	Watching Brief during construction where cable route passes through location of site (33)	Unknown (Moderate under a worst-case scenario)

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Direct effects (possible) on any surviving sub-surface remains of a pond / sluice (38)	Unknown (Negligible worst-case scenario)	None	Unknown (Negligible under a worst-case scenario)
Direct effect on enclosures (34.13, 49)	Major	Site avoidance and marking off	Negligible (no effect)
Direct effects on enclosure (55) and a small area of rig and furrow associated with a field bank (52)	Moderate	Site avoidance and marking off	Negligible (no effect)
Operation			
No operational effects predicted	None	None	Negligible (no effect)
Decommissioning of the Cable, Transition Pits and Other Related Components			
Direct effects on enclosures (34.13, 49)	Major	Site avoidance and marking off	Negligible (no effect)
Direct effects on enclosure (55) and a small area of rig and furrow associated with a field bank (52)	Moderate	Site avoidance and marking off	Negligible (no effect)
Decommissioning of Substation			
No effects predicted	None	None	Negligible (no effect)
Cumulative & In-combination Effects			
Direct cumulative effect on area of drainage (25.3)	Negligible	None	Negligible

Table 9.6: Summary of Predicted Effects

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Ordnance Survey (1854-55) 1st Edition, Haddington, Sheet 12, six inches to one mile.

Ordnance Survey (1895) 1st Edition, Haddingtonshire, Sheet XII NE, six inches to one mile.

Ordnance Survey (1895) 1st Edition, Haddingtonshire, Sheet XII SW, six inches to one mile.

Ordnance Survey (1895) 1st Edition, Haddingtonshire, Sheet XII SE, six inches to one mile.

Ordnance Survey (1908) 1st Edition Haddingtonshire, Sheet XII NE, six inches to one mile.

Ordnance Survey (1908) 1st Edition, Haddingtonshire, Sheet XII SW, six inches to one mile.

Ordnance Survey (1908) 1st Edition, Haddingtonshire, Sheet XII SE, six inches to one mile.

Ordnance Survey (1957) Haddington, Sheet NT67SE, 1:10,560.

Ordnance Survey (1971) Haddington, Sheet NT77SE, 1:10,000,

Ordnance Survey (1981) Haddington, Sheet NT66NE, 1:10,000.

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Sortie	Frames	Date	Scale
106/UK/0014	5239-5235, 7001-7143, 7211, 7233, 7235, 7237, 7241, 7243, 7245	15/04/46	1:10,000
58/3262	F64 0286-0300, F63 0285-0300, F62 0285-0300	15.10.59	1:10,000
OS65-002	355-465	28/03/65	1:7,500
OS73/122	089-099	01/05/73	1:7,600
OS73/123	001-031	11/05/73	1:7,600
OS81-017	001-024	12/06/81	1:7,000

Table 9.7: Aerial Photographs

9.11.1 Oblique Aerial Photography

C706, Oblique aerial view, Innerwick Enclosure (possible), 1992

C706 TR. Innerwick Enclosure (possible) Transcript, 12/12/97

C46443, C46445-447, Lawfield, oblique aerial view, taken from the ENE, centred on the cropmarks, 26/06/1995

C28112, Oblique aerial view, 15/07/94

C72053-055, Oblique aerial view of cropmarks including a ring-ditch, pits and a palisaded settlement, taken from the N, 02/07/96

EL4580-81, Oblique aerial view, John Dewar, 1975

EL/5575, Oblique aerial view Thurston Mains Linear Cropmarks, 19/06/81

