

Crystal Rig Substation Extension



Environmental Report

Contents

Summary

1.0 Introduction	1
2.0 Planning Permission Context	5
3.0 Proposed Development	9
4.0 Landscape and Visual Assessment	11
5.0 Ecology Assessment	25
6.0 Archaeology and Cultural Heritage Assessment	35
7.0 Hydrology Assessment	49
8.0 Conclusion	65

References

Glossary

Figures

1.1 Location of Proposed Crystal Rig Substation Extension
1.2 Proposed Crystal Rig Substation Extension, Access & Temporary Construction Compounds
2.1 Proposed Operational & Temporary Construction Access Routes
4.1 Designated Areas, Features & Infrastructure
4.2 Scottish Natural Heritage (SNH) Landscape Character Areas & Landscape Designations
4.3 Zone of Theoretical Visibility (ZTV) & Viewpoint Photograph Locations
4.4 Zone of Theoretical Visibility with proposed Earthworks
4.5 Photomontages a-c: Viewpoints 1- 3
4.6 Cumulative ZTV - Proposed Development and Existing Crystal Rig Substation
4.7 Cumulative ZTV - Proposed Development and Approved NNG Wind Farm Substation
4.8 Cumulative ZTV - Proposed Development and Approved Aikengall II Substation
6.1 Cultural heritage Constraints
6.2 Cultural Heritage: External Receptors and ZTV

Tables

Landscape and Visual Assessment

Table 4.1: Summary of Evaluation of Visual Effects on Selected Viewpoints

Table 4.2: Summary of Evaluation of Landscape & Visual Effects

Ecology Assessment

Table 5.1: Relevant Planning Policy

Table 5.2: Summary of Evaluation of Ecological Receptors.

Table 5.3: Significance of Effects

Table 5.4: Residual Effects following Adoption of Mitigation Measures.

Archaeology and Cultural Heritage Assessment

Table 6.1: Consultation Responses

Table 6.2: Importance of Cultural Heritage Assets

Table 6.3: Magnitude of Impacts

Table 6.4: Significance of Effects

Table 6.5: Significance of Effects

Table 6.6: Summary of Mitigation Measures

Hydrology Assessment

Table 7.1: 2013 Consultation Responses Relating to the Water Environment

Table 7.2: Sensitivity Criteria for Receptor

Table 7.3: Magnitude of Change Criteria and Definitions

Table 7.4: Significance of Effect

Table 7.5: Summary of Relevant Policies

Table 7.6: Summary of Predicted Changes to the Hydrological Environment and Significance of Effects

Technical Appendices

1.0 Planning Permission & Drawings

2.0 Extract of Environmental Report 2013

3.0 Landscape & Visual

4.0 Ecology

5.0 Cultural Heritage

6.0 Hydrology

7.0 Draft Schedule of Mitigation Measures

Summary

SP Transmission plc (SPT) obtained planning permissions in 2013 to construct an extension to the existing Crystal Rig Substation to allow the proposed Neart na Gaoithe (NNG) offshore wind farm¹ to connect to the transmission system (“the Substation Extension”). The proposed Substation Extension, which lies to the west of the existing Crystal Rig Substation, is located within both East Lothian and Scottish Borders, the site straddling the administrative boundary between the two Council areas. Planning applications were made to each Council for planning permission and both were approved² in 2013. The timescale for the construction of the NNG wind farm is currently not known.

Since obtaining the planning permissions, new electrical engineering safety clearance standards have been introduced which require the Substation Extension electrical compound area to be increased in size from 95m x 137m to 100m x 144m. This represents an increase overall of 5m in width x 7m in length. In addition, the proposed development construction method has identified the requirement for an enlarged temporary compound area primarily for the storage of material and management of surface water in accordance with best practice guidelines. A construction programme of approximately 21 months is currently considered necessary for the proposed Crystal Rig Substation Extension.

To the south of the existing Crystal Rig Substation, an extension to allow the connection of Aikengall II wind farm is currently under construction. A new temporary construction access road was established to facilitate the development. It is now considered that this road would also provide a more appropriate route for traffic engaged in the construction of the Substation Extension.

A dedicated route for construction traffic will minimise any potential conflicts associated with traffic engaged in carrying out the onshore works associated with the Neart na Gaoithe offshore wind farm. It will also ensure that any potential traffic conflicts with operational traffic using the existing access road to the Crystal Rig Substation are minimised. The Substation Extension access road originally proposed for use by all traffic shall therefore be used for operational purposes only.

Environmental specialists have undertaken an assessment of the proposed amendments to the Crystal Rig Substation Extension. On review, the environmental effects are either Minor or represent No Change to those as reported in the Environmental Report (MWH, 2013), which accompanied the two approved planning applications. **No Significant** environmental effects are therefore predicted by the amended proposals.

This Environmental Report has been prepared to accompany the two new planning applications³ for the proposed development being submitted to East Lothian and Scottish Borders Councils. A Pre-Application Consultation Report, and Design and Access Statement will also accompany the applications.

¹ Scottish Ministers granted Section 36 consent and issued a consent decision under regulation 22 of the Marine Works Environmental Impact Assessment) Regulation 2007 for the NNG wind farm in 2014. Subsequently RSPB judicially reviewed the two decisions. The court found that the decisions were flawed and the consents were reduced (quashed) in July 2016. However, Scottish Ministers appealed against the decisions of the court and a judgement will be available later in 2017.

² Planning permission for the construction and operation of a 400kV Substation and associated works was granted by East Lothian Council on 3 December 2013 under reference 13/00756/PM and by Scottish Borders Council on 22 November 2013 under ref 13/01084/FUL.

³ Applications were submitted to East Lothian and Scottish Borders Councils for Non Material Variations of the planning permissions in April 2016. East Lothian have requested the submission of a new Planning Application and Scottish Borders approved the application for the Non Material Variation. An updated Environmental Report has therefore been prepared to accompany the new planning applications.

Project Need

- 1.1 The Crystal Rig Substation is located in the Lammermuir Hills, 10km south of the town of Dunbar and 7.5km north west of the village of Cranshaws. The site is located almost entirely in East Lothian Council area, with a small area of the proposed earthworks to the south located in the Scottish Borders (Figures 1.1 and 1.2).
- 1.2 The Substation Extension is required in order to connect the proposed Neart na Gaoithe offshore wind farm (“the NNG wind farm”) and Substation to the transmission system. The NNG wind farm is located in the Outer Forth Estuary. Development consents for the NNG wind farm were granted in September and October 2014. Subsequently RSPB sought a judicial review of two of the consents granted by Scottish Ministers. The two decisions were found to be unlawful and quashed in July 2016. Scottish Ministers have reclaimed (appealed) against the decision to reduce the consents and a judgement is expected later in 2017.
- 1.3 SPT has a statutory duty “to develop and maintain an efficient, co-ordinated and economical system of electricity transmission”⁴. It is also subject to licence conditions requiring it to enter into an agreement with the system operator to carry out works and obtain consents necessary to facilitate connections for generators.
- 1.4 To comply with its statutory and licence obligations, SPT must provide the proposed NNG wind farm with a connection to the transmission system.

Legislative Context

- 1.5 All transmission licence holders are required under Section 9 of the Electricity Act 1989 (“Electricity Act”) to take account of the following factors in formulating any relevant proposals: -
 - a) “to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and,
 - b) to do what he reasonably can to mitigate any effect the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.”
- 1.6 SPEN⁵ interprets the words “reasonably can” to mean that it should make every effort to mitigate the environmental effects, whilst bearing in mind the technical constraints, and duties under Section 9 of the Electricity Act. In summary, SPEN needs to balance technical, economic and environmental considerations as part of the process of developing proposals.
- 1.7 Due to the area of the site within East Lothian, the proposed Substation Extension must be considered as Major Development in terms of the Town and Country Planning (Hierarchy of

⁴ S9 of the Electricity Act 1989 (as amended by the Utilities Act 2000)

⁵ SP Energy Networks (SPEN) operates and maintains the transmission and distribution networks in central and southern Scotland on behalf of SPT and SP Distribution plc.

Developments) (Scotland) Regulations 2009. It therefore requires to be subject to pre-application consultation procedures as detailed below. Scottish Borders Council (SBC) have confirmed that the Substation Extension constitutes Local Development within its area as the site is less than 2 Hectares (Ha).

- 1.8 The proposed Substation Extension does not constitute EIA Development as defined within the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. Schedule 2(3) (a) of these Regulations concerns industrial installations for the *production* of electricity with an area in excess of 0.5 hectare. Substations are for the transmission of electricity and do not produce electricity, the proposed Substation Extension does not therefore require to be the subject of an environmental impact assessment.

Statutory Consent

- 1.9 Applications for planning permission to construct and operate the proposed Substation Extension shall be submitted to East Lothian Council and Scottish Borders Council as planning authorities for the application site. This Environmental Report will support the planning applications.
- 1.10 All applications for planning permission for Major Developments require developers to undertake Pre-Application Consultation (PAC) with potentially affected communities. This ensures that communities are made aware of, and have an opportunity to comment on development proposals before a planning application is submitted. The Substation Extension is a Major Development within East Lothian Council (ELC).
- 1.11 A Design and Access Statement (“DAS”) is required under Regulation 13 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013.
- 1.12 The Environmental Report, report on Pre-Application Consultation (“PAC Report”) and DAS shall accompany the planning applications for the proposed development.

Purpose of the Report

- 1.9 The purpose of this Environmental Report is to provide a review of the potential environmental effects of the development of the Substation Extension and is organised into the following Chapters: -

Chapter 2: Planning Permission Context

Chapter 3: Proposed Development

Chapter 4: Landscape and Visual Assessment

Chapter 5: Ecology Assessment

Chapter 6: Cultural Heritage Assessment

Chapter 7: Hydrology Assessment

Chapter 8: Conclusion

- 1.13 At the back of the Environmental Report are References and a Glossary. Further supporting information regarding the proposed development and for the Assessment Chapters is provided in the accompanying Technical Appendices Report.

Scope

- 1.14 Environmental specialists have undertaken an assessment of the proposed amendments to the Crystal Rig Substation Extension. The findings are detailed in this Environmental Report covering the following topics: Landscape and Visual; Ecology; Heritage; and Hydrology.
- 1.15 Potential Traffic and Transport effects shall be handled as for the previous planning permissions by imposing conditions on any consent, such as the requirement for a Traffic Management Plan.

Evaluation of Significance

- 1.16 This Environmental Report provides a detailed description of the aspects of the environment likely to be affected by the Substation Extension. This covers direct effects and any indirect, secondary or cumulative effects of the development.
- 1.17 In assessing whether an effect is significant, reference has been made, where appropriate, to criteria on which the evaluation is based. These may include legal standards, policy guidance or accepted practice, and are identified as appropriate in the Assessments. Consideration has also been given to the views expressed by statutory agencies and other organisations that have been consulted.
- 1.18 For the purpose of this Assessment, the relative significance of effects is assessed using the following terms: -

Major - a fundamental change to the environment.

Moderate - a material but non-fundamental change to the environment.

Minor - a detectable but non-material change to the environment.

None - no detectable change to the environment.

- 1.10 Any effect of the Substation Extension assessed as “**major**” or “**moderate**” (in terms of the criteria above) would be considered to be “**significant**” within the terms of Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. Any effect assessed as “**minor**” would not be considered as “**significant**” within the terms of these Regulations.

Project Team & Further Information

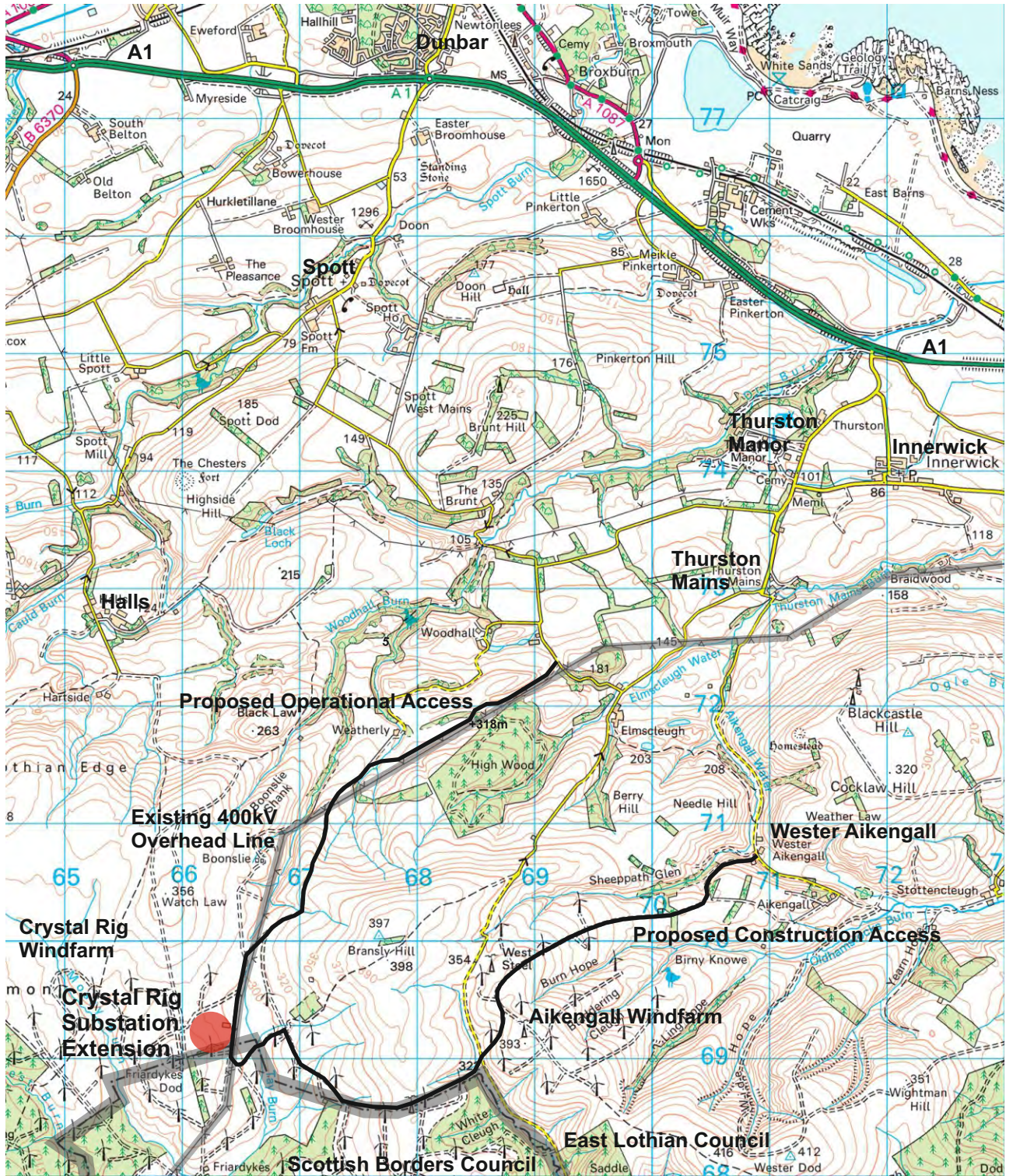
- 1.19 This Report has been prepared for SPEN by Environmental Designworks, an environmental planning and landscape design practice, with specialist input from: SPEN on the proposed Substation Extension engineering design and technical issues; BSG Ecology; CFA Archaeology; and Golder Associates.
- 1.20 A copy of this Environmental Report is available to view on the Internet at:

https://www.spenergynetworks.co.uk/pages/community_consultation.aspx

- 1.21 If you would like any further information or discuss any aspect of the proposed development, please contact the SPEN Project Manager either:

by email: **crystalrigprojectmanager@spenergynetworks.co.uk**

or by post to: **Ochil House, 10 Technology Avenue, Hamilton International Technology Park, Glasgow G72 OHT.**



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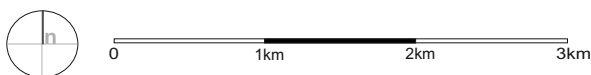
figure 1.1

Title:
Location of Proposed Crystal Rig Substation Extension

Project:
Crystal Rig Substation Extension

Scale: Bar Scale

Date: Mar 2017





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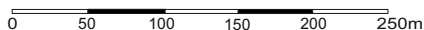
figure 1.2

Title:
Proposed Crystal Rig Substation Extension, Access and Temporary Construction Compounds

Project:
 Crystal Rig Substation Extension

Scale: Bar Scale

Date: Mar 2017



Existing Planning Permission

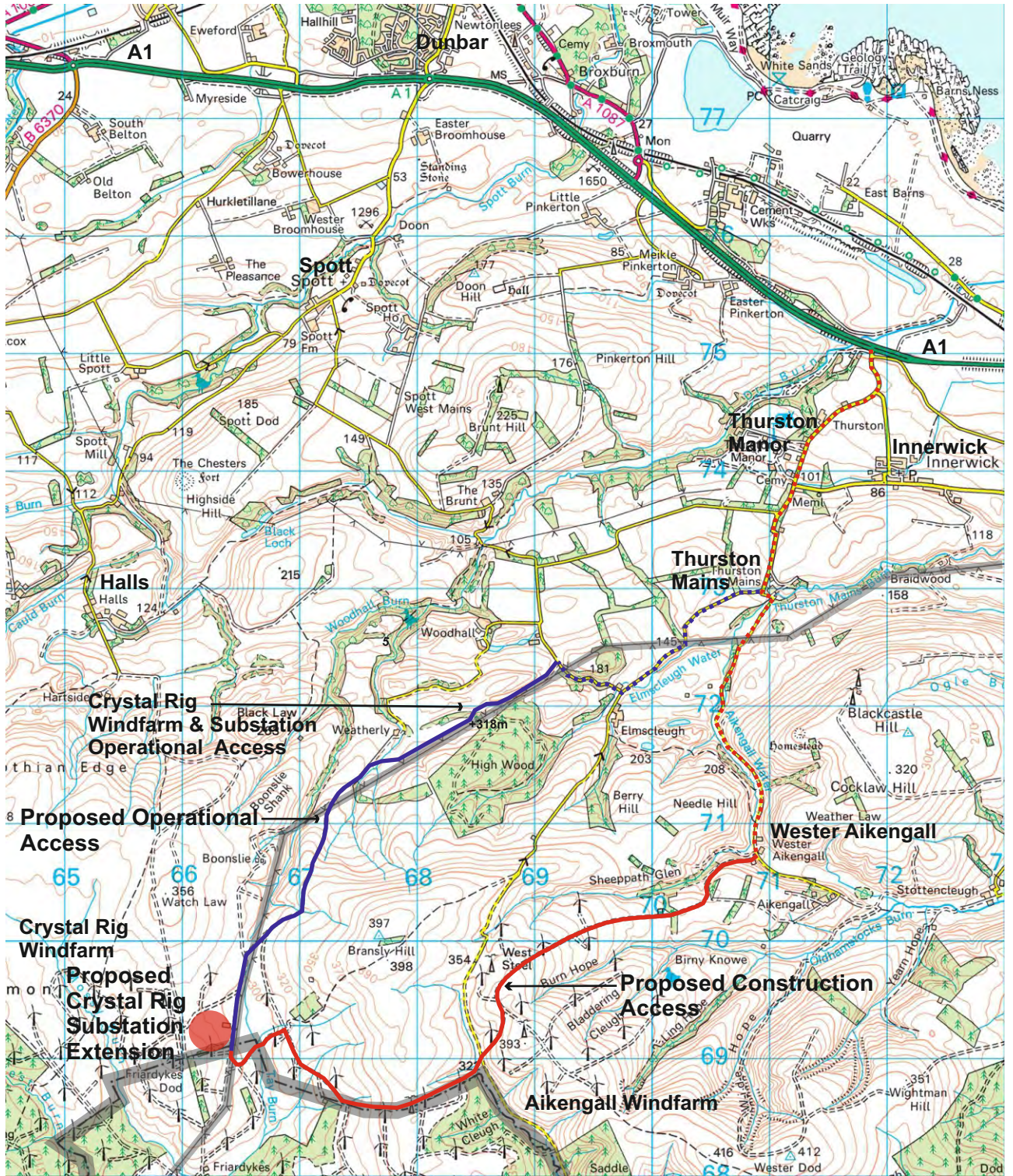
- 2.1 SPT were granted planning permission for the Crystal Rig Substation Extension by East Lothian Council on 3rd December 2013 (Planning Permission 13/00756/FUL) and by Scottish Borders Council on 22nd November 2013 (Planning Permission 13/01084/FUL). An Environmental Report prepared on behalf of SPT accompanied the applications for planning permission (MWH, 2013).
- 2.2 The Crystal Rig Substation Extension as approved includes the extension of the 400kV electrical compound west of the existing Crystal Rig Substation and associated earthworks to the north, west and south (9.035Ha). The Environmental Report was based on all construction traffic travelling from the A1 near Innerwick to the north, to Thurston Manor and then west along a minor road to then follow the existing Crystal Rig wind farm access route to the Crystal Rig Substation (IEC, 2013) (Figure 2.1).
- 2.3 A copy of the Planning Permissions including docketed plans have been placed in Technical Appendix 1.0. For information, the “Summary of Effects and Mitigation Measures” as outlined in Chapter 12.0 of the 2013 Environmental Report have been extracted and placed in Technical Appendix 2.0.

Surrounding Development

- 2.4 The existing Crystal Rig Substation was granted planning permission in 2007 and was constructed to serve the nearby Crystal Rig wind farm (Phase II). The Substation is located adjacent the Smeaton to Torness 400kV overhead transmission line to the north east of Friardyke Dod (334m AOD). The existing Substation has a rectangular footprint in an approximate north-south alignment, with embankments to the west and south.
- 2.5 When the Crystal Rig Substation was initially constructed, a section of access road leading to it was constructed from the public road. The Substation now also serves Aikengall Community wind farm (existing) and Crystal Rig wind farm (Phase III) and will also serve Aikengall II wind farm and Aikengall IIa when constructed and connected.
- 2.6 The existing electrical compound has a setting level of 298m AOD and contains an access road, two buildings and electrical equipment. The plant items within the Substation vary in size and form a number of interconnected mesh structures. The two low level gantries located to the east connecting to the 400kV overhead line are approximately 12.5m high. The overhead line tower (ZS149 A) is approximately 55m in height.
- 2.7 To the north of the existing Crystal Rig Substation, a new Substation is to be constructed by the NNG wind farm developer, as part of their onshore works. Development consents for the NNG wind farm were granted in September and October 2014. Subsequently RSPB sought a judicial review of two of the consents granted by Scottish Ministers. The two decisions were found to be unlawful and quashed in July 2016. Scottish Ministers have reclaimed (appealed) against the decision to reduce the consents and a judgement is expected later in 2017. The timescale for the construction of the NNG wind farm will depend upon the date and outcome of the reclaiming motion.

- 2.8 East Lothian Council granted planning permission reference 12/00922/PM for the onshore electrical infrastructure to connect the NNG wind farm on 18th June 2013. The infrastructure comprises 12.3km of buried cable and a new Substation between Thorntonloch and the Crystal Rig Substation. East Lothian Council granted a further planning permission under Section 42 of the Town and Country Planning (Scotland) Act 1997 for the onshore electrical infrastructure on 3rd November 2015.
- 2.9 The NNG Substation has a setting level of 298m AOD and contains an access road, a control building and electrical equipment. The maximum height of the electrical equipment is noted as 15m. Cut and fill earthworks shall be required to achieve the finished ground level and some of the excavated material shall be used to create a screen berm to the west and north. Planting in drifts is proposed using Hawthorn, Blackthorn, Juniper and Rowan species to create a natural effect in keeping with the upland setting (LUC, 2012, Appendix 10.2).
- 2.10 To the south of the existing Crystal Rig Substation, planning permission was granted on 28th June 2012 for an extension to the Substation compound to enable Aikengall II wind farm to connect to the transmission system (Planning Permission 12/00347/P). The permission was subsequently renewed on 30th June 2015 (Planning Permission 15/00390/P). Scottish Ministers granted the Aikengall II (Wester Dod) wind farm Section 36 consent on 1st March 2013. A further extension to the wind farm, Aikengall Ila was granted Section 36 consent in October 2016.
- 2.11 The Crystal Rig Substation Aikengall II Extension has a setting level of 298m AOD and will contain an access road and electrical equipment. Cut and fill earthworks are required to the west and south to achieve the finished ground levels. Construction works are ongoing on site.
- 2.12 Planning permissions were granted by East Lothian Council on 6th June and 1st July 2014 for the formation of sections of a new access road to the proposed Crystal Rig Substation Aikengall II Extension to allow for the safe delivery of a 400kV transformer component and abnormal loads (Planning Permission references 14/00267/P & 14/00268/P). The sections of new road are part of a route from the A1 near Innerwick to the north, which passes south of Thurston Mains to Wester Aikengall, and then takes a southwest alignment through the existing Aikengall wind farm to link to the existing track, which passes to the immediate east of Crystal Rig Substation (Figure 2.1).
- 2.13 The consent for the Aikengall Ila wind farm includes a condition (18), which obliges the developer to prepare a Traffic Management Plan for the written approval of East Lothian Council prior to work commencing on site. The Traffic Management Plan is to address matters including: the routing of all traffic associated with the development on the local road network; measures to ensure that the specified routes are adhered to, including monitoring procedures; a plan for access by vehicles carrying abnormal loads including the number and timing of deliveries; a written statement relating to the undertaking of road condition surveys and remedial works to respond to damage/deterioration caused by construction traffic; and a programme for the restoration and re-instatement of any temporary works carried out, including the cut-offs already constructed.

2.14 Prior to the works for the Crystal Rig Substation Aikengall II Extension commencing on site, a Construction Method Statement, Traffic Management Plan and Planting Plan Design Concept Report were submitted to the Council by SPEN for approval in January 2015. The proposed construction access route is detailed in the Traffic Management Plan, and the Construction Method Statement notes HGV movements interfacing with the public highway at the A1 will be limited to 100 per day (p 20, Elimco 2014). In terms of the Planting Plan, the proposed design and species aim to create a natural effect in keeping with the upland setting (MWH 2014). Construction work has now started on site.



Key

- · · · — Existing Crystal Rig Windfarm & Substation Operational Access.
- · · · — Proposed Operational Access for Crystal Rig Substation Extension
- · · · — Proposed Construction Access for Crystal Rig Substation Extension
- · · · — Public Road

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figure 2.1

Title:
Proposed Operational & Temporary Construction Access Routes

Project:
Crystal Rig Substation Extension

Scale: Bar Scale

Date: Mar 2017



Approved Development

- 3.1 The 2013 approved Crystal Rig Substation Extension development comprises of the following: -
- setting level 302m AOD;
 - electrical compound area 95m x 137m;
 - electrical equipment with a maximum height of 12.5 m;
 - 3m wide internal access road around the inside of the perimeter;
 - 2.7m high security fence surrounding the Substation compound;
 - 3m wide perimeter walkway outside the security fence;
 - 20m high (maximum) earth bund, graded into existing ground levels on the external slopes to the north, west and south. This earth bund is anticipated to retain the majority of the cut-and-fill excavated material on site, with a proportion of unsuitable material requiring removal off site;
 - extension to the existing swale to accommodate the earthworks, aligned around the base of the external facing slope of the bund to capture upstream runoff;
 - post and wire fence enclosing the swale and bund, of approximately 1m height;
 - construction access from the A1 near Innerwick to the north, utilising the existing Crystal Rig wind farm and Substation operational access track; and
 - preliminary construction programme of 10 months⁶.

Proposed Amended Development

- 3.2 Subsequent to the grant of Planning Permissions 13/00756/FUL and 13/01084/FUL in 2013 there is now a requirement to meet new electrical busbar clearance standards to comply with SPT's updated design for Substations. This reflects current best practice, and allows for improved access for the operation and maintenance of switchgear. To meet these updated Substation design standards, the electrical compound area requires to increase in size by 5m x 7m to 100m x 144m as indicated in Figure 1.2. The maximum height of electrical equipment within the compound will remain at the approved height of 12.5 m.
- 3.3 Further detailed amendments to reflect current Substation standards include the increase in width of the internal access road from 3m to 3.5m, increase in height of the security fence from 2.7m to 3m, and reduction in width of the external perimeter walkway from 3m to 2m.
- 3.4 The earthworks to accommodate the amended electrical compound area have been rechecked by SPT engineers and will retain the same ridgeline alignment and top of slope heights as approved under the Planning Permission 13/00756/FUL, with the highest point being 322m AOD to the south west corner, sloping down to the north of the site by 20m and to the south by 4m. The 20m high (maximum) earthbund will be graded into the existing ground level on the external slopes to the north, west and south. The earth bund will retain the majority of the cut-and-fill excavated materials on site, with only unsuitable material removed off site.
- 3.5 Within the compound area the electrical equipment layout will be amended to accommodate the required electrical safety clearances. The enlarged area will comprise of gravel hardstanding.

⁶ IEC (2013) Technical Note, p4 - 10 months starting in March 2015 and finishing in December 2015.

Impermeable surfaces within the compound area comprise of the concrete footings for the electrical equipment and access road.

- 3.6 An amended construction programme of approximately 21 months is currently considered necessary for the proposed Crystal Rig Substation Extension. No works will take place until completion of the Crystal Rig Substation Aikengall II Extension.
- 3.7 Review of current project programme timescales and experience gained from the construction of the Crystal Rig Substation Aikengall II Extension has also identified the requirement for an enlarged construction compound and temporary area for the storage of construction material as indicated in Figure 1.2. In summary, the temporary construction area now identified reflects the area required for:
- storage of excavated topsoil and subsoil to be reused on site;
 - storage of stone to be retained for ongoing maintenance of the construction access road;
 - storage of unsuitable material until removed from site at the agreed vehicle movement rate⁷; and
 - management of surface water from the construction of the proposed development in accordance with best practice environmental standards.
- 3.8 As stated above, a construction access route to the Crystal Rig Substation Aikengall II Extension Substation, which avoids the existing Crystal Rig wind farm access route to the existing Crystal Rig Substation has been constructed. On review, this route is now considered more appropriate for construction of the Crystal Rig Substation Extension. The use of the dedicated route will minimise any potential conflicts associated with traffic engaged in carrying out the onshore works associated with the Neart na Gaoithe Offshore wind farm or with operational traffic associated with the Crystal Rig wind farms. The Traffic Management Plan prepared for the proposed development shall accommodate and safely address traffic associated with the Aikengall wind farms that maybe using this route concurrently during the construction period.
- 3.9 The operational access will use the Crystal Rig Substation and wind farm access. Both access routes are indicated in Figure 2.1.

⁷ IEC (2013) Technical Note_ p5 - 5 HGVs per hour

Introduction

- 4.1 This Chapter provides an assessment of the potential effects on landscape and visual amenity arising from the proposed extension of the existing Crystal Rig Substation. The Landscape and Visual Impact Assessment (LVIA) provides a description of the landscape and visual baseline conditions, and qualitative assessment of the predicted changes to the baseline associated with the construction and subsequent operation of the proposed development.

Scope and Methodology

- 4.2 The scope of the assessment covers a 4km radius study area encompassing the proposed extension of the existing Crystal Rig Substation. Review of the scale of the proposed development, zone of theoretical visibility, initial site survey and professional judgement determined that this study area was appropriate for the LVIA.
- 4.3 The technical scope is to assess the potential effects of the proposed development on landscape features, the landscape character, and visual amenity afforded from within the geographical area of the assessment. This assessment considers the construction phase of the proposed works and the operational phase.
- 4.4 Good practice as described in the “Guidelines for Landscape and Visual Impact Assessment” (LI, IEMA, 2013) has been followed in undertaking the appraisal of the potential effects on landscape and visual amenity arising from the proposed development.
- 4.5 The adopted methodology and approach is outlined in Technical Appendix 3.0 and summarised below: -

Baseline Survey and Analysis

- **Site and Surroundings:** Collation and review of baseline information covering key features of the physical environment, planning allocation, natural and cultural heritage of the site and surroundings.
- **Landscape and Features:** The character, condition and value of the landscape are determined through a combination of desk and field study. Relevant designations are identified from a review of planning policies and other designations relating to the area.
- **Existing Visibility and Visual Amenity:** Visibility, visual amenity and potential visual receptors are identified, for example, residential properties, public footpaths, transport routes, key viewpoints, etc. The visual baseline including extent of visibility has been determined by using a combination of specialist computer mapping and site fieldwork.

Impact Assessment

- **Landscape and Visual Effects:** These are reviewed and identified with reference to: the potential sources of effect of the proposed development; sensitivity of the landscape and visual resources (nature of receptors); and magnitude of change to the existing landscape and visual environment (nature of effects).

- Evaluation of Significance of Effects: Provides an assessment of the likely significance of effects reviewed with reference to landscape features, character, views and visual amenity. The different thresholds of significance of effect are determined through professional judgement and evaluation of the environmental sensitivity of the location or receptor and the nature or magnitude of effect, and are described using the terms Major, Moderate, Minor or None.

4.6 The relative significance of landscape and visual effects is summarised below:

- Major - a fundamental change to the environment.
- Moderate - a material but non-fundamental change to the environment.
- Minor - a detectable but non-material change to the environment.
- None- no detectable change to the environment.

Policy Context

4.7 The main planning policies and guidance relevant to the landscape and visual assessment of the proposed development have been reviewed and referenced. Key planning guidance particular to the landscape and visual assessment is outlined below.

European

4.8 The UK Government signed and ratified the European Landscape Convention (ELC) in 2006. The ELC is a Council of Europe treaty whose purpose is to promote landscape protection, management and sustainable planning. In ratifying the ELC, the UK government has signaled its intention to promote the good management of all landscapes. The ELC defines landscape as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”⁸, and in summary makes clear that all landscapes require consideration and care.

National

4.9 National planning policy on landscape and natural heritage is set out in Scottish Planning Policy⁹ (SPP) and is supported by Planning Advice Note (PAN) 60 Planning for Natural Heritage.

4.10 SPP notes that the planning system should “facilitate positive change whilst maintaining and enhancing distinctive landscape character”¹⁰, and “the siting and design of development should take account of local landscape character.”¹¹

Development Plans

4.11 Planning policies for East Lothian and the Scottish Borders are set out in the National Planning Framework 3 (NPF3), and strategic and local development plans. The NPF sets the context for development planning in Scotland and provides a framework for the spatial development.

4.12 The following development plans cover the Study Area: -

- SESplan. Adopted 2013

⁸ The European Landscape Convention opened for signature in Florence in October 2000

⁹ SPP 2014

¹⁰ SPP 2014 para 194 p 45

¹¹ SPP 2014 para 202 p 47

- East Lothian Local Plan 2008
- Scottish Borders Local Development Plan 2016

4.13 East Lothian Council is currently preparing a new Local Development Plan (LDP) that will eventually replace the East Lothian Local Plan. The proposed LDP sets out a development strategy for East Lothian to 2024 and beyond as well as a detailed policy framework for guiding development. ELC approved its Proposed LDP in September 2016 and is now published for public representations. The LDP is expected to be adopted in 2017/ early 2018.

National Planning Framework 3

4.14 NPF 3 sets out the Government's development priorities over the next 20-30 years and identifies national developments, which support the development strategy. Key planning outcomes for Scotland are noted as follows:-

- A successful sustainable place- supporting economic growth, regeneration and the creation of well-designed places;
- A low carbon place- reducing our carbon emissions and adapting to climate change;
- A natural resilient place- helping to protect and enhance our natural cultural assets and facilitating their sustainable use;
- A connected place- supporting better transport and digital connectivity.

SESplan

4.15 The South East Scotland Plan (SESplan) covering Edinburgh and South East Scotland provides high level strategic planning guidance. A partnership of six local authorities including East Lothian and the Scottish Borders has prepared the SESplan which was adopted in 2013. The vision of the Strategic Development Plan is that "By 2032 the Edinburgh City Region is a healthier, more prosperous and sustainable place which continues to be internationally recognised as an outstanding area in which to live, work and do business".¹²

4.16 Policy 1B requires that Local Plans ensure that there are no significant adverse impacts on international, national and local designated sites, nature conservation and heritage sites including Areas of Great Landscape Value and Gardens and Designed Landscapes, and "have regard to the need to improve the quality of life on local communities by conserving and enhancing the natural and built environment to create more healthy and attractive places to live".¹³

4.17 The proposed SESplan 2016 which will replace the current plan, has been ratified by all six authorities with the aim to have an approved plan in place by 2018.

East Lothian Local Plan

4.18 The adopted East Lothian Local Plan (ELLP) covers the proposed Crystal Rig Substation Extension and surrounding area to the north, west and east. The Scottish Borders Local Plan covers a small part of the proposed development site to the immediate south. Relevant planning policy extracts from both Local Plans have been placed in Technical Appendix 3.0.

¹² SESplan (2013) p4

¹³ SESplan (2013) p14

- 4.19 The land use policies within the ELLP “seek to achieve a balance between protection of the countryside and coastal assets and the provision of appropriate development, including rural employment and tourism.” Policy DC1 contains criteria that apply to the principle of development within all of East Lothian’s countryside and therefore encompasses the proposed development.
- 4.20 Policy DC1 states that development will “be acceptable where it is of an appropriate scale and character for its proposed location in the countryside, it can be suitably serviced and accessed and there are no significant traffic or other environmental impacts”. It is noted that in all cases “having regard to its nature and scale, new development must be integrated into the landscape, reflect its character and quality of place, and be compatible with its surroundings”. In addition “new development must be sited so as to minimise visual intrusion and landscape impact within the open countrysidefor example, by locating as part of an existing group of buildings, woodland or other well contained setting, and by respecting and making use of the setting provided by landform or other existing landscape features”.
- 4.21 The proposed development is located within an Area of Great Landscape Value where “development that harms the landscape character and appearance” will not be permitted by Local Plan Policy NH4.
- 4.22 To the north, east and west of the proposed development are a number of Sites of Special Scientific Interest and Scottish Wildlife Trust sites, which are protected, by Local Plan Policies NH1b and NH3. The core footpaths and other footpaths in the surrounding area are safeguarded by Local Plan Policies C6 and C7. Local Plan Policy C7 notes that if a proposed development affects a footpath “or harms its amenity, it will only be permitted where the overall integrity of the route and networks is maintained”. In addition “where development that would affect access to an agreed route is allowed the Council will secure appropriate access provision through such development by means of planning conditions or other legal agreements”.
- 4.23 The Local Plan states with regard to design that “all development proposals must respond to their context, respecting the existing character and quality of place”. Landscape design is covered by Policy DP1 which notes that “all new built development, with the exception of alterations and extensions to buildings must:
1. Be well integrated into its surroundings by responding to and respecting landform and by retaining existing natural and physical features at the site that are important to the area and incorporate these into the development in a positive way: and
 2. Use appropriate hard and soft landscaping to provide an attractive setting for the development....”
- 4.24 The design of extensions is covered by Policy DP6, which notes that such development “must be well integrated into their surroundings and be in keeping with the original building”. A number of criteria are noted including the requirement to “retain physical or natural features, which are important to the amenity of the area or provide adequate replacements”.

Scottish Borders Local Development Plan 2016

4.25 The planning policies of the Scottish Borders Local Plan are underpinned by the principle of sustainability as outlined in Policy PMD1. This requires developers to incorporate into their developments a number of principles including:

“.....

- b) the preservation of air and water quality;
- c) the protection of natural resources, landscape, habitats and species; and
- d) the protection of built and cultural resources.”

4.26 The quality and standard of new development is outlined by standards listed in Policy PMD2 which expects principles of sustainability to be embraced “and to integrate with its landscape surroundings”. With specific reference to landscape it is noted that new development “retains physical or natural features or habitats which are important to the amenity or biodiversity of the areas or makes provision for adequate mitigation or replacements.”

4.27 To the south of the proposed development the Bothwell Water which joins the River Tweed downstream is a designated Special Area of Conservation and the River Tweed Site of Special Scientific Interest designation. Policies EP1, EP2 and EP3 of the Local Plan protect international, national and local sites of nature conservation and species.

4.28 The area encompassing the proposed development in the Scottish Borders is designated a Special Landscape Area. Policy EP5 states that in such areas “the Council will seek to safeguard landscape quality and will have particular regard to the landscape impact of the proposed development, including visual impact. Proposals that will have a significant adverse impact will only be permitted where the landscape impact is clearly outweighed by social or economic benefits of national or local importance.”

4.29 Heritage sites are protected by Local Plan Policies EP7 and 8. With reference to public footpaths Policy IS5 notes that “development that would have an adverse impact upon an access route available to the public will not be permitted unless a suitable diversion or appropriate alternative route, as agreed by the Council, can be provided by the developer”.

Consented Development

4.30 Current development under construction or consented in the surrounding area includes the following of particular note in terms of proximity and scale:

- Neart na Gaoithe wind farm Substation to the immediate north.
- Aikengall II Substation, which is under construction to the immediate south.

Baseline Conditions

Information

4.31 Baseline information has been collected from a review of published documents, maps and site visits. Specifically, the following has been undertaken:

- desk review of environmental data, designations and policies relating to the study area;
- site appraisal of potential landscape and visual receptors within the study area;
- reference to the Landscape Character Assessments by Scottish Natural Heritage (SNH);
- information available from: Development Plans covering the study area; Scotland’s Environment database; SNH Database; Historic Scotland Pastmap; East Lothian and Scottish Borders Core Paths Information; and the National Map Library for Scotland.

4.32 Information regarding environmental features and sensitivities of the proposed development site and surrounding area is indicated in Figure 4.1 and summarised below.

Landscape Features and Character Baseline

4.33 The landform of the proposed development site encompasses the north east slope of the rounded hill of Friardyke Dod. The summit of the hill to the south west is 334m AOD. The existing Crystal Rig Substation is sited on an area of man-made flat ground at 298m AOD.

4.34 The surrounding area encompasses an elevated plateau of gently rounded hills such as Watch Law (356mAOD) to the north and Bransly Hill (397mAOD) to the north east. To the south west a range of hills form Spartleton Edge with the highpoint of Spartleton at 468m AOD.

4.35 Immediately to the east of the proposed development site is a wide valley along which the Tay Burn flows southwards to join the Bothwell Water and Whiteadder Water, which flows eastwards into the River Tweed. To the north Woodhall Burn flows along a steeply incised valley down to the coast.

4.36 The landcover of the proposed development site is rough grass with patches of heather moorland. There are a few post and wire fences aligned through the area and to the south is an area of improved grassland. Distinct blocks of coniferous trees are located in the surrounding area. To the east a derelict stone sheepfold is located on Bransly Hill.

4.37 Located across the area are the tall white masts of wind turbines. Two small white harled buildings located to the south and south east are unoccupied control buildings. A network of access routes crosses the area.

4.38 The landuse of the proposed development site is rough sheep grazing with the existing Crystal Rig Substation located to the immediate east. Adjacent the Substation is a 400kV overhead line routed from the south west to north east. The surrounding area is used for sheep grazing, woodland plantations for timber production and wind power generation.

4.39 A number of public footpaths cross the area. In the immediate vicinity of the proposed development site, the operational access road to Crystal Rig Substation is a public footpath and a further footpath follows an access track to the immediate west. Further west is the long distance Herring Road heritage footpath passing from north to south, which links Dunbar to Lauder.

4.40 There are a number of designated nature conservation and heritage sites in the surrounding area. To the north are the Sites of Special Scientific Interest (SSSIs) of Rammer Cleugh, Woodhall Dean and Lammermuir Dean, which are designated primarily for their geology, upland oak and ash woodland. To the south the Bothwell Water is designated a Special Area of Conservation to protect fish, otters and freshwater habitats and forms part of the River Tweed SSSI.

4.41 Designated heritage sites are mainly located 3-4km away from the proposed development site. One Scheduled Ancient Monument (SAM) is located 2km to the south east and protects a prehistoric stone circle named Yadlee. Approximately 6km to the north west, the village of Stenton is designated a Conservation Area.

- 4.42 Scottish Natural Heritage (SNH) has undertaken a series of Regional Landscape Character Assessments covering the whole of Scotland following established guidance¹⁴. The SNH Landscape Assessment divides the landscape into a number of Landscape Character Types and Areas, and provides guidance and advice as to how development could be accommodated in the landscape.
- 4.43 The landscape character of the proposed development site and surrounding study area is described in the following documents and indicated in Figure 4.2: -
- East Lothian Landscape Character Assessment
 - Borders Landscape Character Assessment
- 4.44 The proposed development is located in the “Uplands” Landscape Character Type (LCT) and specifically the “Lammermuir Plateau Landscape Character Area” (LCA). This landscape type is “characterised chiefly by their altitude, generally ranging from around 300m to over 500m, and have a distinctive land cover dominated by heather moorland, peatland and rough grazing vegetation types....”¹⁵
- 4.45 Positive attributes of this LCA are noted to include the ““wild land” quality derived from a high degree of perceived naturalness of land cover, and relative lack of fragmentation of roads, settlements and other urban features” and “distinctive visual qualities including grandeur of scale and unobstructed, long distance views”. Negative attributes include the “visual intrusion of pylon lines and some coniferous plantations.”
- 4.46 The key strategic aim is to “conserve open, “wild land” character”, and the guidelines include for the protection of “visually sensitive areas from potential threat of wind farm development.”¹⁶ The small part of the proposed development located in the Borders Landscape Character Assessment is within the “Lammermuir Plateau”¹⁷ LCA with similar attributes as noted in the East Lothian Landscape Character Assessment.
- 4.47 To the north, the upland fringe is encompassed by the “Eastern Lammermuirs” LCA. The low lying and flatter coastal margin is encompassed by the Dunbar Plain LCA and the river valley by Whittinghame Water LCA. To the south, the Upper Whiteadder LCA encompasses the upland valley with farmland.
- 4.48 The key characteristics and features of the Landscape Character Areas surrounding the proposed development site and relevant guidelines has been extracted and placed in Technical Appendix 3.0.
- 4.49 The landscape character of the proposed development site is of a busy, large scale, simple, exposed plateau landscape enclosed by surrounding gentle rounded hills and dominated by man-made infrastructure of wind turbines, overhead lines and Substation electrical equipment. The scattered plantation blocks of plantation woodland reinforce this character. Although uninhabited, the area is busy with the movement of wind turbines and construction vehicles,

¹⁴ Landuse Consultants (1991) Landscape Assessment Principles and Practice & Countryside Commission (1993) Landscape Assessment Guidance (CCP423).

¹⁵ The Lothians Landscape Character Assessment (ASH, 1998) P24

¹⁶ The Lothians Landscape Character Assessment (ASH, 1998) P28

¹⁷ The Borders Landscape Character Assessment (ASH, 1998) P49

and the wider area. The muted colours of the rough grassland and moorland encompassing the rolling hills and incised valleys creates a simple natural backdrop to this managed landscape.

- 4.50 Localised diversity in texture and colour is provided by the following landscape features: scattered coniferous plantations; transition of areas of rough grassland, moorland and improved grassland; and watercourses.
- 4.51 The use of the landscape for rough grazing, timber production and wind power generation appears in good condition and well managed.
- 4.52 The existing landscape character and quality of the area is protected by the designation of the area as Area of Great Landscape Value (East Lothian Local Plan Policy NH4) and Special Landscape Area (Scottish Borders Local Development Plan Policy EP5). These planning policies seek to protect the distinct attributes of the Lammermuir Plateau landscape.
- 4.53 The area surrounding the proposed development site is experienced by recreational users of the Herring Road long distance footpath and other public footpaths routed through the area. The value of this landscape in the immediate vicinity of the proposed development dominated by man-made features relates primarily to remoteness as opposed to naturalness.
- 4.54 In summary, the proposed development site is located within a remote, gently rolling plateau landscape dominated by man-made infrastructure. The proposed development site is simple sloping moorland and rough grassland managed for sheep grazing, located immediately adjacent the existing Crystal Rig Substation and 400kV overhead line. Beyond the site, this sparsely populated wind farm landscape, is experienced from a network of public footpaths. Overall, it is considered that the landscape features and character of the proposed development site are of **low** sensitivity to change.

Views and Visual Baseline

- 4.55 The visual appraisal of the proposed development site is based on an understanding of the extent of visibility of the proposed development with reference to computer generated information and site survey work, identification of visual receptors, and grading of degrees of visibility.
- 4.56 The computer-generated Zone of Theoretical Visibility (ZTV) of the proposed development site is shown in Figures 4.3 and 4.4. Figure 4.3 indicates the extent of theoretical visibility of the proposed Substation Extension with the existing topography and Figure 4.4 with the proposed earthworks. The area of predicted visibility of the existing Crystal Rig Substation and proposed Substation Extension is indicated in green in Figure 4.6. The area of visibility of the Substation Extension only is indicated in blue.
- 4.57 The ZTV has been reviewed and refined by a site survey of potential visibility, which takes account of localised detailed screening which may be provided for example, by the surrounding blocks of coniferous plantations.

- 4.58 The viewpoint photographs are indicated in Figures 4.5 a-c. The photographs were professionally taken for the Environmental Report prepared in 2013 as listed in Appendix 4.0 and the location indicated in Figures 4.3 and 4.4.

Visibility

- 4.59 To the north, visibility is restricted to within 1km of the proposed development site and encompasses the southern slopes and summit of Watch Law (356m AOD). Visibility to the east extends approximately 1.5km across the western slopes and summit of Bransly Hill (398mAOD).
- 4.60 A ridge of high ground extending to the summit of Crystal Rig at 319m AOD contains visibility to the east and south east. Further to the south east an area of visibility approximately 3km from the proposed development encompasses the northern slopes of Crichness Law. Actual views from this area will be restricted by the coniferous plantation, which encompasses this area.
- 4.61 To the south, visibility of the proposed development site is largely contained by the proposed earthworks. The Substation Extension will be visible from the field to the immediate south and north east slope of Friardyke Dod at 334m AOD, which overlooks the site. Distant views of the proposed development site will be afforded from the northern slopes Spartleton (468m AOD) and Spartleton Edge approximately 3-4km to the south.

Visual Receptors

- 4.62 Visual receptors identified in the surrounding area and description of views in relation to the proposed development site are listed in Technical Appendix 3.0. For the purposes of the assessment, visual receptors include residents, visitors, recreational, road users and other groups of viewers (such as those for example with a special interest in cultural heritage), which have the potential to be affected by the proposed development.
- 4.63 The description of the degree of visibility of the site (or proposed development) from any location has been divided into four categories as follows:

No View: no view or difficult to perceive.

Glimpse View: a transient view or distant view of part of the site or development in the context of a wider view.

Partial View: a clear view of part of the site or development; a partial view of most of it; or a distant view in which the site or development forms a relatively small proportion of a wider view.

Open View: a panoramic view of most of the site or development, occupying most of the field of vision.

- 4.64 No open views of the proposed development site are afforded as from all directions the extension will be viewed in the context of the existing Substation. Partial and glimpse views will be afforded by recreational users of the footpaths to the east and west of the site which are aligned in a north- south direction through the area. To the north, partial and glimpse views will be afforded from the access track leading to Watch Hill.

- 4.65 From all directions and distances, views of the proposed development will also encompass the adjacent existing Crystal Rig Substation and 400kV overhead line, and tall wind turbines located in the surrounding area.
- 4.66 Overall, the extent of visibility is limited to the north, east and west and more extensive to the south and south-east. Partial and glimpse views of the proposed development encompass receptors of **high** sensitivity including recreational users of the footpaths and the designated Lammermuir Plateau AGLV and SLA.

Potential Effects of Proposed Development

Loss of Landscape Features

- 4.67 The proposed development will necessitate the permanent development of an area of upland moorland comprising of a 100m x 144m compound for electrical equipment and associated earthworks to the north, west and south. The overall development site is 9.035 Ha.
- 4.68 The 20m high earthbund will be graded into the existing external slopes ground levels and on completion of the works shall be planted to create a mosaic of acid grassland, scrub and trees to integrate the development with the surrounding uplands.
- 4.69 During construction temporary construction compounds will be required to the north, west and south of the proposed development site to accommodate material storage, manage surface water and site offices. Construction access will be via the access road constructed for the Aikengall II Substation.
- 4.70 The magnitude of change on landscape features is considered to be **low** during construction reflecting the loss of moorland and rough grassland which will have a **minor adverse** significance of effect. During operation of the proposed Substation Extension, it is considered that the permanent magnitude of change would be **low** associated with the permanent removal of moorland associated with the Substation compound with a significance of effect of **minor adverse**.

Landscape Character

- 4.71 The proposed development site is located within a remote gently rolling plateau landscape dominated by wind turbines. The site is simple, sloping moorland located immediately adjacent the existing Crystal Rig Substation and 400kV overhead line. Beyond the site, this sparsely populated wind farm landscape is experienced by a network of public footpaths. Overall, it is considered that the landscape features and character of the proposed development site are of **low** sensitivity to change.
- 4.72 Overall, it is considered that the proposed development construction works adjacent an existing Substation will have a **low** magnitude of change upon the landscape character. The proposed Substation Extension adjacent the existing Crystal Rig Substation on completion is considered to represent a **minor adverse effect** to the existing landscape character.

Visual Amenity

- 4.73 Potential views of the proposed development are relatively limited to the north, east and west and more extensive to the south encompassing slopes of higher ground of Spartleton Edge and Crichness Law.
- 4.74 Within the visual envelope, a number of sensitive and less sensitive receptors will have partial, glimpse and transient views of the proposed development. This includes public footpaths to the east and west, and networks of access tracks.
- 4.75 Views in this area encompass the existing Crystal Rig Substation and 400kV overhead line routed through the area and surrounding wind turbines.
- 4.76 Overall, it is considered that during the construction of the proposed development, the magnitude of change to views and visual amenity will be low for the majority of receptors located within the visual envelope of the proposed development. On completion it is considered that the magnitude of change will be low.
- 4.77 The Viewpoint Photographs locations are indicated in Figures 4.3 and 4.4, and Photomontages of the proposed development are indicated in Figures 4.5 a-c. The Photomontages include the proposed NNG Substation to the north and Aikengall II Substation to the south, which is currently under construction. The visual effect of the proposed development on the identified viewpoints is summarised below. The appraisal of visual effects of the proposed development on receptors and the identified viewpoints is detailed in Technical Appendix 3.0.
- 4.78 On review of the selected viewpoints, the proposed Substation Extension is considered to have a **minor adverse** effect. This assessment reflects the proposed development context sited adjacent the existing Substation and 400kV overhead line, enclosed to the north, west and south by the proposed earthworks, and surrounded by wind turbines.

Table 4.1: Summary of Evaluation of Visual Effects on Selected Viewpoints

Viewpoints	Visual Receptor	Sensitivity	Description of Visibility	Magnitude of Change	Appraisal of Visual Effect
1. Watch Hill Access Track	Access Track	low	partial/glimpse	low	minor
2. Substation Access Track	Public Footpath, Access Track	high	partial/glimpse	low	minor
3. Bransly Hill Access Track	Public Footpath, Access Track	high	partial/glimpse	low	minor

Mitigation Measures during Construction

- 4.79 The following Landscape Mitigation Measures will inform the Construction Environmental Management Plan (CEMP) for the proposed development as summarised below:
- The 20m earthwork bund associated with the proposed development shall be formed to the north, south and west of the proposed development and grade into existing external levels.
 - Vegetation clearance, including topsoil and subsoil storage and a reinstatement landscape planting scheme shall be prepared for the approval of the Planning Authorities and undertaken as soon as practicable following completion of the development.

Mitigation Measures during Operation

- 4.80 No landscape mitigation measures are proposed in relation to the likely operational effects of the proposed development.

Residual and Cumulative Effects

Summary of Effect on Landscape and Visual Amenity

Effect on Landscape Features and Character

- 4.81 The sensitivity of the landscape features to change is considered to be low and the magnitude of change low during construction and operation. Overall, the significance of effect upon the immediate local landscape features is judged to be **minor adverse** during construction and operation.
- 4.82 The sensitivity of the landscape character to change is considered to be low and the magnitude of change low during construction. Overall, the significance of effect upon the landscape character is considered to be **minor adverse** during construction and operation.

Effect on Visual Amenity

- 4.83 The greatest change in the character of views and visual amenity will be restricted and localised, encompassing sensitive and less sensitive receptors to the immediate north, east, south and west.
- 4.84 The overall significance of visual effect for sensitive receptors is considered to be **minor adverse** during construction and operation.

Significance

- 4.85 The proposed development will comprise of the construction of an extension to the existing Crystal Rig Substation. This will comprise of a compound containing electrical equipment and an earthbund to the north, south and west. During construction there will be temporary compounds to the north, south, and west. The proposed development is to allow the Neart na Gaoithe offshore wind farm to connect to the transmission system.
- 4.86 In summary, the overall significance of landscape and visual effects of the proposed development is assessed to be minor adverse during construction. This effect will be temporary and localised.
- 4.87 On completion, it is assessed that the overall permanent landscape and visual effect of the proposed new development will on balance, be **minor adverse** and not considered to be “significant” in terms of the EIA Regulations.
- 4.88 The evaluation of significance of landscape and visual effects associated with the proposed Substation Extension is summarised in Table 4.2.

Residual and Cumulative Effects

- 4.89 There are no additional mitigation measures recommended to reduce the scale of change and subsequent effect over and above those that will be included in the CEMP. Therefore the residual effects are the same as the significance of predicted impact.

4.90 The cumulative effect of the proposed development has been reviewed with reference to the Zone of Technical Visibility for the existing Crystal Rig Substation; Aikengall II Substation currently under construction; and approved NNG Substation as illustrated in Figures 4.6, 4.7 and 4.8. This indicates that there will be small areas of additional visibility associated with the proposed development and that it will be viewed in the context of the other surrounding Substation infrastructure. Overall, it is considered that the cumulative landscape and visual effect of the proposed development will be **minor** and therefore **not significant**.

Table 4.2: Summary of Evaluation of Landscape & Visual Effects

Landscape Receptor	Effect			Significance		Rationale
	Sensitivity	Magnitude of Change		Level of Construction Effect	Level of Permanent Effect	
		Construction	Permanent			
Landscape Features	low	low	low	minor	minor	Construction: Loss of moorland/ rough grassland. Permanent: Loss of moorland/ rough grassland.
Landscape Character	low	low	low to none	minor	minor to negligible	Construction: Alteration of the local appearance and landscape character of the site during construction. Permanent: Extension of the existing Substation.

Visual Receptor	Effect			Significance		Rationale
	Sensitivity	Magnitude of Change		Level of Construction Effect	Level of Permanent Effect	
		Construction	Permanent			
Receptors within Visual Envelope/ Viewpoints 1-3	high-low	high	low	minor	minor	Construction: Temporary localised alteration of available views of the site and character during construction. Permanent: Proposed development will be seen in context of existing Substation infrastructure, wider wind farm landscape and enclosed by earthworks so that it is set into the landscape and does not break the skyline.