SP Energy Networks

Scoop Hill 132kV Connection Project

Environmental Report

November 2023

Scoop Hill 132kV Connection Project

Environmental Report (ER)

Prepared by

LUC

on behalf of

SP Energy Networks

November 2023

Preface

This Environmental Report (ER) has been prepared in support of an application by SP Energy Networks (SPEN) ('the Applicant') to the Scottish Government Energy Consents Unit (ECU) for consent under Section 37 of the Electricity Act 1989 (as amended) ('the Electricity Act') and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended), to install and keep installed a new twin 132 kilovolt (kV) overhead line (OHL) grid connection for the proposed Scoop Hill Community Wind Farm in Dumfries and Galloway (hereafter referred to as the 'Scoop Hill 132kV Connection Project'). The Scoop Hill 132kV Connection Project will comprise twin OHLs each with a length of approximately 2.4 km (4.8 km in total) supported on double wood poles. The twin OHLs will run in parallel from the proposed Scoop Hill Wind Farm substation to the existing Moffat substation at Bearholm.

A hardcopy of the ER (excluding confidential information) along with a map showing the land over which the Scoop Hill 132kV Connection Project passes will be available for viewing during normal opening hours at the following location:

Location	**Opening Hours**
Dumfries and Galloway Council Customer Services Kirkbank House English Street Dumfries DG1 2HS	Monday: 9am to 5pm Tuesday: 9am to 5pm Wednesday: 10am to 5pm Thursday: 9am to 5pm Friday: 9am to 5pm Saturday: Closed Sunday: Closed

The ER will also be made available for viewing online on the ECU planning portal (https://energyconsents.scot/ApplicationSearch.aspx) and the SPEN project website (https://www.spenergynetworks.co.uk/pages/scoop_hill.aspx).

Any public representations to the application may be submitted via the ECU website at www.energyconsents.scot/Register.aspx; by email to the Government, Energy Consents Unit mailbox at representations@gov.scot; or by post to the Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the proposal and specifying the grounds for representation. The Applicant will advertise the submission of the Section 37 and Section 57(2) application in the local press. The advert will state the deadline for submitting representations to Scottish Ministers.

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Chapter 1
Introduction

1.1 LUC has prepared this Environmental Report (ER) on behalf of SP Energy Networks (SPEN) in support of an application to the Scottish Government Energy Consents Unit (ECU) for consent under Section 37 of the Electricity Act 1989 (as amended) ('the Electricity Act') and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended), to install and keep installed a new twin 132 kilovolt (kV) overhead line (OHL) grid connection for the proposed Scoop Hill Community Wind Farm in Dumfries and Galloway (hereafter referred to as the 'Scoop Hill 132kV Connection Project'). The Scoop Hill 132kV Connection Project will be supported on twin double wood poles and will run from the proposed Scoop Hill Wind Farm substation to the existing Moffat substation (at Bearholm). The location of the proposed Scoop Hill Community Wind Farm, existing electricity network and points of connection (substations) are shown on **Figure 1.1**.

The Applicant and Statutory Licence Duties

1.2 SPEN owns and operates the electricity transmission and distribution networks in Southern and Central Scotland through its wholly-owned subsidiaries, SP Transmission plc (SPT) and SP Distribution plc (SPD). SPT is the holder of a transmission licence. SPEN's transmission network is the backbone of the electricity system within its area, carrying large amounts of electricity at high voltages from generating sources such as wind farms, power stations and various other utilities across long distances to connected homes and businesses. The transmission network consists of approximately 4,000 kilometres (km) of overhead lines and over 600 km of underground cables. The electricity is then delivered via the distribution network which has over 150 substations and in excess of 100 grid supply points which serves approximately two million customers in Southern and Central Scotland.

1.3 As transmission licence holder for Southern Scotland, SPEN is required under Section 9(2) of the Electricity Act 1989 to:

- Develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and
- Facilitate competition in the supply and generation of electricity.

1.4 SPEN is required in terms of its statutory and licence obligations to provide for new electricity generators wishing to connect to the transmission system in its licence area. SPEN is also obliged to make its transmission system available for these purposes and to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.

The Need for the Scoop Hill 132kV Connection Project

1.5 The Scoop Hill Community Wind Farm is being proposed by CWL Energy Limited which is a subsidiary of Community Windpower Limited (CWL) and is located approximately 5km south-east of Moffat within Dumfries and Galloway – see **Figure 1.1**. The current proposal is for up to 60 wind turbines with an overall capacity to produce up to 432 megawatts (MW) of electricity. The proposed Scoop Hill Community Wind Farm will also include a 200 MW battery storage facility.

1.6 An application for consent under Section 36 of the Electricity Act was submitted to the Scottish Government Energy Consents Unit (ECU) in November 2020 for Scoop Hill Community Wind Farm and is currently awaiting determination. The original proposal was for up to 75 wind turbines with an output capacity of 525 MW, however, following consultation, and to address concerns raised by NautreScot and Dumfries and Galloway Council, CWL Energy Limited has reduced the scale of the proposal, and the current proposals comprise up to 60 wind turbines.

1.7 A request by CWL Energy Limited for the connection of the Scoop Hill Community Wind Farm to the transmission network has been received by SPEN via National Grid Electricity Transmission (NGET). Following consideration of the network in this area, the proposed point of connection from the Scoop Hill Community Wind Farm substation is the Moffat substation via a new twin 132kV OHL[1].

The Consenting Process

1.8 Section 37 of the Electricity Act stipulates that consent is required from Scottish Ministers for the installation of overhead transmission lines. SPEN is therefore applying to Scottish Ministers via the ECU for consent under Section 37 of the Electricity Act 1989 ('the Electricity Act'), as amended, to install, and keep installed, the Scoop Hill 132kV Connection Project. In conjunction with the Section 37 application, SPEN is also applying for deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997, as amended. The application process for the Scoop Hill 132kV Connection Project is therefore separate to the Section 36 application made by CWL Energy Limited for Scoop Hill Community Wind Farm. As discussed in **Chapter 3: Project Description,** the Scoop Hill 132kV Connection Project will also require an extension to the existing Moffat substation. This extension will be subject to a separate Town and Country Planning application made by SPEN to Dumfries and Galloway Council, and it is therefore not included as part of the Scoop Hill 132kV Connection Project. Likewise, the substation at Scoop Hill Community Wind Farm, which will also be necessary to facilitate the Scoop Hill 132kV Connection Project, is separate and subject to the current Section 36 application.

Content and Structure of the ER

1.9 Chapter 2 of this ER provides details of the Routeing and Consultation and EIA Screening process which has been undertaken to date for the Scoop Hill 132kV Connection Project, and **Chapter 3** provides a description of the proposals for which Section 37 consent and deemed planning permission is being sought. **Chapters 4** to **8** set out the findings of the appraisal of effects of the construction and operation of the Scoop Hill 132kV Connection Project on the following topics:

- **Chapter 4: Landscape and Visual Amenity;**
- **Chapter 5: Ecology;**
- **Chapter 6: Ornithology;**
- **Chapter 7: Cultural Heritage;** and
- **Chapter 8: Hydrology, Flood Risk and Water Quality, including Private Water Supplies.**

1.10 Chapter 9 provides a summary and the conclusions of the ER.

1.11 A number of other environmental topics were given consideration within the EIA Screening Report (see **Chapter 2: Routeing and Consultation and EIA Screening**), including traffic and transport, noise, air quality, land use, major accidents and disasters, climate change and human health (including electromagnetic fields). Given the size, nature and location of the Scoop Hill 132kV Connection Project, it was not considered that effects would be notable for these topics, and so they were not proposed for inclusion in this ER.

Approach to the ER Appraisals

1.12 This ER presents the findings of an appraisal of the potential effects associated with the construction and where

[1] Should consent not be granted for Scoop Hill Community Wind Farm, then there will be no requirement for the Scoop Hill 132kV OHL Grid Connection, and any Section 37 consent granted will not be implemented by SPEN.

applicable, the operation of the Scoop Hill 132kV Connection Project to demonstrate SPEN's consideration of its obligations under Section 38 and Schedule 9 to the Electricity Act 1989 (see **Chapter 2**); and evidence that it has complied with its duty to do what it can to mitigate the effects of the development on the environment.

1.13 Where possible, a consistent approach to the appraisal of the environmental effects of the Scoop Hill 132kV Connection Project has been taken for each topic (as noted above), reflecting and building upon the proposed method of appraisal and utilising the information contained within the EIA Screening Report (see **Chapter 2** below).

1.14 For consistency purposes, each topic chapter is structured as follows:

- Introduction;
- Scope of Appraisal and Study area;
- Policy and Guidance;
- Methodology;
- Baseline;
- Good Practice/Embedded Mitigation;
- Appraisal of Effects;
- Proposed Additional Mitigation; and
- Summary and Conclusions.

1.15 Following the establishment of the appraisal methodology used, including the criteria by which each level of effect is defined and thereafter the baseline environmental conditions, each chapter considers direct, indirect and cumulative effects of the Scoop Hill 132kV Connection Project taking into account any proposed good practice/design measures[2]. Should any effects require additional mitigation in order to make them of a lesser magnitude and therefore more acceptable, then additional mitigation measures are proposed and residual effects appraised. **Appendix 1.1** provides a consolidated list of all good practice/embedded mitigation, additional mitigation measures and any enhancement measures being proposed.

1.16 Each chapter, where relevant, has given consideration to the potential cumulative effects that the construction and operation of the Scoop Hill 132kV Connection Project could have on receptors in-combination with other proposed and committed developments during construction and/or operation. Given the limited number of proposed developments within the area, the cumulative schemes considered has been limited to the following:

- Scoop Hill Community Wind Farm: Application stage scheme comprising 60 turbines (originally 75 turbines) at up to 250m to tip height, a new substation and energy storage facility.
- Moffat Substation Extension: Small extension on the northern side of the existing Moffat substation. This small extension is required to facilitate the Scoop Hill 132kV Connection Project but will be subject to a separate application.

1.17 For OHL developments, it is generally accepted that the effects during decommissioning would be of a lesser magnitude and extent than those during construction. In addition, there are also difficulties in predicting future baseline conditions upon which to base an assessment of decommissioning effects. For these reasons, decommissioning effects are not appraised in this ER.

1.18 The ER has been prepared in accordance with the latest Scottish Government guidance[3], and the topic chapters draw upon the most up-to-date guidelines where relevant.

[2] Embedded mitigation measures, comprising general good practice construction measures and design will be employed as standard techniques. Therefore, these are not considered to be mitigation as such, but an integral part of construction. This is considered a realistic scenario given the current regulatory context and accepted good practice across the construction industry. A list of embedded mitigation/good practice and any additional mitigation measures are identified in each topic chapter. The assessments in this ER assume the implementation of these embedded/good practice measures.

[3] Scottish Government (August 2019) Applications to the Scottish Ministers under Section 37 of the Electricity Act 1989 without an EIA Report. Available [online] at: https://www.gov.scot/publications/energy-consents-overhead-line-applications-without-an-eia-report/.

Chapter 2
Routeing and Consultation and EIA Screening

Routeing and Consultation

2.1 Section 38 and Schedule 9 of the Electricity Act 1989 imposes a further statutory duty on SPEN to take account of the following factors in formulating proposals for the installation of overhead transmission lines:

- *"(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 it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects."*

2.2 SPEN's 'Schedule 9 Statement' sets out how it will meet the duty placed upon it under Schedule 9. The Statement also refers to the application of best practice methods to assess the environmental impacts of proposals and to identify appropriate mitigation measures.

2.3 As a result of the above, SPEN is required to identify electrical connections that meet the technical requirements of the electricity system, which are economically viable, and cause on balance, the least disturbance to both the environment and the people who live, work and enjoy recreation within it.

2.4 In developing and maintaining an efficient and co-ordinated technically and economically viable transmission system, in accordance with its statutory duties and transmission licence obligations, SPEN is committed to limiting disturbance to people and the environment by its operations. It is widely acknowledged that the best way to achieve this is through careful routeing. Routeing requires the exercise of professional judgement in weighing a range of issues to ultimately identify routes, which, on balance, best meet the project routeing objective.

2.5 A routeing exercise was undertaken in 2021 which comprised a review of environmental, technical and economic considerations and the application of SPEN's established

step-by-step routeing principles[4] to identify and appraise potential route options to establish a 'preferred' route for the Scoop Hill 132kV Connection Project. The methodology and findings of the routeing process are presented in the Scoop Hill 132kV Grid Connection: Routeing and Consultation Report (October 2021)[5].

2.6 As discussed in the Routeing and Consultation Report[4], the Routeing Objective for the Scoop Hill 132kV Connection Project was:

> "*To identify a technically feasible and economically viable route for continuous twin 132kV overhead lines supported on wood poles from the proposed Scoop Hill Community Wind Farm to two new 132kV switchbays at Moffat substation. The route should, on balance, cause the least disturbance to the environment and the people, who live, work and enjoy recreation within it."*

2.7 Following identification of a preferred route, consultation with the public, local authority and statutory and non-statutory consultees was carried out from 25th October to 21st November 2021, with comments being received from 25th October 2021 through to 28th November 2021.

2.8 Due to the Covid-19 pandemic and social distancing restrictions, in-person public exhibitions at the time of the consultation could not be held. Therefore, as a form of good practice, SPEN held a virtual online exhibition as an alternative to face-to face consultation. This was in addition to making the relevant information publicly available on SPEN's website.

2.9 The online exhibition included a series of information boards outlining details of the Scoop Hill 132kV Connection Project. The focus of the consultation was to obtain stakeholder views on:

- The preferred route option (Route Option 3);
- The alternative route options considered during the routeing process; and
- Any other issues, suggestions or feedback; particularly views on the local area, for example, areas used for recreation, local environment features, and any plans to build along the preferred route.

2.10 Consultees were also informed that comments at this stage were informal comments to SPEN and are made to allow SPEN to determine whether changes to the preferred route are necessary. It was made clear that the opportunity to comment formally to the Scottish Government Energy Consents Unit (ECU) would follow at a later stage in the process following submission of the application for Section 37consent and deemed planning permission.

2.11 In May 2022, SPEN published its Summary of Feedback from the Pre-Application Consultation report[6] which presented details of who was consulted and the feedback received and how this influenced the selection of the 'proposed route'. The report concluded that Route Option 3 continued to align with the Routeing Objective set out within the Routeing and Consultation Report (October 2021) and was considered to be the most technically feasible and economically viable route, which would cause, on balance, the least disturbance to the environment. Route Option 3 was therefore chosen as the 'proposed route' for progressing the Scoop Hill 132kV Connection Project.

EIA Screening

2.12 Following the identification of the proposed route through the routeing process, it was necessary to determine whether the Scoop Hill 132kV Connection Project would require an Environmental Impact Assessment (EIA) to be undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations'). EIA development falls into two categories: Schedule 1 development, for which EIA is mandatory; and Schedule 2 development, which is classified as EIA development where the development is "*likely to have significant effects on the environment by virtue of factors such as its nature, size or location"* (Part 1(2) of the EIA Regulations). The Scoop Hill 132kV Connection Project was potentially considered to be an EIA development under Schedule 2 of the EIA Regulations as it has a voltage of 132kV or more (Schedule 2 Part (2)(a)) and it will connect the Scoop Hill Wind Farm (for which Section 36 consent is required) to the electricity network (Schedule 2 Part (2)(c)). As a result, LUC, on behalf of SPEN, requested an EIA Screening Opinion from the Scottish Ministers in accordance with Regulation 8(1) of the EIA Regulations on 8th June 2022 (ECU case reference - ECU00004515). To inform the decision of the Scottish Ministers as to whether EIA was required, the

[4] SP Energy Networks (May 2021) Approach to Routeing and Environmental Impact Assessment, Version 2, Available [online] at: https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf

[5] SP Energy Networks (October 2021) Scoop Hill 132kV Connection Project Routeing and Consultation Report, Available [online] at : (https://www.spenergynetworks.co.uk/userfiles/file/Scoop_Hill_Routeing_and_Consultation_Document_FINAL_low_res.pdf

[6] SP Energy Networks (May 2022) Scoop Hill 132kV Connection Project Summary of Feedback from the Pre-Application Consultation. Available [online] at: https://www.spenergynetworks.co.uk/userfiles/file/11086_Scoop%20Hill_Summary%20of%20Pre-App%20Consultation%20Report_Final.pdf

information set out in Regulation 8(2) and 8(3) of the EIA Regulations as well as the selection criteria in Schedule 3 was provided in the EIA Screening Report[7]. The Scottish Ministers provided its EIA Screening Opinion[8] on 19th December 2022 which confirmed that EIA was not required based on the information presented in the EIA Screening Report.

2.13 In accordance with the latest Scottish Government guidance for Section 37 projects which are not subject to EIA[3], this ER provides an appraisal of the environmental effects of the Scoop Hill 132kV Connection Project to show how SPEN has considered its obligations under Section 38 and Schedule 9 of the Electricity Act, and demonstrate how it has complied with its duty to do what it can to mitigate effects of the proposals on the environment.

[7]SP Energy Networks (May 2022) Scoop Hill 132kV Connection Project EIA Screening Report. Available [online] at: https://www.spenergynetworks.co.uk/userfiles/file/Scoop%20Hill_Screening%20Report_Final.pdf

[8] Scottish Government (December 2022) Scoop Hill 132kV Connection Project Screening Determination. Available [online] at: https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004515.

Chapter 3
Project Description

Project Overview and Location

3.1 A new twin 132kV OHL grid connection is required to connect the proposed Scoop Hill Community Wind Farm to the existing substation at Moffat (Bearholm) (hereafter referred to as the 'Scoop Hill 132kV Connection Project). The Scoop Hill 132kV Connection Project will comprise twin 132kV OHLs which will run in parallel and will be supported on double 'H' wood poles, with circa. 31 double poles supporting each OHL (60 'H' poles in total). The twin OHLs will each be approximately 2.4km in length (approximately 4.8 km of OHL in total). A short section of underground cable (UGC) will also be required to connect the OHLs to the Moffat substation and will be approximately 360 m in length. The proposed infrastructure which comprises the Scoop hill 132kV Connection Project is shown in **Figure 3.1**.

3.2 A land right (wayleave) will be sought from each landowner for a corridor, typically 120m (comprising 50m either side of the centre of each OHL and a 20m space between the twin OHLs), to protect the OHLs from future development and from falling trees, as shown in **Figure 3.1**.

3.3 As illustrated on **Figure 3.1**, the Scoop Hill 132kV Connection Project extends from the proposed Scoop Hill Community Wind Farm substation, to the south of the minor summit of The Dod, travels north-west dropping in elevation over the north-western flank of the hill. It then crosses the forested Beldcraig Burn valley at a similar point to the existing 400kV OHL. The Scoop Hill 132kV Connection Project then broadly parallels the existing 400kV as it drops down the valley side to the east of Annadale River, passing over a minor road, crossing the River Annan and passing through low lying farmland before crossing under the 400kV OHL into the proposed extension on the northern side of Moffat substation.

3.4 The landscape surrounding the Scoop Hill 132kV Connection Project largely comprises the lower lying and more settled agricultural valley of the River Annan and the western valley sides. However, the eastern part of the study area is characterised by more elevated land, featuring smooth rounded hills. The elevation range across the study area is between approximately 80m Above Ordnance Datum (AOD) in the lower southern reaches of the valley floor, while the hill summits to the east include high points of 479m AOD at Craig Fell.

3.5 There are a number of scattered residential properties and farmsteads located along minor roads along the floor of the River Annan valley and on the lower slopes of hills to the east and west within the study area (the closest being approximately 500m to the west). The closest settlement is the village of Beattock, approximately 1km north-west of the existing Moffat substation. Minor roads and farm tracks link the properties to the east of the River Annan. To the west of the River Annan the M74, A701, B7076 and the West Coast Mainline all pass along the valley floor.

3.6 In terms of other existing electricity infrastructure in the surrounding area, the existing 400kV Scotland – England Interconnector OHL (ZV route) supported by steel lattice towers extends north-west to south-east across the study area, crossing the River Annan at Bearholm. The 400kV OHL connects to Moffat substation on the western bank of the River Annan, as shown in **Figure 1.1**.

Overhead Line and Ancillary Infrastructure

3.7 With OHLs of this nature, conductors (or wires) are suspended at a specified height above ground, incorporating minimum statutory safety clearances and supported by wooden poles, spaced at intervals.

3.8 Conductors can be made either of aluminium or steel strands. Each of the twin OHLs will include one three-phase circuit each with a separate underslung fibre wire for communication purposes. A separate fibre wire is required due to the high operating temperature of the phase conductors.

3.9 Conductors are strung from insulators attached to the steelwork at the top of the pole and prevent the electric current from crossing to the pole body.

3.10 Given the expected large generating capacity of Scoop Hill Community Wind Farm (circa. 432 MW), double 'Trident' 'H' poles operating at 132kV will be required and will share the output of the wind farm. Wood poles have been proposed to avoid the need for larger steel towers.

Wood Pole Structure

3.11 The proposed twin OHLs will be constructed using double Trident 'H' wood poles with galvanised steelwork on top of supporting aluminium conductors on insulators.

3.12 The proposed design is described below, and examples of typical 'H' pole designs are shown on **Figure 3.2**.

3.13 Wood poles can be used for single circuit lines operating at 132kV. Wood poles are fabricated from pressure impregnated softwood, treated with a preservative to prevent damage to structural integrity.

3.14 There are three types of wood pole structure, in terms of appearance:

- *Intermediate*: where the pole structure is part of a straight-line section;
- *Angle*: where there is a horizontal or vertical deviation in line direction of a specified number of degrees; and
- *Terminal*: where the overhead line terminates into a substation or on to an underground cable section via a separate cable sealing end compound or platform.

3.15 The double 'H' poles will allow a maximum deviation of up to 75 degrees. **Figure 3.1** illustrates where 'H' pole variants of the intermediate, angle and terminal poles will feature on each of the OHL circuits.

3.16 Although the twin OHLs run in parallel along the length of the route, each wood pole on the two circuits has been offset with the pole on the adjacent circuit to maximise the distance between them for operational safety purposes.

Wood Pole Heights and Span Lengths

3.17 The typical height of trident 'H' poles above ground (including steel work and insulators) varies from 10 m to 15 m. Along each proposed OHL circuit, the average height proposed is 13 m.

3.18 The section of OHL between wood poles is known as the 'span', with the distance between them known as the 'span length'. Span lengths between wood poles average between 80m to 100m but can be increased if there is a requirement to span a larger distance due to the presence of a feature in the landscape such as a river or loch. The average span length along the proposed OHL circuits is 80 m.

3.19 Wood poles are used to regulate the statutory clearances required for conductor height, which is determined by the voltage of the OHLs (the higher the voltage, the greater the safety clearance that will be required) and the span length between wood poles.

Wood Pole Colouring

1.19 Wood poles are dark brown when first erected and weather to a silver/grey after a period of about five years.

3.20 The wood pole top cross-arms are galvanised steel and support the aluminium conductors on stacks of grey insulator discs. Both the steelwork and aluminium will weather and darken after a few years.

Moffat Substation

3.21 The Scoop Hill 132kV Connection Project will require the electrical capacity of the existing Moffat substation at Bearholm to be increased. This will be achieved by installing a

new 400/132kV transformer, and two 400kV and 132kV circuit breaker bays, all of which will be undertaken within an extension at the north-eastern end of the substation – see **Figure 3.1**. SPEN will submit a separate planning application to Dumfries and Galloway Council for the substation extension and the above noted ancillary infrastructure needed to support the Scoop Hill 132kV Connection Project.

Scoop Hill Community Wind Farm Substation

3.22 To facilitate the connection from Scoop Hill Community Wind Farm to the transmission network, CWL has identified a location, where two 132kV substations will be constructed. One of these will be used by CWL for the collection of the generated power from the wind turbines and to step up the voltage from 33kV to 132kV, and the other by SPEN to transmit the power to Moffat substation. The SPEN substation shall comprise a two-bay switching arrangement which shall provide the connection to the OHLs. The substations form part of the S36 application for consent for Scoop Hill Community Wind Farm and have been assessed as cumulative schemes for the purpose of this ER.

Underground Cable

3.23 For technical reasons including the proximity of the 400kV Scotland to England interconnector OHL, a short section (approximately 360 m in length) of 132kV underground cable is required to complete the connection of the two new OHLs into the new Moffat substation extension transformer. With an underground cable, the conductors are encased in insulated material and buried in a backfilled trench of suitable depth and width.

Ancillary Development

3.24 In addition to the OHL and underground cable components detailed above, which are considered to be permanent for the purposes of the application for section 37 consent and deemed planning permission, other ancillary development will be required. This ancillary development will be in situ on a temporary basis (excluding the wayleave) and during the construction phase only, and will be reinstated once the Scoop Hill 132kV Connection Project is commissioned. Deemed planning permission is being sought for these ancillary components comprising:

- 120m wayleave through woodland[9];
- Access tracks;
- Working areas (around wood poles);
- Construction compound; and
- Winching/pulling areas.

3.25 These components are discussed further below.

Infrastructure Location Allowance

3.26 The routeing process has been used in combination with technical design work to develop the development footprint upon which the assessments in this ER are based. However, it is anticipated that, post consent, it may be necessary and desirable to refine the pole positions as well as the lines of access routes, to reflect the following:

- Pre-construction confirmation of dynamic environmental conditions, e.g. the location of protected species;
- More detailed technical survey information, particularly for unconfirmed ground conditions such as the forested areas;
- To provide further scope for the effective mitigation of any likely environmental effects; and
- Minor alterations requested by landowners.

3.27 To ensure that the final positions of the OHLs and associated works are not varied to such a degree as to worsen the environmental effects outlined in this ER, an Infrastructure Location Allowance (ILA) of 50 m is proposed. This would permit the siting of a pole and underground cable to be adjusted within a 50 m radius of the indicative locations shown in **Figure 3.1** and a 50 m tolerance either side of the indicative access track locations.

3.28 Implementation of the ILA would be controlled through the proposed detailed Construction Environmental Management Plan (CEMP). Should a request to vary a pole or access track position within the ILA be raised, the relevant environmental baseline surveys undertaken to inform the ER would be reviewed in the first instance as these surveys extend beyond the proposed 50m ILA tolerance. Should this review 'flag up' any potential issues, further environmental advice would then be sought from retained specialists as appropriate. A procedure for notifying relevant statutory consultees of proposed ILA movements would also be agreed with these bodies prior to construction commencing.

Construction Process

Wood Pole Construction

3.29 The construction of the OHLs will follow a well-established sequence of activities as outlined below:

[9] The wayleave will remain in situ for the duration that the OHLs and underground cables are in situ.

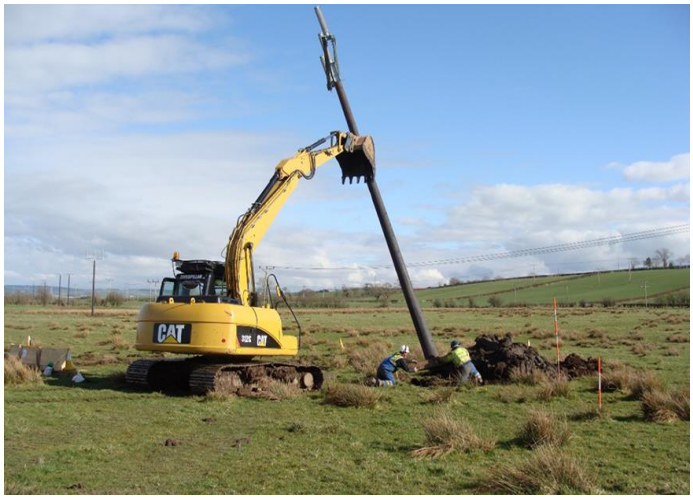
- Preparation of accesses and felling of woodland within the wayleave corridor to allow safe operation of the OHLs;
- Excavation of foundations;
- Delivery of wood poles;
- Erection of wood poles;
- Delivery of conductor drums and stringing equipment;
- Insulators and conductor erection and tensioning; and
- Clearance and reinstatement.

3.30 The erection of the wood poles will require a small excavation to allow the pole brace block and/or steel foundation braces to be positioned in place. A typical pole excavation will be 3m by 2m deep. The excavated material will be sorted and stored and used for backfilling purposes. No concrete is required.

Photo 3.1: Typical Double Wood Pole Foundation Excavation

3.31 Poles are erected in sections, i.e. between angle support poles and/or terminal support poles. The insulator fittings, and wood poles forming the pole support, will be assembled local to the pole site and lifted into position utilising a tracked excavator which excavates the foundations. The pole foundation holes will then be backfilled, and the pole stay wire supports attached to the ground in preparation for conductor stringing, erection and tensioning.

Photo 3.2: Erection of Wood Pole



Underground Cable Construction

3.32 For the 132kV cables, two 1 to 1.5m x 1m trenches will be excavated. This will be undertaken through an 'open cut' of the ground surface to create cable trenches within which the cables will be laid. The cables will be laid on a bed of thermally selected sand and backfilled with the previously excavated material, with the excess material spread in proximity to the excavation, in agreement with the landowner. Standard excavation equipment will be used for the trenches. The only additional/specialised equipment is a cable pulling winch to pull the individual cables through the installed ducting at each cable joint bay along the cable route.

Access

3.33 Delivery of construction materials to wood pole locations will be achieved by access from public roads as shown in **Figure 3.1**. Vehicular access will be required to every pole location along the route during construction, and final access arrangements will be agreed with landowners.

3.34 The initial preference when taking temporary access is to use low ground pressure vehicles and plant. Where access is required to be taken through any sensitive areas or wetter/boggy ground, less intrusive methods such as temporary steel matting, or timber roadways may be employed.

3.35 The use of temporary stone tracks is unlikely for the construction of wood pole connections. However, if small sections are required, all temporary tracks will be removed after commissioning with land being restored to as close to its former condition as possible.

Temporary Construction Compound and Working Areas

3.36 One temporary construction compound is proposed for the storage of material, equipment, site offices and staff welfare facilities within the existing Moffat substation. The temporary construction compound will be located in an area of existing hardstanding within the substation compound[10]. The construction compound will have existing road access from the existing public road networks, including the M74 motorway and A701 to facilitate the delivery of materials.

3.37 Prior to constructing the OHLs, temporary working areas around each pole location will be required for foundation excavation and pole erection. Any vegetation that requires removal will be removed or lopped. Wood pole locations will have a working area of approximately 20 m x 30 m. In some cases, the shape or size of the working area will be determined by nearby environmental or land use constraints, identified prior to construction. Each working area will be taped off to delineate the area for environmental protection reasons. Following the completion of the construction works, the temporary working areas will be reinstated and restored to former conditions.

3.38 Once a sufficient number of sequential poles have been erected, stringing of the conductors will be undertaken. This requires temporary 'pulling' (or 'stringing') areas at certain pole locations along a line or where deviation in the route occurs, such as at wood poles 13, 51 and 51 as shown in **Figure 3.1**. At each pole pulling area, a winch will be positioned and set up at one end of the stringing section, with a 'tensioner' set up similarly at the other end of the section. Pilot wires will be placed in blocks fitted to the top of the insulator strings on the poles and connected around the winch and tensioner at either end. Using the winch to pull the pilot wires, the conductor will then be drawn through the section, using the tensioner to maintain a constant tension. This allows the conductor to be controlled without touching the ground, avoiding damage to both the conductor and the underlying ground. A winch for the stringing of a pole is shown in **Photo 3.3**.

Photo 3.3: Conductor Stringing Winch

3.39 The typical pulling area is approximately 20 m x 30 m. All temporary surfacing materials will be removed from site on completion of the stringing operations.

Construction Timescales

3.40 The indicative programme for the construction of the Scoop Hill 132kV Connection Project is approximately 12 months, although detailed programming would be the responsibility of the Principal Contractor in agreement with SPEN.

3.41 Construction and erection of a standard double pole generally takes approximately half a day depending on ground conditions and location, i.e. construction may take longer if the ground is softer.

3.42 Construction activities will be undertaken on Monday to Friday during daytime periods only, between 07.00 and 19.00 or where daylight allows within these times. There may be a requirement to work at weekends.

3.43 Construction traffic will comprise vehicles for delivery of plant, equipment, wood poles, conductors, underground cables and tree removal. The vehicles used to construct the Scoop Hill 132kV Connection Project will range from HGV (low-loader) for pole, plant and equipment delivery to 4x4 vehicles. In total, 60 double wood poles will be delivered to site, with each HGV carrying an estimated 20 poles per load (three loads in total). HGVs will also be required for the delivery of tracked excavators, conductor pulling winches, drums of conductor, pole top steel work, stay wire drums, etc.

[10] As the construction compound is located within the existing substation compound it does not farm part of the S37 and deemed planning application.

3.44 Each pole will require four construction staff who will be transported to the pole location in 4x4 vehicles. Two 4x4s will therefore be required for the construction of the wood poles on the basis that there will be two teams working in the west and east of the route. Construction at each pole location will also require two tracked excavators.

Operation and Maintenance

3.45 Whilst most OHL components are maintenance free, exposed elements which suffer from corrosion, wear, deterioration and fatigue may require inspection and periodic maintenance. OHL cables generally require refurbishment after approximately 40 years. For UGCs, there is no set time frame but these are built to last a minimum of 40 years.

3.46 Any felled wayleave areas will also have to be managed to maintain the required safety clearances whilst the connection remains in service. Walkover surveys or flyovers will identify where there is a requirement to clear wayleaves of new growth.

Site Reinstatement and Aftercare

3.47 Following construction, all areas disturbed will be reinstated. This would form part of the contract obligation for the Principal Contractor and would involve the removal of any temporary access tracks, all working areas and the re-vegetation of disturbed ground.

3.48 Details of the reinstatement works will form part of the CEMP – see below.

Decommissioning

3.49 The operational life of the proposed Scoop Hill 132kV Connection Project will align with that of the Scoop Hill Community Wind Farm, which is also expected to be operational for 40 years should Section 36 consent be granted. Depending on whether Scoop Hill Community Wind Farm is repowered or decommissioned after 40 years of operating, the OHLs will either be re-equipped with new conductors and insulators and refurbished or removed in their entirety, with components re-used where possible. All ground disturbance will be fully reinstated upon final decommissioning.

OHL Route Design

3.50 Following the identification of a 'proposed route' through the Routeing and Consultation process, work was progressed to identify the most appropriate alignment for the Scoop Hill 132kV Connection Project. This design process was led by the SPEN OHL design team informed by the emerging findings of the environmental surveys and landowner feedback. At this stage, SPEN defined the location of individual wood poles, access tracks and working areas based on key environmental and technical constraints, including landscape and visual amenity, hydrology including watercourses, altitude, topography, accessibility and proximity to existing OHL infrastructure.

Project Design Parameters

3.51 It is important to highlight the following project parameters which influenced the design of the Scoop Hill 132kV Connection Project from the outset:

1. The purpose of the Scoop Hill 132kV Connection Project is to provide a connection for the Scoop Hill Community Wind Farm;
2. The output capacity of the wind farm was an important design parameter in influencing the selection of the support type which could accommodate this output and would cause the least disturbance to the environment (double 'H' wood poles);
3. Under section 38 and Schedule 9 of the Electricity Act 1989 ('the Act'), SPEN is required to consider technical, economic and environmental issues in undertaking its duties, for which design plays an important role. As a consequence of the above, design and routeing objectives for Scoop Hill 132kV Connection Project required technical, economic and environmental issues to be balanced; and
4. The design strategy reflects well established procedures and guidance (the Holford Rules[11]) and incorporates poles and associated infrastructure used widely across the UK electricity transmission network.

3.52 In line with established practice, the design of the following components was considered in sequence; informed by technical considerations, including the required transmission capacity:

1. The pole locations, type, and span length;
2. The location and design of access tracks and working areas; and
3. The design of forestry felling and re-planting.

[11] The Holford Rules for the Routeing of New High Voltage Overhead Transmission Lines (1959). Reviewed circa 1992 by the National Grid Company (NGC) plc (now National Grid Transmission (NGT)) as owner and operator of the electricity transmission network in England and Wales, with notes of clarification added to update the Rules. Both the Holford Rules (and NGC clarification notes) were reviewed subsequently by Scottish Hydro Electric Transmission Limited (SHETL) in 2003 to reflect Scottish circumstances. Whilst these relate to towers only, the principles are also useful in routeing high voltage wood pole lines.

3.53 These elements are discussed below.

Wood Pole Design

3.54 The key design objective for selection of the wood poles has been to meet technical requirements, including capacity, safety, network security requirements, and OHL design parameters, whilst taking account of economic and environmental considerations.

3.55 On this basis, SPEN selected a 132kV double 'Trident' 'H' wood pole design because it is not as intrusive as larger steel towers on the landscape. Pole locations can also be relatively flexible and the construction requirements of timber structures would also be potentially less disruptive to the landscape and habitats found along the route.

Access Track Design

3.56 Access to wood pole locations and working areas is proposed during the construction of the Scoop Hill 132kV Connection Project. The overall design objective for the access tracks has been to avoid and/or reduce effects upon natural heritage interests and to cause the least disturbance to current land use and land management practices. The principle method employed to achieve this has been to maximise the use of existing tracks where possible.

3.57 Where this is not possible, or where the use of existing tracks would result in unnecessarily long connecting tracks, two options for temporary access tracks have been considered as follows:

1. The use of temporary spurs from existing roads/tracks to each pole; and
2. The use of temporary tracks between poles which connect to an existing road or track and which run adjacent to field boundaries.

Forest Felling and Re-Planting Design

3.58 The overall design objective has been to minimise the extent of felling required, and woodland areas and individual trees were avoided where possible during the Routeing phase. Where routeing through woodland has been unavoidable, a 'wayleave' corridor is required for safety reasons to ensure that trees do not fall onto the line and for health and safety of forestry operatives. SPEN has statutory powers to control tree clearance within the wayleave corridor. For the Scoop Hill 132kV Connection Project, a corridor of 120 m (i.e. 50 m either side of the centre line of each OHL) was identified. Where possible, the wayleave corridor has been reduced to avoid/minimise felling of mature broadleaf trees in the vicinity of Beldcraig Wood whilst maintaining operational safety, and 'crowning' of individual mature trees is proposed where this can be accommodated to avoid felling the tree. Further details of the proposed forestry felling requirements are provided below.

Route Design Iterations

3.59 The Routeing process effectively acted as an early design tool to minimise adverse effects of the Scoop Hill 132kV Connection Project by identifying a route which best addressed key environmental and technical constraints from the outset. Given the short length of the route, and the limited environmental constraints identified through baseline environmental surveys, design iterations made to the initial SPEN alignment have been minimal. Changes made were in relation to hydrology which involved moving the working areas at poles 14 and 44 at-least 10 m from Beldcraig Burn for pollution prevention purposes.

Forestry

3.60 The felling of some woodland and individual trees will be required to physically construct the Scoop Hill 132kV Connection Project and also to maintain the statutory clearances required for its safe operation and maintenance. The clearance corridor (wayleave or servitude right) required for operational reasons is 50 m either side of the centre line of each OHL and 20 m between each OHL circuit (120 m in total). The wayleave assumed for the underground cables is 10 m either side. Where the OHLs are routed through other woodland areas, such a broadleaf, the extent of tree clearance within the wayleave will be determined pre-construction based on a detailed assessment of the type, age and condition of trees in that location to minimise loss of trees.

3.61 As shown on **Figure 3.1**, the OHLs pass for a distance of approximately 170 m through Beldcraig Wood. To the south of the Beldcraig burn, the woodland is predominately conifer and to the north of the burn it is birch dominated woodland. The OHLs also cross the riparian broadleaf strip of woodland on both banks of the River Annan. The underground cables connect into Moffat substation which has a mixed species woodland planted around it for screening purposes.

3.62 The total area of forestry and woodland within the wayleave corridor is 2.9 hectares (ha).

3.63 Due to the topography and specific areas of mature broadleaf trees, including at Beldcraig Wood, it is considered that there is an opportunity to retain sections of trees within the overall 2.9 ha through a reduced tree corridor width of 54 m for the OHLs (made of 24 meters between lines, and 15m either side), and this will ensure that the loss of broadleaf trees in this area is minimised. This could potentially reduce the tree felling from 2.9 ha to 1.68 ha (as per details in **Table 3.1**).

3.64 The broadleaved section of Baldcraig Burn is registered in the Native Woodland Survey of Scotland (NWSS) as Upland Birchwood. It is proposed to fell a corridor of these trees to a reduced width of 54 m over a distance of 87 m. The tree clearance required will be 0.47 ha of mixed broadleaved woodland.

3.65 The balance of required tree clearance will be fully mitigated in terms of forest loss by the offsite planting of compensatory woodlands. This action is in line with the Scottish Government policy on Control of Woodland Removal 2009. With landowner agreement and in consultation with Scottish Forestry (SF), SPEN may also seek to replant certain sections of the wayleave corridor and the wayleave corridor edge with low growing shrub species, sourced from local seed provenance, which are not deemed to put at risk the ongoing safe operation of the OHLs.

3.66 The project is committed to delivering the required compensatory planting of woodland within 5 years of the project start date in a location and to a design agreed with the Scottish Government or their designated agent Scottish Forestry.

Table 3.1: Tree Clearance Required for the Scoop Hill 132kV Connection Project

Location	Wood pole numbers	Description	Area within wayleave (ha)	Tree clearance at construction (ha)
Baldcraig Burn South West	Pole 14 and pole 44	Mature conifer plantation (Norway Spruce, Sitka Spruce) at circa 35 meters height	77 meters x 120 meters wayleave = 0.92 ha	Tree clearance over 0.75 ha, with 15m wide section remaining not felled within wayleave to act as a buffer of possible windthrow risk to the forest compartment remainder. Removal of isolated group of trees = 0.07 ha outside of wayleave corridor. Total of 0.82 ha.
Baldcraig Burn North East	Pole 15 and Pole 45	Mature and relatively long established Birch-Oak woodland. 15-20 meters height.	93 meters x 120 meters wayleave = 1.12 ha	Tree clearance over 54 meters wide corridor = 0.47 ha
Breaconside Hedge	Pole 17 and Pole 47	Mature beech hedge. 15 meters height.	9 meters x 120 metres = 0.11 ha	Reduction in height of all the hedge - to 2.5 metres.
River Annan	Pole 28 and Pole 58	Riparian broadleaves, eastern bank. Shrubs: willow, ash, hawthorn, birch.	0.14 ha of trees and scrub	Tree clearance under 54m wide corridor = 0.07 ha
River Annan	Pole 29 and Pole 59	Riparian broadleaves, western bank. Shrubs: willow, ash, hawthorn, birch.	0.11 ha of trees and scrub	Tree clearance under 54m wide corridor = 0.05 ha
Substation screening plantations	Pole 30 and Pole 60	Broadleaved trees: hazel, rowan, hawthorn, willow, alder, some pine. 10meters high.	25 meters x 120 meters wayleave = 0.35 ha	Tree clearance under 54m wide corridor = 0.12 ha
Substation screening plantations	UGC Location		0.12ha + 0.03 ha isolated block = 0.15 ha	0.15 ha
			Total = 2.9	**Total = 1.68**

3.67 In some areas, the felling of forestry for the wayleave will be only part of a forest compartment and as such expose those remaining, and previously sheltered, trees to the wind. Where these trees are semi-mature or mature this is described, within the forest industry, as creating a "brown edge". The remaining trees in these forest compartments in many cases will be less stable and as such prone to future windthrow. Due to the site-specific conditions in terms of exposure, soils, drainage, altitude and aspect, there is a risk of these trees either falling or failing to reach commercial maturity. It is therefore proposed to fell an additional 0.07ha of forestry outside the wayleave, as shown in **Figure 3.1**. As the areas vulnerable to windthrow are outwith the wayleave corridor, SPEN has no mechanism for felling and/or replanting these areas. However, SPEN is committed to liaising with landowners to agree that these areas be felled to mitigate the risk of forest damage through windthrow. The felling of these areas would require the agreement of the landowner, and would be delivered under a felling permission to be applied for by the landowner. It is anticipated that any felling permission would be granted on the basis that the felled woodland is replanted. Should the landowner not agree to pre-emptively fell the trees to create a more windfirm edge, and they subsequently suffer from windthrow, it is within the control of SF using the powers contained in the Forestry and Land Management (Scotland) Act 2018 and associated Felling (Scotland) Regulations 2019 to ensure that these areas are replanted using felling and restocking directions.

3.68 Felling will be undertaken utilising a mixture of mechanical harvesting, mulching and hand felling techniques, as well as lopping/crowning where the entire tree is not required to be felled to meet statutory safety clearances.

3.69 SPEN will undertake regular inspections throughout the lifetime Scoop Hill 132kV Connection Project to ensure that no clearance infringements occur. Should these be identified then SPEN would undertake necessary assessments to ensure that clearance works are undertaken in line with SPEN's statutory and licence duties.

Use of Natural Resources and Production of Waste

Use of Natural Resources

3.70 The Scoop Hill 132kV Connection Project will not require significant use of natural resources, including resources which are non-renewable or in short supply. There will be no major changes to land use within the local area as a result of the OHLs, with only minimal long-term land take required for the wood poles and underground cables, although a small area of land may require to be removed from forestry – up to 1.68 ha.

3.71 There would be no loss of soil, and peat, and the construction methodology would ensure that watercourse crossings did not give rise to any reduction in water quality or impede water flow, while there would be no requirement for potable water consumption.

Production of Waste

3.72 The Scoop Hill 132kV Connection Project will not give rise to any significant quantities of waste as a result of the installation of the OHLs and underground cables. Any soils or peat removed as part of the excavation of pole footings and cable trenches will be replaced in situ as per standard industry practice. Good practice waste management methods will be implemented during the construction phase. These will encourage the reduction, reuse and recycling of wastes. Mitigation measures will be put in place to further minimise the potential environmental effects associated with the storage and transportation of waste, with further details provided below:

- Waste will be generated, and will require management, at a number of construction stages including:
  - Tree felling and clearance of vegetation along the route to enable access to pole locations and construction of the OHLs;
  - Stripping of topsoil and excavation of materials for construction of poles and cable trenches; and
  - Construction of ancillary works, including temporary working areas.

3.73 Measures to reduce possible environmental effects associated with the storage and transportation of waste will include:

- The careful location of stockpiles and other storage areas;
- The use of good practice in the design of waste storage areas and the use of suitable waste containers;
- The use of sheeting, screening and damping where appropriate and practicable;
- The control and treatment of runoff from soil and waste soil stockpiles;
- Minimising storage periods;
- Minimising haulage distances; and
- The sheeting of vehicles.

3.74 Any materials that cannot be reused will be disposed of according to relevant waste management legislation which will serve to address a number of possible environmental effects.

3.75 All of the above details will be enforced through a Site Waste Management Plan (SWMP) as part of the Construction Environmental Management Plan (CEMP).

Biodiversity Enhancement

3.76 In accordance with National Planning Framework (NPF) 4 (Policy 3), SPEN is committed to achieving No Net Loss (NNL) and Biodiversity Net Gain (BNG) across all of its projects. This means we are actively moving away from simply mitigating effects on species and ecosystems to enhancing the stock of natural resources on land within our control. This ambition is necessary in light of the Scottish Government's requirement that all projects should conserve, restore and enhance biodiversity so that it is in a demonstrably better state than before the project was proposed. To ensure that the Scoop Hill 132kV Connection Project achieves SPEN's internal NNL policy, and therefore NPF4's requirements for biodiversity enhancement, it will be necessary to deliver habitat creation and enhancement measures, either on or off-site, via a detailed Biodiversity Enhancement Plan (BEP) which will be secured via a planning condition to the Section 37 consent. The BEP will be prescribed to ensure that newly created, retained and enhanced habitats continue to benefit the habitats and species and provide connectivity to the wider landscape long into the future. **Appendix 5.2: Biodiversity Net Gain Report** provides examples of which potential habitat creation and interventions would aid SPEN in achieving NNL and BNG.

Environmental Management

3.77 Prior to the construction of the Scoop Hill 132kV Connection Project, SPEN will develop a detailed CEMP with its appointed contractors. The CEMP will identify those responsible for the management and reporting on the environmental aspects during construction. The CEMP will be used to ensure a commitment to meeting all relevant conditions attached to the Section 37 consent and deemed planning permission. Adherence to the CEMP will be a contractual requirement of each contractor that SPEN appoints.

3.78 The purpose of the CEMP will be to:

- Provide a mechanism for ensuring that construction methods avoid, minimise and control potentially adverse significant environmental effects, as identified in the EIA Report;
- Ensure that good construction practices are adopted and maintained throughout construction;
- Provide a framework for mitigating unexpected effects during construction and decommissioning;
- Provide assurance to third parties that agreed environmental performance criteria are met;
- Establish procedures for ensuring compliance with environmental legislation and statutory consents; and
- Detail the process for monitoring and auditing environmental performance.

3.79 The CEMP will be updated when necessary to account for changes or updates to legislation and good practice methods throughout the construction and decommissioning phases. The CEMP will also be amended to incorporate information obtained during detailed ground investigations which will be undertaken post consent and prior to construction activities. Compliance with the CEMP (including procedures, record keeping, monitoring and auditing) will be overseen by a suitably qualified and experienced Environmental Manager from SPEN.

3.80 The CEMP will contain the following information:

- Policies and objectives;
- Regulatory controls and guidance to be followed;
- A completed register of contacts confirming the contact details for all key personnel for managing environmental issues, including SPEN representatives, the Ecological Clerk of Works (ECoW), Principal Contractor contacts, and appropriate environmental regulator contacts;
- Construction Programme and detailed working method statements;
- A site-specific action plan, providing a register of environmental risks and outlining the requirement for accompanying site-specific mitigation, monitoring and management system reporting procedures;
- Audit and inspection procedures;
- Training plans;
- Communication plans (onsite, key stakeholders, neighbours and community).

3.81 In addition, the CEMP will contain the following documents, which the Principal Contractor and their sub-contractors will be required to adhere to throughout the construction process:

- A Pollution Prevention Plan (PPP);
- Construction Method Statements (CMS);
- A Water Protection Plan (WPP);
- A Site Waste Management Plan (SWMP);

- A Construction Traffic Management Plan (CTMP).
- Bird Protection Plan (BPP) and Species Protection Plan (SPP).

3.82 The CEMP and associated plans will be submitted to Dumfries and Galloway Council, and others as appropriate, prior to the commencement of construction works for sign-off.

3.83 The Principal Contractor will be responsible for the continual development of the CEMP to take account of monitoring and audit results during the construction phase and changing environmental conditions and regulations.

3.84 The services of other specialist advisers will be retained as appropriate, to be called on as required to advise on specific environmental issues.

3.85 Performance against these documents will be monitored by SPENs Construction Project Manager and the ECoW throughout construction.

Health and Safety

3.86 Health and safety is of primary importance to SPEN, with commitment from the highest levels. In constructing and operating the Scoop Hill 132kV Connection Project, SPEN will take account of the health and safety of all those who could potentially be affected, including construction workers, felling operatives, SPEN company operatives and the general public.

Construction and Decommissioning

3.87 All construction activities will be managed within the requirements of The Construction (Design and Management) Regulations 2015 and will not conflict with the Health and Safety at Work etc Act 1974. To further reduce possible health and safety risks, a Health and Safety Plan will also be drawn up. All staff and contractors will be required to comply with the safety procedures and work instructions outlined in the Plan at all times.

3.88 To ensure that hazards are appropriately managed, risk assessments will be undertaken for all major construction activities, with measures put in place to manage any hazards identified.

3.89 Current industry standards will be followed to manage the risks posed by heavy equipment, falls from heights and rough and dangerous terrain. Information will be made available to the public with respect to any possible safety hazards and open excavations will be fenced off.

Operation and Maintenance

3.90 OHL components, including conductors and insulators will be designed and tested at the manufacturers to ensure compliance with relevant UK and European Standards. This will include testing the performance of insulators under stress, the carrying capability of conductors and the effects of voltage and current on the mechanical strength of the fittings.

Community Liaison

3.91 In partnership with SPEN, the appointed contractors will be required to maintain close liaison with local community representatives, landowners and statutory consultees throughout the construction and decommissioning periods. This is likely to include circulation of information about ongoing activities, particularly those that could potentially cause disturbance. A telephone number will be provided and persons with appropriate authority to respond to calls and resolve any problems made available.

3.92 SPEN and the appointed contractors will liaise with the local councils and communities to identify any major events in the area and to programme construction works to ensure that these do not disrupt the local road network on those days.

Chapter 4
Landscape and Visual Amenity

Introduction

4.1 This Chapter presents the findings of a Landscape and Visual Appraisal (LVA) of the potential effects of the proposed Scoop Hill 132kV Connection Project (double wood poles supporting two new 132kV OHLs) on landscape and visual amenity. It details the baseline environment, based on both desk-based studies and field survey. A description of potential effects, together with proposed mitigation measures, is also provided.

4.2 The LVA has been undertaken by LUC and is supported by the following appendix:

- **Appendix 4.1: ZTV and Visualisation Production Method.**

4.3 The assessment is also accompanied by the following figures:

- **Figure 4.1.1a and b: Pole Tip Height Zone of Theoretical Visibility (ZTV) and Viewpoint Locations (A3 and A1 format);**
- **Figure 4.1.2a: Local Landscape Character Types;**
- **Figure 4.1.2b: Local Landscape Character Types with Pole Tip Height Zone of Theoretical Visibility (ZTV);**
- **Figure 4.1.3a: Designated Landscapes;**
- **Figure 4.1.3b: Designated Landscapes with Pole Tip Height Zone of Theoretical Visibility (ZTV);**
- **Figure 4.1.4: Schemes Included in the Cumulative Appraisal;**
- **Figure 4.2.1: Viewpoint 1 – Newmills;**
- **Figure 4.2.2: Viewpoint 2 - Minor road near Milton;**
- **Figure 4.2.3: Viewpoint 3 - A701;** and
- **Figure 4.2.4: Viewpoint 4 - Minor road, south of Moffat.**

Scope of Appraisal and Study Area

Scope of the Appraisal

4.4 The following effects were identified for consideration in the appraisal:

- Direct effects on the landscape fabric of the Site;
- Direct and indirect effects on landscape character across the LVA study area, which is defined as a 3km radius around the Scoop Hill 132kV Connection Project ;
- Indirect effects on designated landscapes across the LVA study area;
- Effects on views from key viewpoints, settlements and routes across the LVA study area; and
- Cumulative effects, through interactions with consented and proposed wind farms, overhead line (OHL) and other electricity infrastructure projects, across the LVA study area.

4.5 The following effects were not considered:

- Effects on landscape and visual receptors across the LVA study area where the project Zone of Theoretical Visibility (ZTV) mapping (refer to **Figure 4.1.1)** indicates minimal or no theoretical visibility, and which are therefore unlikely to experience effects;
- Indirect effects on landscape character outside the LVA study area;
- Indirect effects on designated landscapes outside the LVA study area;
- Visual effects from viewpoints, settlements and routes outside the LVA study area;
- Effects on residential visual amenity: and
- Cumulative effects, through interactions with consented and proposed wind farms, OHL and other electricity infrastructure projects, outside the LVA study area.

Study Area

4.6 The LVA study area is shown on **Figure 4.1.1** and comprises a 3 km radius in all directions from the proposed OHLs. Due to the scale and nature of the Scoop Hill 132kV Connection Project, (two OHLs supported with double wood poles at an average height of 13m[12]) landscape and visual effects at distances of greater than 3 km are unlikely to be notable.

Policy and Guidance

4.7 Current policy and guidance of relevance to the appraisal is detailed below.

Policy

4.8 The statutory Development Plan comprises National Planning Framework 4 (2023) and the Dumfries and Galloway Local Development Plan (LDP2), adopted in 2019.

Guidance

4.9 The appraisal is carried out in accordance with the principles contained within the following documents:

- Guidelines for Landscape and Visual Impact Assessment' (Third Edition) (GLVIA3)[13];
- Assessing the Cumulative Impact of Onshore Wind Energy Developments (2021)[14];
- Visual Representation of Wind Farms, Version 2.2[15];
- Technical Guidance Note 06/19 Visual Representation of Development Proposals[16];
- Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11[17]; and
- The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (with National Grid Company plc (NGC) 1992 and Scottish Hydro-Electric Transmission plc (SHETL) 2003 Notes).

Methodology

4.10 The objectives of the appraisal are to identify and appraise the potential for landscape and visual effects arising as a result of the Scoop Hill 132kV Connection Project. The identification of landscape and visual effects is the result of applying professional judgement within an evidence-based appraisal process.

Desk Study and Information Sources

4.11 The following data sources were used in the desk study:

[12] Whilst the average height of wood poles will be 13m, the ZTV has been calculated on individual wood pole heights (up to 20m as a worst case) for ZTV mapping purposes.
[13] Landscape Institute and Institute of Environmental Management & Assessment (2013), Guidelines for Landscape and Visual Impact Assessment (Third Edition).
[14] NatureScot (2021), Assessing the cumulative impact of onshore wind energy developments. [Online] Available at: https://www.nature.scot/guidance-assessing-cumulative-impact-onshore-wind-energy-developments
[15] SNH (2017), Visual Representation of Wind Farms, Version 2.2. [Online] Available at: https://www.nature.scot/visual-representation-wind-farms-guidance
[16] Landscape Institute (2019), Technical Guidance Note 06/19 Visual representation of development proposals. [Online] Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf
[17] SNH (unpublished, 2018). Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11

- Ordnance Survey (OS) Landranger 1:50,000 scale and Pathfinder 1:25,000 scale maps;
- Online map search engines;
- OS Terrain® 5 height data (DTM);
- OS Terrain® 50 height data (DTM);
- Raster Data at 1:50,000 (to show surface details such as roads, forest and settlement detail equivalent to the 1:50,000 scale Landranger maps);
- Raster Data at 1:250,000 (to provide a more general location map); and
- Data from other wind farm, OHL and electricity infrastructure applications[18].

Field Survey

4.12 Field survey work was carried out during several visits to the study area under differing weather conditions between April 2022 and April 2023. Records were made in the form of field notes and photographs. Field survey work included visits to the Site (the area in which the Project is proposed), viewpoints, designated landscapes, and extensive travel around the study area to consider potential effects on landscape character and on experiences of views seen from designated landscapes, settlements and routes.

Consultation

4.13 Following screening, consultation was carried out with NatureScot and DCG in August 2023, to confirm the appraisal viewpoints (as suggested through screening); extents of the LVA study area (defined as a 3km radius); and scope of the cumulative appraisal.

4.14 No formal response to the consultation letter was received, so it is assumed that the viewpoints and study area, as set out in consultation, are appropriate.

Assumptions and Limitations to the Appraisal

4.15 No substantial information gaps were identified during the preparation of baseline information or undertaking of the appraisal, and it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and appraisal of likely effects on landscape, views and visual amenity.

Appraisal Method

4.16 The methods and approach used to carry out the appraisal were informed by the *'Guidelines for Landscape and Visual Impact Assessment'* (Third Edition) (GLVIA3)[19]. LVA is distinct from Landscape and Visual Impact Assessment (LVIA) . With reference to LVA, GLVIA3 states that *'The principles and processes of LVIA can also be used to assist in the 'appraisal' of forms of land use change or development that fall outside the requirements of the EIA Directive and Regulations. Applying such an approach in these circumstances can be useful in helping to develop the design of different form of development or other projects that may bring about change in the landscape and in visual amenity.'*

4.17 Although an LVA describes effects, it is not required to determine 'significance', as would be the case under the EIA Regulations[20]. The term 'importance' is used in this LVA to describe potential effects. **Diagram 4.1** below is intended to assist the decision-maker in understanding the weight to be given to these effects.

4.18 The basis of identifying and describing effects is a consideration of the nature of receptors, and the nature of the effect. The factors considered in describing landscape and visual effects include susceptibility of receptors to the specific effects of the Scoop Hill 132kV Connection Project and the value of the receptor affected (which combine to form a judgement on sensitivity); and the scale, geographical extent, duration and reversibility of effect (which combine to form a judgement on magnitude of change).

4.19 The most important effects are those which should, relatively speaking, be given greatest weight in decision making. They typically concern substantial, long-lasting and irreversible changes to receptors of greater sensitivity. However, there may be cases where, for example, a receptor is of such sensitivity that even a small change might constitute a more important effect. There is no clear threshold whereby an effect becomes more or less important. Rather there is a gradual transition in level of importance.

Sensitivity of Receptor

4.20 Receptors considered in this appraisal include landscape features, landscape character types and people (visual receptors) whose views and visual amenity may be affected by the Scoop Hill 132kV Connection Project. The susceptibility of receptors and the value of the landscape receptor or view is determined to inform an overall judgement of receptor sensitivity.

[18] A cut-off date of 3rd August 2023 was applied for the inclusion of developments within the cumulative assessment.
[19] Landscape Institute and Institute of Environmental Management & Assessment (2013), Guidelines for Landscape and Visual Impact Assessment (Third Edition).
[20] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

Susceptibility

4.21 The susceptibility of landscape receptors is determined with consideration of criteria such as scale; landcover, pattern and complexity; settlement and other human influences; skylines and inter-visibility with adjacent landscapes; and perceptual aspects.

4.22 For visual receptors, susceptibility is based on the activities those people may be engaged in whilst experiencing the view (e.g. engaged in outdoor recreation, commuting or at home), and the according susceptibility those receptors may have to changes in their views and visual amenity. Susceptibility is recorded as **high, medium** or **low**.

Value

4.23 The value of landscape receptors is determined using criteria such as scenic quality, rarity, recreational value, representativeness, conservation interests, perceptual aspects and artistic associations. The value of the view experienced by visual receptors is determined using criteria such as the importance of the view, as indicated by reference in relation to designations or heritage assets, appearance in guidebooks or tourist maps and provision of visitor facilities. Value attached to the landscape or view is recorded as **high, medium** or **low**.

4.24 The overall sensitivity of landscape and visual receptors to change is defined as **high, medium** or **low** and is informed by a consideration of professional judgements in relation to susceptibility and value. The sensitivity of identified receptors is presented in the 'Appraisal of Effects', section of this chapter.

Magnitude of Change

4.25 The appraisal considers the potential magnitude of change likely to be experienced by the landscape or visual receptor. When determining the magnitude of change, an overall judgement takes account of a combination of factors including; scale, geographical extent, duration and reversibility. This determination requires the application of professional judgement and experience to recognise the many different variables which are considered, and which are given different weight according to site-specific and location-specific considerations in each instance.

Scale

4.26 The scale of change depends on:

- The loss or addition of features in the landscape or view and changes in its composition, including the proportion of the landscape/view occupied by the Scoop Hill 132kV Connection Project;
- The degree of contrast or integration of any new features or changes in the landscape or view with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture; and
- The nature of the view of the Scoop Hill 132kV Connection Project, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpsed.

4.27 The scale of landscape or visual change is described as being **large, medium, small** or **barely perceptible**.

Geographical Extent

4.28 The geographical extent of a landscape or visual change records the extent of the area over which the changes will be experienced/visible e.g. whether this is at the site level or from a viewpoint from where the Scoop Hill 132kV Connection Project can be glimpsed, or whether it effects a wider area in terms of effects on landscape character or represents a large area from which similar views are gained. Geographical extent is described as being **large, medium** or **small**.

Duration

4.29 GLVIA3 states that *'duration can usually be simply judged on a scale such as short-term, medium-term or long-term*.' For the purposes of the appraisal, the duration of effects is reported as **short-term, medium-term** or **long-term**, as defined below:

- Short-term or temporary effects are those that occur during construction, and may extend into the early part of the operational phase, e.g. construction activities, lasting < 2 years;
- Medium-term effects are those that occur during part of the operational phase, generally lasting 2 - 5 years; and
- Long-term effects are those which occur throughout the operational phase, e.g. presence of the development, or effects which continue after the operational phase, generally lasting 5 - 10 years, or beyond (the operational life of the project is 40 years).

4.30 This LVA considers effects arising during both the construction phase and operational phase of the Scoop Hill 132kV Connection Project.

Reversibility

4.31 In accordance with the principles contained within GLVIA3, the reversibility of the changes which will arise is reported as **reversible, partially reversible** or **irreversible** (i.e. permanent), and is related to whether the change can be reversed at the end of the phase of development under

consideration (i.e. at the end of construction or at the end of the operational lifespan of the development).

4.32 The overall judgement of magnitude of change/effect is informed by consideration of professional judgements in relation to scale, geographical extent, duration and reversibility. The magnitude of change/effect is recorded as **high, medium, low** or **barely perceptible**.

Landscape and Visual Effects

4.33 Judgements on sensitivity and magnitude of change are then combined to come to an overall judgement of the importance of the effect. **Diagram 4.1** provides guidance on determining whether an effect is of greater or lesser importance.

Direction of Effects

4.34 The direction of landscape and visual effects (**beneficial, adverse** or **neutral**) is determined in relation to the degree to which the proposal fits with the existing character of the landscape or view and the contribution that the development makes, even if it is in contrast to the existing character of the landscape or view.

Cumulative Appraisal

4.35 The aim of a cumulative appraisal is to describe, visually represent and assess the ways in which the Scoop Hill 132kV Connection Project would have additional impacts when considered together with other **consented or proposed developments of relevance** (defined as wind farms, other OHL and electricity infrastructure, for this appraisal).

4.36 The cumulative appraisal therefore focuses on the 'additional' cumulative change which may result from the introduction of the Scoop Hill 132kV Connection Project, against alternative future cumulative baseline scenarios. The reported cumulative effect is the effect that would occur when considered in the context of the future alternative baseline scenario described. The cumulative appraisal seeks to set out whether the effect of the Scoop Hill 132kV Connection Project would be different when experienced against this alternative baseline. Where effects are likely to differ from those identified in the 'primary' LVA (which is appraised in the context of the current baseline), this is explained.

4.37 As with the primary assessment, the cumulative appraisal deals with cumulative landscape and visual effects separately.

Cumulative Schemes

4.38 Figure 4.1.4 identifies projects which have been considered in the cumulative appraisal as set out in **Table 4.1** below. For wind farms, the proposed turbines are shown in the supporting wireline visualisations, where visible. For OHL and other electricity infrastructure, these are mapped on **Figure 4.1.4,** and their extents are indicated on the supporting wireline visualisations.

Table 4.1: Projects included in the Cumulative Appraisal

Project Name	Details
Scoop Hill Community Wind Farm	Application stage scheme comprising 60 turbines (originally 75 turbines) at up to 250m to tip height. Located across the hills to the east of the study area, and extending further east. The proposal includes a new substation and energy storage facility, on the southern flank of The Dod, which the Scoop Hill 132kV Connection Project will link into.
Moffat Substation Extension	Small extension on the northern side of the existing Moffat Substation. This small extension is required to facilitate the Scoop Hill 132kV Connection Project, but will be subject to a separate application.

Diagram 4.1: Key Principles in Identifying Importance of Landscape and Visual Effects

	Lesser importance	Greater importance
Landscape	The proposed development is reasonably well accommodated within the landscape and does not conflict with key characteristics. It does not substantially undermine the special qualities or valued characteristics of the landscape. The effect is small in scale, short-lived and/ or easily reversible.	The proposed development conflicts with the character of the landscape, forming an intrusive feature which substantially erodes the valued characteristics or special qualities. The effect is large in scale, long-lasting and/or difficult to reverse.
Visual amenity	The proposed development is seen by people whose attention is less focussed on surroundings, affects relatively few receptors, and/or affects views of limited value. The proposed development is generally well accommodated in views and the effect is typically small in scale, short-lived and/or easily reversible.	The Proposed Development is seen by people whose attention is focussed on surroundings, affects many receptors, and/or affects views of high value. The Proposed Development is a discordant or intrusive element in the view and the effect is large in scale, long-lasting and/or difficult to reverse.

Baseline

4.39 This section sets out the landscape baseline. There is a general description of the LVIA study area. Following this, the baseline of other landscape receptors within the study area (designated landscapes and landscape character types) is described, and where relevant, those which require detailed appraisal are identified.

4.40 The visual baseline sets out the different visual receptor types included in the appraisal, and describes the individual receptors and receptor groups. There is also a description of the representative viewpoints which have been used to inform the appraisal, and a description of baseline views from any settlements or routes, considered for sequential appraisal.

The Proposed Route

4.41 The Scoop Hill132kV Connection Project links the proposed Scoop Hill Wind Farm substation, in the south-east and subject to a separate application, to an extension to the existing Moffat Substation, to the north-west (also subject to a separate application) (see **Figure 4.1.1**).

The Study Area

4.42 The LVA study area is within the council area of Dumfries and Galloway, in the upper reaches of Annandale. The landscape of the study area is varied, from open uplands in the east to the settled valley floor in the west.

4.43 To the east of the study area, the foothills of the Southern Uplands at Eskdalemuir contain the eastern valley side. Landcover typically consists of rough pasture and open moorland. To the west, the landscape comprises the broad, typically pastoral valley floor of the River Annan and the lower western valley side of Annadale. The River Annan flows from north to south through the western half of the study area. The narrow and incised southern extents of Moffat Dale skirt the northern edge of the study area, which also encompasses the southern extents of the settlement of Moffat. The study area extends to the south of Annadale, near Stenrieshill Farm.

4.44 In terms of topography, the western part of the study area generally comprises the lower lying and more settled agricultural valley of the River Annan and the western valley sides. The eastern part of the study area is characterised by more elevated land, featuring smooth rounded hills. These hills form a transitional landscape between lower lying Annandale and the western foothills of the Southern Uplands, at Eskdalemuir. The elevation range across the study area is between approximately 80m AOD in the lower southern reaches of the valley floor, while the hill summits to the east include high points of 503m AOD at Priestgill Head.

4.45 In terms of land use and landcover, the study area comprises mainly agricultural land with moorland and areas of coniferous forest on the higher ground. Broadleaf woodland flanks sections of the River Annan, and there are other areas of broadleaf and mixed woodland throughout the study area, most notably at Beldcraig Wood, in the centre, which includes an area of ancient woodland. The field pattern on the lower ground features loosely rectangular to irregular shaped fields bounded by post and wire fences, hedgerows and low stone walls. The higher ground to the east and west is characterised by rough pasture and open moorland, and is used for grazing.

4.46 Annandale is characterised by numerous settlements, scattered properties and farmsteads. This pattern is reflected across the study area, with a number of scattered residential properties and farmsteads located along minor roads along the floor of the River Annan valley and on the lower slopes of hills to the east and west. The settlement of Beattock is located to the north-west of the study area and the southern extents of the settlement of Moffat is located to the north of the study area. Minor roads and farm tracks link the properties to the east of the River Annan. To the west of the River Annan, the M74, A701, B7076 and the West Coast Main Line Railway all pass along the valley floor.

4.47 In terms of existing development, an existing 400kV Scotland – England Interconnector OHL supported by steel lattice towers extends north-west to south-east across the study area, crossing the River Annan at Bearholm. The 400kV OHL connects to Moffat substation on the western bank of the River Annan.

4.48 In terms of recreational access, the Southern Upland Way, Annandale Way and the Romans and Reivers Walking Route cross the northern extents of the study area (refer to **Figure 4.1.1).** Parts of these routes are on the Core Path network. National Cycle Route 74 also passes north to south through the study area, on the road to the west of the M74.

Landscape Designations

4.49 The northern extents of the study area fall within the locally designated Moffat Hills Regional Scenic Area (RSA) (see **Figure 4.1.3a**). Views into, and along, Moffat Dale and the more incised upper reaches of Annandale on the western and southern extents of the RSA are noted in the Regional Scenic Areas Technical Paper[21]. 'Fine views' across the valley from the A701 towards the Moffat Hills are also recognised.

[21] Dumfries and Galloway Council, Regional Scenic Areas Technical Paper (Local Development Plan 2) January 2018

4.50 The ZTV (refer to **Figure 4.1.3b**) indicates some areas of theoretical visibility, from limited areas on the southern edge of the RSA, within the LVA study area. When visible, the OHLs will be seen in medium to longer distance views looking outside of the RSA. It will be seen in the context of a valley side which has been altered by electricity infrastructure, through the larger 400kV OHL and major transport routes through Annandale. The role the Moffat Hills play in providing a setting to Moffat and the glens to the south and west of the RSA will not be altered by OHL development of this scale, outside of the RSA to the south. As such, effects on the Moffat Hills RSA are not considered further.

Landscape Character

4.51 In terms of landscape character, the Scoop Hill 132kV Connection Project is largely contained within the Middle Dale (Dumfries and Galloway) NatureScot Landscape Character Type (LCT). The key characteristics of this LCT are as follows:

- *"Broad valley with complex undulating topography and locally narrow sections;*
- *River meanders eroding bluffs in the valley moraines;*
- *Landcover predominantly improved pastures, lush green, sheep and cattle grazed;*
- *Medium scale field enclosures, a mixture of hedgerows and dry stone dykes;*
- *Extensive pattern of shelterbelts and farm woodlands with semi-natural woodlands on bluff slopes;*
- *Dale contained by uplands with forests and rough grazing on horizons;*
- *Semi-natural hanging woodlands on steep bluff slopes;*
- *Country houses and designed landscapes;*
- *Settlements of high townscape quality;*
- *Communication routes; and*
- *'Red-earth" qualities relating to underlying red sandstones."*

4.52 For the purposes of this LVA, a finer grain landscape character appraisal has been carried out. Local LCT (LLCT) have been defined, as mapped on **Figure 4.1.2a**, and listed below:

- Wooded Valley LLCT;
- Valley Floor with Woodland Belts LLCT;
- Upland Fringe LLCT; and
- Foothills LLCT.

4.53 The baseline descriptions for each of these LLCT, and an appraisal of construction and operation stage effects on each, is provided in the 'Appraisal of Effects' section of this chapter.

Appraisal Viewpoints

4.54 The visual receptors within the study area include:

- Residential receptors in Annandale, including scattered properties, farms and small property clusters (views from the settlements of Beattock and Moffat will be limited);
- Recreational users of long distance trails (including the Southern Upland Way, Annandale Way and Roman and Reivers Route), the National Cycle Network and Core Paths; and
- Road and rail users through Annandale including the M74, A701 and West Coast Main Line Railway.

4.55 Representative viewpoints have been identified to illustrate the change in views which will be experienced by the range of different visual receptors across the study area, as described in the table below and shown on **Figure 4.1.1**.

Table 4.2: Proposed Appraisal Viewpoint Locations

VP Ref.	Name	Grid Ref.	Reason for selection
1	Newmills	309493, 603029	To represent views from a minor high point on the Southern Upland Way and Core Path network, to the north of the Site.
2	Minor road near Milton	309589, 600708	To represent views for residents and road users from the lower valley floor in Annandale.
3	A701	308375, 601038	To represents views for road users including cyclists (and scattered residents) to west of Annadale.
4	Minor road, south of Moffat	309864, 602097	To represent views by road users (and cyclists using the minor road network) when travelling south from Moffat on the

VP Ref.	Name	Grid Ref.	Reason for selection
			eastern side of Annandale.

Settlements

4.56 Settlements are those defined as such within the LDP. Settlements within the LVA study area are listed in the table below.

Table 4.3: Settlements

Settlements[22]	Theoretical Visibility of the Scoop Hill 132kV Connection Project (ZTV Coverage)
Moffat	The ZTV (see **Figure 4.1.1**) indicates some limited theoretical visibility from southern parts of the settlement, within the LVA study area. Actual visibility from the settlement will generally be limited by built form within the settlement, the undulating landform to the south of the settlement (including the knoll at Oakridge) and intervening woodland in the valley floor of Annandale. Not considered further.
Beattock	The ZTV (see **Figure 4.1.1**) indicates theoretical visibility from parts of the settlement. Actual visibility from the settlement will generally be limited by built form within the settlement, and areas of woodland to the east, including vegetation along the corridor of the A701. Not considered further.

Routes

4.57 Visibility from a route is not uniform along its entire length. This is because views of the surrounding landscape change as one moves along the route depending on the surrounding topography, buildings, structures, tree cover and vegetation alongside the route.

4.58 Theoretical visibility of the Scoop Hill 132kV Connection Project from routes across the study area is illustrated by **Figure 4.1.1.** The routes include a hierarchy of roads, railways and recreational routes (promoted long distance footpaths, Core Paths and cycle routes). Road and rail routes tend to use low lying areas or valleys and passes, but walking routes are more variable and can pass over hills and along ridges.

4.59 Based on an analysis of theoretical visibility and potential views, the table below provides information on which key A roads, railway lines and recreational routes are carried forward for detailed appraisal. Where there is limited theoretical visibility, or where actual visibility from a route is likely to be limited due to localised screening, these routes are not considered further in this LVA, as the likelihood for notable sequential effects is limited.

Table 4.4: Routes

Route	Theoretical Visibility of the Scoop Hill 132kV Connection Project (ZTV Coverage)
Roads	
A701 (includes a section of NCR 74, as it passes to the west of the site)	The ZTV (see **Figure 4.1.1**) indicates some theoretical visibility. Actual visibility will be reduced by roadside vegetation including vegetation alongside the M74, to the immediate east. When visible, views of the Scoop Hill 132kV Connection Project will be oblique and quite fleeting, and seen in the context of a valley side which has been altered by electricity infrastructure due to the existing, and larger, 400kV OHL. This is not judged to translate into sequential effects of importance. An appraisal viewpoint has been included from this road (see Viewpoint 3 – A701) which represents open fleeting views as the route passes to the west of the Scoop Hill 132kV Connection Project. Not considered further.
M74	The ZTV indicates some theoretical visibility. Actual visibility will be reduced by roadside vegetation and local variations in the landform, as the route passes through sections of cutting. When visible, views of the Scoop Hill 132kV Connection Project will be oblique and very fleeting, and seen in the context of a valley side which has been altered by electricity infrastructure due to the existing, and larger, 400kV OHL. This is not judged to translate into sequential effects of importance. The West Coast Main Line Railway and NCR 74 follow a similar north to south

[22] Settlements as defined in LDP.

Route	Theoretical Visibility of the Scoop Hill 132kV Connection Project (ZTV Coverage)
	route through the study area, and effects will be similar. Not considered further.
Recreational Routes	
Southern Upland Way (SUW) and Roman and Reivers Route (RRR)	These routes follow a similar alignment through the LVA study area. A short section of both routes pass through the northern extents of the study area. An appraisal viewpoint has been included from the SUW/ RRR, as it passes over an open area of higher ground at Newmills (Viewpoint 1). This represents one of the closest proximity and 'worse case' scenario views from these routes. Intervening woodland will generally limit views from lower lying sections of the route, as it crosses Annandale through the LVA study area. This combined with the short section of route affected (in relation to the overall length of these routes) is unlikely to result in sequential effects of importance. Not considered further.
Annandale Way	A short section of the route passes through the north-western extents of the study area. Intervening woodland will generally limit views from lower lying sections of the route, as it crosses Annandale through the LVA study area. This combined with the short section of route affected (in relation to the overall length of the route) is unlikely to result in sequential effects of importance. Not considered further.
Core Paths	
Core Paths within 3km are mapped on **Figure 4.1.1.**	Core Paths across the study area are mapped on **Figure 4.1.1**. Those within the ZTV follow the route of the SUW; a section of the Annadale Way; and roads to the west of the M74 (through Beattock and along the A701). For those sections outside of the long distance trails discussed above, visibility will generally be limited by intervening vegetation and built form in the valley floor of Annandale. When visible, views of the Scoop Hill 132kV Connection Project will be quite fleeting, and seen in the context of a valley side which has been altered by electricity infrastructure

Route	Theoretical Visibility of the Scoop Hill 132kV Connection Project (ZTV Coverage)
	due to the existing, and larger, 400kV OHL. Not considered further.

Good Practice Measures/Embedded Mitigation

4.60 The main strategy for minimising adverse environmental effects of the Scoop Hill 132kV Connection Project has been avoidance through careful routeing and design, as discussed in **Chapter 2: Routeing and Consultation and EIA Screening**.

4.61 Mitigation has been recognised in two ways:

- Embedded mitigation – items that are embedded through the design of the project, and also those which will be delivered during the construction process such as good practice measures; and
- Additional mitigation – items that are further required to mitigate the likely adverse effects of the project, and which will be implemented to avoid, reduce or offset these effects identified.

4.62 The appraisal of landscape and visual effects has been undertaken on the basis that the embedded mitigation forms an integral part of the Scoop Hill 132kV Connection Project.

4.63 There are no specific additional mitigation requirements in terms of landscape and visual considerations, over and above the landscape-led routeing process that informed the OHL design.

Appraisal of Effects

4.64 The appraisal of effects is based on the project description as outlined in **Chapter 3: Project Description**.

4.65 Unless otherwise stated, potential effects identified are considered to be negative.

Construction Effects

4.66 During the proposed circa. 12 month construction phase, the key changes to the landscape arising from the construction of the Scoop Hill 132kV Connection Project will include:

- Woodland felling and vegetation removal (hedges and areas of taller scrub), comprising the wayleave requirements and anticipated small area associated with

avoiding future windthrow (total area is 1.68 Ha approximately);

- Preparation of temporary working areas including excavation of pole foundations;
- Delivery, assembly and erection of poles;
- Pole conductor 'stringing' and commissioning of the OHLs;
- Removal of temporary infrastructure and reinstatement; and
- Movement of associated construction/vehicles and plant.

4.67 At the temporary construction compound security lighting will be required (activated by detected movement) during the hours of darkness. However, it is not expected that lighting will be required outside of the intended working hours for the construction phase.

4.68 The appraisal of construction effects considers a maximum case effect scenario which assumes the greatest presence of construction activities prior to reinstatement works (for example the presence of all working areas, temporary construction compound and erected poles).

4.69 The majority of the effects which will occur during the construction phase will be short-term and largely reversible, typically limited to the immediate vicinity from which activities may be perceptible. Further consideration of construction effects for each landscape and visual receptor which is assessed further in this LVA is provided in the following sections.

Operational Effects

4.70 The effects of the Scoop Hill 132kV Connection Project on landscape and visual amenity, once operational, will be associated with the presence of the twin double wood poles supporting the new OHLs (average height of 13m), in the landscape and views.

4.71 Judgements in relation to the duration and reversibility of landscape and visual effects during operation are considered to be long term and reversible unless otherwise stated. Should consent not be granted for Scoop Hill Community Wind Farm, then there will be no requirement for the Scoop Hill 132kV OHL Grid Connection, and any Section 37 consent granted will not be implemented. Should the Scoop Hill Community Wind Farm be consented and constructed, the Scoop Hill 132kV Connection Project will remain in place for the operational lifespan of the wind farm project.

4.72 In some instances, the Scoop Hill 132kV Connection Project may result in a permanent and irreversible change (e.g. permanent loss of mature areas of broadleaf woodland or trees associated with wayleaves) which is noted within the appraisal. With landowner agreement and in consultation with Scottish Forestry (SF), SPEN may also seek to replant certain sections of the wayleave corridor and the wayleave corridor edge with low growing shrub species, sourced from local seed provenance, which are not deemed to put at risk the ongoing safe operation of the OHLs. These low growing species are unlikely to provide much mitigation in the way of visual screening of the project, but will help offset landscape effects associated with vegetation loss.

Landscape Effects during Construction and Operation

4.73 The Scoop Hill 132kV Connection Project crosses a number of LLCTs, as illustrated on **Figure 4.1.2.** The following appraisal describes the likely effects on landscape character during the construction and operational phases. For each LLCT, direct effects (as it passes through the various LLCT) are also considered.

4.74 The direction of effects (positive or negative) is also given consideration. Effects associated with the introduction of the Scoop Hill 132kV Connection Project are judged to be negative in nature.

4.75 The appraisal below also provides consideration of potential 'additional' cumulative effects arising in conjunction with other relevant consented and/or proposed developments, as shown on **Figure 4.1.4**.

Table 4.5: Wooded Valley LLCT Appraisal

Baseline Description

There is one area of the LLCT, to the centre of the study area and focused around Beldcraig Wood (refer to **Figure 4.1.2**). The key characteristics of this LLCT are defined as follows:

- Landform and Scale: small scale intimate landscape of complex topography including sloping ground and a steep-sided valley;
- Landcover and pattern: complex landcover featuring coniferous, native and ancient woodland, traversed by numerous small watercourses;
- Human influence: influence in the form of coniferous forestry, electricity transmission infrastructure (which crosses a narrow part of this LCT to the south) and occasional tracks and dwellings. In the areas of native mature woodland the landscape is more naturalistic in character;
- Visual Experience: visually contained by woodland within the LCT and the steep enclosing valley sides; and
- Settlement: largely unsettled with a small cluster of residential dwellings and farmsteads to the north.

Sensitivity

The key characteristics including the intimate scale and complex landcover and topography indicate a higher susceptibility to OHL development.

In terms of value, the LLCT is not located within a designated landscape. However, parts of the woodland are designated as Ancient Woodland, indicating a higher value.

The overall sensitivity is judged to be medium-high.

Changes During Construction

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the construction of approximately seven twin double wood poles, which pass through a narrow section of this LLCT, to the immediate east of the existing 400kV OHL (which also crosses this LLCT to the west). There will be some disturbance to forest and woodland landcover, including felling activity associated with an area of circa 1.34 Ha coniferous forest/ native broadleaf woodland (includes felling for windthrow purposes outside wayleave corridor). Temporary access and working areas will result in further localised disturbance with associated direct effects on a small area of woodland and forest.

The valley terrain and wooded nature of the LLCT will result in these effects being very localised, limiting any perceptual effects across the wider LLCT, during the construction phase.

The scale of change is judged to be medium and the geographical extent is judged to be small. The overall magnitude of change is judged to be medium-small and taking account of the medium-high sensitivity will result in landscape effects of **lesser importance**.

Changes During Operation

Direct effects arising during operational phase of the Scoop Hill 132kV Connection Project will be limited to the introduction of approximately seven twin double wood poles, which pass through a narrow section of this LLCT, to the immediate east of the existing 400kV OHL. This will include the permanent loss of 1.34 Ha of coniferous forest/ native broadleaf woodland within the wayleave corridor where not planted with low growing shrub species. The Scoop Hill 132kV Connection Project will essentially largen the wayleave associated with the existing 400kV OHL, which also crosses the LLCT (to the immediate west of the Scoop Hill 132kV Connection Project).

The valley terrain and wooded nature of the LLCT will result in these effects being very localised, limiting any perceptual effects across the wider LLCT, during the operational phase.

The scale of change is judged to be medium and the geographical extent is judged to be small. The overall magnitude of change is judged to be medium-small and taking account of the medium-high sensitivity will result in effects of **lesser importance.**

Cumulative Changes

There are no consented or proposed projects (electricity infrastructure or wind farms) in this LLCT, refer to **Figure 4.1.4**. The valley terrain and wooded character of the landscape will also largely screen outward views of consented and proposed projects, in a theoretical future cumulative baseline, from this LLCT. As such, the findings of the primary assessment (landscape effects of lesser importance) will remain the same.

Table 4.6: Valley Floor with Woodland Belts LLCT Appraisal

Baseline Description

There is one area of the LLCT, which runs north to south along the valley floor of Annandale, in the western half of the study area (refer to **Figure 4.1.2**). The key characteristics of this LLCT are defined as follows:

- Landform and Scale: medium scale landscape of flat to gently undulating low lying ground;
- Landcover and pattern: more complex pattern of predominantly pastoral farmland, with occasional arable fields, with belts of woodland and scrub along the River Annan, Beldcraig Burn and field boundaries;
- Human influence: influence in the form of electricity transmission infrastructure, tracks, roads and agricultural management;
- Visual Experience: views towards the enclosing hills on either side of valley interrupted by woodland belts. Where open views exist electricity infrastructure to the east of the valley is apparent on the skyline. Moffat Substation also exerts a localised influence over part of the LLCT; and
- Settlement: scattered residential dwellings and farmsteads on eastern and western fringes of this landscape.

Sensitivity

The key characteristics including the medium scale and simpler topography; landscape pattern of fields and woodland belts; and existing human influences indicate a medium-low susceptibility to OHL development.

In terms of value, the LLCT is largely located outside of designated landscapes, indicating a lower value.

The overall sensitivity is judged to be medium-low.

Changes During Construction

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the construction of approximately six twin double wood poles. Construction effects will be limited in geographical extent, to a small area of the LLCT to the east of the existing Moffat Substation. There will be some disturbance to areas of pastoral and arable farmland, field boundaries, woodland and scrub along the River Annan, to the east of Moffat substation. This will include felling activity associated with the clearance of approximately 0.39 Ha of woodland (of which 0.27 Ha is currently used for screening the Moffat substation). Temporary access, working areas and two underground cables between wood poles 30 and 60 and Moffat substation extension will result in further localised disturbance to these landscape features.

In terms of wider effects, the flatter nature of the valley floor terrain and characteristic feature of woodland belts will help to minimise visibility, and the associated perceptual effects on the wider LLCT, during the construction phase.

The scale of change is judged to be small and the geographical extent is judged to be small. The overall magnitude of change is judged to be small and taking account of the medium sensitivity will result in landscape effects of **lesser importance**.

Changes During Operation

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the introduction of approximately six twin double wood poles. These effects will be limited in geographical extent, to a small area of the LLCT to the east of the existing Moffat substation. There will be some very localised loss of pastoral and arable farmland, field boundaries, woodland and scrub along the River Annan, to the east of Moffat Substation. This will include the permanent loss of approximately 0.39 Ha of woodland associated with wayleaves

In terms of wider effects, the flatter nature of the valley floor terrain and characteristic feature of woodland belts will help to minimise visibility, and the associated perceptual effects on the wider LLCT. From localised areas with

visibility of the Scoop Hill 132kV Connection Project, this will be seen in the context of views which have been altered by electricity infrastructure, through the existing substation and 400kV OHL.

The scale of change is judged to be small and the geographical extent is judged to be small. The overall magnitude of change is judged to be small and taking account of the medium-low sensitivity will result in landscape effects of **lesser importance**.

Cumulative Changes

In a theoretical future baseline, turbines in Scoop Hill Community Wind Farm will be visible on enclosing horizons, in certain views to the east of this LLCT (refer to Viewpoint 2). Moffat substation will also be slightly larger, due to the extension required to facilitate the Scoop Hill 132kV Connection Project (subject to a separate application).

A noted in the primary assessment, a short section of the Scoop Hill 132kV Connection Project, at its western extents, passes through this LLCT. This will contribute to a slight increase in the presence and influence of electricity infrastructure on this LLCT. However, given the very localised nature of effects, landscape effects identified in the primary assessment (lesser importance) will remain the same.

Table 4.7: Upland Fringe LLCT Appraisal

Baseline Description

There are two areas of the LLCT, which run north to south through the study area on the valley sides to the east and west of Annadale (refer to **Figure 4.1.2**). The key characteristics of this LLCT are defined as follows:

- Landform and Scale: medium to larger scale landscape of gently rolling and rising ground on the valley sides of Annandale;
- Landcover and pattern: simpler pattern of pastoral fields separated by dry stone walls and post and wire fences, with occasional areas of coniferous and mixed woodland cover;
- Human influence: traversed by minor roads and existing electricity transmission infrastructure (which follow the grain of the landscape) and influenced by coniferous forestry;
- Visual Experience: medium to longer distance views looking across and along Annandale. Complex and varied skylines interrupted by close proximity views of existing large scale electricity infrastructure and occasional areas of forestry and shelterbelts; and
- Settlement: occasional farmsteads and residential dwellings, focused on the lower ground of this landscape.

Sensitivity

The key characteristics including the larger scale, simpler landscape pattern and existing human influence indicate a medium-low susceptibility to OHL development and electricity infrastructure as proposed.

In terms of value, the LLCT is largely located outside of designated landscapes. The northern end of the LLCT is within the Moffat Hills RSA. This indicates a medium value.

The overall sensitivity is judged to be medium.

Changes During Construction

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the construction of approximately 44 twin double wood poles, located across farmland on the valley side to the north and south of Beldcraig Wood (and on the eastern side of Annandale). There will be some localised disturbance to areas of pastoral farmland and field boundaries. Some small-scale felling activity associated with the clearance of approximately 0.05 Ha of trees in the vicinity of wood pole 17 will be undertakenTemporary access ,working areas and pulling areas will result in further localised disturbance to these landscape features. There will be no direct effects on the LLCT unit to the west of Annandale.

In terms of wider effects, the valley side is quite open in nature, and visible from open parts of the valley floor and western valley side of Annadale. Construction activity will be visible in certain views. However, these effects will be transient in nature and seen in the context of activity in Annadale, including fast moving traffic on major transport routes (in views looking over Annandale from the western valley side).

The scale of change is judged to be medium and the geographical extent is judged to be medium-small. The overall magnitude of change is judged to be medium-small and taking account of the medium sensitivity will result in landscape effects of **lesser importance**.

Changes During Operation

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the introduction of approximately 44 twin double wood poles, located across farmland on the valley side to the north and south of Beldcraig Wood (and on the eastern side of Annandale). There will be some localised loss of areas of pastoral farmland and field boundaries and the removal of the 0.05 Ha of woodland will remain unless planted with low growing shrubs species. There will be no direct effects on the LLCT unit to the west of Annandale.

In terms of wider effects, the valley side is quite open in nature, and visible from open parts of the valley floor and western valley side of Annadale. The Scoop Hill 132kV Connection Project will be visible in certain views. When visible, it will be seen in the context of a valley side which has been altered by electricity infrastructure, through the existing 400kV OHL (the Scoop Hill 132kV Connection Project will follow a similar route to this, through this LLCT, and will form a smaller piece of electricity infrastructure).

The scale of change is judged to be medium and the geographical extent is judged to be medium-small. The overall magnitude of change is judged to be medium-small and taking account of the medium sensitivity will result in landscape effects of **lesser importance**.

Cumulative Changes

There are two units of this LLCT, to the east and west on Annandale. In a theoretical future baseline, turbines in Scoop Hill Community Wind Farm Wind Farm will be visible on enclosing horizons, in certain views to the east of these LLCT (and more so from the unit of the LLCT on the western side of Annandale). The small extension to Moffat substation (outside this LLCT) will not have a notable influence on character.

As noted in the primary assessment, a section of the Scoop Hill 132kV Connection Project (approximately 44 twin double wood poles) passes through the unit of the LLCT, to the east of Annandale. Whilst this will contribute to an increase in the presence and influence of electricity infrastructure on this LLCT, given the localised nature of effects and different landscapes contexts between features considered in an alternative future cumulative baseline (see **Figure 4.1.4** with the Scoop Hill Community Wind Farm turbines located in more upland landscapes to the east), landscape effects identified in the primary assessment (lesser importance) will remain valid.

Table 4.8: Foothills LLCT Appraisal

Baseline Description

There is one area of this LLCT, which runs from north to south on the higher ground to the east of the study area (refer to **Figure 4.1.2**). The key characteristics of this LLCT are defined as follows:

- Landform and Scale: larger scale landscape of undulating foothills with typically rounded summits;
- Landcover and pattern: simple landscape pattern of unimproved grassland and heath, interspersed with occasional upland tributaries and small areas of coniferous forestry;
- Human influence: few enclosures, roads or tracks; some evidence of human influence through coniferous forestry and views over the settled valley landscape to the west;
- Visual Experience: long distance, large scale and often panoramic views, especially to the west over Annandale. Complex horizons associated with larger hills to east tend to contain views in this direction. This landscape plays an important role in providing a backdrop and setting in views from Annandale; and
- Settlement: lack of settlement.

Sensitivity

The key characteristics including the limited human influence, complex topography and role this landscape provides in providing a setting in views from Annandale indicate a medium-high susceptibility to OHL development.

In terms of value, the LLCT is generally located outside of designated landscapes. The northern part of this LLCT is in the Moffat Hills RSA. This indicates a medium value.

The overall sensitivity is judged to be medium-high.

Changes During Construction

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the introduction of the approximately 3 twin double wood poles, on the southern flank of The Dod. There will be some localised disturbance to areas of upland pastoral farmland and field boundaries. Temporary access, and working areas will result in further localised disturbance to these landscape features.

In terms of wider effects, the Foothills LLCT is open in nature and construction activity will be visible on the western edge of the LLCT, in certain views from within and looking out of the LLCT. When visible, the nature of effects associated with construction activity will be transient in nature, and often seen in the context of outward views with associated activity in Annandale.

The scale of change is judged to be small and the geographical extent is judged to be medium-small. The overall magnitude of change is judged to be small and taking account of the medium-high sensitivity will result in landscape effects of **lesser importance**.

Changes During Operation

Direct effects arising during this phase of the Scoop Hill 132kV Connection Project will result from the introduction of the approximately 3 twin double wood poles, on the southern flank of The Dod. There will be some localised loss of areas of pastoral farmland and field boundaries.

In terms of wider effects, the Foothills LLCT is open in nature and the Scoop Hill 132kV Connection Project will be visible on the western edge of the LLCT, in certain views from within and looking out of the LLCT. When visible, it will be seen in the context of a valley side which has been altered by electricity infrastructure, through the existing 400kV OHL.

The scale of change is judged to be small and the geographical extent is judged to be medium-small. The overall magnitude of change is judged to be small and taking account of the medium-high sensitivity will result in landscape effects of **lesser importance**.

Cumulative Changes

In a theoretical future cumulative baseline, Scoop Hill Community Wind Farm will introduce turbines into this LLCT, and this will notably change the character of this landscape. The proposed substation and energy storage facility which forms part of the Scoop Hill Wind Farm proposal is also located in this LLCT. The small extension to Moffat substation (outside this LLCT) will not have a notable influence on character.

Whilst the Scoop Hill 132kV Connection Project will contribute to a slight increase in the presence and influence of electricity infrastructure on the western edge of this LLCT, given the localised nature of effects; influence of turbines and energy infrastructure over the landscape through Scoop Hill Community Wind Farm; and large scale nature of this LLCT, which extends further west outside of the LVA study area, landscape effects as identified in the primary assessment (lesser importance) will remain the same.

Visual Effects during Construction and Operation

4.76 This section presents the appraisal of effects of the Scoop Hill 132kV Connection Project on views and visual amenity across the study area during the construction and operational phases of the project.

4.77 The appraisals of the four viewpoints selected are set out below. The construction phase appraisal assumes that all effects are **short term** (limited to the circa. 12 month construction phase) and **reversible**, unless stated otherwise.

4.78 The operational phase appraisal assumes that all effects are **long term** and **reversible**, unless stated otherwise. The direction of effects (positive or negative) is also given consideration. All effects are judged to be adverse.

4.79 The appraisal below also provides consideration of potential 'additional' cumulative effects arising in conjunction with other relevant consented and/or proposed developments, as mapped on **Figure 4.1.4**.

Table 4.9: Viewpoint 1 - Newmills			
Grid Reference (NGR)	309493, 603029	**Figure Number**	4.2.1
LLCT	Upland Fringe	**Designated Landscape**	None
Direction of View	South	**Distance to Scoop Hill 132kV Connection Project**	1.2km

Location, description of existing view and potential receptors:

This viewpoint is located to the north of the Scoop Hill 132kV Connection Project. It represents views experienced by recreational receptors on a minor high point on the SUW and the Core Path network, as it crosses the knoll just north of the confluence between the Moffat Water and the River Annan.

From this elevated and open vantage point, longer distance views looking south down Annandale are available. The substation at Bearholm is apparent in the foreground. The valley floor is characterised by farmland, woodland and dispersed settlement. The higher valley sides, to the east and west of view, are characterised by pasture and moorland on the higher ground, with areas of coniferous forest. The existing 400kV OHL crosses the view to the south, linking into Moffat substation, with steel-towers seen on the horizon to the south-east of the view.

Sensitivity:

Recreational receptors are considered to be of medium susceptibility.

The viewpoint is not located within a designated or protected landscape. The value of the view is somewhat increased as it is on the SUW.

On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of this viewpoint is judged to be medium-high.

Appraisal of visual effects during construction:

During the construction phase, some felling associated with the circa. 0.39 Ha to be removed for wayleave purposes may just be perceptible in areas of woodland/ scrub to the east of Moffat substation at the crossing point of the River Annan and Beldcraig Wood. Construction vehicles and plant, and the construction of the twin double wood poles will be apparent to the east of Moffat substation and spanning across the eastern valley side, to the north and south of Beldcraig Wood. These construction works will be seen in front and alongside of the existing 400kV OHL, and will be transient in nature.

The scale of change is judged to be medium-small. The geographical extent is judged to be small, as views of this nature will be available from a short section of the SUW, as it crosses an area of open higher ground in Annadale. The overall magnitude of change is judged to be small and taking account of the medium-high sensitivity will result in visual effects of **lesser importance**.

Appraisal of visual effects during operation:

During the operational phase, some permanent woodland and vegetation loss, associated with the 0.39 Ha to be removed within the wayleave, may just be perceptible in areas of woodland/ scrub to the east of Moffat substation and at the crossing point of the River Annan and Beldcraig Wood. The twin double wood poles will be apparent, to the east of Moffat substation and spanning across the eastern valley side to the north and south of Beldcraig Wood, seen at a distance of 1.2km. The new twin wood poles will be seen in front, and alongside, the existing 400kV OHL. It will be contained below the distant horizon.

The scale of change is judged to be medium-small and the geographical extent is judged to be small. The overall magnitude of change is judged to be small and taking account of the medium-high sensitivity will result in visual effects of **lesser importance**.

Potential for future cumulative effects:

In a theoretical future cumulative baseline, certain turbines in the proposed Scoop Hill Community Wind Farm will be visible above horizons on the hills to the east of Annadale. The small substation extension, to the north of Moffat

substation, may also be apparent, but will not have a notable influence on the view as it will be seen in the context of the exiting substation.

As noted in the primary visual assessment, the Scoop Hill 132kV Connection Project will be seen contained below the horizon, and within a different landscape context (within the valley, rather than above the hills to one side of the valley where the proposed Scoop Hill Community Wind Farm will be seen). As such, visual effects as identified in the primary assessment (lesser importance) will remain the same.

Table 4.10: Viewpoint 2 - Minor road near Milton			
Grid Reference (NGR)	309589, 600708	**Figure Number**	4.2.2
LLCT	Valley Floor with Woodland Belts	**Designated Landscape**	None
Direction of View	North-east	**Distance to the Scoop Hill 132kV Connection Project**	1.1km

Location, description of existing view and potential receptors:

This viewpoint is located to the south-west of the Scoop Hill 132kV Connection Project. It represents views experienced by residents and road users from the lower valley floor in Annandale, to the south of Moffat substation.

From the valley floor, the view looks north (up Annandale) and east to the eastern valley side. The substation at Bearholm is apparent in the foreground, behind hedgerows in views to the north. The valley floor is charactered by pasture, hedgerows and woodland. The valley side to the east of the view is characterised by pasture with moorland on the higher ground. There are areas of coniferous forest and woodland (including Beldcraig Wood) on the valley side. The existing 400kV OHL crosses the view to the south, linking into Moffat substation, with steel-towers seen on the horizon to the north-east and south-east of the view.

Sensitivity:

Residential receptors are considered to be of high susceptibility.

The viewpoint is not located within a designated or protected landscape, indicating a lower value.

On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of this viewpoint is judged to be medium-high.

Appraisal of visual effects during construction:

During the construction phase, some limited felling activity, associated with the 1.4 Ha to be removed within the wayleave/for windthrow purposes, may just be perceptible in areas of woodland/ forestry in Beldcraig Wood. Construction vehicles and plant, working areas and the construction of the twin double wood poles will be apparent across the eastern valley side, between The Dod and Moffat substation. These construction works will be seen behind the existing 400kV OHL.

The scale of change is judged to be medium. The geographical extent is judged to be medium, as more open views of this nature are available from the valley floor in this area of Annandale. Taking a precautionary approach to the assessment, the overall magnitude of change is judged to be medium and taking account of the medium-high sensitivity will result in visual effects of **greater importance**.

Appraisal of visual effects during operation:

During the operational phase, some permanent woodland/ forestry loss in Beldcraig Wood (up to 1.4 Ha) (where the proposed route crosses this feature) may just be apparent. The twin double wood poles will be apparent across the eastern valley side, between The Dod and Moffat substation. The new OHLs will be seen behind the existing 400kV OHL, and largely contained below the horizon of the hills to the east of Annandale (a very short section of the wires will just be apparent above the horizon, in views to the north-east).

Table 4.10: Viewpoint 2 - Minor road near Milton
The scale of change is judged to be medium. The geographical extent is judged to be medium. Taking a precautionary approach to the assessment the overall magnitude of change is judged to be medium and taking account of the medium-high sensitivity will result in visual effects of **greater importance**.
Potential for future cumulative effects: In a theoretical future cumulative baseline, certain turbines in the proposed Scoop Hill Community Wind Farm will be visible across horizons on the hills to the east of Annandale. As noted in the primary visual assessment, the Scoop Hill 132kV Connection Project will be seen contained below the horizon, and within a different landscape context (seen across the lower valley side, rather than above the hills to one side of the valley where the proposed Scoop Hill Community Wind Farm will be seen). As such, visual effects as identified in the primary assessment (greater importance) will remain valid.

Table 4.11: Viewpoint 3 - A701			
Grid Reference (NGR)	308375, 601038	**Figure Number**	4.2.3
LLCT	Valley Floor with Woodland Belts	**Designated Landscape**	None
Direction of View	North-east	**Distance to the Scoop Hill 132kV Connection Project**	1.4km
Location, description of existing view and potential receptors: This viewpoint is located to the south-west of the Scoop Hill 132kV Connection Project. It represents slightly oblique views experienced by road users, travelling north, along the A701. This viewpoint is also representative of views from a short section of NCR 74. The view looks through a gap in roadside vegetation, and over the M74 motorway which runs parallel to the road near this viewpoint. Traffic moving along the M74 is visible in filtered views through roadside vegetation. Beyond the motorway, the view looks across Annandale, towards the eastern valley side. The valley floor is charactered by pasture, woodland and mature specimen trees. The valley side to the east of the view is characterised by pasture with moorland on the higher ground. There are areas of coniferous forest and woodland (including Beldcraig Wood) visible on the valley side. The existing 400kV OHL crosses the view to the north-east, with steel towers contained below the horizon of the eastern valley side.			
Sensitivity: Road users, on this fast moving route, are considered to be of low susceptibility. Cyclist on the NCR 74 are of medium susceptibility. The viewpoint is not located within a designated or protected landscape, indicating a lower value. **On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of this viewpoint is judged to be medium-low.**			
Appraisal of visual effects during construction: During the construction phase, some limited felling activity will be perceptible in areas of woodland/ forestry in Beldcraig Wood (associated with the removal of up to 1.4 Ha for wayleave/windthrow purposes). Construction vehicles and plant, and the construction of the twin double wood poles will be apparent across the eastern valley side, between The Dod and the valley side to the north of Beldcraig Wood. These construction works will be seen behind the existing 400kV OHL. The scale of change is judged to be small. The geographical extent is judged to be small, as this represents a fleeting and oblique sequential view, from this generally fast moving route. The overall magnitude of change is judged to be small and taking account of the medium-low sensitivity will result in visual effects of **lesser importance**.			

Table 4.11: Viewpoint 3 - A701
Appraisal of visual effects during operation: During the operational phase, some permanent woodland/ forestry loss in Beldcraig Wood associated with the removal of up to 1.4 Ha for wayleave/windthrow purposes) (where the proposed route crosses this feature) may just be apparent. The twin double wood poles will be apparent across the eastern valley side, between The Dod and the valley side to the north of Beldcraig Wood. The new OHLs will be seen behind the existing 400kV OHL, and contained below the horizon of the hills to the east of Annandale. The scale of change is judged to be small. The geographical extent is judged to be small. The overall magnitude of change is judged to be small and taking account of the medium-low sensitivity will result in visual effects of **lesser importance**.
Potential for future cumulative effects: In a theoretical future cumulative baseline, certain turbines in the proposed Scoop Hill Community Wind Farm will be visible across horizons on the hills to the east of Annandale. As noted in the primary visual assessment, the Scoop Hill 132kV Connection Project will be seen contained below the horizon, and within a different landscape context (seen across the lower valley side, rather than above the hills to one side of the valley where the proposed Scoop Hill Community Wind Farm will be seen). This view also represents a very fleeting and oblique view, from a fast moving section of the road. As such, visual effects as identified in the primary assessment (lesser importance) will remain valid.

Table 4.12: Viewpoint 4 - Minor road, south of Moffat			
Grid Reference (NGR)	309864, 602097	**Figure Number**	4.2.4
LLCT	Edge of Upland Fringe	**Designated Landscape**	None
Direction of View	South-west	**Distance to the Scoop Hill 132kV Connection Project**	260m
Location, description of existing view and potential receptors: This viewpoint is located on a minor road, which travels south from Moffat. The road is located on the eastern valley side of Annandale. The viewpoint represents direct through to oblique views experienced by roads users, travelling south. From this slightly elevated vantage point, the view looks west and south over Annandale. The substation at Bearholm (Moffat substation) is apparent in the foreground to the west of the view. The valley floor is characterised by farmland, woodland and dispersed settlement. The higher valley sides, to the east and west of the view, are characterised by pasture and moorland on the higher ground. There are areas of coniferous forest on the higher valley sides also. The existing 400kV OHL crosses the view to the south, crossing over the road and linking into Moffat Substation. Steel-towers are apparent on the horizon to the south of the view.			
Sensitivity: Road users, including cyclists, on this slower moving minor road, are considered to be of medium susceptibility. The viewpoint is not located within a designated or protected landscape. **On balance, taking account of the judgements of susceptibility and value, the overall sensitivity of this viewpoint is judged to be medium.**			
Appraisal of visual effects during construction: During the construction phase, some limited felling activity will be perceptible in areas of woodland/ scrub to the east of Moffat substation and at the crossing point of the River Annan. This will comprise of circa. 0.39 Ha of woodland (of which 0.27 Ha is currently used for screening the Moffat substation). Construction vehicles and plant, and the construction of the twin double wood poles will be apparent along the western extents of the proposed OHL route. This			

Table 4.12: Viewpoint 4 - Minor road, south of Moffat
will be between Moffat substation and on the valley side to the east of the minor road, and seen in close proximity. These construction works will be seen in front of the existing 400kV OHL. The scale of change is judged to be medium-large. The geographical extent is judged to be small, as this represents a fleeting view from the minor road, as it crosses under the proposed OHLs. Taking a precautionary approach to the assessment, the overall magnitude of change is judged to be medium and taking account of the medium sensitivity will result in visual effects of **greater importance**.
Appraisal of visual effects during operation: During the operational phase, some permanent loss of woodland/ scrub will be apparent, to the east of Moffat substation and at the crossing point of the River Annan. The twin double wood poles will be apparent between Moffat substation and on the valley side to the east of the minor road, seen in close proximity. The new OHLs will be seen in front of the existing 400kV OHL with some parts, on higher ground to the east of view, seen above the horizon. The scale of change is judged to be medium-large. The geographical extent is judged to be small. Taking a precautionary approach to the assessment the overall magnitude of change is judged to be medium and taking account of the medium sensitivity will result in visual effects of **greater importance**.
Potential for future cumulative effects: In a theoretical future cumulative baseline, certain turbines in the proposed Scoop Hill Community Wind Farm will be visible above horizons on the hills to the east of Annandale. The small extension to the north-east of Moffat substation (required to facilitate the Scoop Hill 132kV Connection Project but subject to a separate application) will also be apparent, and seen in the context of existing electricity infrastructure. As noted in the primary visual assessment, the Scoop Hill 132kV Connection Project will be seen contained below the horizon, and within a different landscape context (within the valley, rather than above the hills to one side of the valley where the proposed Scoop Hill Wind Farm will be seen). This view also represents a very fleeting view, as road users pass under the OHLs when travelling south from Moffat. As such, visual effects as identified in the primary assessment (greater importance) will remain valid.

Proposed Additional Mitigation

4.80 Beyond embedded mitigation through routeing and design and good practice measures including the reinstatement of disturbance associated with the construction of the Scoop Hill 132kV Connection Project, no additional mitigation measures have been proposed. As discussed in **paragraph 4.72**, the planting of low growing species, whilst unlikely to provide much mitigation in the way of visual screening of the project, will help offset landscape effects associated with vegetation loss.

Summary and Conclusions

4.81 Table 4.13 below summaries the construction and operational phase landscape and visual effects of the Scoop Hill 132kV Connection Project.

4.82 There will be no landscape and visual effects of greater importance on designated landscapes, settlements or with regard to sequential effects from key routes.

4.83 In terms of effects on landscape character, there will be some very localised and direct effects on LLCT across the study area. However, this will not translate into effects of greater importance for any LLCT, during the construction and operational phase.

4.84 With regard to visual effects, effects of greater importance have been identified from two viewpoints, Viewpoint 2 – Minor Road near Milton and Viewpoint 4 – Minor Road south of Moffat. Both of these viewpoints are within 1.1km of the Scoop Hill 132kV Connection Project, and represent localised and closer proximity views. Both appraisals have also adopted a precautionary stance. Effects are considered to be just above the threshold of 'greater importance'. From VP2 the Scoop Hill 132kV Connection Project is visible across the valley side. However, it is largely contained below the horizon and seen behind larger existing OHL. VP4 is a very fleeting view of the proposals, as road users move south and cross under the OHLs.

4.85 With regard to cumulative effects, the cumulative assessment considers the effects of Scoop Hill 132kV Connection Project in a theoretical future cumulative baseline, which includes Scoop Hill Community Wind Farm and a small extension to the north of Moffat substation (which is required to facilitate the Scoop Hill 132kV Connection Project, but subject to separate applications). In this alternative future cumulative baseline, the landscape and visual effects as identified in the primary assessment (against the current baseline) are judged to remain the same.

Table 4.13: Summary of Effects

Project Name	Construction Stage Effects	Operational Stage Effects
Wooded Valley LLCT	**Lesser Importance**	**Lesser Importance**
Valley Floor with Woodland Belts LLCT	**Lesser Importance**	**Lesser Importance**
Upland Fringe LLCT	**Lesser Importance**	**Lesser Importance**
Foothills LLCT	**Lesser Importance**	**Lesser Importance**
VP1 - Newmills	**Lesser Importance**	**Lesser Importance**
VP2 - Minor road near Milton	**Greater Importance**	**Greater Importance**
VP3 - A701	**Lesser Importance**	**Lesser Importance**
VP4 - Minor road, south of Moffat	**Greater Importance**	**Greater Importance**

Chapter 5
Ecology

Introduction

5.1 This Chapter presents the findings of an appraisal of the potential effects of the proposed Scoop Hill 132kV Connection on ecology. It details the baseline environment, based on both desk-based studies and a comprehensive field survey. A description of potential effects, together with proposed mitigation measures is also provided.

5.2 The appraisal has been undertaken by LUC and is accompanied by the following appendices:

- **Appendix 5.1: Badger Survey Report (Confidential);** and
- **Appendix 5.2: Biodiversity Net Gain Report.**

5.3 The appraisal is also supported by the following Figures:

- **Figure 5.1: Designated Sites;**
- **Figure 5.2: Phase 1 Habitat Map;**
- **Figure 5.3: Protected Species Results**; and
- **Figure 5.4: Badger Results (Confidential) (within Appendix 5.1).**

Scope of Appraisal and Study Area

Scope of the Appraisal

5.4 This appraisal considers the potential effects of the Scoop Hill 132kV Connection Project on terrestrial ecology (both habitats and protected species). Ornithological interests are considered separately within **Chapter 6**. The following key issues were identified for consideration in the appraisal:

- Effects on statutory and non-statutory designated sites for nature conservation purposes.
- Direct habitat loss/ severance and/ or disturbance of habitats of conservation concern[23].
- Direct habitat loss/ severance, disturbance and/ or, mortality of protected species.

[23] Habitats listed on Annex I of The Conservation (Natural Habitats &c.) Regulations (1994), the Scottish Biodiversity List, Local Biodiversity Action Plan priorities and Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

5.5 The following effects were not considered:

- Disturbance and/or displacement during the operational phase as maintenance activities during the operational phase will be infrequent and similar in nature to existing current agricultural activities in this location. No disturbance or displacement is anticipated on ecological receptors due to the presence of the OHLs.

5.6 The appraisal has been prepared in cognisance of relevant legislation and policy, UK nature conservation policy and local biodiversity guidance.

Study Area

5.7 The Study area adopted in this assessment varies by desk and field survey and ecological features, as defined by best practice. Study areas are detailed in **Table 5.1.**

Table 5.1: Study Area Description

Desk-Based Studies	
Statutory Designated Sites	Development footprint and 1km buffer
Non-Statutory Designated Sites	Development footprint and 1km buffer
Existing Protected Species Data	Development footprint and 1km buffer
Field Studies	
Habitat and Vegetation Surveys (including GWDTEs)	Development footprint and 250m buffer
Protected Species (terrestrial)	Development footprint and 250m buffer

Policy and Guidance

5.8 Current policy, legislation and guidance of relevance to the appraisal is detailed below.

Policy and Legislation

5.9 The appraisal has been carried out in accordance with the principles contained within the following legislation:

- Conservation (Natural Habitats, &c.) Regulations 1994[24];
- The Wildlife and Countryside Act 1981 (as amended)[25];
- The Nature Conservation (Scotland) Act 2004[26];
- The Protection of Badgers Act 1992 (as amended)[27];
- The Water Environment and Water Services (Scotland) Act 2003 (WEWS)[28];
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011[29].
- National Planning Framework 4 (NPF4)[30];
- Dumfries and Galloway Local Development Plan 2[31].

Guidance

5.10 The appraisal is carried out in accordance with the principles contained within the following documents:

- Scottish Biodiversity List[32];
- SEPA's Guidance on Assessing the Impacts of Development Proposals on Groundwater Dependant Ecosystems[33]

[2424] UK Government (1994). Conservation (Natural Habitats, &c.) Regulations 1994 ;. Available at: https://www.legislation.gov.uk/uksi/1994/2716/contents/made [Accessed August 2023]
[25] Government (1981). The Wildlife and Countryside Act 1981 (as amended). Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents [Accessed August 2023].
[26] Government (2004). The Nature Conservation (Scotland) Act 2004. Available at: https://www.legislation.gov.uk/asp/2004/6/contents [Accessed August 2023].
[27] Scottish Government (1992). The Protection of Badgers Scotland Act 1992 (as amended). Available at: https://www.legislation.gov.uk/ukpga/1992/51/scotland [Accessed August 2023].
[28] Government (2003). The Water Environment and Water Services (Scotland) Act 2003 (WEWS) Available at: https://www.legislation.gov.uk/asp/2003/3/contents [Accessed August 2023].
[29] Government (2011). The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available at: https://www.legislation.gov.uk/ssi/2011/209/contents/made [Accessed March 2023].
[30] Scottish Government (2023) Scottish Planning Policy. Available at: https://www.gov.scot/publications/scottish-planning-policy/pages/2/ [Accessed August 2023]
[31] Available at: https://www.dumgal.gov.uk/media/19849/LDP2-Local-Nature-Conservation-Sites-technical-paper/pdf/Local_Nature_Conservation_Sites_Jan2018.pdf [Accessed August 2023]
[32] NatureScot (n.d.). Scottish Biodiversity List [Online]. Available at: https://www.nature.scot/doc/scottish-biodiversity-list [Accessed August 2023]
[33] SEPA (2023). Guidance on Assessing the Impacts of Development Proposals on Groundwater Dependant Ecosystems. Available at: ups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf (sepa.org.uk [Accessed August 2023]

- NatureScot (Scottish Natural Heritage), Series on Species Advice Notes for Developers.[34]
- Dumfries and Galloway Local Biodiversity Action Plan 2009[35]; and
- BS 42020:2013 Biodiversity – Code of Practice for Planning and Development[36]
- Chartered Institute of Ecology and Environmental Management, Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine[37].

Methodology

Desk Study and Information Sources

Desk Study

5.11 A desk study was carried out to review existing records of designated sites and protected species activity within 1km of the Scoop Hill 132kV Connection Project.

5.12 The following information sources were utilised during the desk study:

- NatureScot Site Link tool[38].
- Scotland's Environment Web[39].
- Multi-Agency Geographic Information for the Countryside (MAGIC)[40].
- The Dumfries and Galloway Council Biodiversity Action Plan[41].
- Dumfries and Galloway Council list of Local Nature Conservation Sites (Non-statutory designated sites)[42]
- National Biodiversity Network (NBN) Atlas Scotland under CC-BY licence[43].
- Ancient Woodland Inventory[44].

Field Survey

Extended Phase 1 Habitat Survey

5.13 An Extended Phase 1 Habitat Survey was completed by an experienced ecologist in accordance with JNCC methodology[45] on 23rd June and 21st July 2022 in warm and dry weather conditions.

5.14 The survey identified and recorded all natural and semi-natural habitats located within the Study area with particular attention given to habitats of conservation concern[23]. The Phase 1 Habitat Survey method provides a rapid and standardised approach to documenting and classifying broad habitat types, and recording associated floral species (including Invasive non-native species (INNS)). Where potential habitats of conservation concern were identified, a National Vegetation Communities (NVC) survey was conducted, this survey method is also used to identify habitats which can be indicative of groundwater dependency (GWDTE [33].

5.15 The survey was extended to include an assessment of the habitats within the Study area known to support notable and/or protected species. Where direct evidence of protected

[34] NatureScot. Available at https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species [Accessed August 2023]
[35] Dumfries and Galloway LBAP 2009 [Online] Available at: https://www.dumgal.gov.uk/media/19945/Local-Biodiversity-Action-Plan/pdf/Local_Biodiversity_Action_Plan.pdf?m=636561914667330000 [Accessed August 2023]
[36] British Standard Institute. ("103) BS 42020:2013 Biodiversity – Code of Practice for Planning and Development. Available at: https://knowledge.bsigroup.com/products/biodiversity-code-of-practice-for-planning-and-development/standard [Accessed August 2023]
[37] Chartered Institute of Ecology and Environmental Management (2013) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine Available at: https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf [Accessed August 2023]
[38] Available at: https://sitelink.nature.scot/home [Accessed August 2023]
[39] Available at: http://map.environment.gov.scot/sewebmap/ [Accessed August 2023]
[40] Department for Environment, Food and Rural Affairs *et al* (n.d.). Multi-Agency Geographic Information for the Countryside [Online]. Available at: http://magic.defra.gov.uk [Accessed August 2023]
[41] Dumfries and Galloway Council (2009). Dumfries and Galloway Biodiversity Action Plan [Online]. Available at: https://www.dumgal.gov.uk/media/19945/Local-Biodiversity-Action-Plan/pdf/Local_Biodiversity_Action_Plan.pdf [Accessed August 2023].
[42] Dumfries and Galloway Council (n.d.). Dumfries and Galloway Council List of Local Nature Conservation Sites (Non-statutory Designated Sites). Available at: https://www.dumgal.gov.uk/media/19849/LDP2-Local-Nature-Conservation-Sites-technical-paper/pdf/Local_Nature_Conservation_Sites_Jan2018.pdf [Accessed August 2023].
[43] Available at: https://scotland.nbnatlas.org/ [Accessed August 2023]
[44]Scottish Government. Ancient Woodland Inventory (Scotland). Available at: https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland [Accessed August 2023]
[45] JNCC (2010). Handbook for Phase 1 Habitat Survey – a technique for environmental audit. JNCC, Peterborough.

species was identified, this was recorded and photographed, in line with species-specific survey best practice.

5.16 Where potentially suitable habitats for protected species were identified, surveys were undertaken for these species. Methods adopted are provided below:

Preliminary Bat Roost Assessment (PBRP) Survey

5.17 A Preliminary Bat Roost Assessment (PBRA) survey was undertaken on trees and structures (buildings) within the Study area on 23rd June and 21st July 2022.

5.18 The PBRA survey is designed to assess and identify any features that may provide suitable habitat for roosting bats. The PBRA survey follows assessment criteria set out in the BCT Good Practice Guidelines[46] and features are categorised in accordance with their potential to support roosting bats. The criteria used to determine bat roost potential (BRP) is outlined in **Table 5.2** below.

Table 5.2: Bat Roost Potential Classifications

BRP Category	Roosting Habitat Features
Negligible	Negligible habitat features likely to support roosting, commuting or foraging bats.
Low	Structures in this category offer one or more potential roost sites for individual, opportunistically roosting bats. These sites do not offer the space, shelter or appropriate conditions to support large numbers of bats or maternity roosts. Trees in this category include those of sufficient size and age to support suitable roosting features, but none are visible from the ground.
Moderate	Structures and trees in this category offer one or more roost site that, due to their space, shelter or conditions, offer roosting potential for a range of species. Roosts may be more permanent, rather than opportunistic. Small maternity roosts of common species may form in one of these roost sites.
High	Structures and trees in this category have one or more potential roost sites that are suitable for large number of bats. Roosts are likely to be permanent and include maternity roosts. Potential roost sites exist for a wide range of species or species of particular conservation concern.

Otter

5.19 An otter survey was undertaken on all watercourses located within the Study area on 23rd June and 21st July 2022 in accordance with recognised best practice survey methods[47]. Ecologists searched for evidence of suitable habitat for, and direct evidence of, otter. Watercourses were categorised into four suitability classifications based on a variety of characteristics including water width, water depth, suitable foraging resources, suitable resting sites, and connectivity to suitable habitats. Descriptions of suitability categories are provided in **Table 5.3.**

Table 5.3: Watercourse Suitability for Otter

Suitability	Description
Optimal	Typically larger, main watercourses (at least 1m in wet width). These watercourses contain flow at all times of year (not just in spate) and will support foraging resources (such as amphibians and fish). Rocky banksides or vegetation overhangs will provide suitable resting places, and large boulders will provide ideal sprainting sites.
Sub-optimal	Generally a substantial watercourse, greater than 0.5m in width. These watercourses will comprise stone and rock substrate, with occasional boulders. There may be limited resting opportunities, however, vegetation overhangs and occasional rocky crevices may be present.
Suitable	These watercourses may be sporadically used by otter, with connectivity to optimal or sub-optimal watercourses. The watercourses themselves will typically be no wider than 0.5m, with a relatively shallow flow of water. Substrate may comprise stone and earth, and banksides may comprise grassland
Unsuitable	Generally will be a narrow channel, which may contain very little water. The channel

[46] Collins (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition. Available at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-3rd-edition [Accessed August 2023]

[47] Scottish Natural Heritage (2016). Protected Species Advice for Developers Otters.[Online]. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20otter.pdf [August 2023]

Suitability	Description
	may be very densely vegetated with limited suitability to support otter foraging resources.

5.20 Where watercourses were considered suitable to support otter, a detailed survey was undertaken for field signs which included:

- Resting sites;
- Spraint (including age and description: fresh, recent, old);
- Prints, tracks, slides and runs; and
- Feeding remains.

5.21 Where resting sites were recorded, these were assessed for their potential to be used as a breeding or natal site. Resting sites were classified in accordance with descriptions detailed in **Table 5.4.**

Table 5.4: Otter Resting Site Classification

Resting Site Type	Description
Natal Holt	A discreet holt site that is used by a bitch to birth cubs, where they will normally remain for up to three months, before being moved to a secondary holt. These sites are seldom located during surveys and they are rarely recorded without the aid of camera traps. It is generally accepted that most natal holts will contain bedding material and sprainting activity is minimal whilst occupied.
Holt	A cavity or hole on or adjacent to a watercourse. It may be in the ground, under tree roots, within rocks or caves; where it cannot be readily observed. If a holt is confirmed as active it usually contains field evidence such as spraint.
Hover	A bolt hole or ledge that provides temporary cover or a place to eat prey. It is not fully enclosed, and the back of the feature can normally be observed. There may be spraints, footprints and feeding evidence present.
Couch	An above-ground shelter normally used for lying-up and grooming. They may take the form of a depression in tall vegetation or may be covered in a vegetated grass 'roof'.
Breeding Site	An area of land in which otters breed. The site may be large, and it is usually more important to protect this site than an individual natal holt.

5.22 The assessment of resting site status was determined by the quality of the feature and the ability to provide key requirements for otters. This included cover and seclusion for an individual to sleep or rest, the provision of nursery or breeding habitat (including potential for natal holt), the supply of critical factors such as feeding resources (ponds, lochs and water features), freshwater for cleaning and drinking, and the provision of suitable seclusion away from disturbance.

5.23 This assessment was subjective and corroborated by the abundance of field evidence located in, or around, the features. Diagnostic evidence (such as spraints, urination "green" spots, spraint mounds, sign heaps, grooming hollows, footprints, paths, and slides) was interpreted to determine the status of the feature.

5.24 Where spraint was recorded, it was allocated an age class in accordance with the following descriptions:

- **Fresh:** The spraint is still very moist and pungent, and was likely to have been deposited within the last few hours or days.
- **Recent:** The spraint has become decayed but retains consistency and some odour. It is dry and colour is more faded. It is likely to have been deposited within the last week or two.
- **Old:** The spraint is desiccated and powdery having lost its shape and most odours. Usually remains are still evident and identifiable, usually by the abundance of fish-bone or scales. It is likely to have been deposited approximately a month ago (sometimes longer).

Water Vole

5.25 Surveys for suitable habitat for, and direct evidence of, water vole were undertaken on 23rd June and 21st July 2023 following good practice survey methods[48]. Surveys were completed by competent field ecologists and all suitable

[48] Strachan, R. & Moorhouse, T. (2006). Water Vole Conservation Handbook 2nd Edition. Wildlife Conservation Research Unit, University of Oxford, Oxford.

watercourses and waterbodies within the Study area were visited.

5.26 Watercourses were classified for their suitability to support water vole depending on a variety of characteristics including bankside composition, substrate, water flow rate and bankside vegetation. Descriptions of watercourse suitability categories are detailed in **Table 5.5** below.

Table 5.5: Water Course Suitability for Water Vole

Suitability	Description
Optimal	These watercourses will typically have a very slow flow rate and will comprise peaty bankside and substrate. Banksides will also comprise tussocky vegetation, including rushes (a common food source of water vole). The watercourses will generally be deep to enable predatory escape.
Sub-Optimal	Typically, these watercourses will have a relatively slow flow rate. Banksides may be peaty but may not be very steep, therefore not allowing burrows to account for varying water levels. Rushes will be present, providing foraging resource.
Suitable	Banksides may comprise earth allowing for some burrowing. Herbaceous vegetation will generally be lacking, and invertebrates, amphibians and fish will be sparse. Flow rate will be slow to moderate; however, watercourse may comprise rocky substrate.
Unsuitable	Watercourses will comprise rock and stone substrate and banksides. The flow rate will be moderate or fast flowing and rushes will be absent from bankside vegetation

5.27 Where watercourses were considered suitable, these were surveyed with the aim of identifying and recording presence of water vole. Ecologists searched for evidence of suitable habitat for, and direct evidence of water voles as follows:

- Burrows and tunnel systems;
- Runs, tracks and slides;
- Latrines (with droppings categorised as fresh, recent, or old);
- Feeding stations and remains; and
- Physical sightings.

5.28 All survey evidence was collected and recorded using GIS-enabled field tablets for accuracy. Where appropriate field evidence was photographed for later analysis.

Pine Martin and Red Squirrel

5.29 Due to similarities in the habitat requirements for these species, field surveys for pine marten and red squirrel were conducted on 23rd June and 21st July 2023 simultaneously as follows.

5.30 A survey for red squirrel was undertaken in accordance with best practice guidelines[49,50] to assess suitability of habitats within the Study area for the species. Suitable habitat includes cone-bearing coniferous plantation woodland located on free-draining soils, with good connectivity to other woodland habitats. Where suitable red squirrel habitat was recorded, searches for foraged cones, dreys and tracks/prints were undertaken.

5.31 A survey for pine marten was undertaken on all habitats within the Study area in accordance with best practice guidelines[51,52] to assess habitats for their suitability to support the species, while searching for indicative field signs such as feeding remains, scat, footprints, and dens.

5.32 The survey was undertaken using a systematic approach where possible. Suitable habitats were surveyed for evidence of pine marten by walking linear routes. Transects generally followed defined wayleaves, firebreaks and access tracks as these are frequently used by pine marten and therefore where indicative field signs are most commonly found.

5.33 During the survey, competent field ecologists walked the Study area, noting all habitat with potential to support each species. This extended to mature coniferous and mixed woodlands/forests and treelines. Within suitable habitat, direct

[49] Gurnell, J., Lurz, P., McDonald, R. and Pepper, H. (2009). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission [Online]. Available at: https://cdn.forestresearch.gov.uk/2009/09/fcpn011.pdf [Accessed August 2023].

[50] NatureScot (n.d.). Protected Species Advice for Developers: Red Squirrel [Online]. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20red%20squirrel.pdf [Accessed August 2023].

[51] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.

[52] NatureScot (n.d.). Protected Species Advice for Developers: Pine Marten [Online]. Available at: https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20pine%20marten.pdf [Accessed August 2023].

evidence of each species was searched for, and is listed below in **Table 5.6**.

Table 5.6: Pine Marten and Red Squirrel Field Signs

Field Signs	Pine Marten	Red Squirrel
	Scat (including age classification)	Foraged cones (diagnostic)
	Dens	Dreys (non-diagnostic)
	Tracks and prints	Tracks and prints

Other Observations

5.34 While surveys for other species were not specifically undertaken, incidental observations of other species were made, particularly where legislation protections were relevant. For example, ad-hoc sightings of brown hare were noted on GIS-enabled field tablets.

Consultation

5.35 The consultation process with regards to Routing was undertaken in 2021[53]. This identified the potential presence of red squirrel, otter and badger. These species have been included in the scope of ecological surveys and assessment caried out.

5.36 Scottish Wildlife Trust Raised that the possible works may impact on the red squirrel population in the area. SPEN confirmed that any necessary red squirrel surveys will be completed once the application is progressed to the formal environmental assessment/appraisal stage. Appropriate mitigation to avoid or offset any effect on red squirrels, including a Species Protection Plan (SPP), will be developed if required. Should consent be granted for the project, further pre-construction surveys would be undertaken and overseen by an Ecological Clerk of Works (ECoW), including obtaining any species licenses required.

5.37 Scottish Badgers noted there are records of badger setts around the substation and along the route options. Some sett records also appear to be present along field margins and open ground. SPEN confirmed that protected species surveys will be undertaken once the route is more defined following consultation. These surveys will be used to inform the detailed OHL alignment during which any identified badger setts will be avoided, whilst balancing other factors which can influence the placement of individual poles. Robust mitigation proposals will be implemented, including pre-construction surveys and the implementation of a Species Protection Plan.

Assumptions and Limitations to the Appraisal

5.38 All ecological surveys represent a snap-shot in time. Habitats and species assemblages are dynamic and change over time in response to a range of variables. Data presented in this report should not be considered a long-term interpretation of ecological data and should not be relied upon as such.

5.39 Evidence of protected species is not always discovered during a survey. This does not mean that a species is not present; hence the surveys also record and assess the ability of habitats to support protected species.

5.40 No bat roost surveys have been undertaken of individual trees identified as having bat roost potential as these are outwith the 50m ILA. Therefore, bat roost surveys will be undertaken prior to the commencement of construction if they are required. If bat roosts are identified, the bat roost licensing process will be engaged. This is considered an appropriate response as bat tree roosts can often be transient and open to considerable change due to the effects of weather on suitable features.

5.41 Access to the buffer south and west of the study area was restricted due to the presence of free roaming cattle, however broad habitats could still be recorded and assessments made in relation to suitability for protected species, therefore this did not affect the conclusions of the environmental appraisal.

Appraisal Method

5.42 The EIA screening process identified that effects on ecological receptors were unlikely to be significant in EIA terms. As such, the Scoop Hill 132kV Connection Project is not subject to the formal EIA process in relation to ecological receptors.

5.43 This appraisal therefore uses baseline ecological survey information to consider how the Scoop Hill 132kV Connection Project will interact with ecological receptors and subsequently establish mitigation measures that will ensure ecological integrity is maintained, legal and policy compliance achieved and SPEN's duties under Section 38 and Schedule 9 are met. The habitat and species specific survey methods and best practice guidelines outlined above and professional judgement form the basis for the ecological appraisal.

[53]https://www.spenergynetworks.co.uk/userfiles/file/Scoop_Hill_Routeing_and_Consultation_Document_FINAL_low_res.pdf

Effect Criteria

5.44 Effects on sensitive ecological receptors are appraised in relation to the likelihood of the Scoop Hill 132kV Connection Project resulting in changes to the:

- Qualifying features of locally, nationally or internationally designated sites for nature conservation.
- Functionality of habitats of conservation concern.
- Favourable Conservation Status of regional populations of potentially affected protected species.

Approach to Mitigation

5.45 Where appropriate, mitigation measures have been set out as a means of reducing the overall effect, or in order that legislative compliance is achieved.

5.46 The standard mitigation hierarchy has been applied, whereby the following sequential measures are considered:

- **Avoidance:** the effect is avoided by removing its pathway, e.g. by changing the route via the design process wherever possible, micro-siting of towers to avoid ecological receptors.
- **Mitigation:** measures are taken to reduce the magnitude of the effect, e.g. scheduling works to maintain key commuting and foraging corridors.
- **Compensation:** where the effect cannot be reduced, alternative action is taken elsewhere within the Study area, e.g. new planting proposals to replace lost vegetation, etc.

5.47 Mitigation measures included have been designed to be pragmatic and proportionate to the scale of the Scoop Hill 132kV Connection Project.

5.48 SPEN is committed to delivering 'No Net Loss' and has adopted a Biodiversity Net Gain metric to demonstrate this. The metric is included separately in **Appendix 5.2.**

Baseline

Desk Study

Designated Sites

5.49 No statutory designated ecological sites were recorded within 1km.

5.50 Five non-statutory sites were recorded within 1km, and these were sites included in the Ancient Woodland Inventory (AWI) as shown in **Figure 5.1**. These include:

- Beldcraig Wood Long Established Plantation of Origin (LEPO) that is 150m north east from the alignment. The AWI comprises of upland birchwood that runs adjacent to Beldcraig Burn.
- Wildmires Plantation (LEPO) 375m north of the alignment.
- Bankend Wood (LEPO) 600m west of the alignment.
- Whinny Plantation (LEPO) 800m south of alignment.
- Unnamed (Ancient) 1km north of alignment.

Protected and Notable Species

5.51 A total of 285 species records were identified within 1km, as returned by NBN Atlas. These included:

- 67 records of red squirrel*;*
- 121 records of common pipistrelle *;*
- 61 records of soprano pipistrelle *;*
- 24 records of Noctule bat*;*
- 3 records of Daubenton's bat *;*
- 2 records of Natterer's bat*;*
- 2 records of brown long-eared bat*;*
- 1 record of *Chiroptera* unknown bat species;
- 1 record of *Myotis* bat species;
- 1 record of *Pipistrellus* bat species and
- 2 records of Sea lamprey*.*

5.52 In addition, LUC's surveyors recorded the following protected species outwith the 250m survey area but within 1km:

- Bats – several bat boxes were identified within mature woodland, approximately 100m to the north-west of the Site, near the existing Moffat substation.
- Otter - two otter resting places were recorded approximately 190m to the south of the Study area on the River Annan and 100m to the north on Beldcraig Burn, these were both identified within dense bankside scrub.
- Pine marten – an old pine marten scat was recorded 60m outside of the Study area, on the edge of the woodland.

Field Survey

Habitats

5.53 The Phase 1 Habitat Survey was completed by LUC in July 2022. This recorded a small number of common habitats within the 250m survey area, these are described below. Field surveys did not identify any habitats of potential conservation concern or potential GWDTE habitats, therefore NVC survey was not required. Habitat descriptions should be read in conjunction with **Figure 5.2**.

A1.1.1 Broadleaved woodland (semi-natural).
5.54 Two stands of broadleaved plantation woodland were identified within the Study area.

5.55 The Beldcraig Wood Long Established Woodland of Plantation Origin (LEPO) is located approximately 150m from the centre of the Proposed Route. Part of the woodland is designated as upland birchwood and associated with the confluence of the Breconside Burn and Beldcraig Burn which connects the woodland to the wider landscape. This woodland included a diverse canopy dominated by birch, oak and rowan with abundant beech. The shrub layer included abundant hawthorn and hazel. The ground layer included abundant greater woodrush and wood sorrel, with frequent dogs mercury and bracken, and occasional nettle, wild garlic, hedge woundwort and marsh bedstraw were also recorded. Standing and fallen deadwood was also recorded within the woodland.

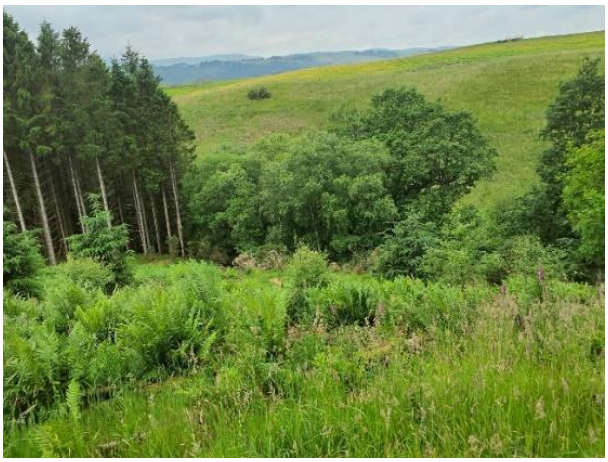
Photo 5.1: Beldcraig Wood

5.56 The second area of broad-leaved woodland was recorded at the west of the Study area. This woodland forms part of the riparian corridor associated with the River Annan and connects the woodland to the wider landscape. This area is comprised of mature broadleaved woodland including a diverse canopy of alder, ash, beech, birch, oak, rowan, sycamore, willow, and wild cherry. The shrub layer included hawthorn and hazel, with bracken recorded frequently in this area. Himalayan balsam was also recorded along the banks of the River Annan.

A1.1.2 Broadleaved woodland (plantation).
5.57 There are three blocks of mature broadleaved woodland recorded surrounding the existing substation at the western end of the Study area. Alder, birch, hawthorn, hazel, oak, rowan, and wild cherry were frequently recorded in these areas.

A1.2.2 Coniferous Woodland (plantation).
5.58 A block of mature coniferous Sitka spruce woodland was recorded in the centre of the Study area immediately to the south of the Beldcraig Wood LEPO. This plantation was associated with the Beldcraig Burn which connects the woodland to the wider landscape.

Photo 5.2: Conifer woodland, broadleaf woodland and bracken in the centre of the Study Area



B2.1 Neutral grassland (unimproved) with A3.1 Scattered trees and G2 Running Water (Drainage Ditch).
5.59 This habitat was recorded to the north and east of Moffat substation. This appeared to be an un-managed field which has been left to provide a buffer zone around the drainage ditch that runs through it.

5.60 Scattered alder were recorded in this area. The grassland species recorded were dominated by false oat-grass, and creeping thistle, cleavers were abundant. Buttercup species, common nettle and Yorkshire fog were frequent, with occasional meadowsweet and marsh woundwort and ragwort were recorded rarely in this area. In addition, in proximity to the drainage ditch, soft rush was locally dominant.

B2.2 Neutral grassland (semi-improved)
5.61 Semi-improved neutral grassland was the dominant habitat present in the central third of the Study area, with two

smaller areas present to the south of the Study area. This habitat was comprised of a number of fields that appears to have been left un-managed. These fields have been fenced off and at the time of the survey showed little/ no signs of grazing be livestock. The sward height was varied and a number of herb species were present. Yorkshire fog curly dock and white clover dominates this habitat, with abundant tufted hair grass, crested dogstail, dandelion and sweet vernal grass. Buttercup, common bent, common nettle, curly dock, marsh thistle, perennial rye grass and spear thistle were frequently recorded. Compact rush, birds foot trefoil, bull thistle, foxglove, harebell, meadowsweet, mouse ear, raspberry, ragwort, selfheal, sharp flowered rush, sorrel, were occasionally recorded and birds foot trefoil was rare within the habitat. In addition, scattered willow saplings were also present in low numbers.

Photo 5.3: Neutral grassland in the centre of the Study Area

B4 Improved grassland

5.62 Improved grassland was recorded predominantly in the southern half of the Study area. This area appears to be either lightly grazed or grown as silage. Ryegrass, Yorkshire fog and sweet vernal grass dominated this habitat. Daisy and white clover were abundant with frequent dandelion and buttercup. Mouse ear and spear thistle were rarely recorded in this habitat.

C1.1 Bracken (continuous)

5.63 Two small stands of continuous bracken were recorded in the north and centre of the Study area.

5.64 The first stand was associated with the western edge of broadleaved woodland habitat to the north of the Study area.

5.65 The second stand was associated with a fire break in the coniferous plantation woodland. to the south of the Study area.

G1 Standing water

5.66 A small pond area was recorded to the south of the Study area surrounded by stocked neutral grassland. Bank vegetation includes common rush, compact rush, sharp flowered rush, marsh thistle, Yorkshire fog, common bent grass, ryegrass. A partly dry ditch runs to the east of Moffat substation, to the north of the Study area.

G2 Running water

5.67 Two watercourses transect the Study area: the Beldcraig Burn close to the centre and River Annan to the west.

5.68 The River Annan was a wide watercourse and was deep in places.

5.69 Beldcraig Burn was recorded as being a fast flowing watercourse with steep sides which runs through Beldcraig Wood.

HS Hardstanding

5.70 The existing Moffat substation was located within the north west of the Study area. In addition, one minor road also cut through the Study area in a north to south direction.

J1.1 Arable

5.71 An arable field was recorded to the north west of the Study area, which was noted to be planted with cereal crop at the time of survey. At the time of the survey, it was noted that livestock was also present in these areas.

J1.1.2 Intact hedge (species-poor)

5.72 An intact hawthorn hedge was present in the north west of the Study area.

J2.4 Fence

5.73 Several boundary fences were recorded across the Study area, these delineated field boundaries.

J2.5 Wall

5.74 Several intact stone walls were recorded across the Study area to delineate field boundaries.

TL Treeline

5.75 There are tree lines present along roadsides. These included oak, beech, ash, sycamore and hawthorn.

Protected Species

Bats

5.76 The PBRA included an assessment of habitat suitability for bats. The woodland habitats associated with the watercourses within the Study area provide optimal habitats for foraging and commuting. These habitats also provide

some suitable roost resources for bats, as described below. Woodland habitats also provide habitat linkages to the wider landscape. Grassland habitats within the Study area also provide suitable foraging and commuting habitats for bats.

5.77 The woodland blocks identified above were assessed for their bat roosting potential (BRP). Seven trees across the Study area were classed with Low to Moderate BRP, five of which were concentrated within the woodland corridors associated with the River Annan and the Beldcraig Burn. In addition, two trees directly to the north of Moffat substation were identified to be of low potential for roosting bats. The locations of these trees are included in **Figure 5.3.**

Otter and Water Vole

5.78 There are three watercourses within the Study area, Beldcraig Burn, Beaconside Burn and the River Annan.

5.79 Within the east of the Study area, Beaconside Burn joins Beldcraig Burn, this in turn discharges to the River Annan outwith the south of the Study area. Beldcraig Burn was identified as being sub-optimal for sheltering for both otter and water vole due to the limited size, flow, lack of botanical diversity and exposure to livestock poaching. However, these watercourses provide suitable foraging and commuting resources for otter.

5.80 The River Annan transects the west of the Study area in proximity to the Moffat substation. The riparian habitats present on this watercourse within the Study area provide suitable habitat for foraging and commuting otters, however suitability for otter resting sites is sub-optimal due to current land uses. The River Annan is un-suitable for water voles due to the lack of overhanging bankside vegetation and high flow rates of the watercourse. Due to the management of the land, there are limited opportunities for water vole due to a lack of unmanaged, grassy vegetation to provide food and cover.

5.81 Figure 5.3 illustrates the results of the otter and water vole survey. No otter or water vole resting places/ sheltering sites were recorded within the Study area during the field survey. Two otter spraints were recorded on Beldcraig Burn within the Study area.

Photo 5.4: Otter spraint by Beldcraig Burn

5.82 No water vole sheltering places or field signs were recorded during surveys undertaken.

Pine Marten and Red Squirrel

5.83 Surveys identified suitable habitat for commuting and foraging pine marten and red squirrel in the woodland and forested areas within the Study area. These areas also provided some suitable habitat for resting sites.

5.84 Outwith the woodland – grassland field margins, the grassland/ agricultural habitats within the Study area were unsuitable for both species.

5.85 A cache of nuts and feeding cones were noted under a birch tree in the coniferous woodland associated with Beldcraig Burn. It is possible that these were evidence of red squirrel foraging. Red squirrels have a large home range, therefore the good connectivity between optimal forest coups and field evidence recorded suggests that the Study area is likely to support a low density population.

5.86 Pine marten field signs were not recorded within the Study area, however, an old scat was recorded 100m north of the study area, at the edge of Beldcraig Wood. Given the species' large home range and good connectivity between optimal forest coups, it is likely the species is present at a low density within the Study area.

5.87 Survey results for red squirrel are included in **Figure 5.3.**

Badger

5.88 Evidence of badger *Meles meles* was recorded. Due to the risk of persecution, information related to badger is confidential and is not discussed within this chapter – see **Appendix 5.1**. This information has been provided to Dumfries and Galloway Council and NatureScot only.

Brown Hare

5.89 A single record of Brown hare was noted within the east of the Study area during field work, as shown in **Figure 5.3**.

Good Practice Measures/Embedded Mitigation and Enhancement

5.90 This section outlines the avoidance and embedded mitigation measures that will be adopted by the Applicant and which have been assumed will be in place prior to the appraisal of effects below:

- The development and application of a Construction Environment Management Plan (CEMP), which will set out (amongst others) guidance on compliance with nature conservation legislation and policy. This will include adherence to Guidelines on Pollution Prevention and Construction Method Statements including relevant measures in relation to lighting, waste management and minimisation of vegetation removal required.
- The appointment of an Advisory Environmental Clerk of Works (ECoW) to advise, monitor and report on compliance with relevant legislation, policy and project specific mitigation during construction.
- Pre-construction surveys to be completed to confirm the status of protected species prior to works commencing. This will include bat activity surveys of those trees identified as having moderate – high bat roost potential that may require to be removed.
- Production of a Species Protection Plan (SPP) to set out the approach to the monitoring of protected species prior to and during construction. This will include requirements for protective exclusion zones (e.g. 30m buffer zones around badger setts etc) and other measures to be adopted in the vicinity of ecological receptors.
- The 'Infrastructure Location Allowance'(ILA) will be applied to allow micro-siting of wood poles and other ancillary infrastructure to avoid ecologically sensitive locations, such as: breeding shelters of protected species (e.g. badger main setts) or where works could cause severe damage to habitats of conservation concern (e.g. watercourse crossings. This will include applying a 20m buffer zone around water courses to retain bank and instream vegetation. This will be advised by an Ecological Clerk of Works (ECoW) during construction.
- Where possible, the ILA will allow for the protection of sheltering and resting sites, should these be identified during pre-construction surveys. Where this is not possible, the NatureScot licensing system will be used to ensure works are completed in full compliance with welfare and conservation standards. Any micrositing required to protect sensitive species will again be advised by the ECoW during construction.
- Where appropriate, vegetation will be protected during construction in localised locations via appropriate matting as directed by the ECoW. This will be particularly important within Beldcraig Wood but may also be relevant to works in proximity to the two water course crossings. These measures will protect existing root system and the seedbank.

Enhancement

5.91 A Biodiversity Enhancement Plan (BEP) will be developed and implemented by means of a planning condition to provide meaningful habitat enhancement appropriate to the scale of Scoop Hill 132kV Connection Project. The key objective of the BEP will be to deliver SPEN's 'No Net Loss' objective which will be measured by the use of the Biodiversity Net Gain (BNG) metric to demonstrate this (see **Appendix 5.2**).

Appraisal of Effects

Construction Effects

Designated Sites

5.92 No statutory designated sites for nature conservation were identified within 1km of the Study area.

5.93 Beldcraig Wood is included in the Ancient Woodland Inventory, as Long-Established Plantation of Origin (LEPO), located within the Study area. The careful design of the route will avoid the designated woodland. Some limited woodland removal on the edge of the larger woodland resource is unlikely to affect the integrity of the designated feature (see **Chapter 3: Project Description**). Therefore, it is unlikely there will be adverse effects on the Favourable Conservation Status[54] of the ancient woodland resource as a result of the Scoop Hill 132kV Connection Project.

[54] As defined by CIEEM https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/ [Accessed August 2023]

Habitats

5.94 The Scoop Hill 132kV Connection Project is largely located on homogenous improved grassland with a variety of other habitats making up a very small area of the overall Study area. However, given the ubiquity and low ecological value of the habitats to be affected, it is considered that all legislative and policy requirements will be met.

5.95 Woodland present within the Study area is of higher ecological value. A small area of broadleaved woodland will be removed to facilitate the Scoop Hill 132kV Connection Project, this loss is unlikely to affect the structural or functional integrity of the wider resource of which it is a part. A series of mitigation measures will be implemented to minimise felling within these areas as much as possible (via the ILA or reduced wayleave width (see **Chapter 3**)) and to safeguard the connectivity and function of these woodland habitats. Therefore, it is unlikely there will be adverse effects on the habitats of conservation concern as a result of the Scoop Hill 132kV Connection Project.

Protected Species

Bats

5.96 The associated woodland corridors within the Study area provide suitable foraging and commuting habitats and some roosting opportunities for bats.

5.97 Several trees were identified as having Low and Moderate BRP within the Study area. These trees have potential to support small numbers of crevice dwelling bats. Trees currently identified as having BRP have been avoided by the design process and will also be outside the 50 m ILA, thus roosting bats will be protected. In the event that new trees are likely to be affected, further surveys will identify the need for any protected species licensing and/ or mitigation measures. Therefore, it is unlikely that the removal of these trees under a European Protected Species licence (if required) will lead to adverse effects on the local bat population.

5.98 There will be a series of embedded mitigation measures in place to safeguard bat species such as pre-construction surveys, therefore it is unlikely there will be adverse effects on the Favourable Conservation Status of the local bat population as a result of the Scoop Hill 132kV Connection Project,

Otter

5.99 The watercourses and associated woodland corridors within the Study area provide suitable foraging and commuting habitats and sub-optimal opportunities for sheltering otters.

5.100 Limited field evidence of otter was recorded within the Study area during field surveys. Considering that the watercourses and waterbodies within the Study area form a very small section of larger, complex habitats which extend significantly beyond the Study area, it is likely that otter are exploiting areas in the wider landscape and only using the Study area mainly for commuting purposes.

5.101 This suggests that the Study area does not form a core area important for breeding of the local population. The Scoop Hill 132kV Connection Project will include a series of embedded mitigation measures to safeguard these species such as pre-construction surveys and an SPP, therefore it is unlikely there will be adverse effects on the Favourable Conservation Status of the local otter population.

Water Vole

5.102 The lack of field evidence and habitat suitability suggests that the Study area does not form a core area important for breeding of the local population. Therefore, there will be no adverse effects on the Favourable Conservation Status of the local water vole population.

Pine Marten and Red Squirrel

5.103 The woodlands within the Study area provide suitable sheltering, foraging and commuting habitats for pine marten and red squirrel.

5.104 Limited evidence of pine marten and red squirrel was recorded within the Study area. This suggests that the Study area does not form a core area important for breeding of the local population. The Scoop Hill 132kV Connection Project will include a series of embedded mitigation measures to safeguard these species such as pre-construction surveys and an SPP, therefore it is unlikely there will be adverse effects on the Favourable Conservation Status of the local pine marten and red squirrel population.

Badger

5.105 The habitats within the study area provide suitable foraging and commuting habitats and sheltering habitats for badgers.

5.106 Where possible, the ILA will maintain a 30 m disturbance buffer from badger setts. There is potential for disturbance to badger setts as a result of the Scoop Hill 132kV Connection Project. More details can be found in **Appendix 5.1**. However due to the application of the ILA the potential effects are likely to be very localised.

5.107 The Scoop Hill 132kV Connection Project will include a series of embedded and additional mitigation measures (including licensing if required) to safeguard the species, therefore it is unlikely there will be adverse effects on the Favourable Conservation Status of the local Badger population.

Cumulative Effects

5.108 The Scoop Hill 132kV Connection Project, in combination with the proposed Moffat substation extension, has potential to have adverse effects on bats and badger at Site level, due to the presence of suitable habitat for these species. No ecological reports for the proposed Moffat substation extension are available at this time. However, it is assumed that the proposed Moffat substation extension will have the appropriate measures and licensing in place prior to commencement of works. As such, it is unlikely that the cumulative effect would be adverse to the integrity of Favourable Conservation Status of the local bat and badger populations.

5.109 The Ecological Impact Assessment (EcIA) for Scoop Hill Community Wind Farm has identified no significant impacts on ecological receptors[55]. Furthermore, the Scoop Hill 132kV Connection Project is in a largely lowland agricultural context, while Scoop Hill Wind Farm is an upland, peaty landscape which supports very different habitat and species communities. As such, there is no relationship between the two sites and adverse cumulative impacts are unlikely.

5.110 Therefore, the Scoop Hill 132kV Connection Project, in combination with the proposed Scoop Hill Community Wind Farm and Moffat substation extension is unlikely to have an adverse cumulative effect on ecological receptors.

Proposed Additional Mitigation

5.111 If any new badger setts are discovered through pre-construction surveys, and the infrastructure cannot maintain the 30 m disturbance buffer through implementation of the 50 m Infrastructure Location Allowance (ILA), a NatureScot licence application may be required to allow for the legal disturbance (and potentially destruction) of setts. If the licensing process requires to be engaged, a Badger Protection Plan would be produced to detail specific mitigation measures to minimise any potential impact on badger.

Summary and Conclusions

5.112 The suite of desk studies and field surveys undertaken to inform this ecological appraisal has confirmed that the proposed construction of the Scoop Hill 132kV Connection Project may result in small scale, mitigable effects on ecological features.

5.113 No statutory designated sites were identified and five non-statutory sites were recorded within the 1km desk Study area.

5.114 Habitats within the 250m Study area are dominated by homogenous improved grassland of low ecological value and woodland present of higher ecological value, however this will largely be avoided as a result of the design process.

5.115 Several trees have been identified as having potential to support roosting bats. Badgers have been recorded within the Study area. Low levels of otter, red squirrel and pine marten are present within the Study area. The Study area also provides foraging and commuting resources for these species.

5.116 A series of good practice/embedded mitigation measures will be adopted within the design and construction to safeguard the designated features of the Beldcraig Woodland LEPO and the low levels of protected species recorded within the Study area. If necessary, licencing will be obtained to disturb known setts where construction works will be and a Badger Protection Plan containing measures to minimise effects on badger will be implemented.

5.117 Overall, the integrity and favourable conservation status[56] of designated sites, habitats of conservation concern[23] and protected species within the Study area will be maintained and legislative compliance will be met and SPEN's legal duties under Section 38 and Schedule 9 will be achieved.

[55] Scoop Hill Wind Farm Application; https://www.scoophillwindfarm.co.uk/planning-documentation

[56] As defined by CIEEM https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/

Chapter 6
Ornithology

Introduction

6.1 This Chapter presents the findings of an appraisal of the likely effects on the proposed Scoop Hill 132kV Connection Project on ornithology. It details the baseline environment, based on both desk-based studies and field survey. A description of likely effects, together with proposed mitigation measures is also provided.

6.2 The appraisal has been undertaken by LUC and is accompanied by the following technical appendices:

- **Appendix 6.1: Ornithology Technical Report**

The appraisal is also supported by the following Figures:

- **Figure 6.1: Ornithology Survey Areas;**
- **Figure 6.2: Flight Activity;** and
- **Figure 6.3: Breeding Birds Locations**

Scope of Appraisal and Study Area

Scope of the Appraisal

6.3 The following effects were identified for consideration in the appraisal:

- Disturbance and/or displacement to birds of moderate to high Nature Conservation Interest (NCI) during construction.
- Collision risk to birds of moderate to high NCI during operation due to the presence of the OHLs.
- Cumulative effects arising from the above, with other projects potentially affecting ornithology.

6.4 The following effects were not considered:

- Effects on statutory designated sites where birds form part of the qualifying interest. The nearest relevant site is the Castle Loch, Lochmaben Special Protection Area (SPA) which is also the Castle Loch Site of Special Scientific Interest (SSSI). This is approximately 18 km from the Scoop Hill 132kV Connection Project. Although theoretically within connectivity distance of foraging geese, in practice there is a very low likelihood of geese

from this SPA using habitats or airspace near to the Scoop Hill 132kV Connection Project.

- Disturbance and/or displacement during the operational phase. Maintenance activities during the operational phase will be infrequent and similar in nature to existing agricultural activities in this location. No disturbance or displacement to bird populations is anticipated due to the presence of the OHLs.
- Effects on bird populations of low NCI (see below).

Study Area

6.5 Statutory designated sites within 20 km for SPAs and 5km for SSSIs were considered as part of the desk study.

6.6 Vantage point (VP) watches were undertaken with the reference to OHL route options being considered during the preliminary routeing stage. The VP watches covered airspace above all OHL route options, including the final OHL route and a 500 m buffer of this route (**Figure 6.1**).

6.7 Breeding bird surveys were undertaken within 250 m of the route of the OHLs (**Figure 6.3**).

Policy and Guidance

6.8 Current policy, legislation and guidance of relevance to the appraisal is detailed below.

Policy and Legislation

6.9 The appraisal is carried out in accordance with the principles contained within the following legislation:

- The European Council Directive on the Conservation of Wild Birds 2009/147/EC ('the Birds Directive');
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland); ('The Habitats Regulations');
- The Nature Conservation (Scotland) Act 2004;
- National Planning Framework 4 (2023) and
- Dumfries and Galloway Local Development Plan (LDP2) (2019).

Guidance

6.10 The appraisal is carried out in accordance with the principles contained within the following documents:

- NatureScot Guidance: Assessment and Mitigation of Impacts of Power Lines and Guyed Meteorological Masts on Birds (SNH, 2016[57]);
- NatureScot Guidance: Assessing Connectivity with Special Protection Areas (SPAs) (SNH, 2016[58]);
- NatureScot Guidance: Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms (SNH, 2014[59]); and
- NatureScot Guidance: Assessing Significance of Impacts from Onshore Windfarms on Birds outwith Designated Areas (SNH, 2018[60]).

Methodology

Desk Study and Information Sources

6.11 A desk study was undertaken to collate information on the location of designated sites where ornithology forms part of the qualifying interest. SPAs up to 20 km distant and SSSIs up to 5 km distant were included.

6.12 Baseline survey information collected for the Scoop Hill Wind Farm was supplied to assist with field survey planning and to provide information on the presence of sensitive ornithological receptors previously recorded in the area.

Field Survey

Flight Activity Surveys

6.13 Bird flight activity was recorded during the 2021 breeding season, by undertaking watches from a single VP, located to provide good coverage of airspace over the preliminary route options (**Figure 6.2**). 36 hours of VP watches were undertaken between April and August 2021.

[57] SNH (2016). Guidance: Assessment and Mitigation of Impacts of Power Lines and Guyed Meteorological Masts on Birds. SNH, Battleby.
[58] SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs). Version 3 – June 2016. Guidance Note. SNH, Battleby.
[59] SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2 – March 2017. Guidance Note. SNH, Battleby.
[60] SNH (2018). Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas. Version 2 – February 2018. Guidance Note. SNH, Battleby.

6.14 VP watches followed the methods described by Band et al. (2007)[61] and collected flight information on a defined list of target species, which included Annex 1 and Schedule 1 raptors, waders and wildfowl.

6.15 Observers scanned a 180º arc of airspace over the preliminary route options to a distance of 2 km (**Figure 6.1**). Flights by target species were mapped, and their height above the ground estimated every 15 seconds for the duration of the flight. For each flight, a record was made of the species, the time of detection, age and sex (when distinguishable), flight duration and flight direction.

Breeding Bird Survey

6.16 In the 2022 breeding season, walkover breeding bird surveys were undertaken within 250 m of the route of the proposed OHLs. Three survey visits were undertaken between April and June 2022.

6.17 Surveys were based on the Brown and Shepherd (1993)[62] method for upland breeding waders. Surveyors approached to within 100 m of all parts of the survey area, aiming to maintain a constant search effort over the area. Surveyors scanned all areas and listened for bird calls to locate target species and classify behaviour to help ascertain their breeding status. The location of individuals was mapped, and a record was made of any behaviour characteristic of breeding.

Consultation

6.18 In June 2021, NatureScot was consulted to obtain advice on the proposed scope of ornithology surveys. The proposed scope was to undertake VP watches in the 2021 breeding season only and to undertake a desk study.

6.19 NatureScot responded in July 2021 and confirmed they were supportive of the survey scope proposed in the breeding season, which entailed 36 hours of VP watches (subsequently, breeding bird surveys were also undertaken). NatureScot requested that justification be provided for not undertaking VP watches in the non-breeding season, andthis is provided in the section 'Assumptions and Limitations to the Appraisal' below.

Assumptions and Limitations to the Appraisal

6.20 An assumption was that flight activity information from the non-breeding season was not considered necessary to inform an appraisal of effects. This was for several reasons:

- The wintering bird community in the vicinity of the Scoop Hill 132kV Connection Project is not known to comprise species with likely flight activity rates that could lead to predicted levels of collision requiring mitigation. Resident breeding raptors may still be present in the winter months, but foraging distributions tend to be larger in the non-breeding season so habitual or concentrated flight patterns over the OHLs are not anticipated. Some breeding raptor species, for example osprey, will abandon their breeding ranges in the winter, so will be absent during the non-breeding season.
- Migratory flights by wildfowl may occur over the Scoop Hill 132kV Connection Project, but collision risk with the OHLs will be low. Migratory flights by geese and swans predominantly occur at substantially higher flight heights than the proposed 13 m height of the OHLs (see **Chapter 3: Project Description**).
- The existing 400kV OHL is mainly parallel and within 150 m of the proposed OHLs for approximately 70% of their proposed route. This 400kV OHL is potentially a greater risk to migratory wildfowl than the proposed OHLs, as it has multiple wires at different heights and at higher heights than the proposed OHLs. Despite this, there is no reported collision mortality associated with this OHL. Also, the scale of the existing OHL, including the supporting towers, means that approaching migratory wildfowl are likely to take avoidance action, by flying higher or changing direction to avoid the wires.

Appraisal Method

Sensitivity of Receptor

6.21 Sensitive ornithological receptors comprise bird populations defined as of 'high' and 'moderate' NCI which are known to be sensitive to the effects associated with OHL developments.

6.22 NCI considers the sensitivity of bird populations with reference to their legal status and known recent trends in number, distribution and threat status.

[61] Band, W., Madders, M. and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms. In: *de Lucas, M., Janss, G.F.E., Ferrer, M. (eds) Birds and wind farms: risk assessment and mitigation*. Madrid, Quercus. p. 259-275.

[62] Brown, A.F. and Shepherd, K.B. (1993). A method for censusing upland breeding waders, Bird Study, 40:3, p.189-195.

6.23 Populations of High NCI comprise the following:

- Species listed on Annex 1 of the EU Birds Directive;
- Breeding species listed on Schedule 1 of the WCA; and
- Species listed on Schedule 1A and A1 of the WCA.

6.24 Populations of Moderate NCI comprise the following:

- Species on the Birds of Conservation Concern (BOCC) 'Red' list (Stanbury et al., 2021)[63];
- Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Scoop Hill 132kV Connection Project ; and
- Species present in regionally important numbers (>1 % regional population).

6.25 For this appraisal, and in line with guidance which seeks to focus attention on species that are rare or potentially vulnerable to impacts arising from OHL developments, only species classified as of high or moderate NCI are considered in detail (CIEEM, 2018[64]; SNH, 2018[9]).

6.26 In addition, passerine species and some other red-listed species like cuckoo, are not considered due to their populations being at limited risk of any adverse impact associated with the construction and operation of OHL developments.

Magnitude of Change

6.27 The magnitude of potential effects is determined following consideration of the spatial and temporal elements of the resulting changes. There are five levels of spatial magnitude and five levels of temporal magnitude.

6.28 Magnitude will consider the likely susceptibility of populations to an effect, taking account of how a species' ecology may influence the response of the population, including their ranging behaviour, seasonality in occurrence or behaviour, reliance on specific habitats, behavioural sensitivity to disturbance effects at different times of the year, and their ability to recover from adverse effects, for example, by birds being recruited from elsewhere.

6.29 The predicted magnitude of an effect can be influenced by when it occurs. For example, operations undertaken in daylight hours may have little temporal overlap with the occupancy of birds' night-time roosts; and seasonality in a bird population's sensitivity or occupancy of a site may mean that effects are unlikely during certain periods of the year.

6.30 Spatial magnitude of effect arising from displacement or mortality is classified in respect of regional populations as follows:

- Very high – total or near total loss of a bird population or population productivity (>80% of regional population affected);
- High – major reduction in population or population productivity (21 – 80% of regional population affected);
- Moderate – partial reduction in population or productivity (6 – 20% of regional population affected);
- Low – small but discernible reduction in population or productivity (1 – 5% of regional population affected); and
- Negligible – population or productivity reduction barely discernible (<1% of regional population affected).

Temporal magnitude is of effect is classified as follows:

- Permanent – effects continuing indefinitely with little prospect of improvement following decommissioning;
- Long-term – effects lasting 15-30 years;
- Medium-term – effects lasting 5-15 years;
- Short-term – effects lasting 1-5 years;
- Negligible – effects lasting less than 1 year.

Effect Criteria

6.31 Effects on sensitive ornithological receptors are appraised in relation to the likelihood of the Scoop Hill 132kV Connection Project resulting in changes to the conservation status of regional populations of potentially affected species of conservation value.

6.32 For this appraisal, conservation status is taken to mean the sum of the influences acting on a population which may affect its long-term distribution and abundance. Conservation status is considered to be favourable where:

- A species appears to be maintaining itself on a long-term basis as a viable component of its habitats;

[63] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

[64] CIEEM (2018). G*uidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine Version 1.1*. Chartered Institute of Ecology and Environmental Management, Winchester.

- The natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and
- There is (and will probably continue to be) sufficient habitat to maintain the species population on a long-term basis.

6.33 Effects that will adversely affect the favourable conservation status of a species, or prevent its recovery to favourable conservation status in Scotland, will be judged as of concern.

6.34 Regional populations are defined by the Western Southern Uplands and Inner Solway Natural Heritage Zone (NHZ 19) as defined by NatureScot (SNH, 2002[65]).

6.35 The likely overall effects on the conservation status of regional populations will consider the predicted spatial and temporal magnitude of effect, employing professional judgement to make a reasoned appraisal for each species assessed.

6.36 The classification of predicted effects has been undertaken using the criteria detailed in **Table 6.1**.

Table 6.1: Effect Classification

Effect	Criteria
Substantial	Changes to regional populations that result in total population loss or severe impacts to conservation status.
Moderate	Changes to regional populations that result in population losses that are likely to impact conservation status.
Minor	Small or barely detectable changes to regional populations that are unlikely to impact their conservation status.
Negligible	No or barely discernible changes to regional populations, with no impact on their conservation status.

Baseline

Desk Study

6.37 The Castle Loch, Lochmaben SPA is the only SPA within 20km of the Scoop Hill 132kV Connection Project. There are no SSSIs citing ornithological features within 5km of the Scoop Hill 132kV Connection Project.

6.38 The baseline surveys for the Scoop Hill Community Wind Farm detected a number of breeding species in the vicinity of the Scoop Hill 132kV Connection Project. These included:

- Breeding peregrine approximately 570 m from the Scoop Hill 132kV Connection Project;
- Breeding osprey approximately 1.8 km from the Scoop Hill 132kV Connection Project.
- Breeding barn owl approximately 250 m from the Scoop Hill 132kV Connection Project.

Field Survey

Raptors

6.39 Twelve flights by single osprey were recorded during VP watches in 2021. None of these were within 500 m of the OHLs (**Figure 6.2**). Observations from VP watches in 2021, confirmed the presence of breeding osprey, which nested successfully approximately 1.8 km from the Scoop Hill 132kV Connection Project.

6.40 Five flights by single red kites were recorded during VP watches in 2021. Of these, one flight passed over the proposed route of the OHLs on eight occasions, however the flight was at a height of at least 30 m for its entire duration (**Figure 6.2**).

6.41 A peregrine carrying food was recorded incidentally in the vicinity of the known nest site in 2022, suggesting an ongoing breeding attempt at this location.

6.42 Buzzard and kestrel were recorded occasionally during VP watches and during breeding bird surveys. Both species may have bred in the vicinity of the Scoop Hill 132kV Connection Project.

Waders

6.43 A single common sandpiper territory was recorded on the River Annan (**Figure 6.3**).

6.44 Up to four oystercatchers were recorded near the River Annan but there was no evidence of a breeding attempt.

Other species

6.45 Four song thrush territories were identified within woodland blocks near to the Scoop Hill 132kV Connection

[65] SNH (2002). Natural Heritage Zones: A National Assessment of Scotland's Landscapes. SNH, Battleby.

Project. Single skylark and linnet territories were identified on open ground areas (**Figure 6.3**).

6.46 A single cuckoo territory was present in the northern part of the Scoop Hill 132kV Connection Project (**Figure 6.3**).

Good Practice Measures/Embedded Mitigation

6.47 The appraisal of effects on ornithological receptors is made under the assumption that a Bird Protection Plan (BPP) is in place and implemented prior to construction commencing. The BPP will detail protocols for maintaining compliance with relevant species protection legislation and best practice during the construction phase, to ensure that bird species and important sites for birds (nests, roosts, key feeding sites) are safeguarded from disturbance during critical periods.

6.48 The BPP will be cognisant of relevant legislation, especially the Wildlife and Countryside Act 1981, taking account of the enhanced protections afforded to nest sites and to nesting and roosting birds listed in the Schedules of the Act. Further requirements which should be included in the BPP are:

- Timing of work: Where possible, tree-felling and ground clearance should be scheduled outside of the breeding bird season, but should also take account of winter roosts.
- Pre-construction surveys: If work is scheduled to take place during the breeding bird season (April to August inclusive), pre-construction bird surveys should be undertaken within a series of distance buffers from construction works, with specific methods dependent on target species, affected habitat and the likely stage of the breeding cycle.
- Nest protection: Protocols should be developed to ensure nests and other sensitive bird sites are protected from destruction, or to ensure that disturbance is prevented or minimised during construction activities. This will include species-specific stand-off distances and work protocols to ensure nesting birds are safeguarded.
- Toolbox talk: The BPP should be overseen by a suitable experienced Environmental Clerk of Works who will oversee the delivery of 'toolbox talks' to contractors to make them aware of bird sensitivities, legislative requirements and relevant working protocols.

6.49 Targeted surveys to identify the nesting locations of sensitive species should be undertaken, and if located, disturbance risk assessments should be prepared to ensure breeding activity is unaffected by construction works.

6.50 The BPP will be overseen by an Ecological Clerk of Works (ECoW), with further detail on the definition of this role and implementation as part of an outline Construction Environment Management Plan.

Appraisal of Effects

6.51 This appraisal considers the potential effects on bird populations of High or Moderate NCI, whose regional populations may be susceptible to effects associated with the construction and operation of the Scoop Hill 132kV Connection Project.

6.52 Baseline studies identified four species that may be affected, all of which are classified as High NCI on account of being Annex 1 and/or Schedule 1 species: osprey, red kite, peregrine and barn owl. Populations of Red listed species, including passerines and cuckoo, which are of moderate NCI, are not considered to be susceptioble to adverse effects associated with OHL developments.

6.53 The appraisal considers effects on these species arising from:

- Construction of the Scoop Hill 132kV Connection Project; and
- Operation of the Scoop Hill 132kV Connection Project.
- Cumulative effects with other projects potentially affecting ornithology.

Construction Effects

6.54 The construction phase of the Scoop Hill 132kV Connection Project will lead to increased levels of noise and visual disturbance due to the presence of vehicles, site machinery and site personnel. Activities associated with construction are set out in **Chapter 3**, and will include preparation of accesses, tree felling, vegetation clearance, excavations, pole erection, stringing of OHL wires and reinstatement activities.

6.55 This disturbance could lead to indirect habitat loss if birds are displaced from key sites or habitats within their range. Disturbance may also lead to behavioural changes, which could, for example, lead to reduced breeding success or increased mortality. Disturbance effects are difficult to quantify, but will be greatest in close proximity to works.

6.56 Construction is proposed to last 12 months so one breeding season and/or one non-breeding season may be affected.

6.57 The BPP will ensure that nest sites of Schedule 1 species are safeguarded, with measures put in place to

ensure that sites are buffered to avoid or minimise any effects associated with construction activities, or that activities close to potential nest sites are timed to avoid the breeding season.

Osprey

6.58 An osprey nesting site was confirmed but is sufficiently distant (approximately 1.8 km) from any construction activity that no disturbance effect is predicted to arise. Osprey could be displaced from foraging areas due to the presence of construction activities, but the large hunting range of this species and the limited overlap between construction activities and suitable osprey foraging areas (rivers, streams, waterbodies etc.) means than no effects on foraging efficiency are predicted.

6.59 Construction activities are predicted to have a short-term and spatially negligible effect on breeding osprey and the overall effect of construction activities on the conservation status of the regional osprey population, numbering at least 10 pairs (Challis et al. 2022[66]), is classified as negligible.

Red kite

6.60 Red kite were recorded in flight so are likely to hunt over the Scoop Hill 132kV Connection Project. Although construction activities may displace red kites from suitable hunting habitat, the potential short-term losses in foraging area will be insubstantial in relation to their potential foraging range which can exceed 20 km^2.

6.61 Construction activities are predicted to have a short-term and spatially negligible effect on breeding and non-breeding red kite, and the overall effect of construction activities on the conservation status of the regional red kite population, numbering over 100 pairs (Challis et al. 2022), is classified as negligible.

Peregrine

6.62 Information from desk studies revealed that a peregrine nesting site is located approximately 570 m from the nearest construction activities. This is within the 500-750 m recommended buffer zone to safeguard breeding peregrine from disturbance impacts. However, the nest site is shielded from all construction activities by topography and habitat features, so is at the lower end of recommended buffer size range and unlikely to be subject to disturbance impacts. Nevertheless, the BPP will detail measures to ensure that this site is safeguarded during the construction phase. Foraging peregrines hunt over a wide area and potential displacement from construction activities will not impinge on foraging efficiency.

6.63 Construction activities are predicted to have a short-term and spatially negligible effect on breeding and non-breeding peregrine, and the overall effect of construction activities on the conservation status of the regional peregrine population, which numbers over 40 breeding pairs (Challis et al. 2022), is classified as negligible.

Barn owl

6.64 Information from desk studies, revealed a barn owl nesting site, which could also be used as a roosting site, is located approximately 250 m from the Scoop Hill 132kV Connection Project. This site is beyond the recommended disturbance buffer zone for barn owl, which can be relatively tolerant of human activities. This site will be considered within the BPP, with any necessary steps taken to safeguard the site during the construction phase. Foraging barn owl may use habitat near to construction activities, but their largely nocturnal behaviour means they should not be affected by construction activities in daylight hours.

6.65 Construction activities are predicted to have a short-term and spatially negligible effect on breeding and non-breeding barn owl, and the overall effect of construction activities on the conservation status of the regional barn owl population, which numbers over 80 breeding pairs (Challis et al. 2022), is classified as negligible.

Operational Effects

6.66 The effects of disturbance and/or displacement during the operational phase of the Scoop Hill 132kV Connection Project are not considered to have any scope to lead to effects on regional bird populations.

6.67 Collision with OHLs can result in mortality to birds, and if sufficient deaths occur, the conservation status of populations could be compromised. Collision risk is dependent on a range of factors, including the configuration of OHLs, their height above the ground and the nature of the topography and habitat through which they are routed. Importantly, collision risk is dependent on the characteristics of bird flight activity in proximity to the OHL, particularly the height of flights and the frequency that flights cross the OHL.

6.68 Baseline flight activity surveys for 36 hours recorded only a single flight that passed over the OHL route, namely a single red kite which circled over the route and crossed eight times

[66] Challis, A., Wilson, M.W., Eaton, M.A., Stevenson, A., Stirling-Aird, P., Thornton, M. & Wilkinson, N.I. (2022). Scottish Raptor Monitoring Scheme Report 2020. BTO Scotland, Stirling.

(see **Figure 6.2**). The entire duration of this flight was above the height of the OHL and it is notable that the flight crossed the existing and much larger 400kV OHL seven times, above the height of the this OHL.

6.69 On this basis, the potential effects of collision on all species, although classified as temporally permanent, are spatially negligible. Hence, operational effects on the conservation status of all ornithological receptors are classified as negligible.

Cumulative Effects

6.70 No substantial effects on ornithology are predicted due to the construction or operation of the Scoop Hill 132kV Connection Project. Hence, there is no potential to contribute to cumulative effects on any ornithological receptor and cumulative effects are classified as negligible.

Proposed Additional Mitigation

6.71 No additional mitigation is proposed and good practice/embedded measures detailed previously during the construction phase will be sufficient to ensure that ornithological receptors are safeguarded during all phases of the Scoop Hill 132kV Connection Project.

Summary and Conclusions

6.72 Effects on sensitive ornithological receptors were appraised in relation to the construction and operation of the Scoop Hill 132kV Connection Project. None of the predicted effects were classified as greater than negligible on the conservation status of the receptors assessed.

Chapter 7
Cultural Heritage

Introduction

7.1 This chapter presents the findings of an appraisal of the likely effects of the proposed Scoop Hill 132kV Connection Project on the historic environment. It identifies the historic environment baseline and an assessment of potential effects, together with proposed mitigation measures.

7.2 The appraisal has been undertaken by LUC and is accompanied by **Appendix 7.1: Designated Heritage Asset Setting Assessment Tables**.

7.3 The appraisal is also supported by the following figures:

- **Figure 7.1: Baseline Historic Environment;** and
- **Figure 7.2: Setting Study Area**.

Scope of Appraisal and Study Area

Scope of the Appraisal

7.4 The aims of this appraisal are to:

- Identify heritage assets and their cultural significance within the study areas identified below that have the potential be to be affected by the construction and operation of the Scoop Hill 132kV Connection Project;
- Identify the potential for the presence of previously unrecorded buried archaeological remains within the footprint of Scoop Hill 132kV Connection Project;
- Assess the potential effects of the construction and operation of the Scoop Hill 132kV Connection Project, including physical direct effects and how setting change due to the presence of the proposed OHLs will affect their cultural significance; and
- Identify potential mitigation to reduce the effect on heritage assets, including previously unrecorded buried archaeological remains.

Study Areas

7.5 Direct physical effects to heritage assets are appraised within the Scoop Hill 132kV Connection Project footprint only.

7.6 The following study areas have been used to identify the potential direct effects to heritage assets as a result of setting change:

- Inner Study Area: land within a 1 km radius of the proposed OHLs for designated and non-designated heritage assets (see **Figure 7.1**). This study area has been used to establish the known heritage resource,to inform the Historic Environment baseline and establish potential for unidentified archaeology.
- Outer Study Area: land within a 1-3 km radius of the proposed OHLs for heritage assets that could potentially undergo a change to setting as a result of the introduction of the OHLs (see **Figure 7.2**).
- Consideration has also been given to the potential for setting change to designated heritage assets within the ZTV (**Figure 7.2**), beyond 3 km.

Legislation, Policy and Guidance

Legislation

7.7 The appraisal is carried out in accordance with the principles contained within the following legislation:

- Scheduled Monuments are, by definition, of national importance and are protected by law under the Ancient Monuments and Archaeological Areas Act 1979.
- Listed Buildings are protected under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 and are recognised to be of special architectural or historic interest. Under the Act, planning authorities are instructed to have special regard to the desirability of preserving a Listed Building, its setting, or any features of special architectural or historic interest which it possesses .

Policy

National Policy

7.8 The following national policy is relevant to this appraisal

- National Planning Framework 4 (NPF4); and
- Historic Environment Policy for Scotland (HEPS).

7.9 Policy 7 of NPF4 concerns various aspects of the historic environment. Those relevant to this appraisal include:

- Policy 7(a) states that "*development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place. The assessment should identify the likely visual or physical impact of any proposals for change, including cumulative effects and provide a sound basis for managing the impacts of change. Proposals should also be informed by national policy and guidance on managing change in the historic environment, and information held within Historic Environment Records*."
- Policy 7(h) states that "*development proposals affecting scheduled monuments will only be supported where:*
  - *i. direct impacts on the scheduled monument are avoided.*
  - *ii. significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or*
  - *iii. exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised*."
- Policy 7(o) states that "*non-designated historic environment assets, places and their setting should be protected and preserved in situ wherever feasible. Where there is potential for non-designated buried archaeological remains to exist below a site, developers will provide an evaluation of the archaeological resource at an early stage so that planning authorities can assess impacts. When new archaeological discoveries are made during the course of development works, they must be reported to the planning authority to enable agreement on appropriate inspection, recording and mitigation measures.*"

7.10 The HEPS sets out the six principles of how the historic environment should be managed and looked after, and forms part of a range of documents that inform decision making in the Scottish planning system.

Local Policy

7.11 The Dumfries & Galloway Local Development Plan 2, adopted in October 2019, sets out the polices on development. Those relevant to the historic environment include:

- Policy OP1: Development Considerations b) Historic Environment;
- Policy HE1: Listed Buildings; and
- Policy HE3: Archaeology 30.

7.12 These polices seek to ensure that The Council will support development that makes effective, efficient, and

sustainable decisions with regards to the Historic Environment.

Guidance

This appraisal has been prepared in accordance with the principles contained following guidance:

- Code of Conduct: professional ethics in archaeology (Chartered Institute for Archaeologists (CIfA), 2022)[67];
- Standard and guidance for historic environment desk-based assessment CIfA (2020)[68];
- Managing Change in the Historic Environment Guidance Notes – setting (hereafter referred to as the HES setting guidance) (Historic Environment Scotland (HES), 2020)[69];
- Designation Policy and Selection Guidance (HES, 2019)[70];
- Planning Advice Note 2/2011: Planning and Archaeology[71]; and
- Principles of Cultural Heritage Impact Assessment (PCHIA) in the UK (CIfA, Institute of Historic Building Conservation and Institute of Environmental Management and Assessment, 2021)[72].

Methodology

Desk Study

Sources

7.13 In line with best practice, the following publicly accessible sources of primary and secondary information were used to gather baseline information for the appraisal:

- HES spatial datasets and database for designated heritage assets comprising:
  - scheduled monuments; and
  - listed buildings[73].
- Dumfries and Galloway Historic Environment Record (HER) data;
- HES Canmore database;
- Historic Ordnance Survey mapping (principally First and Second Edition 25-inch and 6-inch to a mile mapping where available for the Site) and other published historic mapping held in the National Library of Scotland (NLS) and available online;
- Aerial photographs (oblique and vertical) held by the National Collection of Aerial Photography (NCAP), Cambridge Aerial Photos and Britain From Above available online;
- Available reports from recent archaeological work undertaken in the area ('grey literature'); and
- Relevant archive material held by SBC, HES, National Library of Scotland, Registers of Scotland available online.

Field Survey

7.14 The walkover survey was undertaken on 19th August 2022. The survey allowed for the verification of known heritage assets, confirming their interpretation, location, and likely sensitivity to change, and informed the assessment of potential effects on those assets. Selected heritage assets were also visited to confirm their setting and inform the appraisal of change to that setting.

Consultation

7.15 A programme of consultation has been undertaken with the Dumfries and Galloway Council historic environment service, and Historic Environment Scotland.

[67] CIfA,2022. Code of conduct: professional ethics in archaeology. Available on line: https://www.archaeologists.net/sites/default/files/Code%20of%20conduct%20revOct2022.pdf [Accessed August 2023].
[68] CIfA, 2020. Standard and Guidance for historic environment desk-based assessment. Available on line: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf [Accessed August 2023]
[69] HES, 2020. Managing Change in the Historic Environment: Setting. Available on line: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549 [Accessed August 2023].
[70] HES, 2019. Designation Policy and Selection Guidance. Available on line: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b [Accessed August 2023].
[71] Planning Advice Note 2/2011: Planning and archaeology. Available on line: https://www.gov.scot/publications/pan-2-2011-planning-archaeology/ [Accessed August 2023].
[72]CIfA, Institute of Historic Building Conservation and Institute of Environmental Management and Assessment, 2021. Available on line: https://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.pdf. [Accessed August 2023]
[73] No world heritage sites, conservation areas, Inventory-listed garden and designed landscapes or battlefields recorded on the Inventory of Historic Battlefields are located within the 3 km study area.

Assumptions and Limitations to the Appraisal

7.16 The appraisal has utilised a range of sources on the area's historic environment. Much of this is necessarily secondary information compiled from a variety of sources (e.g. HER data and grey literature reports). It has been assumed that this information is reasonably accurate unless otherwise stated.

Appraisal Method

7.17 The heritage assets forming the baseline were subject to a high-level analysis to identify those that are likely to be sensitive to the Scoop Hill 132kV Connection Project and required detailed appraisal (**Appendix 7.1**). Those heritage assets identified as being likely to experience effects have been subject to a full appraisal undertaken in line with the six steps set out in PCHIA:

1. **Understanding heritage assets**:

a. describe the heritage asset;

b. ascribe heritage (cultural) significance; and

c. attribute importance.

2. **Evaluating the consequences of change**:

a. understand change;

b. assess impact; and

c. weigh the effect.

Understanding Heritage Assets

Description

7.18 A factual description of heritage assets is provided including, where relevant, their location, form, fabric, condition, etc. As proportionality is key, the information presented is focused on that which is relevant to understanding the cultural significance of the heritage asset, especially those elements that might be affected by the Scoop Hill 132kV Connection Project.

Ascribing Cultural Significance

7.19 Heritage assets are important due to their cultural significance, which can be articulated in various ways. This assessment draws upon the heritage values referenced by the HEPS which in turn are drawn from The Burra Charter (Australia International Council on Monuments and Sites (ICOMOS), 2013) and detailed in the Australia ICOMOS (2013) Understanding and Assessing Cultural Significance Practice Note. These values comprise:

- **Aesthetic value**: This refers to the sensory and perceptual experience of a place; that is, how we respond to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals. Expressions of aesthetics are culturally influenced.
- **Scientific value:** This refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions.
- **Historic value**: This is typically either illustrative or associative. It is intended to encompass all aspects of history; for example, the history of aesthetics, art and architecture, science, spirituality, and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, a historic event, phase, movement or activity, person or group of people. It may be the site of an important event. For any place, the significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence.
- **Social/ Spiritual value**: This refers to the associations that a place has for a particular community or cultural group, and the social or cultural meanings that it holds for them. Spiritual value refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art and practices of a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places.

7.20 The ICOMOS values are a more consistent and easily understandable way of framing the values encapsulated by the HES designation criteria, which offer an alternative framework for understanding cultural significance.

7.21 The ICOMOS heritage values are a way of transparently and consistently articulating the cultural significance of any heritage asset, including any contribution made by its setting. The HES (2020) setting guidance explains that setting is the way the surroundings of an asset or place contribute to how it is understood, appreciated, and experienced in its present context. All assets have a setting, but the contribution that this makes to their cultural significance varies in line with the location, form, function and preservation of the asset and its surroundings. In this assessment, the contribution made by setting to an asset's cultural significance is set out discursively.

Ascribing Importance

7.22 Heritage assets may derive their cultural significance from one or more of the above heritage values, but a lack of interest in one or more of these values does not indicate a lower level of importance, just that their interest lies elsewhere.

7.23 The ICOMOS heritage values (discussed above) can help explain an asset's cultural significance, but they do not explain how important (e.g. high, medium, low) the significance of the asset is. Establishing the importance of an asset is a key stage of the assessment process as it influences the way in which decisions are made during the development of a proposal as well as the weight to be given it by the decision-maker.

7.24 Importance is determined using professional judgement alongside an understanding of local, regional, and national historic environment research objectives and, where appropriate, the use of the designation criteria for heritage assets. The criteria used to inform the assessment of importance of heritage assets are identified in **Table 7.1**.

Table 7.1: Heritage Asset Importance Criteria

Importance	Criteria
High	Designated heritage assets. Non-designated heritage assets that meet the criteria for statutory designation, or an equivalent level of cultural significance.
Medium	Non-designated heritage assets of regional or regional/local value.
Low	Non-designated heritage assets of local value.
Very low	Non-designated heritage assets of less than local or other value.
Uncertain	The heritage value of the heritage asset could not be fully ascertained.

Evaluating Change

Understanding Change

7.25 A heritage asset's sensitivity to change does not automatically equate to its importance. It varies depending on the nature of a heritage asset's cultural significance, the contribution that setting makes to that cultural significance, and the character of the proposed development and the way in which it interacts with that cultural significance.

7.26 Unless otherwise stated, all heritage assets within the Scoop Hill 132kV Connection Project footprint have been assumed to be of high sensitivity to physical change as their cultural significance is derived primarily from their evidential and historic value (form and fabric) which will be diminished or lost if physically changed.

7.27 Sensitivity to setting change is variable and has been established based on an understanding of the contribution made by setting to a heritage asset's cultural significance and the likely interaction of the Scoop Hill 132kV Connection Project with that contribution. Sensitivity to setting change has been articulated by describing the way a heritage asset's setting contributes (or not) to its cultural significance (or understanding that significance), with reference to HES setting guidance, and how that contribution may be changed by the Scoop Hill 132kV Connection Project.

Types of Effects

7.28 This assessment considers the potential effects associated with the construction and operation of the Scoop Hill 132kV Connection Project as detailed below. Effects to heritage assets are described in terms of the extent to which the proposals will degrade or enhance the heritage assets' cultural significance using professional judgement.

7.29 Impacts can be adverse or beneficial, temporary or permanent, avoidable or unavoidable, individual or cumulative, amongst many factors. The following effects have been assessed in full:

- Direct physical effects;
- Direct effects due to setting change; and

- Cumulative effects resulting from other proposals which could jointly affect the same asset.

7.30 Cumulative physical effects and physical indirect effects are not considered likely given the nature of the Scoop Hill 132kV Connection Project.

Physical Effects

7.31 Direct physical effects to heritage assets occur when, as a result of a proposed development, the fabric of a heritage asset is removed or damaged; this will be permanent and generally occurs during the construction phase. This risk exists in relation to recorded heritage assets as well as previously unrecorded heritage assets, including buried archaeological remains.

7.32 To identify heritage assets sensitive to physical change, an intersection analysis was run between known heritage assets and the Scoop Hill 132kV Connection Project footprint. Consideration has also been given to the potential to encounter further hitherto unrecorded heritage assets, including buried archaeological remains.

Setting Change

7.33 Effects related to setting change are direct and result from how a development proposal alters a heritage asset's setting in a way which affects its cultural significance or how it is perceived. Such changes are often visual, but can also relate to disruptions of historical, functional or symbolic relationships (including affecting intervisibility between heritage assets or historic patterns of land use) or sensory factors such as noise, odour or emissions.

7.34 Indirect impacts on setting can also occur away from the proposal, such as changes in traffic volumes around a heritage asset, resulting in changes to relative levels of tranquillity, where this forms an important part of the design intention and setting of the asset (e.g. contemplative monastic sites). This type of impact can occur at any stage of development and may be temporary, permanent or reversible. However, no such potential effects have been identified in relation to the Scoop Hill 132kV Connection Project and are not considered further.

7.35 To identify heritage assets whose cultural significance is potentially sensitive to setting change, a high-level assessment of all known heritage assets that intersected with the ZTV was undertaken. Heritage assets outside of the ZTV were also reviewed to see if in-combination views that could affect their cultural significance were considered possible.

7.36 A full list of heritage assets within the Inner and Outer Study Areas whose setting may experience change, can be found in **Appendix 7.1**. This list has been used to establish the baseline data to inform the scope of the assessment of potential effects to heritage assets due to setting change.

Cumulative Effects

7.37 Impacts of a cumulative nature can relate to the physical fabric or setting of heritage assets. This can be a result of impact interactions between different impacts of a proposed development or in-combination with impacts of other schemes. Alternatively, they may be additive impacts from incremental changes caused by a proposed development together with other extant schemes or those already in the planning system.

7.38 This assessment considers the potential effects to the cultural significance of heritage assets against a baseline that includes existing and consented energy infrastructure, in line with the schemes agreed for inclusion in the cumulative assessment.

7.39 A full list of cumulative schemes are identified in **Table 4.1** of **Chapter 4: Landscape and Visual Amenity**.

Magnitude of Change

7.40 Appraisal of the impact to a heritage asset's cultural significance as a result of the Scoop Hill 132kV Connection Project has been undertaken using professional judgement and an understanding of how the heritage values of that asset that contribute to its cultural significance will be affected. It is not a measure of the reach or extent of the proposal or the importance of the heritage asset. As per the PCHIA guidance, a simple scale is used for assessing an impact/magnitude of change and, for transparency, the criteria for this are set out below in **Table 7.2**.

Table 7.2: Level of Impact / Magnitude of Change Criteria

Magnitude of Change	Description
Large	Substantial, near total, or total loss of an asset's cultural significance either through physical and/or setting change. Substantial level of change to how that significance is understood, appreciated, or experienced.
Medium	Medium loss or alteration of an asset's cultural significance either through physical and/or setting change. Medium level of change to how that significance is understood, appreciated, or experienced.
Small	Slight loss or alteration of an asset's cultural significance either through physical and/or

Magnitude of Change	Description
	setting change. Small changes to how that significance is understood, appreciated, or experienced.
None	No change to the cultural significance of the heritage asset, or how that significance is understood, appreciated, or experienced

Effect Criteria

7.41 The level of the effect has been determined using professional judgement to reflect the importance of the heritage asset using the scaled criteria in **Table 7.3** below. The justification for the level of effect has been reported clearly. This approach accords with the guidelines for assessment set out in the PCHIA guidance (termed 'weighting the effect').

7.42 A clear statement has been made as to describe the level of effect based on professional judgement of the available evidence and guided by the description of significance of effect identified in **Table 7.3**.

Table 7.3: Level of Effect Criteria

Level of Effect	Description
Major	A large magnitude of change (e.g. total or near total loss) to the cultural significance of a heritage asset of medium or high importance.
Moderate	A medium magnitude of change (e.g. substantial loss or alteration) to the cultural significance of a heritage asset of medium or high importance; or a large magnitude of change (total or near total loss) to a heritage asset of low importance.
Minor	A small magnitude of change (slight loss or alteration) to the cultural significance of a heritage asset of medium or high importance; a medium or small (slight to substantial loss or alteration) to the cultural significance of a heritage asset of low importance; or any change to a heritage asset of very low importance.
None	No change to the cultural significance of a heritage asset.

Baseline

Historic Environment Baseline

Footprint

7.43 There are no known heritage assets within the proposed Development footprint and so potential direct physical effects on known heritage assets are not considered further.

Inner Study Area

7.44 Three designated heritage assets have been identified within the Inner Study Area. These comprise two scheduled monuments: the standing stone at Poldean (SM12697); Milton Roman fort, Fortlet and Camps (SM676); and, a Category C listed building, Breconside Tower (LB16848).

7.45 A further 46 non-designated heritage assets have been identified in the Inner Study Area. These are characterised by prehistoric burnt mounds, a cairn at Craigielands Hill (MDG21340), evidence of late prehistoric activity including the scooped settlements at Crofthead (MDG403) and Cornal Burn (MDG406), and the hilltop enclosure/defended homestead of The Dod (MDG403), the alignment of two Roman roads (MDG8701; MDG10280), areas of rig and furrow cultivation, farmsteads, tower houses and post-medieval bridges.

7.46 The 46 non-designated heritage assets have been assessed to be of local and regional importance.

7.47 The locations of heritage assets within the Inner Study Area are shown on **Figure 7.1**.

Outer Study Area

7.48 Seven scheduled monuments have been identified within the Outer Study Area. These comprise:

- Benoaks, stone row (SM12614);
- Craigbeck Hope, burnt mound (SM12664);
- Two hillforts at Knock Hill and Beattock Hill (SM2197; SM4748);
- Two late prehistoric settlement sites (SM10789; SM12736); and

- a section or Roman road between Coatshill Quarry and Holehouse Linn (SM3347).

7.49 Twenty-seven listed buildings are located within the Outer Study Area. The are characterised by larger country houses and their associated auxiliary buildings and structures such as lodges and an ice house including those at Craigielands (LB9842; LB9844; LB9843), a tower house (LB9894), farmhouses and agricultural buildings (LB16788; LB9896), bridges (LB16855; LB9907), a former mill (LB13324) and a school (LB9840).

7.50 A full list of the designated heritage assets forming the baseline is presented in **Appendix 7.1** and their locations are shown on **Figure 7.2**.

7.51 No world heritage sites, conservation areas, inventory-listed gardens and designed landscape or battles that appear on the Inventory of Historic Battlefields have been identified in the baseline. In addition, no designated heritage assets beyond the Outer Study Area with the potential to experience setting change have been included in the baseline.

Previous Archaeological Investigations

7.52 A number of archaeological investigations have been undertaken within the 1 km Study Area. These comprise:

- **Milton (NT00SE 22):** The Roman Fort at Milton (SM676), was excavated between 1938 and 1950 by J. Clarke. Clarke's findings are summarised in the Appraisal of Effects.as part of the setting assessment of the asset.
- **North West Ethylene Pipeline, (NT10SW 49-51):** Undertaken by CFA in 1991 excavations were carried out on a series of isolated features (NT10SW 49-51) identified during construction of the North West Ethylene Pipeline. These excavations produced evidence of domestic occupation on this hill slope such as probable domestic hearth[74] [75] [76].
- **Beattock Barnhill (NT00SE 20)**: The excavations were undertaken in 1992, and preceded the construction of the North West Ethylene Pipeline. Excavations were carried out on one of a group of Roman camps near Beattock, previously identified from oblique aerial photographs. This involved the excavation of two adjacent trenches over the northern quadrant of the Roman camp, and identified pre-Roman pits, in addition to the rampart and associated ditch[77].
- **Beattock, Bankend (NT00SE 36):** Excavations were undertaken in 1993 parallel, and immediately adjacent, to the east of the A74, in advance of upgrade to motorway status. Eighteen separate areas were examined, either by machine or hand, of which eleven contained archaeological remains. Seven areas were positioned within the boundaries of the Roman camp and a further three straddled the perimeter ditch. Others were positioned to test for any unknown archaeology within the development corridor. [78]
- **Bearholm (NT00SE 169):** An archaeological evaluation was undertaken 2006 near Bearholm Steading, at the proposed location of an electricity substation. Twenty-nine trenches were excavated,, with a single linear ditch measuring 1.7m wide and 0.56m deep identified. No other features of archaeological interest were uncovered.[79]
- **Broomlands House (NT00SE 128):** A watching brief undertaken in 2016, in advance of building works identified no significant archaeological features or artefacts, with a small amount of 19th-20th century ceramics and glass recovered from disturbed topsoil. [80]

7.53 The results of these previous studies have provided additional information, to support the baseline for this assessment.

Archaeological and Historical Context

7.54 The following section gives a brief description of the archaeological and historical context for the historic environment baseline presented by period.

7.55 There are no heritage assets belonging to the Palaeolithic and Mesolithic period within the wider landscape, with the first archaeological remains recorded in the historic environment baseline dating to the Neolithic period.

[74] https://canmore.org.uk/site/72893/bearholm [Accessed September 2023].
[75] https://canmore.org.uk/site/72894/poldean [Accessed September 2023].
[76] https://canmore.org.uk/site/72892/bearholm [Accessed September 2023].
[77] https://canmore.org.uk/site/48381/beattock-barnhill [Accessed September 2023].
[78] https://canmore.org.uk/site/48398/beattock-bankend [Accessed September 2023].
[79] https://canmore.org.uk/site/294192/bearholm [Accessed September 2023].
[80] https://canmore.org.uk/site/90121/broomlands-house [Accessed September 2023].

Neolithic and Bronze Age (3800 BC – 800 BC)

7.56 From around 3,800 BC, Scotland saw the introduction of cereal cultivation and domesticated animals, together with a slow transformation from hunter gathering to subsistence agriculture. This period was largely characterised by the introduction and use of pottery, establishment of agrarian practices and the emergence of megalithic monuments, such as standing stones and stone circles. Within the immediate landscape, Neolithic activity predominantly survives within the lowland floodplain of the River Annan and includes ritual monuments including the standing stone at Poldean (SM12697) c. 960 m south-west of the southern extent of the proposed OHL, and Benoaks stone row c. 2.2 km to the north.

7.57 Further changes occurred during the Bronze Age with the arrival of new ideas and communities associated with a new type of pottery (Beaker pottery), and the introduction and use of copper and copper alloys (Bronze). With the emergence of metallurgy, the complexity and diversity of settlements, material cultural and monumentality traditions increased. This is evidenced in the surrounding environs by an unenclosed settlement, and a Bronze Age funerary cairn (MDG21340) at Craigielandshill on the mid-slopes of the Annandale Valley, as well as a numerous burnt mounds, twenty in total, situated along the tributaries of the River Annan (examples include MDG5435, MDG5512 and MDG8846). Burnt mounds comprise piles of fire shattered stones and charcoal associated with hearths. They are the waste product of stones having been heated in order to heat water for any activity or process that may have required hot water, such as cooking.

Iron Age (800 BC – 79 AD)

7.58 The 1st millennia BC saw a change from bronze to iron metallurgical technologies, and a decline in the visibility of monumental and funerary and ritual traditions within the landscape. There is, however, a perceptible increase in defensive and communal centres during the Iron Age, with an increase in the complexity of settlement typology, with the appearance of defended enclosures and fortifications at prominent topographic positions, within and above the River Annan Valley. Evidence of occupation from this period has been identified at Breckonside Hill (MDG5532), Poldean (MDG5005), Bearholm (MGD9397) and Beattock Farm (MDG332), with settlement evidence at Milton of Tassieholm (MDG12946) c. 500 m west of the proposed OHL.

7.59 Occupying the summit of The Dod, the most prominent Iron Age feature comprises a defended enclosure (MDG403) c. 95 m north of the southern extent of the proposed OHL. The enclosure is positioned c.222 m AOD, approximately 140 m above the River Annan and commands views westwards across and, north-south along, Annandale, as well as eastwards towards the uplands of Craig Fell and Glengap Head.

7.60 Further evidence within the wider landscape includes a number of fortifications and defended settlements along Annandale at St Catherine's Hill (SM12736) and Knock Hill (SM2197), as well as Moffat Dale.

7.61 All of the archaeological evidence identified from the Iron Age demonstrates a significant intensification in the exploitation of, and control of the movement through, the surrounding landscape.

Roman (AD 79 – 211)

7.62 First arriving in what became modern Scotland in the 1st century AD, the Roman period in Scotland is characterised by a series of military campaigns and short phases of occupation which ended in AD 211.

7.63 Expanding northwards from their outpost at Carlisle, the Annan valley holds extensive evidence for Roman Military activity. Multiple temporary Roman encampments have been identified (MDG319, MDG20982, MDG309 and MDG318) c. 1.1 km to 1.4 km north of the proposed OHL, adjacent to the River Annan and its confluence with Evan Water. These temporary encampments date from varying phases of invasion, and appear to control key water course crossings and restricted points along the River Annan and associated valley.

7.64 Within the Study Area lies Milton Roman Fort (SM676) a later permanent structure at Tassies Height, an elevated knoll c.250 m west from the proposed OHL. Overlying an early temporary camp (MDG298) and Iron Age settlement, the fort is interpreted as having controlled movement and access along the Roman roads (MDG8701 and MDG10280) that traverse broadly north / south through Annandale.

7.65 Unlike other areas of the frontier, no evidence for contemporary Roman domestic occupation, has been identified within the wider landscape.

7.66 There is no evidence of early medieval activity within the wider environs of the proposed OHL.

Medieval (900 AD – 1560 AD)

7.67 Reflecting the turbulent nature of politics and society in medieval Scotland, and position within the border region, the most common and often best-preserved monuments from this period are defensive, including castles and later tower houses. Early defensive structures such as motte and bailey castle, can be found across with wider landscape, with concentrations of these defences and symbols of Norman power, along the River Annan and its associated tributaries to the north,

including those at Garpol Water, Coats Hill and Auldton (SM8566; SM686; SM684).

7.68 With early defences to the south situated on high ground above, and along, the Whamphray Water, including Lochwood Castle, The Mount, Motte and Tower House Complex (SM698) and Wamphray motte and bailey (SM714).

7.69 Whilst there are no known early defensive structures within the 1 km Study Area, there the remains of a number of later medieval tower houses present. While partly defensive, these later medieval buildings were designed to be as much about status and display as defensive. These tower houses comprise Breckonside Tower (LB16848), Poldean (MD9761) and Cornal Tower (MDG406). Many of these tower houses have been subject to post-medieval redevelopment, converted into larger undefended farmstead complexes, reflecting the changing geopolitical landscape of the border region.

7.70 Outside of defended sites, the general nature of medieval rural settlement in Scotland is poorly understood. While there were nucleated medieval village settlements in rural Scotland and disperse rural farmsteads, smaller townships were more common. There is no evidence for medieval settlement within close proximity to the proposed OHL and it is likely that the continual use and adaption of farming settlements from this period until the Improvement era and the largely ephemeral nature of their construction could account for the absence of settlement archaeological evidence. Possible evidence for later medieval agricultural practices is present at Woodfoot Cottage (MDG9994) and Whinny Plantation (MDG9712), to the west of the central section of the proposed OHL, where ephemeral traces of rig and furrow have been identified. Rig and furrow has also previously been identified at The Dod (MDG403), at the southern extent of the scheme.

Post-medieval (1560 – 1900 AD) and Modern (1901 – Present Day)

7.71 Often referred to as the Improvement era, the post-medieval period saw rapid changes to the regional and national socio-economic climate, with the Union of Crowns and subsequent Acts of Union leading to greater regionally stability. This stability was also precipitated by changes in agricultural practices, innovations in farming technology and new forms of land tenure also resulted in a significant reorganisation of the rural economy and landscape. This reorganisation saw the decline and abandonment of some upland farming settlements, growth of townships, new forms of agricultural building, and a shift into larger-scale homogenised agricultural practices with field enclosure, as well as attempts to improve marginal land through drainage and clearance.

7.72 These changes in the post-medieval landscape are evidenced in the archaeological, cartographic and documentary evidence. Examples of farmsteads established during this period include those at Poldean, Bearholm and Woodfoot (MDG9762; MDG10043; MDG10292), which appear on Roy's Military Survey of Scotland, Lowlands, 1752-1755.

7.73 Comprising one of the earliest detailed illustrated plans of the region, Roy's Military Survey shows these farmsteads situated within a landscape very similar to that of the present day, with small roadside settlement and farmsteads situated on roads and routeways through the landscape that run parallel to the River Annan. Development however is shown to be limited to the lower reaches of Annandale, with later upland and more marginal farmsteads such as Craigsfield (MDG10462) and Stenrieshill Farmhouse (MDG18223) not shown.

7.74 By the first edition Ordnance Survey (OS) (Six Inch Dumfriesshire, Sheet XXIV 1861) however, smaller farmsteads had appeared, seemingly repurposing and occupying the sites of earlier upland agricultural structures, e.g. sheepfolds. The first edition also demonstrates large-scale enclosure adjacent to the River Annan, suggestive of more intensive agrarian and pastoral practices. This is further supported by the Statistical accounts of the period, which highlight a shift from rotational cultivation regimes to more intensive production of cereals and turnips adjacent to the River Annan, in addition to the expansion of upland sheep farming.[81]

7.75 Annandale continued to be an important routeway into Scotland, with first the railway line and in the 20th century the construction of the A74 (M) trunk road, both of which follow the alignment of the Roman road. A number of existing OHL, including the main Scotland-England 400kV interconnector, have been introduced into the landscape, as well as other associated structures including the large sub-station directly to the north of Roman military site at Milton (SM676).

7.76 The current land use of the Scoop Hill 132kV Connection Project and its surrounding environs is largely pasture and rough grazing, with limited provision of relatively recent tracks to improve access for those managing the land for agricultural activities.

[81] Wamphray, County of Dumfries, OSA, Vol. XII, 1794 https://statacscot.edina.ac.uk/static/statacc/dist/parish/Dumfries/Wamphray [Accessed September 2023].

Archaeological Potential Summary

7.77 Given the extent of known archaeological remains associated with prehistoric and later activity present on the west-facing slope of the Annan valley, the potential for previously unrecorded archaeological remains along the Scoop Hill 132kV connection Project route and working corridor has been assessed to be **medium**. This potential primarily pertains to the discovery of hitherto unidentified Bronze Age burnt mounds at the southern and central sections of the proposed OHLs, and for archaeological remains and findspots associated with Roman military activity in close proximity to Milton Roman fort (SM676).

Good Practice Measures/Embedded Mitigation

7.78 The evolution of the design process has sought to minimise the potential for impacts on heritage assets resulting from direct physical effect. This has included a review of proposed route options and the position of wooden poles, as discussed in **Chapter 2: Routeing and Consultation and EIA Screening**.

7.79 Construction best practice measures will be undertaken for the historic environment. Measures which will be adopted include:

- The clear and appropriate demarcation of heritage assets to prevent accidental damage during construction; and
- The implementation of a working protocol should previously unrecorded archaeological features be discovered.

Appraisal of Effects

Construction Effects

Potential Direct Physical Effect

7.80 No direct physical effects on known heritage assets have been identified as a result of the construction of the Scoop Hill 132kV Connection Project.

7.81 Ground-breaking for the installation of the wooden poles has the potential to remove or truncate any previously unrecorded buried archaeological remains that may be present in the construction corridor.

Operational Effects

Potential Direct Effects Due to Setting Change

7.82 A screening exercise has been undertaken to identify those designated heritage assets included in the baseline whose setting may be changed due to the presence of the Scoop Hill 132kV Connection Project in the landscape. The results of this screening exercise are presented in **Appendix 7.1.**

7.83 This exercise was informed by the selection of heritage assets included in the 2022 EIA Screening Report, stakeholder consultation, the LVIA ZTV (shown on **Figure 7.2**) and through the identification of heritage assets where long-distance views and landscape context makes a contribution to cultural significance.

7.84 The final selection of assets comprises:

- Milton, Roman fort, fortlet & camps (SM676); and
- The Dod (MDG403).

7.85 This section identifies the potential changes to the setting of these heritage assets resulting from the presence of the Scoop Hill 132kV Connection Project in the landscape during operation, and the potential effects on their cultural significance of heritage assets screened into the appraisal including how changes to the setting will affect how the current setting of heritage assets contributes to how they are understood, appreciated or experienced.

Milton, Roman fort, fortlet & camps (SM676)

Description

7.86 This scheduled monument comprises a series of Roman fortifications and military features, identified during excavations between 1938 and 1950. Features identified include a temporary encampment, a permanent or semi-permanent early Flavian fort with reuse and rebuilding during the Agricolan advance (from AD78), smaller associated fortlets, a probable parade ground, as well as an entrenched block-house. Evidence for the lines of two Roman roads (MDG8701 and MDG10280) leaving the north and south gates of the largest of the forts, were not identified during these excavations but were traceable during observations of the site in the early 19th century, and are visible elsewhere within Annandale. With the exception of ephemeral earthworks at the southern extent of the monument, limited surface evidence for the fortifications now survives.

7.87 This complex covers approximately 2.2 ha of pasture, and is positioned on a broadly rectangular north – south aligned levelled promontory, known as Tassies Height.

Situated c. 450 m west of the River Annan this platform is elevated c. 20m above the surrounding river valley, and historically would have provided a vantage point by which to view the landscape north-south along the River Annan, and east-west across the Annandale Valley and the mid slopes of the adjacent upland. In addition, Tassies Heights would have afforded any defensive features at this site views to the north-east, up and across the valley of the Moffat Water, and provided a key strategic location for the control of movement through the landscape.

7.88 Presently, the location is enclosed to the north and east, by an extensive tree and hedge screening belt, with partial screening present at the west of the monument. Views southwards are partially interrupted by the presence of Milton, a post-medieval farmstead complex (MDG20889) subject to extensive modern expansion. To the immediate north-east of the monument lies the Moffat (Bearholm) substation.

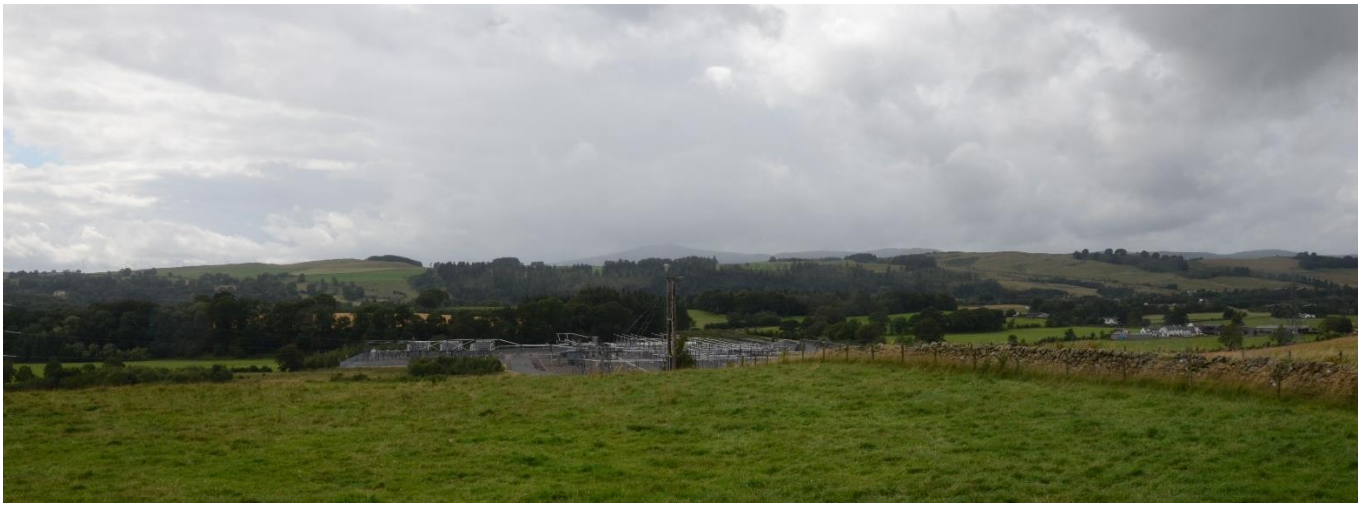
7.89 Cultural Significance

7.90 The cultural significance of Milton, Roman fort, fortlet & camps (SM676) is largely derived from its evidential (scientific) and historical values, as both physical remains of the Roman Military occupation of Scotland, and the site's association and role with the varying phases of military advance and retreat from the region.

7.91 The surviving buried remains, have the potential to add to the understanding of Roman Military activity on both a national and regional level, and may provide information further information about the complexes' date and function, as well as about the contemporary economy and environment of the wider landscape.

7.92 The monument's elevated setting, and its spatial and visual relationship to the surrounding landscape, contribute to the understanding and appreciation of the site's strategic defensive military function, illustrating how the Roman military would have controlled movement through the landscape, in addition to the symbolism of such a prominent and dominant military complex and how it would have been experienced.

Photo 7.1: View Westwards with Moffat (Bearholm) Substation in foreground and Milton Roman Fort (SM676) behind



View west from road across towards Bearholm Substation and Milton (SM676) beyond.

Importance

7.93 Whilst the remains of Roman fortifications are generally well-understood elsewhere in the UK and beyond, the scale, phasing and complexity of the features at Milton (SM676) is rare within Scotland, and the monument has been assessed to be of **High** importance.

Effects

7.94 The Scoop Hill 132kV Connection Project would be situated to the east of the monument and may be present in views across and beyond the River Annan from the centre or western edge of the monument, where tree screening does not block visibility, or from the eastern edge of the monument where partial winter views may be present through foliage (see **Figure 7.2**).

7.95 Neither the construction or operation of the Scoop Hill 132kV Connection Project would affect how the elevated setting of the fort complex is experienced within in the landscape, nor effect key setting contributions, namely the north-south orientation and positioning in relation to the Roman road network. The introduction of the Scoop Hill 132kV Connection Project will not affect the evidential (scientific) and historical (illustrative) value of the heritage asset which contributes the most to its cultural significance.

7.96 Therefore, the Scoop Hill 132kV Connection Project will not affect this High value heritage asset's cultural significance, and no effects have been identified.

The Dod (MDG403)

7.97 This asset has been included for appraisal, due to the potential for substantial long-distance views, in close proximity to the Scoop Hill l132kV Connection Project.

Description

7.98 'The Dod', comprises a defensive Iron Age enclosure, occupying the summit of the titular low hill, part of the foothills of Craig Fell, at an elevation of c. 220m AOD, approximately 110m above the level of the River Annan in the valley below.

7.99 Roughly circular in plan, the enclosure measures about 72m in diameter (enclosing c.0.4ha) within a single rampart with an external ditch. The rampart comprises a stony bank approximately 6m in width, with an internal height of 0.6m and an external maximum drop of 1.5m into the bottom of a ditch 4.8m in width. There is well-defined entrance on the east of the monument, but due to the presence of adjacent entrance and well-worn trackway, it is likely that this is a later route, utilising higher ground. With the exception of this routeway, and the traces of rig and furrow cultivation, the interior is otherwise featureless.

7.100 The enclosure is under pasture, and encompasses a 360-degree vista, with long distance views south, and eastwards, across and along the valley, and mid-distant views eastwards towards Craig Fell. Views northwards are partially restricted by plantation woodland at Beldcraig, and the landscape adjacent accommodates a number of modern farming structures, including: a large uPVC tank inserted directly adjacent to The Dod's southern ditch; a small reservoir at the head of Mirk Gill (apparently formed by an earthen embankment) c. 250m to the south-west; and, a large, relatively prominent, plastic-lined reservoir c. 900m to the south-west.

7.101 The relatively prominent location of the enclosure suggests a degree of dominance over the lowland valley, and is an important element of its setting, contributing to how this asset's possible function as a defensive structure is understood and appreciated, the degree of control within the landscape, and how it is experienced. It is, however, a comparatively small structure and less complex and impressive than 'typical' later prehistoric hilltop enclosures – perhaps suggesting less importance of the symbolic role fulfilled by larger examples.

7.102 In addition, the western hillslopes of Annandale, contain a number of similar defensive enclosures, such as those at Park Hill (SM10544), suggesting that The Dod is part of a wider continuum of defended homesteads in the area.

Photo 7.2: View looking south- west from the Dod

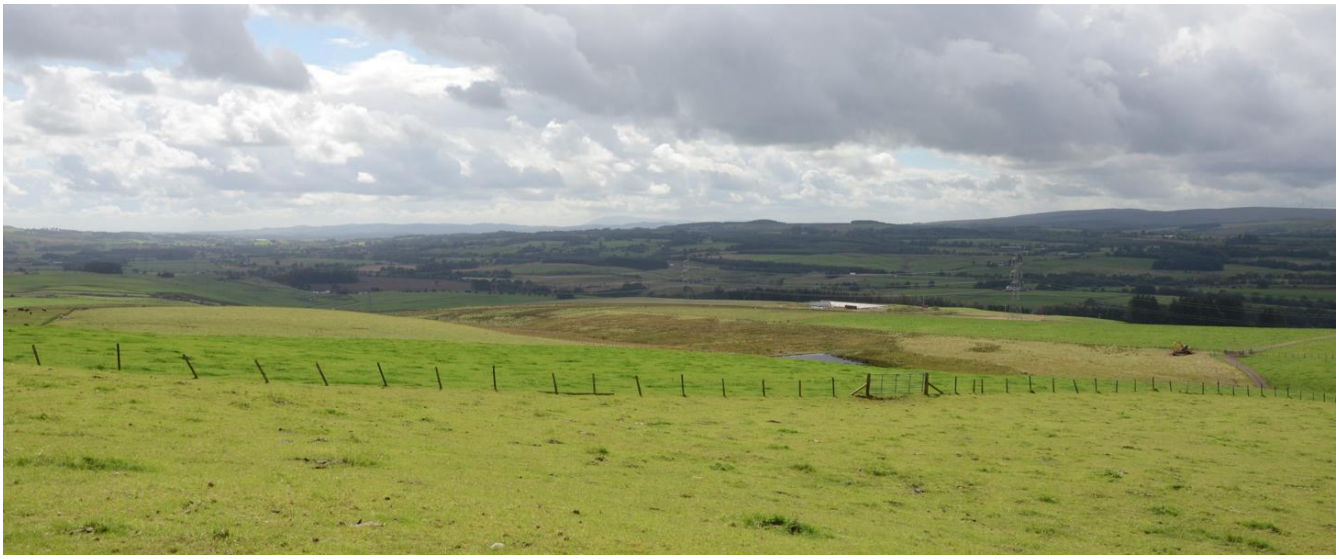
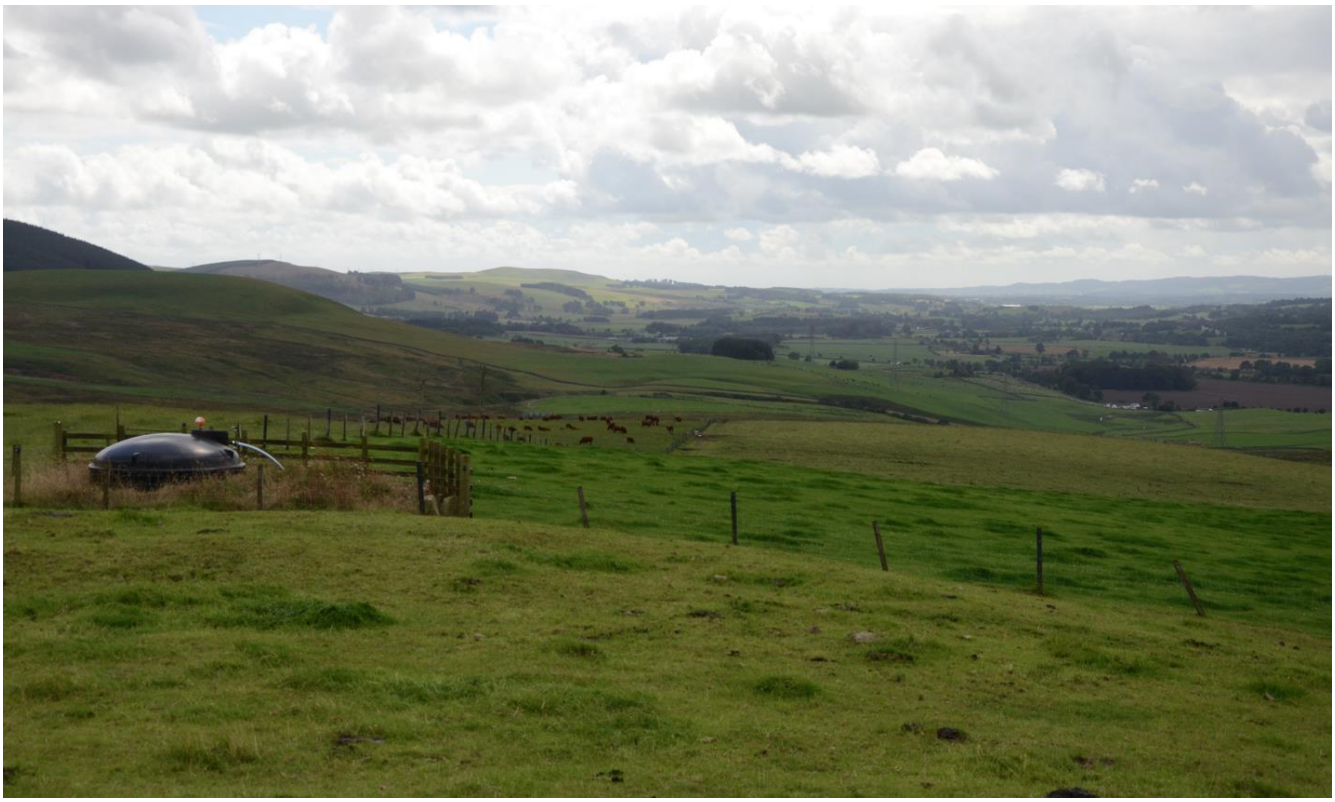
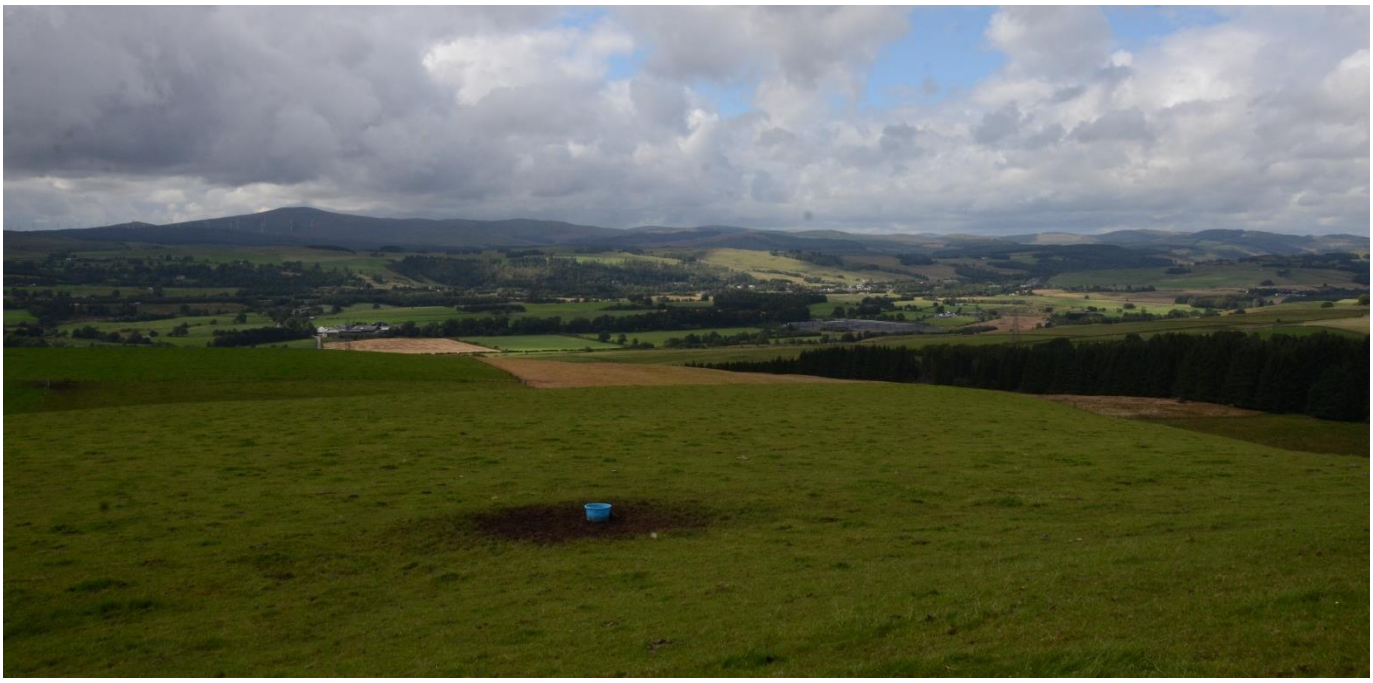


Photo 7.3: View southwards from the Dod



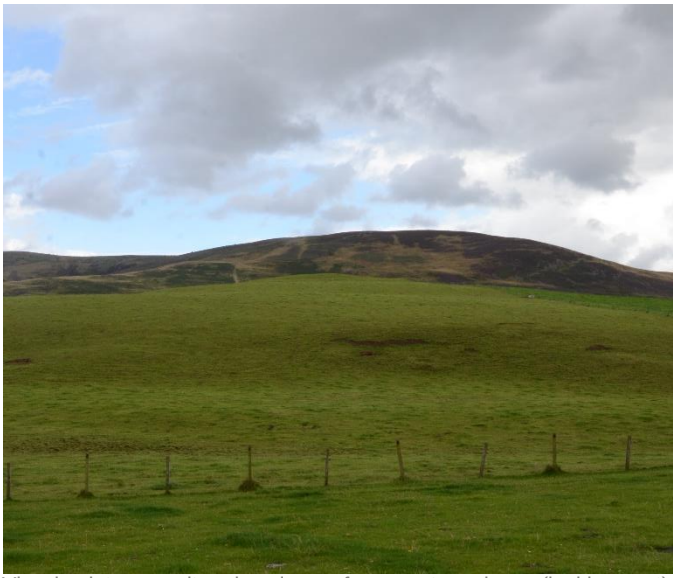
View southwards from the Dod, with uPVC header tank in the foreground and Brock Hill at left side of image. Note height difference due to bank.ditch.

Photo 7.4: View westwards from the Dod

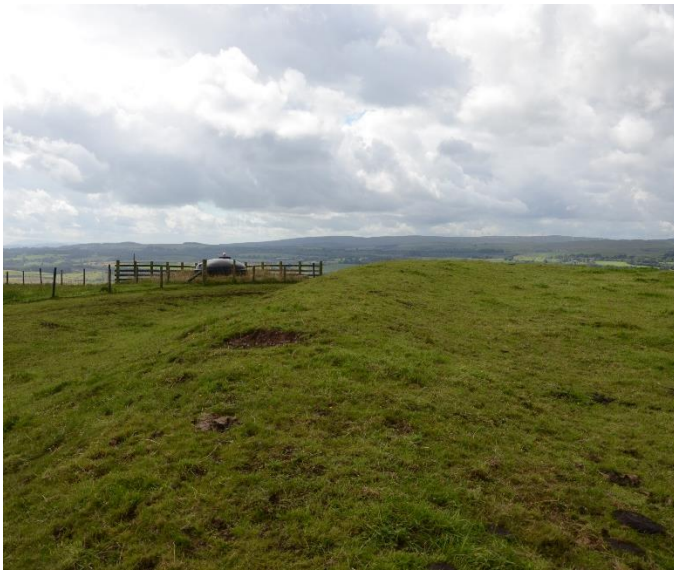


View westwards from the Dod, the Bearholm Substation in the middle distance on the right (north) of the image, and views of Hareshaw Rig beyond

Photo 7.5: General views of The Dod



View back to summit and enclosure from western slopes (looking east)



Bank and ditch detail, southern circuit (looking west-south-west)

Cultural Significance

7.103 The cultural significance of The Dod is predominantly derived from the evidential (scientific) value of the heritage asset's physical remains, including the visible remains of its bank and ditch, and any buried archaeological remains that may be present, which have the potential to inform the understanding of this asset's date and function. The heritage asset also has some historical (illustrative) value given its potential to contribute to understanding of the form of defensive enclosures locally and the pattern of regional settlement, economy and development of the landscape in later prehistory.

Importance

7.104 In consideration of this heritage asset, and its potential to make a contribution to the understanding of the construction of, and spatial relationships with other later prehistoric defensive sites, this asset is of **Medium** importance.

Effects

7.105 The Scoop Hill 132kV Connection Project would be situated to the west of the enclosure, on the slope below and adjacent to The Dod. The construction and operation of the Scoop Hill 132kV Connection Project would not affect how the elevated setting of the enclosure contributes to an understanding of its form and function. However, due to its proximity, the Scoop Hill 132kV Connection Project would be present in the foreground of views to the west and south-west of the enclosure and could result in a small change to how the enclosure is appreciated or experienced.

7.106 The introduction of the Scoop Hill 132kV Connection Project will not, however, affect the evidential (scientific) value of the heritage asset which contributes the most to its cultural significance.

7.107 Therefore, the Scoop Hill 132kV Connection Project will not affect the key aspect of the heritage asset's cultural significance, and minor adverse effects have been identified. While the Scoop Hill 132kV Connection Project would be clearly visible from The Dod, it would appear in the context of a range of modern infrastructure, including the 400kV Scotland-England interconnector, Moffat (Bearholm) substation and wind energy developments in longer views. While it would be a somewhat distracting introduction, the scope and scale of views available from The Dod would remain readily appreciable. In views to The Dod, its form, function and relationships would remain fully legible.

Cumulative Effects

Milton, Roman fort, fortlet & camps (SM676)

7.108 No cumulative effects to the heritage assets at the SM676 complex have been identified resulting from the operation of the proposed OHL in-combination with the developments identified in **Table 4.1**. This is due to a lack of in-combination visibility from assets having a meaningful effect on the setting, and hence cultural significance, of assets.

The Dod (MDG403)

7.109 The combination of Scoop Hill 132kV Connection Project with Scoop Hill Wind Farm (including substation and energy storage facility) will affect views southwards, down and across the Annandale valley, interrupting the visual connectivity of the Dod Hill enclosure with the wider landscape and other putatively contemporary assets. Whilst the introduction of this infrastructure will not affect the evidential and historical value of the asset derived from its physical remains, it will result in a change in the way these key elements of the setting of this asset makes to how its function as a defended enclosure, the choice of location, and the intervisibility between similar contemporary assets can be appreciation and understood and experienced as such. This change will result in a minor adverse effect.

Proposed Additional Mitigation

7.110 Mitigation in the form of archaeological monitoring (watching brief) via the provision of an Archaeological Clerk of Works is proposed during ground-breaking for the installation of the wooden poles. A targeted approach may be adopted to focus on areas of higher archaeological potential, i.e. in close proximity to known heritage assets. This approach and the archaeological monitoring will be undertaken in line with a Written Scheme of Investigation to be approved by the Dumfries and Galloway Historic Environment Service.

7.111 For proposed developments of this type it is difficult to fully mitigate the impacts to heritage assets resulting from setting change, beyond those changes to the design identified as the Proposed Development evolves. No specific mitigation to reduce the potential effects of setting change to heritage assets has been identified.

Summary and Conclusions

7.112 No direct physical effects to known heritage assets within the proposed Scoop Hill 132kV Connection Project footprint have been identified. However, ground-breaking associated with construction has the potential to remove or truncate previously unrecorded buried archaeological remains

that may be present in the construction corridor. A programme of monitoring of construction works by an Archaeological Clerk of Works has been proposed, and the full details of the specification would be resolved in discussions with the Dumfries and Galloway Archaeologist.

7.113 A review of potential direct effects due to setting changes has identified a minor adverse effect to the cultural significance of The Dod (MDG403) through change within its setting. No effects are predicted for Milton, Roman fort, fortlet & camps (SM676).

7.114 Cumulative effects are also limited to The Dod (MDG403), where a minor adverse effect has also been identified.

Chapter 8
Hydrology, Flood Risk and Water Quality, including Private Water Supplies

Introduction

8.1 This Chapter presents the findings of an appraisal of the likely effects on the proposed Scoop Hill 132kV Connection Project on hydrology, flood risk and private water supplies (PWS). It details the baseline environment, based on both desk-based studies and field survey. A description of potential effects, together with proposed mitigation measures is also provided.

8.2 The appraisal has been undertaken by Kaya Consulting and is supported by the following figures:

- **Figure 8.1: Hydrological Setting of Site and Surrounds**

Scope of Appraisal and Study Area

Scope of the Appraisal

8.3 The following effects were identified for consideration in the appraisal:

- Direct effects during construction on surface water and ground water quality and hydrology (including PWS quality and quantity);
- Direct effects during construction and operation on and from fluvial flood risk; and
- Cumulative effects with other schemes which share the same catchment as the Scoop Hill 132kV Connection Project and which could result in cumulative effects.

8.4 The following effects were not considered:

- Effects on geology and peat were scoped out of the environmental appraisal. The entire route is classed as mineral soils (Class 0) by the NatureScot (2016) carbon and peatland mapping[82], which is not peat. No peat was observed during the site walkovers.
- Operational effects on surface water and ground water quality (including PWS quality and quantity) as it is generally considered that effects will be of less magnitude than during construction.

[82] NatureScot (2016) Carbon and Peatland

Study Area

8.5 The study area for surface water quality, hydrology and flood risk comprises the overall route of the Scoop Hill 132kV Connection Project extending east from the existing Moffat substation (which will be extended to facilitate the connection) across the River Annan, then south-east to the proposed Scoop Hill Community Wind Farm substation, and includes the watercourses within and downgradient of the proposed OHLs (**Figure 8.1**).

8.6 The study area for detailed assessment of groundwater abstractions, including PWS, as outlined by SEPA (2017) guidance[83], is a 250 m buffer from the proposed infrastructure. However, the search area was extended for PWS up to 1 km from the proposed OHLs to account for uncertainties in the PWS source locations, which are often not known by the local council.

Policy and Guidance

8.7 Current policy, legislation and guidance of relevance to the appraisal is detailed below.

Policy and Legislation

8.8 The appraisal is carried out in accordance with the principles contained within the following legislation:

- The Flood Risk Management (Scotland) Act 2009;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR);
- The Water Framework Directive (2000/60/EC) (WFD), and Water Environment and Water (Scotland) Act (WEWS Act) 2003;
- The Pollution Prevention and Control (Scotland) Regulations 2012;
- The Control of Pollution Act 1974 (as amended) Part II: Pollution of Water;
- The Scotland River Basin District (Standards) Directions 2014;
- The Scotland River Basin District (Status) Directions 2014
- The Public Water Supplies (Scotland) Regulations 2014;
- The European Drinking Water Directive (Council Directive 98/83/EC);
- The Private Water Supplies (Scotland) Regulations 2006;
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017;
- The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013; and
- The Waste Management Licensing (Scotland) Regulations 2011.
- National Planning Framework 4 (2023) Policy 22 – Flood Risk and Water Management;
- Dumfries and Galloway LDP2 Policy IN7 Flooding and Development, IN8 Surface Water Drainage and Sustainable Drainage Systems (SuDS, IN9, NE 11 Supporting the Water Environment and NE12 Protection of Water Margins.

Guidance

8.9 The appraisal is carried out in accordance with the principles contained within the following documents:

- The Scottish Environment Protection Agency (SEPA)'s Guidance for Pollution Prevention (GPPs) including:
  - GPP1: Understanding your environmental responsibilities – good environmental practices;
  - GPP2: Above ground oil storage tanks;
  - GPP4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;
  - GPP5: Works and maintenance in or near water;
  - GPP8: Safe storage and disposal of used oils;
  - GPP21: Pollution incident response planning;
  - GPP22: Dealing with spills; and
  - GPP26: Safe storage – drums and intermediate bulk containers.
- Scottish Government Planning Advice Notes (PANs) and Guidance (including PAN 51 Planning, Environmental Protection and Regulation and PAN 79 Water and Drainage);
- SEPA: Technical Flood Risk Guidance for Stakeholders, version 13 (SEPA, June 2022);

[83] SEPA (2017) Land Use Planning System, SEPA Guidance Note 31 (LUPS-31): Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems

- SEPA: Water Environment (Controlled Activities) (Scotland) Regulations 2011 – A Practical Guide, Version 9.3 June 2023;
- SEPA: Position Statement to support the implementation of the Water Environment (Controlled Activities) (Scotland) Regulations 2005, WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance, Version 2, June 2015.
- SEPA: Engineering in the Water Environment Good Practice Guide – River Crossings, WAT-SG-25, 2010;
- SEPA: Engineering in the Water Environment Good Practice Guide – Temporary Construction Methods, WAT-SG-29, 2009;
- SEPA: Sector Specific Guidance: Construction Sites, WAT-SG-75, 2021;
- SEPA: Policy No. 19, Groundwater protection policy for Scotland, 2009;
- SEPA: Special requirements for civil engineering contracts for the prevention of pollution, WAT-SG-31, 2006;
- SEPA: Land Use Planning System, SEPA Guidance Note 31 (LUPS-31): Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, 2017;
- SEPA: Flood Risk and Land Use Vulnerability Guidance, version 4, July 2018;
- SEPA: Climate change allowances for flood risk assessment in land use planning, Land Use Planning System SEPA Guidance. Version 3, 4 April 2023;
- Scottish Water standards and policies, including Sewers for Scotland 3rd edition, 2015 and Water for Scotland 3rd edition, 2015;
- CIRIA: The SuDS Manual (C753) 2015;
- CIRIA: Control of water pollution from construction sites: Guidance for consultants and contractors (C532) 2001;
- CIRIA: Groundwater Control – design and practice (C515) 2016; and
- Forestry Commission (2017) The UK Forestry Standard.

Methodology

Desk Study and Information Sources

8.10 A desk-based study was undertaken to assess the baseline environment within the study area. The desk-based review included analysis of numerous mapping and data resources including:

- 1:10,000 scale Ordnance Survey Maps;
- 1:25,000 scale Ordnance Survey Maps;
- 1:50,000 scale British Geological Survey (BGS) maps;
- 1:250,000 scale Soil Maps of Scotland, Hydrogeological Maps of Scotland and NatureScot (2016) Carbon and Peatland map[84];
- SEPA Flood Hazard Maps for 200-year event, 200-year+CC event and 1000-year event, downloaded from SEPA website[85];
- The Flood Estimation Handbook (FEH) Web Service[86];
- SEPA Water Classification Hub[87];
- ScotGov- Scotland's Environment Website and Interactive mapping resource[88];
- NatureScot Site Link Interactive Map[89];
- PWS data provided by DGC, and;
- Scottish Water Asset Plans of the study area and nearby areas viewed online.[90]

Field Survey

8.11 A field survey to inform the hydrological appraisal was undertaken on 10th August 2022. Weather conditions were sunny and dry.

8.12 A PWS questionnaire was also sent to a several properties within 1 km of the Scoop Hill 132kV Connection Project in June 2023 to ascertain whether they are served by a PWS, including those not listed on the DGC register.

Consultation

8.13 DGC and SEPA were consulted to obtain data on PWS and groundwater abstractions in a buffer search area extending to 1km from the Scoop Hill 132kV Connection Project.

[84] NatureScot (2016) Carbon and Peatland map
[85] https://scottishepa.maps.arcgis.com/
[86] https://fehweb.ceh.ac.uk/Map
[87] https://www.sepa.org.uk/data-visualisation/water-classification-hub/
[88] https://map.environment.gov.scot/sewebmap/
[89] https://sitelink.nature.scot/map
[90] Scottish Water Asset Plan Portal GIS Extranet View/Plot (esriuk.com)

Assumptions and Limitations to the Appraisal

8.14 The appraisal was based on existing, available data, supplemented by hydrology surveys. It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and appraisal of the likely environmental effects of the Scoop Hill 132kV Connection Project.

Appraisal Method

8.15 The appraisal method was based on review of the baseline environment and an understanding of the proposals, combined with the professional experience and judgement of the author. The sensitivity of receptors and magnitude of effect were defined based on the criteria described below in order to appraise the likely effects.

Sensitivity of Receptor

8.16 Sensitivity has been determined on the basis of the criteria shown in **Table 8.1**.

Table 8.1: Criteria Used to Assess the Sensitivity of Receptor

Sensitivity of Receptor	Typical Indicators
High	Receptor is of national or international value (i.e., Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA), and RAMSAR). Overall water quality classified by SEPA as high. Abstractions for public water supply. Groundwater classified under the WFD as 'good' or groundwater resource with numerous sensitive users/receptors. The flooding of property (or land use of great value) that has been susceptible to flooding in the past. Watercourse floodplain/hydrological feature that provides critical flood alleviation benefits. Natural channel and of high morphological diversity. Receptor supports GWDTE confirmed as highly groundwater dependent.
Medium	Receptor is of regional or local value (e.g. Local Nature Reserve). Overall water quality classified by SEPA as good or moderate. Smaller watercourse lying upstream of larger river that is an SSSI, SAC SPA or RAMSAR. May be subject to improvement plans by SEPA. Abstractions for private water supplies. Groundwater resource with sensitive users/receptors. Environmental equilibrium copes well with natural fluctuations but cannot absorb some changes greater than this without altering part of its present character. The flooding of property (or land use of great value) that may be susceptible to flooding. Watercourse/floodplain/hydrological feature that provide some flood alleviation benefits. Semi-natural channel, with morphological diversity. May have some minor morphological constraints. Receptor supports GWDTE confirmed as moderately groundwater dependent.
Low	Receptor is of low environmental importance (e.g., water quality classified by SEPA as bad or poor). Not subject to water quality improvement plans by SEPA. Environmental equilibrium is stable and is resilient to changes which are considerably greater than natural fluctuations, without detriment to its present character. No abstractions for public or private water supplies. No significant groundwater resource and no identified sensitive users/receptors. No flooding of property or land use of great value. Watercourse/floodplain/hydrological feature that provides minimal flood alleviation benefits. Heavily engineered or artificially modified and may dry up during summer months. No GWDTE confirmed as either moderately or highly groundwater dependent.

Magnitude of Change

8.17 Magnitude of change has been assessed based on the criteria presented in **Table 8.2**.

Table 8.2: Criteria Used for Estimating the Magnitude of Effect

Magnitude	Description/Typical Example
High	Fundamental changes to the hydrology, water quality or hydrogeology (in terms of quantity, quality, and morphology). A >10% change in average or >5% change in flood flows. The extent of flood risk areas (as classified by NPF4 – i.e. land or built form with an annual probability of being flooded of greater than 0.5% including an appropriate allowance for future climate change) will be significantly increased. Change that would render water supply unusable for longer than a month. Change resulting in total loss of feature or integrity of feature or use.
Moderate	Material but non-fundamental changes to the hydrology, water quality or hydrogeology (in terms of quantity, quality, and morphology). A >5% change in average and minimal change in flood flows. Extent of flood risk areas will be moderately increased/or decreased. Change that would render water supply unusable for days or weeks up to a month with no alternative.
Slight	Detectable but non-material changes to the hydrology, water quality or hydrogeology (in terms of quantity, quality, and morphology). A >1% change in average flows and no increase in flood flows. Change that would render water supply unusable for a short period (days) or for longer period if alternative supply put in place.
Negligible	No perceptible changes to the hydrology, water quality or hydrogeology (in terms of quantity, quality, and morphology). A <1% change in average and no change in flood flows. No change in water supply or minor change (days) where alternative is put in place.
None	No change.

Effect Classification

8.18 The sensitivity of the receptor and the magnitude of the effect were combined using **Table 8.3** to classify the level of effect.

Table 8.3: Classification of Effect based on Sensitivity of Receptor and Magnitude of Effect

Receptor Sensitivity	Magnitude of Change				
	High	Moderate	Slight	Negligible	None
High	Major	Major/Moderate	Minor	Negligible	None
Medium	Major/Moderate	Moderate	Minor	Negligible	None
Low	Moderate/Major	Minor	Minor	Negligible	None

Baseline

Designated Sites

8.19 There are no designated sites nearby or downstream of the Scoop Hill 132kV Connection Project that would potentially be impacted. Effects on designated sites are therefore not considered further.

Hydrology and Water Quality

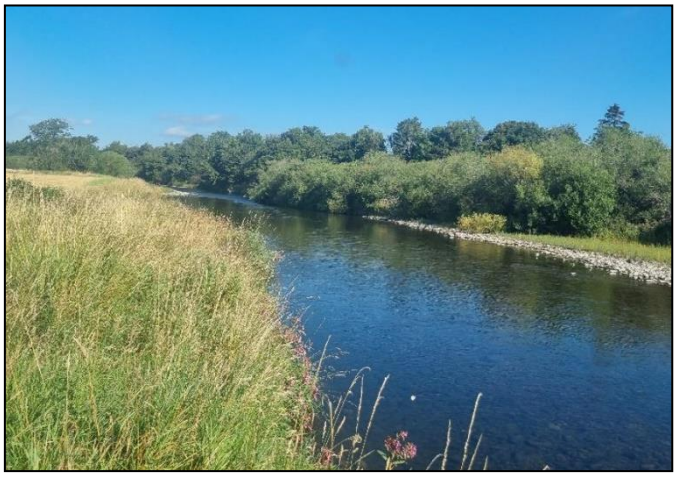
8.20 The Scoop Hill 132kV Connection Project is wholly within the River Annan catchment. As shown in **Figure 8.1**, the Scoop Hill 132kV Connection Project crosses three watercourses as it traverses from the Moffat substation to the Scoop Hill substation in the south; the River Annan, Howbeck Gill and the Beldcraig Burn. It also lies near the headwaters of a small watercourse named Mirk Gill but does not cross this directly.

8.21 The River Annan (**Photo 8.1**) is a large, ~40 m wide river which flows in a southerly direction and has a catchment area of 216 km^2 at the OHL crossing location. There is a SEPA gauge (No. 78006) approximately 1km downstream of the crossing location, where flows have been recorded since 1984. The mean flow of the River Annan, as measured at the gauge is 9.2 m^3/s.

8.22 The Howbeck Gill is a small tributary of the River Annan, which flows in a westerly direction and is ~2 m wide at the proposed crossing location. During the site visit, the watercourse was dry and appeared artificially blocked and infilled upstream (**Photo 8.2**). The Howbeck Gill is too small to be on the FEH Web Service and has an estimated catchment area of 0.08km^2 based on LiDAR data.

8.23 The Beldcraig Burn is a tributary of the River Annan and flows in a south westerly direction within a deeply incised, well-vegetated valley, known as Beldcraig Glen. Based on LiDAR Phase 3 terrain data, the valley is ~20m deep and 115m wide, although the burn itself is only ~5-6 m wide at the bottom of the Glen (see **Image 8.3**). The catchment area of the burn at the proposed crossing location is 7.3km^2 from the Flood Estimation Handbook (FEH) Web Service[91].

Photo 8.1: River Annan, looking north (upstream) to the proposed OHL crossing location



[91] https://fehweb.ceh.ac.uk/GB/map

Photo 8.2: Howbeck Gill, at the proposed OHL crossing location (dry at the time of the site visit)

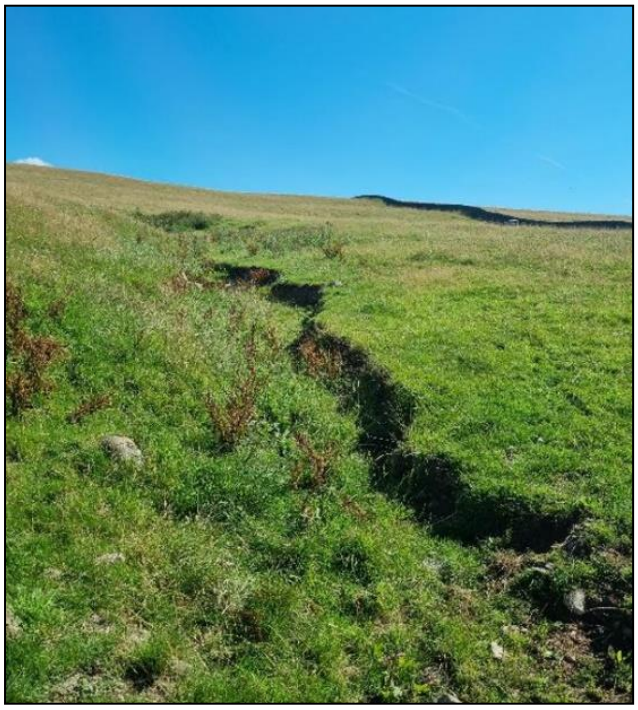
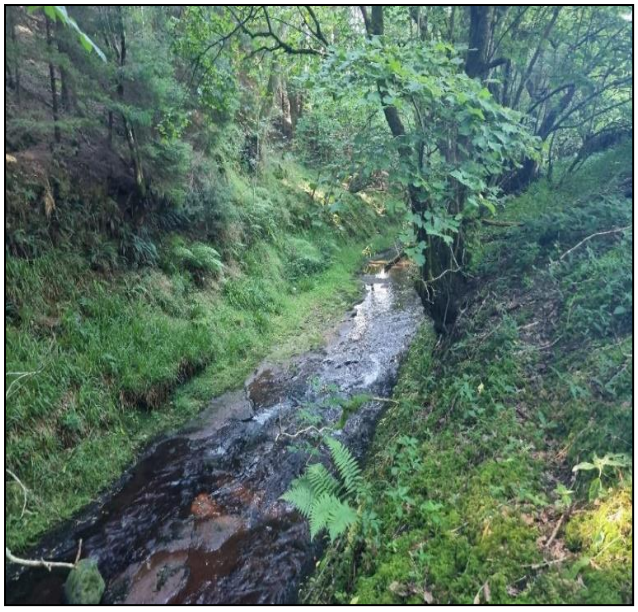


Photo 8.3: Beldcraig Burn



8.24 The River Annan (waterbody ID 10642), is registered under the River Basin Management Plan (RBMP) and was classified as having 'Poor' ecological status in 2020, based on data from SEPAs Water Classification Hub[92]. The other two watercourses are too small to be classified under the RBMP.

8.25 The proposed temporary access routes for the Scoop Hill 132kV Connection Project do not cross any watercourses.

Flood Risk

8.26 Based on the SEPA Future Flood Maps, the 200 year plus climate change floodplain of the River Annan is ~435m wide at the proposed OHL crossing location, close to the Moffat substation. The low-lying land on the west bank of the River Annan is at flood risk. The existing substation and proposed extension, proposed wood poles 29, 30, 61 and 62 and their associated temporary working areas and access routes are within the predicted floodplain.

8.27 The 200 year (+ climate change) floodplain of the Beldcraig Burn is largely constrained within the channel and is narrow (~10-15 m wide). No infrastructure will therefore be in the floodplain.

8.28 Flood risk from the small Howbeck Gill watercourse is not shown on SEPA flood maps as the catchment is small (<3km) and is not considered to be significant.

There are no areas of surface water flooding within the Scoop Hill 132kV Connection Project area.

Existing Drainage

8.29 Watershed analysis was carried out in GIS software using the LiDAR topographic data to derive surface water flow paths. The proposed route of the OHLs drains towards the River Annan, either directly or indirectly, via tributary watercourses.

8.30 A small part of the southern section of the proposed route of the OHLs drains to the south towards the Mirk Gill watercourse to enter the River Annan much further downstream. The remainder of the proposed route of the OHLs either drains towards the Beldcraig Burn or directly to the River Annan.

Groundwater Dependent Terrestrial Ecosystems

8.31 The Water Framework Directive 2000/60/EC (WFD) requires any terrestrial ecosystems which are dependent on groundwater (i.e., groundwater dependent terrestrial ecosystems, GWDTE) to be identified and the pressures acting on them considered.

[92] https://www.sepa.org.uk/data-visualisation/water-classification-hub/

8.32 The hydrology and ecology surveys found no GWDTEs within or close to the site. Effects on GWDTEs are not considered further.

Hydrogeology

8.33 The BGS hydrogeology map shows that the study area is located on a highly productivity aquifer (Class 2A) with flow being identified throughout fractures and discontinuities. The aquifer is classed as a regionally important aquifer up to 1500m thick with sandstones and breccias yielding up to 40L/s.

8.34 The groundwater classification for the Moffat and Annandale Sand and Gravel groundwater bodies are both considered as 'Good'.

Private Water Supplies (PWS)

8.35 DGC was contacted by Kaya Consulting on 14th October 2021 to request PWS data within 1 km of the Scoop Hill 132kV Connection Project. DGC provided details of nearby properties that are supplied via a private water supply (**Table 8.4).** Only one PWS was noted on DGC's register within 1 km of the proposed route of the OHLs, as shown in **Figure 8.1**.

8.36 DGC noted that none of the nearby remote properties have registered a private water supply with the council, however they may still be served by an unregistered supply. A search of the Scottish Water asset maps online was carried out to identify which of these properties are on the Scottish Water supply system (and thus do not have a PWS). Following this, PWS questionnaires were sent to Milton Farm and several other remote properties on 4th July 2023, to obtain details about their water supply. Based on PWS questionnaire responses and the Scottish Water asset review, no other PWS were identified.

Table 8.3: Private Water Supplies within 1 km search area of Scoop Hill 132kV Connection Project

Supply/ Possible Supply Name	NGR of Source (or property)	Type	No. of properties supplied	Distance from proposed infrastructure (km)
Milton Farm, Beattock	309455 600706	Borehole	1	918m south of working area for wood pole 1

8.37 Milton Farm PWS is ~918 m from the infrastructure and on the opposite side of the River Annan valley from most of the proposed infrastructure.

8.38 There are no PWS within 250 m of the proposed infrastructure and as such a detailed appraisal of effects on PWS is not required based on SEPA (2017) guidance. Effects on PWS are not considered further.

Good Practice Measures/Embedded Mitigation

8.39 The proposed route of the OHLs associated with the Scoop Hill 132kV Connection Project was located as far as reasonably practical from watercourses and other natural hydrological features. An infrastructure buffer of 50m from watercourses was achieved where possible. Watercourse crossings (of access vehicles for construction) have been avoided. The OHLs will cross three watercourses (River Anna, Beldcraig Burn and Howbreck Gill), but construction works (and wood pole locations) will be set back from the watercourses by an appropriate buffer (of at least 50 m where possible). Locations where a 50 m buffer could not be achieved are described in the 'Appraisal of Effects' section and additional mitigation provided if required. Stringing the OHLs across watercourses will not impact the bed and banks.

8.40 In addition to the careful siting of infrastructure components, and given SPEN's commitment to, and prior experience of, implementing accepted good practice during construction and operation, and the current regulatory context, many potential effects on the water environment can be avoided or reduced.

8.41 With respect to the current regulatory context, since the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR) came into force, CAR authorisation will be required in relation to a number of activities (e.g. engineering works in inland waters and wetlands). Based on constraints applied during the iterative design process, there are no works within the water environment and no new (or upgraded) watercourse crossings. SEPA's General Binding Rules (GBR) under the CAR Regulations will be followed during construction.

8.42 Good practice pollution prevention and control measures will be put in place during forestry felling and construction, which will reflect best practice guidance and recognised industry standards (e.g. SEPA guidance, including their Guidance for Pollution Prevention (GPPs), CIRIA SUDS Manual[93] and control of water pollution guidance[94,95], amongst others), as well as SPEN's experience of constructing OHLs.

[93] CIRIA: The SUDS Manual (C753) 2015
[94] CIRIA: Control of water pollution from construction sites: Guidance for consultants and contractors (C532) 2001
[95] CIRIA: Control of water pollution from linear construction projects. Site guide (C649) 2006

As highlighted in **Chapter 3: Project Description**, a Pollution Prevention Plan (PPP) will be prepared and implemented through the CEMP.

8.43 Forestry felling and removal will follow the good practice guidance and legal requirements set out in Section 6.7 (Forests and Water) of the UK Forestry Standard (Forestry Commission 2017).

8.44 An Environmental Clerk of Works (ECoW) will be on site throughout construction to monitor and assess the works and check the mitigations outlined in the PPP are adhered to and function properly.

8.45 Many of the measures mitigate several potential effects (e.g., mitigation to minimise sedimentation and pollution such as Sustainable Drainage Systems (SUDS) which can also serve to attenuate surface water run-off). Embedded mitigation measures that are incorporated into project design will include:

- SuDS to minimise/attenuate surface runoff from temporary hardstanding and temporary tracks;
- SuDS to reduce sedimentation and erosion;
- SuDS to reduce pollution and accidental spillage;
- Measures to reduce sedimentation, erosion, and pollution during forestry felling.

8.46 As a consequence, a number of measures are not considered to be mitigation as such, but rather an integral part of the design/construction process as part of good practice. Where it is considered that 'additional' and location specific mitigation is required to minimise certain effects, these are highlighted in the appraisal below.

Appraisal of Effects

8.47 Taking account of the findings of the work undertaken to date, and professional experience, whilst adopting a precautionary approach, likley effects are as set out below.

8.48 The sensitivity of receptors has been appraised in **Table 8.4** using the criteria in **Table 8.1**.

Table 8.4: Sensitivity of Receptors

Receptor	Sensitivity	Comment
Watercourses and waterbodies River Annan Howbeck Gill Beldcraig Burn	Water quality – Low Flood Risk – High	The River Annan is classified by SEPA as 'Poor.' The River Annan has a wide floodplain, based on SEPA Future flood maps.
Mirk Gill		The entire Site drains towards the River Annan, either directly or via tributaries
Groundwater	Low	The Scoop Hill 132kV Connectio Project is located on highly productive aquifer. The groundwater bodies underlying the area are classified by SEPA as 'Good'. There are no known groundwater abstractions on the Site.

Construction Effects

Water Quality, Hydrology and Flood Risk

8.49 The construction of the Scoop Hill 132kV Connection Project has the potential to impact the water environment including the River Annan and its tributaries.

8.50 Potential effects during construction are as follows:

- Construction phase pollution of surface water and groundwater and subsequent quality deterioration caused by release of sediment/silt-laden run-off, forestry felling, operation of machinery (e.g., fuel spillage, oils etc) to watercourses during site preparation and construction.
- Construction phase effects on and from fluvial flooding.

8.51 NPF4 also advises that no development should be sited in flood risk areas. NPF4 Policy 22 states that "*Development proposals at risk of flooding or in a flood risk area will only be supported if they are for essential infrastructure where the location is required for operational reasons….*". Floodplains were avoided as far as practicable during the routeing and design process. The Scoop Hill 132kV Connection Project is essential infrastructure and SEPA's Flood Risk and Land Use

Vulnerability Guidance[96] notes that essential infrastructure can be in medium to high-risk flood areas (i.e. >0.5% AP) if a flood risk location is required for operational reasons and an alternative lower-risk location is not available.

8.52 Poles and working areas were moved as far away from watercourses as practicable during the design stage and floodplains were avoided where practicable. However, a 50 m buffer and development (wood poles) in the floodplain could not be achieved at the following locations (**Figure 8.1**). Photographs of the watercourses are also provided:

- River Annan (**Image 8.1**) – poles 28 and 58 and their associated working areas are ~20 m east of the River Annan. However, they are located at the top of the bank, at an elevation above 92 m AOD and are situated well above the river channel and the predicted future floodplain, which is at ~88 m AOD. Thus, the poles and working areas on the east side of the River Annan are not at flood risk. However, given their proximity to the watercourse, there is a risk of sediment/pollution entering the watercourse during construction and additional mitigation (e.g. additional SuDS/ silt fence) will be put in place.
- River Annan – poles 28, 29, 58 and 59 (and their associated temporary working areas and access routes) are outwith the 50 m buffer of the River Annan but are located within the predicted future floodplain. This flood risk area could not be avoided as the OHL needs to tie into the existing Moffat substation and the wood poles could not span the wide floodplain. Additional mitigation is described in the following section for construction in the floodplain.
- Small, unnamed ditch – poles 60 and 30, associated working areas and the underground cable are ~15m away from the ditch. The ditch is man-made and has been diverted round the existing substation. Given the size of the ditch (<2m wide and its limited catchment area) the infrastructure is not considered to be at flood risk. However, there is a slight risk of sediment/pollution entering the water environment during construction and additional mitigation (e.g. additional SuDS/ silt fences) will be put in place.
- Howbeck Gill (**Image 8.2**) – poles 24 and 54 (and their associated temporary working areas and accesses) are ~19m from the small watercourse. A small part of the temporary working area for pole 53 is within 43m of the watercourse. However, given the size of the watercourse (<2m wide and its small upstream catchment area of 0.08km^2) and the locations of the poles, which are at a higher elevation with respect to the watercourse, they are not considered to be at flood risk. However, given their proximity to the watercourse, there is a risk of sediment/pollution entering the watercourse during construction and additional mitigation (e.g. additional SuDS/ silt fences) will be put in place.
- Beldcraig Burn (**Image 8.3**) – poles 14, 15, 44, 45 (and their associated temporary working areas and accesses) are ~30 m from the small watercourse. The poles and working areas were moved as far was from the burn as practicable during design iterations and are located higher on the valley sides out of the SEPA future predicted floodplain (**Figure 8.1**). However, given their proximity to the watercourse and steep slopes down to the watercourse, there is a risk of sediment/pollution entering the water environment during construction and additional mitigation (e.g. additional SuDS/ silt fences) will be put in place.
- Mirk Gill –the temporary working area for pole 4 and the construction access route are within 40 m and 28 m of the upper reach of the Mirk Gill watercourse. The OHL infrastructure is upgradient of the watercourse and based on the site visit, there is a potential surface water pathway from the Scoop Hill 132kV Connection Project to the watercourse. To minimise the risk of pollution/sedimentation to the water environment, additional mitigation (e.g. additional SuDS/ silt fences) will be put in place here.

8.53 The sensitivity of the receptors in terms of water quality is Low. Given the watercourse buffers achieved, the magnitude of effect on surface water quality (with embedded SuDS and good practice construction measures) is considered to be Negligible. The OHL wood pole foundations and construction work areas affect a relatively small area (30 m x 15 m maximum where required) and no concrete will be used and the magnitude of effect on surface water run-off and water quality during construction is considered to be Negligible, resulting in a Negligible effect.

8.54 The sensitivity of the receptors in terms of flood risk is High, due to the wide floodplain of the River Annan. The wood poles that have to be within the flood risk area will be designed and constructed to be operational during floods (i.e. the 0.5% Annual Probability event + CC) and to not impede water flow.

8.55 Considering the very small area taken up by the four wood pole bases (approx. 3 m^2 each) within the River Annan floodplain, the magnitude of effect on flood risk downstream as a result of the Scoop Hill 132kV Connection Project during

[96] SEPA (2018) Flood Risk and Land Use Vulnerability Guidance, version 4, July 2018

construction and operation is considered to be Negligible and the resulting effect is Negligible.

Cumulative Effects

8.56 The appraisal of cumulative effects considers the following nearby proposed and completed developments:

- Scoop Hill Wind Farm (including substation and energy storage facility) - assuming that the wind farm is designed and constructed in line with NPF4 and national guidelines with respect to SuDS and GPPs, there should be no cumulative effect on the downstream catchments.
- Moffat Substation Extension – the proposed extension is within the future floodplain of the River Annan. A Flood Risk Assessment (FRA) for the extension has been prepared by AECOM (2023)[97]. The results of the FRA conclude that the land raising required for the substation extension will have a very minimal localised effect on flood levels, with minimal increases only occurring within 200m of the extension site. There is no discernible increase in the flood extents and no increase in pass forward flow. The proposed substation extension therefore does not increase flood risk downstream (AECOM, 2023). The effect on flood risk as a result of the Scoop Hill 132kV Connection Project is Negligible and would make a negligible contribution to the cumulative effect on flood risk; the resulting cumulative effect is negligible.

Proposed Additional Mitigation

8.57 The following additional mitigation will be put in place:

- The contractor will sign up to SEPA's Floodline flood warning scheme, which provides live flooding information[98]. No construction works will be undertaken in floodplain areas of the River Annan (e.g. poles 30, 31, 61 and 62) during periods of flood risk.
- During construction, additional pollution protection measures will be put in place round construction working areas that are within 50 m of watercourses to prevent silt or other pollutants from leaving the construction area and entering watercourses (e.g. swales, silt fences). These locations are detailed above. The PPP will contain details of location specific additional mitigation.

Summary and Conclusions

8.58 The Scoop Hill 132kV connection Project extends east from the existing Moffat substation across the River Annan floodplain and over the Howbeck Gill and Beldcraig Burn to the Scoop Hill Community Wind Farm.

8.59 Given SPEN's commitment to, and prior experience of, implementing accepted good practice during construction and operation, and the current regulatory context, potential effects on the water environment can largely be avoided or reduced and effects are considered to be Negligible. With additional mitigation measures in place, the potential effects on hydrology, water quality and flood risk will be minimised.

[97] AECOM 2023 Moffat Substation Extension: Flood Risk Assessment, October 2023

[98] https://www.sepa.org.uk/environment/water/flooding/floodline/

Chapter 9
Summary and Conclusions

9.1 SPEN is applying to Scottish Ministers for consent under Section 37 of the Electricity Act 1989 and deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) to install, and keep installed, the Scoop Hill 132kV Connection Project comprising twin double wood pole overhead lines each with an approximate length of 2.4km and ancillary infrastructure. The Scoop Hill 132kV Connection Project is required to connect the proposed Scoop Hill Community Wind Farm to the electricity grid network and ensure that SPEN complies with its Section 9(2) licence obligation under the Electricity Act 1989.

9.2 Section 38 and Schedule 9 of the Electricity Act 1989 imposes a further statutory duty on SPEN to take account of the following factors in formulating proposals for the installation of overhead transmission lines:

- *"(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 it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects."*

9.3 This ER presents the findings of an appraisal of the likely environmental effects associated with the construction and operation (including cumulatively) of the Scoop Hill 132kV Connection Project. As a result of the preliminary routeing and consultation exercise, subsequent detailed design and engineering analysis and a commitment to adopting best practice during construction, this ER has identified that the residual environmental effects of the Scoop Hill 132kV Connection Project will be limited to landscape and visual amenity and cultural heritage. Where possible, additional project specific mitigation measures are proposed to minimise potential effects on other environmental topics, including hydrology.

9.4 In accordance with National Planning Framework (NPF) 4 (Policy 3), SPEN is committed to achieving No Net Loss (NNL) and Biodiversity Net Gain (BNG) across all of its projects. To

ensure that the Scoop Hill 132kV Connection Project achieves SPEN's internal NNL policy, and therefore NPF4's requirements for biodiversity enhancement, a BEP will be prepared and secured via a planning condition to the Section 37 consent. The BEP will be prescribed to ensure that newly created, retained and enhanced habitats continue to benefit habitats and species and provide connectivity to the wider landscape long into the future.

9.5 This ER has demonstrated SPEN's consideration of its obligations under Section 38 and Schedule 9 to the Electricity Act 1989; and highlights that it has complied with its duty to do what it can to mitigate the effects of the Scoop Hill 132kV Connection Project on the environment.