



# **EWE HILL TO HOPSRIG 132KV OHL GRID CONNECTION**

## **Routeing Consultation Report**

May 2020

## QUALITY MANAGEMENT

Issue/Revision	First Issue	Revision 1	Revision 2	Revision 3
Remarks	Draft Issue	Final Issue		
Prepared by	Sally Hadley	Sally Hadley		
Signature	02/06/2020	10/06/2020		
Checked by	John Bacon	John Bacon		
Signature	02/06/2020	11/06/2020		
Authorised by	Mike Roberts	Mike Roberts		
Signature	03/06/2020	11/06/2020		
Project number	70068516	70068516		

SP Energy Networks  
 Ochil House  
 10 Technology Avenue  
 Hamilton International Technology Park  
 Blantyre  
 G72 0HT

## Contents

Page

1	INTRODUCTION .....	1
1.1	BACKGROUND TO THE PROJECT .....	1
1.2	PURPOSE OF THE ROUTEING CONSULTATION REPORT .....	1
1.3	STRUCTURE OF THE ROUTEING CONSULTATION REPORT .....	1
2	LEGAL FRAMEWORK .....	2
2.2	SCOTTISH POWER TRANSMISSION'S STATUTORY DUTIES .....	2
2.3	CONSENTING REQUIREMENTS .....	2
2.4	THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 .....	3
3	PROJECT DESCRIPTION .....	4
3.1	CONNECTION REQUIREMENTS .....	4
3.2	DESIGN .....	4
3.3	CONSTRUCTION .....	5
4	APPROACH TO ROUTEING .....	6
4.1	SPEN'S ROUTEING APPROACH .....	6
4.2	ROUTEING OBJECTIVE .....	6
4.3	ESTABLISHED PRACTICE FOR OVERHEAD LINE ROUTEING .....	6
4.4	OVERVIEW OF ROUTEING PROCESS .....	9
4.5	IDENTIFICATION AND APPRAISAL OF ROUTE OPTIONS .....	10
4.6	SELECTION OF PREFERRED ROUTE .....	10
5	IDENTIFICATION OF ROUTE OPTIONS .....	11
5.1	ROUTEING STRATEGY .....	11
5.2	STUDY AREA .....	11
5.3	ROUTE OPTIONS .....	13
6	BASELINE REVIEW .....	14
6.2	PLANNING POLICY CONTEXT .....	14
6.3	TECHNICAL CONSIDERATIONS .....	15
6.4	ENVIRONMENTAL CONSIDERATIONS .....	16
7	APPRAISAL OF ROUTE OPTIONS .....	25
7.1	APPRAISAL METHODOLOGY .....	25
7.2	APPRAISAL CRITERIA .....	25
7.3	APPRAISAL OF ROUTE OPTIONS .....	29
7.4	PREFERRED ROUTE .....	35
7.5	PLANNING POLICY COMPLIANCE .....	36
8	CONSULTATION PROCESS AND NEXT STEPS .....	37
8.1	CONSULTATION ON THE PREFERRED ROUTE .....	37
8.2	NEXT STEPS .....	38
	APPENDIX A – HOLFORD RULES .....	40
	THE HOLFORD RULES: GUIDELINES FOR THE ROUTEING OF NEW HIGH VOLTAGE OVERHEAD TRANSMISSION LINES (WITH NGC 1992 AND SHETL 2003 NOTES) .....	40
	APPENDIX A .....	43



INTERPRETATION OF THE HOLFORD RULES 1 AND 2 AND THE NOTES TO RULE 2 REGARDING THE SETTING OF A SCHEDULED ANCIENT MONUMENT OR A LISTED BUILDING.....	43
APPENDIX B.....	44
ENVIRONMENTAL AND PLANNING DESIGNATIONS – EXAMPLES OF DESIGNATIONS TO BE TAKEN INTO ACCOUNT IN THE ROUTEING OF NEW HIGH VOLTAGE TRANSMISSION LINES 44	
APPENDIX B – ENVIRONMENTAL DATA SOURCES.....	46
APPENDIX C – ECOLOGICAL DESK STUDY.....	47
APPENDIX D – LIST OF CONSULTEES .....	60
APPENDIX E - FIGURES.....	61

## Glossary

Term	Definition
AOD	Above Ordnance Datum
ASA	Archaeologically Sensitive Area
BGS	British Geological Survey
D&G	Dumfries and Galloway
LCADG	Dumfries and Galloway Landscape Character Assessment
DGWLCS	Dumfries and Galloway Windfarm Landscape Capacity Study
EIA	Environmental Impact Assessment
Electricity Works Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000
Electricity Act	The Electricity Act 1989
ES	Environmental Statement
EIAR	Environmental Impact Appraisal Report
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HER	Historic Environment Record
Holford Rules	Guidelines developed by the late Lord Holford in 1959 for routeing overhead lines
OS	Ordnance Survey
kV	Kilo-volt capacity of an electricity power line
LCT	Landscape Character Type
LCU	Landscape Character Unit
LDP	Local Development Plan
m	metres
MoD	Ministry of Defence
OHL	Overhead line: an electric line in the open air and above ground level
Preferred Route	The preferred route identified through this routeing study process, which is yet to be subject to non-statutory consultation
Proposed Route	The amended proposed route following non-statutory consultation. The route which will go forward to Environmental Impact Assessment
ROA	Route Option Area: area within which a number of feasible route options can be identified prior to appraisal
RSA	Regional Scenic Area: area identified by local authorities of regional importance for scenic quality. Names vary between local authorities
RSPB	Royal Society for the Protection of Birds
Section 37 (s37) application	An application for development consent under Section 37 of the Electricity Act 1989
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage, rebrand to NatureScot delayed
SPEN	SP Energy Networks
SSSI	Site of Special Scientific Interest
TCPA	The Town & Country Planning (Scotland) Act 1997

## **1 INTRODUCTION**

### **1.1 BACKGROUND TO THE PROJECT**

1.1.1 SP Energy Networks (SPEN) has a legal duty under the Electricity Act 1989 to provide grid connections to new electricity generating developments and has been approached by the developers for Hopsrig Wind Farm, Loganhead Wind Farm and Crossdykes Wind Farm Extension to provide a grid connection to the wider electricity transmission network. These wind farms are located approximately 7km north west of Langholm in Dumfries and Galloway as illustrated in **Figure 1**. As the licence holder, SPEN, is required under the Electricity Act 1989 “*to develop and maintain an efficient, co-ordinated and economical system of electricity transmission.*”

1.1.2 In response to this, SPEN is proposing to construct a new 132 kilovolts (kV) wood pole overhead line (OHL) between the proposed Hopsrig 132kV Collector Substation (at approximately NGR 327203, 588043) and Ewe Hill Substation (NGR 324946, 583693), herein known as the ‘Proposed Development’.

1.1.3 This request will lead to an application for consent under Section 37 (s37) of the Electricity Act 1989.

### **1.2 PURPOSE OF THE ROUTEING CONSULTATION REPORT**

1.2.1 The primary purpose of the routeing consultation report is to identify a preferred route option to provide a grid connection to the Ewe Hill Substation from the proposed Hopsrig 132kV Collector Substation taking account of technical, environmental and economic considerations.

1.2.2 The routeing consultation report presents information on the approach taken in the identification of route options, the methodology used for the appraisal of the route options and the findings of the studies and appraisals, culminating in the selection of a route option as the ‘Preferred Route’.

1.2.3 This report is intended to inform consultees of the Preferred Route selected, based on the environmental and technical studies undertaken, and offers the opportunity to provide feedback and comment on the route options and Preferred Route. The views and opinions of consultees will be considered and will feed into the subsequent selection of the ‘Proposed Route’ which will be taken forward to the next stage in the process.

### **1.3 STRUCTURE OF THE ROUTEING CONSULTATION REPORT**

1.3.1 The report has been structured to initially provide context and information on what the project will comprise, followed by the process which was followed to arrive at the Preferred Route. The report has been spilt into the following sections.

- Section 2: Legal Framework
- Section 3: Project Description
- Section 4: Approach to Routeing
- Section 5: Identification of Route Options
- Section 6: Baseline Review
- Section 7: Appraisal of Route Options
- Section 8: Consultation Process and Next Steps

## **2 LEGAL FRAMEWORK**

2.1.1 There are a number of legal provisions which apply to the development of electricity transmission and distribution lines and associated infrastructure. The key provisions are as follows:

- The Electricity Act 1989 (the 'Electricity Act') is the principal legislation which applies in the UK;
- The Town & Country Planning (Scotland) Act 1997 (the 'TCPA') as amended; and
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the 'Electricity Works Regulations').

### **2.2 SCOTTISH POWER TRANSMISSION'S STATUTORY DUTIES**

2.2.1 Scottish Power Transmission's licensed businesses are authorised to transmit and distribute electricity within its network areas under the Electricity Act. As such, Scottish Power Transmission has a statutory obligation to carry out the duties outlined within the Electricity Act.

2.2.2 Section 9 of the Electricity Act states that it shall be the duty of a license holder "to develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and to facilitate competition in the supply and generation of electricity".

2.2.3 Schedule 9 of the Electricity Act requires Scottish Power Transmission to take account of specific factors in formulating any relevant proposals. It states that the licence holder:

*"(a) shall 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) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."*

### **2.3 CONSENTING REQUIREMENTS**

2.3.1 S37 of the Electricity Act requires that, with the exception of certain specific examples, all electricity lines exceeding 20kV will require consent to be granted by the Scottish Ministers. This 's37 consent' gives approval to install, and keep installed, an overhead electricity line.

2.3.2 Section 57 of the TCPA provides that "*Planning permission may also be deemed to be granted in the case of development with government authorisation*". In certain circumstances, deemed planning permission may include works that are 'ancillary' or necessary to the operation of the OHL such as cable sealing end compounds.

2.3.3 In some instances, there may also be the need for separate planning permission where development does not form part of a s37 application. For example, separate planning permission may be required for 'ancillary development' such as a substation. Where consent for development is sought, an application must be made to the relevant planning authority, under the TCPA, before such works are able to be carried out.

2.3.4 Finally, some forms of development, including underground cables, are classed as 'permitted development' under the Town and Country Planning (General Permitted Development) (Scotland) Order 1992 (as amended). Developments classified as permitted development may automatically be granted planning permission, by statutory order, and do not require submission of a planning application to the local planning authority.

2.3.5 At the same time as applying for s37 consent, SPEN will request deemed planning permission under Section 57 of the TCPA from Dumfries and Galloway Council as the planning authority for the OHL and all ancillary elements.

2.3.6 SPEN will be applying for planning permission from Dumfries and Galloway Council as the planning authority for the proposed Hopsrig 132kV Collector Substation separately under the TCPA.

## **2.4 THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017**

2.4.1 The Electricity Works Regulations require that, before consent is granted for certain developments, an Environmental Impact Assessment (EIA) must be undertaken. The first stage of the procedure is to determine whether or not the development in question constitutes 'EIA development'. In accordance with Regulation 2(1) of the Electricity Works Regulations, 'EIA development' means development which is either:

- Schedule 1 development; or
- Schedule 2 development likely to have significant factors such as its nature, size or location.

2.4.2 In accordance with Regulation 2(1), "Schedule 1 development" means development, other than exempt development, of a description mentioned in Schedule 1 of the Electricity Works Regulations. "Schedule 2 development" means development, other than exempt development, of a description mentioned in column 1 of the table in Schedule 2 of the Electricity Works Regulations where:

- Any part of that development is to be carried out in a sensitive area; or
- Any applicable threshold or criterion in the corresponding part of column 2 of that table is respectively exceeded or met in relation to that development.

2.4.3 The Proposed Development currently falls under two Schedule 2 definitions:

*(2) an electric line installed above ground*

*(a) with a voltage of 132 kilovolts or more; and(c) the purpose of which installation is to connect the electric line to a generating station the construction or operation of which requires consent under section 36 of the Electricity Act 1989.*

2.4.4 As the Proposed Development falls under Schedule 2, under Regulation 6(1) of the Electricity Works Regulations a person who is minded to carry out development may request the Scottish Ministers to adopt a screening opinion, to determine whether or not the development in question constitutes 'EIA development'.

2.4.5 Regulation 7(1)(a) of the Electricity Works Regulations requires that both the criteria set out in Schedule 3 and available results of any relevant assessment be taken into account to determine whether a Schedule 2 development requires EIA, or whether through the EIA process a statutory EIA can be 'screened out'. The Schedule 3 criteria include:

- Characteristics of the development;
- Location of the development; and

2.4.6 Characteristics of the potential impact, including the effectiveness of proposed mitigation

2.4.7 SPEN will request an EIA Screening Opinion from Scottish Ministers.



### 3 PROJECT DESCRIPTION

#### 3.1 CONNECTION REQUIREMENTS

3.1.1 A new 132kV wood pole OHL is required between the proposed Hopsrig 132kV Collector Substation and Ewe Hill Substation to accommodate the connection requirements of Hopsrig Wind Farm, Loganhead Wind Farm and Crossdykes Wind Farm Extension.

#### 3.2 DESIGN

3.2.1 SPEN's policy, in line with statutory license requirements is to seek a continuous OHL solution for all transmission connections and only where there are exceptional constraints are underground cables considered an acceptable design option. Such constraints can be found in urban areas and in rural areas of the highest scenic and amenity value. Whilst underground cables have visual benefits, there are associated technical and environmental and economic disadvantages including:

- the physical extent of land required;
- the fault repair time;
- difficulties associated with general maintenance;
- increased cost;
- greater ground disturbance from excavating trenches;
- the restriction of development and planting within the underground transmission cable corridor;
- requirements for cable sealing end compounds or platforms at each end of each section of underground cable; and
- the fact that underground cabling is a less efficient means of transporting electricity.

3.2.2 On this basis, the key design assumption is that the Proposed Development will be a continuous OHL connection throughout. Should the appraisal identify any areas where a proposed OHL is likely to give rise to unacceptable effects, alternative options (such as underground cables and alternative routes) will be considered.

3.2.3 The OHL is proposed as a 132kV connection to be supported by trident wood poles. It will connect to the existing Ewe Hill Substation located approximately 15km east of Lockerbie in Dumfries and Galloway identified in **Figure 1**. From here a 132kV OHL will be installed to the proposed Hopsrig 132kV Collector Substation approximately 4km north of Ewe Hill Substation.

#### WOOD POLES

3.2.4 The trident wood poles would carry a single circuit operating at 132kV and the design specification would be in line with Electricity Network Association Technical Specification *ENA TS 43-50 132kV Single Circuit Overhead Lines on Wood Poles a UK Electricity Industry Design Standard*. Wood poles are fabricated from pressure impregnated softwood, treated with a preservative to prevent damage to structural integrity.

3.2.5 There are two configurations of trident wood pole; a 'single' pole and an 'H' pole. H-poles are used for 'extreme environments' (above 200m AOD) as they are subject to greater ice and wind loadings, whereas single-poles are used in less extreme environments at lower altitudes. **Figure 2** illustrates the main different pole types. Given the area surrounding the Proposed Development is mostly above 200m AOD it is anticipated that the H-pole configuration is most likely to be used throughout.

3.2.6 There are three types of pole and can be either a single or H-pole configuration:

- Intermediate: where the pole is part of a straight-line section;

- Angle: where the OHL changes direction. Single-poles can support changes in direction up to a maximum of 30 degrees and H-poles up to 70 degrees. All angle structures require to be back stayed; and
- Terminal: where the OHL terminates into a substation or on to an underground cable section via a cable sealing end.

**3.2.7** Typical heights for the trident wood poles including insulators are approximately 12m above-ground height, with a range between 10m and 21m. The trident wood poles would support three conductors (wires) in a horizontal flat formation.

**3.2.8** Typical spans between trident wood poles at elevations above 200m are 50–75m for Single-poles and 90-110m for the H-pole configuration; however, they will vary depending on factors such as the size of the conductor, the size of the structures, terrain, ice and wind loadings etc.

#### TIE-IN TO SUBSTATIONS

**3.2.9** The OHL entry into each substation is anticipated to be directly from terminal pole into the substation compound. Any required works within the substation compounds will be covered within the individual planning application for the substation or via Permitted Development Rights, as required. Should a section of underground cable be required to enter either substation for technical reasons, this will be accommodated within the design and using the same pole types as identified above. To connect the proposed OHL to Ewe Hill Substation there would be a requirement for a gantry structure to be built inside the substation.

### 3.3 CONSTRUCTION

#### OVERHEAD LINE – WOOD POLE

**3.3.1** The OHL construction would comprise of the following stages:

- Establishment of temporary infrastructure including construction compound(s) and other areas of temporary hard standing such as lay down areas. There may be a requirement to construct bell-mouths to the public highway where narrow farm tracks are utilised.
- Provision of access to the pole locations. Access for wood pole construction would use low ground-pressure vehicles such as an argocat, tractor or quad bike; and a tracked excavator. Access may include the use of trackway to minimise the impact on soils (especially in peaty areas) and temporary watercourse crossings may be required.
- Construction of pole foundations. Pole excavations are typically 3m by 2m deep. The excavated material would be sorted into appropriate layers and backfilled to maintain the original soil horizons. No concrete is anticipated to be required.
- Wood poles erected. The excavator(s) would hoist the assembled structure into position and once the structure has been braced in position the trench would be backfilled.
- Stringing of conductors. The conductors would be winched to/pulled from section poles; these poles therefore require access for heavy vehicles to transport the conductor drums and large winches. Where the OHL crosses a road a scaffold tunnel would be used to protect the vehicles from the works. Existing distribution lines would be either switched off, deviated or protected using 'live line' scaffolds.
- Reinstatement of pole sites and removal and reinstatement of temporary infrastructure sites.

**3.3.2** Disturbance to local residents and landowners would be minimised as far as possible through the application of proven construction methodologies and the application of a Construction Environmental Management Plan (CEMP) for the duration of the construction period.

## **4 APPROACH TO ROUTEING**

### **4.1 SPEN'S ROUTEING APPROACH**

- 4.1.1 The Government, Ofgem and the electricity industry, including SPEN, have reviewed their positions on OHLs. They remain of the view that the need to balance economic, technical and environmental factors, as a result of statutory duties and licence obligations, continues to support an OHL approach in most cases.
- 4.1.2 It is therefore SPEN's view that wherever practical an OHL approach is taken when planning and designing new transmission lines. However, SPEN accepts that there are specific circumstances in which an undergrounding approach should be considered.
- 4.1.3 In 2015, SPEN published a summary document outlining the approach taken to routeing transmission infrastructure<sup>1</sup> (herein known as the 'SPEN Approach to Routeing').

### **4.2 ROUTEING OBJECTIVE**

- 4.2.1 This study follows established best practice in OHL routeing first codified as the 'Holford Rules' (see **Appendix A**) in combination with the SPEN Approach to Routeing.
- 4.2.2 Under the Electricity Act, SPEN is required to consider environmental, technical and economic considerations, and to reach a balance between them. This means that the Proposed Route would be the one, selected after an appraisal of a number of route options, which balances technical feasibility and economic viability with the least disturbance to people and the environment. Following engagement with relevant stakeholders, including local communities, professional judgement is used to establish the balance.
- 4.2.3 In accordance with the Electricity Act, the project routeing objective is:
- "To identify a technically feasible and economically viable route for an overhead transmission line that meets the technical requirements of the electricity network and causes, on balance, the least disturbance to the environment and the people who live, work and recreate with in it."
- 4.2.4 SPEN's routeing objective is to identify a technically feasible and economically viable OHL route, between specified points, which causes the least disturbance to people and the environment.

### **4.3 ESTABLISHED PRACTICE FOR OVERHEAD LINE ROUTEING**

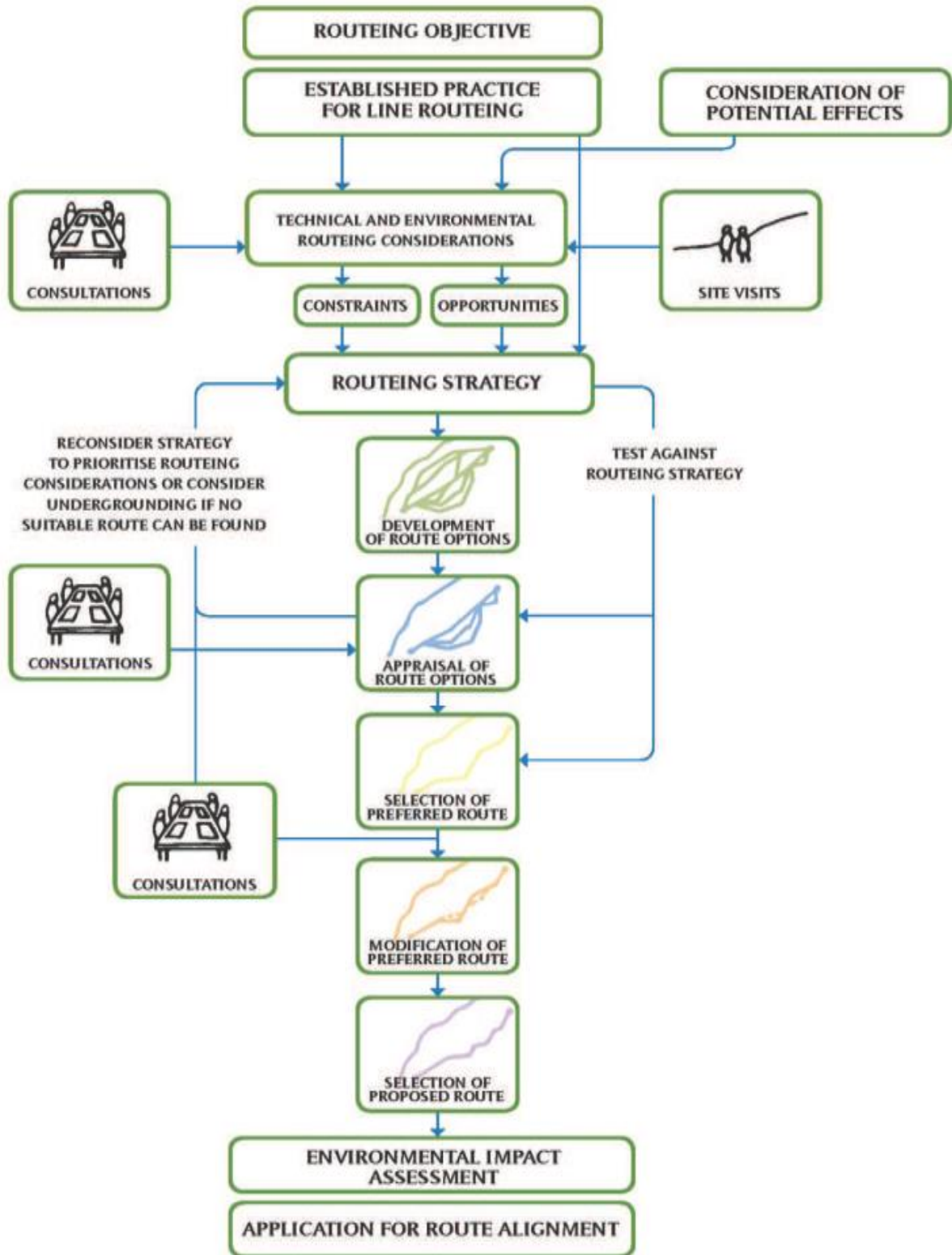
- 4.3.1 SPEN's approach to routeing an OHL is based on the premise that the major effect of an OHL is visual and that the degree of visual intrusion can be reduced by careful routeing. A reduction in visual intrusion can be achieved by routeing the line to fit the topography, by using topography and trees to provide screening and/or background, and by routeing the line at a distance from settlements and roads. In addition, a well-routed line takes into account other environmental and technical considerations and would avoid, wherever possible, the most sensitive and valued natural and man-made features.

---

<sup>1</sup> Major Electrical Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment, SPEN 2015). Available at [https://www.spenergynetworks.co.uk/userfiles/file/SPEN\\_Approach\\_to\\_Routeing\\_FINAL\\_20150527.pdf](https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_FINAL_20150527.pdf)

- 4.3.2 It is generally accepted across the electricity industry that the guidelines developed by the late Lord Holford in 1959 for routeing OHLs, 'The Holford Rules', should continue to be employed as the basis for routeing high voltage OHLs. The Holford Rules were 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 Holford Rules. A subsequent review of the Holford Rules (and NGC clarification notes) was undertaken by Scottish Hydro Electric Transmission Limited (SHETL) in 2003 to reflect Scottish circumstances.
- 4.3.3 The Holford Rules and the NGC and SHETL clarification notes are included in **Appendix A**. These guidelines for the routeing of new high voltage overhead transmission lines form the basis for routeing the Proposed Development. Key principles of the Holford Rules include avoiding prominent ridges and skylines, following broad wooded valleys, avoiding settlements and residential properties and maximising opportunities for 'backclothing' infrastructure.
- 4.3.4 The approach is an iterative, systematic evaluation of route alternatives with professional judgement used to establish explicitly the balance between factors. Consultation is an integral part of the routeing strategy process. The approach to routeing overhead transmission lines is summarised in the below Chart 1.

Chart 1: SPEN Approach to Routing



## **4.4 OVERVIEW OF ROUTEING PROCESS**

### **STUDY AREA**

- 4.4.1 A Study Area is first defined, which is large enough to accommodate all likely route options, taking account of the technical requirements (i.e. connection points) and factors such as topography. Baseline mapping of the routeing considerations outlined below then enables routeing constraints and opportunities to be identified.

### **ENVIRONMENTAL CONSIDERATIONS**

- 4.4.2 Statutory duties imposed by Section 38 and Schedule 9 of the Electricity Act require licence holders to seek to preserve features of natural and cultural heritage interest, and mitigate where possible, any adverse effects which a development may have on such features. The construction and operation of an overhead transmission line will have potential effects on people and the environment, including potential effects on (in no hierarchical order):
- Landscape, views and visual amenity;
  - Cultural heritage;
  - Ecology and nature conservation;
  - Socio-Economics (tourism and recreation);
  - Land Use (agriculture);
  - Planning allocations and major applications;
  - Forestry and woodland;
  - Noise;
  - Traffic (access for construction); and
  - Geology, hydrology and hydrogeology.
- 4.4.3 Some effects can be avoided or limited through careful routeing. Other effects are best mitigated through local deviations of the route, the refining of pole locations and/or specific construction practices. These are reviewed as part of the environmental appraisal process.
- 4.4.4 Following this, the potential constraints and opportunities for a project can be identified and used to formulate a site-specific routeing strategy.

### **ECONOMIC CONSIDERATIONS**

- 4.4.5 In compliance with Schedule 9 of the Electricity Act, the routeing objective requires the proposed connection to be economical. It is understood that this is interpreted by SPEN as meaning that as far as possible, and all other things being equal, the connections should be as direct as possible and the route should avoid areas where technical difficulty or compensatory schemes would render the connection uneconomical.

### **TECHNICAL CONSIDERATIONS**

- 4.4.6 Technical considerations potentially include existing infrastructure (in this case the wind farm and existing OHLs), landowner constraints, altitude and slope angle, and physical constraints such as large water bodies.
- 4.4.7 These technical considerations are not considered as being absolute constraints but are a guide to routeing. The approach taken is to identify preferred environmental options informed by a staged review of technical issues.



## **4.5 IDENTIFICATION AND APPRAISAL OF ROUTE OPTIONS**

- 4.5.1 Following identification of the Study Area a number of possible 'route options' for the Proposed Development are identified. This process involves the avoidance where possible of areas of high 'amenity' value. These areas generally include areas of natural and cultural heritage value designated at a national, European or international level as these are afforded the highest levels of policy protection. The Study Area also includes consideration of matters such as altitude and slope gradients, over which technical limitations would mean a route was unachievable.
- 4.5.2 The route options are then appraised against environmental criteria, including the length of the route options. As each route option is developed, its effect on the routeing considerations is recorded. At this stage, a route option may be rejected, modified or studied in more detail. In conjunction with the collection of relevant data and the evaluation of route options, the routeing considerations may be re-appraised and updated as more information becomes available. Route options may then be rejected or modified, or new route options developed.
- 4.5.3 This stage is iterative based on the findings of the appraisal and consultation responses and may result in modification to the routeing strategy and/or the route options which then require reappraising.

## **4.6 SELECTION OF PREFERRED ROUTE**

- 4.6.1 The comparative appraisal of route options leads to identification of an 'emerging preferred route' which is subjected to a technical review to confirm that the emerging preferred route is technically feasible. At this stage the emerging preferred route is subjected to a review of potential cumulative effects with other proposed connections within the Study Area, as outlined below. Following the cumulative review, with associated revisiting or modification of routes as necessary, the 'Preferred Route' is selected.
- 4.6.2 The Preferred Route is the option which is considered technically feasible and economically viable whilst causing the least disturbance to the environment and to people. This is then taken forward for stakeholder and public consultation. The Preferred Route is subjected to further consideration in response to public consultation and may be modified further in the light of these consultations. Modifications may result in further consultation if necessary.
- 4.6.3 The Preferred Route, modified to take into account consultations and the consideration of specific local issues, is then confirmed as the 'Preferred Route'. The Preferred Route is subjected to further environmental survey, detailed design and subsequent environmental appraisal, resulting in the further modifications required to avoid and/or minimise effects on the environment.

## 5 IDENTIFICATION OF ROUTE OPTIONS

### 5.1 ROUTEING STRATEGY

5.1.1 The Preferred Route should in principle be the shortest route which avoids steep gradients and technical constraints, and either avoids or minimises potential impacts to environmental factors. Cultural heritage assets are anticipated to be a key criterion in the routeing strategy as the area surrounding the Proposed Development is located within an area which contains several Schedule Monuments.

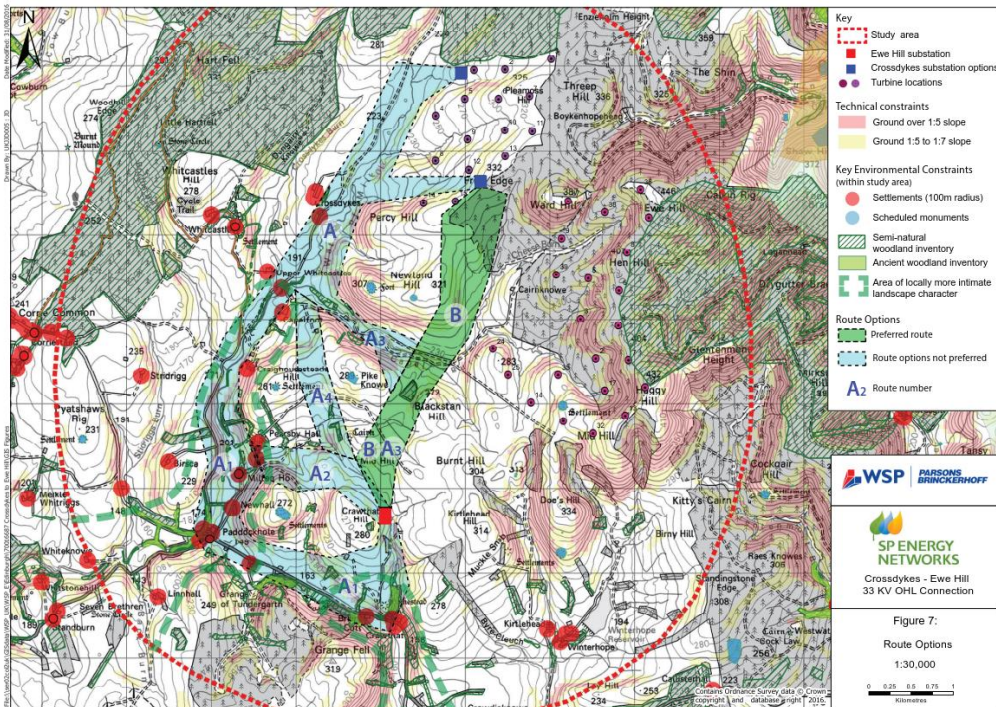
5.1.2 To limit adverse effects on the landscape, routes should, wherever possible, follow the grain of the landscape, avoiding high ground and ridgelines and generally following valleys so that the OHLs and poles are seen against a hill or forest backdrop. For the Hopsrig Wind Farm connection, the landscape is characterised by undulating topography, forestry, valleys and burns.

### 5.2 STUDY AREA

5.2.1 The proposed Hopsrig 132kV Collector Substation is located approximately 200m south-east of the Crossdykes Wind Farm Substation which is connected to Ewe Hill Substation by a 33kV OHL.

5.2.2 In 2016 a Routeing Study<sup>2</sup> (herein known as ‘Crossdykes Routeing Study’) was completed that considered technical and environmental factors and identified a Crossdykes OHL Preferred Route primarily from an environmental perspective. The Crossdykes Routeing Study ruled out potential routes following the valleys to the west of the Crossdykes and Ewe Hill substations, whilst the existing windfarm development constrained any route options to the east. The results of this routeing study considered the route options shown in **Plate 1** and concluded that the Crossdykes OHL Preferred Route was the then ‘Route B’.

#### Crossdykes Routeing Study – Route Options and Constraints



<sup>2</sup> WSP | Parsons Brinckerhoff (2016) Crossdykes To Ewe Hill Routeing Study | Preferred Route Report (Environmental)



- 5.2.3 In the course of landowner discussion and design development, it was identified that some sections of the Crossdykes OHL Preferred Route would not be able to accommodate the OHL, due to landowner issues. The Crossdykes OHL Preferred Route was revisited, and a revised route was identified and appraised<sup>3</sup>. This revised route was then adopted as the Crossdykes OHL Revised Preferred Route and is currently under construction.
- 5.2.4 The outcomes of the routeing study and appraisals undertaken for the Crossdykes Wind Farm to Ewe Hill Substation connection have been reviewed to help determine a search area for route options and the Study Area for the Proposed Development.
- 5.2.5 Based on the review of existing data from the Crossdykes Wind Farm studies the Study Area for the Proposed Development was identified as an area 1km either side of a straight line between the connection points, widened at the southern end to give a buffer of approximately 500m around the area with known landowner constraints; land on which there are existing exclusion zones for development placed on the landowner.
- 5.2.6 The Study Area is shown on **Figure 3** with an overview of the Study Area characteristics provided below.

#### CHARACTERISTICS OF THE STUDY AREA

- 5.2.7 The Study Area lies on the edge of the Southern Uplands. It is formed of generally broad rolling hills with summits at between 250m and 450m AOD with intervening valley floors generally at altitudes of between 150m to 200m. The proposed Hopsrig 132kV Collector Substation being located at approximately 300m AOD and Ewe Hill Substation at 250m.
- 5.2.8 The Study Area is characterised by undulating topography and comprises little flat land apart from along the valley bottoms. Hill slopes in the area are generally relatively gentle but there are a number of areas of steeper ground. It is also characterised by the presence of forestry and several small burns.
- 5.2.9 There are several watercourses, scattered throughout the Study Area including Tankers Gill, Grovegill Burn, Priestbutts Burn, Capel Burn, Papert Sike, Black Sike, Coon Burn, Seavy Sike, Cheese Burn and Carling Sike.
- 5.2.10 The area is sparsely populated with no settlements occurring within the Study Area and the closest residential property, Pearsby Hall, located approximately 500m west of the Study Area. There is a network of minor roads and farm, forest and windfarm access tracks throughout the Study Area.
- 5.2.11 There are two existing OHLs within the Study Area; Crossdykes Wind Farm OHL connection and the Gretna to Ewe Hill 132kV OHL connection. Crossdykes Wind Farm OHL connection is a 33kV wood-pole OHL connecting the Crossdykes Wind Farm Substation (located approximately 200m from the proposed Hopsrig 132kV Collector Substation) and the Ewe Hill Substation. This OHL is wholly located within the middle of the Study Area. The Gretna to Ewe Hill 132kV OHL connection is a 132kV wood-pole OHL connecting Gretna Substation and Ewe Hill Substation; this OHL is located in the south-west of the Study Area.

---

<sup>3</sup> SPEN (2019) Overhead Line Connection: Supporting Statement – Section 37 Application to Energy Consents Unit.

### 5.3 ROUTE OPTIONS

- 5.3.1 Given the nature of OHLs the primary environmental effects are likely to be landscape and visual effects, including effects on the setting of heritage assets. The best way to limit adverse effects on landscape and visual amenity is by careful line routeing, led by landscape architects, based on professional judgement and informed by fieldwork.
- 5.3.2 Holford Rules 1 and 2, as described above, form the basis for the landscape led identification of route options. In addition, Rules 4 and 5 of the Holford Rules identify that OHL infrastructure is judged to be more widely visible from surrounding areas when located on higher ground, for example ridges and skylines. Holford Rule 3 which states that, other things being equal, the most direct line should be chosen, with no sharp changes in direction, is also taken account of in identifying route options.
- 5.3.3 The nature of the topography and of the technical and environmental constraints within the Study Area between the proposed Hopsrig 132kV Collector Substation and the Ewe Hill Substation are documented in the Crossdykes Routeing Study and subsequent appraisals. These have been reviewed and informed the identification of four 'route options' as shown in **Figure 4**. In addition, a site visit undertaken by a landscape architect was undertaken on 7th May 2020 to inform the development of route options.
- 5.3.4 All route options have the same connection points commencing at the proposed Hopsrig 132kV Collector Substation and terminating at the existing Ewe Hill Substation.

## **6 BASELINE REVIEW**

- 6.1.1 To inform the appraisal of the identified Route Options and to ensure information used as part of this appraisal is up to date a review of the planning policy context, technical considerations and environmental considerations was undertaken. The results of this review are outlined below.

### **6.2 PLANNING POLICY CONTEXT**

#### **NATIONAL PLANNING POLICY**

##### **NATIONAL PLANNING FRAMEWORK 3 (NPF3) 2014**

- 6.2.1 The NPF3<sup>4</sup> sets out the spatial strategy for Scotland's development. There is a commitment to increase renewable energy generation by 2020. In order to facilitate this and enhance the development of onshore wind in rural areas, electricity grid enhancements will need to take place across Scotland. The improvement of the high voltage electricity transmission network of or in excess of 132kV is listed as a National Development.

##### **SCOTTISH PLANNING POLICY (SPP) 2014**

- 6.2.2 The SPP<sup>5</sup> was published in 2014 and reflects the Scottish Ministers' priorities for operation of the planning system and for the development and use of land.
- 6.2.3 Paragraph 155 states that "Development plans should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved, in line with national climate change targets, giving due regard to relevant environmental, community and cumulative impact considerations".

#### **LOCAL PLANNING POLICY**

- 6.2.4 The Local Development Plan (LDP) covering the Study Area is the Dumfries and Galloway LDP 2 (DGLDP2) (adopted October 2019)<sup>6</sup> and associated Supplementary Guidance<sup>7</sup>. The Supplementary Guidance provides further detail to what is included within DGLDP2 but directly relates to the policies included within DGLDP2.
- 6.2.5 DGLDP2 sets the spatial strategy in which to guide the future use and development of land in towns, villages and the rural area. It also provides a snapshot of where development should happen and where it should not. DGLDP2 sets out this strategy through planning policies, which outline the criteria by which proposals acceptability will be considered. The policies are structured around the themes of economic development, housing, historic environment, natural environment, community services and facilities, infrastructure and transport. DGLDP2 recognises the importance of delivering supporting infrastructure and that provision of infrastructure is fundamental to the deliverability of development proposals and ensuring that infrastructure and service improvement requirements can be met.
- 6.2.6 Table 6.1 highlights policies of the DGLDP2 relevant to topic areas considered in the routing study.

---

<sup>4</sup> The National Planning Framework (2014) Available [online] at: <<http://www.gov.scot/Publications/2014/06/3539>>

<sup>5</sup> Scottish Planning Policy (2014) Available [online] at: <<https://beta.gov.scot/publications/scottish-planning-policy/pages/2/>>

<sup>6</sup> The Dumfries and Galloway Local Development Plan 2 (2019), Available [online] at: <http://www.dumgal.gov.uk/ldp2>

<sup>7</sup> Dumfries and Galloway Council Local Development Plan 2 Supplementary Guidance (2020): Wind Energy Development: Development Management Considerations Available [online] at: <https://www.dumgal.gov.uk/article/17034/LDP2-Supplementary-Guidance>.

**Table 6.1: Policies from the LDPs which are relevant to this project**

LDP and Policy	Topic Areas
DGLDP2 OP1: Development considerations	Landscape and Visual Amenity, Cultural Heritage and Ecology, Ornithology and Geology
DGLDP2 HE1: Listed Buildings	Cultural Heritage and Archaeology
DGLDP2 HE3: Archaeology	Cultural Heritage and Archaeology
DGLDP2 HE4: Archaeologically Sensitive Areas	Cultural Heritage and Archaeology
DGLDP2 NE3: Species of International Importance for Biodiversity	Biodiversity
DGLDP2 NE4: Species of International Importance	Biodiversity and Geodiversity
DGLDP2 NE5: Sites of National Importance for Biodiversity and Geodiversity	Biodiversity and Geodiversity
DGLDP2 NE7: Forestry and Woodland	Ecology, Ornithology, Forestry
DGLDP2 NE7: Trees and Development	Ecology, Ornithology and Geology
DGLDP2 NE 11: Supporting the Water Environment	Water Environment
DGLDP2 NE12: Protection of Water Margins	Water Environment
DGLDP2 NE13: Agricultural Soil	Agiculture
DGLDP2 NE14: Carbon Rich Soil	Soils and Peat
DGLDP2 NE15: Protection and Restoration of Peat Deposits as Carbon Sinks	Peat
DGLDP2 OP1: Development considerations	Landscape and Visual Amenity, Cultural Heritage and Ecology, Ornithology and Geology

## 6.3 TECHNICAL CONSIDERATIONS

- 6.3.1 The key technical considerations identified within the Study Area are related to constructability; slope of the ground and construction access.
- 6.3.2 The technical requirements for wood pole OHLs become more onerous with altitude because of issues such as wind loading and icing risk. Altitudes below 200m are generally considered 'normal environments', and above 200m 'extreme environments' where a H-pole design is appropriate. As previously discussed, the majority of the Study Area is above 200m AOD.
- 6.3.3 Hill slopes in the area are generally relatively gentle but there are a number of areas of steeper ground. **Figure 5** shows the study area coloured by height which identifies the areas of steeper ground, between 15% and 20%, and over 20% gradient<sup>8</sup>.
- 6.3.4 The proximity of the OHL to the existing infrastructure has also been taken into consideration. There are two constraints to be considered as detailed in Energy Networks Association's document Separation between Wind Turbines and Overhead Lines<sup>9 10</sup> and summarised as follows:

<sup>8</sup> Gradients identified from OS Terrain 50 data which does not show small areas of steeper ground

<sup>9</sup> Energy Networks Association (2012): Engineering Recommendation L44, Separation between Wind Turbines and Overhead Lines Principals of Good Practice

<sup>10</sup> Energy Networks Association (2016): Technical Specification 43-8, Overhead Line Clearances

- OHLs cannot be located within topple distance of a wind turbine which equates to the wind turbine height to blade tip plus 10% or height to blade tip plus the electrical safety distance which is 2.3m for 132 kV OHLs.
- The downwind wake effect of wind turbines can cause increased levels of movement of the OHL conductors which in extreme cases could lead to conductor clashing. The effects are negligible at a distance of 3 times the rotor diameter of the wind turbine, although there is some flexibility in this depending on the intervening topography.
- OHLs should be designed to ensure sufficient safety clearance from existing OHL.

## 6.4 ENVIRONMENTAL CONSIDERATIONS

6.4.1 Environmental considerations were determined through gathering of baseline environmental information which was obtained from a number of sources as detailed in **Appendix B** and summarised below.

- Designated or sensitive sites from Scottish Natural Heritage (SNH), Scottish Forestry, Historic Environment Scotland (HES), Sustrans and Scottish Environment Protection Agency (SEPA);
- National Biodiversity Network (NBN) Atlas<sup>11</sup>;
- Landscape character assessments published by SNH;
- Ordnance Survey (OS) mapping (1:50,000 and 1:25,000) and aerial photography (Google Earth Pro, Google Streetview, Bing maps);
- Local Authority Planning Portal;
- LDP2 documentation and maps;
- Dumfries and Galloway Wind Farm Landscape Capacity Study (2016)<sup>12</sup> (DGWLCS);
- Publicly available Environmental Statements and studies for Hopsrig Wind Farm<sup>13</sup>, Crossdykes Wind Farm<sup>14</sup>, Loganhead Wind Farm<sup>15</sup> and the Crossdykes to Ewe Hill connection<sup>16</sup>;
- Crossdykes to Ewe Hill Overhead Line; pre-construction survey data collected in April 2020 by WSP; and
- Other local information through internet searches.

6.4.2 An overview of the baseline environmental information for relevant environmental aspects is provided below and are illustrated on **Figures 6 to 11**.

### LANDSCAPE

6.4.3 To inform the baseline information collected from desktop sources a site visit was undertaken by a landscape architect on 7th May 2020.

### LANDSCAPE AND LANDSCAPE-RELATED DESIGNATIONS

6.4.4 There are no national or local landscape or related designations within the Study Area, or close enough to be potentially indirectly affected by the Proposed Development.

---

<sup>11</sup> Only datasets which allow commercial use have been used.

<sup>12</sup> Dumfries and Galloway Wind Farm Landscape Capacity Study (2016), Revised and Updated Study Report – EEI Committee, Carol Anderson Landscape Associates.

<sup>13</sup> MacArthur Green (2016). Hopsrig Wind Farm Environmental Statement. Available at: <https://www.energyconsents.scot>

<sup>14</sup> Muirhall Energy Ltd. (2014). Crossdykes Wind Farm Environmental Statement. Available at: <https://www.energyconsents.scot>

<sup>15</sup> Muirhall Energy Ltd. (2015). Loganhead Wind Farm Environmental Statement Available at: <https://muirhallenergy.co.uk/portfolio-items/loganhead/>

<sup>16</sup> SPEN (2019) Crossdykes to Ewe Hill Grid Connection. Available at: <https://www.energyconsents.scot>

## TOPOGRAPHY

- 6.4.5 The Study Area covers an area of rolling land between approximately 200m and 320m AOD, cut principally, and about midway between the Hopsrig Collector and Ewe Hill substations, by the valleys of the Capel Burn and its tributaries which flow west to the Water of Milk at Capelfoot. Parts of these valleys are quite deeply incised. Whilst parts of the valley sides are relatively steep, generally more so to the west of the Study Area, the hill tops are in the main very gently rounded.
- 6.4.6 The proposed Hopsrig 132kV Collector Substation lies at approximately 320m AOD on the south flank of the ridge named Friar Edge, which links Threep Hill to Newland Hill. Ewe Hill Substation lies at an altitude of approximately 250m AOD on the eastern flank of Crawthat Hill.

## LANDSCAPE CHARACTER

### **Scottish Natural Heritage Landscape Character Assessment**

- 6.4.7 The landscape character of Scotland has been classified and assessed in a series of studies coordinated by SNH. The study area is covered by the Dumfries and Galloway Landscape Character Assessment. In 2019 existing studies were reviewed and consolidated into a single online map of the Landscape Character Types (LCTs) of Scotland<sup>17</sup>.
- 6.4.8 The Study Area falls across three LCTs: Foothills - Dumfries & Galloway, Foothills with Forest - Dumfries & Galloway and Southern Uplands with Forest - Dumfries & Galloway (see **Figure 6**).
- 6.4.9 The current SNH database gives a landscape character description and summarises the key characteristics of each LCT. The original Dumfries & Galloway landscape character assessment included this information, however it also outlined the key forces for change acting on them, and provides guidance related to the potential effect of the forces for change on the key landscape characteristics.
- 6.4.10 The Foothills with Forest LCT is at the north-west boundary of the Study Area only, is considered not to be affected and therefore is not considered further.

#### *Foothills - Dumfries & Galloway LCT*

- 6.4.11 The character of this landscape is described as:
- “The foothills are found at heights of between 170 and 250 metres. They are generally undulating with gently rounded summits in the east and craggier peaks in the west, for example, around Cairnharrow, where the influence of the underlying granite is apparent. This landscape is dissected by many streams, which have cut incisions into the landscape. Views within this landscape are not usually extensive. A few plateau areas and upland basins are found among the foothills.”*
- 6.4.12 The landscape character assessment identifies this landscape type as having the following key characteristics:
- generally undulating land between 170 & 250 metres, with rounded peaks. Higher in the west, up to over 350m with craggier peaks;
  - foothills dissected by incised valleys;
  - semi improved pasture enclosed in medium – large fields by stone walls. Grazed by sheep & cattle. Some rough pastures and heath on higher ground;
  - trees in sheltered pockets with some copses on tops of hills;
  - many scattered farmsteads and small settlements;

---

<sup>17</sup> Scottish Landscape Character Types Map and Descriptions. Available online at: <https://arcg.is/m85Sq> [Accessed May 2020]



- network of minor roads; and
- numerous archaeological sites particularly Bronze Age funerary and ritual sites and Iron Age settlements and forts.

6.4.13 The landscape character assessment from the 2019 online LCTs of Scotland map no longer includes guidelines for development. However, the original landscape character assessment<sup>18</sup> included the following guidelines which are considered relevant to the routing of an OHL in this landscape type:

- Maintain and reinstate tree lines and hedgerows; and
- Potential siting of wind turbines should attempt to use adjacent forested landscapes to aid screening and backclothing.

*Southern Uplands with Forest - Dumfries & Galloway LCT*

6.4.14 This LCT is described as being typical of the higher parts of the Southern Upland range, ranging between 200m and 500m and is “characterised by large smooth domed or slightly conically shaped hills. This is a large-scale landscape, although there is some confinement between the peaks. The hill slopes are generally smooth but there are some incised gullies, rock outcrops, and screes”. The Southern Uplands generally lack walled enclosures and have an exposed, remote quality. There are few trees, mostly confined to the more sheltered courses of incised burns but large areas of forestry. The visual influence of these forests extends over considerably larger areas than those shown on OS mapping. The forestry is predominantly Sitka spruce and the rotational nature of forest management provides long term textural and colour changes related to the felling and replanting coups.

6.4.15 Key characteristics of the Southern Uplands landscape include:

- large, smooth dome-shaped hills with large scale dark green forests on slopes and over lower summits;
- predominantly simple, gently rolling landform;
- some areas of more complex and smaller-scale landscapes, with steep slopes enclosing heads of valleys and/or where uplands remain open;
- changing landscapes with large scale forestry operations and wind farm development;
- forested areas dominated by Sitka Spruce, interspersed with mixed conifers and broadleaf planting, and undergoing felling and replanting in large coupes;
- wind farms are a key characteristic in some areas; and
- expansive scale.

6.4.16 There are no guidelines in the original or updated LCA relevant to the routing of an OHL in this landscape type.

---

<sup>18</sup> Land Use Consultants (1998) SNH Review 94 – Dumfries and Galloway landscape assessment  
<https://www.nature.scot/snh-review-94-dumfries-and-galloway-landscape-character-assessment>

### **Local Landscape Character Assessment**

- 6.4.17 The description of the Foothills LCT fits the whole of the Study Area. Whilst the 2019 online LCTs of Scotland map suggests a distinct boundary between the different LCTs, the site visit identified that there is a very subtle change in character with the eastern, upper edges of the 'Foothills' merging into the 'Southern Uplands with Forestry'. Locally, the character variation within the SNH LCTs are greater than the differences between the parts of the Study Area defined as being of a different character type<sup>19</sup>.
- 6.4.18 With the exception of the forestry plantation at the northern end of the Study Area, the landscape is a simple one of rolling terrain, with some areas of steep valley sides but flat, rounded tops. It is almost entirely given over to rough grazing and it is criss-crossed by windfarm roads and farm tracks. Outwith the plantation, trees are primarily limited to small blocks mainly of conifers, some designed to provide shelterbelts. The turbines of the adjacent Ewe Hill Windfarm are a defining characteristic of the eastern half of the Study Area, even though not within it. The lower parts of the western edge of the Study Area, towards Pearsby Hall have a more pastoral character.

### **LANDSCAPE SENSITIVITY AND CAPACITY**

- 6.4.19 Landscape sensitivity refers to the degree to which the landscape is sensitive to the change brought about by the introduction of development, and thus how likely it is that a given change would lead to a considerable effect on landscape character. Judgements on the sensitivity of a given landscape are based on a combination of its susceptibility to change brought about by the development and the values accorded to the landscape<sup>20</sup>.
- 6.4.20 Landscape sensitivity is development-specific i.e. it is a function of the type of development (its particular form and characteristics), how this affects the landscape directly (physical changes) and how this affects it indirectly (perceptual effects on how the character of the landscape is appreciated).
- 6.4.21 Key factors that contribute to the sensitivity of landscape include underlying physical aspects such as landform and scale; human aspects such as land use and land cover; and perceptual aspects, particularly the degree of wildness and perceived naturalness. These factors, which draw on the principles of the Holford Rules, are taken into account both in the identification of route options and in the appraisal.
- 6.4.22 The sensitivity of the local landscape to the introduction of wood pole overhead lines was considered during previous work on the Crossdykes to Ewe Hill connection and in field observations as part of this study<sup>21</sup>.

---

<sup>19</sup> (for example, the difference between the character valley of the Water of Milk below Craighousesteads and the character of Papert Hill at the edge of the Ewe Hill windfarm, both within the same LCT, is far greater than the difference between Pearsby Hill and Newland Hill, within different LCTs).

<sup>20</sup> Guidelines for Landscape & Visual Impact Assessment, Landscape Institute & IEMA, 3rd Edition 2013

<sup>21</sup> A site visit undertaken by a landscape architect was undertaken on 7th May 2020.



6.4.23 As noted above, the landscape of the Study Area is a simple one of rolling terrain, with some areas of steep valley sides but flat, rounded tops. Except for the forestry plantation, it is almost entirely given over to rough grazing. Whilst relatively remote (there is little settlement visible from within the area) it is a noticeably ‘tamed’ and man-influenced landscape, criss-crossed by windfarm roads and farm tracks, fenced and actively grazed, and influenced by the presence of the adjacent wind turbines and the existing wood pole overhead lines. The introduction of an additional 132 kV wood pole OHL would be a noticeable change, increasing the more obvious human influence on the landscape, but is unlikely to affect its defining characteristics. As such, the local landscape is considered to be of low sensitivity to the Proposed Development.

#### VISUAL AMENITY

- 6.4.24 The Study Area is located in a remote and sparsely populated part of the Southern Uplands, approximately equidistant between Lockerbie and Langholm.
- 6.4.25 There are no recognised walking routes or ‘destination’ summits in the Study Area, and there are no national or regional walking routes.
- 6.4.26 There are no sensitive visual receptors within the Study Area, although the property at Cainknowe is currently being renovated. Within the wider area there are a small number of visual receptors who may have a view of the Proposed Development. These are:
- scattered residential properties in the valley of the Water of Milk, between Paddockhole and Crossdykes;
  - recreational users of the minor road up the valley of the Water of Milk, which is part of the National Byway, a signed leisure cycling route; and
  - visitors to the Castle Milk Estate, north-west of the Study Area above Whitcastle (a privately-owned woodland with recreational walking and cycle trails and picnic areas, listed on the Woodland Trust website, and traversed by a core path which runs from by Craighousesteads to Hart Fell).
- 6.4.27 There are no defined settlements (clusters of five or more houses) within the Study Area.
- 6.4.28 The visual receptors within and surrounding the Study Area are shown on **Figure 7**.
- 6.4.29 The nature of the views available in the Study Area is predominately determined by of topography, with forestry cover affecting the northern part of the Study Area. There are open panoramic views available from the higher ground. In the lower ground, views are mostly focussed along the valleys and are relatively enclosed.

#### CULTURAL HERITAGE

6.4.30 There are a number of designated Cultural Heritage assets identified within 3km of the route options. These are listed in the following table and shown on **Figure 8**:

**Table 6.2 Cultural Heritage Designations within 3km**

Designation Type	Features present in within 3km of the route options
Scheduled Monument (SM)	<ul style="list-style-type: none"> <li>• Birrens Hill, enclosure and farmstead (SM645);</li> <li>• Mid Hill, settlement (SM12666);</li> <li>• Newland Hill, settlement (SM12667);</li> <li>• Kirtlehead, unenclosed settlement (SM12621);</li> <li>• Kirtlehead, ring ditch house (SM12720);</li> <li>• Does Hill, settlement (SM12739);</li> <li>• Pearsby Hill, enclosures and settlement (SM12674);</li> </ul>

Designation Type	Features present in within 3km of the route options
	<ul style="list-style-type: none"> <li>• Black Esk Bridge, farmstead and cultivation remains (SM4693);</li> <li>• Newhall Hill, enclosures (SM3963);</li> <li>• Newland Hill, fort (SM3964);</li> <li>• Seven Bretheren, stone circle (SM639);</li> <li>• Phyatshaws Rig, settlement (SM2289);</li> <li>• Craighousesteads, fort (SM2330); and</li> <li>• Camp Hill, fort (SM647).</li> </ul>
Listed Building	<ul style="list-style-type: none"> <li>• Whitecastles House (LB9876) Category C Listed;</li> <li>• Paddockhole Bridge (LB9917) Category C Listed; and</li> <li>• Milton House (LB16913) Category B Listed.</li> </ul>
Archaeologically Sensitive Areas	<ul style="list-style-type: none"> <li>• Tanlawhill Archaeologically Sensitive Area; and</li> <li>• Boyken Burn Archaeologically Sensitive Areas.</li> </ul>
Garden and Designed Landscape	None
Conservation Area	None
Inventory Battlefield	None
Historic Marine Protected Area	None
World Heritage Site	None

- 6.4.31 The assets with particular sensitivities relating to potential adverse impacts on Setting include Craighousesteads Fort, and its key views towards Newland Hill fort, and the site of Kirtlehead unenclosed settlement, and the potential for impacts from the introduction of infrastructure in close proximity of the monument.
- 6.4.32 There are numerous undesignated cultural heritage assets (sites that include all other known archaeological sites, listed within the national SMR, and local Historic Environment Record (HER) databases, as well as any cultural heritage site that is yet to be discovered) scattered across the Study Area, with approximately 33 sites listed within the HER.

#### ECOLOGY AND ORNITHOLOGY

- 6.4.33 Existing data available from the Study Area and wider landscape has been collected, reviewed and documented in an Ecological Desk Study Report presented in in **Appendix C**. The Ecological Desk Study Report details the full methods and results of the data review and collection exercise.
- 6.4.34 No field surveys have been undertaken to specifically inform the routeing appraisal. Dedicated habitat and protected species surveys would be undertaken of the Preferred Route to inform further design and impact assessment.

#### RECREATION AND TOURISM

- 6.4.35 There are no major tourist attractions within the Study Area, however the recreation and tourism features within the wider area include:
- Minor road up the valley of the Water of Milk, which is part of the National Byway, a signed leisure cycling route, located approximately 400m west of the Study Area;

- Core Path 309<sup>22</sup>, Corrie Common to Hart Fell loop, located approximately 1.1km west of the Study Area;
- Cycle trails and picnic areas within Castle Milk Estate, a privately-owned woodland located approximate 1.2km west of the Study Area; and
- A number of recreational fishing opportunities.

6.4.36 The recreation and tourism features surrounding the Study Area are shown on **Figure 7**.

#### LAND USE

6.4.37 The land use features within the Study Area are illustrated on **Figure 9**.

6.4.38 The James Hutton Institute: Macaulay Maps show the Land Capability for Agriculture (LCA) classification within the Study Area varies from LCA class 6.3, land capable of rough grazings with low quality plants, in the north, to LCA classes 5.1 to 5.3, land capable of use as improved grassland, in the central and southern sections. As such, the Study Area has limited capability to support agriculture and it is unlikely that the effect on agriculture would be a determining factor in route selection.

6.4.39 The Study Area is located within a Ministry of Defence (MoD) high priority low flying zone.

6.4.40 Relevant developments within Study Area, recorded between 20<sup>th</sup> May 2015 and 20<sup>th</sup> May 2020, were identified by searching Dumfries and Galloway planning portal. Information was gathered on the location of the planning application boundary and information about the planning application. One valid planning application, shown below, has been identified within the north-west of the Study Area:

*18/1706/FUL | Erection of 10 Wind Turbines, 1 Meteorological Mast (80m High), Control Room and Sub Station Building, Temporary Concrete Batching Plant, Formation of 2 Borrow Pits, 2 Temporary Construction Compounds, Crane Standings, New Access onto C80A, Access Tracks and Associated Works | Land Forming Part Of Crossdykes Farm, Approximately 11km North-West Of Langholm And Approximately 13km North-East Of Lockerbie | Status: Unknown | Decision: Grant Conditionally with Legal Agreement | Decision Issue Date: Tue 10 Sep 2019.*

#### FORESTRY AND WOODLAND

6.4.41 There are large areas of coniferous forestry plantation across the higher ground in the north-east of the Study Area and smaller blocks of plantation in the south and south-east, again generally on the higher ground. There has been no consultation to date with the forest owner.

6.4.42 Non-commercial forestry has been identified where timber is unlikely to be the dominant objective. These areas of trees may be principally to shelter stock or for landscape diversification. Size of the woodland block or tree belt was a consideration in this categorisation. The importance of these areas to provide an occasional timber resource is not discounted, rather optimisation and harvest planning may be less actively pursued.

6.4.43 In the lower parts of the Water of Milk valley there is a network of mostly deciduous shelterbelts. Almost all of these shelterbelts are identified on the Ancient Woodland Inventory Scotland. The narrower belts are mainly deciduous but a number of the slightly larger blocks have been converted to conifer plantations. The nearest ancient woodland, an unnamed woodland of 2.9ha, lies 0.5km south of the Ewe Hill Substation, which is shown on **Figure 9**.

---

<sup>22</sup> As shown on the Dumfries and Galloway Council Core paths: walking and cycling in Dumfries and Galloway Map viewer available at: <https://info.dumgal.gov.uk/mapviewers/pathsmap.aspx>

## GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

6.4.44 The geology, hydrology and hydrogeology features within the Study Area are shown on **Figure 10**.

### SURFACE WATER AND FLOOD RISK

6.4.45 The Study Area falls within the River Annan catchment and the Gretna Coastal catchment. There are several unclassified watercourses scattered throughout the Study Area including: Tankers Gill, Grovegill Burn, Priestbutts Burn, Capel Burn, Papert Sike, Black Sike, Coon Burn, Seavy Sike, Cheese Burn and Carling Sike.

6.4.46 Kirk Burn flows north to south, at the south of the Study Area and the Water of Milk flows north to south, immediately west of the Study Area. These watercourses are classified by SEPA under the Water Framework Directive, with Kirk Burn (ID: 10668) being classified as having a 'Good' Overall status in 2018 and the Water of Milk (ID: 10646 - u/s Corrie Water Confluence) being classified as having a 'Poor' Overall status in 2018.

6.4.47 There is one area at risk of flooding from rivers located within the Study Area. This area is associated with the Capel Burn and is an area with both Medium and High likelihood of flooding. In addition, there are several small areas with a High likelihood of flooding from surface water, associated with watercourses outlined above, throughout the Study Area.

### GEOLOGY

6.4.48 The majority of the Study Area is underlain by glacial till and sedimentary bedrock. Higher ground is free from superficial cover with the exception of small areas of peat. Alluvium underlies rivers and streams.

### PEAT AND GWDTE

6.4.49 Peat deposits have been identified within the Study Area by consulting the following sources:

- The SNH Carbon and Peatland Map<sup>23</sup> is a GIS vector dataset covering Scotland. This map has been derived using a matrix of soil carbon categories (derived from Soil Survey of Scotland maps) and peatland habitat types (derived from the Land Cover of Scotland 1988 map). This dataset categorises areas of carbon-rich soils, deep peat and priority peatland habitat in terms of importance.
- The James Hutton Institute: National soil map of Scotland<sup>24</sup>. This online map shows the distribution of the main soil types across the whole of Scotland.
- British Geological Survey (BGS) Superficial Deposits mapping<sup>25</sup> indicates superficial deposits in Britain.

6.4.50 Based on SNH mapping, one cluster of Class 1 SNH Peatland ('nationally important carbon-rich soils, deep peat and priority peatland habitat') is located within the south-east of the Study Area. Large areas of Class 5 SNH Peatland (no peatland habitat recorded, may include areas of bare soil, soils are carbon-rich and deep peat) are also found, alongside some pockets of Class 3 SNH Peatland (not priority peatland habitat, occasional peatland habitats, most soils are carbon-rich, some areas of deep peat).

<sup>23</sup> SNH (2016) Carbon and Peatland Map [online] Available at: <https://www.nature.scot/professional-advice/planning-and-development/natural-heritage-advice-planners-and-developers/planning-and-development-soils/carbon-and-peatland-2016> [Accessed in May 2020].

<sup>24</sup> The James Hutton Institute (2017). Soil Mapping [online] Available at: [http://map.environment.gov.scot/Soil\\_maps/?layer=1](http://map.environment.gov.scot/Soil_maps/?layer=1) [accessed 13th May 2020].

<sup>25</sup> BGS. Geoindex Onshore. Superficial Deposits Map [online] Available at: <http://mapapps2.bgs.ac.uk/geoindex/home.html> [Accessed in May 2020].

- 6.4.51 BGS mapping indicates the presence of Quaternary Peat superficial deposits across the Study Area, predominantly at the headwaters of the burns within the Study Area including Priestbutts Burn, Dalbate Burn, Capel Burn, Seavy Sike and Water of Milk.
- 6.4.52 Groundwater within the Study Area is described as being associated with the Annandale bedrock and localised sand and gravel aquifers. The groundwater quantity and chemistry status of the aquifers was classified by SEPA as 'Good' in the 2018 and resulted in an overall status of 'Good'. No specific pressures on these aquifers were identified.
- 6.4.53 Groundwater Dependent Terrestrial Ecosystems (GWDTE) have previously been identified in this region, including descriptions within the Crossdykes Wind Farm ES. GWDTE have been covered in more detail in the Ecological Desk Study Report presented in in **Appendix C**. We will review ecology data in due course in relation to groundwater dependency in particular settings.

### WATER SUPPLIES

- 6.4.54 There are no public water supplies present within the Study Area.
- 6.4.55 Information regarding private water supplies (PWS) has been gathered from the Drinking Water Quality Regulator (DWQR) for Scotland<sup>26</sup> data and information available from Crossdykes Wind Farm ES. The DWQR website has identified Crawthat House Waterbeck PWS, which is located just outwith the southern Study Area boundary on the southern slopes of Crawthat Hill. The Crossdykes Wind Farm ES has identified Crossdykes PWS which serves three properties and is located within the Study Area to the north-east of Percy Hill.

---

<sup>26</sup> DWQR (2019). Private Water Supplies mapping [online]. Available from: <https://dwqr.scot/private-supply/> [Accessed May 2020].

## **7 APPRAISAL OF ROUTE OPTIONS**

### **7.1 APPRAISAL METHODOLOGY**

**7.1.1** The objective of the appraisal of the route options is to identify a Preferred Route for the Proposed Development, in a comparable, documented and transparent way. As outlined in the Routeing Strategy, where the characteristics of the Study Area are such that they required to be balanced to enable the overarching Routeing Objective to be met, professional judgement by appropriately qualified environmental professionals, informed by both desk studies and field work, and reflecting the Holford Rules, will be employed to identify the Preferred Route. This professional judgement will be made on a case by case basis.

**7.1.2** The process also seeks to:

- continue to reflect the overall Routeing Objective and Routeing Strategy;
- continue to reflect SPEN's Approach to Routeing and EIA document;
- continue to reflect the Holford Rules for Routeing Overhead Transmission Lines; and
- draw out distinctions between the routes to enable the relative strengths and weaknesses of each to be identified.

**7.1.3** The comparative appraisal of route options is undertaken in stages as set out below:

- (i) identification of appraisal criteria, together with their reasoning for inclusion;
- (ii) application of appraisal criteria to each route option, following the appraisal methodology;
- (iii) comparative appraisal of route options to identify a Preferred Route;
- (iv) SPEN technical review, reflecting system design requirements; and
- (v) cumulative appraisal with other OHL connections within the Study Area.

### **7.2 APPRAISAL CRITERIA**

**7.2.1** Based on the established practice for the OHL routeing and the routeing considerations for the Proposed Development, the route options are appraised using the following criteria, which continue to reflect the key considerations of the routeing methodology. The reasoning for the use of these criteria and an outline of the methodology for appraising each route option is outlined below.

#### **LENGTH OF ROUTE**

**7.2.2** Route length is considered as an appraisal criterion because generally the longer the line, normally the more resources are required to construct it and the more potential it has to result in considerable environmental effects. Whilst direct quantitative comparisons cannot be made, other things being equal, a 10km route is likely to be visible from, and affect the environment over, twice the area of a 5km route.

#### **LANDSCAPE**

**7.2.3** Landscape is considered as an appraisal criterion given the primary environmental effects of OHLs are likely to be landscape and visual effects.

**7.2.4** The landscape appraisal took into account the landscape character and sensitivity of the different landscape character types affected (as identified in Section 6.4), the degree to which the route options and potential alignments within the route option could be considered to fit the grain and form of the landscape, and the degree to which the options conformed to the Holford Rules, particularly rules 4 and 5 (rules 1 to 3 were considered in the identification of route options). Consideration was given not only to the route itself but to the potential requirements for construction access tracks.



- 7.2.5 Because landscape was a key factor in developing the route options, the differences between them is relatively limited. The appraisal therefore takes a qualitative approach, drawing out the key differences between the route options.

#### VISUAL AMENITY

- 7.2.6 Visual amenity is considered as an appraisal criterion given the primary environmental effects of OHLs are likely to be landscape and visual effects. Consideration was given to the potential visibility of the OHL of each Route Option from the sensitive receptors as set out in Section 6.4.
- 7.2.7 As part of this, the degree to which an OHL would actually be perceptible was taken into account. Studies have been undertaken by a number of landscape practitioners<sup>27</sup>. These suggest that wood poles may be perceived in most circumstances up to a distance of about 1.5km, and that poles are not generally perceived beyond 6km. The degree to which poles are perceived depends on whether they are seen against a backdrop or against the sky, the age of the line (new poles are dark and tend to blend in well, whilst older poles weather to a light silver-grey and can be more visible in the middle distances), and the design of the pole (H-poles tend to be more noticeable than single poles).
- 7.2.8 Taking this into account and taking account of screening provided by woodland and built form, the appraisal identified the receptors sufficiently close to each of the Route Options to be at risk of considerable adverse effects on visual amenity. This was undertaken through a combination of desk study and fieldwork.

#### CULTURAL HERITAGE

- 7.2.9 Given the presence of cultural heritage assets within, and surrounding, the Study Area as summarised in Section 6.4 it is considered as an appraisal criterion.
- 7.2.10 The proximity of the route options to cultural heritage assets (as identified in Section 6.4) was investigated. Designated Cultural Heritage assets were identified within the Route Options and/or within a 3km buffer of the Route Options; other undesignated cultural heritage assets were identified where located either partially or fully within each of the Route Options.
- 7.2.11 For the statutorily protected designated assets, Setting effects were considered taking account of the type and aspect of the feature and its citation. Where no assets were located within the Route Option and 3km buffer, or where there were assets which are avoidable and have no Setting issues, it was concluded that there were unlikely to be any significant effects.
- 7.2.12 Potential for significant effects which may be avoidable are identified where the route is contained within a broad designation (such as an Archaeologically Sensitive Area, which does not relate to a specific feature); or where there is the potential for Setting effects on an asset out with the main route (i.e. within the 3km buffer); or a Cultural Heritage asset could not be entirely avoided but can be traversed. A higher risk of effects are likely where the route was in close proximity to a designated asset and Setting effects were likely, or where a Cultural Heritage asset could not be avoided or traversed.

---

<sup>27</sup> D Horn, I McAulay and M Turnbull (May 2010) High Voltage Wood Pole Transmission and Distribution Main Interconnector Lines in Rural Landscapes: Perceptibility

## ECOLOGY AND ORNITHOLOGY

7.2.13 Given the presence of ecological receptors within, and surrounding, the Study Area it is considered as an appraisal criterion. Information for ecological receptors considered as part of the appraisal has been collected and reviewed from existing data available from the Study Area and wider landscape. This information is documented in an Ecological Desk Study Report presented in in **Appendix C** which details the full methods and results of the data review and collection exercise. The following biodiversity factors (sub-criteria) have been considered as part of the appraisal:

- Areas of nature conservation interest, including statutory designations and non-statutory, local designations.
- Sensitive habitats, including bog and mire habitats, and those likely to be GWDTEs.
- Confirmed presence of protected or notable (e.g. Scottish Biodiversity List) species; and suitable habitat for protected or notable species.

7.2.14 Although each of the Route Options is considered to have the potential to affect the biodiversity factors outlined below, they have not been used to inform the appraisal as there is no significant disparity between Route Options based on available data:

- Statutory designated sites: Castle Loch Special Area Special Protection Area (SPA) (and Ramsar site) and Upper Solway Flats and Marshes SPA (and Ramsar site) are located relatively equidistant from each route option. There is not anticipated to be connectivity for the qualifying interests of these designated sites (primarily goose species) to the Study Area. SNH confirmed via email on 12/05/2020 that the works would be sufficiently far from these SPAs and of a small scale, thus there would be no likely significant effects on the SPAs. No other statutory designated sites have been identified with connectivity to the Study Area.
- Non-statutory designated sites: There are no non-statutory designated sites within 2km of each Route Option.
- Reptiles: Habitats and features suitable to support reptiles are abundant across the Study Area; multiple sightings of common lizard *Zootoca vivipara* have been reported. There is no disparity between route options regards to reptiles given they are mobile species, habitats are abundant, their shelters are not legally protected, and either of the Routes will have a localised footprint.
- Amphibians: Habitats and features suitable to support common amphibians are abundant across the Study Area, including marshy grassland; sightings of common frog *Rana temporaria* have been reported. There are no suitable habitats to support great crested newt *Triturus cristatus* (not considered a 'common' amphibian, in the geographical context of the Study Area). There is no disparity between route options regards to common amphibians given they are mobile species, their shelters are not legally protected, habitats are abundant, and either of the Routes will have a localised footprint.
- Water vole *Arvicola amphibious*: No evidence of water vole has been recorded to date during any surveys undertaken with the Study Area or wider area for neighbouring developments. Watercourses crossed by the Crossdykes to Ewe Hill OHL have been considered generally unsuitable for water vole. Assuming homogenous characteristics of the watercourses within the Study Area, water vole are considered unlikely to represent a material constraint for this routeing appraisal.
- Other Invertebrates: Habitats encountered within the Study Area are generally damp and likely to support aerial invertebrate activity. Watercourses are likely to support aquatic invertebrates. No notable species have been reported to date. There is no disparity between route options regards to terrestrial or aquatic invertebrates (other than freshwater pearl mussel separated above) given they are mobile species, habitats are abundant, and the OHL will have a localised footprint.



- 7.2.15 A high-level evaluation of each receptor present/potentially present was undertaken in order to inform the comparison of the route options and qualify preference between each option. The high-level evaluation included consideration of value, rarity and susceptibility to impact from OHL development, amongst other factors.

#### RECREATION AND TOURISM

- 7.2.16 The effects on recreation and tourism have been appraised within the visual amenity topic as no major tourist attractions are located within the Study Area. Therefore, no direct effects have been identified and effects relate to the visual experience of the recreational user. Temporary diversions during construction would be managed through the construction environmental management process.
- 7.2.17 Recreation and tourism is therefore not considered further in the route appraisal below.

#### LAND USE

- 7.2.18 The land use topic covers several features including existing and committed developments, valid planning applications, agricultural land and woodland. Woodland is not considered as part of this appraisal as it is included within the Forestry and Woodland appraisal.
- 7.2.19 As shown in Section 6.4 the only land use receptors within the Study Area include agricultural land (rough grazings with low quality plants and improved grassland with limited capability to support agriculture) and one valid planning application for Crossdykes Wind Farm (18/1706/FUL). A relative comparison of each route option against these receptors was completed in order to qualify preference between each option.

#### FORESTRY / WOODLANDS

- 7.2.20 Given the presence of woodland within, and surrounding the Study Area it is considered as an appraisal criterion. This criterion has been split into commercial forestry and non-commercial woodland. The ability to avoid the identified areas of commercial forestry and non-commercial woodland has been used as a main factor to differentiate between route options.

#### GEOLOGY, HYDROLOGY AND HYDROGEOLOGY.

- 7.2.21 The geology, hydrology and hydrogeology topic covers different features including flood risk, private water supplies, peat and GWDTE. Given the presence of these features within, and surrounding the Study Area these criteria are considered as part of the appraisal below with the exception of GWDTE, as this is already included within the Ecology and Ornithology appraisal.

#### FLOOD RISK

- 7.2.22 River flood risk has been considered in the route option appraisal. Although wood poles can be constructed within flood plains, there are potential risks associated with river erosion and subsequent ground instability which may make these options less favourable. The appraisal involved a review of SEPA flood risk maps<sup>28</sup> indicating watercourse crossings and the level of flood risk surrounding each route.

---

<sup>28</sup> SEPA (2018). Flood Maps [online] Available at: <http://map.sepa.org.uk/floodmap/map.htm> [Accessed 6th March 2020].

### PRIVATE WATER SUPPLIES

7.2.23 The appraisal included a review of DWQR for Scotland data and information available from Crossdykes Wind Farm ES. The ability to avoid the PWS catchments has been used as a main factor to differentiate between route options.

### PEAT

7.2.24 In relation to peat, the appraisal focusses on the Class 1 and 2 peatland habitats from the SNH Carbon and Peatland mapping and the James Hutton Institute National Soil Map of Scotland. However, peat data is based on third party sources and there remains potential for peat to be present across all routes. Where there are small pockets of Class 1 peat which cannot be avoided, this has been noted as potential to have considerable effects. Where there are extensive areas of peat which are also unavoidable, this is noted as having a higher potential for effects.

## 7.3 APPRAISAL OF ROUTE OPTIONS

7.3.1 The findings of the detailed appraisal for the route options for each criterion are outlined below. No weightings have been applied to each criterion. The route options and the key environmental constraints are shown on **Figure 3**.

### LENGTH OF ROUTE

Route A	Route B	Route B1	Route B2
4.8km	5.0km	4.2km	4.0km

### LANDSCAPE APPRAISAL

7.3.2 All of the Route Options cross the Southern Uplands - with Forest and Foothills LCTs, although in this area the boundary is almost indistinguishable. Overall, the potentially affected landscape is a large scale almost unpopulated landscape of rounded hills, but very noticeably influenced by the presence of wind farm and electricity transmission infrastructure.

7.3.3 Towards the west, the valley of the Priestbutts Burn is more enclosed, settled and pastoral in nature. The two Crossdykes 33kV OHLs under construction locally increase the presence and influence of infrastructure on the landscape. The sensitivity of the landscape to the type of development proposed is Low. However, the Priestbutts Burn valley would be more sensitive.

7.3.4 Route Option A would cross the valley of the Priestbutts Burn and overall, the line would be a reasonable if not good 'landscape fit'. By following the existing OHLs this would intensify the effect on a landscape already affected by OHL development but avoid 'spreading' the effect more widely.

7.3.5 Route Option B stays on the more open rougher grazing areas avoiding the slightly more enclosed, settled and pastoral landscape of the Priestbutts Burn valley. Overall, Route Option B would be a good 'landscape' fit except locally at Burnt Hill (north-east of Ewe Hill Substation). By diverging from the existing OHLs this route would spread the urbanising effect of OHL more widely but avoids the slightly more sensitive landscape.

7.3.6 Routes B1 and Route Option B2 would have similar effects to Route Option B but take a more direct line to connect to Ewe Hill Substation and take advantage of some subtle topographical features to improve the 'landscape fit'.

### VISUAL AMENITY APPRAISAL

- 7.3.7 Route Option A is likely to be noticeable from the group of residential properties at Pearsby Hall. It is also likely to be visible from Crossdykes although in the context of the new windfarm. It would also be glimpsed by users of the National Byway (the minor road up the Water of Milk, to the west of the Study Area).
- 7.3.8 Routes B, B1 and B2 are unlikely to be noticeable from any sensitive visual receptors

### CULTURAL HERITAGE APPRAISAL

#### SCHEDULED MONUMENTS

- 7.3.9 There are 12 Scheduled Monuments within 3km of Route Option A and 11 Scheduled Monuments within 3km of Routes B, B1 and B2.
- 7.3.10 Of these Scheduled Monuments, the Table 7.1 identifies those which may have visibility of an OHL within each Route Options due to the intervening topography.

**Table 7.1 – Scheduled Monuments within 3km of each Route Option**

Route A	Route B	Route B1	Route B2
Newland Hill Fort (SM3964); Newland Hill settlement (SM12667); Pearsby Hill enclosures and settlement (SM12674); Craighousesteads Fort (SM2330); and Newhall Hill enclosures (SM3963).	Newland Hill Fort (SM3964); Newland Hill settlement (SM12667); Pearsby Hill enclosures and settlement (SM12674); Mid Hill Settlement (SM12666); and Kirtlehead unenclosed settlement (SM12621).	Newland Hill Fort (SM3964); Newland Hill settlement (SM12667); Pearsby Hill enclosures and settlement (SM12674); Craighousesteads Fort (SM2330); Newhall Hill enclosures (SM3963); and Mid Hill Settlement (SM12666).	Only five of these may have visibility of the OHL due to the undulating visibility: Newland Hill Fort (SM3964); Newland Hill settlement (SM12667); Pearsby Hill enclosures and settlement (SM12674); Craighousesteads Fort (SM2330); and Mid Hill Settlement (SM12666).

- 7.3.11 Route Option A has the potential to adversely impact on the key view from Craighousesteads Fort to Newland Hill Fort, appearing above the ridgeline in key views towards the direction of Newland Hill. The introduction of electrical infrastructure in peripheral views has the potential to impact on the 'experiential qualities' associated with visiting the Scheduled Monument of Craighousesteads Fort.
- 7.3.12 Route Option B has the potential to adversely impact on Kirtlehead unenclosed settlement due to its proximity to the asset (located approximately 500m east), which may retain key views to associated settlements to the north-west.
- 7.3.13 At this stage, no significant adverse impacts on these monuments are predicted for Routes B1 and B2.

### **LISTED BUILDINGS**

- 7.3.14 There are three Listed Buildings within 3km of Route Option A, Route Option B1 and Route Option B2 and four Listed Buildings within 3km of Route Option B.
- 7.3.15 An OHL within Routes B, B1 and B2 are not likely to be visible for these Listed Buildings.
- 7.3.16 Only Milton House (LB16913) may have visibility of an OHL within Route Option A from the south-west, however Route Option A is not considered to result in an impact on its Setting.

### **ARCHAEOLOGICALLY SENSITIVE AREAS (ASA)**

- 7.3.17 The Tanlawhill ASA is at the northern edge of the 3km search area of all Route Options. In addition, Boyken Burn ASA is at the north-western edges of the 3km search area of Routes B, B1 and B2. However, it is not likely that an OHL within the Route Options will be visible from these ASAs.

### **UNDESIGNATED HERITAGE ASSET RECORDED WITHIN HISTORIC ENVIRONMENT RECORDS**

- 7.3.18 There are three undesignated assets located along Route Option A that comprise the remains of Prehistoric settlements and enclosures. Route Option A has the potential for direct impacts on these assets.
- 7.3.19 There are three undesignated assets located along Route Option B that comprise the remains of Prehistoric, Medieval, and Post-Medieval agricultural remains. Route Option B has the potential for direct impacts on these assets.
- 7.3.20 There is a single undesignated asset located along Routes B1 and B2 that comprises the remains of a Post-Medieval settlement and field systems. These Routes have the potential for direct impacts on these assets.

### **OVERALL APPRAISAL**

- 7.3.21 Route Option A has the potential to introduce significant Setting impacts on the Setting of Craighousesteads Fort and its key views towards Newland Hill Fort. There is also potential for direct impacts on a known Prehistoric settlement and linear earthwork, as well as Post-Medieval field systems. There is also the potential for impacts on possible unknown features associated with these assets.
- 7.3.22 Route Option B has the potential to introduce Setting impacts on the Setting of Kirtlehead unenclosed settlement. There is also potential for direct impacts on known Prehistoric, Medieval, and Post-Medieval field systems and agricultural remains. There is also the potential for impacts on possible unknown features associated with these assets.
- 7.3.23 Routes B1 and B2 have the potential to have direct impacts on known Post-Medieval settlement and field systems. There is also the potential for impacts on possible unknown features associated with these assets.

### **ECOLOGY AND ORNITHOLOGY APPRAISAL**

#### **SENSITIVE HABITATS (INCLUDING GWDTE)**

- 7.3.24 In the north, Route Option A extends over sensitive habitats including blanket bog, rush pasture and wet mire (National Vegetation Classification (NVC) communities including M17, M23, M25, M15). Many of these plant communities have been identified as potential GWDTE. In the south, Route Option A predominantly extends over semi-improved neutral grassland (not sensitive).

- 7.3.25 In the north, Route Option B extends through coniferous plantation, avoiding a greater portion of sensitive habitats encountered along Route Option A. Travelling south from the plantation, Route Option B extends over species-poor mire (M25), with linear tracts of rush pasture (M23); both have potential for GWDTE. In the south, as Route Option B diverges from the other routes it appears to extend south-east over mire habitats on the side of Burnt Hill (according to aerial imagery); there is potential for GWDTE here.
- 7.3.26 In the north, Routes B1 and B2 extend through coniferous plantation, avoiding a greater portion of sensitive habitats encountered along Route A. Travelling south from the plantation, Route Option B extends over species-poor mire (M25), with linear tracts of rush pasture (M23); both have potential for GWDTE. In the south, Routes B1 and B2 extend through slight valleys, and aerial imagery suggests there to be a mosaic of mires and grassland habitats. There is potential for GWDTE.
- 7.3.27 Each Route Option extends over sensitive habitats, such that the Proposed Development may result in loss or degradation.

#### **BADGER *Meles meles***

- 7.3.28 Badgers are active within the Study Area. Route Option A extends over known badger setts; a main sett, a disused sett and an outlier sett. Route Option A may require destruction of or damage to badger setts, or disturbance to badgers; this should be avoided in the first instance through further alignment studies if Route Option A is selected, however if essential and suitably justified, it would require licensing and compensation efforts.
- 7.3.29 Routes B, B1 and B2 do not intersect any known badger setts; however sections of these areas have not been subject to dedicated survey and potential exists for setts to be encountered along these routes, in particular where the route extends through woodland to the north. If any setts exist, these routes may also result in destruction, damage or disturbance under licence; but avoidance would be sought primarily through further alignment studies.

#### **PINE MARTEN *Martes martes***

- 7.3.30 Pine martens are active within the Study Area. Although no den sites have been identified in proximity to the Route Options, not all sections surrounding Routes B, B1 or B2 have been subject to dedicated survey and potential exists for activity and den sites within woodland to the north, and sheepfolders in the centre of the Study Area.
- 7.3.31 In the absence of field survey data from the entire Study Area, Routes B, B1 or B2 have potential to result in destruction of or disturbance to den sites. As no den sites are identified in proximity to Route Option A it is not considered to result in destruction of or disturbance to den sites.

#### **RED SQUIRREL *Sciurus vulgaris***

- 7.3.32 Squirrels are active within the Study Area. Route Option A bisects a small area of woodland by Priestbutt Burn; however no signs of squirrel have been recorded here during previous surveys<sup>29</sup>. Route Option B extends through woodland to the north likely used by squirrels. Squirrel feeding remains and a potential drey have been recorded within a central block of woodland. Routes B1 and B2 extend in proximity to this central woodland; and also through woodland to the north likely used by squirrels.
- 7.3.33 In the absence of field survey data from the entire Study Area, Routes B, B1 or B2 have potential to result in destruction of or disturbance to dreys.

---

<sup>29</sup> WSP (2019). Crossdykes to Ewe Hill Grid Connection. Protected Species Surveys

### **OTTER *Lutra lutra***

- 7.3.34 As identified in the Ecological Desk Study, otters are active along watercourses which extend through the Study Area. All Route Options cross Capel Burn identified as a hotspot for otter activity with regular spraints and temporary resting site opportunities. In addition:
- Route Option A also crosses Priestbutt Burn and Ashycleuch Burn; both with regular otter presence recorded. In total Route Option A extends over four watercourses;
  - Route Option B extends over a total of four watercourses, not previously surveyed but likely to support otter activity;
  - Route Option B1 extends over a total of eight watercourses/ tributaries, not previously surveyed but likely to support otter activity; and
  - Route Option B2 extends over a total of five watercourses/ tributaries, not previously surveyed but likely to support otter activity.
- 7.3.35 Any watercourse crossing has potential to effect otters by creating a barrier to movement, a vector for pollution and habitat degradation, or disturbance to or destruction of resting sites. In the absence of field survey data for the entire Study Area, the Route Option with least watercourse crossings would be preferred.

### **BATS**

- 7.3.36 Bats are likely to forage within the Study Area, particularly around woodlands, in valleys and riparian zones; however roosting habitat is limited. All Route Options are considered unlikely to interact directly with roost features; although it should be noted that some sections of Routes B, B1 and B2 have not been subject to survey. However, Route Option A but does bisect woodland at Priestbutt Burn and Routes B, B1 and B2 extend through woodland (commercial forestry) in the north which may be used for foraging.
- 7.3.37 Any felling or construction works within proximity to woodland has potential to effect bats through habitat loss, and disturbance to and destruction of roost sites.

### **BIRDS**

- 7.3.38 The Study Area has relatively low ornithological interest based on existing data. Previous surveys identified wader territories: curlew *Numenius arquata* (3), oystercatcher *Haematopus ostralegus* (1) and snipe *Gallinago gallinago* (2); as well as numerous passerine territories. It should be noted that Routes B, B1 and B2 also extend through woodland to the north-east which may support a different bird assemblage and has not previously been surveyed.
- 7.3.39 In addition to the bird assemblage noted above, Route Option A is also located approximately 150m from an identified barn owl roost site (not nest site).

### **FISH AND FRESHWATER PEARL MUSSEL *Margaritifera margaritifera***

- 7.3.40 Populations of Atlantic salmon *Salmo salar*, brown trout *Salmo trutta* (including migratory sea trout) and European eel *Anguilla anguilla* (albeit low numbers) have been reported from the wider catchment; no surveys have been undertaken of watercourses within the Study Area to date.
- 7.3.41 Populations of freshwater pearl mussel have been reported from the wider Water of Milk catchment; no surveys have been undertaken of watercourses within the Study Area to date.
- 7.3.42 Route Option A and Route Option B extend over four watercourses/ tributaries which could support fish and freshwater pearl mussel, with Route Option B1 extending over eight and Route Option B2 extending over five.



- 7.3.43 Any watercourse crossing has potential to effect aquatic species by creating a barrier to movement, a vector for pollution and habitat degradation, or disturbance to or destruction of spawning grounds. In the absence of field survey data, the Route Option with least watercourse crossings would be preferred.

#### OVERALL APPRAISAL

- 7.3.44 Overall, it is anticipated that the OHL within each Route Option could be micro-sited to avoid known features associated with protected mammals (e.g. badger setts). Such features would be identified through a suite of protected species surveys of the Preferred Route to ensure current site-specific data are available to inform further design and assessment stages.
- 7.3.45 Aquatic surveys and consultation with River Annan Trust & District Salmon Fishery Board (RAT&DSF) should be undertaken to inform sensitive design of watercourse crossings and control measures for working in sensitive habitats could be implemented. The Route Option with least watercourse crossings would be preferred with regards to all aquatic receptors (e.g. otters, fish, invertebrates).
- 7.3.46 With the above in mind, it is likely that potentially significant impacts could be avoided or sufficiently mitigated. However, it must be noted that features already identified along Route Option A could be subject to some level of impact from the current construction of the Crossdykes to Ewe Hill OHL; such that cumulative impacts could be heightened along this route relative to the others, in particular for badgers and sensitive habitats.

#### LAND USE APPRAISAL

- 7.3.47 All Route Options are within land identified, on Macaulay ALC maps, as land of rough grazings with low quality plants and improved grassland with limited capability to support agriculture. As Route Option A and Route Option B are the longest, they are likely to result in an increased impact compared to Route Option B1 and Route Option B2. However overall, no likely significant effects are identified as a result of all Routes.
- 7.3.48 All Route Options are within land identified for the Crossdykes Wind Farm (18/1706/FUL) planning application. However, no likely significant effects are identified as a result of all Routes.

#### FORESTRY / WOODLANDS APPRAISAL

- 7.3.49 Route Option A will not impact on commercial forestry but passes through non-commercial woodland; a shelterbelt (north of Priestbutts Burn) Burn and small shelterbelt at Haggies Brae. The impact on woodland at Haggies Brae can potentially be minimised through design.
- 7.3.50 Routes B, B1 and B2 do not pass through any areas of non-commercial woodland; although Route Option B crosses ground at Willie's Cleuch, which OS base mapping indicates once possessed tree cover, this is not visible on aerial imagery.
- 7.3.51 Routes B, B1 and B2 pass through an area of commercial forestry which will likely require clearance within productive forestry. Impacts may be reduced, by adopting some areas of open ground within the forest but it is inadequate in total to accommodate the OHL for Routes B, B1 and B2. These Routes will require forest compartmental division. Dependent on crop stage, this may have consequences for the windfirmness of retained trees and require an extended harvest area. Therefore, these Routes are considered to result in small-scale disruption to forest planning of a commercial forestry interest.

## GEOLOGY, HYDROLOGY AND HYDROGEOLOGY APPRAISAL

7.3.52 All Route Options fall within a high river flood risk zone associated with Capel Burn and are located east of The Water of Milk; which flows north to south. The watercourses crossed by each of the Route Options are outlined in Table 7.2 below.

**Table 7.2 – Watercourses crossed by each Route Option**

Route A	Route B	Route B1	Route B2
Capel Burn; Asheycleuch Burn; and Prestbutts Burn.	Capel Burn; Tankers Gill; Seavy Sike; Grovegill Burn; and Delbate Burn.	Capel Burn; Ashycleauch Burn; and Priestbutts Burn.	Capel Burn; Dalebate Burn; and Grovegill Burn.

7.3.53 Crawthat House Waterbeck PWS is not predicted to be affected by any of the Route Options due to intervening distance and topography. Crossdykes PWS is located within the Study Area, downgradient west of Route Option A and therefore could potentially be adversely affected in terms of water quality and quantity. Design can aim to avoid direct impact to the pipe network and mitigation can be provided but the route cannot avoid the catchment area.

7.3.54 Based on SNH Carbon and Peatland mapping and Hutton Soils mapping, peat (class 3 and class 5) is encountered at the northern and southern ends of all Route Options. In addition to these areas, a small pocket of peat class 1 located in the south-east of the Study Area is crossed by Route Option B. It is considered the potential impact of Route Options A, B1 and B2 on peat will not be significant. However, the potential impacts on the pocket of peat class 1 by Route Option B may be significant and therefore siting of wooden poles in these areas should be avoided, where possible.

7.3.55 Overall, it is considered that no likely significant effects are expected as a result of Route Option B1 and B2 on the surface water bodies, groundwater bodies, water supplies and peat. However, Route Option A has the potential to have effects on Crossdykes PWS. Although design can avoid any impacts on the pipe network, it cannot avoid the catchment area. Route Option B has the potential to have considerable effects on peat class 1 in the south-west.

## 7.4 PREFERRED ROUTE

### ENVIRONMENTAL CONSIDERATIONS

7.4.1 Taking account of environmental considerations only, Routes B1 and B2 are preferable to Route Option B or Route Option A (**see Figure 12**). However, it should be noted that the majority of the impacts identified above could be mitigated with the use of micrositing, additional surveys, consultation to inform sensitive design and the implementation of control measures; with the exception of the potential impact upon the key view from Craighousesteads Fort to Newland Hill Fort as a result of Route Option A.

7.4.2 Routes B1 and B2 are preferred as, relative to Route Option A and Route Option B, they are approximately 1km shorter and have the potential to minimise effects on Scheduled Monuments and undesignated heritage assets. However, the Routes of B1 and B2 do cross a greater number of watercourses, compared to Routes A and B, which also have the potential to support fish, otter and freshwater pearl mussels.



- 7.4.3 Relative to Route Option A, the Routes of B1 and B2 have the potential to minimise effects on landscape character, visual receptors and listed buildings. However, they also pass through an area of commercial forestry, with potential for red squirrels and additional bird nests.

#### TECHNICAL REVIEW OF ROUTE OPTIONS

- 7.4.4 Following the environmental appraisal of options, the Route Options were reviewed by SPEN in relation to the technical constraints and system/network design requirements. This review was undertaken to ensure that, based on the level of detail available, the Route Options are within the technical parameters required to construct OHLs. This included consideration of altitude, topography, slope gradients, watercourse crossings, land owner constraints existing OHLs and other infrastructure.
- 7.4.5 The results of the review of technical constraints to the Route Options identified that the constraints associated with each Route Option are similar; including topography, presence of peat, presence of the Crossdykes 33kV OHL and the presence of National Grid High pressure pipelines. However, the review noted that Routes B, B1 and B2 pass through forestry near the proposed Hopsrig 132kV Collector Substation that will require considerable felling and that they also pass through landowner exclusion zones which prohibits the construction of the Proposed Development within these areas.

#### PREFERRED ROUTE

- 7.4.6 Taking account of environmental considerations only, Routes B1 and B2 are preferable to Route Option B or Route Option A. However technical considerations have identified that significant felling required for Routes B, B1 and B2, and the presence of landowner exclusion zones within these routes would prohibit their construction. Therefore, the Preferred Route is Route Option A.

### 7.5 PLANNING POLICY COMPLIANCE

- 7.5.1 The Preferred Route broadly complies with national and local planning policy. The design of the route alignment will further seek to minimise potential environmental effects and further environmental studies will take cognisance of planning policy when devising appropriate management and mitigation measures.

## **8 CONSULTATION PROCESS AND NEXT STEPS**

### **8.1 CONSULTATION ON THE PREFERRED ROUTE**

- 8.1.1 SPEN will apply to Scottish Ministers for consent for the new 132kV OHL comprising the Hopsrig Wind Farm connection under s37 of the Electricity Act for consent to install and keep installed the overhead electricity line. SPEN will also apply for deemed planning permission for the line and associated works under Section 57(2) of the TCPA. While there are no formal pre-application requirements for consultation in seeking s37 consent/deemed planning permission, SPEN is embracing best practice as outlined in the Scottish Government Energy Consents Unit's Best Practice Guidance (January 2013). This guidance encourages applicants to engage with stakeholders and the public in order to develop their proposals in advance of such applications being made.
- 8.1.2 Therefore, prior to the submission, SPEN is carrying out consultation with stakeholders and the public. Due to recent COVID-19 legislation<sup>30</sup>, face-to-face consultation is unfortunately not possible at present and may not be permitted for the foreseeable future. SPEN is committed to undertaking meaningful and wide-reaching consultation and is therefore hosting an online live and interactive consultation events.
- 8.1.3 The list of consultees included in this consultation is provided in **Appendix D**. Following the submission of application for s37 consent and deemed planning permission, the Scottish Government Energy Consents Unit will, on behalf of Scottish Ministers, carry out further consultation with the public and stakeholders, including Dumfries and Galloway Council.
- 8.1.4 SPEN attaches great importance to the effect that its works may have on the environment and local communities and is very keen to hear the views of local people. The consultation will run for three weeks from **15<sup>th</sup> June** until the **3<sup>rd</sup> July**. Online consultation events will be held for two days over the three week consultation period, further information on these events is available from the project website detailed below.
- 8.1.5 The general public is encouraged to be involved in the process and Consultation materials will be made available online at:  
[http://spenergynetworks.co.uk/pages/hopsrig\\_collector\\_substation\\_grid\\_connection.aspx](http://spenergynetworks.co.uk/pages/hopsrig_collector_substation_grid_connection.aspx).
- 8.1.6 This document is being provided to inform consultees of the initial proposals for the Proposed Development and to provide a mechanism by which consultees can comment on the proposals.

#### **FOCUS OF THE CONSULTATION**

- 8.1.7 This report presents the findings of Proposed Development, the routeing process, resulting in the identification of a Preferred Route. The focus of the consultation will be to ask for people's views on:
- the Preferred Route;
  - 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 environmental features, and any plans to build along the Preferred Route.

---

<sup>30</sup> Scottish Government (2020). The Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020. Available at: <http://www.legislation.gov.uk/ssi/2020/124/contents/made>

#### SOURCES OF FURTHER INFORMATION

- 8.1.8 If you would like to comment on any aspect of this Proposed Development, please email us at: [Hopsriggc@spenergynetworks.co.uk](mailto:Hopsriggc@spenergynetworks.co.uk)
- 8.1.9 SPEN would seek comment and responses on the 'Preferred Route' described within this Routing Consultation Report by **3<sup>rd</sup> July 2020**.

#### **8.2 NEXT STEPS**

- 8.2.1 The responses received from the consultation process will be considered in combination with the findings of this report to enable SPEN to decide on the 'Proposed Route' to be progressed to the next stage.
- 8.2.2 The Proposed Route will then progress to a more detailed review to identify an OHL alignment, including individual pole positioning, which will, subject to EIA screening, be informed by a more detailed assessment of potential impacts to the environment, detailed engineering ground surveys and discussions with landowners. This alignment, including all ancillary development will be included in the application for s37 Consent and deemed planning permission.
- 8.2.3 SPEN will consult fully with affected landowners and occupiers on all aspects of the Hopsrig Wind Farm connection project and will give them an opportunity to comment on proposals as they progress.

# Appendices

## APPENDIX A – HOLFORD RULES

### THE HOLFORD RULES: GUIDELINES FOR THE ROUTEING OF NEW HIGH VOLTAGE OVERHEAD TRANSMISSION LINES (WITH NGC 1992 AND SHETL 2003 NOTES)

#### RULES 1-7

##### Rule 1

**AVOID ALTOGETHER, IF POSSIBLE, THE MAJOR AREAS OF HIGHEST AMENITY VALUE, BY SO PLANNING THE GENERAL ROUTE OF THE LINE IN THE FIRST PLACE, EVEN IF THE TOTAL MILEAGE IS SOMEWHAT INCREASED IN CONSEQUENCE.**

##### NOTE ON RULE 1

a) Investigate the possibility of alternative routes, avoiding altogether, if possible major areas of highest amenity value. The consideration of alternative routes must be an integral feature of environmental statements. If there is an existing transmission line through a major area of highest amenity value and the surrounding land use has to some extent adjusted to its presence, particularly in the case of commercial forestry, then the effect of remaining on this route must be considered in terms of the effect of a new route avoiding the area.

b) Areas of highest amenity value require to be established on a project-by-project basis considering Schedule 9 to The Electricity Act 1989, Scottish Planning Policies, National Planning Policy Guidelines<sup>31</sup>, Circulars and Planning Advice Notes and the spatial extent of areas identified.

Examples of areas of highest amenity value which should be considered are:

- Special Area of Conservation (NPPG 14)
- Special Protection Area (NPPG 14)
- Ramsar Site (NPPG 14)
- National Scenic Areas (NPPG 14)
- National Parks (NPPG 14)
- National Nature Reserves (NPPG 14)
- Protected Coastal Zone Designations (NPPG 13)
- Sites of Special Scientific Interest (SSSI) (NPPG 14)
- Schedule of Ancient Monuments (NPPG 5)
- Listed Buildings (NPPG 18)
- Conservation Areas (NPPG 18)
- World Heritage Sites (a non-statutory designation) (NPPG 18)
- Historic Gardens and Designed Landscapes (a non-statutory designation) (NPPG 18)

##### Rule 2

**AVOID SMALLER AREAS OF HIGH AMENITY VALUE, OR SCIENTIFIC INTEREST BY DEVIATION; PROVIDED THAT THIS CAN BE DONE WITHOUT USING TOO MANY ANGLE TOWERS, I.E. THE MORE MASSIVE STRUCTURES WHICH ARE USED WHEN LINES CHANGE DIRECTION.**

##### NOTE ON RULE 2

a) *Small areas of highest amenity value not included in Rule 1 as a result of their spatial extent should be identified along with other areas of regional or local high amenity value identified from development plans.*

b) *Effects on the setting of historic buildings and other cultural heritage features should be minimised.*

c) *If there is an existing transmission line through an area of high amenity value and the surrounding land uses have to some extent adjusted to its presence, particularly in the case of commercial forestry, then the*

---

<sup>31</sup> National Planning Policy Guideline series (NPPG) has been superseded by Scottish Planning Policy (SPP) published on 23 June 2014. The areas of highest amenity value are now included within SPP.

effect of remaining on this line must be considered in terms of the effect of a new route deviating around the area.

### **Rule 3**

**OTHER THINGS BEING EQUAL, CHOOSE THE MOST DIRECT LINE, WITH NO SHARP CHANGES OF DIRECTION AND THUS WITH FEW ANGLE TOWERS.**

#### **NOTE ON RULE 3**

a) Where possible choose inconspicuous locations for angle towers, terminal towers and sealing end compounds.

b) Too few angles on flat landscape can also lead to visual intrusion through very long straight lines of towers, particularly when seen nearly along the line.

### **Rule 4**

**CHOOSE TREE AND HILL BACKGROUNDS IN PREFERENCE TO SKY BACKGROUNDS, WHEREVER POSSIBLE; AND WHEN THE LINE HAS TO CROSS A RIDGE, SECURE THIS OPAQUE BACKGROUND AS LONG AS POSSIBLE AND CROSS OBLIQUELY WHEN A DIP IN THE RIDGE PROVIDES AN OPPORTUNITY. WHERE IT DOES NOT, CROSS DIRECTLY, PREFERABLY BETWEEN BELTS OF TREES.**

### **Rule 5**

**PREFER MODERATELY OPEN VALLEYS WITH WOODS WHERE THE APPARENT HEIGHT OF TOWERS WILL BE REDUCED, AND VIEWS OF THE LINE WILL BE BROKEN BY TREES.**

#### **NOTES ON RULES 4 AND 5**

a) Utilise background and foreground features to reduce the apparent height and domination of towers from main viewpoints.

b) Minimise the exposure of numbers of towers on prominent ridges and skylines.

*c) Where possible follow open space and run alongside, not through woodland or commercial forestry, and consider opportunities for skirting edges of copses and woods. Where there is no reasonable alternative to cutting through woodland or commercial forestry, the Forestry Commission Guidelines should be followed (Forest Landscape Design Guidelines, second edition, The Forestry Commission 1994 and Forest Design Planning – A Guide to Good Practice, Simon Bell/The Forest Authority 1998).*

d) Protect existing vegetation, including woodland and hedgerows, and safeguard visual and ecological links with the surrounding landscape.

### **Rule 6**

**IN COUNTRY WHICH IS FLAT AND SPARSELY PLANTED, KEEP THE HIGH VOLTAGE LINES AS FAR AS POSSIBLE INDEPENDENT OF SMALLER LINES, CONVERGING ROUTES, DISTRIBUTION POLES AND OTHER MASTS, WIRES AND CABLES, SO AS TO AVOID A CONCATENATION OR 'WIRESCAPE'.**

#### **NOTE ON RULE 6**

a) In all locations minimise confusing appearance.

b) Arrange wherever practicable that parallel or closely related routes are planned with tower types, spans and conductors forming a coherent appearance. Where routes need to diverge, allow where practicable, sufficient separation to limit the effects on properties and features between lines.

### **Rule 7**

**APPROACH URBAN AREAS THROUGH INDUSTRIAL ZONES, WHERE THEY EXIST; AND WHEN PLEASANT RESIDENTIAL AND RECREATIONAL LAND INTERVENES BETWEEN THE APPROACH LINE AND THE SUBSTATION, GO CAREFULLY INTO THE COMPARATIVE COSTS OF UNDERGROUNDING, FOR LINES OTHER THAN THOSE OF THE HIGHEST VOLTAGE.**



#### **NOTE ON RULE 7**

- a) When a line needs to pass through a development area, route it so as to minimise as far as possible the effect on development.
- b) Alignments should be chosen after consideration of effects on the amenity of existing development and on proposals for new development.
- c) When siting substations take account of the effects of the terminal towers and line connections that will need to be made and take advantage of screening features such as ground form and vegetation.

#### **EXPLANATORY NOTE ON RULE 7**

*The assumption made in Rule 7 is that the highest voltage line is overhead.*

#### **SUPPLEMENTARY NOTES**

##### **a) Residential Areas**

Avoid routeing close to residential areas as far as possible on grounds of general amenity.

##### **b) Designations of Regional and Local Importance**

Where possible choose routes which cause the least disturbance to Areas of Great Landscape Value and other similar designations of Regional or Local Importance.

##### **c) Alternative Lattice Steel Tower Designs**

In addition to adopting appropriate routeing, evaluate where appropriate the use of alternative lattice steel tower designs available where these would be advantageous visually, and where the extra cost can be justified [Note: SHETL have reviewed the visual and landscape arguments for the use of lattice steel towers in Scotland and summarised these in a document titled *Overhead Transmission Line Tower Study 2004*].

#### **FURTHER NOTES ON CLARIFICATION TO THE HOLFORD RULES**

##### **LINE ROUTEING AND PEOPLE**

The Holford Rules focused on landscape amenity issues for the most part. However, line routeing practice has given greater importance to people, residential areas etc. The following notes are intended to reflect this.

- a) Avoid routeing close to residential areas as far as possible on grounds of general amenity.
- b) In rural areas avoid as far as possible dominating isolated houses, farms or other small-scale settlements.
- c) Minimise the visual effect perceived by users of roads and public rights of way, paying particular attention to the effects of recreational, tourist and other well-used routes.

##### **SUPPLEMENTARY NOTES ON THE SITING OF SUBSTATIONS**

- a) Respect areas of high amenity value (see Rule 1) and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area.
- b) Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas.
- c) Use space effectively to limit the area required for development, minimizing the effects on existing land use and rights of way.
- d) Alternative designs of substations may also be considered, e.g. 'enclosed', rather than 'open', where additional cost can be justified.
- e) Consider the relationship of towers and substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints.
- f) When siting substations take account of the effects of line connections that will need to be made.

## APPENDIX A

### INTERPRETATION OF THE HOLFORD RULES 1 AND 2 AND THE NOTES TO RULE 2 REGARDING THE SETTING OF A SCHEDULED ANCIENT MONUMENT OR A LISTED BUILDING

#### 1 Interpretation of The Holford Rules 1 and 2

##### 1.1 Introduction

Rules 1 refers to avoiding major areas of highest amenity value, Rule 2 refers to avoiding smaller areas of high amenity value. These rules therefore require identification of areas of amenity value in terms of highest and high, implying a hierarchy, and the extent of their size(s) or area(s) in terms of major and smaller areas.

The NGC Notes to these Rules identify at Rule 1(b) areas of highest amenity value and at Rule 2(a) and (b) of high amenity value that existed in England circa 1992.

##### 1.2 Designations

Since 1949 a framework of statutory measures has been developed to safeguard areas of high landscape value and nature conservation interest. In addition to national designations, European Community Directives on nature conservation, most notably through Special Areas of Conservation under the Habitats and Species Directive (92/43/EC) and Special Protection Areas under the Conservation of Wild Birds Directive (79/409/EEC) have been implemented. Governments have also designated a number of Ramsar sites under the Ramsar Convention on Wetlands of International Importance (CM6464). Scottish Office circulars 13/1991 and 6/1995 are relevant sources of information and guidance. In addition, a wide range of non-statutory landscape and nature conservation designations affect Scotland.

##### 1.3 Amenity

The term 'Amenity' is not defined in The Holford Rules but has generally been interpreted as designated areas of scenic, landscape, nature conservation, scientific, architectural or historical interest.

This interpretation is supported by paragraph 3 of the Schedule 9 to the Electricity Act 1989 (The Act). Paragraph 3 (1)(a) requires that in formulating any relevant proposals the licence holder must have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiological features of special interest and of protecting sites, buildings including structures and objects of architectural, historic or archaeological interest. Paragraph 3 (1)(b) requires the licence holder to do what he reasonably can do to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any flora, fauna, features, sites, buildings or objects.

##### 1.4 Hierarchy of Amenity Value

Rules 1 and 2 imply a hierarchy of amenity value from highest to high.

Schedule 9 to the Act gives no indication of hierarchy of value and there is no suggestion of a hierarchy of value in either NPPG 5: Archaeology and Planning, NPPG 13: Coastal Planning, NPPG 14: Natural Heritage or NPPG 18: Planning and the Historic Environment. Nevertheless, designations give an indication of the level of importance of the interest to be safeguarded.

##### 1.5 Major and Smaller Areas

Rules 1 and 2 imply consideration of the spatial extent of the area of amenity in the application of Rules 1 and 2.

##### 1.6 Conclusion

Given that both the spatial extent in terms of major and smaller and the amenity value in terms of highest and high that must be considered in applying Rules 1 and 2, that no value in these terms is

provided by either Schedule 9 to the Act, relevant Scottish Planning Policies or National Planning Policy Guidelines, then these must be established on a project-by-project basis. Designations can be useful in giving an indication of the level of importance and thus value of the interest safeguarded. The note to The Holford Rules can thus only give examples of the designations which may be considered to be of the highest amenity value.

## 2 The setting of a Scheduled Ancient Monument or a Listed Building

The NGC note to Rule 2 refers to the setting of historic buildings and other cultural heritage features. NPPG 5: Archaeology and Planning refers to the setting of scheduled ancient monuments and NPPG 18: Planning and the Historic Environment refers to the setting of Listed Buildings. None of these documents define setting.

## APPENDIX B

### ENVIRONMENTAL AND PLANNING DESIGNATIONS – EXAMPLES OF DESIGNATIONS TO BE TAKEN INTO ACCOUNT IN THE ROUTEING OF NEW HIGH VOLTAGE TRANSMISSION LINES

#### MAJOR AREAS OF HIGHEST AMENITY VALUE

- 1 In Scotland relevant national or international designations for major areas of highest amenity value include the following identified from Scottish Planning Policies and National Planning Policy Guidelines<sup>32</sup>.

Special Areas of Conservation	(NPPG 14)
Special Protection Areas	(NPPG 14)
Ramsar Sites	(NPPG 14)
National Scenic Areas	(NPPG 14)
National Parks	(NPPG 14)
National Nature Reserves	(NPPG 14)
Protected Coastal Zone Designations	(NPPG 13)
Sites of Special Scientific Interest	(NPPG 14)
Scheduled Ancient Monuments	(NPPG 5)
Listed Buildings	(NPPG 18)
Conservation Areas	(NPPG 18)
World Heritage Sites	(NPPG 18)
Historic Gardens and Designed Landscapes	(NPPG 18)

#### Other Smaller Areas of High Amenity Value

- 2 There are other designations identified in development plans of local planning authorities which include areas of high amenity value:-

Areas of Great Landscape Value  
Regional Scenic Areas  
Regional Parks  
Country Parks

---

<sup>32</sup> See footnotes under Holford Rule 1 (note on Rule 1) for references update.

The nature of the landscape in these areas is such that some parts may also be sensitive to intrusion by high voltage overhead transmission lines but it is likely that less weight would be given to these areas than to National Scenic Areas and National Parks.

### **Flora and Fauna**

- 3 Legislation sets out the procedure for designation of areas relating to flora, fauna and to geographical and physiogeographical features. Designations relevant to the routing of transmission lines will include Special Area of Conservation, Special Protection Area, Sites of Special Scientific Interest, National Nature Reserves, Ramsar Sites and may also include local designations such as Local Nature Reserve.
- 4 Area of Historic, Archaeological or Architectural Value  
Certain designations covering more limited areas are of relevance to the protection of views and the settings of towns, villages, buildings of historic, archaeological or architectural value. These designations include features which may be of exceptional interest. Of particular importance in this connection are:-
  - Schedule of Ancient Monuments
  - Listed Buildings, especially Grade A and Grade B
  - Conservation Areas
  - Gardens and Designed Landscapes included in the Inventory of Gardens and Designed Landscapes of Scotland

### **Green Belts**

- 5 Generally the purposes of Green Belts are not directly concerned with the quality of the landscape.

## APPENDIX B – ENVIRONMENTAL DATA SOURCES

Feature	Data Source
Ancient Woodland Inventory	SNH
Archaeologically Sensitive Areas	Dumfries and Galloway (D&G) Council
Battlefields	Historic Environment Scotland
Conservation Areas	Historic Environment Scotland
Core Paths	D&G Council
Cycle Routes	Sustrans
Existing Transmission Infrastructure	SPEN
Flood Risk Zones	SEPA
Woodlands / Forests	FCS
Historic Environment Records	D&G Council
Gardens and Designed Landscapes	Historic Environment Scotland
Non-Inventory Gardens and Designed Landscapes	D&G Council
Important Bird Areas	SNH
Landfills	D&G Council
Landscape Character Types	SNH
Listed Buildings	Historic Environment Scotland
Local Nature Reserves	D&G Council
Mineral Extraction	D&G Council
National Nature Reserves	SNH
National Routes	Sustrans
National Scenic Areas	SNH
Peat Superficial Deposits	BGS
Peatland Priority Habitats	SNH
Ramsar Sites	SNH
Regional Routes	Sustrans
Residential Properties	Ordnance Survey AddressBase Plus
Consented and valid planning applications, and local plan allocations	D&G Council
RSPB Reserves	SNH
Scheduled Monuments	Historic Environment Scotland
Scottish Wildlife Sites	D&G Council
Sites of Special Scientific Interest	SNH
Special Area of Conservation	SNH
Special Landscape Areas	SNH
Special Protection Areas	SNH
Waterbodies	SEPA
Wild Land Areas	SNH
World Heritage Sites	Historic Environment Scotland



## APPENDIX C – ECOLOGICAL DESK STUDY





# **EWE HILL TO HOPSRIG 132KV OHL GRID CONNECTION**

## **Ecological Desk Study Report**

**May 2020**



Applies to <b>EWE HILL TO HOPSRIG          132KV OHL GRID          CONNECTION</b>	<b>Ecological Desk Study          Report</b>	Document Reference <b>70068516</b>
Classification <b>Public</b>	Uncontrolled if Printed	Revision <b>V1</b>

The author/owner of this document is	This document has been approved for issue by	Date of issue	Review date
--------------------------------------	---	---------------	-------------

## QUALITY MANAGEMENT

Issue/Revision	1	2	3	4
Remarks	First issue			
Prepared by	Iain Gilmore & Jenny Downie			
Signature				
Checked by	Jenny Downie			
Signature				
Authorised by	Greg Chamberlain			
Signature				
Project number	70068516			
Report number	V1			
File reference	\\uk.wspgroup.com\central data\Projects\700685xx\70068516 - Hosprig OHL and substation\03 WIP\07 Ecology\Ecological Desk Study Report			



## Contents

Page

1	Introduction .....	1
1.1	Proposed Development .....	1
1.2	Purpose of Report.....	1
2	Methods .....	2
2.1	Stakeholder Engagement .....	2
2.2	Desk Study.....	2
3	Results .....	4
3.1	Stakeholder Engagement .....	4
3.2	Statutory Designated Sites .....	4
3.3	Non-Statutory Designated Sites for Nature Conservation.....	6
3.4	Habitats .....	6
3.5	Protected and Notable Species .....	7
3.6	Dumfries and Galloway Biodiversity Priorities .....	10
	References .....	11
	Appendix A: Figures .....	12
	Appendix B: Protected Species Data .....	13

## **1 Introduction**

### **1.1 Proposed Development**

- 1.1.1 Scottish Power Energy Networks (SPEN) propose to develop a new overhead line (OHL) connection between the proposed Hopsrig 132kV Collector Substation (under consideration separately) and the existing Ewe Hill Substation (hereafter referred to as the 'Proposed Development'). The Proposed Development will be located in an open area north of the B7068 road, which connects Lockerbie and Langholm in Dumfries and Galloway.
- 1.1.2 The Proposed Development is anticipated to be approximately 4km in length and be a trident (predominantly H-pole) design, typically 12m in height but ranging from 10m to 21m.
- 1.1.3 The proposed Hopsrig 132kV Collector Substation is located approximately 300m east of the consented Crossdykes Wind Farm Collector Substation, which is connected to Ewe Hill Substation by two 33kV OHLs. The connection between Crossdykes Wind Farm Collector Substation and Ewe Hill Substation (hereafter the Crossdykes to Ewe Hill OHL) is currently under construction.

### **1.2 Purpose of Report**

- 1.2.1 This report presents a desk-based review of existing ecological information relevant to the Proposed Development, obtained from neighbouring consented developments, online resources, and early engagement with stakeholders. The findings will be used to inform a routeing appraisal and required relevant subsequent ecological assessments.
- 1.2.2 Ecological information on designated sites, habitats, and protected or notable species was reviewed in relation to the Routeing Study Area (Figure 1). This covers approximately 9km<sup>2</sup> and encompasses potential route options under consideration in May 2020. A central grid reference for the Routeing Study Area is NY 25388 85201.

## **2 Methods**

### **2.1 Stakeholder Engagement**

2.1.1 A preliminary stakeholder engagement exercise was undertaken in May 2020 to obtain comments on the Proposed Development, the proposed scope of ecological surveys (specifically with regards to ornithology), and any pertinent data which may further inform survey scopes. The following stakeholders were consulted via email on 7 May 2020:

- Scottish Natural Heritage (SNH);
- Royal Society for the Protection of Birds (RSPB); and
- Dumfries and Galloway Raptor Study Group.

2.1.2 This section will be updated to reflect additional stakeholders consulted as the Proposed Development progresses.

2.1.3 A summary of the consultation responses is located at Section 3.1.

### **2.2 Desk Study**

2.2.1 Data used to inform the Crossdykes to Ewe Hill OHL Environmental Appraisal (EA) have been reviewed to inform the desk study. Specifically, data presented in baseline reports from National Vegetation Classification (NVC) surveys (WSP, 2019a), protected species surveys (WSP, 2019b), and ornithology surveys (WSP, 2019c) undertaken in 2018 were reviewed for ecological sensitivities relevant to the Proposed Development Routeing Study Area.

2.2.2 Additionally, recent data collected during pre-construction surveys for the Crossdykes to Ewe Hill OHL (WSP, 2020a) have been incorporated into this desk study.

2.2.3 Data from the following other neighbouring developments have also been reviewed: Hopsrig Wind Farm Environmental Statement (ES) (MacArthur Green, 2016), and Crossdykes Wind Farm ES (Muirhall Energy Ltd., 2014).

2.2.4 The following publicly available resources were consulted in May 2020:

- National Biodiversity Network (NBN) Atlas<sup>1</sup>;
- SNH Site Link<sup>2</sup>; and
- Dumfries and Galloway Local Biodiversity Action Plan (2014).

2.2.5 These resources were used to identify ecologically sensitive sites, habitats and species up to 20km from the Routeing Study Area. However, data were only deemed relevant to the Proposed Development if within the following parameters.

---

<sup>1</sup> Only datasets which allow commercial use have been published in this report. Licences which allow commercial use include: Open Government Licence (OGL), Creative Commons No Rights Reserved Licence (CCO) and Creative Commons Licence with Attribution (CC-BY).

<sup>2</sup> <https://sitelink.nature.scot/map>



- Special Areas of Conservation (SAC) and Special Protected Areas<sup>3</sup> (SPA) and Ramsar sites<sup>4</sup>; within 10km of the Routeing Study Area (or up to 20km where designated for geese/ swan).
- Sites of Special Scientific Interest<sup>5</sup> (SSSI), National Nature Reserves<sup>6</sup> (NNR), Local Nature Reserves<sup>7</sup> (LNR); Local Wildlife Sites<sup>8</sup> (LWS) and Local Nature Conservation Sites<sup>9</sup> (LNCS); within or up to 2km from the Routeing Study Area.
- Biosphere Reserves<sup>10</sup> (BR) within or up to 2km from the Routeing Study Area.
- Ancient and Native Woodland; within or connected to (i.e. overlaps/ extends from/ directly adjacent to) the Routeing Study Area.
- Protected or notable species (e.g. listed on the Scottish Biodiversity List) within 2km of the Routeing Study Area and recorded within the last 10 years (data older than 10 years are generally regarded as historical/ not relevant).

---

<sup>3</sup> SACs are protected areas in the UK designated under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland. SPAs are protected areas for birds in the UK classified under the Wildlife & Countryside Act 1981 (as amended) and the Conservation (natural Habitats &c.) Regulations 2010 (as amended) in England, Scotland and Wales. Together they form the UK's contribution to the Bern Convention's Emerald Network of protected areas, known as Areas of Special Conservation Interest (ASCIs).

<sup>4</sup> Ramsar sites are designated under the International Convention of Wetlands of International importance, especially as Waterfowl Habitat (the Ramsar Convention).

<sup>5</sup> SSSIs in Scotland are protected areas designated under the Nature Conservation (Scotland) Act 2004.

<sup>6</sup> NNRs are areas containing habitats and species of national or international importance designated under the National Parks and Access to the Countryside Act 1949 (as amended) and the Wildlife and Countryside Act 1981.

<sup>7</sup> LNRs are areas of natural heritage of at least local importance designated under Section 21 of the National Parks and Access to the Countryside Act 1949 (as amended).

<sup>8</sup> LWSs are non-statutory areas with 'substantive nature conservation value'.

<sup>9</sup> LNCSs are non-statutory areas of locally important natural heritage.

<sup>10</sup> BRs are non-statutory internationally designated areas that promote solutions reconciling the conservation of biodiversity with the sites sustainable use.

### 3 Results

#### 3.1 Stakeholder Engagement

3.1.1 Responses from the consultees contacted in May 2020 are presented in Table 3.1. This section will be updated to reflect further responses as and when additional consultation activities have been undertaken.

**Table 3.1 – Stakeholder engagement**

Stakeholder	Comment	Influence on scope
Scottish Natural Heritage (SNH)	<p>12 May 2020 – SNH do not hold any species or habitat data for the Routeing Study Area and recommended requesting data from South West Scotland Environmental Information Centre if needed. SNH confirmed the location of works are sufficiently far from Castle Loch, Lochmaben SPA and Upper Solway Flats and Marshes SPA (see Table 3.2), and of a small scale; thus there would be no likely significant effects on these SPAs and a Habitats Regulations Appraisal is not required.</p> <p>15 May 2020 – SNH commented that based on previous bird surveys undertaken for the Crossdykes to Ewe Hill OHL conducted in 2018 (WSP, 2019c), and the perceived relatively low degree of ornithological sensitivities in the Routeing Study Area resulting from the 2018 work, existing data proposed to be used for this Proposed Development would be appropriate.</p>	<p>A Habitats Regulations Assessment is not required.</p> <p>Breeding and wintering bird surveys will not be undertaken to inform the Proposed Development.</p> <p>It is not considered necessary to contact South West Scotland Environmental Information Centre for additional data, in light of the information already available and anticipation that dedicated ecology surveys will be undertaken of the Preferred/Proposed Route.</p>
Royal Society for the Protection of Birds (RSPB)	No response received at the time of issue.	N/A
Dumfries and Galloway Raptor Study Group	18 May 2020 – The group do not hold systematic data on the Routeing Study Area and have no additional data for the Hopsrig Wind Farm.	No further actions.

#### 3.2 Statutory Designated Sites

3.2.1 Table 3.2 presents Sites designated for nature conservation importance identified within the predefined buffers (refer to Section 2.2 Desk Study), in order of increasing distance from the Routeing Study Area. Figure 1 (Appendix A) shows the locations of the designated sites.

**Table 3.2 – Statutory designated sites for nature conservation**

Site name	Site code	Size (ha)	Relative location	Qualifying/ notified interests
Castle Loch SPA	UK9003191	107.6	15km southwest	<p>The site qualifies under Article 4.2 of the Directive (79/409/EEC)<sup>11</sup> by supporting populations of European importance of the following migratory species:</p> <p>Over winter;</p> <p><b>Pink-footed goose</b> <i>Anser brachyrhynchus</i>, 5,450 individuals, representing at least 2.4% of the wintering Eastern Greenland/ Iceland/ UK population (5 year peak mean 1991/2 – 1995/6).</p>
Castle Loch Ramsar site	UK13006	107.6	15km southwest	<p>The site qualifies under Ramsar criterion 6 – species/ populations occurring at levels of international importance:</p> <p>Wintering population of Icelandic/ Greenlandic <b>pink-footed geese</b>.</p> <p>Wintering populations of <b>goosander</b> <i>Mergus merganser</i>. 1987/88 – 1991/2 winter peak mean of 66 (1% of the British population).</p>
Upper Solway Flats and Marshes SPA	UK9005012	30,706.26	18km south	<p>The site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:</p> <p>Over winter;</p> <p><b>Barnacle goose</b> <i>Branta leucopsis</i>, 13,595 individuals, representing at least 13.3% of the wintering population in Great Britain (5 year peak mean 1991/2 – 1995/6).</p> <p><b>Whooper swan</b> <i>Cygnus cygnus</i>, 117 individuals, representing at least 2.1% of the wintering population in Great Britain (5 year peak mean 1991/2 – 1995/6).</p> <p>The site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:</p> <p>Over winter;</p>

<sup>11</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

Site name	Site code	Size (ha)	Relative location	Qualifying/ notified interests
				<b>Pink-footed goose</b> , 15,983 individuals, representing at least 3.9% of the wintering Eastern Greenland/ Iceland/ UK population (5 year peak mean 1991/2 – 1995/6).
Upper Solways Flats and Marshes Ramsar	UK11079	43,636.73	18km south	The site qualifies under Ramsar criterion 6 – species/ populations occurring at levels of international importance:  <b>Pink-footed goose</b> , 4,321 individuals, representing an average of 1.8% of the flyway population (5 year peak mean 1998/9 – 2002/3).  <b>Barnacle goose</b> , 13,515 individuals, representing an average of 58.7% of the flyway population (5 year peak mean 1998/9 – 2002/3).

### 3.3 Non-Statutory Designated Sites for Nature Conservation

3.3.1 No non-statutory designated sites were identified within the predefined buffers (refer to Section 2.2 Desk Study).

### 3.4 Habitats

3.4.1 From a review of data gathered in support of the Crossdykes to Ewe Hill OHL, NVC plant community and Phase 1 habitat data are available across a central corridor of the Routeing Study Area (Figure 2) (WSP, 2019a); the remainder of the Routeing Study Area has not been subject to habitat surveys at the time of writing. Using existing NVC and Phase 1 habitat data and Esri aerial imagery (typically within 3-5 years of currency, last updated May 2020), semi-improved neutral grassland appears to dominate much of the southern extent of the Routeing Study Area; likely extending over grazed hillside. Rush pasture and mire habitats appear to extend over much of the northern half of the Routeing Study Area; with many plant communities identified to have a potential to be Groundwater Dependant Terrestrial Ecosystems (GWDTE), including:

- M25 *Molinia caerulea* – *Potentilla erecta* mire;
- M23 *Juncus effusus/acutiflorus* – *Galium palustre* rush-pasture;
- M15 *Scirpus cespitosus* – *Erica tetralix* wet heath;
- M6 *Carex echinata* – *Sphagnum fallax/denticulatum* mire;
- M10 *Carex dioica* – *Pinguicula vulgaris* mire;
- M27 *Filipendula ulmaria* mire;
- U6 *Juncus squarrosus* – *Festuca ovina* grassland; and
- MG9 *Holcus lanatus* – *Deschampsia cespitosa* grassland.

3.4.2 Five plant communities indicative of broad classification under the EU Habitats Directive ('Annex 1 habitats') were identified, as follows:

- M25 *Molinia caerulea* – *Potentilla erecta* mire (H7130 blanket bogs);
- M20 *Eriophorum vaginatum* blanket and raised mire (H7130 blanket bogs);
- M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire (H7130 blanket bogs);
- M17 *Scirpus cespitosus* – *Eriophorum vaginatum* blanket mire (H7130 blanket bogs); and
- M10 *Carex dioica* – *Pinguicula vulgaris* mire (H7230 alkaline fens).

3.4.3 Swamp communities are limited in extent, and only found in the centre of the Routeing Study Area at the headwaters of the Priestbutts Burn.

3.4.4 A subsequent habitats report will seek to provide greater detail on the plant communities and sensitive habitats within the Preferred Route.

### 3.5 Protected and Notable Species

3.5.1 A summary of data on protected and notable species known to occur within the Routeing Study Area is presented in Table 3.3. This is primarily based on existing Crossdykes to Ewe Hill OHL and pre-construction survey data; as well as data from the ES for the Hopsrig and Crossdykes Wind Farms. All data on protected and notable species relevant to the Routeing Study Area are shown on Figure 3, where Geographical Information Systems (GIS) data were available. Notes relating to data shown on Figure 3 are included in Appendix B.

3.5.2 Records obtained from the NBN Atlas (where the dataset may be commercially used) from up to 2km from the Routeing Study Area, and from 2010-2020, are incorporated into Table 3.3.

3.5.3 Badgers are active in the area, however information pertaining to badgers has not been included in Table 3.3 or Figure 3. These data are sensitive due to the persecution of badgers and are included on a separate confidential figure that should not be uploaded to the public domain.

**Table 3.3 – Protected and notable species**

Species/ group	Data
Otter <i>Lutra lutra</i>	<p>Otters are active along watercourses within the Routeing Study Area, evidenced by records of spraints obtained during surveys for the Crossdykes to Ewe Hill OHL (WSP, 2019b), as well as more recently during pre-construction surveys in April 2020.</p> <p>Otter spraints were regularly recorded from Priestbutts Burn and Capel Burn. Opportunities for temporary resting (i.e. otter couches) were recorded along Priestbutts Burn. No otter holts have been reported from previous surveys.</p> <p>During surveys to inform Hopsrig Wind Farm, an otter was sighted approximately 5km northeast of the Routeing Study Area (MacArthur Green, 2016).</p>
Water vole <i>Arvicola amphibious</i>	<p>No water vole evidence was recorded during surveys for the Crossdykes to Ewe Hill OHL. Many of the watercourses were considered sub-optimal (including Newlands Cleugh and Capel Burn) owing to fast water flows and lack of suitable bank profiles and soft substrate within which to burrow (WSP, 2019b).</p> <p>The Crossdykes Wind Farm ES reported similar conclusions; watercourses were of marginal suitability for water vole due to lack of bank-side vegetation at the time of survey (Muirhall Energy Ltd., 2014).</p>

Species/ group	Data
Pine marten <i>Martes martes</i>	<p>The Routeing Study Area overlaps with an active pine marten territory (potentially one or more territories); evidenced by scats recorded during surveys to inform the Crossdykes to Ewe Hill OHL (WSP, 2019b), as well as more recently during pre-construction surveys in April 2020 (although recorded as <i>potential</i> pine marten scats).</p> <p>No pine marten den sites have been recorded; but suitable features include root matrices underneath wind-blown plantation trees, tree cavities and sheep enclosures (WSP, 2019).</p>
Red squirrel <i>Sciurus vulgaris</i>	<p>No evidence of red squirrel was recorded during surveys to inform the Crossdykes to Ewe Hill OHL; in fact, woodland blocks were considered sub-optimal for red squirrel because they are fragmented (WSP, 2019b).</p> <p>However, pre-construction surveys for Crossdykes to Ewe Hill OHL identified squirrel feeding remains concentrated around Blackstan Moss, as well as a potential drey (although squirrel species was not recorded).</p> <p>Hopsrig Wind Farm ES protected species survey data include a number of red squirrel feeding signs within the larger area of woodland to the northeast of the Routeing Study Area.</p> <p>Scottish Wildlife Trust/Scottish Squirrel Database NBN Atlas data from within 2km: red squirrel (26) and non-native grey squirrel <i>Sciurus carolinensis</i> (25).</p>
Bats	<p>During surveys to inform the Crossdykes to Ewe Hill OHL, four mature trees along the Ashycleugh Burn in the southeast were recorded to have bat roost potential (WSP, 2019b).</p> <p>No other features suitable for roosting bats have previously been recorded within the Routeing Study Area.</p> <p>The general area is likely to support foraging activity, particularly in the less exposed valley areas and along wooded riparian corridors such as the Capel Burn; and forestry edges in the northeast of the Routeing Study Area (WSP, 2019b).</p>
Reptiles	<p>Common lizard <i>Zootoca vivipara</i> have been regularly sighted during pre-construction surveys for the Crossdykes to Ewe Hill OHL.</p> <p>Abundant reptile hibernation and summer shelter habitat was recorded along dry stone walls, scrub, woodland and tussocky grassland and bracken habitats during surveys to inform the Crossdykes to Ewe Hill OHL (WSP, 2019b).</p> <p>The Crossdykes Wind Farm ES reported habitats in the area were suitable to support common lizard, slow worm <i>Anguis fragilis</i> and adder <i>Vipera berus</i> (Muirhall Energy Ltd., 2014).</p>
Birds	<p>The Routeing Study Area is considered to be of relatively low ornithological sensitivity.</p> <p>Targetted surveys within the Routeing Study Area, as part of the Crossdykes to Ewe Hill OHL, in June and July 2018, recorded three curlew <i>Numenius arquata</i> territories and one oystercatcher <i>Haematopus ostralegus</i> territory (WSP, 2019c). Barn owl <i>Tyto alba</i> pellets and feathers were reported from beside a hollow,</p>



Species/ group	Data
	<p>mature tree within the Routeing Study Area; these signs were considered to relate to a temporary roost site rather than a nest site (WSP, 2019c).</p> <p>Breeding raven <i>Corvus corax</i> have been recorded in plantation woodland within the Routeing Study Area (WSP, 2020b). Stonechats <i>Saxicola rubicola</i>, wheatears <i>Oenanthe oenanthe</i> and skylarks <i>Alauda arvensis</i> have also been recorded from the Routeing Study Area (WSP, 2020b).</p> <p>Bird surveys undertaken in 2015 and 2016 to support the Hopsrig Wind Farm ES (MacArthur Green, 2016) reported breeding territories for curlew and snipe <i>Gallinago gallinago</i>; and no records of black grouse <i>Tetrao tetrix</i> during dedicated surveys. Barn owl roosting and goshawk <i>Accipiter gentilis</i> breeding activity was recorded. Other species recorded included hen harrier <i>Circus cyaneus</i>, peregrine falcon <i>Falco peregrinus</i>, red kite <i>Milvus milvus</i>, merlin <i>Falco columbarius</i>, and osprey <i>Pandion haliaetus</i>; but none confirmed breeding. Wintering bird surveys recorded a single instance of pink-footed goose flight activity with 66 individuals; as well as low numbers of woodcock <i>Scolopax rusticola</i>, goshawk and red kite.</p> <p>The Crossdykes Wind Farm ES reported that whilst pink-footed geese can forage up to 15-20km from their roost; those designated with Castle Loch, Lochmaben SPA are associated with the floodplain of the River Annan (Mitchell, 2012). Wintering bird surveys suggested there to be no meaningful connectivity between Crossdykes Wind Farm and any SPA goose roosts (Muirhall Energy Ltd., 2014). Other bird surveys reported suspected breeding goshawk, a breeding bird assemblage of upland waders (curlew, snipe, oystercatcher), and no records of black grouse (Muirhall Energy Ltd., 2014).</p> <p>RSPB NBN Atlas data from within 2km: black grouse (2), curlew (2), golden plover <i>Pluvialis apricaria</i> (1), and snipe (1).</p>
Fish	<p>Crossdykes Wind Farm ES reported that fish habitat and electrofishing surveys were undertaken by Annan Fisheries Trust, focussing on the Water of Milk; species recorded included Atlantic salmon <i>Salmo salar</i>, brown trout <i>Salmo trutta</i> (and potential for migratory sea trout) and low numbers of eel <i>Anguilla anguilla</i> (Muirhall Energy Ltd., 2014).</p> <p>Watercourses which extend through the Routeing Study Area feed into the Water of Milk, including Percy Cleuch, Newland Cleuch, Capel Burn, and Priestbutts Burn. No surveys have been undertaken of these watercourses to date.</p> <p>Crossdykes to Ewe Hill OHL reported that an 'impassable waterfall/other obstruction' is recorded on Capel Burn (NY 24951 85690), downstream of the Routeing Study Area, indicating that migratory fish may not be able to traverse upstream of this point<sup>12</sup> (WSP, 2019b).</p> <p>Fish habitat and electrofishing surveys to inform Hopsrig Wind Farm ES recorded brown trout and low numbers of eels from watercourses within the Hopsrig Wind Farm development to the northeast of the Routeing Study Area (MacArthur Green, 2016).</p>

<sup>12</sup> <https://www.environment.gov.scot/maps/scotlands-environment-map/>



Species/ group	Data
Amphibians	<p>Common frog <i>Rana temporaria</i> were sighted during surveys to inform the Crossdykes to Ewe Hill OHL (WSP, 2019b).</p> <p>The Routeing Study Area falls outwith the typical range of great crested newts <i>Triturus cristatus</i>; it falls within Zone C generally regarded as unsuitable (National Amphibian and Reptile Recording Scheme, 2007). Four ponds within the larger extent of forestry to the northeast of the Routeing Study Area were subject to Habitat Suitability Index assessments for great crested newt, during protected species surveys to inform Hopsrig Wind Farm ES (MacArthur Green, 2016). All ponds had poor terrestrial habitat and overall scored poor suitability for great crested newts.</p> <p>A palmate newt <i>Lissotriton helveticus</i> was sighted during surveys for the Hopsrig Wind Farm ES (MacArthur Green, 2016).</p> <p>A male palmate newt was recorded from drainage ditches associated with Crossdykes to Ewe Hill OHL (WSP, 2020b).</p> <p>Based on available mapping, there are no ponds within the Routeing Study Area or wider 500m<sup>13</sup>.</p>
Aquatic Invertebrates	<p>Crossdykes Wind Farm ES reported that populations of freshwater pearl mussle <i>Margaritifera margaritifera</i> are known elsewhere in the catchment; but dedicated surveys by Annan Fisheries Trust did not reveal presence in the Water of Milk (Muirhall Energy Ltd., 2014).</p> <p>Aquatic invertebrates were not considered for the Crossdykes to Ewe Hill OHL.</p>
Terrestrial Invertebrates	<p>Habitats encountered within the area are generally damp and likely to support aerial invertebrate activity.</p> <p>Dragonfly Recording Network NBN Atlas data from within 2km: black darter <i>Sympetrum danae</i> (1), common blue damselfly <i>Enallagma cyathigerum</i> (1), blue-tailed damselfly <i>Ischnura elegans</i> (1), common darter <i>Sympetrum striolatum</i> (1), common hawker <i>Aeshna juncea</i> (1), azure damselfly <i>Coenagrion puella</i> (1), golden-ringed dragonfly <i>Cordulegaster boltonii</i> (1), large red damselfly <i>Pyrrhosoma nymphula</i> (1), and four-spotted chaser <i>Libellula quadrimaculata</i> (1).</p>

### 3.6 Dumfries and Galloway Biodiversity Priorities

- 3.6.1 Dumfries and Galloway biodiversity priorities<sup>14</sup> are noted to include achieving improved conservation status of all species listed for priority action through the Species Action Framework for Scotland (Gaywood *et. al.*, 2016). Relevant species listed are: red squirrels, freshwater pearl mussel, pearl-bordered fritillary butterfly, lesser butterfly orchid, hen harrier, red and roe deer (regional priority code D+G10).

<sup>13</sup> The typical connectivity range for newts would be 500m, depending on availability of terrestrial and aquatic habitat.

<sup>14</sup> <https://www2.gov.scot/Topics/farmingrural/SRDP/RuralPriorities/DumfriesandGalloway/Biodiversity>

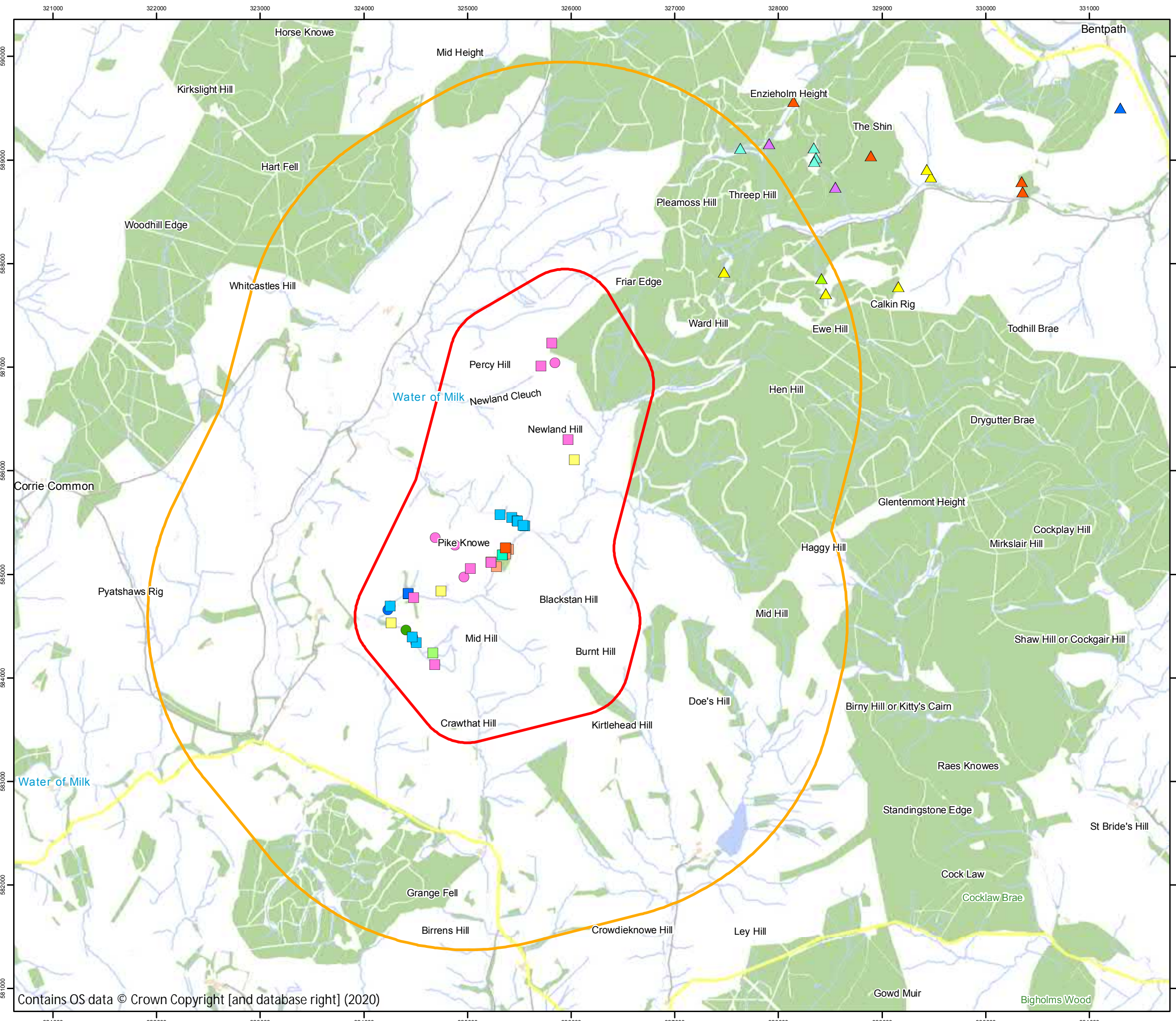
## References

- Dumfries and Galloway Council (2014). Local Development Plan 2014. Available: [https://www.dumgal.gov.uk/media/17553/Local-Nature-Conservation-Sites-Technical-Paper/pdf/Local\\_Nature\\_Conservation\\_Sites\\_September\\_2014.pdf](https://www.dumgal.gov.uk/media/17553/Local-Nature-Conservation-Sites-Technical-Paper/pdf/Local_Nature_Conservation_Sites_September_2014.pdf)
- Gaywood M. J., Boon P. J., Thompson D. B. A., Strachan I. M. (eds). (2016). The Species Action Framework Handbook. Scottish Natural Heritage, Battleby, Perth.
- MacArthur Green (2016). Hopsrig Wind Farm Environmental Statement Volume 4: Chapters 5 (Ecology) and 6 (Ornithology); and associated technical appendices.
- Mitchell, C 2012 Mapping the Distribution of feeding Pink-footed and Iceland Greylag geese in Scotland Wildfowl and Wetlands Trust/Scottish Natural Heritage, Slimbridge
- Muirhall Energy Ltd. (2014). Crossdykes Wind Farm Environmental Statement Volume 2: Chapters 6 (Ecology) and 7 (Ornithology); and associated technical appendices.
- National Amphibian and Reptile Recording Scheme (2007). Great Crested Newt Habitat Suitability Index Guidance Note. Available: <http://www.narrs.org.uk/documents/HSI%20guidance.pdf>
- WSP (2019a). Crossdykes to Ewe Hill Grid Connection. National Vegetation Classification Survey & Groundwater Dependent Terrestrial Ecosystems Report. Project number 70046009.
- WSP (2019b). Crossdykes to Ewe Hill Grid Connection. Protected Species Surveys. Project number 70046009.
- WSP (2019c). Crossdykes to Ewe Hill Grid Connection. Ornithology Baseline Report. Project number 70046009.
- WSP (2020a). Crossdykes to Ewe Hill Grid Connection. Pre-Construction Survey Report. Project number 70046009.
- WSP (2020b). Crossdykes to Ewe Hill Grid Connection. Ongoing Environmental Clerk of Works Monitoring. Project number 70046009.



## Appendix A: Figures





**Legend**

- Routeing Study Area
- 2km Buffer

**Crossdykes to Ewe Hill OHL Pre-construction Protected & Notable Species Data (2020)**

- Brown hare sighting
- Common lizard sighting
- Mustelid foot prints
- Otter couch
- Otter spraint
- Pine marten scat
- Squirrel drey
- Squirrel feeding signs

**Crossdykes to Ewe Hill OHL EIA - Protected & Notable Species Data (2019)**

- Mature trees
- Otter spraint
- Pine marten scat

**Hopsrig Wind Farm - Protected & Notable Species Data (2016)**

- Fish
- Otter sighting
- Palmate newt sighting
- Red squirrel feeding signs
- Reptile sighting/ hibernacula
- Ponds

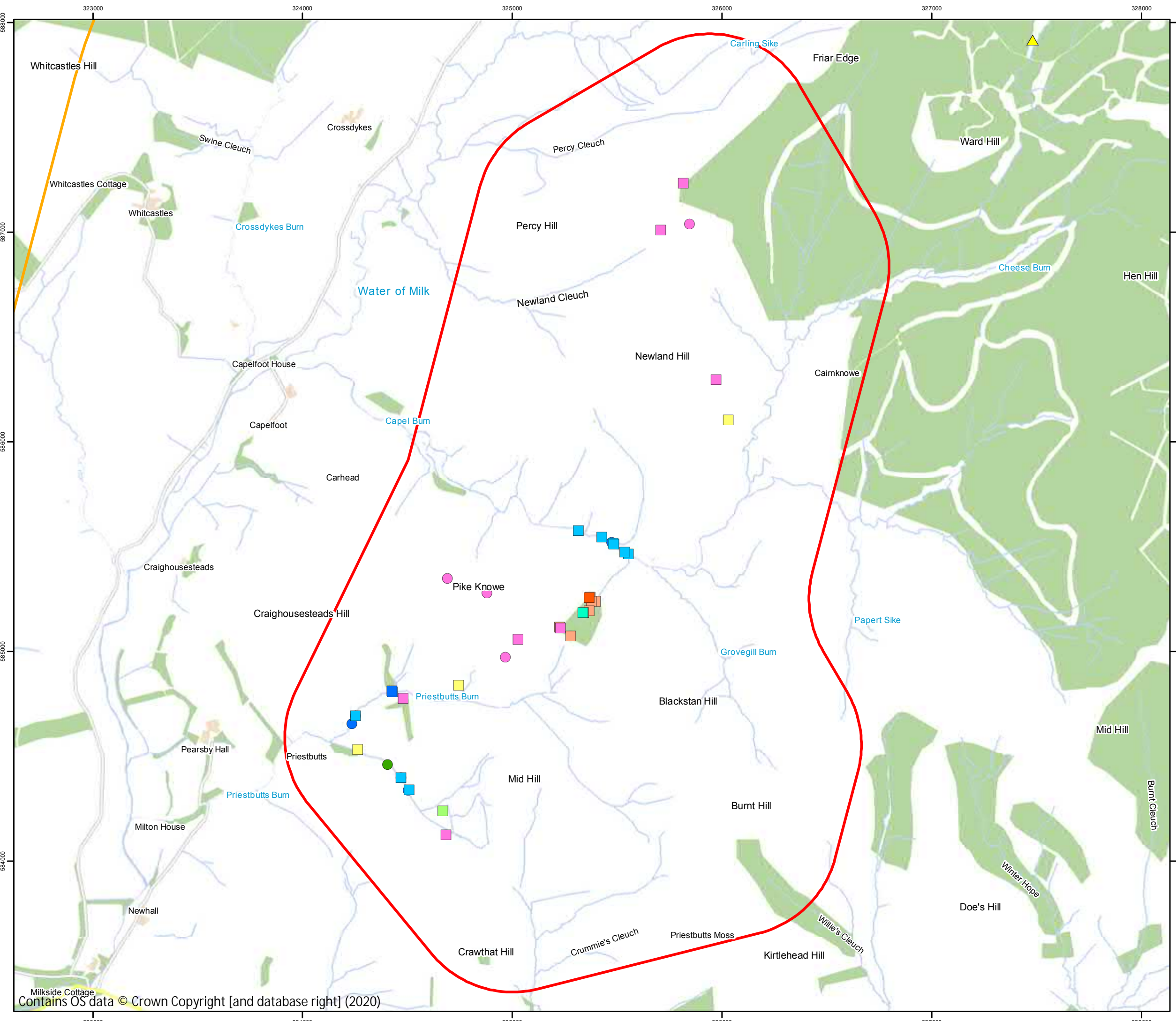
Rev	Date	By	Comment
A	01/06/2020	JD	First Issue



**Ewe Hill to Hopsrig 132KV OHL Grid Connection**  
**Figure 3: Protected & Notable Species (Sheet 1 of 2)**

<b>Drg No</b>	HOPSRIG_WSP_ECO_3
<b>Rev</b>	A
<b>Date</b>	01/06/2020
<b>Scale</b>	1:34,200 @ A3





- Legend**
- Routeing Study Area
  - 2km Buffer
- Crossdykes to Ewe Hill OHL Pre-construction Protected & Notable Species Data (2020)**
- Brown hare sighting
  - Common lizard sighting
  - Mustelid foot prints
  - Otter couch
  - Otter spraint
  - Pine marten scat
  - Squirrel drey
  - Squirrel feeding signs
- Crossdykes to Ewe Hill OHL EIA - Protected & Notable Species Data (2019)**
- Mature trees
  - Otter spraint
  - Pine marten scat
- Hopsrig Wind Farm - Protected & Notable Species Data (2016)**
- Reptile sighting/ hibernacula

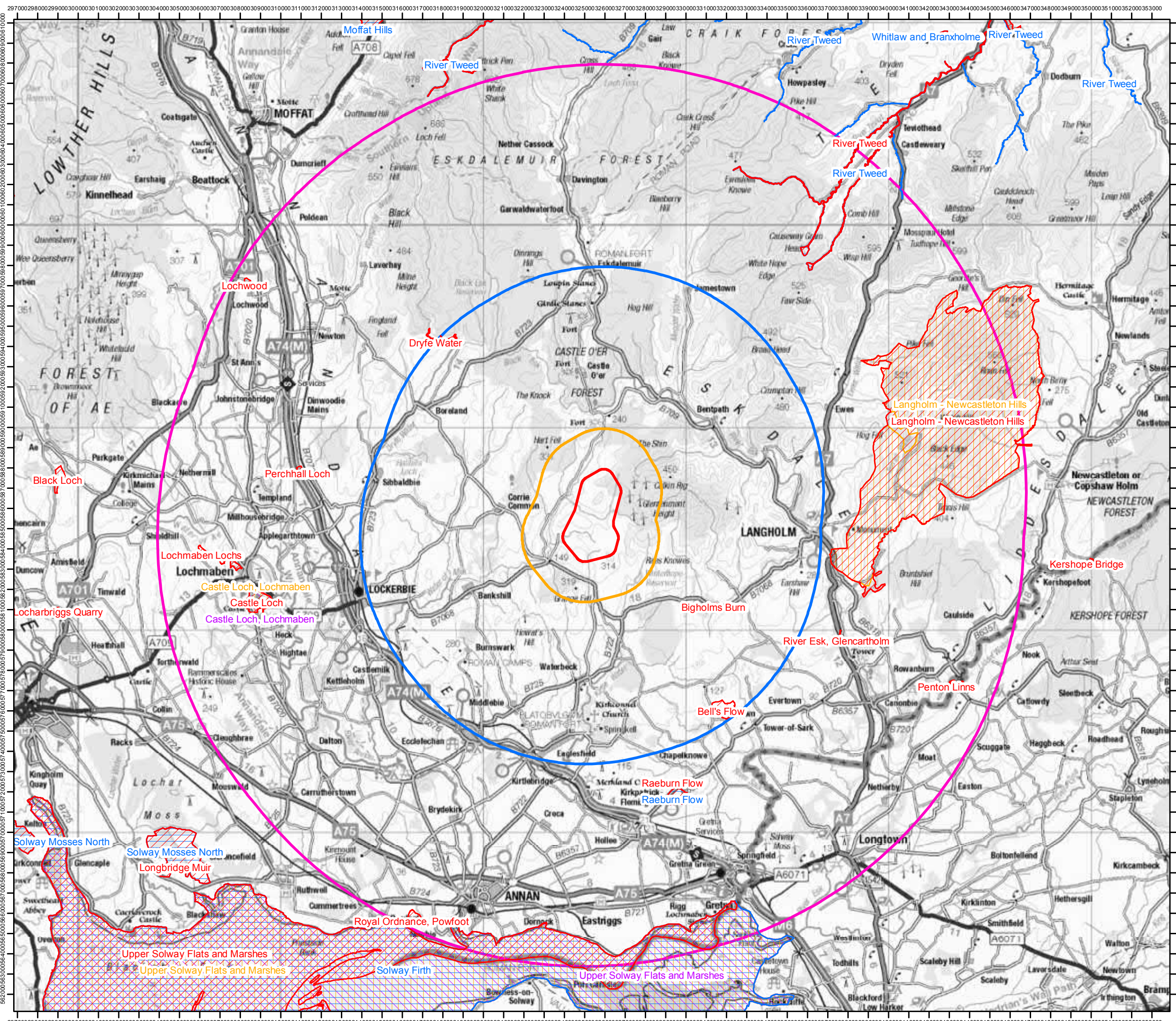
Rev	Date	By	Comment
A	01/06/2020	JD	First Issue











**Ewe Hill to Hopsrig 132KV OHL Grid Connection**  
**Figure 3: Protected & Notable Species (Sheet 2 of 2)**

<b>Drg No</b>	HOPSRIG_WSP_ECO_3
<b>Rev</b>	A
<b>Date</b>	01/06/2020
<b>Scale</b>	1:16,900 @ A3





- Legend**
-  Site of Special Scientific Interest
  -  Special Area of Conservation
  -  Special Protection Area
  -  Ramsar Site - Wetland of International Importance
  -  Routing Study Area
  -  2km Buffer
  -  10km Buffer
  -  20km Buffer

Contains OS data © Crown Copyright [and database right] (2020)  
 Acknowledgement: Contains SNH information licensed under the Open Government Licence v3.0.

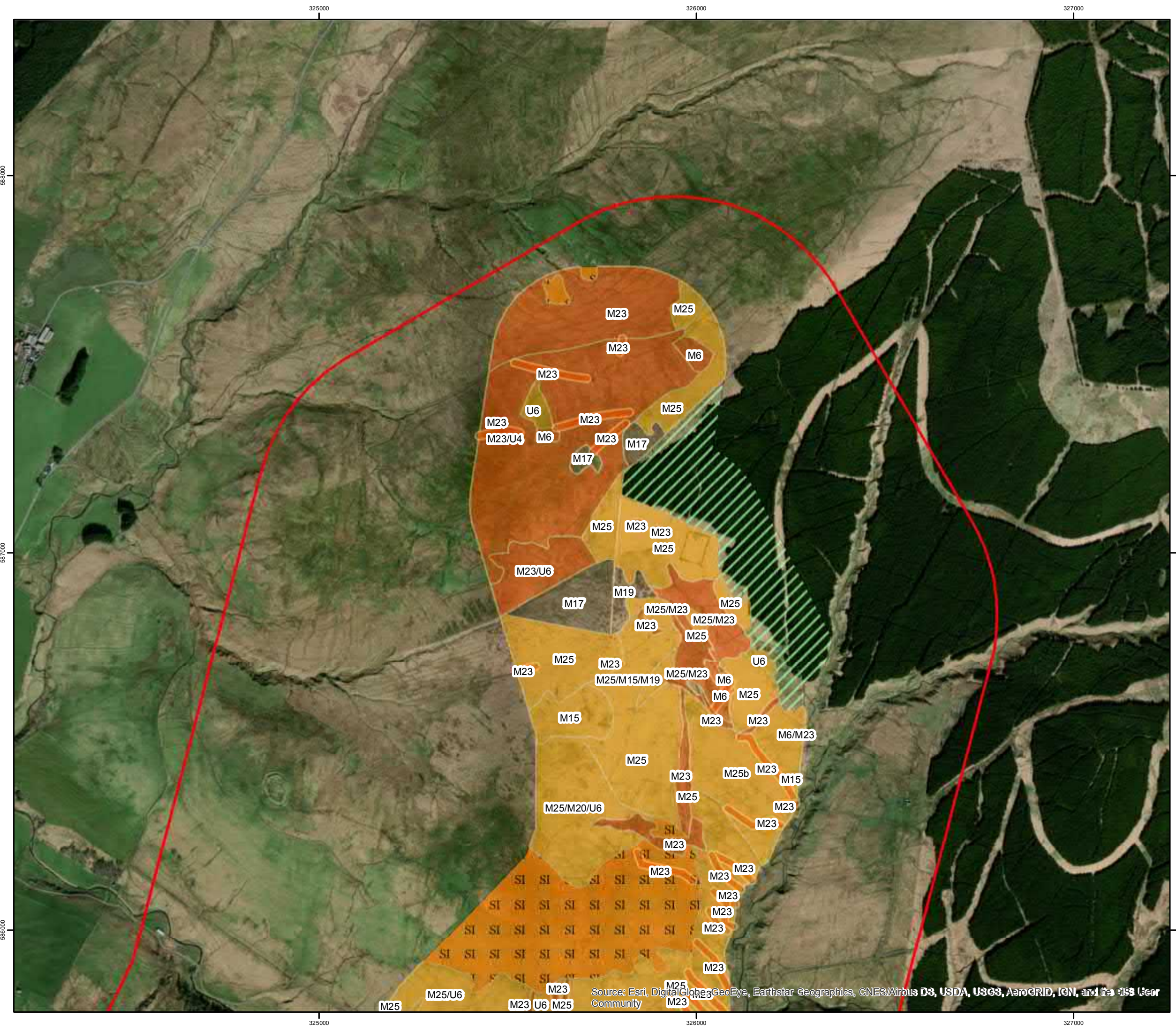
Rev	Date	By	Comment
A	01/06/2020	JD	First Issue



**Ewe Hill to Hopsrig 132KV OHL Grid Connection**  
 Figure 1: Statutory Designated Sites

<b>Drq No</b>	HOPSRIG_WSP_ECO_1
<b>Rev</b>	A
<b>Date</b>	01/06/2020
<b>Scale</b>	1:175,000 @ A3





**Legend**

- Routing Study Area

**Crossdykes to Ewe Hill OHL NVC Community Data (2019)**

- No GWDTE potential
- High GWDTE potential
- Moderate GWDTE potential
- NVC community M10

**Crossdykes to Ewe Hill OHL Phase 1 Habitat Data (2019)**

- A1.2.2 Coniferous plantation
- B2.2 Semi-improved neutral grassland
- C1.1 Continuous bracken

Rev	Date	By	Comment
A	01/06/2020	JD	First Issue



**Ewe Hill to Hopsrig 132KV OHL Grid Connection**

Figure 2: Habitats  
(Sheet 1 of 3)

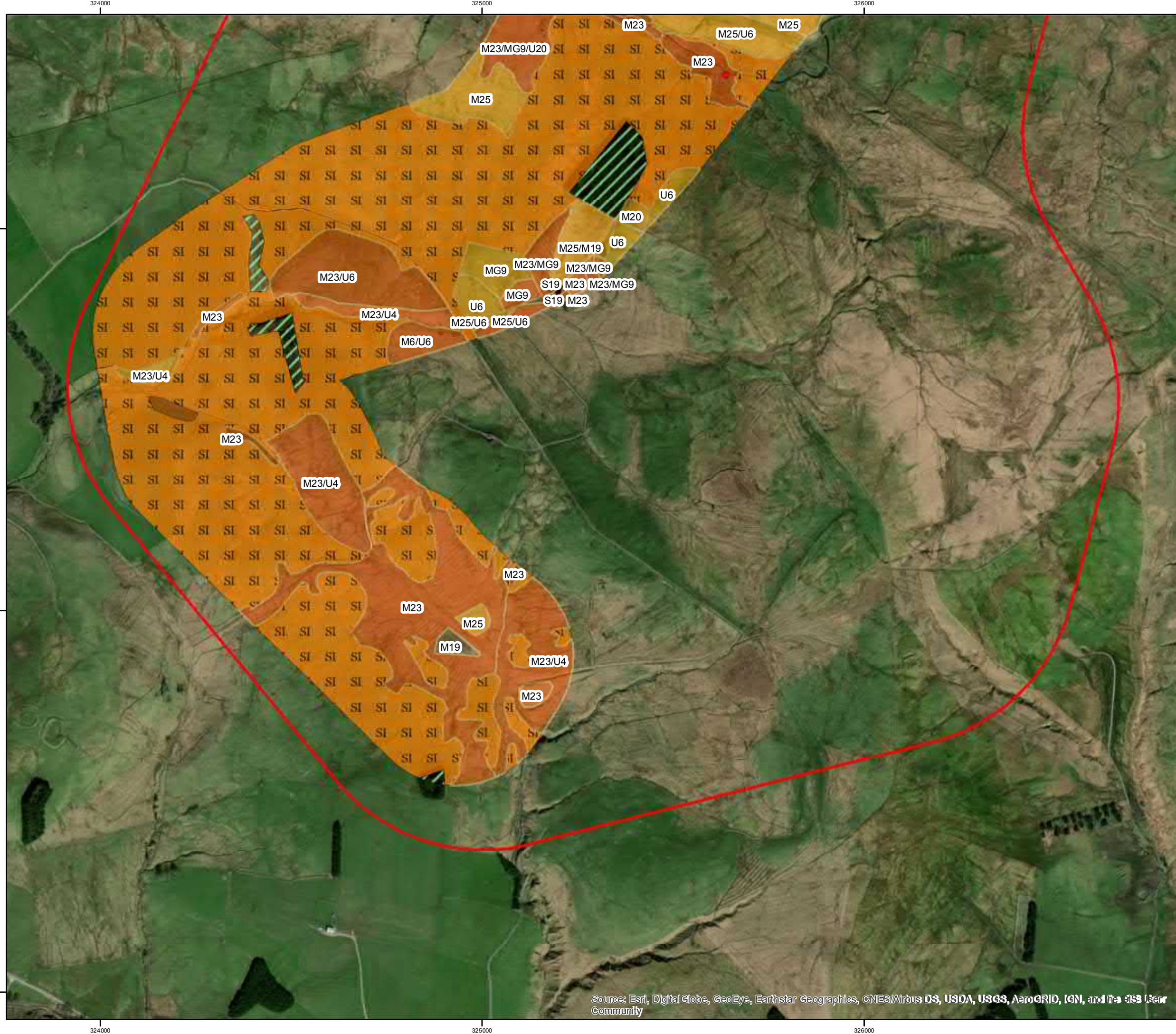
<b>Drg No</b>	HOPSRIG_WSP_ECO_2
<b>Rev</b>	A
<b>Date</b>	01/06/2020
<b>Scale</b>	1:9,400 @ A3

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community









**Legend**

Routing Study Area

**Crossdykes to Ewe Hill OHL NVC Community Data (2019)**

No GWDTE potential

High GWDTE potential

Moderate GWDTE potential

NVC community M10

**Crossdykes to Ewe Hill OHL Phase 1 Habitat Data (2019)**

A1.2.2 Coniferous plantation

B2.2 Semi-improved neutral grassland

C1.1 Continuous bracken

Rev	Date	By	Comment
A	01/06/2020	JD	First Issue



**Ewe Hill to Hopsrig 132KV OHL Grid Connection**

Figure 2: Habitats  
(Sheet 3 of 3)

<b>Drg No</b>	HOPSRIG_WSP_ECO_2
<b>Rev</b>	A
<b>Date</b>	01/06/2020
<b>Scale</b>	1:9,400 @ A3

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## Appendix B: Protected Species Data

**Table B 1 – Crossdykes Overhead Line Protected Species Survey Data (WSP, 2019b)**

Grid reference	Feature	Description
NY 24780 85513	Otter spraint	Fresh otter spraint found at side of bridge.
NY 25549 85464	Otter spraint	Fresh spraint on high rock in river.
NY 24879 85278	Pine marten scat	Several fresh pine marten scats found along top of stone wall. Stone wall provides suitable reptile habitat.
NY 24690 85347	Pine marten scat	Pine marten scats - variety of ages all along wall.
NY 24503 84335	Otter spraint	Old otter spraint.
NY 24470 84395	Otter spraint	Old otter spraint.
NY 24406 84458	Mature trees	Four mature ash trees with moderate-high bat potential. Most mature tree has large rot hole with high bat potential and evidence of barn owl use (pellets and barn owl feathers found). Also suitability for pine marten den.
NY 24325 84655	Otter spraint	Old otter spraint.
NY 24253 84689	Otter spraint	Old otter spraint.
	Pine marten scat	
	Pine marten scat	

**Table B 2 – Crossdykes Overhead Line Pre-construction Survey Data (WSP, 2020a)**

Easting	Northing	Feature	Description
324684	584123	Pine marten scat	Potential very old pine marten scat on stone wall. Dry so no smell but contained beetles and small bones.
324263	584529	Common lizard sighting	Common lizard seen in grass next to burn.
324508	584338	Otter spraint	Old otter spraint in rock on burn.
324669	584237	Brown hare sighting	Disturbed from grass.
324253	584691	Otter spraint	1 dried fragmented spraint on rock in burn.
324428	584806	Otter couch	2 fresh spraints, under bridge, next to potential rest area.
324427	584809	Otter couch	2 fresh spraint under bridge over burn, next to potential rest area.
324480	584773	Pine marten scat	2 potential pine marten scats on top of old stone wall at edge of woodland
324469	584395	Otter spraint	1 dried spraint on rock in burn.
325427	585543	Otter spraint	1 dried fragmented spraint on rock in burn.
325482	585514	Otter spraint	1 old otter spraint on rock under bridge.
325486	585509	Otter spraint	1 dried intact spraint on rock beside burn.
325553	585463	Otter spraint	Multiple dried spraint on rock outcrop in burn.
325397	585237	Squirrel feeding signs	Multiple cones, fresh.
325372	585255	Squirrel feeding signs	Multiple cones.
325377	585237	Squirrel feeding signs	Few cones.
325366	585192	Squirrel feeding signs	Feeding station, multiple cones, fresh.
325342	585182	Squirrel feeding signs	
325337	585182	Mustelid foot prints	1 potential young badger or mustelid.

<b>Easting</b>	<b>Northing</b>	<b>Feature</b>	<b>Description</b>
325278	585073	Squirrel feeding signs	Multiple cones.
325226	585113	Squirrel feeding signs	Multiple cones.
324744	584835	Common lizard sighting	Sighted in riparian habitat beside small burn.
325972	586296	Pine marten scat	Potential pine marten scat on top of tussock in open grassland
326029	586101	Common lizard sighting	Common lizard sighting in tussocky grassland
325230	585109	Pine marten scat	Potential pine marten scat
325709	587007	Pine marten scat	Potential pine marten scat
325816	587232	Pine marten scat	Potential pine marten scat
325029	585055	Pine marten scat	Potential old pine marten scat on rock, full of bones and beetles but too old for scent
325315	585574	Otter spraint	Large pile of old otter spraint on rock in centre of the burn.
325536	585470	Otter spraint	Very old spraint on rock at edge of burn.
325366	585254	Squirrel drey	Potential squirrel drey in tree near edge of woodland.

**Table B 3 – Hopsrig Wind Farm Protected Species Survey Data (MacArthur Green, 2016)**

<b>Easting</b>	<b>Northing</b>	<b>Date</b>	<b>Species</b>	<b>Sign</b>	<b>Description</b>
328418	587857	25/05/2015	Palmate newt	Sighting	Male palmate newt on track, noted during bat survey.
328148	589563	05/06/2015	Red squirrel	Stripped cones	Cones found during bird survey. Can not confirm species.
328460	587707	04/06/2015	Reptile	Sighting	Common lizard sighting - during bird survey.
329158	587775	05/06/2015	Reptile	Sighting	Common lizard sighting - during bird survey.
330359	588689	08/10/2015	Red squirrel	Stripped cones	Stripped cones under several Scot's pine trees, along banks of Boyken Burn and nearby trees on ower banks of woodland to north of burn.
330347	588790	08/10/2015	Red squirrel	Stripped cones	Stripped cones (both from squirrels and vole/mice), outside of pheasant pen, under numerous trees.
329472	588835	08/10/2015	Reptile	Hibernacula	Potential hibernacula/basking area - ruins of stone wall/semi-circle remaining.
329434	588906	08/10/2015	Reptile	Hibernacula	Potential hibernacula/basking - Pile of stones, overgrown vegetation around, on banks of burn (frog seen here).
328895	589040	09/10/2015	Red squirrel	Stripped cones	Stripped cones (also some cones eaten by vole/mice).

<b>Easting</b>	<b>Northing</b>	<b>Date</b>	<b>Species</b>	<b>Sign</b>	<b>Description</b>
327911	589158	09/10/2015	Fish	Sighting	Observed in burn, shallow area of peat erosion - falling into burn.
327480	587916	09/10/2015	Reptile	Hibernacula	Old stone walled pen. Lots of old mossy stones. Lots of gaps in between stones as built like a drystone dyke. Some areas fallen away with rocks and stones on floor. Some vegetation coverage in areas. Could potentially act as hibernacula.
331300	589500	04/05/2016	Otter	Sighting	Around Boyken Crag - Otter hunting for rabbits, in and out of holes near water @ 09:45am.

## APPENDIX D – LIST OF CONSULTEES

<b>Consultees</b>	
<b>Statutory Consultees</b>	
Energy Consents Unit	Scottish Environment Protection Agency
Dumfries and Galloway Council	Scottish Natural Heritage
Historic Environment Scotland	
<b>Non Statutory Consultees</b>	
Association of Salmon Fishery Board	RSPB Scotland
The Coal Authority	Scottish Forestry
Defence Infrastructure Organisation (DIO)	Scottish Water
Marine Scotland	Scottish Wildlife Trust
<b>Other Consultees</b>	
British Horse Society	OFCOM
BT	RAF
Civil Aviation Authority - Airspace	Ramblers Association (Scotland)
Galloway Fisheries Trust	Red Squirrels in Scotland (Southwest Scotland)
Game and Wildlife Conservation Trust	Scottish Badgers
Health and Safety Executive	Scottish Outdoor Access Network (SOAN)
JNCC (for Geological Conservation Review)	Scottish Rights of Way and Access Society (ScotWays)
John Muir Trust	Sustrans Scotland
Mountaineering Council of Scotland	The Crown Estate
National Farmers Union	The Woodland Trust
National Trust for Scotland	Transport Scotland
NATS Safeguarding	Visit Scotland
<b>Local Community Councils</b>	
North Milk Community Council	Middlebie & Waterbeck Community Council
Langholm, Ewes & Westerkirk Community Council	



## APPENDIX E - FIGURES