

**SP Energy Networks**

# **Glenmuckloch to Redshaw Reinforcement Project Routeing and Consultation Report**

**Final report**

Prepared by LUC

February 2024



## SP Energy Networks

### Glenmuckloch to Redshaw Reinforcement Project Routing and Consultation Report

Version	Status	Prepared	Checked	Approved	Date
1.	Draft Report	L. Meldrum	Click to enter initial + surname.	K. Wigley	20.08.2021
2.	Version 2	L. McGowan		K. Wigley	06.09.2023
3.	For SPEN review	L. McGowan	SPEN		22.09.2023
4.	Version 4 (inc. SPEN comments)	L. McGowan D. Walker		K. Wigley	26.10.2023
5.	Version 5 (Copper & figure updates)	LUC Copper	L. McGowan	A.Hutchison	19.12.2023
6.	Final Report	LUC	L. McGowan	A.Hutchison	01.02.2024

Bristol  
Cardiff  
Edinburgh  
Glasgow  
London  
Manchester  
Sheffield  
  
landuse.co.uk

Land Use Consultants Ltd  
Registered in England  
Registered number 2549296  
Registered office:  
250 Waterloo Road  
London SE1 8RD  
  
100% recycled paper

Landscape Design  
Strategic Planning & Assessment  
Development Planning  
Urban Design & Masterplanning  
Environmental Impact Assessment  
Landscape Planning & Assessment  
Landscape Management  
Ecology  
Historic Environment  
GIS & Visualisation  
Transport & Movement Planning  
Arboriculture



OHS627041





# Contents

<b>Chapter 1</b>		<b>Chapter 6</b>	
<b>Introduction</b>	<b>1</b>	<b>Appraisal Findings</b>	<b>20</b>
Purpose of this Report	1	Environmental Considerations	20
The Need for the Glenmuckloch to Redshaw Reinforcement Project	1		
SPEN's Statutory and License Duties	2	<b>Chapter 7</b>	
The Development and Consenting Process	2	<b>Consultation Process and Next Steps</b>	<b>24</b>
The Structure of the Report	3	The Consultation Process	24
		Consultation Strategy	25
		Next Steps	26
<b>Chapter 2</b>			
<b>Project Description</b>	<b>5</b>	<b>Appendix A</b>	
Connection Requirements	5	<b>The Holford Rules and NGC and SHETL Clarification</b>	<b>A-1</b>
Overhead Line Infrastructure	5		
Construction Process	6	<b>Appendix B</b>	
Operation and Maintenance	7	<b>Appraisal Methodology</b>	<b>B-1</b>
Decommissioning	7		
<b>Chapter 3</b>		<b>Appendix C</b>	
<b>Approach to Routeing</b>	<b>8</b>	<b>Environmental Appraisal Tables</b>	<b>C-1</b>
SPEN's Overall Approach to Routeing an Overhead Line	8		
Established Practice for Overhead Line Routeing	9	<b>Appendix D</b>	
The Routeing Objective	9	<b>Appraisal of Landscape Susceptibility to Overhead Electricity Transmission Infrastructure</b>	<b>D-2</b>
Overview of Routeing Process	9		
Strategic Optioneering Study	10	<b>Appendix E</b>	
Routeing Considerations, Identification of Study Area and Collection of Baseline Data	10	<b>Key Characteristics and Sensitivities of Locally Designated Landscapes</b>	<b>E-1</b>
<b>Chapter 4</b>			
<b>Identification of Route Options</b>	<b>13</b>		
The Project Routeing Strategy	13		
<b>Chapter 5</b>			
<b>Appraisal of Route Options</b>	<b>18</b>		
Approach to the Appraisal of Route Options	18		
Environmental Appraisal Criteria	19		
Technical Appraisal Criteria	19		



# Chapter 1

## Introduction

### Purpose of this Report

**1.1** This document has been prepared by LUC on behalf of SP Energy Networks (SPEN). It relates to the identification and appraisal of route options for a new 400kV overhead line (OHL) supported on steel towers from the substation at Glenmuckloch (comprising part of the Glenmuckloch to Glenglass Reinforcement Project<sup>1</sup>) in Dumfries and Galloway to the existing 'ZV' route (Scotland to England 400kV interconnector), via a new 400/132kV substation located at Redshaw, between the existing Coalburn and Elvanfoot substations in South Lanarkshire. The Redshaw substation project is being progressed under a separate consenting route and is called Redshaw 400kV substation. Details of the Redshaw 400kV substation Project can be found at: [https://www.spenergynetworks.co.uk/pages/redshaw\\_400kv\\_substation.aspx](https://www.spenergynetworks.co.uk/pages/redshaw_400kv_substation.aspx).

**1.2** The project is hereafter referred to as the 'Glenmuckloch to Redshaw Reinforcement Project'. The location of the Project is shown on **Figure 1.1**.

**1.3** This report presents the methodology adopted for the identification of route options and the findings of the routing study, culminating with the description of the 'preferred route' for the Project. This report also sets out the process for the consultation which will be undertaken. This process is designed to gather feedback from stakeholders, including the public, to inform the subsequent stages of the Project.

### The Need for the Glenmuckloch to Redshaw Reinforcement Project

**1.4** There is ongoing substantial interest for renewable energy generation development within the project area and SPEN continues to receive associated grid connection requests from developers wishing to develop such renewable energy schemes. Currently, it is proposed that these developments will connect into the 132kV substation at Glenglass as well as the proposed substation at Glenmuckloch.

**1.5** As a result, existing transmission grid infrastructure in the South of Scotland will in the next few years be operating at

---

<sup>1</sup>

[https://www.spenergynetworks.co.uk/pages/glenmuckloch\\_to\\_glenglass\\_reinforcement\\_project.aspx](https://www.spenergynetworks.co.uk/pages/glenmuckloch_to_glenglass_reinforcement_project.aspx)



full capacity and will therefore no longer be able to accommodate the planned and potential new generation in the area. Therefore, SPEN is required to reinforce the network to facilitate future connections and ensure the network remains fit for purpose.

**1.6** To meet this requirement, SPEN is proposing a new 400kV overhead transmission line to connect the new Glenmuckloch substation to the existing 'ZV' route (Scotland to England 400kV interconnector), via the proposed Redshaw 400kV substation. This solution was identified, as the alternative would have meant reinforcing the system from Glenmuckloch to Glenglass, Blackhill, New Cumnock, Coylton to Kilmarnock South substations which would have resulted in a much greater scope of works.

**1.7** The existing transmission network, including 'ZV' route and the proposed Redshaw substation, as well as the location of the Glenmuckloch to Glenglass Reinforcement Project (including the 132kV substation) is shown on **Figure 1.1**.

## SPEN's Statutory and License Duties

**1.8** As transmission licence holder for southern Scotland, SPEN<sup>2</sup> is required under Section 9(2) of the Electricity Act 1989 to:

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

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

**1.10** Schedule 9 of the Electricity Act 1989 imposes a further statutory duty on SPEN to take account of the following factors in formulating proposals for the installation of overhead transmission lines.

- *"(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features or special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and*

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

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

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

## The Development and Consenting Process

**1.13** The Project comprises three key phases:

- Phase One: Routeing and Consultation;
- Phase Two: Environmental Impact Assessment (EIA); and
- Phase Three: Application for Consent.

### Phase One: Routeing and Consultation

**1.14** This report relates to Phase One, which comprises a review of environmental, technical and economic considerations and the application of established step-by-step routeing principles to identify and appraise potential route options to establish a 'preferred' route for the OHL.

**1.15** SPEN is committed to ongoing consultation with interested parties, including statutory and non-statutory consultees and local communities. Whilst there is no statutory requirement to consult during the early routeing stages, SPEN nonetheless considers it good practice to introduce consultation at this stage.

### Phase Two: Environmental Impact Assessment (EIA)

**1.16** As the project comprises 'construction of overhead power lines with a voltage of 200 kilovolts or more and a length of more than 15 kilometres', the Project is defined as an 'EIA development' under Schedule 1 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations

<sup>2</sup> SPEN owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly-owned subsidiaries SP Transmission plc (SPT) and SP Distribution plc (SPD). SP Transmission plc is the holder of a transmission licence.

The references within this report to SPEN in the context of statutory and licence duties and the application for section 37 consent below should be read as applying to SP Transmission plc



2017. As a Schedule 1 development, an EIA is required and the provisions of the EIA Regulations apply.

**1.17** SPEN will therefore follow the EIA process, with the topics requiring further consideration to be agreed with consultees through the EIA Scoping process. SPEN will then prepare an EIA Report to accompany the S37 application.

**1.18** A request for a Scoping Opinion was submitted to South Lanarkshire Council (SLC) in Q4 of 2023 for the Redshaw 400kV Substation Project.

### Phase Three: Application for Consent

**1.19** SPEN will apply to the Scottish Ministers for consent under Section 37 of the Act, as amended, to install and keep installed, the proposed Glenmuckloch to Redshaw Reinforcement Project. In conjunction with the Section 37 application, SPEN will apply for deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997, as amended, for any ancillary development such as access tracks. The EIA Report will accompany the application.

### Stakeholder Engagement

**1.20** Stakeholder engagement, including public involvement, is an important component of the Scottish planning and consenting system. Legislation and government guidance aim to ensure that the public, local communities, statutory and other consultees and interested parties have an opportunity to have their views taken into account throughout the planning process.

**1.21** Striking the right balance can be challenging, and in seeking to achieve this, SPEN recognises the importance of consulting effectively on proposals and of being transparent about the decisions reached. SPEN is keen to engage with key stakeholders including local communities and others who may have an interest in the Glenmuckloch to Redshaw Reinforcement Project. This engagement process begins at the early stages of development of a project and continues into construction once consent has been granted.

**1.22** SPEN's approach to stakeholder engagement for major electrical infrastructure projects is outlined in Chapter 2 of the SPEN document 'Approach to Routeing and Environmental Impact Assessment'<sup>3</sup>. SPEN aims to ensure effective, inclusive and meaningful engagement with the public, local communities statutory and other consultees and interested parties through four key engagement steps:

- **Pre-project notification and engagement:** Discussions are undertaken with consenting bodies, planning

authorities, and statutory consultees such as NatureScot, Historic Environment Scotland and Scottish Forestry. Early and proactive engagement enables the views of these consultees to inform project design, assessment methodologies and further engagement. It also provides consultees with an early understanding of the likely programme to submission of the application for consent.

- **Information gathering:** To inform the routeing stage, information on relevant environmental and planning considerations and proposed data gathering techniques (e.g. for seasonal ecological surveys) is requested from statutory consultees and other relevant organisations.
- **Obtaining feedback on emerging route options:** This Routeing and Consultation document has been prepared to gather feedback on the emerging project details. It will be issued to statutory consultees, and made available on SPEN's website, at Council offices and in public libraries, with its availability advertised in the press. Local exhibitions and/or public meetings will be arranged. SPEN will also look to virtual methods of informing consultation and gathering feedback from stakeholders such as project specific websites to host virtual consultations to share relevant information.
- **The EIA stage:** The results of stakeholder engagement are taken into consideration and used to confirm the 'proposed route' for progression to EIA. The main purpose of the EIA is to identify the significant effects arising from a project. Further consultation is carried out during the EIA stage, including additional information gathering, and the preparation of a publicly available Scoping Report which accompanies a 'Request for a Scoping Opinion' to the consenting authority as to the information to be provided in the EIA Report.

**1.23** In addition, and as noted above, SPEN as a holder of a transmission licence, has a duty under section 38 and Schedule 9 of the Electricity Act 1989, when formulating proposals for the new electricity lines and other transmission development, to have regard to the effect of work on communities, in addition to the desirability of the preservation of amenity, the natural environment, cultural heritage, landscape and visual quality.

## The Structure of the Report

**1.24** This report comprises of the following chapters:

- **Chapter 1:** Introduction;

<sup>3</sup> chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.spenergy

etworks.co.uk/userfiles/file/SPEN\_Approach\_to\_Routeing\_Document\_2nd\_version.pdf



- **Chapter 2:** Project Description;
- **Chapter 3:** Approach to Routeing;
- **Chapter 4:** Identification of Route Options;
- **Chapter 5:** Appraisal of Route Options;
- **Chapter 6:** Appraisal Findings; and
- **Chapter 7:** The Consultation Process and Next Steps.

**1.25** This report is also supported by figures and appendices, as listed in the contents page.



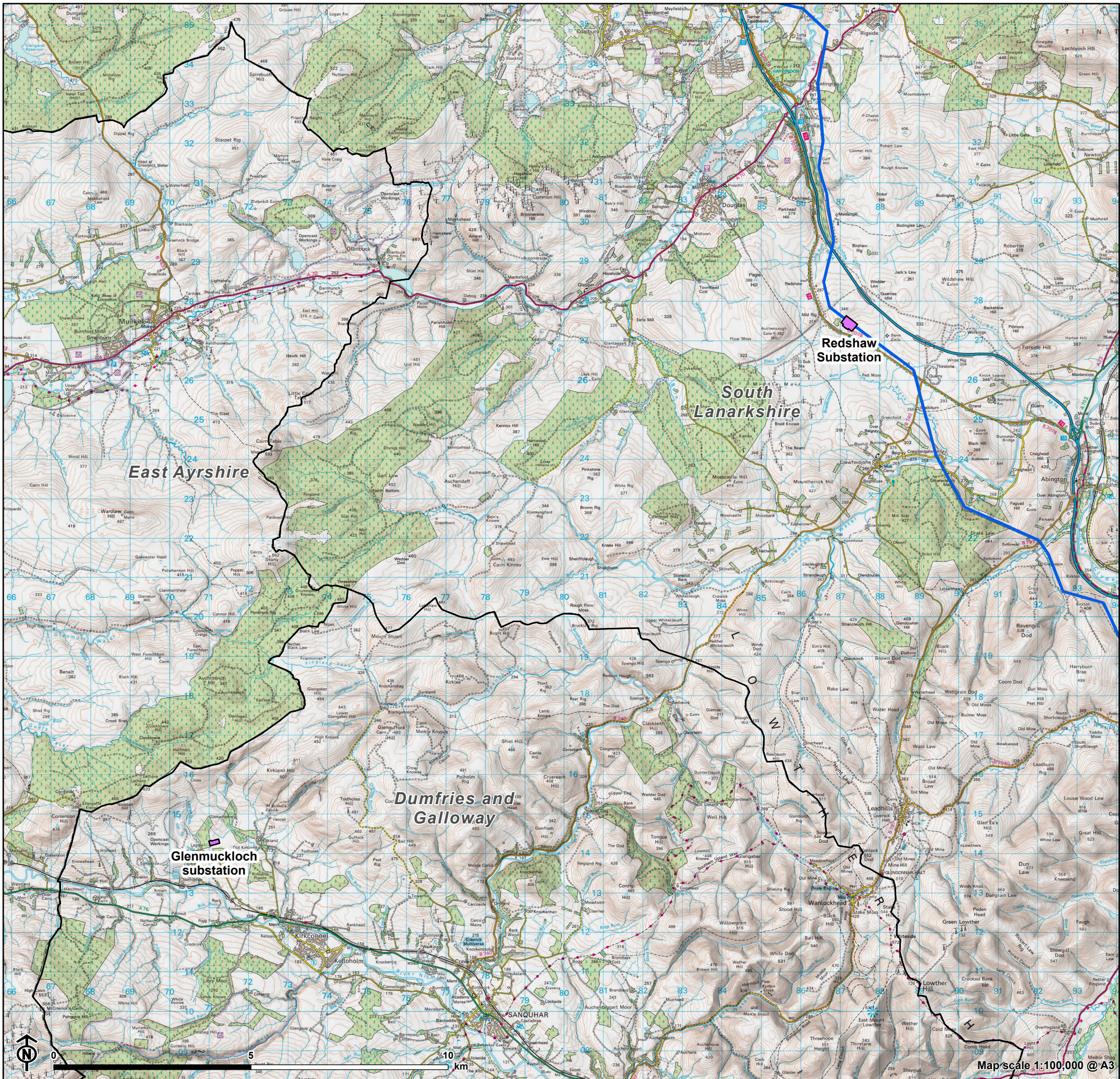
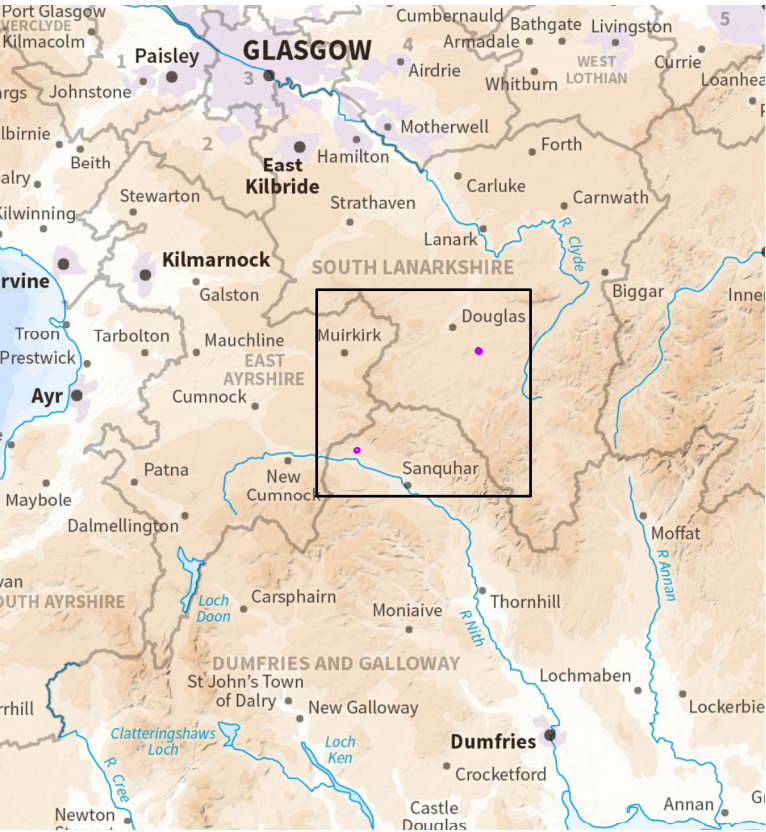


Figure 1.1: Location Plan

- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Existing 400kV overhead line (OHL)
- Local Authority





## Chapter 2

### Project Description

#### Connection Requirements

**2.1** A new 400kV OHL is required to connect the Glenmuckloch substation to a new 400kV substation adjacent to the existing ZV route (Redshaw substation). The Glenmuckloch to Redshaw Reinforcement Project is approximately 23km in length and will be supported on double circuit steel towers.

#### Overhead Line Infrastructure

**2.2** With an overhead line, conductors (or wires) are suspended at a specified height above ground and supported by wooden poles or lattice steel towers, spaced at intervals. Conductors can be made either of aluminium or steel strands. Most overhead lines at 400kV carry two 3-phase circuits, with one circuit strung on each side of a tower. An earth wire is also required to provide lightning protection.

**2.3** Conductors are strung from insulators attached to the lower cross-arms and prevent the electric current from crossing to the tower body.

#### Tower Types

**2.4** Towers are used to carry conductors at 400kV. These are generally of a lattice steel construction fabricated from high tensile steel which is assembled using galvanised high tensile steel bolts with nuts and locking devices.

**2.5** There are three types of tower, as shown on **Figure 2.1**:

- **Suspension or Line:** where the tower is part of a straight line section;
- **Tension or Angle:** where there is a horizontal or vertical deviation in line direction of a specified number of degrees. There are three main types of angle tower 30 degrees, 60 degrees and 90 degrees; and
- **Terminal:** where the overhead line terminates into a substation or on to an underground cable section via a separate cable sealing end compound or platform.

#### Tower Heights and Span Lengths

**2.6** The overhead line will be supported on L12 lattice steel towers, which have six cross-arms (three on each side) and has a standard design height of **46m**. A photograph showing examples of existing L12 towers in the landscape is provided



as **Figure 2.2**. Where the 400kV OHL is proposed to route in relative proximity to wind turbines the use of low-tower' L12 may be utilised if required. The low-tower L12 has four cross arms (two on each side) with a standard height of 35m. Photograph examples of a low tower in the landscape are shown on **Figure 2.3**.

**2.7** The section of overhead line between towers is known as the 'span', with the distance between them known as the 'span length'. Span lengths between towers average between 200m and 300m but can be above 350m if there is a requirement to span something such as a river or a loch.

**2.8** Towers are used to regulate the statutory clearances required for conductor height, which is determined by the voltage of the overhead line (the higher the voltage, the greater the safety clearance that will be required) and the span length required between towers.

#### Tower Colour

**2.9** Towers are fabricated from galvanised steel. It is not possible to colour towers to camouflage them for all times of day or all seasons. However, the colour of towers can often only be recognised over a short distance. Over greater distances, the colour is often not distinguishable and appears as grades of light and dark. Where towers are viewed against the sky, colour cannot be relied upon to diminish visibility, since the lighting characteristics of the sky vary greatly. Towers will turn a dull grey colour after about 18 months.

### Construction Process

**2.10** The construction of overhead lines and underground cables requires additional temporary infrastructure such as temporary accesses to tower locations and construction compounds to store materials. All have limited maintenance requirements, and all are subject to well-established procedures for dismantling/decommissioning.

#### Steel Tower Construction

**2.11** The construction of OHLs requires additional temporary infrastructure such as temporary accesses to tower locations and construction compounds to store materials. All have limited maintenance requirements, and all are subject to well-established procedures for dismantling/decommissioning. The general order of construction comprises these stages:

- Felling of trees (where required);
- preparation of accesses;
- excavation of foundations;
- tower delivery;
- erection of towers;

- delivery of conductor drums and stringing equipment;
- insulators and conductor erection and tensioning; and
- reinstatement.

**2.12** Prior to constructing the OHL, temporary working areas around each steel tower location will be required for foundation excavation and steel tower erection. Any vegetation that requires removal will be removed or lopped.

**2.13** The erection of the steel towers will require excavations to be undertaken for each leg of the tower. A typical L12 leg excavation will be 10m by 10m excavation width for the line towers, increasing up to approximately 20m by 20mm for angle towers. The depth of excavation would be approx. 3-5m deep for line and angle towers. Once the excavations are formed the tower legs will be fixed in accordance with the foundation design. Following this, the foundation will then be concreted.

**2.14** Steel towers are erected in sections, i.e. between angle towers and/or terminal towers. Steelwork for each tower will be delivered to site in sections via HGV. Tower assembly will commence by either setting up a derrick crane and building up the tower in steel sections or, alternatively, assembling the tower in part at ground level and lifting the tower in sections by crane to complete assembly.

**2.15** Once a sufficient number of sequential sections of towers have been erected, stringing of the conductors will commence. This requires temporary 'pulling' (or 'stringing') areas at tower locations approximately every 3-4km along a line, or where a deviation in the route occurs. The typical pulling area comprises approximately 20m x 50m for steel towers.

**2.16** The temporary pulling areas will be formed using one of the following:

- stone laid on a membrane (as similar to the floating road access track);
- timber matting; and
- aluminium panels.

**2.17** All temporary surfacing materials will be removed from site on completion of the stringing operations.

#### Access

**2.18** Temporary accesses will be taken from the existing main road network wherever feasible, with the use of selected unclassified roads also likely to be required. The use of existing forestry and/or wind farm tracks and watercourse crossings will be maximised, with the upgrading of these where necessary.

**2.19** Where existing roads/tracks cannot be used, the use of temporary stone tracks will be required to facilitate construction of the steel towers. All temporary tracks will be removed after commissioning with land being restored to its former condition.

### Temporary Working

**2.20** Temporary working areas will be required for the duration of the construction works. Temporary vehicular access is required to every steel tower location. Steel tower locations will have a working area of 25m x 25m for standard towers and 50m x 50m for angle towers.

**2.21** In some cases, the shape or size of the working area will be determined by nearby environmental or land use constraints, identified prior to construction. Each working area will be taped off to delineate the area for environmental protection reasons.

**2.22** Following the completion of the construction works, the temporary working areas will be reinstated and restored to former conditions.

### Construction Timescales

**2.23** The total duration of construction activity at any single tower site is approximately two weeks for tower foundations, one to two weeks for tower construction, and up to four weeks for conductor erection and stringing depending on the size of the tower and the number of the conductors to be strung. A typical cable installation rate is up to 160m per week, depending on the terrain.

## Operation and Maintenance

**2.24** Whilst most OHL components are maintenance free, exposed elements which suffer from corrosion, wear, deterioration and fatigue may require inspection and periodic maintenance. OHL conductors generally require refurbishment after approximately 40 years.

**2.25** The condition of tower steelwork and foundations is monitored regularly. Towers which have deteriorated significantly may be dismantled carefully and replaced.

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

**2.27** Annual maintenance checks on foot are commonly required during operation for underground cables. The cable section will also be kept clear of all but low growing vegetation. In the unlikely event that there is a fault along the cable, the area around the fault is excavated and the fault

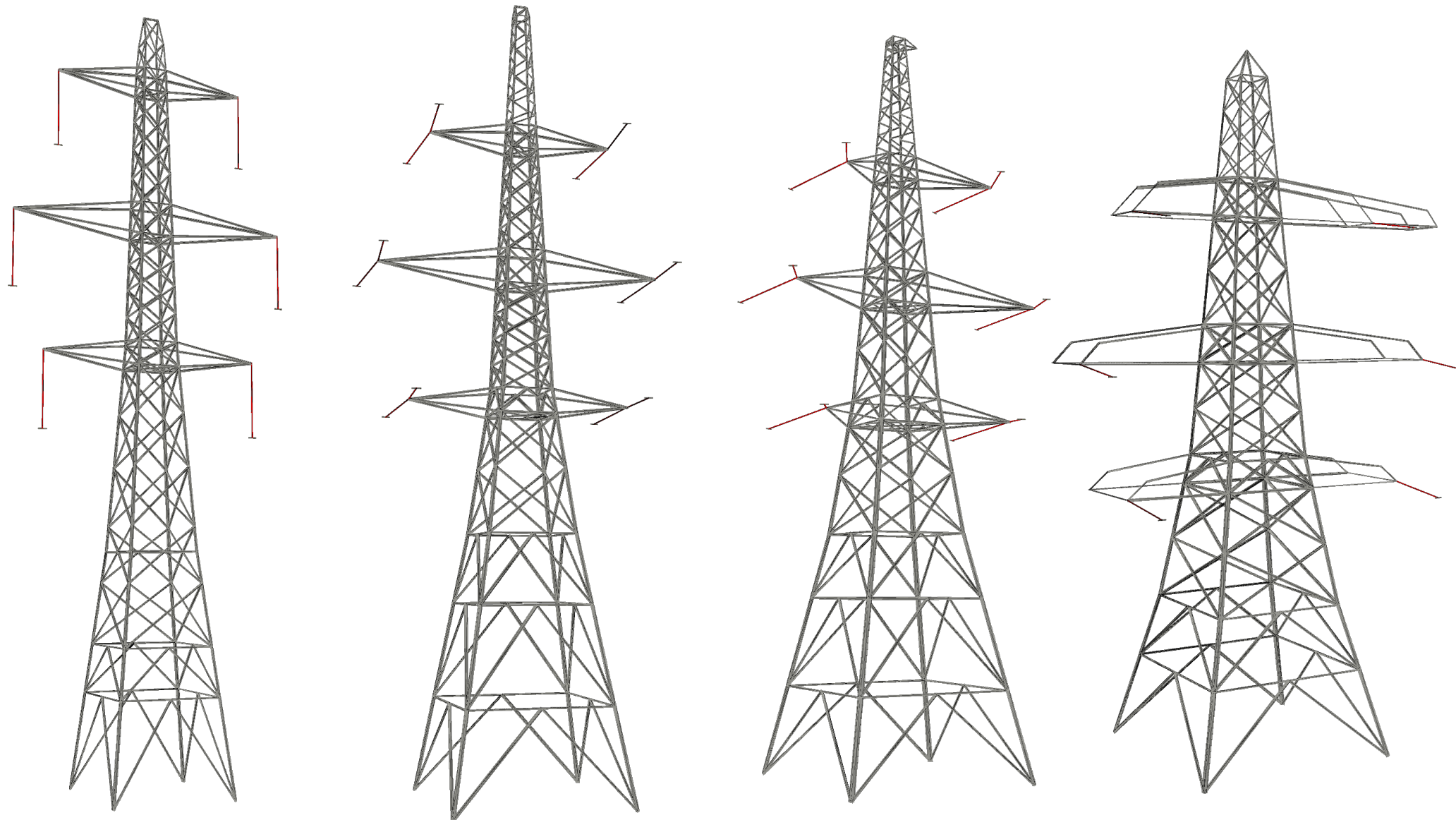
repaired, or a new section of cable inserted as a replacement. If lines are decommissioned, cables can either be left in situ or carefully excavated and removed.

## Decommissioning

**2.28** If a line is decommissioned, towers will be removed with components re-used where possible. Foundations are removed to a minimum depth of one metre below ground level, the area cleared and the ground reinstated.



Figure 2.1: Tower Types



L12 Suspension  
Tower

L12 Angle Tower

L12 Angle Tower

L12 Terminal Tower

**NOT TO SCALE**

Figure 2.2: L12 Standard Steel Tower Examples





Figure 2.3: L12 Low Steel Tower Examples





## Chapter 3

### Approach to Routeing

#### SPEN's Overall Approach to Routeing an Overhead Line

**3.1** In June 2021 SPEN published the second version of its Approach to Routeing and Environmental Impact Assessment document outlining the approach taken to routeing transmission infrastructure<sup>4</sup>. The approach to routeing forms the basis for the methodology used for the Project.

**3.2** Having established the need for a project and the two points of connection, the starting point is to identify an overhead line route.

**3.3** The approach to routeing an OHL is based on the premise that one of the major effects 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 OHL to fit the topography, by using topography and trees to provide screening and/or backclothing, and by routeing the line at a distance from settlements and roads. However, other environmental issues also play a key role in this process, including (in no hierarchical order):

- visual amenity;
- landscape character;
- ecology and ornithology (biodiversity, including areas of irreplaceable habitat);
- hydrology and water resources,;
- geology and soil (such as carbon-rich soils and deep peat);
- cultural heritage including archaeology;
- land uses including agriculture and forestry;
- recreation and tourism.

**3.4** Technical considerations, which can influence routeing also require to be taken account of alongside environmental and economic considerations. Technical considerations include the existing electricity transmission network, access requirements, slope gradient, altitude, waterbodies, peat and the presence of wind turbines.

---

<sup>4</sup>

[https://www.spenergynetworks.co.uk/userfiles/file/SPEN\\_Approach\\_to\\_Routeing\\_Document\\_2nd\\_version.pdf](https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf)

## Established Practice for Overhead Line Routeing

**3.5** The methodology for identifying the preferred route for the overhead line is based on the Holford Rules 1959, with subsequent amendment); **Appendix A**.

**3.6** The methodology is also informed by the following:

- SPEN and LUC experience of routeing overhead lines;
- relevant national and local planning policy and guidance; and
- consultation with relevant stakeholders.

### The Holford Rules for Routeing Overhead Transmission Lines

**3.7** 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 Electricity Transmission Plc (NGT)) as owner and operator of the electricity transmission network in England and Wales, with notes of clarification added to update the Rules. A subsequent review of the Holford Rules (and NGC clarification notes) was undertaken by ScottishHydro Electric Transmission Limited (SHETL) in 2003 to reflect Scottish circumstances.

**3.8** These guidelines for the routeing of new high voltage overhead transmission lines form the basis for routeing the 400kV overhead line. 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.

### Biodiversity Net Gain

**3.9** SPEN is committed to achieving No Net Loss (NNL) of biodiversity across all of its projects.

**3.10** The Scottish Government has not adopted a formal definition of Biodiversity Net Gain (BNG). However, in recognition of their commitment to NNL, SPEN has proactively adopted an assessment tool based on DEFRA's BNG metric (version 2.0<sup>5</sup>). The tool has been specifically adapted to reflect the specific Scottish ecological context and provides parity with Scottish and Southern Energy Networks (SEN) toolkit<sup>6</sup>.

**3.11** The adopted assessment tool will allow detailed analysis of biodiversity gains and losses as a consequence of development. However, following a period of testing, SPEN has determined that the assessment tool offers limited value at routeing stage, as detailed habitat and vegetation data is rarely available for all route options.

**3.12** Consequently, a qualitative assessment of BNG opportunities is undertaken. Using data collected to inform the biodiversity appraisal detailed in later chapters of this report, professional ecological judgement is applied to determine the potential for development within each route to achieve NNL. The presence of designated sites and likely presence of habitats of particular conservation importance, along with the potential for site-based biodiversity enhancement interventions are considered.

**3.13** Individual route options that are likely to have greater potential to achieve NNL are preferred.

## The Routeing Objective

**3.14** In accordance with SPEN's Approach to Routeing and Environmental Impact Assessment document, and to fulfil SPEN's license obligations and Schedule 9 responsibilities under the Electricity Act 1989, the routeing objective seeks to ensure that an appropriate balance is made between technical engineering requirements, economic viability and the environment (including people). On this basis, the Routeing Objective for the Project is:

**"To identify a technically feasible and economically viable route for a continuous 400kV overhead line supported on steel towers, from the Glenmuckloch substation to the proposed Redshaw 400kV substation. This route should, on balance, cause the least disturbance to the environment and the people who live, work and enjoy recreation within it."**

## Overview of Routeing Process

**3.15** The methodology for overhead line routeing follows a number of broadly sequential steps as shown in **Figure 3.1** below.

**3.16** Whilst presented in a broadly linear manner, the routeing process is iterative, and the steps outlined below may be re-visited several times. The outcome of each step is subject to a technical and, where relevant, consultation, 'check' with key stakeholders including the public, prior to commencing the next step. Professional judgement is used to establish

<sup>5</sup> Note that Defra has now published version 4.0 of the BNG metric, which is available at [The Biodiversity Metric 4.0 - JP039](https://www.naturalengland.org.uk) ([naturalengland.org.uk](https://www.naturalengland.org.uk))

<sup>6</sup> <https://www.sserenewables.com/sustainability/biodiversity-net-gain/>

explicitly the balance between technical, economic viability and environmental factors.

## Strategic Optioneering Study

**3.17** In accordance with the SPEN Approach to Routeing Document, for a project of the scale of the Glenmuckloch to Redshaw Reinforcement Project, a Strategic optioneering Study (SOS) was undertaken by LUC in 2019.

**3.18** A number of 'Strategic Corridors' and 'Broad Corridors' were identified during the SOS to help refine the study area and inform the subsequent development and appraisal of the route options. These Strategic Corridor and Broad Corridor options, cover a broader geographical area than the route options and allow the routeing process to be informed by an additional stage of options appraisal and stakeholder engagement.

**3.19** The broad corridor options were subjected to a relative appraisal against a number of environmental and technical criteria to identify potential constraints and opportunities for future routeing. The methodology and findings of the appraisal, including the summary of 'constraints' and 'opportunities' for each broad corridor are presented in the SOS report (LUC 2019)<sup>7</sup>.

**3.20** The methodology and findings of the SOS were presented to the statutory consultees at a meeting held on 5<sup>th</sup> September 2019. The meeting was attended by the Scottish Government Energy Consents Unit, East Ayrshire Council, Dumfries and Galloway Council, South Lanarkshire Council, Nature Scot (formerly SNH), Scottish Environment Protection Agency, Historic Environment Scotland and Scottish Forestry.

**3.21** Reflecting the findings of the SOS, and informed by the discussions and preliminary feedback at the meeting, SPEN confirmed the preferred broad corridor as **Broad Corridor 2A** and the preferred substation siting area as **Substation Siting Area B**. See **Figure 3.2**.

**3.22** The preferred Broad Corridor and Substation Siting Area were subsequently progressed to the routeing and siting stages. The overview of the overhead line routeing stages are set out below and the application of the methodology are set out in Chapter 4, however the substation siting stages are not discussed further within this document, as the proposed new Redshaw 400kV substation is the subject of a separate consenting process.

**3.23** The methodology for the identification of route options was informed by the findings of the SOS.

## Routeing Considerations, Identification of Study Area and Collection of Baseline Data

**3.24** The main environmental and technical considerations which should be taken into account in routeing an OHL are determined from a study of potential effects and established routeing practice. These 'routeing considerations' include topography, landscape character and areas of high amenity value.

**3.25** A 'study area' is first defined and information on the main environmental considerations within it is gathered. In addition, information is gathered on the technical considerations which apply such as the existing electricity transmission network, access requirements, slope gradient, altitude, waterbodies and peat and other infrastructure such as wind farms. Consultations are undertaken to obtain additional, up-to-date information on relevant considerations. The study area needs to be large enough to accommodate all likely route options, reflecting the Routeing Objective.

**3.26** Considerations which are likely to constrain routeing are mapped together on a 'constraints map' to give an overview of the routeing issues, with all relevant environmental and technical information mapped in their relative locational context. Topography is also mapped at this stage.

## Routeing Strategy

**3.27** Reflecting the study area and the routeing considerations located within it, a Routeing Strategy is developed to provide clarity on how the overall Routeing Objective will be achieved for the specific project in question. This is based on established practice for routeing and careful consideration of the specific technical and environmental constraints and opportunities relating to routeing an overhead line through the identified study area. Further information on the routeing strategy is provided in **Chapter 4** of this report.

## Development of Route Options

**3.28** Subsequent to, and informed by, the SOS, considerations identified in the routeing strategy are applied to the study area to establish a number of possible 'Route Options'. This process involves the avoidance of designated areas of high amenity value and irreplaceable habitat wherever possible. These areas generally include areas of natural and cultural heritage value designated at a national, European or international level. These areas of high amenity value are balanced with the technical constraints to inform the landscape led identification of route options.

<sup>7</sup> [www.spenergynetworks.co.uk/pages/grrp.aspx](http://www.spenergynetworks.co.uk/pages/grrp.aspx)



### **Appraisal of Route Options**

**3.29** Each route option is appraised against the agreed environmental and technical routeing considerations, which have supporting objectives. For example, in relation to visual amenity, one objective may be to avoid/reduce, as far as is practicable, potential effects on views from residential receptors. In relation to technical considerations, such as the presence of existing and/or proposed turbines and the existing electricity network, the objective may be to avoid technical conflicts with existing or planned infrastructure.

**3.30** In conjunction with the collection of relevant data and the appraisal of route options, the routeing considerations and related objectives may be re-appraised and updated as more information becomes available. Route options may then be rejected or modified, or new route options developed. The options which perform poorly in this initial appraisal are not considered further and the remaining options are then further refined and re-appraised if necessary. The objective of this process is to identify the 'preferred route' which is technically feasible and economically viable whilst causing the least disturbance to the environment and to people.

### **Selection of a Preferred Route**

**3.31** After the appraisal of route options, an emerging preferred option is subjected to a further technical check prior to SPEN confirming the preferred option.

**3.32** At this stage the preferred route is also subjected to a review of potential cumulative effects with other proposed similar developments (if any) within the study area which are in the public domain. Following the cumulative review, with associated revisiting or modification of routes as necessary, the 'preferred route' is confirmed.

**3.33** This is then taken forward for stakeholder consultation. The routeing and consultation report (i.e. this document) provides details on route options considered and provides a clear and transparent justification for the selection of the preferred route option.

### **Modification of the Preferred Route**

**3.34** If required, following consideration of the consultation feedback the preferred route and/or substation site may be modified to reflect the feedback. Modifications may result in further consultation if necessary.

### **Selection of the Proposed Route**

**3.35** The preferred route, with any post consultation modifications, is subsequently confirmed by SPEN as the 'proposed route'. This is then progressed to the EIA and detailed design stage to establish a final alignment, including locations for towers and for any ancillary development

required such as temporary construction access tracks, laydown areas and construction compounds.

Figure 3.1: Routeing Methodology

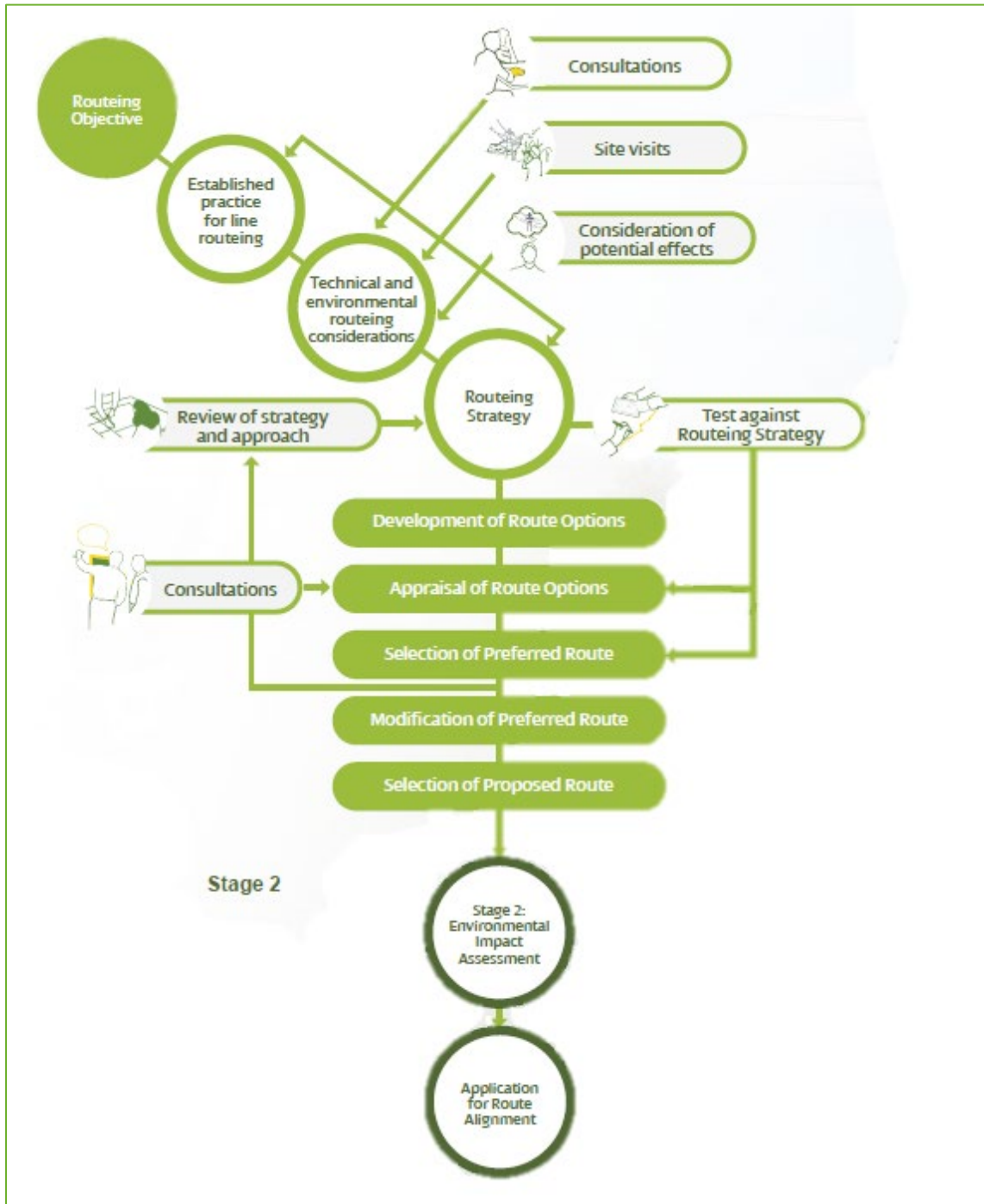
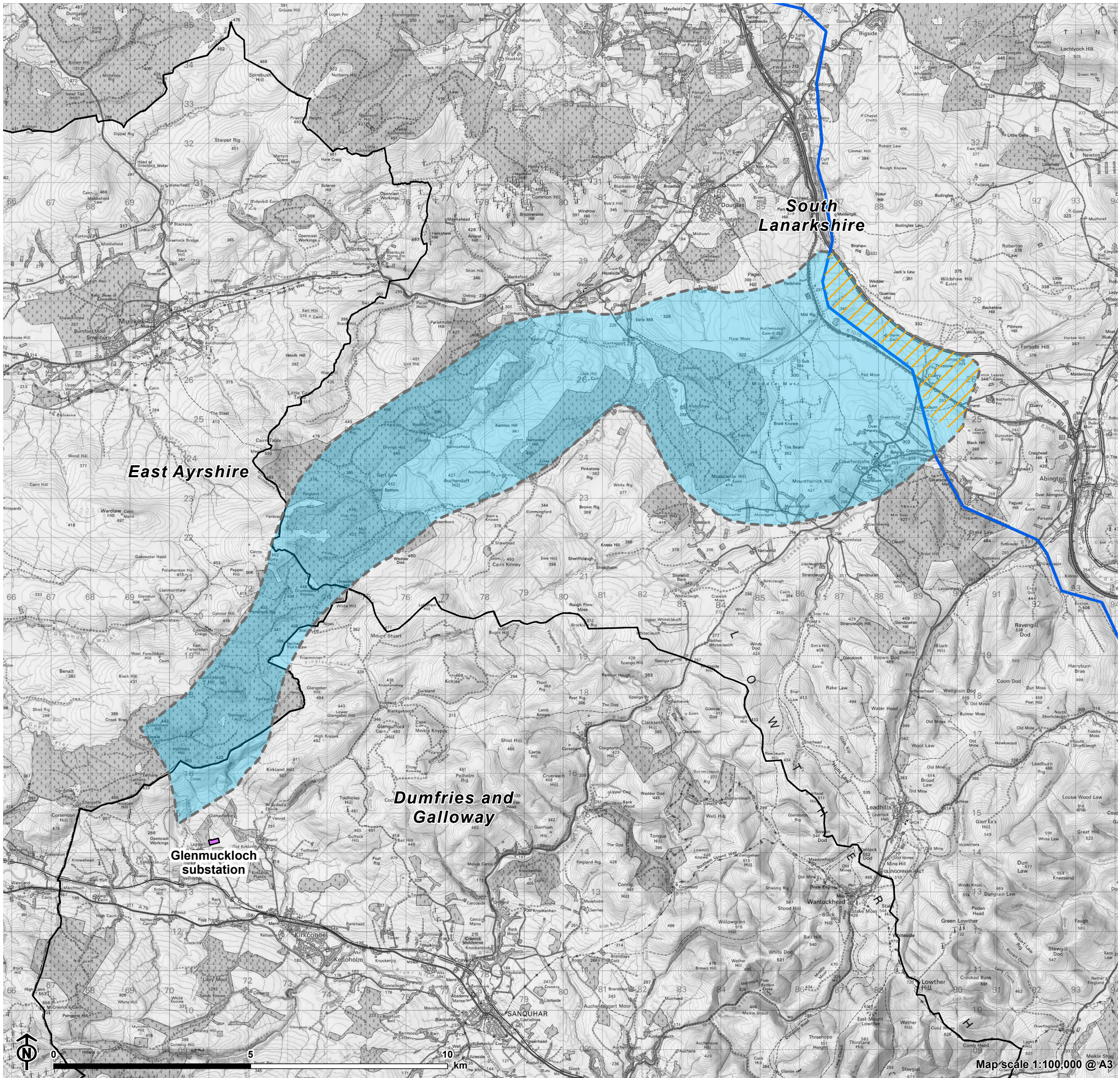




Figure 3.2: Broad Corridor and Substation Siting Area



- Proposed Glenmuckloch substation
- Existing 400kV overhead line (OHL)
- Local Authority
- Broad corridor 2A
- Substation Siting Area



## Chapter 4

### Identification of Route Options

#### The Project Routeing Strategy

**4.1** As set out in Chapter 3, application of the methodology at the Strategic Optioneering Study (SOS) stage identified a Preferred Broad Corridor and Substation Siting Area (**Figure 3.2**). The Preferred Broad Corridor avoided the areas of highest environmental value (Holford Rule 1), and wherever possible tended to follow valleys or lower lying topography, to limit widespread visibility of the overhead line by avoiding the highest ground. However, the consequence of routeing within valleys is often that potential effects on communities (e.g. residential areas/settlements and the visual amenity from individual residential properties) may need to be balanced with avoiding areas of highest environmental value and/or limiting wider visibility.

**4.2** The routeing strategy, which has informed the identification and appraisal of the route options is:

*“To limit visual effects of the proposed overhead line, routes will seek to avoid the highest ground and ridgelines and generally follow valleys, responding to the grain of the landscape wherever possible, subject to avoiding areas of highest amenity value.”*

#### The Study Area and Mapping of Routeing Considerations

**4.3** On the basis that preferred Broad Route Corridor 2A and preferred Substation Siting Area B (Redshaw) were progressed to the route option stage, these formed the study area for the mapping of routeing considerations. Since the 2019 SOS the study area at the eastern end was extended to reflect the emergence of further renewable energy developments and the positioning of Glenmuckloch substation moved further south and the study area was extended to reflect this movement. The study area is reflected in **Figure 4.1**. The methodology for identification of route options follows the methodology set out in Chapter 3 of this report, reflecting the SPEN approach to routeing document and the Holford Rules.

**4.4** The Holford Rules are broadly hierarchical, with Rule 1 deemed the first rule to be considered in routeing. Rule 1 relates to the avoidance, where possible, of “major areas of highest amenity value”. Holford Rule 2 makes the following

recommendation: “avoid smaller areas of high amenity value or scientific interest by means of deviation”. As the Holford Rules do not define what constitutes a major area (Rule 1), and the importance of the area is irrespective of size, smaller areas of highest amenity value were also mapped at this stage alongside the larger areas.

**4.5** The Holford Rules do not identify which designated areas constitute areas of *highest amenity value*. However, SHETL clarification note b) (see **Appendix A**) states that areas of highest amenity value “*require to be established on a project-by-project basis considering Schedule 9 of the Electricity Act, 1989*”, and provides examples to be considered.

**4.6** In this routeing study, the term ‘environmental’ has been used in place of ‘amenity’ (with the exception of residential amenity) to reflect more recent thinking which also seeks to recognise the intrinsic value of such areas.

**4.7** On this basis, Holford Rule 1 and Rule 2 areas considered within this stage of the routeing process, in addition to the SPAs (which informed the identification of broad corridors), alongside other areas of ‘regional or local high amenity value’ locally informed the identification of route options, include the following:

- Special Areas of Conservation (SAC);
- Sites of Special Scientific Interest (SSSI);
- Scheduled Monuments (SM) and Unscheduled Archaeology of National Importance (where large in size and/or geographic location such that it may form a potential constraint to routeing);
- Settlements (identified from the Local Development Plans);
- Individual residential properties with a 150m radius ‘trigger for consideration’ mapped around each residential property to allow this proximity to be balanced with other considerations, while also helping identify possible ‘pinch points’.
- Ancient Woodland (AWI);
- Committed development (existing wind farms and wind farms with valid planning applications);
- Local Nature Conservation Sites (LNCS); and
- Minerals (active minerals sites and areas allocated for mineral extraction in LDP)<sup>8</sup>.

**4.8** These have been mapped where present and treated as ‘avoid where possible’, or where not possible, ‘balance with other considerations’.

### Technical Considerations

**4.9** In addition to the mapping of areas of environmental value, whilst not forming ‘avoid altogether where possible’ constraints, a review was undertaken by SPEN at this stage to identify any technical considerations. These are outlined below in relation to overhead line routeing.

### Overhead Line Routeing

**4.10** At this stage all operational wind farms, wind farms with consent and those subject of an undetermined valid planning or Section 36 application<sup>9</sup> were also mapped as these are an environmental constraint to routeing as committed development, as well as being a technical constraint due to the requirement for a separation distance between turbines and the OHL. Whilst it is known that a number of other wind farm developments are in the process of undertaking EIA for sites, those at scoping stage were not mapped to inform the identification of route options<sup>10</sup> due to the level of uncertainty regarding their final layouts to be progressed through the consenting process. Turbines were mapped with a turbine blade tip height plus 10% radius buffer as an ‘avoid’ constraint. Turbines and their 2 x rotor diameter buffer were also included as a ‘trigger for consideration’ constraint to routeing due to the potential ‘wake effect’ operational turbines can have on an overhead line. However, route options did not ‘avoid where possible’ these buffer areas during routeing as these constraints were subject to more detailed technical appraisal by SPEN.

**4.11** SPEN advised that areas of highest ground and steep slopes ( $\geq 22$  degrees) can form technical constraints to the routeing of high voltage overhead lines. To identify topography, a Digital Elevation Model (DEM) was used which maps gridded Ordnance Survey (OS) Terrain 5 data with a resolution of 5m. To identify slope angles, the slope was calculated from the DEM using ArcGIS Spatial Analyst. Areas of higher ground and the main prominent ridges/steep slopes were mapped and identified as technical considerations.

### Identification of Route Options

**4.12** Reflecting the Routeing Strategy, the identification of route options was undertaken using the methodology set out below to meet the overarching Routeing Objective.

<sup>8</sup> Previously worked and restored sites were considered viable for routeing on environmental grounds.

<sup>9</sup> Including those currently at appeal or subject to a Public Local Inquiry process

<sup>10</sup> A review of the status of all windfarms was undertaken on a monthly basis to ensure the latest status/layouts were used to inform routeing.

**4.13** Given the nature of overhead transmission lines the primary environmental effects are likely to be landscape and visual effects. 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.

**4.14** 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 where it crosses ridges or open 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.

**4.15** It is important to note that the corridor 'edges' as mapped do not represent fixed boundaries to routeing. The identification of corridors was undertaken to identify the broad geographic area within which the routeing of an overhead line was considered to be preferable, relative to other geographic areas. Therefore, if an area outside the corridor was identified as being suitable for the accommodation of a potential overhead line, this was identified as a route option for appraisal and consultation.

**4.16** Taking account of the technical and environmental constraints identified above, 200m wide route options were identified using the desk based mapping supplemented by knowledge of the area gathered during field work, were identified for progression to the technical and environmental appraisal stage.

**4.17** Consideration was also given to the 'fit' of the OHL within the topography and the landscape. Key objectives were as follows:

- follow the grain of the landscape, running within valleys, in parallel with woodland edges, field boundaries etc. wherever possible;
- use forestry/woodland and landform/topography as a backdrop to the OHL, or as a foreground screen (Holford Rule 4);
- minimise the number of crossings of linear features (e.g. roads and rivers), and when appropriate cross at a perpendicular angle;
- minimise the exposure of the OHL over prominent ridges and skylines (Holford Rule 4);

- avoid creating wirescape with existing OHL infrastructure (Holford Rule 6);
- avoid residential areas as far as practicable, including individual residential properties, which could be adversely affected, particularly by steel towers (Holford Supplementary Note a); and
- other things being equal, prefer the shortest and/or most direct alignment (Holford Rule 3).

**4.18** Initial desk based identification of route options was followed by fieldwork<sup>11</sup>. The findings from application of the desk based criteria were verified and refined where necessary to more accurately reflect the local conditions and characteristics observed in the field. The identification of route options included understanding the principal/ primary view(s) from residential properties which were considered pertinent to routeing; including consideration of the potential screening provided by local landform, forestry/woodland, and hedgerows; and identifying important views/locally sensitive landscape characteristics. Modifications were made to the route options, where required, to reflect the findings of the site based field work and identify suitable route options to take forward for appraisal.

#### SPEN Technical Review

**4.19** At this stage, a technical review was undertaken by SPEN to confirm that the route options were technically feasible prior to being progressed to the appraisal stage.

### Description of Route Options

**4.20** Each of the route options was given a numerical reference: Route Section 1 – 4. All route options have the same connection point commencing from the Glenmuckloch PSH substation and terminating at the proposed Redshaw 400kV substation. The Route Options described below are shown in **Figures 4.2a-d** alongside the environmental considerations as described at paragraph 4.7.

#### Route Section 1

**4.21** Two route options were identified for the 400kV L12 lattice steel tower connection between the proposed Glenmuckloch PSH substation and the hill of Black Law (408m AOD) south of Poldive Burn.

#### Route Section 1 – Option 1A

**4.22** The alignment of Route option 1A runs north, north-east from proposed Glenmuckloch PSH substation for approximately 1km where it ascends the southern slopes of

<sup>11</sup> Field based observations undertaken from publicly accessible locations.

White Naze before crossing Glenwharrie Burn and ascending the steep slopes of Glenwharrie Craig north-westwards before entering coniferous woodland and the consented turbines of Glenmuckloch Wind Farm. Passing between the proposed turbines of Glenmuckloch Wind Farm to the west and the proposed turbines of Lethans Wind Farm Extension to the east. The route option then deviates north-eastwards for approximately 1km towards Dennigall Hill before turning north-westwards, then north to pass between the proposed turbines of Lethans Wind farm Extension east of Auchtitench Hill. Continuing within coniferous woodland the route option then follows the broad alignment of Poldive Burn in a north-easterly direction towards the western flanks of Black Law (408m AOD).

#### Route Section 1 – Option 1B

**4.23** Route Option 1B follows the alignment of route option 1A for approximately 3km until north-east of Dennigall Hill where it continues north-east through coniferous woodland and between the proposed turbines of Lethans Wind Farm Extension before emerging from the woodland edge near Blood Moss. The route option then crosses open moorland towards Stell Knowe where it re-enters coniferous woodland before rejoining the alignment of route option 1A north of Nether Black Law.

#### Route Section 2

**4.24** Due to the presence of existing and consented wind farms within this section of the preferred route corridor, only one viable route option was identified for the 400kV L12 lattice steel tower connection between the end of Route Section 1 and Greenburn Rig to the south of the valley of Duneaton Water.

#### Route Section 2

**4.25** Route Section 2 runs north-east from Black Law (408m AOD) for approximately 4.8km along and within the southern edge of a large section of commercial woodland. The entire length of this route section runs parallel to the operational Kennoxhead Wind Farm and consented Kennoxhead Wind Farm 2 and Kennoxhead Extension Wind Farms. After approximately 500m, the route passes over one forestry track before continuing throughout the forestry along the north facing slopes of White Hill (480m AOD) and Wedder Dod (460m AOD). The route emerges from forestry into open moorland, before continuing approximately 600m north-eastwards towards Duneaton Water.

#### Route Section 3

**4.26** Two route options were identified for the 400kV L12 lattice steel tower connection between the end of Route Section 2 and Glentaggart.

#### Route Section 3 – Option 3A

**4.27** The alignment of Route Option 3A runs north-east from Duneaton Water, across open moorland, passing approximately 400m to the south-east of Auchendaff Hill (427m AOD) and the turbines of the operational Kennoxhead Wind Farm and consented Kennoxhead Wind Farm Extension. The route then passes between Kennox Hill (388m AOD) and Hartwood Hill (400m AOD) running parallel to the northern edge of the block of coniferous forestry which extends between Harwood Hill Glentaggart for approximately 2.6km where the route reaches Lees Hill. From here the route deviates eastwards towards Glentaggart.

#### Route Section 3 – Option 3B

**4.28** Route Option 3B runs slightly further east, south-east of Route Option 3A, following a broad parallel alignment north of the Duneaton Water for a distance of approximately 2km before entering the coniferous woodland across the south-eastern flanks of Hartwood Hill. The route then generally follows a parallel alignment to Glentaggart Road north-eastwards for a distance of 2km. Continuing within the coniferous woodland the route then passes over Hartwood Burn before passing within approximately 150m north-west of Glentaggart and its associated properties.

#### Route Section 4

**4.29** Four route options were identified for the 400kV L12 lattice steel tower connection between the end of Route Section 3 and the proposed Redshaw 400/kV substation located adjacent to the existing ZV 400kV OHL east of Red Moss.

#### Route Section 4 – Option 4A-1

**4.30** Route Option 4A-1 is only viable in conjunction with Route Option 3A. The route option begins at Lees Hill where 3A deviates south-eastwards. The route option runs north-east across a large area of former open-cast coal workings before passing to the south-east of Glentaggart Cottage within a distance of approximately 200m where it deviates north, north-east following the general alignment of Andershaw Road towards the A70 for a distance of 2km, and west of the proposed turbines of Bodinglee Wind Farm. The route then deviates east, north-east near the edge of Weston wood, approximately 160m south of the residential property of Weston, before passing through the coniferous woodland of Weston Wood and crossing Arnesalloch Burn, before



continuing into Townhead wood. The route emerges from Townhead wood approximately 600m south of the southern edge of Douglas, before re-entering forestry and continuing east. The route then crosses open moorland as it passes around the north, north-eastern perimeter of the proposed Bodinglee Wind Farm before deviating southwards and following the general alignment of the B7078, passing to the west of the residential property of Redshaw (at a distance of approximately 240m) before crossing the B7078 and terminating at the proposed Redshaw 400kV substation adjacent to the existing ZV route.

#### Route Section 4 – Option 4A-2

**4.31** Route Option 4A-2 begins at the termination of Route Option 3B, 380m to the north of Glentaggart. The route travels north-east, emerging from the coniferous woodland and crossing a small section of the disused open-cast coal workings before rejoining Route Option 4A-1 approximately 380m to the south-east of Glentaggart Cottage. The route then follows the same alignment as Route Option 4A-1, described above.

#### Route Section 4 – Option 4B

**4.32** Route Option 4B begins at the termination of Route Option 3B, 380m to the north of Glentaggart. The route runs east through forestry for approximately 800m before crossing Glentaggart Burn. The route then emerges from forestry to cross Andershaw Road north of Andershaw Farm at a distance of approximately 160m, before turning east, north-east and continuing through woodland and crossing Braidnie Burn. Continuing north-eastwards, the route passes north of the turbines of the operational Andershaw and Middle Muir Wind Farms, and south of the proposed turbines of Bodinglee Wind Farm to the north, at a nearest distance of 360m. Emerging from the forestry near Braid Knowe the route then deviates eastwards and passes to the south of Auchensaugh Hill (392m AOD) and continues to the north-east for a distance of 2.1km following the alignment of the existing wind farm access track before crossing the B7078 and terminating at the proposed Redshaw Substation.

#### Route Section 4 – Option 4C

**4.33** Route Option 4C follows the same alignment as Route Option 4B to Andershaw Road where the route continues eastwards and passes through coniferous woodland west of the Andershaw Wind Farm before passing between the operational turbines of this wind farm and the adjacent Middle Muir Wind Farm. The route deviates north-eastwards before rejoining Route 4B south of Auchensaugh Hill (392m AOD). The Route then follows the same path as Route Option 4B, described above.

#### Route Section 4 – Option 4D

**4.34** Route Option 4D follows the same alignment as Route Option 4B and 4C to approximately 800m east of Glentaggart. The route alignment then deviates south-eastwards to follow the broad alignment of Glespin Burn for approximately 2.6km until west of Mosscastle Hill (414m AOD). As the route emerges from the woodland, approximately 800m to the west of Mosscastle Hill, it then deviates south-eastwards to contour across open moorland, loosely following the contours of Mosscastle Hill, and heads eastwards towards Mountherrick Burn and Andershaw Road passing approximately 220m to the north of the residential property of Mosscastle to the south. The route then turns north-east and passes between the high ground formed by The Beam (362m AOD) to the north-west and Mountherrick Hill (427m AOD) to the south-east, as it avoids the southern operational turbines of Andershaw Wind Farm. The alignment continues north-eastwards across open moorland, passing within approximately 1.6km of the settlement of Crawfordjohn and 800m west of Greenfield Law (321m AOD), before deviating north, then north-west to pass east of Middle Muir Wind Farm before crossing Black Burn, west of the low lying ground of Red Moss. The route then deviates eastwards towards the B7078 for approximately 500m where it crosses the road before terminating at the proposed Redshaw Substation.



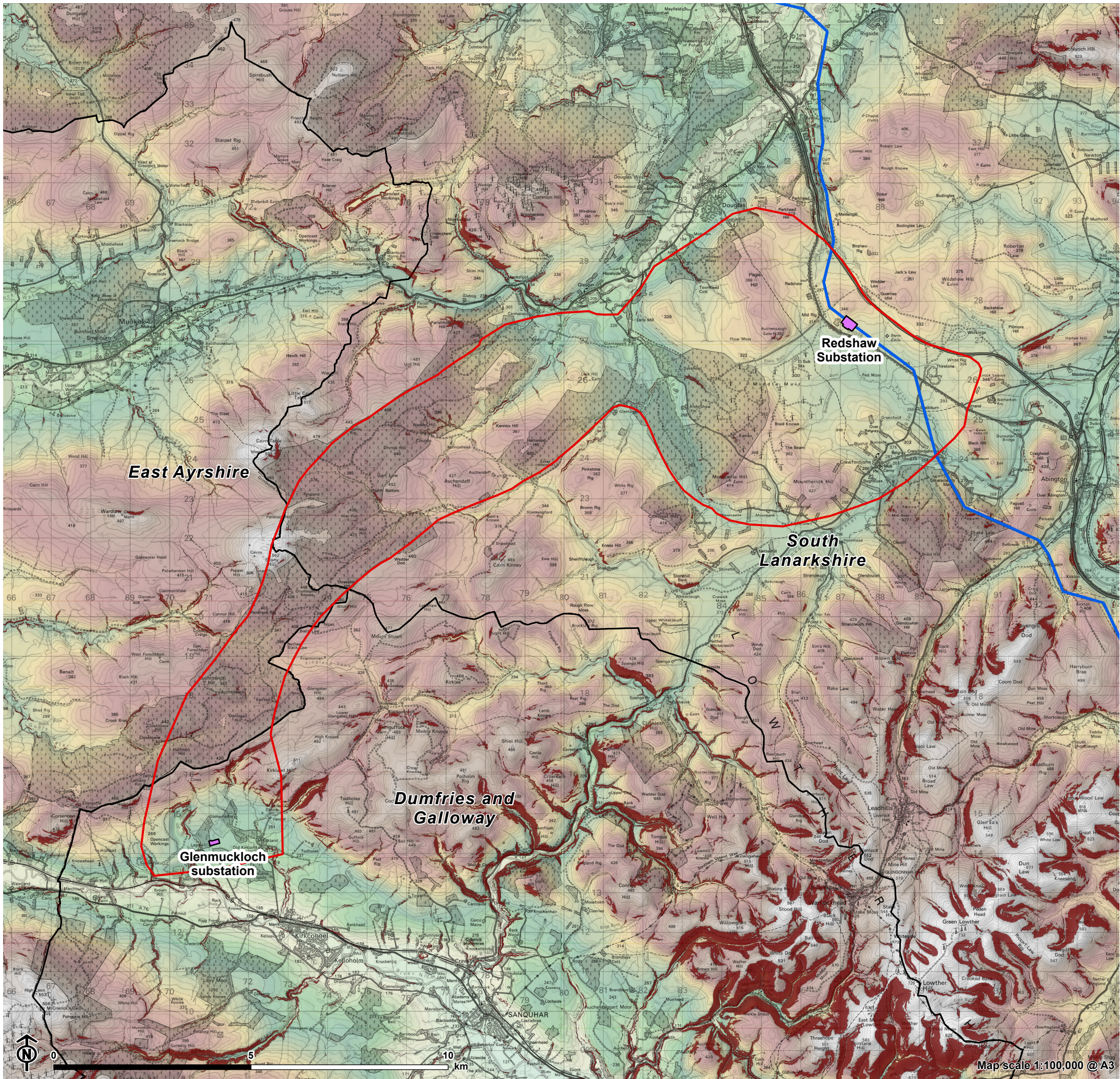


Figure 4.1: Study Area

- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Existing 400kV overhead line (OHL)
- Local Authority
- Elevation
  - High
  - Low
  - Slope > 22 degrees



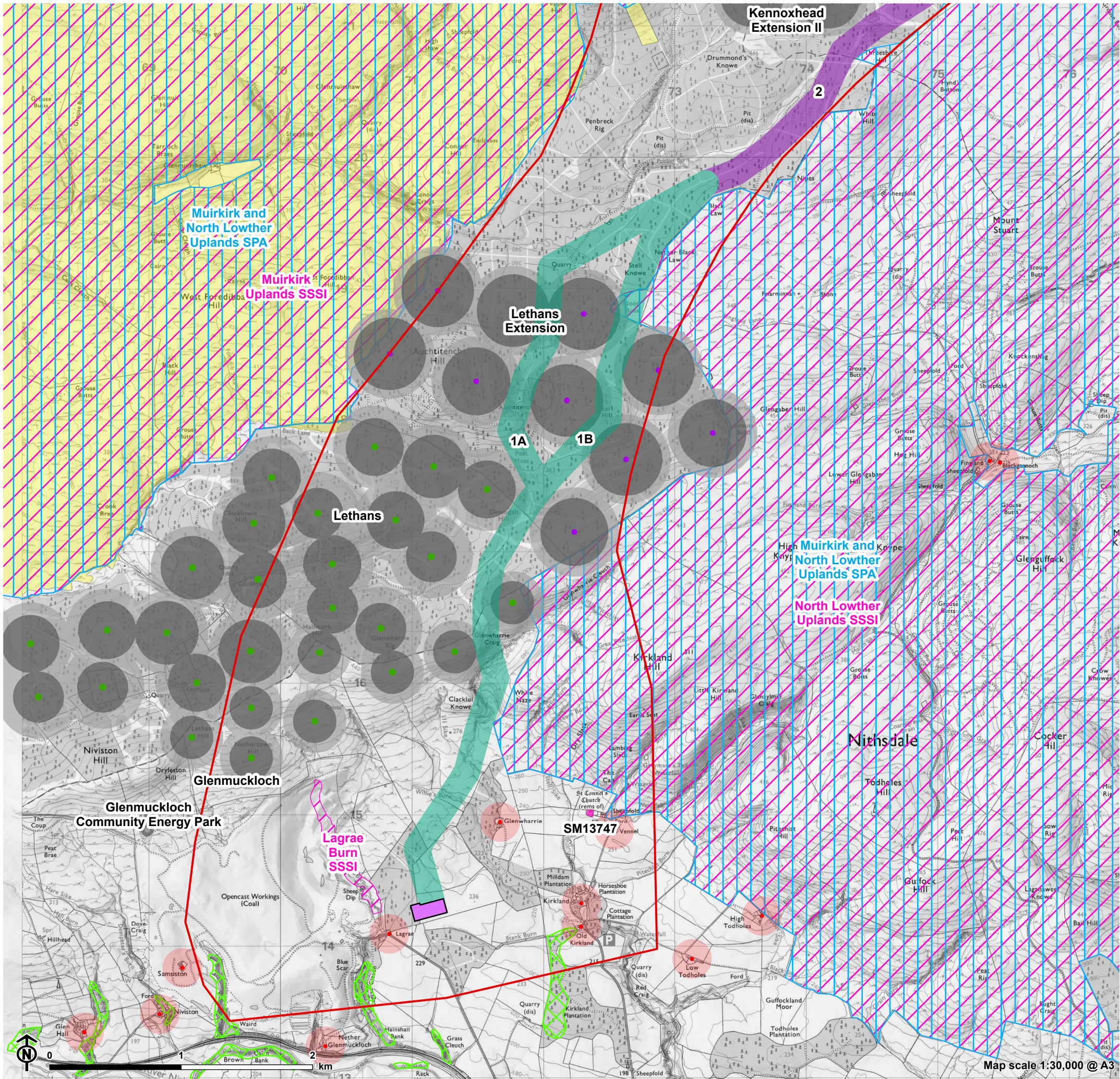
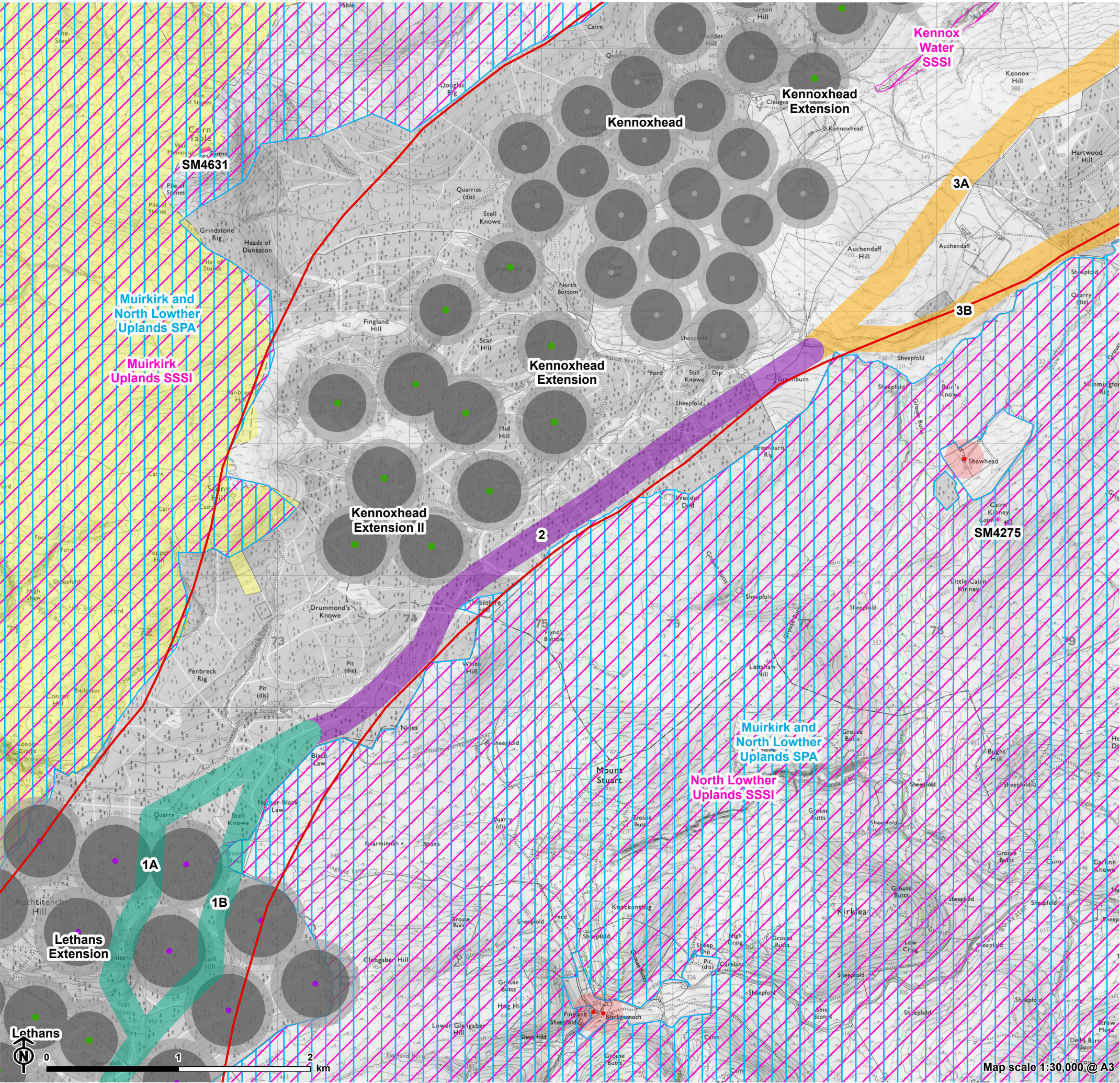


Figure 4.2a: Route Options - Section 1

- Study Area
- Section 1
- Section 2
- Proposed Glenmuckloch substation
- Residential Property
- 150m from Residential Property
- Wind Farm Status
  - Application Submitted
  - Consented
  - Operational
- Turbine Tip Height + 10% Buffer
- Rotor Diameter x 2 Buffer
- Natural Heritage
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Ancient Woodland (AWI)
  - Local Nature Conservation Sites
- Cultural Heritage
  - Scheduled Monuments



Figure 4.2b: Route Options - Section 2



- Study Area
- Section 1
- Section 2
- Section 3
- Residential Property
- 150m from Residential Property
- Wind Farm Status
  - Application Submitted
  - Consented
  - Operational
- Turbine Tip Height + 10% Buffer
- Rotor Diameter x 2 Buffer
- Natural Heritage
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Ancient Woodland (AWI)
  - Local Nature Conservation Sites
- Cultural Heritage
  - Scheduled Monuments



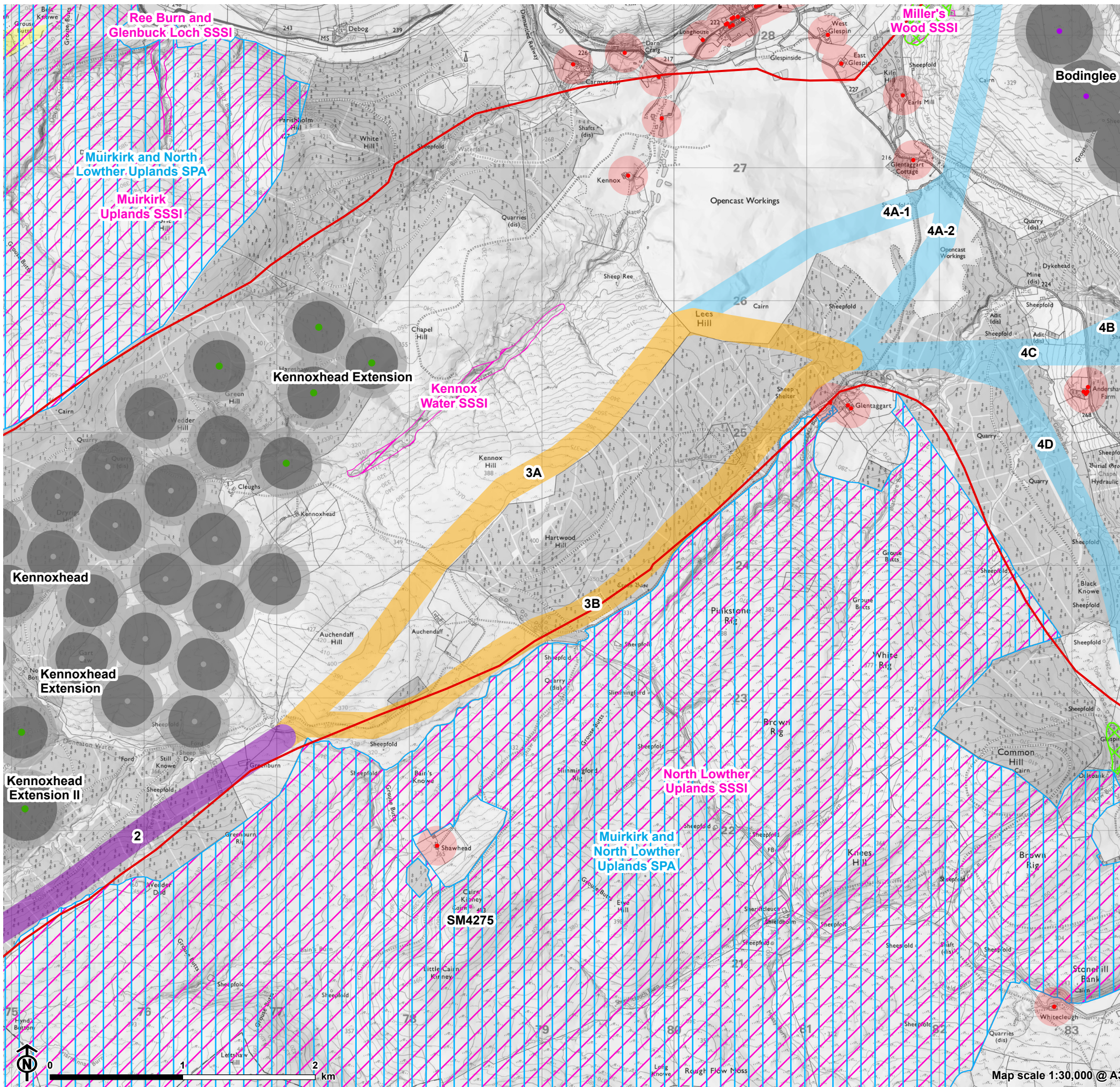


Figure 4.2c: Route Options - Section 3

- Study Area
- Section 2
- Section 3
- Section 4
- Residential Property
- 150m from Residential Property
- Wind Farm Status**
  - Application Submitted
  - Consented
  - Operational
- Turbine Tip Height + 10% Buffer
- Rotor Diameter x 2 Buffer
- Natural Heritage**
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Ancient Woodland (AWI)
  - Local Nature Conservation Sites
- Cultural Heritage**
  - Scheduled Monuments



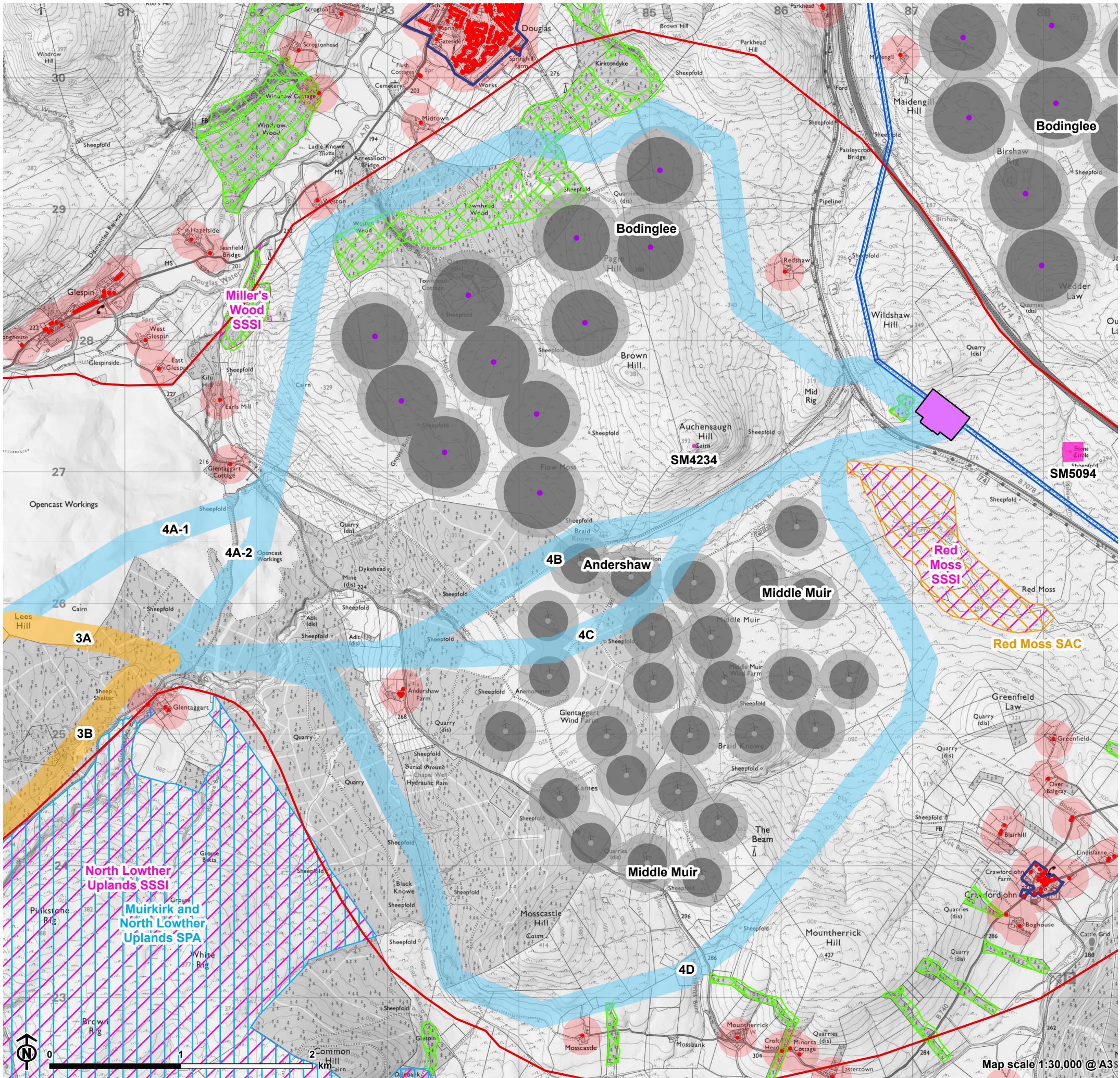


Figure 4.2d: Route Options - Section 4

- Study Area
- Section 3
- Section 4
- Proposed Redshaw Substation
- Existing 400kV overhead line (OHL)
- Residential Property
- 150m from Residential Property
- Settlement
- Wind Farm Status
  - Application Submitted
  - Operational
  - Turbine Tip Height + 10% Buffer
  - Rotor Diameter x 2 Buffer
- Natural Heritage
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Special Area of Conservation (SAC)
  - Ancient Woodland (AWI)
- Cultural Heritage
  - Scheduled Monuments



## Chapter 5

# Appraisal of Route Options

### Approach to the Appraisal of Route Options

**5.1** The objective of the appraisal of the route options was to identify a preferred route for the Glenmuckloch to Redshaw Reinforcement Project, in a comparable, documented and transparent way to identify an overall preferred route option.

**5.2** As outlined in the Routeing Strategy, where the characteristics of the study area were such that they required to be balanced to enable the overarching Routeing Objective to be met, professional judgement, informed by both desk studies and field work, and reflecting the Holford Rules, was employed to identify the preferred route. This professional judgement was made on a case-by-case basis.

**5.3** The process sought 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;
- Consider Biodiversity Net Gain (BNG) opportunities; and
- Draw out distinctions between the routes to enable the relative strengths and weaknesses of each to be identified.

**5.4** The comparative appraisal of route options was undertaken in stages as set out below:

- Identification of appraisal criteria, together with their reasoning for inclusion;
- The application of appraisal criteria to each route option, following the appraisal methodology;
- A comparative appraisal of route options to identify a preferred route;
- A SPEN technical appraisal of route options, reflecting system design requirements; and
- A cumulative appraisal with other developments which could give rise to similar environmental effects (e.g. other OHL connections, wind energy developments and other large scale development) within the study area.

## Environmental Appraisal Criteria

**5.5** Based on the established practice for OHL routeing and the routeing considerations for the project; the route options were appraised using the following criteria:

- Length of route;
- Biodiversity;
- Landscape and visual amenity;
- Cultural Heritage;
- Forestry and woodland;
- Hydrology (including flood risk), Hydrogeology, Minerals, Soils and Peat; and
- Land use (infrastructure, committed developments, Local Development Plan allocations, Scotland Land Capability for Agriculture Classifications).

**5.6** The reasoning for the use of these criteria and an outline of the methodology for appraising each route option is set out in **Appendix B**. Each of the above criteria and the associated environmental considerations are represented in **Figures 5.1 to 5.7**.

## Technical Appraisal Criteria

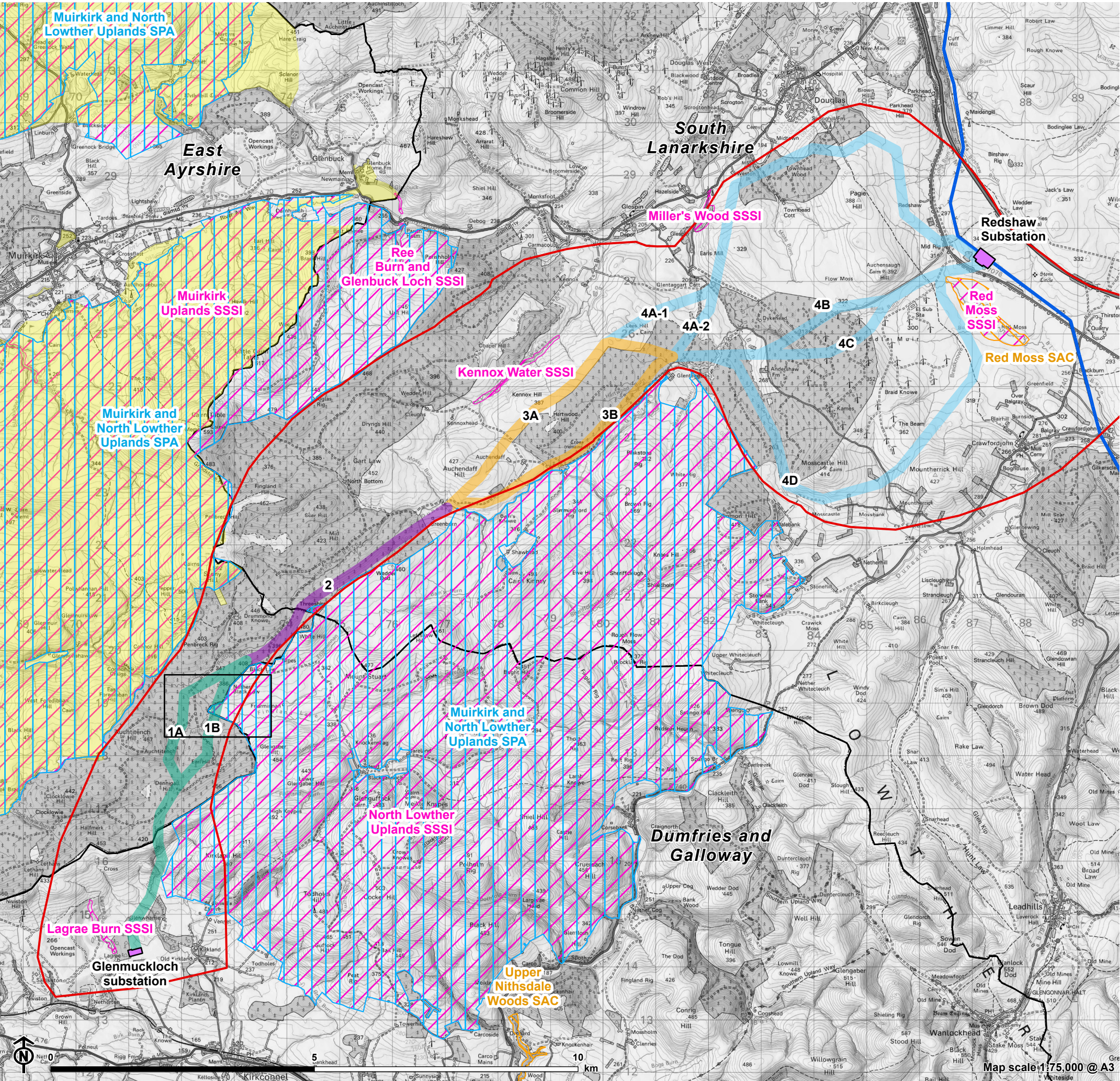
**5.7** All route options were reviewed by SPEN in relation to the system/network design requirements to assess the technical constraints of each route option. This review was undertaken to ensure that, based on the level of detail available, the preferred route is within the technical parameters required to construct the OHL. This included consideration of the following parameters:

- **Length of route;**
- **Altitude;**
- **Topography** (particularly slopes greater than 22 degrees however, slopes that were not greater than 22 degrees but steep in nature were also considered as these could be less favourable for routeing);
- **Buildability access constraints** (including restrictive roads and forestry access tracks);
- **Crossings of existing OHL transmission and distribution infrastructure;**
- **Proximity to existing OHL transmission and distribution infrastructure;**
- **Mineworking areas** (opencast etc);
- **Ground conditions** (including peat and alluvium);

- **Public service utilities** (crossings/ proximity) (including major pipelines);
- **Watercourse / Catchment areas crossings** (i.e. river, loch, reservoir);
- **Road / railway crossings along corridor;**
- **Wind farms** (existing and future developments);
- **Residential / Industrial areas;** and
- **Pollution** (consideration of corrosion rates).



Figure 5.1: Biodiversity



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options
- Section 1
- Section 2
- Section 3
- Section 4
- Existing 400kV overhead line (OHL)
- Local Authority
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Local Nature Conservation Sites

Note:

There are no Local Wildlife Sites or Local Nature Reserves in the study area.

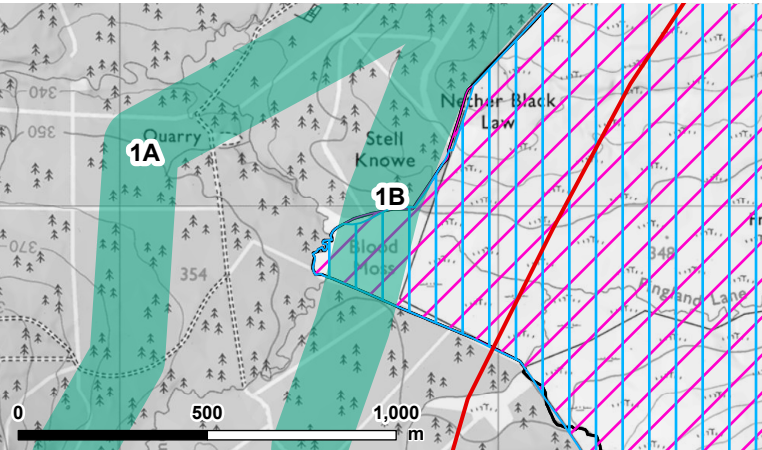
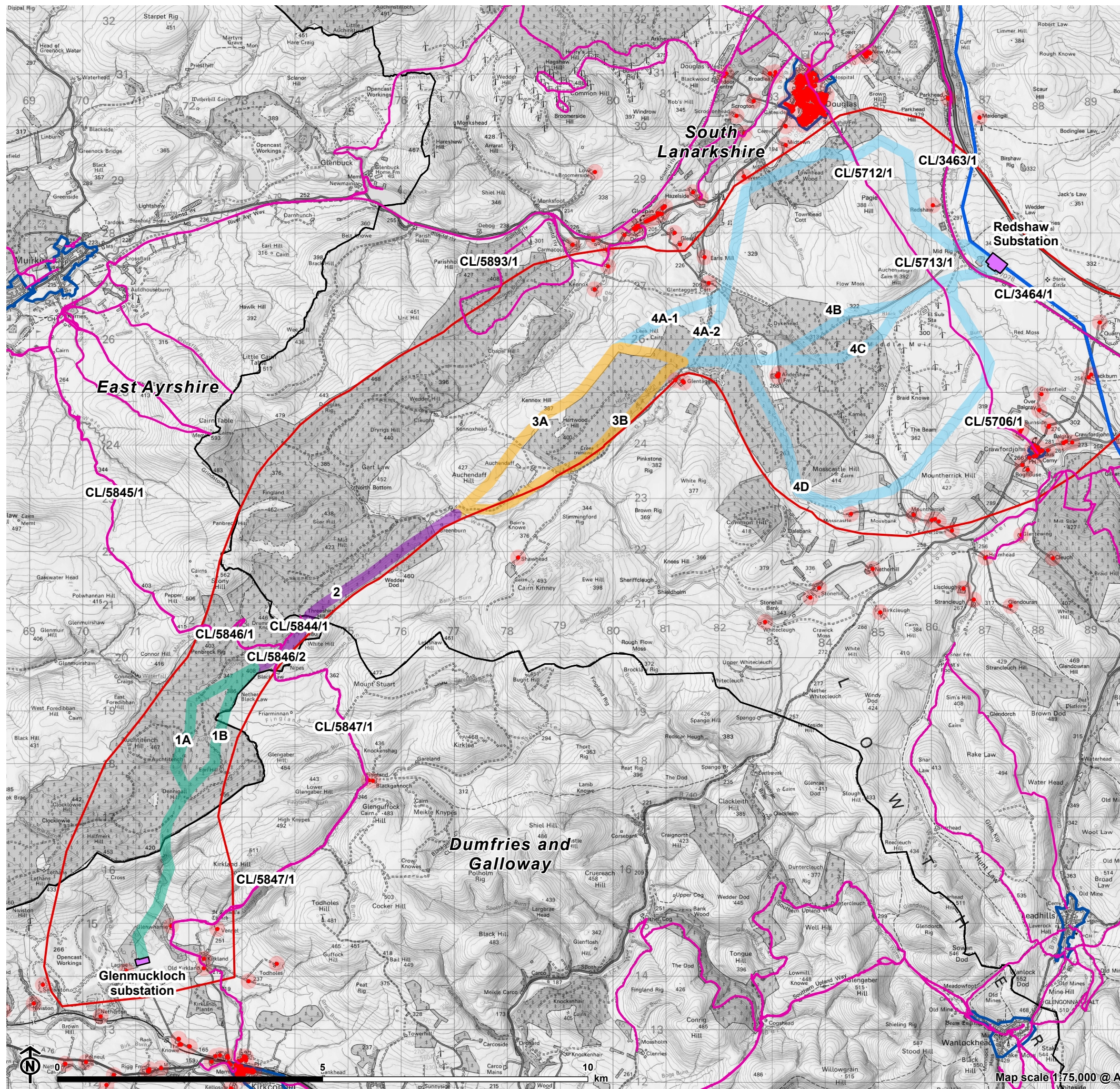




Figure 5.2: Landscape and Visual



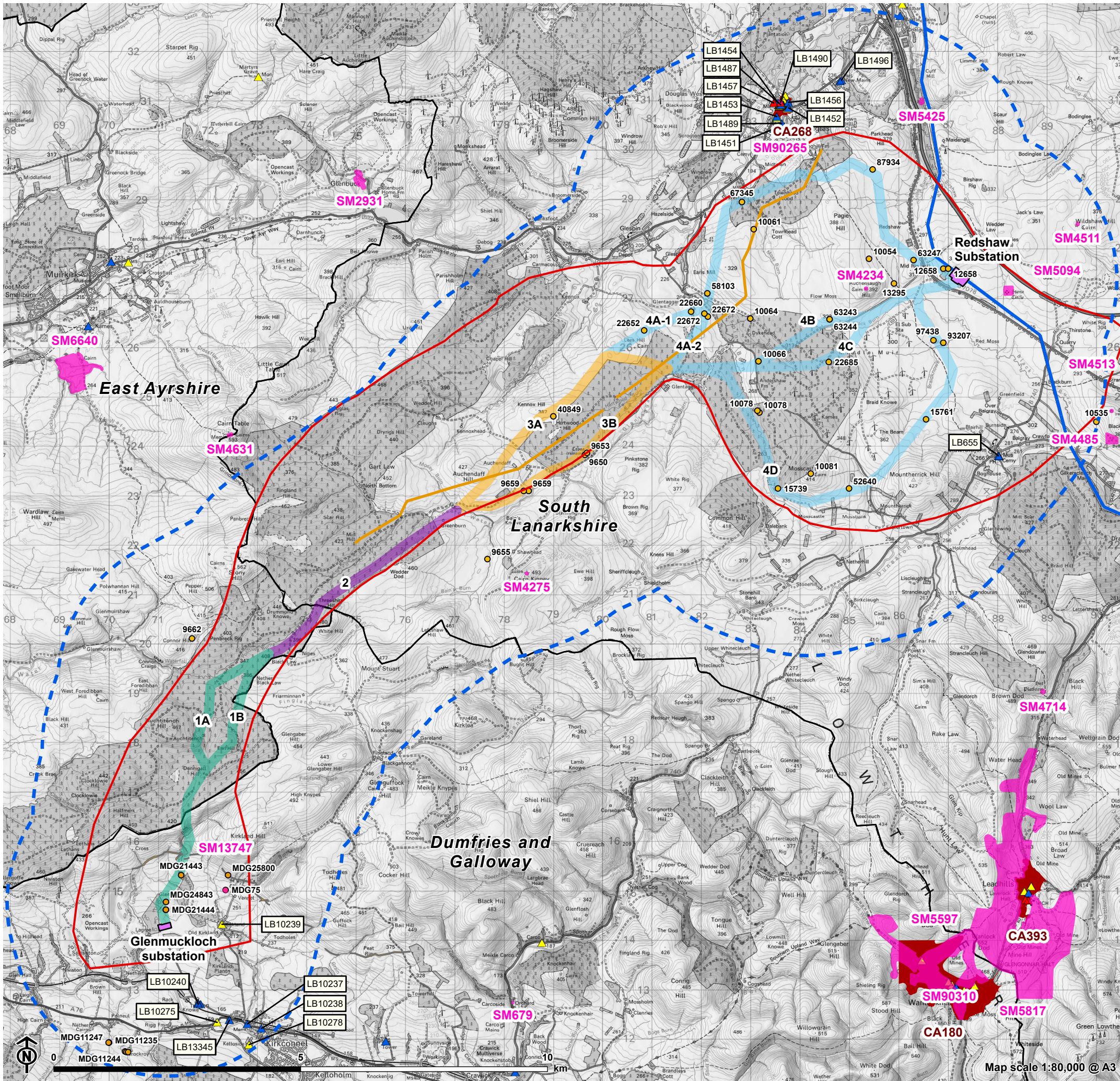
- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options**
  - Section 1
  - Section 2
  - Section 3
  - Section 4
  - Existing 400kV overhead line (OHL)
  - Local Authority
  - Settlement
  - Residential Property
  - 150m from Residential Property
  - Core Path

Note:

Landscape Character Types (LCT), landscape susceptibility and landscape designations are provided on Figures D1, D2 and E1.



Figure 5.3: Cultural Heritage



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options
  - Section 1
  - Section 2
  - Section 3
  - Section 4
  - Existing 400kV overhead line (OHL)
- Local Authority
- 3km cultural heritage study area
- Scheduled Monuments
  - Listed Building - Category A
  - Listed Building - Category B
  - Listed Building - Category C
- Conservation Areas
- HER Point
- HER Line (12380)
- HER Polygon

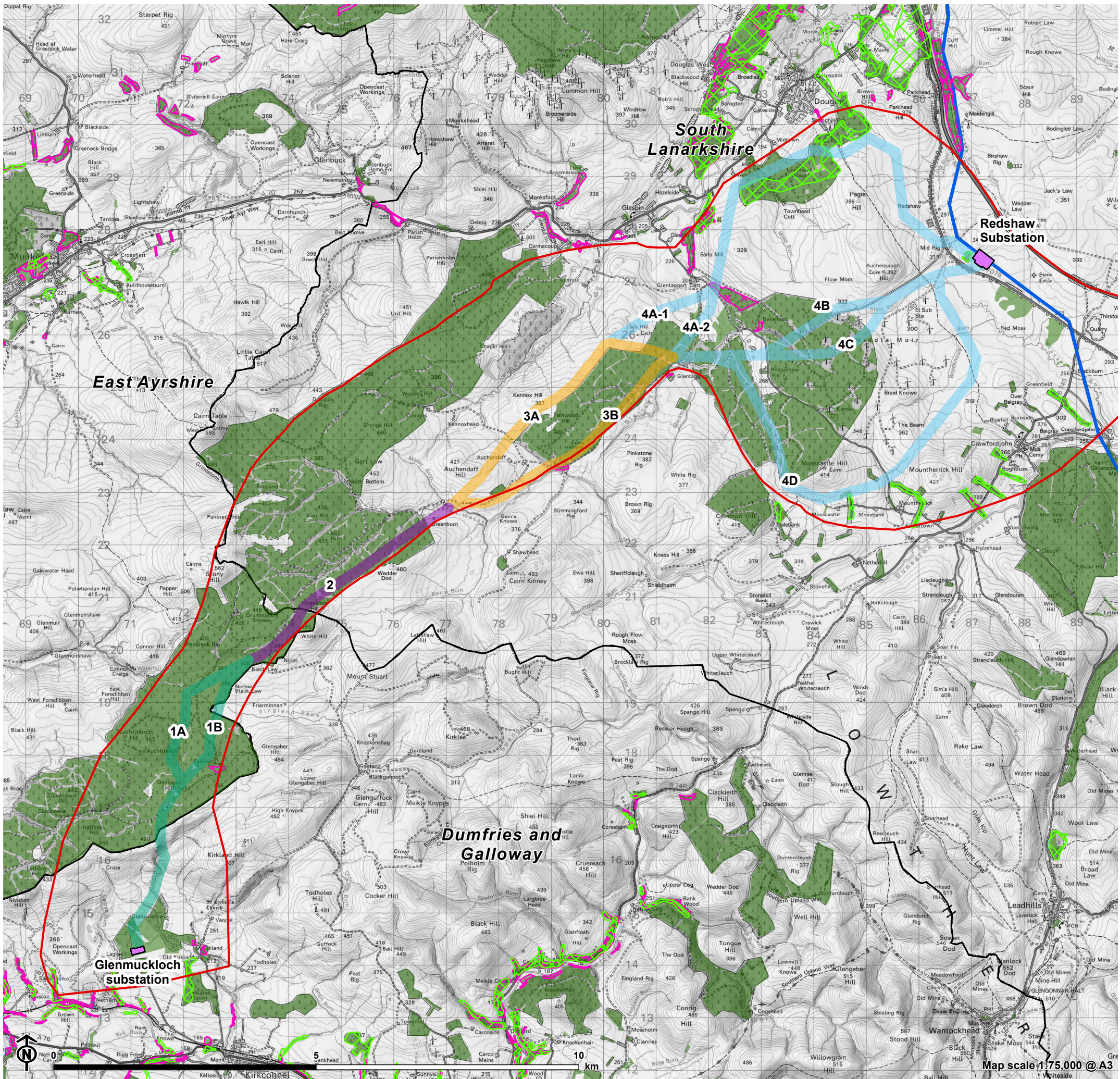
Note:

HER data obtained from West of Scotland Archaeology Service (WoSAS) and Dumfries and Galloway Council. All levels of HER data shown within the route sections. HER of National Status (D&G) or of confidence level C1, V1 or V2 (WoSAS) shown beyond route to 3km study area.





Figure 5.4: Forestry and Woodland



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options
  - Section 1
  - Section 2
  - Section 3
  - Section 4
  - Existing 400kV overhead line (OHL)
  - Local Authority
  - Ancient Woodland (AWI)
  - Native Woodland Survey of Scotland (NWSS)
  - National Forest Inventory (NFI)



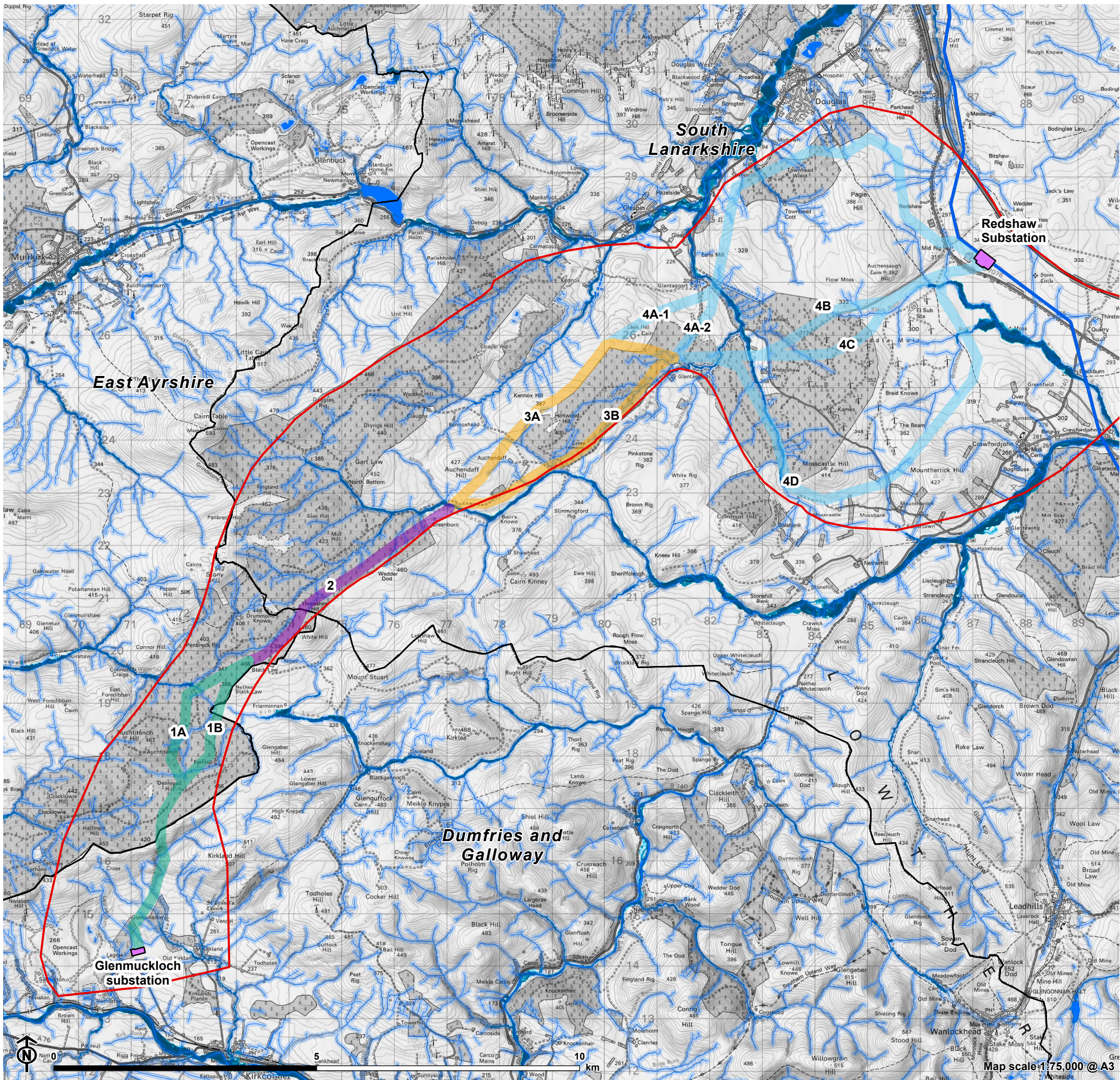
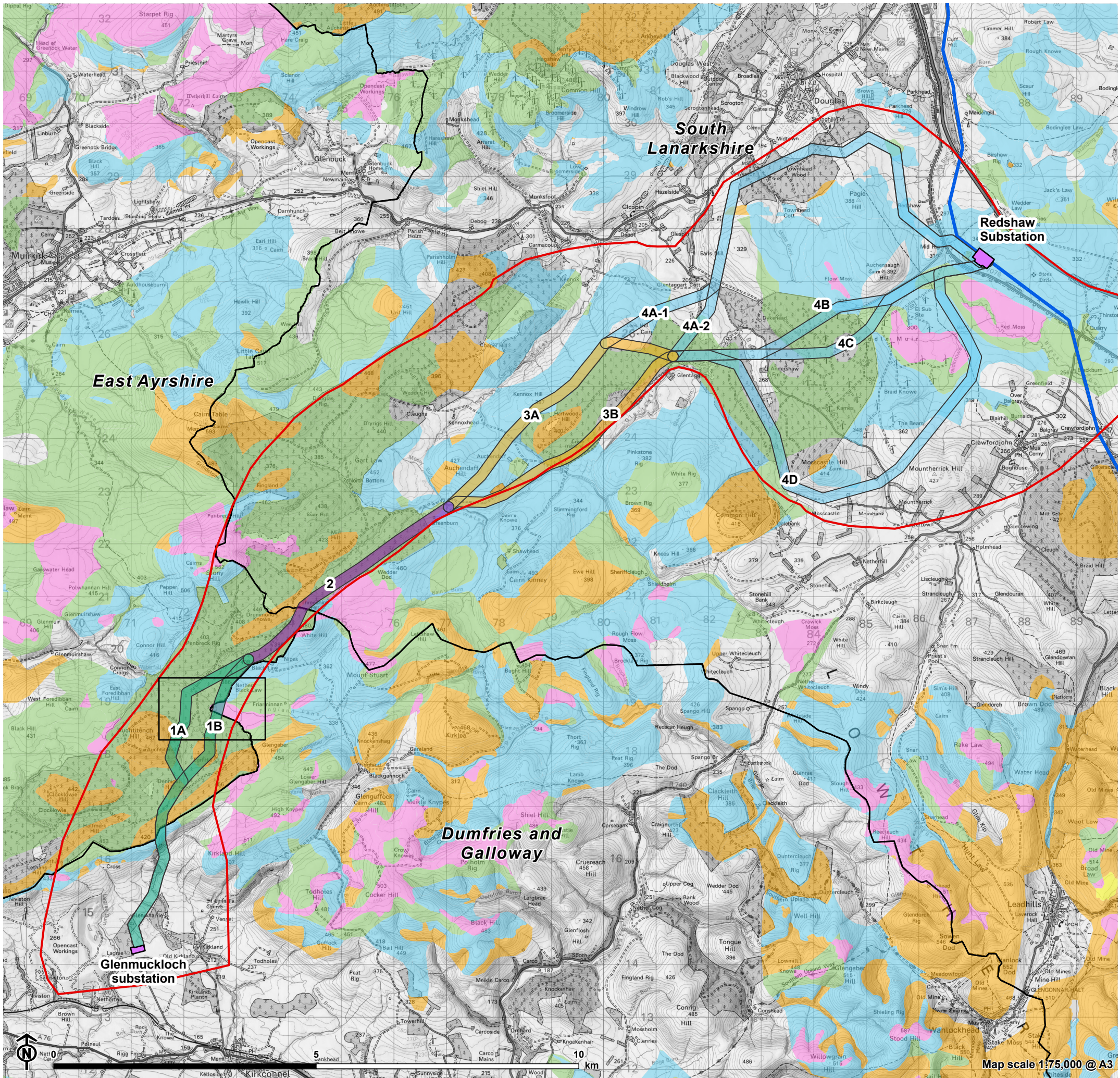


Figure 5.5: Hydrology

- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options**
  - Section 1
  - Section 2
  - Section 3
  - Section 4
  - Existing 400kV overhead line (OHL)
  - Local Authority
  - Watercourse
  - Watercourse 50m buffer
  - Flood Risk Management - Rivers High (10 year)
  - Flood Risk Management - Rivers Medium (200 year)
  - Flood Risk Management - Rivers Low (1000 year)



Figure 5.6: Peatland



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation

Route Options

- Section 1
- Section 2
- Section 3
- Section 4
- Existing 400kV overhead line (OHL)
- Local Authority

NatureScot (2016) Carbon and peatland

- Class 1 peatland
- Class 2 peatland
- Class 3 peatland
- Class 4 peatland
- Class 5 peatland

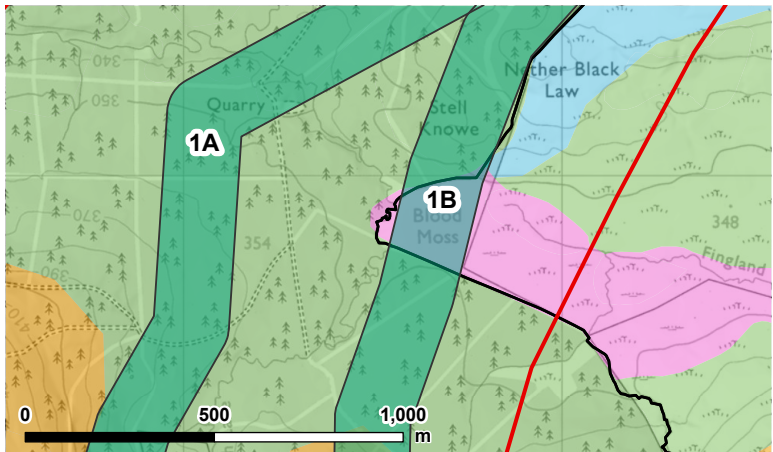
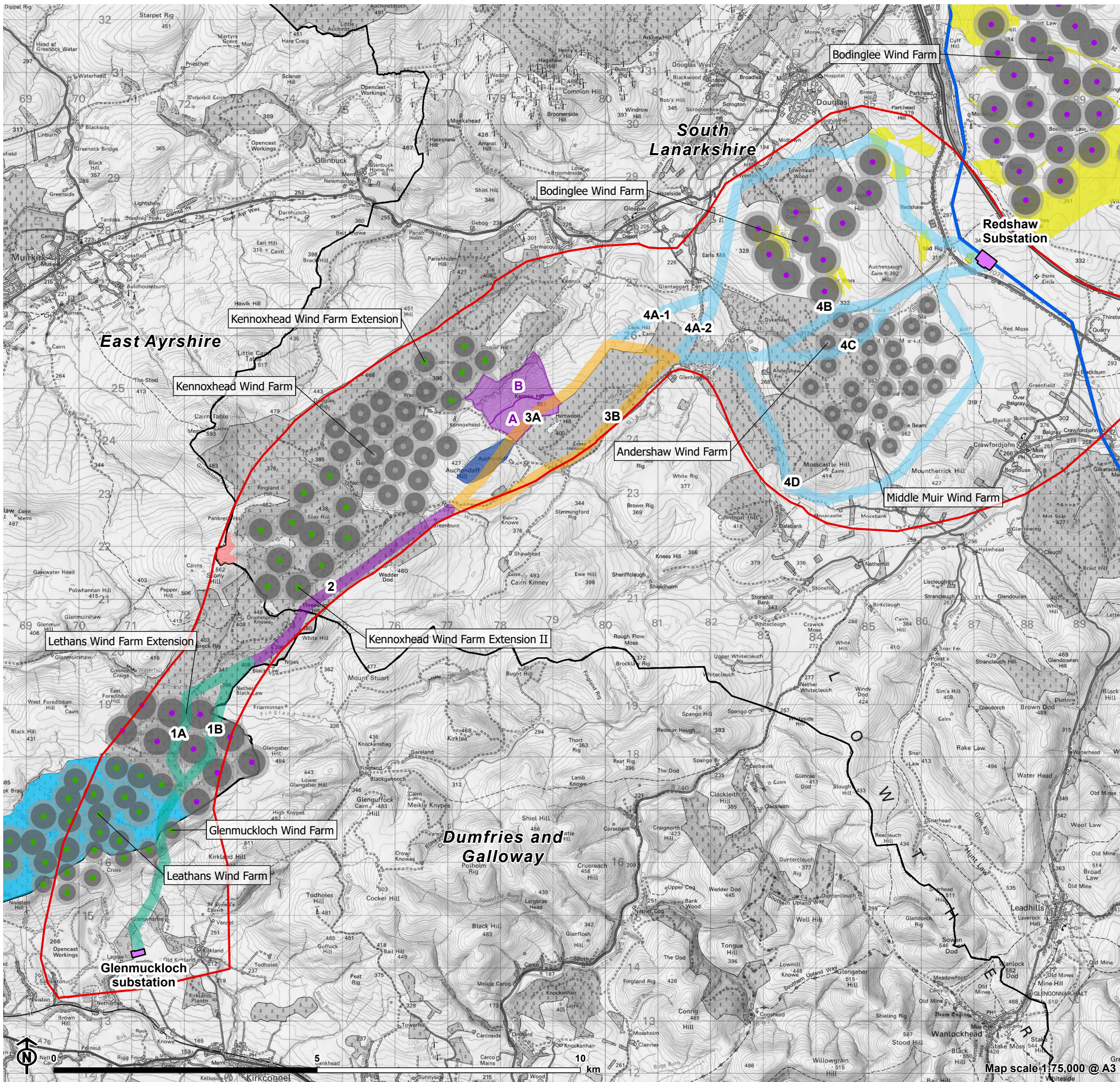






Figure 5.7: Land Use



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Route Options**
  - Section 1
  - Section 2
  - Section 3
  - Section 4
  - Existing 400kV overhead line (OHL)
  - Local Authority

- Wind Farm Status**
  - Appeal/Public Inquiry
  - Application Submitted
  - Consented
  - Design/Scoping
  - Operational
  - Under Construction
  - Turbine Tip Height + 10% Buffer
  - Rotor Diameter x 2 Buffer
- Habitat Management Plans**
  - Kennoxhead Wind Farm Habitat Management Plan Management Unit A/Unit B
  - Kennoxhead Wind Farm Extension Habitat Management Plan
  - Kennoxhead Wind Farm Extension II Habitat Management Plan
  - Bodinglee Outline Management Plan
  - Leathans Wind Farm Habitat Management Plan



## Chapter 6

### Appraisal Findings

**6.1** The overall emerging preferred route for the Glenmuckloch to Redshaw Reinforcement Project, i.e. the preference, on balance, taking account of environmental and technical considerations is **Route Option 1B-2-3B-4B**. This considers hydrology as both a technical and environmental constraint.

### Environmental Considerations

**6.2** The findings of the Environmental Route Option Appraisal are shown in **Appendix C** and can be read alongside **Figures 5.1 – 5.7**.

#### Section 1

**6.3** On balance, Route Option 1A is the preferred route as it would avoid crossing/spanning the Special Protection Area (SPA) and Sites of Special Scientific Interest (SSSI) designations. Route Option 1A is also preferred from a landscape and visual perspective in addition to being preferred in relation to impacts on peat.

#### Section 2

**6.4** Route Option 2 is the only route option and is therefore the preferred route for this section of the proposed overhead line.

#### Section 3

**6.5** The emerging preference from an environmental perspective is Route Option 3A as it is located furthest away from designated sites including the SPA and SSSI and associated qualifying interests; from a landscape and visual perspective, it maximises the opportunity to offset OHL from Glentaggart Farm and Glentaggart Farm Cottage, and minimises the potential for sequential effects from the Core Path network. In addition to this it, from a cultural heritage point of view, runs slightly further to the north away from Cairn Kinney and the Duneaton Water valley over which the Scheduled Monument looks and which forms a key aspect of its setting. There are also fewer non-designated heritage assets within Route Option 3A. Route Option 3A also impacts smaller area of afforested land and also avoids potential impact to NWSS registered woodland and has fewer watercourses to cross.



**6.6** However, Route Option 3A does conflict with the committed HMP areas associated with the operational and consented Kennoxhead Wind Farm developments with no opportunity to avoid these through detailed design. The location of OHL infrastructure within the HMP areas would conflict with the objectives of the HMPs and cannot be avoided which would result in potential consenting constraints. Where many of the environmental criterion above were marginal in their conclusion that Route Option 3A was the preference, the balance of weighting to be given to the impacts on the HMP areas results in the overall balance being given to Route Option 3B as the overall environmental preference for this section. Route Option 3B is the shortest in length, avoids interactions with minerals sites and less of the route is shown to be underlain by peat.

#### Section 4

**6.7** Overall, on balance Route Option 4C is the preferred route from an environmental perspective. This Route Option avoids direct interaction with all natural heritage designations (specifically AWI) and avoids direct effects on the locally designated landscape of the Douglas Valley SLA, and minimises the potential for indirect effects on the Leadhills and Lowther Hills SLA. It also minimises effects on more sensitive valley landscapes (and residential and recreational receptors within) to the north (the Douglas Water Valley) and south (the Duneaton Water Valley) of the study area. Further to this, Route Option 4C also has the fewest watercourse crossings.

**6.8** Where Route Option 4C interacts with committed developments and hydrology floodplains these aspects will be considered through detailed design to minimise impacts.

**6.9** Whilst Route Option 4C cannot avoid peatland, it does not interact with Class 1 or 2 priority peatlands and interactions with committed developments will not result in a constraint to development from an environmental perspective.

#### Overall Environmentally Preferred Route

**6.10** The overall environmentally preferred route is **1A-2-3B-4C**.

### Consideration of Cumulative Effects of Emerging Route Option Preference

**6.11** As set out in **Chapter 3**, the routing process takes cognisance of other existing and proposed OHL connections and other types of development located within the project study area. This consideration of cumulative effects is undertaken in addition to the technical consideration of the

OHLs in the area. When considering more than one project, combined or cumulative environmental effects can arise from the concentration of environmental effects in one area or the distribution of effects across a wider area. It is therefore necessary to find an appropriate balance using professional judgement and experience.

**6.12** The cumulative assessment will be considered through the EIA and the existing baseline (OHL and other large scale vertical structures) will be considered alongside any other consented/proposed OHLs and wind farms that are present at the time of writing.

**6.13** Overall, there are no likely geographically widespread significant environmental cumulative effects which will prevent **Route Option 1B-2-3B-4B** from being progressed further. Cumulative effects will, however, continue to be considered, and assessed where appropriate, throughout the alignment and EIA/Environmental Appraisal stages.

### Technical Considerations

**6.14** A technical appraisal was undertaken of all route option corridors.

**6.15** Below is a summary of the technical risks<sup>12</sup> associated with the preferred Route Options. The overall preferred route from a technical perspective is **1B-2-3B-4B**.

#### Section 1

**6.16** Overall, the SPEN technical appraisal identifies Route Options 1B as the preferred route taking account of the technical considerations. In addition to amber/medium risks associated with altitude, topography, buildability access constraints and ground conditions, Route Option 1A has a red/high rated technical constraint with regards to wind farms where wind turbines of the proposed Glenmuckloch, Lethans and Lethans Extension wind farms are in the corridor. There is no viable route for an OHL between the proposed turbines of Lethans Extension.

**6.17** Potential amber/medium rated technical risks identified for Route Option 1B include:

- Altitude: highest point of the corridor is 409 m. 100% of the corridor is > 200 m.
- Topography: approximately 35% of the corridor has steep ground slopes > 6 degrees. Approximately 15% of corridor has steep ground slopes > 11 degrees. Approximately 5% of the corridor has steep ground slopes > 22 degrees.

<sup>12</sup> Taken as medium or high risks as identified through SPEN's technical feasibility appraisal of the OHL corridors.



- Buildability Access Constraints: There are some access difficulties in approximately 40% of the route.
- Ground Conditions: Approximately 25% peat along the corridor.
- Wind farms: Wind turbines of the proposed Glenmuckloch, Lethans and Lethans Extensions Wind farms in the corridor. In some areas it is not possible to stay out of the SPEN standards recommended 2 x rotor diameters of the turbines.

## Section 2

**6.18** There are no alternative Route Options for section 2. The potential amber/medium rated technical risks identified for Route Option 2 include:

- Altitude: highest point of the corridor is 441 m. 100% of the corridor is > 200 m.
- Topography: approximately 25% of the corridor has steep ground slopes > 6 degrees. Approximately 40% of corridor has steep ground slopes > 11 degrees. Approximately 0% of the corridor has steep ground slopes > 22 degrees.
- Buildability Access Constraints: There are some access difficulties in approximately 30% of the route.
- Ground Conditions: Approximately 50% peat along the corridor.

## Section 3

**6.19** Both Route Option 3A and 3B have two amber/medium technical risks identified. On balance, Route Options 3B is the preferred route taking account of the technical considerations, with no major difficulties identified. Route Option 3A has some access difficulties along approximately 60% of the route, whereas Route Option 3B will only result in difficulties along approximately 10% of the route.

**6.20** Potential amber/medium rated technical risks identified for Route Option 3B include:

- Altitude: highest point of the corridor is 355 m. 100% of the corridor is > 200 m.
- Topography: approximately 15% of the corridor has steep ground slopes > 6 degrees. Approximately 10% of corridor has steep ground slopes > 11 degrees. Approximately 5% of the corridor has steep ground slopes > 22 degrees.

## Section 4

**6.21** All of the Route Options in section 4 have amber/medium technical risks, with one section, 4C resulting

in a red/high risk in relation to windfarms, where there is no viable technical OHL route through the Andershaw and Middlemuir wind turbines. On balance, Route Option 4B is considered the technical preference.

**6.22** Potential amber/medium rated technical risks identified for Route Option 4B include:

- Altitude: highest point of the corridor is 314 m. 100% of the corridor is > 200 m.
- Buildability Access Constraints: There are some access difficulties in approximately 40% of the route.
- Crossings to existing OHL transmission and distribution infrastructure: there are 2 no. 11kV crossings in this route.
- Ground Conditions: Approximately 25% peat along the corridor.
- Wind farms: Proximity to turbines at Andershaw and proposed turbines at Bodinglee. Schemes at scoping excluded from consideration in line with the environmental appraisal methodology (**Appendix B**).

## Conclusion

**6.23** In accordance with the overarching project routing strategy, the selection of the preferred route has primarily reflected the findings of the landscape and visual appraisal, subject to avoiding areas of highest amenity value. However, due to the nature of the other key environmental and technical constraints including forestry, existing and consented infrastructure, and consideration of the setting of cultural heritage features, these considerations have also influenced the preferred route choices. This is on the basis that the routing stage comprised the most effective way of avoiding and/or minimising these potential effects.

**6.24** The environmental and technical appraisals identified different routing preferences:

- Environmental preference: **1A-2-3B-4C**
- Technical preference: **1B-2-3B-4B**

**6.25** Where there are different routing preferences, a balance has to be made. With regards to section 1, the technical appraisal has shown that there is no technically viable route for an OHL between the proposed turbines of Lethans Extension. This has directed the preferred route to Route Option 1B where there will a short crossing of the SPA/SSSI required. Detailed design of the OHL will look to span the short crossing of the OHL so that no towers are located within the designated area.

**6.26** With regards to section 3, where the environmental preference is Route Option 3A, and there are no high risk



technical constraints, the preference is to proceed with 3A as the preferred route.

**6.27** With regards to section 4, the environmental preference is Route Option 4C. The technical appraisal has identified that there is no viable technical OHL route through the Andershaw and Middlemuir wind turbines. On balance, Route Option 4B does not directly interact with any natural heritage designations (including AWI), the route maximises offset from properties and recreational receptors, avoids medium susceptibility landscape character type LCT 207 and is the shortest route. Impacts on hydrology and peatland will be considered further through the detailed design stage to minimise impacts.

**6.28** On this basis, the environmental and technical appraisal undertaken as part of the routeing process has identified a continuous 400kV route which meets the project routeing objective.

**6.29** Balancing the environmental and technical constraints, the preferred route is confirmed as Route Option **1B-2-3B-4B** and is shown in **Figure 6.1**. The preferred route, along with the alternative route options considered, form the basis of this round of consultation with stakeholders and the public. Further details in relation to the consultation process are provided in Chapter 7.



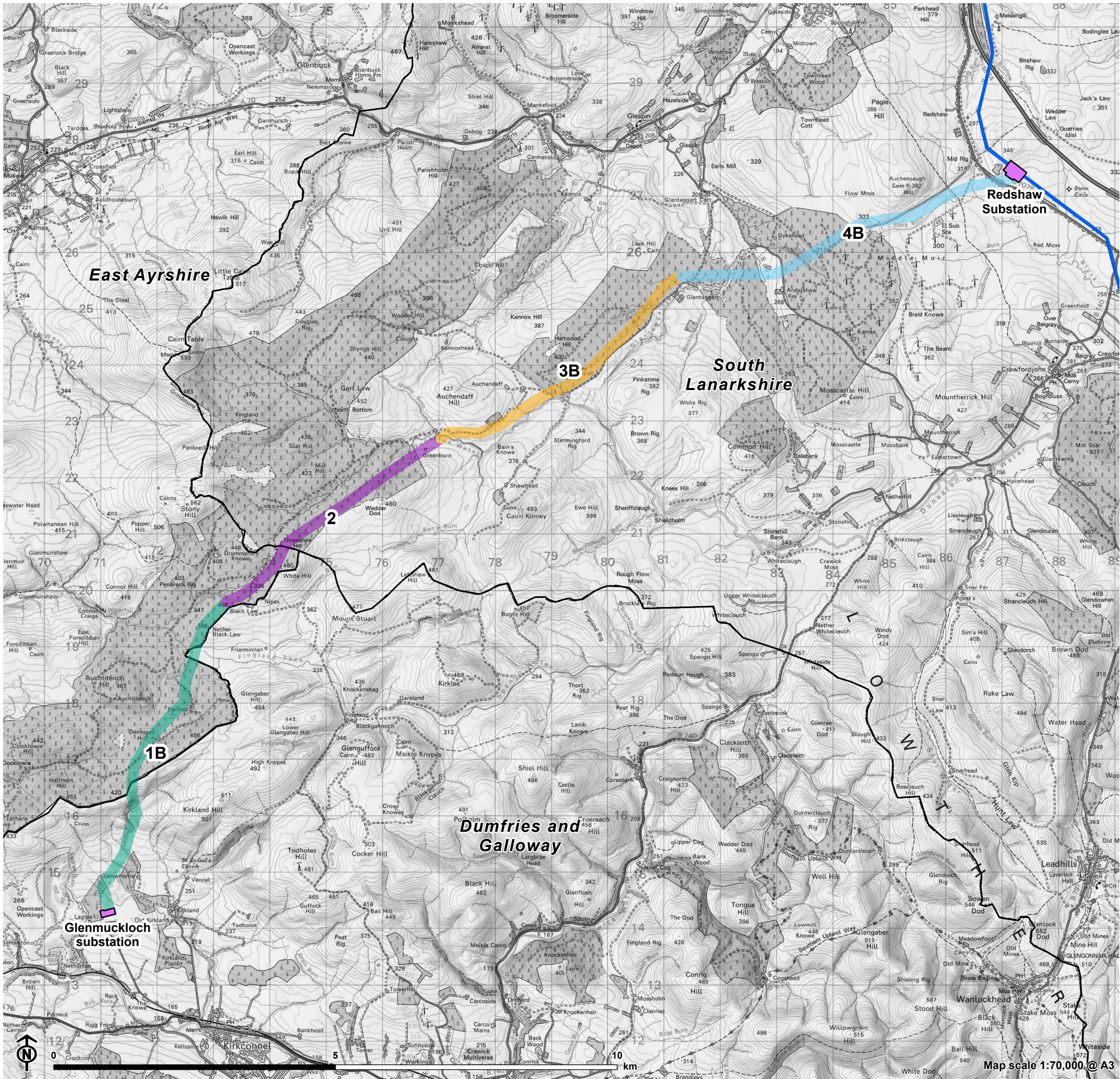


Figure 6.1: Preferred Route

- Proposed Glenmuckloch substation
  - Proposed Redshaw Substation
  - Existing 400kV overhead line (OHL)
  - Local Authority
- Route Options**
- Section 1
  - Section 2
  - Section 3
  - Section 4



## Chapter 7

### Consultation Process and Next Steps

**7.1** In April 2023, SPEN met with statutory consultees SEPA, Historic Environment Scotland and Scottish Forestry to discuss the emerging route options.

**7.2** SEPA noted that there were a number of water courses along the route that may potentially require licences during construction.

**7.3** Historic Environment Scotland indicated concern regarding the location of hilltop cairns and recommend that any Environmental Impact Assessment (EIA) undertaken for the proposals should include an assessment of impacts on all heritage assets and their settings in the vicinity of the proposed overhead line.

**7.4** Scottish Forestry initially indicated that didn't identify any issues with the proposals, subject to appropriate compensatory planting. A further meeting was held with Scottish Forestry in January 2024, and it was indicated that the level of felling required through the project was considered to be high and that routeing around woodland was preferable.

**7.5** South Lanarkshire Council were contacted, however provided no comments at that time.

### The Consultation Process

**7.6** As set out in **Chapter 1**, SPEN will apply to the Scottish Ministers for consent to install and keep installed the Glenmuckloch to Redshaw Reinforcement Project under Section 37 of the Electricity Act 1989. SPEN will also apply for deemed planning permission for the line and associated works under Section 57(2) of the Town and Country Planning (Scotland) Act 1997. Whilst there are no formal pre-application requirements for consultation in seeking section 37 consent/deemed planning permission, SPEN is embracing best practice as outlined in the Scottish Government Energy Consents Unit's (ECU) Best Practice Guidance (July 2022). This guidance encourages applicants to engage with stakeholders and the public in order to develop their proposals in advance of such applications being made.

**7.7** Therefore, prior to the submission, SPEN is carrying out consultation with stakeholders and the public.

**7.8** Following the submission of application for Section 37 consent and deemed planning permission, the Scottish Government ECU will, on behalf of Scottish Ministers, carry



out further consultation with the public and stakeholders, including South Lanarkshire, East Ayrshire and Dumfries & Galloway Councils.

## Consultation Strategy

**7.9** 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 to help it develop the project in the most appropriate way.

**7.10** The overall objective of the consultation process is to ensure that all parties with an interest in the Glenmuckloch to Redshaw Reinforcement Project continue to have access to up to date information and are given clear and easy ways in which to shape and inform SPEN's proposals at the pre-application stage.

**7.11** In addition, it is envisaged that the key issues identified through this process can be recorded and presented to decision makers to assist the consents process.

**7.12** As part of the consultation strategy, SPEN will be holding two rounds of public consultation events for the public, stakeholders and consultees to provide comments on the proposals. Details of the consultation process are set out below.

### Consultation Launch and Duration

**7.13** The consultation will run from Monday 26 February 2024 to Thursday 28 March 2024.

**7.14** Prior to the consultation events, an advert will appear in local newspapers for two consecutive weeks in w/c 12 February 2024 and w/c 19 February 2024. The advert will provide information on the project, where and when consultation events will take place and confirm that comments received at this stage are informal comments to SP Energy Networks, with the opportunity to comment formally to the Energy Consents Unit available once an application has been submitted to them.

**7.15** Leaflets containing information about the project and the consultation will also be distributed to properties within the local area.

**7.16** The closing date for sending responses to SPEN will be midnight on Thursday 28 March 2024. Following this date, the consultation information will remain accessible online (on the project website) and available to download.

### Consultees

**7.17** SPEN wishes to consult with relevant stakeholders and gain their views on the identified proposed route as well as the alternatives considered. The consultation will seek to gain views from the following broad groups:

- Statutory and non-statutory consultees, including community councils;
- Known local interest and community groups operating in the project area in South Lanarkshire and Dumfries & Galloway Council areas;
- Elected members of South Lanarkshire and Dumfries & Galloway Council areas, Members of Parliament (MP) and Members of the Scottish Parliament (MSPs) whose constituencies are within in the South Lanarkshire and Dumfries & Galloway Council areas closest to the project; and
- Local residents, businesses and the public in general.

**7.18** As noted above, leaflets will be distributed to local residents. Email correspondence will be sent to relevant stakeholders advising them of the consultation and seeking their views on the proposals.

### The Focus of the Consultation

**7.19** This report presents the findings of Phase One of the Glenmuckloch to ZV 400kV Overhead Line Grid Connection Project; the routeing process, resulting in identification of a preferred route.

**7.20** The focus of the consultation process will be to ask for people's views on:

- The preferred route;
- The alternative route options considered during the routeing process;
- Any other issues, suggestions or feedback; particularly knowledge of the local area, for example areas used for recreation, local environmental features, and any plans to build along the preferred route.

### Sources of Information about the Consultation

**7.21** The principal source of information regarding the consultation will comprise the project leaflet, website and the in-person public events.

#### Project Leaflet

**7.22** The leaflet will include details of the project, the consultation process, how to find out more and how to submit comments by feedback form, website, post or email, and by what date. The leaflet will be distributed to all properties within the project consultation area and emailed to community councils and known local interest and community groups operating in the South Lanarkshire and Dumfries & Galloway Council areas.



### Project Website

**7.23** The project website ([www.spenergynetworks.co.uk/pages/grrp.aspx](http://www.spenergynetworks.co.uk/pages/grrp.aspx)) will go live prior to the start of consultation, and will contain information about the project and consultation including an online feedback form. It will include a library of publicly available consultation documents for viewing or download.

### Consultation Documents

**7.24** Hard copies of consultation documents will be lodged at publicly-accessible information points from w/c 26 February 2024 until Thursday 28 March 2024 for public viewing (during normal opening hours) for those who do not have access to the internet, cannot attend an exhibition or would prefer to see them in person. Details of these information points are listed below and in other consultation materials.

#### Public viewing locations

- St Brides Centre, Braehead, Douglas, ML11 0PT
- Kirkconnel Library, Greystone Ave, Kelloholm, Sanquhar, DG4 6RA

### Public Consultation Events

**7.25** As part of the first round of public consultation events for the project, SPEN will hold three public exhibitions Monday 26 February 2024, Tuesday 27 February 2024 and Wednesday 28 February 2024, where people can look at maps, talk to members of the project team and pick up a feedback form. Locations have been chosen so that people within the consultation zone are only a short distance from their nearest exhibition by car or public transport. The dates and venues are listed in full in the project leaflet and on the website. The format will be an afternoon/evening drop-in.

**7.26** The exhibitions will be held at the following locations on the days and times stated:

- Monday 26 February (11.30am to 4.30pm) - St Brides Centre, Braehead, Douglas ML11 0PT
- Tuesday 27 February (2.30pm to 7.30pm) - Crawfordjohn Hall, Crawfordjohn ML12 6SR
- Wednesday 28 February (1.00pm to 7.00pm) – Miners Memorial Centre, Needle Street, Kirkconnel DG4 6ND

### How People can make Comments

**7.27** People will be able to submit comments:

- In person at an exhibition (see above);

- Online, via the project website ([www.spenergynetworks.co.uk/pages/grrp.aspx](http://www.spenergynetworks.co.uk/pages/grrp.aspx)) ;
- In writing to FREEPOST SPEN GRRP;
- By freephone on 0800 021 7890; or
- By email to [grrp@communityrelations.co.uk](mailto:grrp@communityrelations.co.uk).

**7.28** Comments and feedback should be submitted by midnight on Thursday 28 March 2024. SPEN may not be able to consider submissions received after this date when developing its proposals.

### Next Steps

**7.29** The responses received from the consultation process will be considered in combination with the findings of ongoing technical and environmental surveys and reports to enable SPEN to decide on the 'proposed' route to be progressed to the next stage. Following the consultation period, SPEN will consider all responses carefully and will subsequently prepare a Consultation Feedback Report setting out how consultation responses have been considered and how they have informed the selection of the proposed route. The feedback report will be published to the project website. In parallel, SPEN will submit a request for an EIA Scoping Opinion to the Scottish Ministers. It is proposed that a second round of public consultation will be undertaken following EIA Scoping and this will be publicised in due course.

**7.30** The proposed route will then progress to identify an OHL alignment, including individual tower positioning which will be informed by the Environmental Appraisal<sup>13</sup>, detailed engineering ground surveys and discussions with landowners. This alignment, including all ancillary development, will be included in the application for Section 37 Consent and deemed planning permission.

**7.31** SPEN will consult fully with affected landowners and occupiers on all aspects of the project and will give them an opportunity to comment on proposals as they progress.

<sup>13</sup> Subject to the Scottish Ministers confirming the Project does not require an EIA.



## **Appendix A**

### **The Holford Rules and NGC and SHETL Clarification**



**The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (with NGC 1992 and SHETL 2003 Notes)****Rule 1**

**Avoid altogether, if possible, the major areas of highest amenity, 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 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>14</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)<sup>15</sup>**Special Protection Area (NPPG 14)<sup>16</sup>**Ramsar Site (NPPG 14)<sup>17</sup>**National Scenic Areas (NPPG 14)<sup>18</sup>**National Parks (NPPG 14)<sup>19</sup>**National Nature Reserves (NPPG 14)<sup>20</sup>**Protected Coastal Zone Designations (NPPG 13)<sup>21</sup>**Sites of Special Scientific Interest (SSSI) (NPPG 14)<sup>22</sup>**Schedule of Ancient Monuments (NPPG 5)<sup>23</sup>**Listed Buildings (NPPG 18)<sup>24</sup>**Conservation Areas (NPPG 18)<sup>25</sup>**World Heritage Sites (a non-statutory designation) (NPPG 18)<sup>26</sup>**Historic Gardens and Designed Landscapes (a non-statutory designation) (NPPG 18)<sup>27</sup>*

<sup>14</sup> The National Planning Policy Guidelines ("NPPG") have been superseded by the Scottish Planning Policy ("SPP") published on 23 June 2014. The references to the relevant equivalent paragraphs of the SPP are noted.

<sup>15</sup> Now noted in SPP paragraph 207.

<sup>16</sup> Now noted in SPP paragraph 207.

<sup>17</sup> Now noted in SPP paragraph 211.

<sup>18</sup> Now noted in SPP paragraph 212.

<sup>19</sup> Now noted in SPP paragraph 212.

<sup>20</sup> Now noted in SPP paragraph 212.

<sup>21</sup> Now noted in SPP paragraph 87.

<sup>22</sup> Now noted in SPP paragraphs 211-212.

<sup>23</sup> Now noted in SPP paragraph 145.

<sup>24</sup> Now noted in SPP paragraph 141.

<sup>25</sup> Now noted in SPP paragraph 143.

<sup>26</sup> Now noted in SPP paragraph 147.

<sup>27</sup> Now noted in SPP paragraph 148.



## 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. *Impacts 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 landuses have to some extent adjusted to its presence, particularly in the case of commercial forestry, then the 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 impacts 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 impacts on the amenity of existing development and on proposals for new development.
- c. When siting substations take account of the impacts 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 entitled *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 house, 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 impacts on existing land use and rights of way.
- d. Alternative designs of substation may also be considered, e.g. 'enclosed', rather than 'open', where additional cost can be justified.
- e. Consider the relationship of tower 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 impacts of line connections that will need to be made.

## 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, or 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 license 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 NPPG5: 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 Listed Buildings. None of these documents define setting.



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

### Major Areas of Highest Amenity Value

2. In Scotland relevant national or international designations for major areas of highest amenity value include the following identified from Scottish Planning Policies and National Policy Guidelines<sup>28</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 Designated Landscapes	(NPPG 18)

### Other Smaller Areas of High Amenity Value

3. 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

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

4. 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

<sup>28</sup> See footnotes under Holford Rule 1 (note on Rule 1) for references update.



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.

#### Area of Historic, Archaeological or Architectural Value

5. Certain designations covering more limited areas are of relevance to the protection of views and the settings of towns, villages, buildings or 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 Designated Landscapes included in the Inventory of Gardens and Designated Landscapes of Scotland

#### Green Belts

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



## **Appendix B**

### **Appraisal Methodology**



Criterion	Sub-criteria	Objectives	Methodology
<b>Length of Route</b>	<ul style="list-style-type: none"> <li>Length of Route Option (Holford Rule 3)</li> </ul>	<ul style="list-style-type: none"> <li>To choose the shortest and most direct route (Holford Rule 3).</li> </ul>	Holford Rule 3 states, “ <i>other things being equal, choose the most direct line</i> ”. Although this rule primarily relates to avoiding sharp changes in direction, and therefore the need for more visually intrusive angle towers, choosing the most direct route may result in fewer adverse environmental effects than a longer, less direct route (taking due consideration of other constraints). The length of the centre line of each route option is calculated using Geographical Information Systems (GIS).
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>Ramsar Sites (Holford Rule 1)<sup>1</sup></li> <li>Special Protection Areas (SPA) (Holford Rule 1)</li> <li>Sites of Special Scientific Interest (SSSI) (Holford Rule 1)</li> <li>Special Areas of Conservation (SAC) (Holford Rule 1)</li> <li>National Nature Reserves (NNR) (Holford Rule 1)<sup>1</sup></li> <li>Local Nature Reserves (LNR) (including RSPB Reserves) (Holford Rule 2)<sup>1</sup></li> <li>Local Nature Conservation Sites (LNCS) / Local Wildlife Sites (LWS) (Holford Rule 2)<sup>1</sup></li> <li>Scottish Wildlife Trust (SWT) Reserves (Holford Rule 2)<sup>1</sup></li> <li>Biodiversity Net Gain (BNG) – No Net Loss (NLL)</li> </ul>	<ul style="list-style-type: none"> <li>To seek to avoid/reduce, as far as practical, effects on the qualifying features of designated sites of nature conservation importance (Holford Rule 1 and 2).</li> </ul>	<p>In accordance with Holford Rule 1, areas of highest environmental value are mapped to identify whether any of these areas are located within the study area.</p> <p>In accordance with Holford Rule 2, areas of regional or local value are also mapped to determine their presence (or lack of) within the study area. These include Local Nature Reserves (LNRs) (including RSPB Reserves), Local Nature Conservation Sites (LNCS) / Local Wildlife Sites (LWS) and Scottish Wildlife Trust (SWT) Reserves.</p> <p>Physical effects on areas of ‘highest amenity value’ and regional or local value were identified based on the size/location of the designated sites which the route option overlaps, reflecting the potential to avoid locating the towers supporting the overhead line (OHL) within the designated site at the detailed design stage. Holford Rule 1 sites will have been avoided where possible in identifying the route options. Where, due to insurmountable technical reasons, a designated site cannot be avoided due to its size or geographic location, the general preference would be to route through the larger site as this is likely to be able to accommodate an OHL more readily than a smaller site (due to the smaller proportion of the overall site area that the OHL would affect).</p> <p>The appraisal also considers the distance of the route options to ecological designations and their qualifying features and identifies a route preference taking into account these factors. Where possible, the connectivity and pathways for impact (e.g. via watercourse or functionally-linked habitat) are also considered with the route options with the lowest potential for pathway-related effects on designations being preferred. Where designated sites with non-avian qualifying species are located within 1 km of a route option, these are considered within the appraisal. The habitats and species within the designation are considered, as well as any functional ecological connectivity to the route option and the likelihood of effects on the species’ metapopulations within and beyond the boundaries of the designated sites.</p> <p>An ornithological ‘trigger for consideration’ zone of 2 km is applied around designations for which birds are a qualifying feature, including SPAs, Ramsar Sites, SSSIs and RSPB Reserves, as well as habitual concentrations of species of high conservation value and known nest sites of Annex 1/Schedule 1 raptor and owl species and Black Grouse leks. A 2 km zone is applied because bird species that are qualifying features of designated sites may be reliant on habitats adjacent to, but outside, the designated site boundaries: for example, qualifying species nesting within the SPA may forage up to 2km from nest sites. Hence, the presence of a route within a 2 km ‘trigger for consideration’ zone may present a risk of disturbance and collision for individuals of these species, and the risk is considered to be proportionate to the length of the route which intersects with the 2 km zone. The appraisal states the length of route which intersects with the ‘trigger for consideration zone’ and considers whether this zone can be avoided during the detailed alignment stage and/or whether suitable mitigation can be implemented during construction/operation.</p> <p>Other species such as breeding Schedule 1 birds (outwith the boundaries of designated sites), European Protected Species (such as otters) and other nationally protected species (such as water vole and badger) will be considered during the detailed alignment and subsequent assessment stage, informed by the findings of field surveys.</p> <p>As far as possible, hydrology and forestry data sets are also reviewed as they indicate the presence of habitats such as open water and woodland. The appraisal considers the level of sensitivity of the habitat, the species this habitat is likely to support, and its distance from/degree of overlap with the route option.</p> <p>The absence of an ecological feature from the datasets cannot be taken to represent actual absence. Habitat distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.</p> <p>Ecological sub-criteria, along with contemporary aerial imagery, is used to determine each route’s potential to achieve BNG (NNL). Professional ecological judgement is applied to determine the likely habitat assemblages within each route. The presence of designated sites and the likely presence of habitats of particular conservation importance, along with the potential for site-based biodiversity enhancement interventions, are considered. Individual route options that are likely to have greater potential to achieve NNL are preferred.</p>
<b>Landscape and Visual Amenity</b>	<ul style="list-style-type: none"> <li>Nationally Designated Landscapes: National Parks and National Scenic Areas (Holford Rule 1)<sup>1</sup></li> <li>Locally Designated Landscapes: Local Landscape Areas (LLA) (East Ayrshire Council)<sup>2</sup>, (Regional Scenic Areas (RSA) (Dumfries and Galloway Council)<sup>3</sup> and Special Landscape Areas (SLA)) (South Lanarkshire Council) (Holford Rule 2)</li> <li>Landscape Character Types (LCT) (Holford Rules 4, 5, 6 and 7), including Landscape Susceptibility.</li> </ul>	<ul style="list-style-type: none"> <li>To seek to avoid/reduce, as far as practical, effects on designated landscapes (Holford Rule 1 and 2).</li> <li>To contribute to the understanding of likely landscape and visual sensitivities within different areas for routeing (Holford Rules 4, 5, 6 and 7).</li> <li>To seek to avoid/reduce, as far as practicable, potential effects on views from residential receptors.</li> <li>To seek to avoid/reduce, as far as practicable, potential effects on formal/informal recreational areas and tourism features. (Further Notes on Clarification to the Holford Rules).</li> </ul>	<p>In accordance with Holford Rule 1, areas of highest environmental value are mapped to identify whether these areas are located within the study area. These include:</p> <ul style="list-style-type: none"> <li>National Parks: National Parks are designated under the National Parks (Scotland) Act 2000 with the condition “(a) <i>that the area is of outstanding national importance because of its natural heritage or the combination of its natural and cultural heritage</i>” and/or, “(b) <i>that the area has a distinctive character and a coherent identity.</i>”</li> <li>National Scenic Areas (NSAs): NSAs are designated under Section 263A of the Town and Country Planning (Scotland) Act 1997, and are defined as “<i>of outstanding scenic value in a national context.</i>”</li> <li>Wild Land: Policy 4(g) of National Planning Framework 4 (NPF4) states that “<i>Development proposals in areas identified as wild land in the Nature Scot Wild Land Areas map will only be supported where the proposal: i). will support meeting renewable energy targets; or, ii). is for small scale development directly linked to a rural business or croft, or is required to support a fragile community in a rural area</i>”.</li> </ul> <p>In addition to the areas of highest environmental value above, and in accordance with Holford Rule 2, areas of local value are also identified to inform the appraisal. These include areas of scenic value designated at local level, and which have a level of protection in a</p>

<sup>1</sup> Where designation/criteria were not identified in the route options or study area these have been excluded from the environmental appraisal table (varies per route option)

<sup>2</sup> <https://www.east-ayrshire.gov.uk/CouncilAndGovernment/Consultations/Local-Landscape-Area.aspx>

<sup>3</sup> [https://www.dumgal.gov.uk/media/19851/Regional-Scenic-Areas-technical-paper/pdf/Regional\\_Scenic\\_Areas\\_Technical\\_Paper.pdf?m=637064038441030000](https://www.dumgal.gov.uk/media/19851/Regional-Scenic-Areas-technical-paper/pdf/Regional_Scenic_Areas_Technical_Paper.pdf?m=637064038441030000)



	<ul style="list-style-type: none"> <li>■ Wild Land Areas (WLA) (Holford Rule 1)<sup>1</sup></li> <li>■ Visual Amenity from residential properties (residential visual amenity) (similar to Holford Rule 4)</li> <li>■ Tourism and Recreation: potential for views from OS promoted viewpoints, Sustrans routes, Core Paths, long distance promoted trails, tourist attractions and recreational areas such as golf courses (Notes on Clarification to the Holford Rules)</li> </ul>		<p>Local Development Plan (LDP). The potential for effects on the identified special qualities of these designated areas are appraised where present within the study area.</p> <p>The NatureScot (formerly SNH) digital map-based national Landscape Character Assessment (LCA) (published in 2019)<sup>4</sup> is used as the basis for determining the susceptibility of Landscape Character Types (LCTs) across the study area. This is supplemented by information contained within relevant published landscape capacity studies and observations made during fieldwork to appraise the relative landscape 'fit' of each route option. Landscape susceptibility refers to the ability of the landscape to accommodate a particular kind of change without significant change in its character, in this instance the introduction of steel lattice tower 400kV OHL development. During the appraisal of route options, indicators of landscape susceptibility are considered to ensure the most appropriate landscape 'fit' of the proposed OHL development. Reflecting Holford Rules 4, 5 and 6, the appraisal considers aspects of landscape character including landform and scale, landcover and pattern (e.g. in terms of topography or field boundaries), the presence of other man-made influence, the presence and distribution of settlement and evidence of existing and likely future change within the landscape. The findings of the landscape susceptibility appraisal are presented in <b>Appendix A</b>.</p> <p>In all areas, routing should seek a positive fit between the type and scale of OHL and the receiving landscape character. Routes with a positive landscape fit are likely to give rise to less severe, fewer, and less widespread effects on landscape character. Routes with a poorer landscape fit, for example running along ridge lines, or cutting across valleys, are likely to have greater effects on landscape character. The appraisal also considers landscape sensitivity, with reference to both the susceptibility of the landscape to the type and scale of OHL development proposed and the value attributed to the landscape through formal designation or otherwise, using published baseline landscape character information.</p> <p>As effects on views and visual amenity are experienced by people as receptors, receptors at their homes are often judged to be most susceptible to changes in views and visual amenity. Residential dwellings are mapped, and 150 m buffers on these are applied as 'trigger for consideration zones' for residential visual amenity to reflect the principles within the Further Notes on Clarification to the Holford Rules and published Landscape Institute Guidance on Residential Visual Amenity Assessment (RVAA) (TGN 02/2019)<sup>5</sup>. Potential effects on residential visual amenity are considered with regard to locations where these buffers overlapped with each route option. Particular consideration is given to higher concentrations of residential receptors within close proximity of route options that may result in pinch points. The implications for principal views from individual properties are considered, informed by aerial photography and field work. Approved and validated planning applications for residential dwellings which are not yet constructed are considered as 'committed development' under the Land Use topic where present within the route option (see section on Land Use below). In relation to residential amenity, approved and validated<sup>6</sup> planning applications for residential dwellings within 150 m of the route option are considered in the identification of pinch points. It is recognised that the degree of certainty of construction of these two types of potential future development differs.</p> <p>Consideration is also given to visual amenity experienced by people within a 3 km radius of the route options at locations where recreational activities are undertaken, including tourist attractions. To inform consideration of visual amenity, a number of potential receptors (i.e. areas where people are undertaking recreation or visiting tourist attractions where views of the surrounding landscape are important to that experience) are identified and mapped, including but not limited to golf courses, holiday/caravan parks, promoted visitor attractions, promoted tourist routes/core paths and long distance walking/cycle routes. Data on recreation and tourism interests is gathered using a desk based approach using Ordnance Survey maps, aerial satellite imagery and GIS datasets supplemented by fieldwork. Outdoor tourist attractions, promoted viewpoints and formal recreational facilities, where the surrounding landscape contributes to the recreational experience, were identified from Ordnance Survey maps, fieldwork, and tourist information. Transport routes are identified from Ordnance Survey maps. The potential for visual amenity effects on users of these features is considered in relation to professional judgements about the likely sensitivity of receptors, observations made during fieldwork and the type and scale of the proposed OHL.</p>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>■ Scheduled Monuments (Holford Rule 1)</li> <li>■ World Heritage Sites (Holford Rule 1)<sup>1</sup></li> <li>■ Listed Buildings, Category A, B and C (Holford Rule 1)</li> <li>■ Conservation Areas (Holford Rule 1)</li> <li>■ Inventory Gardens and Designed Landscapes (Holford Rule 1)<sup>1</sup></li> <li>■ Inventory Historic Battlefields (Holford Rule 1)<sup>1</sup></li> <li>■ Non-designated records identified by South Lanarkshire Council (SLC), Dumfries and Galloway Council (D&amp;GC) and East Ayrshire Council (EAC) Historic Environment Record (HER) and SLC, D&amp;GC and</li> </ul>	<ul style="list-style-type: none"> <li>■ To seek to avoid/minimise, as far as practical, direct physical change on designated features of cultural heritage interest ('historic assets') or change in their settings which would harm their significance or perception (Holford Rule 1 and 2).</li> </ul>	<p>In accordance with Holford Rule 1, areas of highest environmental value were mapped to identify whether any of these areas are present within the 3km study area. These include:</p> <ul style="list-style-type: none"> <li>■ World Heritage Sites (WHSs): WHSs are designated by UNESCO for their special cultural or physical significance and are protected under an international agreement adopted by the General Conference of UNESCO in 1972 (the UNESCO World Heritage Convention). This includes their 'buffer zones'.</li> <li>■ Scheduled Monuments (SMs): SMs are monuments of national importance, given legal protection under the Ancient Monuments and Archaeological Areas Act 1979.</li> <li>■ Inventory Gardens and Designed Landscapes (GDLs): GDLs which are particularly important for their scenic quality and historic interest and are an important element of Scotland's historic environment and landscape. Historic Environment Scotland (HES) select nationally important sites for the Inventory under the terms of the Ancient Monuments and Archaeological Areas Act 1979 and maintains that Inventory of GDLs that meet criteria published in HES' Designation Policy and Selection Guidance<sup>7</sup>.</li> <li>■ Category A Listed Buildings: In Scotland, Listed Buildings are protected under the Listed Buildings and Conservation Areas (Scotland) Act 1997. Buildings of special architectural or historic interest are divided into three categories to reflect their degree of interest. Category A Listed Buildings are considered to be of national or international importance.</li> <li>■ Inventory of Historic Battlefields (Scotland): HES maintains an Inventory of Historic Battlefields which is a list of national important battlefields in Scotland that meet the criteria published in HES' Designation Policy and Selection Guidance<sup>8</sup>.</li> </ul>

<sup>4</sup> <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

<sup>5</sup> <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf>

<sup>6</sup> Undetermined planning applications are those which have been validated, i.e. are 'live' applications, but have not yet been decided.

<sup>7</sup> <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b>

<sup>8</sup> <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b>



	<p>EAC locally recognised non-inventory designed landscapes (NIDL) (Holford Rule 2)</p> <ul style="list-style-type: none"> <li>■ Archaeologically Sensitive Areas (ASA) (Holford Rule 2)<sup>1</sup></li> </ul>		<ul style="list-style-type: none"> <li>■ Conservation Areas (CAs): CAs are considered worthy of preservation or enhancement because of their special architectural or historic interest. They are given legal protection under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.</li> </ul> <p>In addition to the areas of highest environmental value above, and in accordance with Holford Rule 2, areas of regional or local value are also identified to inform the appraisal. For example, Archaeologically Sensitive Areas designated by D&amp;GC for protection under Policy HE4: Archaeologically Sensitive Areas (ASA) within the D&amp;GC Local Development Plan (LDP) 2 (2019), non-inventory designed landscapes (NIDLs), and sites recorded in Council Historic Environment Records (HER).</p> <p>Policy and guidance seeks the preservation<sup>9</sup> of heritage assets and the routeing appraisal therefore focusses on the ways in which harm could arise to assets via:</p> <ul style="list-style-type: none"> <li>■ Direct physical change<sup>10</sup>;</li> <li>■ Change in the setting of assets which affects their cultural significance<sup>11</sup>; and</li> <li>■ Change in the setting of assets which affects how the asset and its heritage significance is appreciated<sup>12</sup>.</li> </ul> <p>The cultural heritage appraisal provides a high-level consideration of effects to the heritage significance of:</p> <ul style="list-style-type: none"> <li>■ Designated assets identified by HES data; and</li> <li>■ Non-designated assets identified using the SLC, D&amp;GC and EAC Historic Environment Records (HER)<sup>13</sup> which also includes data on locally recognised designed landscapes (NIDLs) which have had significance ratings pre-assigned to them.</li> </ul> <p>The methodology for assessing potential direct physical effects comprises identifying the number, extent and nature of historic assets within the route option (designated historic assets<sup>14</sup> and HER entries likely to constitute historic assets<sup>15</sup> (hereafter referred to as non-designated heritage assets)). These are then noted in relation to the opportunity, or otherwise, for avoiding direct effects at the detailed routeing stage.</p> <p>Potential effects of the OHL arising from how it may affect the cultural significance of historic assets as a result of change within their settings is assessed by initially identifying assets within the route option itself and within 3km of the route options (the distance within which potentially significant effects are considered most likely to occur). These are then reviewed to identify those with susceptibility for harm to their cultural significance associated with the proposed OHL being within their setting. With some exceptions, consideration is not given to effects related to setting change for non-designated heritage assets at this stage. The non-designated heritage assets where effects associated with setting change are considered are due to those assets forming part of a related system with a designated asset and where the proposed OHL may affect how these relationships can be understood (e.g. a Roman fort SM and associated non-designated sections of Roman road).</p>
<b>Forestry and Woodland</b>	<ul style="list-style-type: none"> <li>■ Ancient Woodland of the Ancient Woodland Inventory (AWI) (Holford Rule 1)</li> <li>■ Native Woodland of the Native Woodland Survey of Scotland (NWSS) (Holford Rule 2)</li> <li>■ Forestry of the National Forest Inventory (NFI) (Holford Rule 5)</li> </ul>	<ul style="list-style-type: none"> <li>■ To seek to avoid/reduce, as far as practical, effects on forestry, particularly areas of ancient woodland (Holford Rule 1) and native woodland (Holford Rule 2, and on future forestry operations (Holford Rule 5).</li> </ul>	<p>Notes c) and d) in respect of Rules 4 and 5 of the Holford Rules state “<i>where possible follow open space and run alongside, not through woodland or commercial forestry and consider opportunities for skirting edges of copses and woods. Protect existing vegetation including woodland and hedgerows, and safeguard visual and ecological links with the surrounding landscape</i>”.</p> <p>On this basis, forest and woodland areas within each of the route options are identified through the use of aerial photography, combined with digital data available from NatureScot (formerly SNH) and Scottish Forestry (SF) sources.</p> <p>Forests and woodland are divided into three groupings:</p> <ol style="list-style-type: none"> <li>1. Conifer forest from the National Forest Inventory (NFI) for Great Britain<sup>16</sup>;</li> <li>2. Ancient Woodland Inventory (AWI); and</li> <li>3. Native Woodlands from the Native Woodland Survey of Scotland (NWSS).</li> </ol> <p>It is recognised that there is often overlap between 1 and 2 and also between 2 and 3. There is no perceived overlap between 1 and 3.</p> <p>Appraisal against the forestry and woodland criterion comprises analysis of the extent and location of each forest and woodland type within the route options to identify net areas for these three forest and woodland types. A GIS-based calculation is run to identify the total area (hectares (ha)) of woodland, of each forestry category listed above, present within each route option. As ancient woodland areas are also included in the NFI, the total area of ‘other’ (non-ancient) woodland is calculated by subtracting the total AWI area from the total NFI area. Although the AWI and NFI datasets do not always precisely align in individual cases (it is possible for areas contained within the AWI not to feature in the NFI), visual inspection indicates that the datasets are sufficiently aligned across the route options for the purposes of route option appraisal using this calculation method.</p> <p>In general terms, the objective in identifying a preferred route is based on identifying the lowest impact for all three types of forest and woodland. This requires a subjective review which places greater weight on reducing the impact on type 2 and also 3 ahead of type 1. This reflects the importance of the local resource of these woodland types and as such, the implications of the proposed removal of this type of woodland within the wayleave (area of woodland felled to accommodate the OHL). The method of appraisal of route options seeks</p>

<sup>9</sup> Generally held, as a result of legal precedent, as meaning “to do no harm to”, i.e. an asset could change but if this change is not harmful to its cultural significance then it would be understood as having been preserved.

<sup>10</sup> For example, this could include change to the key characteristics or fabric of a designated, or non-designated asset.

<sup>11</sup> For example, this could include blocking or obstructing the line of sight from a defensive asset and a topographic feature it was sited to observe/control (e.g. from a medieval castle to the river crossing it policed), or obscuring or obstructing intervisibility between related monuments.

<sup>12</sup> For example, this could include placing infrastructure in a location which affects appreciation of an asset (e.g. a tower being visible on a hillside when the principal elevation of a listed building is seen from its approach road/drive, or where it might lie within a designed vista from a listed building or a GDL).

<sup>13</sup> HER data was obtained in [March 2023]

<sup>14</sup> i.e. World Heritage Sites (WHS), Scheduled Monuments (SM), Listed Buildings (LB), Conservation Areas (CA), Inventory Gardens and Designed Landscapes (GDL), Inventory Historic Battlefields (HB).

<sup>15</sup> Entries in HERs do not necessarily constitute historic assets for the purposes of planning and environmental assessment. It is therefore necessary for appropriately qualified and experienced professionals to undertake a sift of HER data to exclude, inter alia, find-spots, archaeological events (location of excavations, watching briefs etc.), assets previously lost/destroyed, records with insufficient spatial resolution, and other records not relevant to the purpose in hand.

<sup>16</sup> Updated where necessary to reflect woodlands recently planted and not yet updated in the NFI



			<p>to minimise effects particularly on areas of ancient woodland, due to the value of this resource as reflected in NPF4. In addition, for the AWI designated areas, consideration is given as to whether this woodland type is a Plantation on Ancient Woodland Site (PAWS) rather than continuing to be of native woodland species. While still recognising the importance of PAWS sites it is considered important to identify these separately from other AWI designations.</p> <p>GIS mapping is used to support commentary in the appraisal table as to whether woodland of different types can potentially be avoided through detailed design or whether it cannot (assuming that the final wayleave within woodland will be up to 80 m in width (i.e. 40 m on either side of the OHL)), e.g. if it spans the entire width of the route option, with observations being made concerning the implications of this. Due to the often scattered and broken nature of natural forests and woodland, for example, there is frequently the opportunity to avoid areas through careful consideration of the detailed route alignment.</p> <p>Based on the above, a judgement is made as to which route option is preferred. Consideration is also be given to minimising impacts on forestry and woodland at the detailed route alignment stage, taking account of the need to create long term stable forest edges and to minimise impacts on forestry and woodland management practices. During the alignment/EIA stage consideration will be given to all three forest and woodland types through:</p> <ul style="list-style-type: none"> <li>■ taking account of existing, and planned, windfirm boundaries to minimise sterilisation of commercial forestry and woodland areas and reduce the requirements for additional felling outwith the wayleave;</li> <li>■ taking account of forest design plans and liaising with forestry owners/managers to avoid, or reduce restrictions on forest management operations/techniques e.g. maintaining access to woodland blocks for harvesting/safety; and</li> <li>■ identification of opportunities to retain and/or plant particularly lower growing shrub species within the wayleave.</li> </ul>
<b>Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	<ul style="list-style-type: none"> <li>■ Flood Zones</li> <li>■ Waterbodies/watercourses</li> <li>■ NatureScot (previously Scottish Natural Heritage (SNH)) Priority Peatland Habitats (Class 1 and Class 2) (Holford Rule 1)</li> <li>■ NatureScot (previously Scottish Natural Heritage (SNH)) Peatland Habitats (Classes 3, 4 and 5)</li> </ul>	<ul style="list-style-type: none"> <li>■ To cross flood zones at their narrowest point to minimise locating infrastructure within flood zones, where possible.</li> <li>■ To avoid locating steel towers within watercourses and waterbodies.</li> <li>■ To seek to avoid/reduce loss of peatlands in accordance with National Planning Framework 4 (NPF4) (Holford Rule 1).</li> </ul>	<p>To avoid potential conflicts with policy relating to flooding and to avoid potential increases to flood risk, the Scottish Environment Protection Agency (SEPA) online flood mapping tool is used to review SEPA flood zones and location of the route options relative to the flood plain and SEPA 200-year + climate change flood zones are mapped using GIS. When appraising the route options, the ability to span the flood zone (average span of 300m for steel towers) is considered. The appraisal considers the potential to cross the flood zone at the narrowest point, all other environmental / technical considerations being equal.</p> <p>GIS is also used to map watercourses and waterbodies to identify those which interact with the route options. The location of each constraint with respect to the route option; the length and/or area of intersection of the route option with the constraint is identified. Professional judgement is then applied to identify the possibility of avoiding effects upon the constraint via detailed design; and, where the constraint is unavoidable, the severity of potential effects upon it, taking into account mitigation.</p> <p>The presence of NatureScot Priority Peatland Habitats are also considered during the route appraisal. NatureScot (formerly Scottish Natural Heritage (SNH)) published a series of maps and guidance documents relating to Priority Peatlands (Mapping of SNH Carbon Rich Soil, Deep Peat and Priority Peatlands (CPP) (July 2016)). By dividing peatland habitat types into 5 broad 'classes', SNH has mapped those areas of Scotland of greatest value for carbon sequestration through peat formation. Class 1 and 2 peatlands are those which offer greatest restoration and carbon-sequestration potential and should be avoided as far as possible. GIS is used to identify the location of Class 1 and 2 peatlands with respect to the length and/or area of intersection of the route option. Professional judgement is applied to identify the possibility of avoiding effects upon the constraint via detailed design; and, where the constraint is unavoidable, the severity of potential effects upon it, taking into account mitigation. The avoidance of all peat is a consideration and areas of Class 3, 4 and 5 peat will also be considered in the route appraisal using the NatureScot GIS data to identify locations.</p>
<b>Minerals</b>	<ul style="list-style-type: none"> <li>■ Previous and current areas of mineral extraction</li> <li>■ Potential future areas of mineral extraction</li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid/minimise areas where previous/current mineral extraction may have created areas of potential instability (opencast backfill, former mine entries and shallow mineworkings). Such areas may impact upon the stability of the bedrock/ground surface and require enabling remediation works prior construction of towers and associated infrastructure commencing.</li> <li>■ Avoid/minimise areas where the construction of steel towers may sterilise the future extraction of mineral resources.</li> </ul>	<p>Review available British Geological Survey maps and borehole data to determine soil types and thicknesses as well as the nature and composition of the underlying rock strata and, hence, potential for mineral deposits of potential past and future economic importance to be present. Review Coal Authority mine plan data to obtain information on areas of potential shallow mineworkings and locations of mine entries. Review local authority planning policy documents with regard mineral potential including drift materials such as sand and gravel. Professional judgement is then utilised to avoid, as far as is possible, areas where there is the greatest potential for instability due to weak soils or previous mineral extraction. Areas where future mineral extraction could be viable would also where possible be avoided.</p> <p>Where constraints are unavoidable, identify mitigation measures to reduce/remove the severity of the constraint(s) through the use of cost effective engineering methodologies and ground remediation techniques.</p> <p>Future coal extraction has been excluded from the appraisals due to the unlikely progression of coal extraction in the future, where there is a strong national policy preference on the use of fossil fuels.</p>
<b>Land Use</b>	<ul style="list-style-type: none"> <li>■ Committed Development (Consented and Undetermined<sup>17</sup> Planning Applications) (Holford Rule 7)</li> <li>■ Local Development Plan (LDP) Allocations (Holford Rule 7)</li> <li>■ Scotland Land Capability for Agriculture (LCA) Classes 1, 2 and 3.1 (Holford Rule 7)<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Avoid, where possible, land use conflict with committed development including consented and undetermined planning applications and land allocated within an LDP (Holford Rule 7).</li> <li>■ To seek to avoid/reduce, as far as practical, effects on Best and Most Versatile (BMV) agricultural land (Holford Rule 7).</li> </ul>	<p>The land use appraisal identifies potential conflicts between the route options and existing and future, i.e. planned or consented but not yet constructed/operational, land uses.</p> <p>Land which is already allocated for development within the route options, for example, through a Local Development Plan (LDP), and land which is subject to a valid planning application or planning permission, also presents the potential for future land use conflicts. Land of this type is referred to as 'committed development' in the appraisal, although it is taken into account that the degree of likelihood of future land use conflict varies within this type (e.g. land with a planning consent as against land with a validated planning application that has not yet been determined).</p> <p>Consideration is also given to the presence of Habitat Management Plans (HMPs) which are commonly associated with wind farm developments. Where the proposed development interacts with a number of consented, in planning and operational wind farms,</p>

<sup>17</sup> Undetermined planning applications are those which have been validated, i.e. are 'live' applications, but have not yet been decided.



			<p>consideration is given to the interactions of the proposed route with any areas designated as HMP areas. Where the proposed development would negatively impact the obligations the landowner/developer in relation to the implementation of the HMP, this should be avoided where possible and the impacts on the objectives of the HMP should be considered in the balance of the assessment.</p> <p>Developments consented prior to August 2018<sup>18</sup> are considered either likely not to be constructed (as the consent will likely have expired<sup>19</sup>) or to have already been constructed and therefore captured as existing development within relevant data used to inform the appraisal across all topics. To ensure that all relevant planning permissions are captured in the appraisal, planning applications consented from 2018 onwards are appraised, as it was considered that this cut-off date allowed sufficient time for prior consents to be fully implemented and for the OS basemaps/data/aerial photography to be updated to include them as existing developments. Applications considered within the cut-off period include applications which have received planning permission or planning permission in principle (PPiP) consent; applications for approval of matters specified in conditions (AMSC) associated with PPiP consents granted prior to the 2018 cut-off date; and applications which have been validated, i.e. are 'live' applications, but not yet determined. To avoid duplication, applications for Non-Material Amendments, Condition Variations or Discharge of Conditions were not referenced in the appraisal where these related to a planning application which had already been captured under other categories.</p> <p>When appraising the route options, where a committed development is located (fully or partially) within the route option, the implications of this for the detailed routeing/alignment design and/or subsequent environmental assessment stage are highlighted. Both residential and non-residential committed developments are considered within the appraisal: for example, residential dwellings, holiday lets, agricultural buildings, etc. The implications of committed development within 150 m of route options for residential visual amenity are treated under the Landscape and Visual Amenity topic above. Route options with the lowest number of committed developments present, or where the committed developments could be avoided through detailed design, are generally preferred.</p> <p>As outlined above, the land use appraisal also considers land which is allocated for a specific purpose within the SLC LDP, East Ayrshire LDP and D&amp;G LDP. The appraisal assesses the extent to which areas allocated within the LDPs are present within the route options. A judgement is made as to whether areas allocated under either LDP can or cannot be avoided during the detailed design stage. Route options which avoid or cross fewer allocated areas within the LDPs are preferred.</p> <p>The appraisal also considers the Land Capability for Agriculture (LCA) classification system which is used to rank land based on its potential productivity and cropping flexibility. This is determined by the extent to which the physical characteristics of the land (soil, climate and relief) impose long term restrictions on its use. The LCA is a seven-class system, whereby classes 1, 2 and 3.1 in Scotland are referred to as 'Best and Most Versatile' land (with regards to agricultural productivity) and are afforded a degree of protection from development<sup>20</sup>. These grades of agricultural land are subject to predictive mapping and opportunities to avoid them during routeing are appraised. The appraisal assesses the area (hectares) of BMV agricultural land present within each of the route options and the route which avoids the most BMV agricultural land is preferred.</p>
--	--	--	--

<sup>18</sup> Using 5 years data to consider impacts of covid legislation which extended the time period of consents.

<sup>19</sup> Under Section 58 of the Town and Country Planning (Scotland) Act 1997 (as amended), any planning permission granted expires after a period of 3 years beginning with the date on which permission was granted. Generally, unless the planning permission states otherwise, planning permissions expire three years following the date granted to commence development.

<sup>20</sup> Bibby, J.S., Douglas, H.A., Thomasson, A.J. & Robertson, J.S. (1982) Land capability classification for agriculture. Macaulay Land Use Research Institute, Aberdeen.



## **Appendix C**

### **Environmental Appraisal Tables**



Table 1.1: Section 1 - Route Options Environmental Appraisal

Criterion	Sub-Criteria	Route Option 1A	Route Option 1B	Preference
<b>Length of Route</b>	Length of Route Option (Holford Rule 3)	Approximately 6.56 km	Approximately 6.16 km	<b>Route Option 1B is preferred</b> as the length of line is shortest.
<b>Biodiversity</b>	Special Protection Areas (SPA) (Holford Rule 1)	Both Route Options run between two parallel 'units' of the Muirkirk and North Lowther Uplands SPA <sup>1</sup> and lie within the 2km 'trigger for consideration' zone for the SPA.  Route Option 1A is approximately 400m from the boundary of the SPA at its closest point.	Both Route Options run between two parallel 'units' of the Muirkirk and North Lowther Uplands SPA <sup>1</sup> and lie within the 2km 'trigger for consideration' zone for the SPA.  Route Option 1B crosses the SPA for a distance of approximately 250m, spanning a spur of the SPA's southernmost unit. However, the relatively short span of Route Option 1B over the SPA and SSSI (ca.250m) and its proximity to the SPA/SSSI boundary where adjacent habitat comprises sub-optimal forestry plantation on three sides, means that the qualifying bird species are not expected to rely on habitats adjacent to the spanned area, with any potential habitat loss arising from displacement likely to be insubstantial in relation to species' requirements.	<b>Route Option 1A is preferred</b> as the line would not cross the SPA.
	Site of Special Scientific Interest (SSSI) (Holford Rule 1)	In the lower western extent of Route Option 1A and 1B, both lie (approximately 300 m) from Lagrae Burn SSSI <sup>2</sup> .  In the northern and southern extent of Route Options 1A and 1B, both route options lie within the 2 km 'trigger for consideration zone of the North Lowther Uplands SSSI <sup>3</sup> . In the southern extent of both route options, the route option skirts along the western boundary of this SSSI. Route Option 1A lies approximately 400 m from the North Lowther Uplands SSSI <sup>3</sup> .	In the lower western extent of Route Option 1A and 1B, both lie (approximately 300 m) from Lagrae Burn SSSI <sup>2</sup> .  In the northern and southern extent of Route Options 1A and 1B, both route options lie within the 2 km 'trigger for consideration zone of the North Lowther Uplands SSSI <sup>3</sup> . In the southern extent of both route options, the route option skirts along the western boundary of this SSSI.  Route Option 1B crosses the SSSI for a distance of approximately 250 m through the corner of the SSSI boundary at this location. Route Option 1B then follows the boundary of the SSSI until it meets Route option 2. However, the relatively short span of Route Option 1B over the SPA and SSSI (ca.250m) and its proximity to the SPA/SSSI boundary where adjacent habitat comprises sub-optimal forestry plantation on three sides, means that the qualifying bird species are not expected to rely on habitats adjacent to the spanned area, with any potential habitat loss arising from displacement likely to be insubstantial in relation to species' requirements.	<b>Route Option 1A is preferred</b> as the line would not cross the SSSI.
	Local Nature Conservation Sites (LNCS) / Local Wildlife Sites (LWS) (Holford Rule 2)	There is one LNCS/LWS located within the 1 km 'trigger for consideration zone'. At the closest point, Muirkirk South Uplands is located approximately 590 m north west of Route Option 1A.  However, Route Option 1A does not interact with any LNCS/LWS.	There is no LNCS/LWS located within the 1 km 'trigger for consideration zone'.	<b>Route Option 1B is preferred</b> as it is located the farthest (point from where both routes splits into their individual routes) from Muirkirk South Uplands.
	Potential to achieve Biodiversity Net Gain (No Net Loss)	Each route option supports broadly comparable habitat structures, including forestry and mosaics of upland/peatland habitat structures. As such, each route option offers broadly comparable opportunities to deliver Biodiversity Net Gain (No Net Loss)		There is <b>no preferred route option</b> as all routes are likely capable of supporting Biodiversity Net Gain (No Net Loss)
	<b>Overall Preference for Biodiversity</b>	<b>Overall, Route Option 1A is preferred in relation to biodiversity as this Route Option avoids the SPA and SSSI. However, the relatively short span of Route Option 1B over the SPA and SSSI (ca.250m) and its proximity to the SPA/SSSI boundary where adjacent habitat comprises sub-optimal forestry plantation on three sides, means that the qualifying bird species are not expected to rely on habitats adjacent to the spanned area, with any potential habitat loss arising from displacement likely to be insubstantial in relation to species' requirements.</b>		

<sup>1</sup> The Muirkirk and North Lowther Uplands SPA is designated for the following features: Golden Plover (breeding), Hen Harrier (breeding and non-breeding) and Merlin (breeding)

<sup>2</sup> The Lagrae Burn SSSI is designated for the feature: Upper Carboniferous (Namurian (part) – Westphalian) (no ornithology features)

<sup>3</sup> The North Lowther Uplands SSSI is designated for the following features: Breeding bird assemblage, Hen harrier (Circus cyaneus) (breeding), Mineralogy of Scotland, Upland assemblage



Criterion	Sub-Criteria	Route Option 1A	Route Option 1B	Preference
<b>Landscape and Visual Amenity</b>	Locally Designated Landscapes: Local Landscape Areas (LLA) (East Ayrshire Council), (Regional Scenic Areas (RSA) (Dumfries and Galloway Council) and Special Landscape Areas (SLA)) (South Lanarkshire Council) (Holford Rule 2)	The northern extent of Route Option 1A is located approximately 550 m south east of the boundary of the Uplands and Moorlands LLA, in East Ayrshire.	The northern extent of Route Option 1B is located approximately 1 km south east of the boundary of the Uplands and Moorlands LLA, in East Ayrshire.	<b>Route Option 1B is preferred</b> as it is located furthest from locally designated landscapes in East Ayrshire (LLAs). However, both route options avoid direct effects on the Uplands and Moorlands LLA.
	Landscape Character Types (LCT) (Holford Rules 4, 5, 6 and 7), including Landscape Susceptibility	The southern extent of Route Option 1A and 1B both cross through the Upper Dale – Dumfries & Galloway LCT 165, for a distance of approximately 680 m. This LCT is judged to be of medium susceptibility to OHL development.  Continuing north, both route options pass through the Southern Uplands – Dumfries and Galloway LCT 177 for a distance of approximately 1.7 km. This LCT is judged to be of medium susceptibility, to OHL development.  Both routes then pass through the Plateau Moorland – Ayrshire LCT 78 for a distance of approximately 3.6 km (1B) and 3.9 km (1A) with a short section of Route Option 1B also crossing again through the Southern Uplands- Dumfries and Galloway LCT 177 (approximately 250 m). The Plateau Moorland – Ayrshire LCT 78 is judged to be of lower susceptibility, to OHL development.		<b>Route Option 1A is preferred</b> as it slightly minimises routing through the Southern Uplands – Dumfries and Galloway LCT 177 (medium susceptibility to OHL development).
	Visual Amenity from residential properties (residential visual amenity) (similar to Holford Rule 4)	There are no residential properties that fall within the 150 m ‘trigger for consideration zone’ of either Route Option 1A or 1B.  The closest residential properties to Route Options 1A and 1B are: <ul style="list-style-type: none"><li>■ Lagrae: located approximately 310 m south west of the starting point of both Route Options;</li><li>■ Glenwharrie: located approximately 330 m east of the southern extent of both Route Options; and</li><li>■ Vennel: located approximately 1.2 km to the south-east of both Route Options.</li></ul> Views from isolated properties at Fingland and Blackgannoch, located over 2.8km east of the route options, would be screened by the intervening terrain to the west of the properties (Lower Glengaber Hill).		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to visual amenity from the nearest properties.
	Tourism and Recreation: potential for views from OS promoted viewpoints, Sustrans routes, Core Paths, long distance promoted trails, tourist attractions and recreational areas such as golf courses (Notes on Clarification to the Holford Rules)	Neither route options cross Core Paths or Sustrans routes.  Both route options follow a similar alignment, except for a short section where they diverge towards the northern extents of section A. OHL would be visible in both route options, in longer distance views from the Southern Upland Way (located to the south-east) as the long distance trail crosses Nithsdale. OHL would also be visible in the southern extents of both route options from St Connel’s Church (and the approach to), to the north-west of Kirkconnel, on the northern valley side of Nithsdale. The level of visibility would be comparable for OHL in both route options.		In relation to tourism and recreation, there is <b>no preferred route option</b> .
	<b>Overall Preference for Landscape and Visual Amenity</b>	<b>Overall, Route Option 1A is preferred in relation to landscape and visual amenity. This route option minimises routing through the Southern Uplands – Dumfries and Galloway LCT 177 (medium susceptibility to OHL development). However, the additional length of routeing through this LCT, when compared with Route Option 1B, is very short (Route 1B passes an additional 250 m approximately, through this LCT).</b>		
<b>Cultural Heritage</b>	Scheduled Monuments (Holford Rule 1)	There are no Scheduled Monuments within Route Options 1A and 1B.  Within 3 km of Route Options 1A and 1B there is one Scheduled Monument, St Connel’s Church and Graveyard (SM 13747), approximately 870 m east of the southern end of both Route Options. The church is a locally promoted visitor site. There is potential for impacts on the setting of the church, which is located above the River Nith, at the foot of steep slopes of Kirkland Hill and from which long views are gained to the south along the Stell Sike into the Nith Valley, and to the north west looking across Glenwharrie towards Halfmerk Hill.		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to Scheduled Monuments.
	Listed Buildings, Category A, B and C (Holford Rule 1)	There are no Listed Buildings within Route Options 1A and 1B.  Within 3 km of Route Options 1A and 1B, there are: 4 x Category B Listed Buildings and 3 x Category C Listed Buildings. These are: <ul style="list-style-type: none"><li>■ Category B Listed<ul style="list-style-type: none"><li>– The Knowe Farmhouse and Steading (LB 10240)</li><li>– Kirkconnel Parish Church and Churchyard (LB 10237)</li><li>– Queensferry Arms Hotel, 71-72 Main Street (LB 10238)</li><li>– Manse, Kirkconnel (LB 13345)</li></ul></li><li>■ Category C Listed<ul style="list-style-type: none"><li>– Kirkland Farmhouse (LB 10239)</li><li>– Guildhall Bridge (LB 10275)</li><li>– Kelloside (LB 10278)</li></ul></li><li>■ The closest Listed Building, Kirkland Farmhouse (LB 10239), stands approximately 1 km to the east of the southern end of both Route Options. The majority of the Listed Buildings are located either within or close to Kirkconnel village and</li></ul>		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to Listed Buildings.



Criterion	Sub-Criteria	Route Option 1A	Route Option 1B	Preference
		have generally localised settings. Any potential impact of the proposed development on the setting of the Listed Buildings is not considered likely to be significantly adverse.		
	<p>Non-designated heritage records identified by South Lanarkshire Council (SLC), Dumfries and Galloway Council (DGC) and East Ayrshire Council (EAC) Historic Environment Record (HER) (Holford Rule 2)</p> <p>Non-inventory designed landscapes (NIDL) recognised by SLC, DGC and EAC (Holford Rule 2)</p>	<p>The DGC HER records four non-designated heritage assets within both Route Options 1A and 1B. These are:</p> <ul style="list-style-type: none"> <li>■ Glenwharrie, Farmstead; Quarry; Ridge and Furrow (MDG 21444)</li> <li>■ Glenwharrie, Enclosure (MDG 24843)</li> <li>■ Glenwharrie, Ridge and Furrow; Bank; Enclosure; Buildings (MDG 21443)</li> <li>■ Kirkland Hill, Bank (MDG 25800)</li> </ul> <p>These are associated with former medieval/post-medieval settlement and agrarian activity and are clustered at the southern end of the Route Options.</p> <p>One asset (Glenwharrie, Farmstead; Quarry; Ridge and Furrow (MDG 21444)), is categorised in the DGC HER as being of national significance, and potentially of schedulable quality. This heritage asset should be avoided/spanned during the alignment design stage.</p> <p>All of the remaining assets are elements of the local historic farming landscape. One, Glenwharrie, Enclosure (MDG 24843), is categorised in the HER as being of regional/local significance and the remaining assets are categorised as being of local significance. Consideration should be given to avoiding or minimising direct effects on these during the alignment design stage.</p> <p>Within 3 km of the Route Options there is one additional non-designated heritage asset recorded in the DGC HER as being of 'National Significance':</p> <ul style="list-style-type: none"> <li>■ Sections of the 'Deil's Dyke' (MDG 11235, MDG 11244-MDG 11246), a massive linear bank of possible Dark-Age date.</li> </ul> <p>The sections of the Deil's Dyke lie around 2.5 km to the south of the southern end of the Route Options. Given the distance between the monument and the Route Options, it is considered unlikely that there would be an adverse effect on its setting.</p> <p>Neither Route Option passes through a NIDL, and there are no NIDLs within 3 km of either Route Option.</p>		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to non-designated records.
	<b>Overall Preference for Cultural Heritage</b>	<b>There is no preference as there is no notable difference between the Route Options in relation to the cultural heritage assets within the study areas.</b>		
<b>Forestry and Woodland</b>	Forestry of the National Forest Inventory (NFI) (Holford Rule 5)	<p>There is a total of 62.6 hectares (ha) of NFI within Route Option 1A.</p> <p>Route Option 1A includes, 37.2ha of young conifers and 25.4ha of mature ones.</p> <p>Route Option 1A would result in the removal of 25.04 ha, based on an 80 m wide wayleave.</p>	<p>There is a total of 50.9 ha of NFI within Route Option 1B.</p> <p>Route Option 1B includes, 37.2ha of young conifers and 25.4ha of mature ones.</p> <p>Route Option 1B would result in the removal of 20.36 ha, based on an 80 m wide wayleave.</p>	<b>Route Option 1B is preferred</b> as it only impacts smaller area of afforested land.
	<b>Overall Preference for Forestry and Woodland</b>	<b>Overall, Route Option 1B is preferred in relation to forestry and woodland as it would impact a smaller area of afforested land.</b>		
<b>Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	Flood Zones	There is only one small area of fluvial flood risk noted on the SEPA future flood maps within Route Option 1A which is located just at the west boundary of route as it crosses the Auchtitench Lane watercourse. There are no significant areas of surface water flood risk within the route.	There are no areas of fluvial flood risk noted by the SEPA flood maps within Route Option 1B, but this may be due to the watercourses crossed being under 3km <sup>2</sup> in catchment size. There are no significant areas of surface water flood risk within the route.	<b>Route Option 1B is marginally preferred</b> on the basis of flood risk as it has no flood risk areas within the route, while Route Option 1A has a small area of flood risk from Auchtitench Lane, although this could be avoided or spanned.
	Waterbodies/watercourses	Route Option 1A crosses eight watercourses which span the width of the route. This includes Willie's Burn, Glenwharrie Burn, Fingland Lane, Auchtitench Lane and several unnamed tributaries. These crossings can, however, be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	Route Option 1B crosses five watercourses which span the width of the route. This includes Willie's Burn and Glenwharrie Burn and Fingland Lane. These crossings can, however, be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	<b>Route Option 1B is preferred</b> due to the fewer watercourse crossings within the route, however, both route options can be accommodated through detailed design through avoidance of placing infrastructure close to watercourses.
	NatureScot (previously Scottish Natural Heritage (SNH)) Priority Peatland Habitats (Class 1 and Class 2) (Holford Rule 1)	No priority peatland habitat within route option.	There is a small area of Class 1 peatland (approximately 44,000 m <sup>2</sup> ) which spans the width of the route for a length of between 160 and 270m at Blood Moss (NGR 272670 618890),	<b>Route Option 1A is preferred</b> as there is a small section of Class 1 peatland within option 1B.



Criterion	Sub-Criteria	Route Option 1A	Route Option 1B	Preference
			northeast of Auchtitench Hill. This section of Class 1 peatland can be spanned by the OHL.	
	NatureScot (previously Scottish Natural Heritage (SNH)) Peatland Habitats (Classes 3, 4 and 5)	A peat body comprising Class 3, 4 and 5 peatland (approximately 834,000 m <sup>2</sup> ) covers approximately 4.3km of Route Option 1A east of Auchtitench Hill. This cannot be easily avoided or spanned within the detailed design.	A peat body comprising Class 3, 4 and 5 peatland (approximately 800,000 m <sup>2</sup> ) covers approximately 3.9km of Route Option 1B east of Auchtitench Hill. This cannot be easily avoided or spanned within the detailed design.	There is <b>no preferred route option</b> as there is both Route Options 1A and 1B cross large areas of Class 3, 4 and 5 peatland.
	<b>Overall Preference for Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	<b>Overall, there is a preference for Route Option 1A, as there is no priority peatland within this route and the flood risk areas and watercourses can be avoided or spanned through detailed design.</b>		
<b>Minerals</b>	Previous and current areas of mineral extraction	No archive evidence of previous or current mineral extraction along the route although small area of former mining located around 200m to the north. These workings do not encroach beneath the route option.	No archive evidence of previous or current mineral extraction.  Whilst not associated with mineral extraction this route also crosses the Southern Upland Fault to the north of Clacknui Knowe. It is extremely unlikely that any significant movement would occur along the fault, however, it would be preferable to avoid placing towers directly over or in the immediate vicinity of this fault line.	There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to previous and current areas of mineral extraction.
	Potential future areas of mineral extraction	Sands and gravels locally present around water courses with sandstone and conglomerate bedrock predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these materials as a mineral resource is not likely or anticipated.	Sands and gravels locally present around water courses with sandstone and conglomerate bedrock in addition to igneous rocks predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these materials as a mineral resource is not likely or anticipated.	There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to potential future areas of mineral extraction.
	<b>Overall Preference for Minerals</b>	<b>Overall, Option 1A is preferred in relation to minerals as this route option would encounter fewer areas of deeper peat.</b>		
<b>Land Use</b>	Committed Development (Consented and Undetermined Planning Applications) (Holford Rule 7)	Route Options 1A and 1B are located within the administrative area of Dumfries & Galloway Council (DGC) and East Ayrshire Council (EAC) <sup>4</sup> .  There are no D&GC or EAC committed developments located within or up to 150 m from Route Options 1A and 1B <sup>5</sup> .  Route Options 1A and 1B would both pass through the consented Lethans Wind Farm (ECU ref: ECU00001856) which is subject of a Habitat Management Plan (HMP) for the site. The OHL would interact with the areas of land identified in the HMP for conifer plantation, areas of land identified as open ground with no specific management and areas identified as open ground which are to be managed to discourage nesting hen harriers. It is not expected the OHL would jeopardise the objectives of the HMP and replacement tree planting can be discussed/agreed with the landowner.  Both Route Options will also pass through the consented Glenmuckloch Wind Farm (Dumfries & Galloway Council ref: 17/2073/FUL and consented subject to Section 75 consent ref: 22/0889/S42). Glenmuckloch Wind Farm is not subject of a consented HMP, however is subject to conditions relating to the development of a peregrine mitigation and monitoring plan (condition 13) and the development of a hen harrier monitoring plan (condition 14). It is not expected that the proposed OHL would impact negatively on the monitoring plans which are subject of the Glenmuckloch consent and therefore these should not pose any restrictions to the OHL route through this area.		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to committed developments.
	Local Development Plan (LDP) Allocations (Holford Rule 7)	There are no D&GC or EAC LDP2 designations located within or up to 150 m from route options 1A and 1B <sup>6</sup> .		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to committed developments.
	<b>Overall Preference for Land Use</b>	<b>There is no overall preference in relation to land use.</b>		
<b>Overall Emerging Preference:</b>		<b>Overall, on balance, Route Option 1A is the preferred route as it would avoid crossing / spanning the SPA and SSSI designations. Route Option 1A is also preferred from a landscape and visual perspective in addition to being preferred in relation to impacts on peat.</b>		

<sup>4</sup> Checked September 2023

<sup>5</sup> Checked September 2023

<sup>6</sup> Checked September 2023



Table 1.2: Section 2 - Route Options Environmental Appraisal

Criterion	Sub-Criteria	Route Option 2
<b>Length of Route</b>	Length of Route Option (Holford Rule 3)	Approximately 4.85 km.
<b>Biodiversity</b>	Special Protection Areas (SPA) (Holford Rule 1)	Route Option 2 follows the western boundary of the Muirkirk and North Lowther Uplands SPA <sup>1</sup> as it passes between the SPA and the consented Kennoxhead Wind Farm Extension (ECU Ref: ECU0002038).
	Sites of Special Scientific Interest (SSSI) (Holford Rule 1)	Route Option 2 follows the western boundary of the North Lowther Uplands SSSI <sup>3</sup> as it passes between the SSSI and the consented Kennoxhead Wind Farm Kennoxhead Wind Farm Extension (ECU Ref: ECU0002038).
	Potential to achieve Biodiversity Net Gain (No Net Loss)	The route option supports a mosaic of habitats that would benefit from enhancement, particularly dense forestry plantation. It is likely that Biodiversity Net Gain (No Net Loss) can be achieved in the route option.
<b>Landscape and Visual Amenity</b>	Locally Designated Landscapes: Local Landscape Areas (LLA) (East Ayrshire Council), (Regional Scenic Areas (RSA) (Dumfries and Galloway Council) and Special Landscape Areas (SLA)) (South Lanarkshire Council) (Holford Rule 2)	Route Option 2 is located approximately 1.2 km to the east of the boundary of the Uplands and Moorlands LLA, in East Ayrshire. There will be no direct effects on this LLA.
	Landscape Character Types (LCT) (Holford Rules 4, 5, 6 and 7), including Landscape Susceptibility	Approximately 1.5 km of the southern section of the route option is located within the Plateau Moorland – Ayrshire LCT 78, with the remainder of the route falling within the Plateau Moorlands – Glasgow & Clyde Valley LCT 213. Both LCT are of lower susceptibility, to OHL development.
	Visual Amenity from residential properties (residential visual amenity) (similar to Holford Rule 4)	Route Option 2 does not pass within the 150 m residential ‘trigger for consideration zone’ of any properties. The route lies approximately 1.3 km north-west of the isolated residential property of Shawhead. The intervening terrain (Wedder Dod and Bains Knowe) will help to screen views of the OHL in this route option.
	Tourism and Recreation: potential for views from OS promoted viewpoints, Sustrans routes, Core Paths, long distance promoted trails, tourist attractions and recreational areas such as golf courses (Notes on Clarification to the Holford Rules)	The route option crosses Core Path CL/5846/2 at its southern extents, and then routes broadly parallel and to the south of Core Paths CL/5844/1 and CL/5842/2. It crosses Core Path CL/5085/1 at its northern extent.  There are no other tourism or recreation attractions of note within 3km of the route option.
<b>Cultural Heritage</b>	Scheduled Monuments (Holford Rule 1)	There are no scheduled monuments in Route Option 2.  There is one Scheduled Monument, Cairn Kinny (SM 4275), a hilltop burial cairn of likely Bronze Age date, approximately 1.9 km from Route Option 2. There is potential for impacts on the setting of the cairn, which stands on the summit of Cairn Kinney Hill. Views from the monument are concentrated along the Duneaton Water valley to the northwest, with panoramic views being gained from the monument to the west, north-west, north, and east. There is intervisibility between Cairn Kinney and two other prehistoric burial cairns at Cairn Table (SM 4631), around 5 km to the northwest. Kennoxhead Wind Farm Phase 1 lies around 2.4 km to the northwest of the cairn. The cairn’s location in a prominent topographical location with wide ranging views and visual relationships with likely contemporary monuments in the surrounding rural landscape is an important aspect of its setting. The Route Option passes between Cairn Kinney and Cairn Table but at a lower elevation and the potential impact of the steel lattice tower mounted OHL on the setting of Cairn Kinney is considered unlikely to be significantly adverse (intervisibility with Cairn Table Cairns is unlikely to be interrupted).
	Listed Buildings, Category A, B and C (Holford Rule 1)	There are no listed buildings located within 3 km of Route Option 2.
	Non-designated heritage records identified by South Lanarkshire Council (SLC), Dumfries and Galloway Council (DGC) and East Ayrshire Council (EAC) Historic Environment Record (HER) (Holford Rule 2)  Non-inventory designed landscapes (NIDL) recognised by SLC, DGC and EAC (Holford Rule 2)	There are no non-designated heritage assets recorded in the HERs within Route Option 2.  Within 3 km of Route Option 2 there are two non-designated heritage assets categorised in the WoSAS HER as being of national significance and potentially of schedulable quality: <ul style="list-style-type: none"><li>■ Auchinleck, Enclosure (9662), the potential remains of a prehistoric burial site.</li><li>■ Bain’s Burn, Enclosure (9655), recorded as of unknown date and function but possibly related to sheep husbandry.</li></ul> Both assets lie over 1 km from the Route Option. Bain’s Burn, Enclosure (9655) is set down in a small valley and has a localised setting associated with Bain’s Burn. Auchinleck Enclosure (9662) is separated from the Route Option by commercial forestry and intervening topography and current forestry would likely screen, or limit views, to the proposed development from this heritage asset. It is considered unlikely that there would be a significant impact on the settings of these heritage assets from the proposed development.  The Route Option does not pass through a NIDL and there are no NIDLs within 3 km of the Route Option.
<b>Forestry and Woodland</b>	Forestry of the National Forest Inventory (NFI) (Holford Rule 5)	There is a total of 86.8 ha of NFI within Route Option 2, comprising mainly conifer planation.  Route Option 2 would result in the removal of 34.72ha of NFI, based on an 80 m wide wayleave.
	Flood Zones	The SEPA future flood maps show an area of predicted fluvial flood risk associated with the Duneaton Water at the eastern extent of Route Option 2. The floodplain is ~60m wide and can be spanned. There are no significant areas of surface water flooding noted within the route option.



Criterion	Sub-Criteria	Route Option 2
<b>Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	Waterbodies/watercourses	Route Option 2 is located just south of two watercourses; the Poldive Burn, which flows in a southwest direction and Lairds Burn, which flows in a northeast direction parallel to the route. The route crosses five small tributaries of the Lairds Burn and also crosses the larger Duneaton Water at the eastern extent of the route. The watercourses can all be spanned by the OHL.
	NatureScot (previously Scottish Natural Heritage (SNH)) Peatland Habitats (Classes 3, 4 and 5)	A peat body of mainly Class 5, with small areas of Class 3 and 4 peat (approximately 960,000 m <sup>2</sup> ) covers the entirety of Route Option 2 over the entire length of the route (approximately 4.77km). This peatland cannot be avoided and/or spanned during detailed design.
<b>Minerals</b>	Previous and current areas of mineral extraction	No archive evidence of previous or current mineral extraction along the route.
	Potential future areas of mineral extraction	Igneous bedrock predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these materials as a mineral resource is not likely or anticipated.
<b>Land Use</b>	Committed Development (Consented and Undetermined Planning Applications) (Holford Rule 7)	Route Option 2 is located within the administrative area of East Ayrshire Council (EAC) and South Lanarkshire Council (SLC) <sup>7</sup> . There are no EAC or SLC committed developments located within or up to 150 m from Route Option 2 <sup>8</sup> . There are no identified HMPs within this Route Option.
	Local Development Plan (LDP) Allocations (Holford Rule 7)	There are no EAC LDP2 or SLC LDP2 (adopted) allocations located within or up to 150m from Route Option 2 <sup>9</sup> .
<b>Overall Emerging Preference</b>		<b>Route Option 2 is the only route option and is therefore the preferred route for this section of the proposed overhead line.</b>

Table 1.3: Section 3 – Route Options Environmental Appraisal

Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
<b>Length of Route</b>	Length of Route Option (Holford Rule 3)	Approximately 5.67 km	Approximately 5.33 km	<b>Route Option 3B is preferred</b> as it is the shortest in length.
<b>Biodiversity</b>	Special Protection Areas (SPA) (Holford Rule 1)	Route Option 3A lies within the 2 km 'trigger for consideration zone of the Muirkirk and North Lowther SPA and is generally 300 m – 1.1 km to the west of the southernmost SPA unit, along the length of the route.	Route Option 3B lies within the 2 km 'trigger for consideration zone of the Muirkirk and North Lowther SPA.  Route Option 3B follows the boundary of the southernmost unit of the Muirkirk and North Lowther Uplands SPA <sup>1</sup> .	<b>Route Option 3A is preferred</b> as it is located further away from the SPA and its qualifying interests.
	Sites of Special Scientific Interest (SSSI) (Holford Rule 1)	Route Option 3A lies within the 2 km ornithological 'trigger for consideration zone' of two SSSI designations.  Route Option 3A lies approximately 650 m south east from Kennox Water SSSI <sup>10</sup> and approximately 1.2 km west from North Lowther Uplands SSSI <sup>3</sup> .	Route Option 3B lies within the 2 km ornithological 'trigger for consideration zone' of one SSSI designation.  Route Option 3B follows the boundary of North Lowther Uplands SSSI <sup>3</sup> .	<b>Route Option 3A is preferred</b> as it is located further away from the SSSI and its qualifying interests.
	Potential to achieve Biodiversity Net Gain (No Net Loss)	Route Option 3A appears to be located in open upland habitats. These habitats are likely to benefit from ecological enhancement, however opportunities are limited.	Route Option 3B appears to be located in dense coniferous plantation, which is of limited ecological value. This habitat is likely to benefit from ecological enhancement and a wide range of opportunities are available.	Biodiversity Net Gain (No Net Loss) is likely to be achievable in either route option, but <b>Route Option 3B would be marginally preferred</b> as it presents more opportunities.
	<b>Overall Preference for Biodiversity</b>	<b>Overall, Route Option 3A is preferred in relation to biodiversity as this route option is the greatest distance from the SPA and SSSI.</b>		
<b>Landscape and Visual Amenity</b>	Locally Designated Landscapes: Local Landscape Areas (LLA) (East Ayrshire Council), (Regional Scenic Areas (RSA) (Dumfries and Galloway Council) and Special Landscape Areas (SLA)) (South Lanarkshire Council) (Holford Rule 2)	The upper extents of Route Options 3A and 3B lie approximately 1.5 km to the south west of the Douglas Valley SLA, In South Lanarkshire.		<b>Route Option 3A is preferred</b> as it is located furthest from locally designated landscapes in South Lanarkshire. However, both route options avoid direct effects on SLA in South Lanarkshire.
		Route Option 3A is located approximately 5.4 km to the north west of the Leadhills and Lowther Hills SLA, in South Lanarkshire.	Route Option 3B is located approximately 4.2 km to the north west of the Leadhills and Lowther Hills SLA, in South Lanarkshire.	

<sup>7</sup> Checked September 2023

<sup>8</sup> Checked September 2023

<sup>9</sup> Checked September 2023

<sup>10</sup> The Kennox Water SSSI is designated for the feature: Lower Carboniferous (Dinantian – Namurian (part))



Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
	Landscape Character Types (LCT) (Holford Rules 4, 5, 6 and 7), including Landscape Susceptibility	The whole extent of Route Options 3A and 3B cross the Plateau Moorlands – Glasgow and Clyde Valley LCT 213. This LCT is considered to be of lower susceptibility to OHL development.		There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to impacts on LCT.
		<p>The upper extent of Route Option 3A is located approximately 100 m south east of the boundary of Upland River Valley – Glasgow and Clyde Valley LCT 207, around the Kennox Water Valley. This LCT is of medium susceptibility to OHL development.</p> <p>A section of this route option (approximately 2 km) parallels the southern boundary of this LCT and OHL through this route option would be visible in views south, outside of this LCT but on enclosing horizons.</p>	<p>A short section of approximately 1km of Route Option 3B is located adjacent and north of the upper extents of the Upland River Valley – Glasgow and Clyde Valley LCT 207, around the Duneaton Water Valley. This LCT is of medium susceptibility to OHL development.</p> <p>OHL in this route option would cross the upper extents of the valley, in views looking out of this LCT.</p>	
	Visual Amenity from residential properties (residential visual amenity) (similar to Holford Rule 4)	<p>Route Option 3A does not pass within the 150 m residential 'trigger for consideration zone'. The closest residential properties to Route Option 3A are:</p> <ul style="list-style-type: none"> <li>■ Kennox Farm; approximately 1.1 km north of Route Option 3A;</li> <li>■ Glentaggart Farm and Glentaggart Farm Cottage; approximately 260 m south of Route Option 3A; and</li> <li>■ Shawhead; approximately 1.2 km south east of Route Option 3A.</li> </ul>	<p>Route Option 3B does not pass within the 150 m residential 'trigger for consideration zone'. The closest residential properties to Route Option 3B are:</p> <ul style="list-style-type: none"> <li>■ Glentaggart Farm and Glentaggart Farm Cottage; approximately 150 m south of Route Option 3B; and</li> <li>■ Shawfield; approximately 920 m south of Route Option 3B.</li> </ul>	<b>Route Option 3A is preferred</b> , as it maximises the opportunity to offset the OHL from Glentaggart Farm and Glentaggart Farm Cottage.
	Tourism and Recreation: potential for views from OS promoted viewpoints, Sustrans routes, Core Paths, long distance promoted trails, tourist attractions and recreational areas such as golf courses (Notes on Clarification to the Holford Rules)	<p>Route Option 3A crosses Core Path CL/5083/1 at its southern extent. Route option 3B runs parallel (to the south) of this Core Path, and crosses Core Path CL/5082/1 further east.</p> <p>There are no other tourism or recreation attractions within 3km of either route option.</p>		<b>Route Option 3A is preferred</b> , as it minimise potential sequential effects from the Core Path network.
Overall Preference for Landscape and Visual Amenity		Overall, Route Option 3A is preferred in relation to landscape and visual amenity as this route option maximises the opportunity to offset OHL from Glentaggart Farm and Glentaggart Farm Cottage, and minimise the potential for sequential effects from the Core Path network.		
Cultural Heritage	Scheduled Monuments (Holford Rule 1)	<p>There are no Scheduled Monuments within Route Options 3A and 3B.</p> <p>There is one Scheduled Monument, Cairn Kinny (SM 4275), a hilltop burial cairn of likely Bronze Age date, approximately 1.9 km from Route Option 3A and 1.5 km from Route Options 3B. There is potential for impacts on the setting of the cairn, which stands on the summit of Cairn Kinney Hill. Views from the monument are concentrated along the Duneaton Water valley to the northwest, with panoramic views being gained from the monument to the west, north-west, north and east. Kennoxhead Wind Farm Phase 1 lies around 2.4 km to the northwest of the cairn. There is intervisibility between Cairn Kinney and two other prehistoric burial cairns at Cairn Table (SM 4631), around 5 km to the northwest. The cairn's location in a prominent topographical location with wide ranging views and visual relationships with likely contemporary monuments in the surrounding rural landscape is an important aspect of its setting. The Route Option passes between Cairn Kinney and Cairn Table but at a lower elevation and the potential impact of the steel lattice tower mounted OHL on the setting of Cairn Kinney is considered unlikely to be significantly adverse (intervisibility with Cairn Table Cairns is unlikely to be interrupted).</p>		<b>Route Option 3A would be marginally preferred</b> in terms of the impact on the setting of Cairn Kinney. This route option runs slightly further to the north away from Cairn Kinney and the Duneaton Water valley, over which the Scheduled Monument looks and which forms a key aspect of its setting.
	<p>Non-designated heritage records identified by South Lanarkshire Council (SLC), Dumfries and Galloway Council (DGC) and East Ayrshire Council (EAC) Historic Environment Record (HER) (Holford Rule 2)</p> <p>Non-inventory designed landscapes (NIDL) recognised by SLC, DGC and EAC (Holford Rule 2)</p>	<p>The HER records two non-designated heritage assets within Route Option 3A:</p> <ul style="list-style-type: none"> <li>■ The route of an alleged Roman Road (12380), and</li> <li>■ Two ponds (40849), depicted on the Ordnance Survey 1980 10,000 map</li> </ul> <p>No definite trace of the Roman road has been recorded and it is likely that the interpretation</p>	<p>The HER records four non-designated heritage assets within Route Option 3B:</p> <ul style="list-style-type: none"> <li>■ Two sheepfolds (9659)</li> <li>■ An enclosure (9650)</li> <li>■ A cross-base and possible chapel site (9653)</li> <li>■ The route of an alleged Roman Road (12380)</li> </ul>	<b>Route Option 3A would be marginally preferred</b> as there are fewer known cultural heritage assets within the Route Option.



Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
		<p>was based on a misunderstanding of natural features. Both the Roman road and the ponds are assessed as being of negligible sensitivity and not considered to be constraints to alignment design.</p> <p>Within 3 km of the Route Option there are an additional four non-designated heritage assets categorised in the WoSAS HER as being of national significance and potentially of schedulable quality:</p> <ul style="list-style-type: none"> <li>■ Shiel Burn, Enclosure (10064),</li> <li>■ Andershaw, Sheepfold (10066)</li> <li>■ Andershaw, Chapel, Burial Ground and Well (10078)</li> <li>■ Bain's Burn, Enclosure (9655)</li> </ul> <p>The closest, Bain's Burn Enclosure (9655), lies around 1 km to the south of the Route Option.</p> <p>Most of these heritage assets are situated within the Glespin valley, in commercial forestry. Intervening topography and current surrounding forestry limit views out to the surrounding landscape from these assets. It is considered that the impact of the proposed development on the settings of these assets would not likely be significantly adverse.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	<p>The sites of the supposed chapel (9653) and the enclosure (9650) lie within commercial forestry. The cross base, possibly associated with the former chapel, now lies adjacent to a farm access track (outside the Route Option). The exact locations of both the possible chapel site (9653) and the enclosure (9650) are unknown and no remains have so far been identified. As possible remains of an early religious chapel and a prehistoric enclosure, both may contain archaeological evidence relating to their use and occupation. They are considered to be of local significance and of low sensitivity. Consideration should be given to avoiding their recorded locations during the alignment design.</p> <p>No definite trace of the Roman road has been recorded and it is likely that the interpretation was based on a misunderstanding of natural features. The road is assessed as being of negligible significance and not considered to be a constraint to alignment design.</p> <p>Within 3 km of the Route Option there are an additional four non-designated heritage assets recorded in the WoSAS HER as being of national significance and potentially of schedulable quality:</p> <ul style="list-style-type: none"> <li>■ Shiel Burn, Enclosure (10064),</li> <li>■ Andershaw, Sheepfold (10066)</li> <li>■ Andershaw, Chapel, Burial Ground and Well (10078)</li> <li>■ Bain's Burn, Enclosure (9655)</li> </ul> <p>The closest, Bain's Burn Enclosure (9655), lies around 1 km to the south of the Route Option.</p> <p>Most of these heritage assets are situated within the Glespin valley, in commercial forestry. Intervening topography and current surrounding forestry limit views out to the surrounding landscape from these assets. It is considered that the impact of the proposed development on the settings of these assets would not likely be significantly adverse.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	
	Overall Preference for Cultural Heritage	Overall, there is a marginal preference for Route Option 3A in relation to cultural heritage. This Route Option runs slightly further to the north away from Cairn Kinney and the Duneaton Water valley over which the Scheduled Monument looks and which forms a key aspect of its setting. There are also fewer non-designated heritage assets within Route Option 3A.		
Forestry and Woodland	Native Woodland of the Native Woodland Survey of Scotland (NWSS) (Holford Rule 2)	There are no areas of Native Woodland of the NWSS within the Route Option 3A.	<p>There is a total of 0.53 ha of Native Woodland of the NWSS within Route Option 3B.</p> <p>It is possible to avoid impact to NWSS by tower siting within the 200 m route.</p>	<b>Route Option 3A is preferred</b> as it avoids the potential loss of native woodland.
	Forestry of the National Forest Inventory (NFI) (Holford Rule 5)	There is a total of 11.8 ha of NFI within Route Option 3A.	There is a total of 64.2 ha of NFI within Route Option 3B.	<b>Route Option 3A is preferred</b> as its impacts a smaller area of afforested land.



Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
		Route Option 3A impacts conifer plantations, 3.5 ha of young conifers and 8.3 ha of mature conifers.  Route Option 3A would result in the removal of 4.72 ha, based on an 80 m wide wayleave.	Route Option 3B impacts conifer plantations, 2 ha of young conifers and 62.2 ha of mature conifers.  Route Option 3B would result in the removal of 25.68 ha, based on an 80 m wide wayleave.	
	<b>Overall Preference for Forestry and Woodland</b>	<b>Overall, Route 3A is preferred in relation to forestry and woodland as it impacts smaller area of afforested land and also avoids potential impact to NWSS registered woodland.</b>		
<b>Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	Flood Zones	There is an area of fluvial flood risk noted on SEPA future flood maps associated with the Duneaton Water at the western extent of the route. The floodplain is ~60m at its widest within the route and can be spanned. No surface water flood risk shown on SEPA flood maps.	There is an area of fluvial flood risk noted on SEPA future flood maps associated with the Duneaton Water at the western extent of the route. The floodplain is ~60m at its widest within the route and can be spanned.  Route Option 3B runs adjacent to the Duneaton Water predicted floodplain for approximately 650m, but the route is not within the floodplain and it can be avoided. There are small areas of surface water flood risk shown on SEPA flood maps, associated with the low-lying area around an unnamed watercourse.	<b>Marginal preference for Route Option 3A</b> , as it does not parallel the flood risk area associated within the Duneaton Water which flows in an easterly direction close to the southern boundary of Route 3B.
	Waterbodies/watercourses	Route Option 3A crosses three watercourse which span the width of the route. This includes Duneaton Water in the west and two unnamed watercourses. These crossings can, however, be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	Route Option 3B crosses seven watercourse which span the width of the route. This includes Duneaton Water in the west, the Hartwood Burn and several other unnamed watercourses. These crossings can, however, be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	<b>Route Option 3A is preferred</b> as there are less watercourses associated with this option.
	NatureScot (previously Scottish Natural Heritage (SNH)) Priority Peatland Habitats (Class 1 and Class 2) (Holford Rule 1)	No priority peatland habitat within either route option.		There is <b>no preferred route option</b> , as there is no priority peatland habitat in either route options.
	NatureScot (previously Scottish Natural Heritage (SNH)) Peatland Habitats (Classes 3, 4 and 5)	A peat body of Class 3 and 5 peat (approximately 990,000 m <sup>2</sup> ) covers approximately 4.9 km of Route Option 3A in two separate sections, north of Cairn Kinney. A large section of this is Class 3 peatland. This cannot be avoided or spanned during detailed design.	A peat body of Class 3, 4 and 5 peat (approximately 800,000 m <sup>2</sup> ) covers approximately 4.0 km of Route Option 3B in two separate sections, north of Cairn Kinney. This cannot be avoided or spanned during detailed design.	<b>Route Option 3B</b> is marginally preferred as less of the route is shown to be underlain by peat.
	<b>Overall Preference for Hydrology (including flood risk), Hydrogeology &amp; Peat</b>	<b>Overall, Route Option 3A is marginally preferred in relation to hydrology as there are less watercourses associated with this route. However, Route 3B is marginally preferred in terms of geology and peat, as less of the route is shown to be underlain by peat.</b>		
<b>Minerals</b>	Previous and current areas of mineral extraction	The South Lanarkshire Council Local Development Plan Minerals Plan includes land identified as Glentaggart in aftercare, which extends to a large area including Route Options 3A and 3B. Geological maps covering this area and Coal Authority archive information have been reviewed it is concluded that that there is no rock strata below Route Option 3A and Route Option 3B that contain any coal seams or coal seams of previous economic importance and there is no archive evidence of previous or current mineral extraction within these route options. The boundary of Glentaggart in aftercare is therefore considered to extend outwith areas that have previously been subject to coal mining.		There is <b>no preferred route option</b> in relation to previous and current areas of mineral extraction.
	Potential future areas of mineral extraction	Sandstone and conglomerate bedrock, in addition to lavas predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these materials as a mineral resource is not likely or anticipated. Two limestone seams, including the Hurllet Limestone are present locally beneath part of the route. Whilst historically being an important mineral the size of the deposit is unlikely to make this economic to consider extraction in the future. Notwithstanding this it should be possible to span this area during detailed design.	Sandstone and conglomerate bedrock predominating at surface below higher areas and below the drift deposits elsewhere with sandstones, mudstones and siltstones present in the northern area. The future widescale removal of these materials as a mineral resource is not likely or anticipated. Two limestone seams, including the Hurllet Limestone are present locally beneath the northern end of the route at two locations, around 400m and 950m before the start of route option 4. Whilst historically being an important mineral the size of the deposit is unlikely to make this economic to consider extraction in the future. Notwithstanding this it	There is <b>no preferred route option</b> in relation to future areas of mineral extraction.



Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
			should be possible to span these areas during detailed design.	
	<b>Overall Preference for Minerals</b>	<b>Overall, there is no preference in relation to minerals as all considerations are minor and could be spanned during detailed design stage.</b>		
<b>Land Use</b>	Committed Development (Consented and Undetermined Planning Applications) (Holford Rule 7)	Route Options 3A and 3B are located within the administrative area of SLC <sup>11</sup> .		<b>Route Option 3B is preferred</b> as it avoids the planned Habitat Management Plan areas associated with the Kennoxhead Wind Farm and Kennoxhead Wind Farm Extension consents.
		<p>Route Option 3A crosses through an area of land identified as a Habitat Management Plan area (Management Unit A) through operational Kennoxhead Wind Farm (ECU Ref: Ref: EC00002101). The aim of the HMP for management unit A is to restore and enhance the blanket bog and wet modified bog resource across the unit.</p> <p>One of the objectives of the Kennoxhead Wind Farm OHMP confirms that the construction of tracks, roads, yards, hardstandings or any new structures are prohibited from management unit A. It is assumed that this would apply the construction of tracks, vegetation removal, etc which would be involved with the construction of an OHL. The OHMP further seeks to re-establish wetter conditions and re-creation of bog habitats. The long term management and maintenance of an OHL would not be consistent with the objectives of the OHMPs and development through these areas should be avoided.</p> <p>Route Option 3A also crosses an area of land identified as a Habitat Management Plan area through the consented Kennoxhead Wind Farm Extension (ECU Ref: ECU00002038). Within the management area, the aim is to enhance the moorland mosaic habitat, and increase the proportion of Sphagnum mosses and dwarf shrubs on bog habitat, via measures including managing sheep grazing densities and removing self-seeding Sitka spruce. Improving these habitats will be of benefit to breeding and foraging black grouse.</p> <p>It would not be possible to avoid these areas during detailed design and interaction with the HMP areas should be avoided.</p> <p>Route Option 3A would not interact with any of the proposed wind turbines or associated hard standing areas consented through Kennoxhead Extension or Kennoxhead Wind Farm Extension II (Penbreck) (ECU Ref: ECU00003263) or the operational Kennoxhead Wind Farm.</p>	<p>Route Option 3B crosses the consented planning application boundaries of both Kennoxhead Wind Farm Extension (ECU Ref: ECU00002038) and Kennoxhead Wind Farm Extension II (Penbreck) (ECU Ref: ECU00003263).</p> <p>It is anticipated that interactions with the Kennoxhead Wind Farm Extension and Kennoxhead Wind Farm Extension II (Penbreck) consented developments can be considered through detailed design. Route Option 3B would not interact with any of the proposed wind turbines or associated hard standing areas.</p>	
	Local Development Plan (LDP) Allocations (Holford Rule 7)	Route Option 3A crosses Glentaggart (in aftercare) mineral site for approximately 4 km of the route <sup>12</sup> as identified by the SLC LDP2 Minerals, Deposits and Extraction map <sup>13</sup> . It is not expected that this designation would result in any constraint to development.	There are no LDP allocations within Route Option 3B <sup>14</sup> .	<b>Route Option 3B is preferred</b> as it does not interact with any LDP allocations, however it is not expected that the minerals designation would result in an environmental constraint to development.
	<b>Overall Preference for Land Use</b>	<b>Overall, Route Option 3B is preferred in terms of land use as it avoids planned Habitat Management Areas associated with consent P/19/1145 and does not interact with the former Glentaggart minerals site (in aftercare).</b>		

<sup>11</sup> Checked September 2023

<sup>12</sup> Checked September 2023

<sup>13</sup> <https://www.southlanarkshire.gov.uk/downloads/download/1071/>

<sup>14</sup> Checked September 2023



Criterion	Sub-Criteria	Route Option 3A	Route Option 3B	Preference
Overall Emerging Preference:		<p>The emerging preference from an environmental perspective is Route Option 3A as it is located furthest away from designated sites including the SPA and SSSI and associated qualifying interests; from a landscape and visual perspective, it maximises the opportunity to offset OHL from Glentagart Farm and Glentagart Farm Cottage, and minimises the potential for sequential effects from the Core Path network. In addition to this it, from a cultural heritage point of view, it runs slightly further to the north away from Cairn Kinney and the Duneaton Water valley over which the Scheduled Monument looks and which forms a key aspect of its setting. There are also fewer non-designated heritage assets within Route Option 3A. Route Option 3A also it impacts smaller area of afforested land and also avoids potential impact to NWSS registered woodland and has fewer watercourses to cross.</p> <p>However, Route Option 3A does conflict with the committed HMP areas associated with the operational and consented Kennoxhead Wind Farm developments with no opportunity to avoid these through detailed design. The location of OHL infrastructure within the HMP areas would conflict with the objectives of the HMPs and cannot be avoided which would result in potential consenting constraints. Where many of the environmental criterion above were marginal in their conclusion that Route Option 3A was the preference, the balance of weighting to be given to the impacts on the HMP areas results in the overall balance being given to Route Option 3B as the overall environmental preference for this section. Route Option 3B is the shortest in length, avoids interactions with minerals sites and less of the route is shown to be underlain by peat.</p>		

Table 1.4: Section 4 – Route Options Environmental Appraisal

Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
Length of Route	Length of Route Option (Holford Rule 3)	Approximately 10.83 km	Approximately 10.05 km	Approximately 6.41 km	Approximately 6.58 km	Approximately 11.32 km	Route Option 4B is preferred as it is the shortest in length.
Biodiversity	Special Protection Areas (SPA) (Holford Rule 1)	The western end of all Route Options lie within the 2 km ‘trigger for consideration zone of the Muirkirk and North Lowther Uplands SPA <sup>1</sup> .					Route Option 4A-1 is preferred as it is located furthest from the SPA and its qualifying interests.
		Route Option 4A-1 lies approximately 1.2 km north from Muirkirk and North Lowther Uplands SPA <sup>1</sup> .	Route Option 4A-2, 4B and 4C lie approximately 300 m north from Muirkirk and North Lowther Uplands SPA <sup>1</sup> at its closest point.			Route Option 4D, at its closest point, lies approximately 385 m east of Muirkirk and North Lowther Uplands SPA <sup>1</sup> .	
	Sites of Special Scientific Interest (SSSI) (Holford Rule 1)	All Route Options lie within the 2 km ‘trigger for consideration zone.					Route Option 4A-1 and 4A-2 are equally preferred as they are located furthest from SSSIs.
		Route Option 4A-1 lies in close proximity to the following SSSIs:  ■ Kennox Water SSSI <sup>10</sup> (approximately 820 m east).  ■ Miller’s Wood SSSI <sup>15</sup> (approximately 180 m east)  ■ Red Moss SSSI <sup>16</sup> (approximately 380 m north)  ■ North Lowther Uplands SSSI <sup>3</sup> (approximately 1.2 km north).	Route Option 4A-2 lies in close proximity to the following SSSIs:  ■ Miller’s Wood SSSI <sup>15</sup> (approximately 180 m east).  ■ Red Moss SSSI <sup>16</sup> (approximately 380 m north)  ■ North Lowther Uplands SSSI <sup>3</sup> (approximately 300 m north)	Route Options 4B and 4C lie in close proximity to the following SSSIs:  ■ Red Moss SSSI <sup>16</sup> (approximately < 10 m north from the upper corner of the SSSI)  ■ North Lowther Uplands SSSI <sup>3</sup> (approximately 300 m north)	Route Option 4D lies in close proximity to Red Moss SSSI <sup>16</sup> .  At its closest point the Route Option is < 5 m from the upper corner of the SSSI.		
		All Route Options lie within the 1 km ‘trigger for consideration zone of Red Moss SAC <sup>17</sup> .					
Special Areas of Conservation (SAC) (Holford Rule 1)	The final sections of Route Options 4A-1 and 4A-2 lie approximately 380 m north of Red Moss SAC <sup>17</sup> .			The final approach section of both routes is located approximately 10m north of the upper corner of the SAC <sup>17</sup> .			

<sup>15</sup> The Miller's Wood SSSI is designated for the feature: Upland birch woodland

<sup>16</sup> The Red Moss SSSI is designated for the feature: Raised bog

<sup>17</sup> The Red Moss SAC is designated for the feature: Active raised bog



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
						At its closest point the Route Option is < 5 m from the upper corner of the SAC.	
	Potential to achieve Biodiversity Net Gain (No Net Loss)	Each route option supports broadly comparable habitat structures, including forestry and mosaics of upland/peatland habitat structures. As such, each route option offers broadly comparable opportunities to deliver Biodiversity Net Gain (No Net Loss)					There is <b>no preferred route option</b> as all routes are likely to be capable of supporting Biodiversity Net Gain (No Net Loss)
	Overall Preference for Biodiversity	Overall, there is a preference for Route Options 4A-1 or 4A-2 as these are located furtherst from the SPA, SSSI and SAC designations, however none of the Route Options directly impact any of the designations.					
Landscape and Visual Amenity	Nationally Designated Landscapes: National Parks and National Scenic Areas (NSAs) (Holford Rule 1)	There are no National Parks or NSAs located within the study area.					There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to impacts on National Parks or NSAs.
	Wild Land Areas (Holford Rule 1)	There are no WLAs located within the study area.					There is <b>no preferred route option</b> as there is no notable difference between the routes in relation to impacts on WLAs.
	Locally Designated Landscapes: Local Landscape Areas (LLA) (East Ayrshire Council), (Regional Scenic Areas (RSA) (Dumfries and Galloway Council) and Special Landscape Areas (SLA)) (South Lanarkshire Council) (Holford Rule 2)	The mid to upper extents of Route Options 4A-1 and 4A-2 cross the southern extents of the Douglas Valley SLA, in South Lanarkshire, for a distance of approximately 5 km.	Route Option 4B crosses the Douglas Valley SLA for a distance of approximately 480 m.	Route Option 4C does not cross any Locally Designated Landscapes (LLAs, RSAs, SLAs) but lies approximately 300 m south of the Douglas Valley SLA.	Route Option 4D crosses the Leadhills and Lowther Hills SLA, in South Lanarkshire, for a distance of approximately 1.5 km.  Route Option 4D passes within approximately 5.7 km of the Upper Clyde Valley and Tinto SLA.	<b>Route Option 4C is preferred</b> as it avoids locally designated landscapes (SLA) in South Lanarkshire.	
	Landscape Character Types (LCT) (Holford Rules 4, 5, 6 and 7), including Landscape Susceptibility	Route Option 4A-1 and 4A-2 cross the Plateau Moorlands – Glasgow and Clyde Valley LCT 213, at its western and eastern extents. This LCT is of lower susceptibility, to OHL development.  The middle section of these route options (approximately 4.2km) cross the Upland River Valley – Glasgow and Clyde Valley LCT 207 (around the Douglas Water Valley) This LCT is of medium susceptibility, to OHL development.	Route Options 4B and 4C cross the Plateau Moorlands – Glasgow and Clyde Valley LCT 213. This LCT is of lower susceptibility, to OHL development.		Route Option 4D crosses the Plateau Moorlands – Glasgow and Clyde Valley LCT 213. This LCT is of lower susceptibility, to OHL development.  A 1 km (approximate) section of Route Option 4D also crosses the Upland River Valley –Glasgow and Clyde Valley LCT 207 (around the Duneaton Water). This LCT is of medium susceptibility, to OHL developments.	<b>Route Options 4B and 4C are preferred</b> as both avoid medium susceptibility Upland River Valley – Glasgow and Clyde Valley LCT 207, to the north and south of the study area.	



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
	Visual Amenity from residential properties (residential visual amenity) (similar to Holford Rule 4)	There are a number of properties in the Douglas Valley, to the north of these route options, including properties in the settlement of Douglas. Residential properties in closer proximity to both route options (4A-1 and 4A-2) include: <ul style="list-style-type: none"><li>■ Glentaggart Cottage; approximately 210 m north west of the route options;</li><li>■ Earls Mill; approximately 410 m west of the route options;</li><li>■ Weston, approximately 150 m north of the route options;</li><li>■ Midtown; approximately 330 m north of the route options; and</li><li>■ Redshaw; approximately 240 m east of the route options.</li></ul>		Residential properties in closer proximity to both route options (4B and 4C) include the small cluster of properties at Andershaw Farm, approximately 150 m to the south.		There are a number of properties in the Duneaton Water Valley, to the south of these route options, including properties in the settlement of Crawfordjohn. Residential properties in closer proximity to Route Option 4D include: <ul style="list-style-type: none"><li>■ Andershaw Farm, approximately 320 m to the east;</li><li>■ Mosscastle, approximately 150m to the south;</li><li>■ Mountherrick; approximately 520 m south; and</li><li>■ Townhead Cottage, Blairhill House, Dail Bhreagha, and Greenfield; approximately 990 m east, south-west of the route option.</li></ul>	<b>Route Options 4B and 4C are preferred</b> as both maximise the offset from properties across the study area.
	Tourism and Recreation: potential for views from OS promoted viewpoints, Sustrans routes, Core Paths, long distance promoted trails, tourist attractions and recreational areas such as golf courses (Notes on Clarification to the Holford Rules)	All Route Options cross the National Cycle Network (NCN) (Route No 74), which follows the route of the B7078, to reach the Redshaw substation. All route options cross a number of Core Paths, which cross section 4 from north to south, linking the Douglas Valley to the Duneaton Water Valley.					<b>Route Options 4B and 4C are preferred</b> as both maximise the offset and potential visibility of OHL in views from tourism and recreational attractions in the Douglas Water Valley, to the north, and the Duneaton Water Valley, to the south of the study area.
		Any OHL in Route Options 4A-1 and 4A-2 is likely to be visible on the valley side in views south from tourist attractions and the Core Path network in the Douglas Valley.		There are no other tourism and recreation attractions of note, which would be notably affected by these route options.		There are no other tourism and recreation attractions of note, which would be notably affected by these route option, and any OHL in Route Option 4D is unlikely to be visible from tourist attractions and the Core Path network in the Duneaton Water Valley to the east, south-east.	
	Overall Preference for Landscape and Visual Amenity	Overall, Option 4C is preferred in relation to landscape and visual amenity. This route avoids direct effects on locally designated landscape of the Douglas Valley SLA, and minimises the prospect of indirect effects on the Leadhills and Lowther Hills SLA. It also minimises effects on more sensitive valley landscapes (and residential and recreational receptors within) to the north (the Douglas Water Valley) and south (the Duneaton Water Valley) of the study area.					
Cultural Heritage	Scheduled Monuments (Holford Rule 1)	There are no Scheduled Monuments within Route Options 4A-1 and 4A-2.  Within 3 km of Route Options 4A-1 and 4A-2 there are five Scheduled Monuments: <ul style="list-style-type: none"><li>■ St Bride’s Church (SM 90265) (which is also a Property in Care (PIC) and a Category a Listed Building)</li><li>■ Thorril Castle, Bastle House 450 m NNE of Parkhead (SM 5425)</li><li>■ Wildshaw Hill, Cairn 500 m WSW of Summit (SM 4511)</li><li>■ Thirstone, Stone Circle 1300 m NNW of (SM 5094)</li></ul>		There are no Scheduled Monuments within Route Options 4B and 4C.  Within 3 km of Route Option 4B and 4C there are three Scheduled Monuments: <ul style="list-style-type: none"><li>■ Thirstone, Stone Circle 1300 m NNW of (SM 5094)</li><li>■ Wildshaw Hill, Cairn 500 m WSW of Summit (SM 5425)</li><li>■ Auchensaugh Hill, Cairn (SM 4234)</li></ul>		There are no Scheduled Monuments within Route Option 4D.  Within 3 km of Route Option 4D there are three Scheduled Monuments: <ul style="list-style-type: none"><li>■ Thirstone, Stone Circle 1300 m NNW of (SM 5049)</li></ul>	The preference in regards to Scheduled Monuments is either <b>Route Options 4A-1 or 4A-2</b> as these route options lie furthest from Scheduled Monuments within the Outer Study Areas.  The <b>least preferred Route Option would be Route Option 4D</b> as its close proximity to Thirstone Stone Circle (SM 5094) would likely result in a significant adverse



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
		<div><div><div>Auchensauagh Hill, Cairn (SM 4234)</div></div><p>There is potential for impacts on the setting of Auchensauagh Hill Cairn (SM 4234) and Thirstone Stone Circle (SM 5094), which lie within 1 km of the Route Options.</p><p>The closest Scheduled Monument to the Route Options is Thirstone Stone Circle (SM 5094), located on a southwest facing slope approximately 750 m from the east end of the Route Options. The monument stands adjacent to the Wildshaw Burn and its association with this watercourse is likely to be a key aspect of its setting. There is a wide, open view to the south from the monument, along the Wildshaw Burn and across the Black Burn and Duneaton Water valleys. Given the proximity of the Route Options to this Scheduled Monument it is possible that the steel lattice tower mounted OHL may have an adverse impact on the setting of the stone circle.</p><p>Auchensauagh Cairn (SM 4232), a hilltop burial cairn of likely Bronze Age date, stands on the summit of Auchensauagh Hill, at its closest around 950 m to the southwest of the Route Options. There are panoramic views in all directions from the monument and views out to the surrounding area form a key aspect of its setting. Middle Muir and Andershaw Wind Farms lie around 1 km to the south of the cairn. The Route Options run along the lower slopes of Auchensauagh Hill, to the west of Redshaw. Given the proximity of the Route Options to this Scheduled Monument it is possible that the steel lattice tower mounted OHL may result in an adverse impact on its setting.</p><p>St Bride’s Church (SM 90265) stands within Douglas Conservation Area over 1.4 km to the north of the Route Options. It has a localised urban setting within the townscape of Douglas.</p><p>Thorril Castle, Bastle House (SM 5425) stands on the lower slopes of Cuff Hill alongside the Birkenshaw Burn, on the opposite side of the M74 to the Route Options, and around 1.6 km from the Route Option. The association with the Birkenshaw Burn and views north along the valley are likely to be important aspects of its setting.</p><p>Wildshaw Hill, Cairn (SM 4511) lies approximately 2.4 km from the east end of the Route Options. Views from the cairn across the Route Options are likely to be largely limited, if not entirely screened, by intervening topography.</p><p>The potential impact of the proposed development on the settings of St Bride's Church (SM 90265), Thorril Castle, Bastle House (SM 5426) and Wildshaw Hill, Cairn (SM4511) is considered unlikely to be significantly adverse.</p></div>		<p>There is potential for impacts on the settings of Auchensauagh Hill Cairn (SM 4234) and Thirstone, Stone Circle (SM 5094), which lie within 800 m of the Route Options.</p> <p>The closest Scheduled Monument to the Route Options is Auchensuagh Cairn (SM 4232), a hilltop burial cairn of likely Bronze Age date, on the summit of Auchensuagh Hill, around 400 m to the north of the Route Options. There are panoramic views in all directions from the monument and views out to the surrounding area form a key aspect of its setting. Middle Muir and Andershaw Wind Farms lie around 1 km to the south of the cairn. Initial assessment suggests that there may be intervisibility between Auchensauagh Cairn and another similar prehistoric burial cairn present to the southwest, at Black Hill (Netherton, Cairn (SM 4513)). The Route Options run along the lower slopes of Auchensauagh Hill, to the south of the Scheduled Monument, and given the proximity of the Route Options to this Scheduled Monument it is possible that the steel lattice tower mounted OHL may result in an adverse impact on its setting.</p> <p>Thirstone Stone Circle (SM 5094) stands on a southwest facing slope approximately 750 m from the east end of the Route Options. The monument stands adjacent to the Wildshaw Burn and its association with this watercourse is likely to be a key aspect of its setting. There is a wide, open view to the south from the monument, along the Wildshaw Burn and across the Black Burn and Duneaton Water valleys. Given the proximity of the Route Options to this Scheduled Monument it is possible that the steel lattice tower mounted OHL may result in an adverse impact on the setting of the Stone Circle.</p> <p>Wildshaw Hill, Cairn (SM 4511) lies approximately 2.4 km from the southern end of the Route Option. Views from the cairn across the Route Option are likely to be largely limited, if not entirely screened, by intervening topography, and the asset is not considered to be a significant constraint.</p>	<div><div><div>Auchensuagh Hill, Cairn (SM 4234)</div><div>Wildshaw Hill, Cairn 500 m WSW of Summit</div></div><p>The closest Scheduled Monument to the Route Option is Thirstone Stone Circle (SM 5094), on a southwest facing slope approximately 500 m from the east end of the Route Option. The monument stands adjacent to the Wildshaw Burn and its association with this watercourse is likely to be a key aspect of its setting. There is a wide, open view to the south from the monument, along the Wildshaw Burn and across the Black Burn and Duneaton Water valleys. The Route Option crosses both the Black Burn valley and the Wildshaw Burn in views to the south of the Stone Circle. Given both the proximity of the Route Option to this Scheduled Monument, and its presence in key views from the monument to the south along the Widshaw Burn, it is likely that the steel lattice tower mounted OHL would result in a significant adverse impact on the setting of the Stone Circle.</p><p>Auchensauagh Cairn (SM 4232), a hilltop burial cairn of likely Bronze Age date, stands on the summit of Auchensauagh Hill, at its closest around 1.8 km to the east of the Route Option. There are panoramic views in all directions from the monument and views out to the surrounding area form a key aspect of its setting. Middle Muir and Andershaw Wind Farms lie around 1 km to the south of the cairn. Initial assessment suggests that there may be intervisibility between Auchensauagh Cairn and another similar prehistoric burial cairn present to the southwest at Black Hill (Netherton, Cairn (SM 4513)). The Route Option runs across the higher slopes of Green Field Law and the Black Burn valley and may interrupt intervisibility between Auchensauagh Cairn and Netherton Cairn. As such it is possible that the steel lattice tower mounted OHL</p></div>	impact on the setting of this Scheduled Monument.	



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
						<p>may result in a significant adverse impact on the setting of the burial cairn.</p> <p>Wildshaw Hill, Cairn (SM 4511) lies approximately 2.4 km from the east end of the Route Option. Views from the cairn across the Route Option are likely to be largely limited, if not entirely screened, by intervening topography.</p> <p>The operational impact of the proposed steel lattice tower mounted OHL on Wildshaw Hill, Cairn (SM 4511), is not considered likely to be significantly adverse.</p>	
	Listed Buildings, Category A, B, and C (Holford Rule 1).	<p>There are no Listed Buildings within Route Options 4A-1 and 4A-2.</p> <p>Within 3 km of Route Options 4A-1 and 4A-2 there are 25 Listed Buildings (2 x A Listed, 8 x B Listed, and 15 x C Listed). These include:</p> <ul style="list-style-type: none"><li>■ Category A Listed<ul style="list-style-type: none"><li>– St Bride’s Chapel (LB 1490) (which is also a Scheduled Monument, see above)</li><li>– Douglas Village Earl of Angus’ Monument (LB 1457)</li></ul></li><li>■ Category B Listed<ul style="list-style-type: none"><li>– New Mains (LB 1496)</li><li>– Douglas Arms Hotel (LB 1453)</li><li>– Douglas Village Ayr Road Springhill (LB 1451)</li><li>– Douglas Village 38 Ayr Road Earlston (LB 1452)</li><li>– Douglas Village Bell’s Wynd, Douglas Heritage Museum (LB 1454)</li><li>– Douglas Village Douglas Parish Church (LB 1456)</li><li>– Douglas Village 74 Main Street Sun Inn (LB 1487)</li><li>– Douglas Village Mansefield (LB 1489)</li></ul></li></ul> <p>The closest Listed Building, Douglas Village Ayr Road Springhill (LB 1451) lies around 1 km to the north of the Route Options.</p> <p>Most of the Listed Buildings lie within Douglas Conservation Area (see below) forming part of the townscape of Douglas and have localised urban settings. Any potential impact on the setting of the Listed Buildings is considered unlikely to be significantly adverse.</p>		There are no Listed Buildings within Route Options 4B and 4C, and there are no listed Buildings within 3 km of the Route Options.		<p>There are no Listed Buildings within Route Option 4D.</p> <p>Within 3 km of Route Option 4D there is one Category B Listed Building:</p> <ul style="list-style-type: none"><li>■ Crawfordjohn Parish Church and Graveyard (LB 655). The Listed Building stands 1.5 km to the southeast of the Route Option in the village of Crawfordjohn and has a localised village setting. The potential impact on the setting of the Listed Building is considered unlikely to be significantly adverse.</li></ul>	The preference in regards Listed Buildings is either <b>Route Option 4B</b> or <b>Route Option 4C</b> as there are no Listed Buildings within, or within 3 km, of either of these Route Options.
	Conservation Areas (Holford Rule 1)	No part of any Conservation Area is crossed by Route Options 4A-1 and 4A-2.	Within 3 km of Route Option 4A-1 and 4A-2 there is one Conservation Area: Douglas Conservation Area (CA 268).		No part of any Conservation Area is crossed by Route Options 4B, 4C, and 4D and there are no Conservation Areas within 3 km of the Route Options.		The closest Listed Building, Douglas Village Ayr Road Springhill (LB 1451) lies around 1 km to the north of the Route Options.



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
		From elevated viewpoints along Ayr Road (A70) views across the Conservation Area extend to include the Douglas Water valley beyond the town. Both Route Options lie to the south of the Conservation Area, over 1.1 km away, and would not be visible in key views from, or in and around, the Conservation Area. The potential impact of the proposed steel lattice tower mounted OHL on the setting of Douglas Conservation Area is considered unlikely to be significantly adverse.					
	<p>Non-designated heritage records identified by South Lanarkshire Council (SLC), Dumfries and Galloway Council (DGC) and East Ayrshire Council (EAC) Historic Environment Record (HER) (Holford Rule 2)</p> <p>Non-inventory designed landscapes (NIDL) recognised by SLC, DGC and EAC (Holford Rule 2)</p>	<p>The WoSAS HER records seven non-designated heritage assets within Route Option 4A-1. These comprise two sheepfolds (22652 and 22660), possible mining remains (58103), a farmstead (67345), a bank and dam (87934), clearance cairns (12658) and what may be the remains of a prehistoric burial cairn (12658).</p> <p>One site, the remains of a burial cairn (12658) may contain archaeological evidence on prehistoric funerary practices and is considered to be of regional heritage value and of medium sensitivity. This is a discrete feature that can readily be avoided during the alignment design stage.</p> <p>All of the remaining assets are elements of the local historic farming or mining landscape and assessed as being of no more than local importance and low sensitivity.</p> <p>Consideration should be given to avoiding or minimising direct effects on these recorded heritage assets during the alignment design stage.</p> <p>Within 3 km of the Route Option there are six heritage assets categorised in the HER as being of 'national significance' and potentially of schedulable quality:</p> <p>Andershaw, Chapel, Burial Ground and Well (10078)</p> <p>Andershaw, Sheepfold (possible) (10066)</p> <p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Weston, Mound (10061)</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shielling Hut (13295)</p>	<p>The WoSAS HER records six non-designated heritage assets within Route Option 4A-2. These comprise spoil heaps, trackways, and possible audits (22672), possible mining remains (58103), a farmstead (67345), a bank and dam (87934), a number of clearance cairns (12658), and what may be the remains of a prehistoric burial cairn (12658).</p> <p>One site, the remains of a possible burial cairn (12658) may contain archaeological evidence on prehistoric funerary practices and is considered to be of regional heritage value and medium sensitivity. This is a discrete feature that can readily be avoided during the alignment design stage.</p> <p>All of the remaining assets are elements of the local historic farming or mining landscape and assessed as being of no more than local importance and low sensitivity. Consideration should be given to avoiding or minimising direct effects on these recorded heritage assets during the alignment design stage.</p> <p>Within 3 km of the Route Option there are six heritage assets categorised in the HER as being of 'national significance' and potentially of schedulable quality:</p> <p>Andershaw, Chapel, Burial Ground and Well (10078)</p> <p>Andershaw, Sheepfold (possible) (10066)</p> <p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Weston, Mound (10061)</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shielling Hut (13295)</p>	<p>The WoSAS HER records two non-designated heritage assets within Route Option 4B: a sheepfold (10066) and a bank (63243).</p> <p>One asset, Andershaw, sheepfold, is categorised in the WoSAS HER as being of 'national significance' and potentially of schedulable quality. This asset comprises a small turf enclosure of unknown date and function but is recorded in the HER as being potentially related to sheep husbandry. It is a discrete feature that can readily be avoided during the alignment design stage.</p> <p>The bank (63243) is a minor element of the local farming landscape and assessed as being of no more than local heritage value and low sensitivity. Consideration should be given to avoiding or minimising direct effects on this recorded heritage asset during the alignment design stage.</p> <p>Within 3 km of the Route Option there are six additional heritage assets categorised in the HER as being of 'national significance' and potentially of schedulable quality:</p> <p>Weston, Mound (10061)</p> <p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shielling Hut (13295)</p> <p>Andershaw, Chapel, Burial Ground and Well (10078)</p> <p>Mosscastle Hill, Cairn (10081)</p> <p>The majority of these are elements of the local historic farming landscape and have generally localised settings which would not be</p>	<p>The WoSAS HER records one non-designated heritage asset, a sheepfold (22685), within Route Option 4C. This asset is an element of the local farming landscape and assessed as being of no more than low sensitivity. Consideration should be given to avoiding or minimising direct effects on this recorded heritage asset.</p> <p>Within 3 km of the Route Option there are seven heritage assets categorised in the HER as being of 'national significance' and potentially of schedulable quality. These comprise:</p> <p>Andershaw, Sheepfold (possible) (10066)</p> <p>Weston, Mound (10061)</p> <p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shielling Hut (13295)</p> <p>Andershaw, Chapel, Burial Ground and Well (10078)</p> <p>Mosscastle Hill, Cairn (10081)</p> <p>The majority of these are elements of the local historic farming landscape and have generally localised settings which would not be significantly adversely affected by the proposed development.</p> <p>Mosscastle Hill, Cairn (10081) lies over 2.1 km to the south of the Route Option, on the south side of Middle Muir and Andershaw Wind Farms, and adjacent to a large swathe of commercial forestry. Views of the proposed development are likely to be limited, if not entirely screened, by current</p>	<p>The WoSAS HER records four non-designated heritage assets within Route Option 4D. These comprise a ring enclosure (97438), a sheepfold (52640) and a number of clearance cairns (15739 and 15761). These assets are most likely elements of the local farming landscape and assessed as being of no more than local heritage value and low sensitivity. Consideration should be given to avoiding or minimising direct effects on these recorded heritage assets during the alignment design stage.</p> <p>Within 3 km of the Route Option there are seven heritage assets categorised in the HER as being of 'national significance' and potentially of schedulable quality:</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shielling Hut (13295)</p> <p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Andershaw, Sheepfold (possible) (10066)</p> <p>Andershaw, Chapel, Burial Ground and Well (10078)</p> <p>Mosscastle Hill, Cairn (10081)</p> <p>Crawfordjohn Mill, Cairn (10535)</p> <p>The majority of these are elements of the local historic farming landscape and have generally localised settings which would not be significantly adversely affected by the proposed development.</p> <p>Mosscastle Hill, Cairn (10081) stands on the summit of Mosscastle Hill around 450 m north of the Route Option. There are wide-ranging views</p>	<p>There is very little difference between <b>Route Options 4A-1, 4A-2, 4B and 4C</b> in regards non-designated heritage assets and there is no preference between these route options.</p> <p><b>The least preferred Route Option would be Route Option 4D</b> as its close proximity to Mosscastle Hill, Cairn (10081) could result in a significant impact on the setting of this nationally important asset.</p>



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
		<p>The majority of these are elements of the local historic farming landscape and have generally localised settings which would not be significantly adversely affected by the proposed development.</p> <p>Three of the assets (10078, 10066 and 10064) are located within the Glespin Burn valley and stand in commercial forestry. Intervening topography and surrounding forestry likely limit views out to the surrounding landscape from these assets.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	<p>Shiel Burn, Enclosure, Turf Bank (10064)</p> <p>Weston, Mound (10061)</p> <p>Auchensaugh Hill, Enclosure (10054)</p> <p>Auchensaugh Hill, Mound and Shieling Hut (13295)</p> <p>The majority of these are elements of the local historic farming landscape and have generally localised settings which would not be significantly adversely affected by the proposed development.</p> <p>Three of the assets (10078, 10066 and 10064) are located within the Glespin Burn valley and stand in commercial forestry. Intervening topography and surrounding forestry likely limit views out to the surrounding landscape from these assets.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	<p>significantly adversely affected by the proposed development.</p> <p>Mosscastle Hill, Cairn (10081) lies over 2.4 km to the south of the Route Option, on the south side of Middle Muir and Andershaw Wind Farms, and adjacent to a large swathe of commercial forestry. Views of the proposed development are likely to be limited, if not entirely screened, by intervening forestry and, where visible, likely to be viewed through Middle Muir and Andershaw Wind Farms. As a result, the potential impact on this prehistoric burial cairn from the proposed development is considered unlikely to be significantly adverse.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	<p>intervening forestry and, where visible, likely to be viewed through Middle Muir and Andershaw Wind Farms. As a result, the potential impact on this prehistoric burial cairn from the proposed development is considered unlikely to be significantly adverse.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	<p>from the prehistoric burial cairn, particularly to the east and south, which form key aspects of its setting. Views out from the cairn in other directions are currently limited by commercial forestry. The Route Option runs along the lower slopes of Mosscastle Hill. Given the proximity of the Route Option to the burial cairn it is possible that the steel lattice tower mounted OHL may result in a significant adverse impact on its setting.</p> <p>Crawfordjohn Mill Cairn (10535) lies over 2 km to the east of the Route Option. Given the distance between the monuments and the proposed development, it is considered unlikely that there would be a significantly adverse impact on its settings.</p> <p>The Route Option does not pass through a NIDL, and there are no NIDLs within 3 km of the Route Option.</p>	
	<b>Overall Preference for Cultural Heritage</b>	<b>Overall, Route Options 4A-1 or 4A-2 are preferred in relation to cultural heritage as these route options are furthest from the Scheduled Monuments within the Outer Study Areas, with fewer predicted effects on the setting of the Scheduled monuments in the Outer Study Area and Listed Buildings, and Douglas Conservation Area, are sufficiently far away, and within an urban setting, so as not to have their settings adversely affected.</b>					
<b>Forestry and Woodland</b>	Ancient Woodland of the Ancient Woodland Inventory (AWI) (Holford Rule 1)	<p>Route Options 4A-1 and 4A-2 routes through Townhead Wood AWI over an area of 1.87 ha. It is possible to mitigate the impact to AWI through micro-siting and assumption the tree clearance is based on a 200 m wide wayleave – avoiding crossing the OHL through AWI.</p> <p>Route Option 4A-1 and 4A-2 cross through Townhead Wood AWI over an area of 2.49 ha. Through micro-siting and assumption the tree clearance is based on an 80m wide wayleave – 0.72 ha of AWI would be impacted.</p> <p>Route Option 4A-1 and 4A-2 crosses through Wildshaw Hill AWI over an area of 1.49 ha. Through micro-siting and assumption the tree clearance is based on an 80 m wide wayleave – 0.12 ha of AWI would be impacted.</p> <p>Both Route Options also lie approximately 180 m east of Millers Wood AWI (LEPO).</p>		<p>Neither Route Option 4B or 4C directly interact with any AWI.</p> <p>The eastern portion of Route Option 4B and 4C lie approximately 150 m from an unnamed AWI site (LEPO).</p>		<p>Route Option 4D cross 0.29 ha AWI at Mosscastle. This can be avoided through the detailed design and tower positioning stage.</p> <p>Route Option 4D also lies approximately 12 m north of an unnamed AWI site (LEPO).</p>	<b>Route Options 4B or 4C are preferred</b> as they avoid the loss of AWI registered woodland.
	Native Woodland of the Native Woodland Survey of Scotland (NWSS) (Holford Rule 2)	<p>There is a total of 1.76 ha of Native Woodland of the NWSS within Route Options 4A-1 and 4A-2.</p> <p>Route Option 4A-1 and 4A-2 would result in the removal of 0.64 ha of NWSS, based on an assumed 80 m wide wayleave.</p>		Route Options 4B, 4C and 4D do not cross any NWSS.			<b>Route Options 4B or 4C or 4D are preferred</b> as they avoid the loss of NWSS registered woodland.
	Forestry of the National Forest Inventory (NFI) (Holford Rule 5)	<p>There is a total of 37.8 ha of NFI woodland within Route Option 4A-1 which is affected.</p> <p>The 37.8 ha of NFI woodland are conifer plantations, of</p>	<p>There is a total of 49.2 ha of NFI woodland within Route Option 4A-2 which is affected.</p>	<p>There is a total of 57.6 ha of NFI woodland within Route Option 4B which is affected.</p> <p>The 57.6 ha of NFI woodland are conifer plantations, of</p>	<p>There is a total of 64.8 ha of NFI woodland within Route Option 4C which is affected.</p> <p>The 64.8 ha of NFI woodland are conifer plantations, of</p>	<p>There is a total of 80.4 ha of NFI woodland within Route Option 4D which is affected.</p> <p>The 80.4 ha of NFI woodland are conifer plantations, of</p>	<b>Route Option 4A-1</b> is preferred as it has the smallest impact on NFI woodlands.



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
		which 20.4 ha are young conifers; 14.4 ha mature conifers and 3 ha broadleaved woodland.  Route Option 4A-1 would result in the removal of 15.12 ha of woodland, based on an 80 m wide wayleave.	The 49.2 ha of NFI woodland are conifer plantations, of which 34.2 ha are young conifers, 12 ha mature conifers and 3 ha broadleaved woodland.  Route Option 4A-2 would result in the removal of 19.68 ha of woodland, based on an 80 m wide wayleave.	which 20.2 ha are young conifers, 37 ha mature conifers and 0.4 ha broadleaved woodland.  Route Option 4B would result in the removal of 23.04 ha of woodland, based on 80 m wide wayleave corridor.	which 51.2 ha are young conifers, 16.8 ha mature conifers and 0.4 ha broadleaved woodland.  Route Option 4C would result in the removal of 27.36 ha of woodland, based on an 80 m wide wayleave.	which 20.2 ha are young conifers, 60.2 ha mature conifers and 0.4 ha broadleaved woodland.  Route Option 4D would result in the removal of 32.16 ha of woodland, based on an 80 m wide wayleave.	
	Overall Preference for Forestry and Woodland	Overall, Route 4B is preferred in relation to forestry and woodland.  Whilst Route Options 4B has the potential for the greatest loss of woodland; this is primarily through commercial woodland plantations and it does directly interact the registered AWI or NWSS woodlands and has limited impact on broadleaved woodland, compared to route 4A-1.  Route Option 4B is also the shortest route and also have the smallest influence on potential future afforestation of land currently not under forest/woodland land use.					
Hydrology (including flood risk), Hydrogeology & Peat	Flood Zones	Route Option 4A-1 and 4A-2 crosses 2 areas identified as at fluvial flood risk on the SEPA Future Flood maps, at crossings over Glespin Burn and Arnesalloch Burn. The maximum floodplain extent at Glespin Burn is approximately 90 m wide and both areas can be spanned. There are no significant areas of surface water flooding within the route.		Route Option 4B and 4C crosses 3 areas of fluvial flood risk identified by SEPA flood mapping at the Glentaggart Burn, Glespin Burn and upper reaches of the Black Burn. All floodplains can be spanned or avoided. There are no significant areas of surface water flooding within the route.		Route Option 4D crosses 4 areas of fluvial flood risk identified by SEPA flood mapping at the Glentaggart Burn, Glespin Burn, Braidknowe Burn and the Black Burn. However, the Glespin Burn flows extensively for 1.6 km through the route. All floodplains can be spanned or avoided. There are no significant areas of surface water flooding within the route.	<b>Route Options 4A-1 and 4A-2 are both marginally preferred</b> over Options 4B and 4C as there are only 2 flood risk areas (opposed to 3 and 4).  Route Option 4D is least preferred due to Glespin Burn running within the route.  All of mapped floodplains can be spanned or avoided.
	Waterbodies/watercourses	All Route Options cross several waterbodies/watercourses.					<b>Route Option 4C is marginally preferred</b> over Route Option 4B, 4A-1 and 4A-2 as it contains the fewest watercourse crossings and is one of the shortest routes.  Route Option 4D is the least preferred as it has 8 watercourse crossings and the Glespin Burn flows extensively within the route.
		Route Option 4A-1 crosses 12 watercourses which span the width of the route. This includes Arnesalloch Burn and Glespin Burn. These crossings can be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	Route Option 4A-2 crosses 13 watercourses which span the width of the route. This includes Arnesalloch Burn and Glespin Burn. These crossings can be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	Route Option 4B crosses 8 watercourses which span the width of the route. This includes Glentaggart Burn, Glespin Burn and Braidnie Burn. These crossings canbe spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.  There is a small surface waterbody within Route Option 4B at NGR 283870 626140 but this can be avoided during detailed alignment.	Route Option 4C crosses 7 watercourses which span the width of the route. This includes Glentaggart Burn, Glespin Burn and Braidnie Burn. These crossings canbe spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design.	Route Option 4D crosses 8 watercourses which span the width of the route. This includes Glentaggart Burn, Glespin Burn, Mountherrick Burn, Braidknowe Burn and Black Burn. These crossings can be spanned by the OHL infrastructure, and the siting of infrastructure will avoid them during detailed design. However, the Glespin Burn flows extensively within the route for 1.6km and will be difficult to avoid.	
	NatureScot (previously Scottish Natural Heritage (SNH)) Priority Peatland Habitats (Class 1 and Class 2) (Holford Rule 1)	There is no priority peatland habitat within these route options.  Route Option 4D is adjacent to a large area of Class 1 peatland at Middle Muir however the route option avoids interaction with this.					There is <b>no preferred route</b> option as there is no difference between the routes in relation to impacts on priority peatland habitats.
NatureScot (previously Scottish Natural Heritage	Peat bodies comprising Class 3 and 5 peatland cover	Peat bodies comprising Class 3 and 5 peatland	A peat body of Class 3 and 5 peat (approximately	A peat body of Class 3 and 5 peat (approximately	A peat body of Class 3 and 5 peat (approximately	<b>Route Option 4A-1 is marginally preferred</b> over	



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
	(SNH)) Peatland Habitats (Classes 3, 4 and 5)	approximately 3km of Route Option 4A-1. The peatland extends over an area of approximately 562,000m <sup>2</sup> within the route in three separate sections. The largest extent of peat is in the east near the B7078 road (NGR 286500 627770), where the mapped peat extends for a length of 2.1km of the route. The other two sections of mapped peatland are shorter, covering 0.5km and 0.4km of the route. None of the three sections can be avoided and/or spanned during detailed design.	cover approximately 3.5km of Route Option 4A-2. The peatland extends over an area of approximately 637,000m <sup>2</sup> within the route in three separate sections. The largest extent of peat is in the east near the B7078 road (NGR 286500 627770), where the mapped peat extends for a length of 2.1km of the route. The other two sections of mapped peatland are shorter, covering 0.5km and 0.4km of the route. None of the three sections can be avoided and/or spanned during detailed design.	1,000,000m <sup>2</sup> ) covers approximately 5.4km of Route Option 4B in two sections, one small area at the west extent, and a large area covering the east extent from Middle Muir, south/west of Auchensaugh Hill to east of the B7078 Road (NGR 287300 627350). The extensive peat areas cannot be avoided and/or spanned during detailed design.	1,002,000m <sup>2</sup> ) covers approximately 4.8m of Route Option 4C in two sections, one small area at the west extent, and a large area covering the east extent from Middle Muir, south of Auchensaugh Hill to east of the B7078 Road (NGR 287300 627350). The extensive peat areas cannot be avoided and/or spanned during detailed design.	1,200,000m <sup>2</sup> ) covers approximately 6.8km of Route Option 4D in three separate sections at the eastern and western extents of the route, close to the Glespin Burn and north of Crawfordjohn (NGR 286800, 624870). None of these peat sections can be avoided and/or spanned during detailed design as they cover the entire width of the route and extend at least 700 m in length.	option 4A-2 as the route option covers slightly less mapped peat, with no priority peatland habitat.  Options 4B, 4C and 4D are least preferred as all have extensive mapped Class 3, 4 and 5 peat within the routes.
	Overall Preference for Hydrology (including flood risk), Hydrogeology & Peat	Overall, Route Option 4A-1 is marginally preferred over Option 4A-2 in relation to hydrology, hydrogeology, geology, mineral, soils and peat as this route option crosses the smallest area of mapped peatland, with no priority peatland habitat (Class 1 or 2). It has numerous watercourse crossings, but all can be spanned by the OHL. Option 4C is marginally preferred on hydrology alone, as the route has the fewest watercourse crossings.					
Minerals	Previous and current areas of mineral extraction	A number of coal seams of potential former economic thickness underlie the final 700m of Route Option 4A-1 (to the south-west of the Glespin Burn) with some recorded areas of shallow mineworkings. In addition, four abandoned mineshafts are also present which confirms the extensive mining legacy. These would need to be avoided or treated and capped. There is also the potential that unrecorded drift (underground) mining at shallow depth within the 19peratis coal seams may also have historically occurred.	At least three thick coal seams (including the Seven Foot) are present at shallow depth below the final 500m of Route Option 4A-2 (to the south of the Glespin Burn) with some recorded areas of shallow mineworkings. In addition, five abandoned mineshafts are also present which confirms the extensive mining legacy. These would need to be avoided or treated and capped. There is also the potential that unrecorded drift (underground) mining at shallow depth within the coal seams may also have historically occurred.	There is evidence that the Nine Foot Coal has been extracted by opencast methods at the location where Option Route 4B and 4C diverge to the north of Andershaw Farm. There is also the potential that unrecorded drift (underground) mining at shallow depth within this seam may also have historically occurred.		No archive evidence of previous or current mineral extraction.  Whilst not associated with mineral extraction, this route also locally runs parallel to the Southern Upland Fault to the north of Mosscastle. Whilst it is extremely unlikely that any significant movement would occur along the fault it would be preferable to avoid placing towers directly over or in the immediate vicinity of this fault line.	<b>Route Option 4D</b> would be preferred due to the absence of previous mineral extraction.
	Potential future areas of mineral extraction	Sandstone, siltstone and mudstone bedrock along with, locally igneous rocks, predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these rock materials as a mineral resource is not likely or anticipated.  Two limestone seams, including the Hurlet Limestone are present around 500m to the north of the point where Route Options 4A1 and 4A2 merge. Whilst historically being an important mineral the size of the deposit is unlikely to make this economic to consider extraction in the future. Notwithstanding this it	Sandstone, siltstone and mudstone bedrock along with, locally igneous rocks, predominating at surface below higher areas and below the drift deposits elsewhere. The future widescale removal of these rock materials as a mineral resource is not likely or anticipated.  Two limestone seams, including the Hurlet Limestone are present at the start of Route Option 4C where is begins to diverge from Route option 4B. Whilst historically being an important mineral the size of the deposit is unlikely to make this	Sandstone, siltstone and mudstone bedrock predominating below the drift deposits. The future widescale removal of these rock materials as a mineral resource is not likely or anticipated.  As noted above at least one coal seam has been worked by open cast methods at location where Option Route 4B and 4C diverge to the north of Andershaw Farm.	Sandstone, siltstone and mudstone bedrock predominating below the drift deposits. The future widescale removal of these rock materials as a mineral resource is not likely or anticipated.  Two limestone seams, including the Hurlet Limestone are present at the start of Route Option 4C where is begins to diverge from Route option 4B. Whilst historically being an important mineral the size of the deposit is unlikely to make this economic to consider extraction in the future. Notwithstanding this it should be possible to span	Sandstone, siltstone and mudstone bedrock predominating at surface below higher areas and below the drift deposits elsewhere. With greywackes present below southernmost edge of the route. The future widescale removal of these rock materials as a mineral resource is not likely or anticipated.	There is <b>no preferred route option</b> as it is considered to be unlikely that future mineral extraction is a realistic possibility.



Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
		should be possible to span these areas during detailed design.	economic to consider extraction in the future. Notwithstanding this it should be possible to span these areas during detailed design.		these areas during detailed design.		
	Overall Preference for Minerals	Overall, Route Option 4D is preferred in relation to minerals as this route option does not cross areas of previous mineral extraction that would require further detailed investigation and appraisal and, potentially, remediation by grout injection.					
Land Use	Committed Development (Consented and Undetermined Planning Applications) (Holford Rule 7)	All Route Options 4 lie within the administrative area of SLC <sup>18</sup> .					Route Option 4D is preferred as it does not interact with any committed developments or LDP allocations.
		All Route 4 Options cross the red line boundaries for the consented Kennoxhead Wind Farm Extension (ECU Ref: ECU00002038) and Kennoxhead Wind Farm Extension II (Penbreck) (ECU Ref: ECU00003263). All route 4 Options interact with an access track which extends in the middle and entire extent of the application boundary. The Route Options do not interact with any of the main infrastructure, and cross only existing/proposed access tracks.  It is expected that the overlaps with the consented red line boundaries will not result in any constraints to development and can be considered through detailed design.					
	Both Route Options also cross the red line boundary for Bodinglee Wind Farm application (Live ECU application, Ref: ECU00004839). Both Route Options are approximately 290 m north of the closest proposed turbine (turbine 4). Both Route options avoid the tip height plus 10% trigger for consideration zone but cross through the 2 x rotor trigger for consideration zones applied to the proposed turbines for distances of approximately 300 m and 360 m.  It is expected that the overlaps with the proposed red line boundaries and crossing through the 2 x rotor trigger for consideration zones will not result in any constraints to development and can be considered through detailed design.  Bodinglee Wind Farm application has been submitted with an Outline Habitat Management Plan (OHMP) (dated June 2023). Route Options 4A-1 and 4A-2 would interact with areas of land which have been proposed through the OHMP for rush pasture topping and ditch blocking (northern section of the route options near Bodinglee turbine no.4) and peatland ditch blocking (southern section of the route where it passes Mid Rig). The potential to avoid interaction with the rush pasture topping and ditch would need to be reviewed through detailed design (potential to span) however the peatland ditch blocking should be avoidable through detailed design. Interaction with HMP areas should be avoided where possible. Where Bodinglee Wind Farm is still subject of a live application, the weighting to be given to the interaction with the HMP designations should be less than for a consented development.		Both Route Options also cross the red line boundary for Bodinglee Wind Farm application (Live ECU application, Ref: ECU00004839). Route Option 3B is approximately 345 m south of the closest proposed turbine (turbine 11). Both Route Options avoid the tip height plus 10% and 2 x rotor trigger for consideration zones applied to the proposed turbines.  It is expected that the overlaps with the proposed red line boundaries will not result in any constraints to development and can be considered through detailed design.		Route Option 4D does not interact with any consented (undeveloped) developments or undetermined planning applications.		
	Local Development Plan (LDP) Allocations (Holford Rule 7)	From Lees Hill, Route Option 4A-1 crosses the Glentaggart (in aftercare) mineral site for approximately 2.3 km <sup>19</sup> as identified by the SLC LDP2 Minerals, Deposits and Extraction map <sup>20</sup> . It is not expected that this designation would result in any constraint to development.	To the north of Glentaggart, Route Option 4A-2 crosses the Glentaggart (in aftercare) mineral site for approximately 1.3 km as identified by the SLC LDP2 Minerals, Deposits and Extraction map <sup>21</sup> . It is not expected that this designation would result in	To the north-east of Glentaggart, route options 4B and 4C cross the Glentaggart (in aftercare) mineral site for approximately 800 m as identified by the SLC LDP2 Minerals, Deposits and Extraction map <sup>22</sup> . It is not expected that this designation would result in any constraint to development.		There are no LDP allocations within Route Option 4D.	

<sup>18</sup> Checked as of September 2023

<sup>19</sup> Checked September 2023

<sup>20</sup> <https://www.southlanarkshire.gov.uk/downloads/download/1071/>

<sup>21</sup> <https://www.southlanarkshire.gov.uk/downloads/download/1071/>

<sup>22</sup> <https://www.southlanarkshire.gov.uk/downloads/download/1071/>

Criterion	Sub-Criteria	Route Option 4A-1	Route Option 4A-2	Route Option 4B	Route Option 4C	Route Option 4D	Preference
			any constraint to development.				
		South of Redshaw, shared route options 4A-1 and 4A-2 briefly cross the mineral site again before reaching the proposed substation.	Route Option 4B briefly crosses into the mineral site again to the south of Flow Moss, before joining route option 4C to the south of Auchensaugh Hill. Both shared route options 4B and 4C run alongside the boundary of the mineral site for approximately 1 km.				
		Overall Preference for Land Use	Overall, Route Option 4D is preferred as this route option avoids interactions with committed developments and LDP designations. However, it is noted that the committed developments and LDP designations identified are unlikely to result in a constraint to development from an environmental perspective.				
Overall Emerging Preference:		Overall, on balance Route Option 4C is the preferred route from an environmental perspective. This Route Option avoids direct interaction with all natural heritage designations (specifically AWI) and avoids direct effects on the locally designated landscape of the Douglas Valley SLA, and minimises the potential for indirect effects on the Leadhills and Lowther Hills SLA. It also minimises effects on more sensitive valley landscapes (and residential and recreational receptors within) to the north (the Douglas Water Valley) and south (the Duneaton Water Valley) of the study area. Further to this, Route Option 4C also has the fewest watercourse crossings.  Where Route Option 4C interacts with committed developments and hydrology floodplains these aspects will be considered through detailed design to minimise impacts.  Whilst Route Option 4C cannot avoid peatland, it does not interact with Class 1 or 2 priority peatlands and interactions with committed developments will not result in a constraint to development from an environmental perspective.					

Table 1.5: Summary of Overall Emerging Environmental Preference

Route Options	Route Option 1	Route Option 2	Route Option 3	Route Option 4
Emerging preference	1A	2	3B	4C
Overall Emerging Preferred Route	1A-2-3B-4C			



## **Appendix D**

### **Appraisal of Landscape Susceptibility to Overhead Electricity Transmission Infrastructure**

## Introduction

**D.1** Landscape sensitivity is assessed with reference to the existing landscape characteristics and attributes of the landscape. Accordingly, the NatureScot digital map-based national Landscape Character Assessment (LCA) (published in 2019)<sup>29</sup> has been used as the basis for determining the susceptibility of Landscape Character Types (LCTs) across the study area.

**D.2** This updated baseline dataset is based on a review of existing regional Landscape Character Assessments (LCAs) produced between 1994 and 1999 and includes updates to the original LCAs considering advances in digital technology, development of complementary datasets and changes in development patterns and pressures.

**D.3** Within the study area, the original regional landscape character assessments include the following:

- Ayrshire Landscape Assessment (1998)<sup>30</sup>;
- Dumfries and Galloway Landscape Assessment (1998)<sup>31</sup>; and
- Glasgow and Clyde Valley Character Assessment (1999)<sup>32</sup>.

**D.4** In addition to the above NatureScot digital map-based national LCA and original LCAs, relevant landscape capacity studies which cover the extents of the study area were also reviewed. Although these studies relate to wind energy development (wind turbines), due to the vertical nature of transmission infrastructure and the relatively large geographical extents over which both of these types of infrastructure can affect landscape and visual receptors, the findings of these studies were considered to be of relevance and assistance when ascribing landscape susceptibility to the type and scale of development proposed.

**D.5** Reference has been made to the assessed sensitivity<sup>33</sup> of each LCT from the following reports:

- East Ayrshire Council Landscape Wind Capacity Study (2018)<sup>34</sup>;
- Dumfries and Galloway Council Wind Farm Landscape Capacity Study (2017)<sup>35</sup>;
- South Lanarkshire Council Landscape Capacity Study for Wind Energy (2016)<sup>36</sup>; and
- South Lanarkshire Council Tall Wind Turbines: Landscape capacity, siting and design guidance (2019).<sup>37</sup>

## Appraisal of Landscape Susceptibility

**D.6** Each of the NatureScot National LCTs (2019) identified within the defined study area is shown on **Figure D.1** has been evaluated (400kV L12 lattice steel tower of an average 46m height, and large scale 400kV/132kV substation infrastructure) and categorised as being of **higher**, **medium**, or **lower** susceptibility. Indicators of the relative levels of landscape susceptibility to accommodate overhead line (OHL) development are detailed in the table below.

<sup>29</sup> <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

<sup>30</sup> Land Use Consultants 1998. Ayrshire landscape assessment. Scottish Natural Heritage Review No 111.

<sup>31</sup> Land Use Consultants 1998. Dumfries and Galloway landscape assessment. Scottish Natural Heritage Review No 94.

<sup>32</sup> Land Use Consultants 1999. Glasgow and the Clyde Valley landscape assessment. Scottish Natural Heritage Review No 116. Note: Landscape character types for the South Lanarkshire area were updated in the South Lanarkshire Landscape Character Assessment (2010).

<sup>33</sup> 'Sensitivity' is defined here in accordance with the first component only of Paragraph 3.24 of GLVIA 3 namely: "the susceptibility of the receptor to the type of change arising from the specific proposal..."

<sup>34</sup> East Ayrshire Council (2018). East Ayrshire Local Development Plan, Non-statutory Planning Guidance. East Ayrshire Landscape Wind Capacity Study.

<sup>35</sup> Dumfries and Galloway Council (2017). Local Development Plan, Supplementary Guidance. Part 1 Wind Energy Development: Development Management Considerations, Appendix 'C' Dumfries & Galloway Wind Farm Landscape Capacity Study.

<sup>36</sup> South Lanarkshire Council (2016). South Lanarkshire Landscape Capacity Study for Wind Energy.

<sup>37</sup> South Lanarkshire Council (2019) Tall Wind Turbines: Landscape capacity, siting and design guidance.



## Indicators of Landscape Susceptibility

Table D.1: Indicators of Landscape Susceptibility

Landscape Susceptibility	Definition
Higher	Landscape character, existing land use, pattern, scale, and attributes are vulnerable to being changed or lost resulting from the introduction of OHL / large scale substation development. Key perceptual and aesthetic characteristics are vulnerable to change or loss.
Medium	Landscape character, existing land use, pattern, scale, and attributes able to accommodate some landscape change resulting from OHL / large scale substation development.
Lower	Landscape character, existing land use, pattern, scale, and attributes are robust and tolerant of the change resulting from OHL / large scale substation development. The change could be accommodated without geographically extensive and/ or significant adverse effects on (or loss of) key perceptual, physical, or aesthetic characteristics.

## Characteristics Influencing Landscape Susceptibility

**D.7** In determining landscape susceptibility, professional judgement is applied alongside an understanding of how the type of development proposed would affect, or fit with, the landscape, and the degree to which potentially adverse effects could be reduced. Analysis of the baseline information contained in the baseline landscape character assessments and landscape capacity studies, and the application of professional judgement which also draws on the principles set out in the Holford Rules and Horlock Rules, has informed an

appraisal of the susceptibility of each LCT in the study area. This enables a judgement to be made on the landscape susceptibility of each LCT, which is presented graphically on **Figure D.2** and supported by written observations on the key landscape characteristics.

**D.8** For each LCT, the key characteristics have been analysed to inform an overall judgement on the susceptibility of each LCT to accommodate high voltage overhead line development of the type and scale proposed. The following table outlines the rationale for determining landscape susceptibility in relation to key landscape characteristics.

**Table D.2: Characteristics Influencing Landscape Susceptibility to OHL Development**

Criteria	Characteristics indicating a lower susceptibility to OHL / large scale substation development	Characteristics indicating a higher susceptibility to OHL / large scale substation development
Landform and Scale	<ul style="list-style-type: none"> <li>■ Flatter or gently undulating landscapes</li> <li>■ Broad valley landscapes</li> <li>■ Larger scale landscapes</li> </ul>	<ul style="list-style-type: none"> <li>■ Steep, complex landscapes</li> <li>■ Complex topography</li> <li>■ Intimate scale landscapes</li> </ul>
Landcover and Pattern	<ul style="list-style-type: none"> <li>■ Arable, pasture, rough grassland</li> <li>■ Moorland</li> <li>■ Simple patterns</li> <li>■ Landcover which can recover quickly/ does not require complex engineering solutions</li> </ul>	<ul style="list-style-type: none"> <li>■ Continuous woodland</li> <li>■ Bog, peat, wetlands</li> <li>■ Complex patterns</li> <li>■ Landcover which recovers slowly/ requires complex engineering solutions</li> </ul>
Manmade influence	<ul style="list-style-type: none"> <li>■ Industry, arable farming, presence of large built structures, disturbed areas</li> <li>■ Landscapes which have experienced a higher level of human influence</li> <li>■ More developed/ managed landscapes</li> </ul>	<ul style="list-style-type: none"> <li>■ Remote landscapes</li> <li>■ Areas with natural characteristics</li> <li>■ Landscapes with little evidence of human influence</li> </ul>
Visual Experience	<ul style="list-style-type: none"> <li>■ Interrupted horizons</li> <li>■ Simple skylines</li> </ul>	<ul style="list-style-type: none"> <li>■ Uninterrupted horizons</li> <li>■ Distinctive/ complex skylines</li> </ul>
Settlement	<ul style="list-style-type: none"> <li>■ Industrial</li> <li>■ Sparsely settled arable</li> </ul>	<ul style="list-style-type: none"> <li>■ Residential</li> <li>■ Dense patterns of isolated farmstead/ small scale settlements</li> </ul>
Time Depth	<ul style="list-style-type: none"> <li>■ Landscapes which, through human influence, have experienced greater change at a faster pace of evolution (and which look likely to continue in this way)</li> </ul>	<ul style="list-style-type: none"> <li>■ Landscapes which are more static, evolving at a slower pace (and which look likely to continue in this way)</li> </ul>

## Findings of Appraisal of Landscape Susceptibility

**D.9** The following table presents LUC's appraisal of the landscape's relative susceptibility to OHL / large scale

substation development of the type and scale proposed (400kV L12 lattice steel tower of an average 46m height, and large scale 400/132kV substation infrastructure) with reference to the Landscape Character Types (LCTs) within the study area.



Table D.3: Appraisal of landscape susceptibility to overhead line development

Landscape Character Type (LCT)	Key Characteristics	Landscape Sensitivity <sup>38</sup> findings (in relation to wind farms) from relevant landscape capacity studies	LUC Appraisal – Landscape Susceptibility to OHL / large scale substation development
Plateau Moorland – Ayrshire LCT (78)	<ul style="list-style-type: none"> <li>■ Topography is <b>comparatively level</b> with <b>extensive plateaux</b> rising to soft contoured ridges.</li> <li>■ Covered by <b>blanket bog, heather and grass moorland, with extensive mosses and peatland</b> forming an important component of this landscape type.</li> <li>■ Frequent <b>extensive areas of coniferous forest</b> of uniform age which, in places, have significantly modified the original character of these areas in terms of colour, texture and views.</li> <li>■ Largely undeveloped with a sparse network of roads.</li> <li>■ <b>Wind farm development</b> on the north-eastern margins.</li> <li>■ Open, exposed and <b>rather remote landscape</b>, wild in character, although this is lessened in places by the presence of wind turbines and associated infrastructure.</li> <li>■ Views are open and medium to longer distance depending on undulations in the local topography.</li> </ul>	<p>Assessment of large typology (70-130m); no assessment provided for small-medium typology:</p> <p><i>“Turbines located on less dramatic lower and more even skylines and/or set back into the core of these uplands would be likely to have less of an effect on these adjoining landscapes... This typology would fit with the more expansive scale of the interior of these uplands although they would dominate smaller scale buildings and woodlands on lower hill slopes and within valleys generally lying on the outer fringes of this upland plateau.</i></p> <p><i>The relatively simple land cover pattern of this landscape reduces sensitivity although turbines of this size would detract from more diverse small woodlands and stronger field enclosure pattern on settled lower hill slopes and valleys on the periphery of these uplands.</i></p> <p><i>This typology could exacerbate the fragmented and degraded nature of this landscape where it is disturbed by open cast mining if sited close-by workings... The largely unsettled and limited accessibility of this landscape reduces sensitivity” (pg. 92-94).</i></p>	<p>The relatively simple landform, expansive scale, and presence of manmade influence, including wind farms and coniferous forestry, would indicate a lower susceptibility to OHL development. However, remote qualities and areas of diverse landcover would indicate medium susceptibility to OHL development of the type and scale proposed.</p> <p>Overall susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>lower</b>.</p>

<sup>38</sup> The judgements of sensitivity referenced are made in relation to the small-medium wind turbine typology, defined as 20-50m in vertical height and of a similar vertical scale to the typical vertical height of 400kV L12 lattice steel tower infrastructure proposed.

Landscape Character Type (LCT)	Key Characteristics	Landscape Sensitivity <sup>38</sup> findings (in relation to wind farms) from relevant landscape capacity studies	LUC Appraisal – Landscape Susceptibility to OHL / large scale substation development
Upper Dale - Dumfries & Galloway LCT (165)	<ul style="list-style-type: none"> <li>■ <b>Wide valleys</b>, enclosed by high peaks and <b>moorland</b>.</li> <li>■ <b>Open with long views</b>.</li> <li>■ <b>Notable narrower section of Upper Nithsdale</b> between Thornhill and Mennock.</li> <li>■ <b>Improved valley pastures</b> becoming rougher up the valley sides.</li> <li>■ <b>Medium to large scale enclosures</b> with dry stone dykes.</li> <li>■ <b>Riparian woodlands</b> along the main river and up tributary channels.</li> <li>■ <b>Medium to large scale forests</b> on the valley sides and <b>extending over horizons</b> from higher ground.</li> <li>■ <b>Large scale wind farm development</b> characteristic of some adjacent upland fringes and backdrop skylines.</li> <li>■ <b>Mining settlements and remnants of industrial activity</b> such as mine ruins and bings.</li> </ul>	<p>Upper Nithsdale LCU assessment for small-medium turbines (20-50m):</p> <p><i>“The more extensive areas of undulating landform and gentle side slopes offer some potential to accommodate this typology. However, the more complex landforms associated with glacial deposits, steeper gradients and the prominent outcrop hills are areas where the landscape is more sensitive to this typology.</i></p> <p><i>Turbines of this size located within the floor and lower slopes of the dale would also intrude on presently open views from roads and settlement although they would be less visually dominant if sited on upper side slopes and back-dropped by rising ground within broader sections of the valley”</i> (pg. 136-139).</p>	<p>Due to the scale of the landscape, presence of manmade influence, including wind farm development, commercial forestry and mineral extraction, and relatively simple pattern of landcover, landscape susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>medium</b>.</p>
Southern Uplands – Dumfries and Galloway LCT (177)	<ul style="list-style-type: none"> <li>● <b>Large, smooth dome/conical shaped hills</b>, predominantly grass-covered.</li> <li>● <b>Open and exposed character</b> except within incised valleys.</li> <li>● <b>Dramatically sculpted landforms</b> and awe-inspiring scale.</li> <li>● <b>Distinctive dark brown/purple colour</b> of heather on some of the higher areas.</li> <li>● <b>Pockets of woodland</b> in incised valleys.</li> <li>● <b>Stone dykes</b> occasionally define the lower limit.</li> </ul>	<p>Southern Uplands LCU assessment for small-medium turbines (20-50m):</p> <p><i>“There is no scope for the medium typology (turbines 50-80m) or for smaller turbines principally due to the cumulative effects that would be likely to occur with operational, under-construction and consented developments sited in these landscape units and the adjacent Upper Dale (9) - Upper Nithsdale unit.”</i></p>	<p>The large scale of the landscape and existing presence of electricity infrastructure (including wind farm development) would indicate a lower susceptibility to OHL development. However, the distinctive landform, complex landcover pattern and presence of woodland would indicate a higher susceptibility.</p> <p>Overall susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>medium</b>.</p>



Landscape Character Type (LCT)	Key Characteristics	Landscape Sensitivity <sup>38</sup> findings (in relation to wind farms) from relevant landscape capacity studies	LUC Appraisal – Landscape Susceptibility to OHL / large scale substation development
	<ul style="list-style-type: none"> <li>• <i>Legacy of lead and other mining activity, with extensive archaeological remains around the former mining village of Wanlockhead.</i></li> <li>■ <b>Wind farms locally characteristic</b>, away from the more dramatic, scenic and sculptural slopes and skylines.</li> </ul>		
Upland River Valley - Glasgow & Clyde Valley LCT (207)	<ul style="list-style-type: none"> <li>■ <i>A series of valleys formed along fault lines through the Plateau Moorlands and paired with valleys to the south and west in Ayrshire.</i></li> <li>■ <i>South-west to north-east orientation of the valleys.</i></li> <li>■ <b>Strong contrast between the wooded and settled character</b> of the valleys and the exposed enclosing uplands.</li> <li>■ <i>Transition from the exposed upper reaches to more sheltered lowland areas.</i></li> </ul>	An overall landscape character sensitivity rating of “Medium/High” is afforded due to the small to medium scale, varying landform, somewhat irregular pattern, with a presence of existing electricity infrastructure and opencast mining (pg. A28).	<p>The smaller scale, presence of settlement, relatively irregular pattern and varying topography would indicate a higher susceptibility to OHL development. However, the presence of existing electricity infrastructure and other manmade influence (e.g. wind farm development and mineral extraction) decreases susceptibility somewhat.</p> <p>Overall susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>medium</b>.</p>
Plateau Moorlands - Glasgow & Clyde Valley LCT (213)	<ul style="list-style-type: none"> <li>■ <b>Large scale landform</b></li> <li>■ <b>Undulating hills and sloping ridges</b> in the western areas; <b>a more even plateau landform in the east.</b></li> <li>■ <i>Distinctive upland character created by the combination of elevation, exposure, smooth plateau landform, moorland vegetation.</i></li> <li>■ <b>Predominant lack of modern development.</b></li> <li>■ <b>Extensive wind turbine development</b>, including one of the largest wind farms in Scotland, Black Law.</li> <li>■ <b>Sense of apparent naturalness and remoteness</b> which contrasts with the farmed and settled lowlands, although this has been <b>reduced in</b></li> </ul>	An overall landscape character sensitivity rating of “Medium/Low” is afforded due to the large scale, “predominantly undulating” landform and presence of wind farm and conifer plantation development (pg. A27).	<p>Due to the large scale, relatively simple gently undulating landform, moorland landcover (with areas of extensive commercial forestry which offers opportunities for backclothing and screening of OHLs) and presence of manmade influence (e.g. wind farms and mineral extraction), susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>lower</b>.</p>

Landscape Character Type (LCT)	Key Characteristics	Landscape Sensitivity <sup>38</sup> findings (in relation to wind farms) from relevant landscape capacity studies	LUC Appraisal – Landscape Susceptibility to OHL / large scale substation development
	<b>places by wind energy development.</b>		
Southern Uplands - Glasgow & Clyde Valley LCT (217)	<ul style="list-style-type: none"> <li>■ <b>Extensive, large-scale upland landscape with strong but smooth relief.</b></li> <li>■ <i>Glacial carved and smoothed landforms, including u-shaped valleys, hanging valleys and corries.</i></li> <li>■ <i>Extensive mosaics of heath, with a transition to rough grazing on lower tops or slopes.</i></li> <li>■ <i>Prominent isolated conifer forests and old stands of Scots pine.</i></li> <li>■ <i>Largely undeveloped, except for occasional upland farms, shielings and Clyde wind farm.</i></li> <li>■ <i>Important travel and transmission lines pass through the area are the A74, west coast mainline railway and Scotland-England interconnector pylon line</i></li> <li>■ <i>Significant archaeological sites, particularly from the Bronze and Iron Age periods.</i></li> <li>■ <b>Prominent hill ranges in views from many areas.</b></li> <li>■ <i>Wide ranging panoramic views from the hill summits.</i></li> </ul>	An overall landscape character sensitivity rating of “Medium” is afforded due to the large scale, “rolling hills with glacial features”, “fairly random pattern” and low level of development, however existing electricity infrastructure and wind farm development is noted (pg. A31).	<p>The large scale of the landscape and existing presence of electricity infrastructure, wind farm development and key communications infrastructure (e.g. motorway and railway) would indicate a lower susceptibility to OHL development. However, the distinctive landform, complex landcover pattern and presence of woodland would indicate a higher susceptibility.</p> <p>Overall susceptibility to OHL / large scale substation development of the type and scale proposed is considered to be <b>medium</b>.</p>
Rounded Landmark Hills LCT (218)	<ul style="list-style-type: none"> <li>■ <b>High, rounded hills with a distinctive landform.</b></li> <li>■ <i>Glacially carved and smoothed landforms including shallow meltwater channels.</i></li> <li>■ <i>Highly prominent in views from many areas: Tinto is particularly striking as a landmark for the whole region.</i></li> </ul>	<p>(Rating for Prominent Isolated Hills<sup>39</sup>)</p> <p>An overall landscape character sensitivity rating of “Medium/High” is afforded due to the large scale, “no built development and little cultivation”, “prominent steep landforms” “important scenic elements appearing</p>	Due to the distinctive topography, diversity of landcover, presence of woodland and limited manmade influence, susceptibility to OHL / large scale development of the type and scale proposed is considered to be <b>higher</b> .

<sup>39</sup> The South Lanarkshire Capacity Study for Wind Energy (2016) was based on the LCTs identified in the South Lanarkshire Landscape Character Assessment (2010), with this area identified as the Prominent Isolated Hills LCT. The specific landscape characteristics that have influenced the landscape sensitivity assessment are consistent with the characteristics identified for the Rounded Landmark Hills LCT [218] (SNH, 2019), thus the landscape sensitivity is considered to remain relevant.

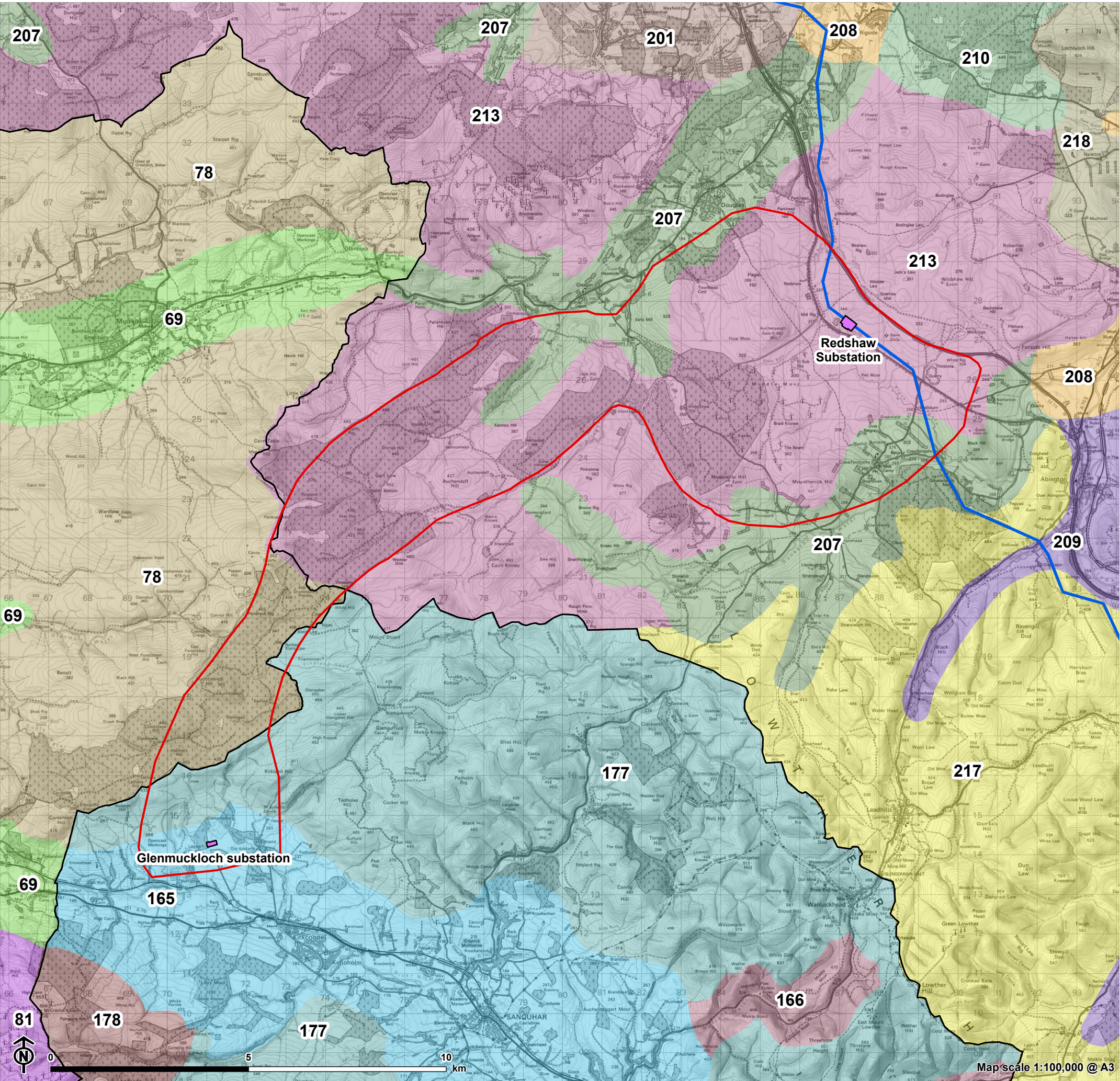


Landscape Character Type (LCT)	Key Characteristics	Landscape Sensitivity <sup>38</sup> findings (in relation to wind farms) from relevant landscape capacity studies	LUC Appraisal – Landscape Susceptibility to OHL / large scale substation development
	<ul style="list-style-type: none"> <li>■ <b>Mosaic of important habitat types</b> including dry heather moorland, heath and rough grazing</li> <li>■ <b>Woodland in blocks</b> and shelterbelts on the lower slopes.</li> <li>■ <b>Undeveloped</b>, except for occasional steadings and houses on lower ground.</li> <li>■ Popular recreational area.</li> <li>■ Wide-ranging panoramic views from the summits and higher ground.</li> </ul>	relatively natural", and characteristic topography (pg. A30).	





Figure D.1: Landscape Character Types



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Existing 400kV overhead line (OHL)
- Local Authority

**Landscape Character Types (LCT) - Naturescot**

- 69: Upland River Valleys - Ayrshire
- 78: Plateau Moorland - Ayrshire
- 81: Southern Uplands - Ayrshire
- 165: Upper Dale - Dumfries & Galloway
- 166: Upland Glens - Dumfries & Galloway
- 177: Southern Uplands - Dumfries & Galloway
- 178: Southern Uplands with Forest - Dumfries & Galloway
- 201: Plateau Farmland - Glasgow & Clyde Valley
- 207: Upland River Valley - Glasgow & Clyde Valley
- 208: Broad Valley Upland
- 209: Upland Glen - Glasgow & Clyde Valley
- 210: Undulating Farmland and Hills
- 213: Plateau Moorlands - Glasgow & Clyde Valley
- 217: Southern Uplands - Glasgow & Clyde Valley
- 218: Rounded Landmark Hills



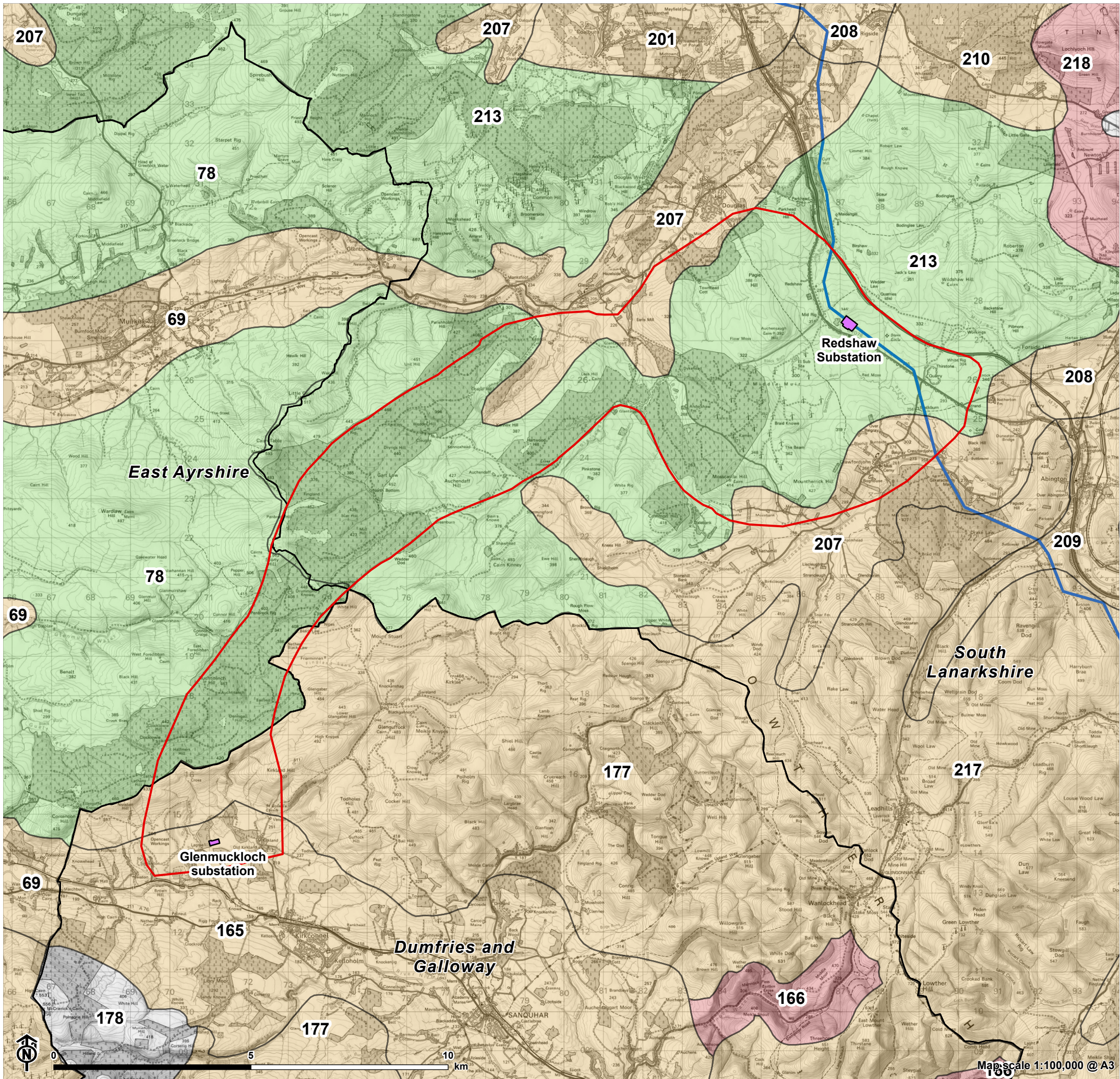


Figure D.2: Landscape Susceptibility

- Study Area
  - Proposed Glenmuckloch substation
  - Proposed Redshaw Substation
  - Existing 400kV overhead line (OHL)
  - Local Authority
- Landscape Susceptibility**
- Higher
  - Medium
  - Lower
- Landscape Character Types (LCT) - Naturescot**
- 69: Upland River Valleys - Ayrshire
  - 78: Plateau Moorland - Ayrshire
  - 81: Southern Uplands - Ayrshire
  - 165: Upper Dale - Dumfries & Galloway
  - 166: Upland Glens - Dumfries & Galloway
  - 177: Southern Uplands - Dumfries & Galloway
  - 178: Southern Uplands with Forest - Dumfries & Galloway
  - 201: Plateau Farmland - Glasgow & Clyde Valley
  - 207: Upland River Valley - Glasgow & Clyde Valley
  - 208: Broad Valley Upland
  - 209: Upland Glen - Glasgow & Clyde Valley
  - 210: Undulating Farmland and Hills
  - 213: Plateau Moorlands - Glasgow & Clyde Valley
  - 217: Southern Uplands - Glasgow & Clyde Valley
  - 218: Rounded Landmark Hills



## Appendix E

# Key Characteristics and Sensitivities of Locally Designated Landscapes

### Introduction

**E.1** A proportion of the study area is defined by local landscape designation and afforded protection at a local planning policy level, as shown on **Figure E.1**. These areas include the following local landscape designations in East Ayrshire and South Lanarkshire:

- Uplands and Moorlands Local Landscape Area (LLA2), East Ayrshire<sup>40</sup>;
- Douglas Valley Special Landscape Area (SLA), South Lanarkshire<sup>41</sup>; and
- Leadhills and Lowther Hills SLA, South Lanarkshire<sup>42</sup>.

**E.2** These areas are designated as part of the Local Development Plan (LDP) process and therefore represent the landscapes of greatest scenic value within each of the administrative areas and have therefore been included for consideration within the appraisal of broad corridor options.

**E.3** The relative susceptibility of these designated areas to OHL development / large scale substation infrastructure is largely informed by the consideration of the landscape susceptibility of the underlying LCTs as detailed in **Appendix E**. Nevertheless, the designation of these local landscapes is underpinned by the key characteristics/special qualities which may make them distinctive, unique, or rare, and therefore consideration of how these could be affected by the introduction of OHL / large scale substation development of the type and scale proposed.

**E.4** **Table E.1** below presents a summary of the key characteristics of each of the locally designated landscapes found within the study area, consideration of the potential for these key characteristics to be affected by the introduction of OHL / large scale substation development of the type and scale proposed, and a summary of potential opportunities or challenges for routeing of OHL development / siting of large scale substation infrastructure within or in close proximity to these designated areas. However, no judgements of the

---

<sup>40</sup> East Ayrshire Council (2021) East Ayrshire Local Landscape Area Boundary Review: <https://www.east-ayrshire.gov.uk/Resources/PDF/L/LDP2-Local-Landscape-Area-Review-study.pdf>

<sup>41</sup> South Lanarkshire Council (2010) Validating Local Landscape Designations:

[https://www.southlanarkshire.gov.uk/downloads/file/4147/landscape\\_designations\\_report\\_november\\_2010](https://www.southlanarkshire.gov.uk/downloads/file/4147/landscape_designations_report_november_2010)

<sup>42</sup> South Lanarkshire Council (2019) Tall Wind Turbines: Landscape capacity, siting and design guidance.



overall susceptibility are made for these often large, designated areas consisting of several different LCTs.

**Table E.1: Key characteristics of designated landscapes**

Locally Designated Landscape	Description and, Special Qualities and/or Key Characteristics <sup>43</sup>	Key Sensitivities and potential opportunities/challenges
Uplands and Moorlands LLA2, East Ayrshire	<p><i>“In the main a bold and large-scale but simple, rolling landscape of open, rounded top hills that form the backdrop to the eastern parts of East Ayrshire, the yellow and ochre colours of the moorland areas contrasting with the dark greens of the coniferous and plantation woodlands. The combination of natural features and the lack of roads and access gives an impression of landscapes that are more extensive, remote and higher than is actually the case. The boundary encapsulates the Southern Uplands, Ayrshire LCTs and Plateau Moorland, Ayrshire LCT and also takes in the majority of the area designated as Sites of National Nature Conservation Interest.” (pg. 25)</i></p> <p>No documented Special Landscape Qualities currently exist for the LLAs; however, it is understood that further detail will be developed and published as non-statutory planning guidance following the adoption of the East Ayrshire Council Local Development Plan 2 (LDP2) in late 2023.</p>	The large scale and simple landcover pattern found across much of the landscapes of the LLA offer opportunities to assimilate sensitively sited transmission infrastructure, as is the case in some parts of the LLA. The presence of large scale conifer plantations and rolling landform may offer opportunities for backclothing through sensitive routing of OHL infrastructure. However, the open and scenic nature of the upland areas of this landscape may provide challenges to routing OHL / siting large scale substation infrastructure and may lead to widespread visibility across this LLA.
Douglas Valley SLA, South Lanarkshire	<p><i>“The Douglas Valley is a sheltered valley containing a well preserved designed landscape with significant woodland planting. It is centred around the historic village of Douglas and provides an accessible, contained and tranquil landscape in contrast to the open and expansive rolling moorland to both the south and north of the valley.</i></p> <p><i>The significance of the Douglas Valley relates to a combination of scenic and cultural features:</i></p> <ul style="list-style-type: none"> <li>■ <b>Scenic compositional qualities of a meandering upland river passing through a sheltered, mature pastoral landscape enclosed by moorland hills;</b></li> <li>■ <b>Cultural features include the designed landscape of Douglas Castle and the historic village of</b></li> </ul>	The complexity of topography and diverse landcover pattern, including areas of woodland and small scale settlement and scattered population, may provide challenges to routing OHL / siting large scale substation infrastructure within this SLA.

<sup>43</sup> The key characteristics of each locally designated landscape may draw on reference to special landscape qualities defined within the documented descriptive information.

Locally Designated Landscape	Description and, Special Qualities and/or Key Characteristics <sup>43</sup>	Key Sensitivities and potential opportunities/challenges
	<p><i><b>Douglas together and their historic associations with the Douglas family, the Cameronians regiment and literary associations with Sir Walter Scott;</b></i></p> <ul style="list-style-type: none"> <li>■ <b>A network of mature policy woodlands and shelterbelts and a high quality of water environment;</b></li> <li>■ <i>Frequently visited, as the M74 passed through the eastern end of the designated area and intersects with the <b>main east-west route of the A70 which passes along the valley. The village and castle are visitor destinations with well maintained footpaths through the designed landscape.</b></i></li> </ul>	
Leadhills and Lowther Hills SLA, South Lanarkshire	<p><i>“The Leadhills and Lowther Hills area forms part of the more extensive Lowther Hills range, which extends into Dumfries and Galloway. This landscape of remote rounded hills and isolated upland glens is characterised by a general sense of emptiness. Much of the landscape is treeless, with only a few small forestry plantations. Between the hills a number of scenic glens pass southwest from the Clyde valley into Dumfries and Galloway. The Conservation Village of Leadhills is located at the head of two glens, 400m above sea level. With the adjacent village of Wanlockhead (Dumfries and Galloway) they represent the highest settlements in Scotland and the industrial archaeology associated with these villages, including working railway, museum, mine spoil and former mines, permeates into the adjoining landscape. The Southern Upland Way passes through this landscape, providing many with the opportunity to explore and enjoy it.</i></p> <p><i>“The significance of the Leadhills/Lowther Hills area arises from:</i></p> <ul style="list-style-type: none"> <li>■ <b>An extensive area of high, smooth, rolling, hills and varied upland glens with a sense of emptiness engendered by a lack of extensive forestry or wind farm development;</b></li> <li>■ <b>Cultural features include the mining heritage surrounding Leadhills and remains of</b></li> </ul>	<p>Areas of relatively simple topography and landcover, including those within the Southern Uplands offer potential opportunities for routeing of OHL development / siting of large scale substation infrastructure.</p> <p>However, areas of more intimate landscape scale, including those within the upland glens, and the sense of remoteness/ uninterrupted skylines within the Southern Uplands may provide challenges to routeing OHL / siting large scale substation infrastructure within this SLA.</p>

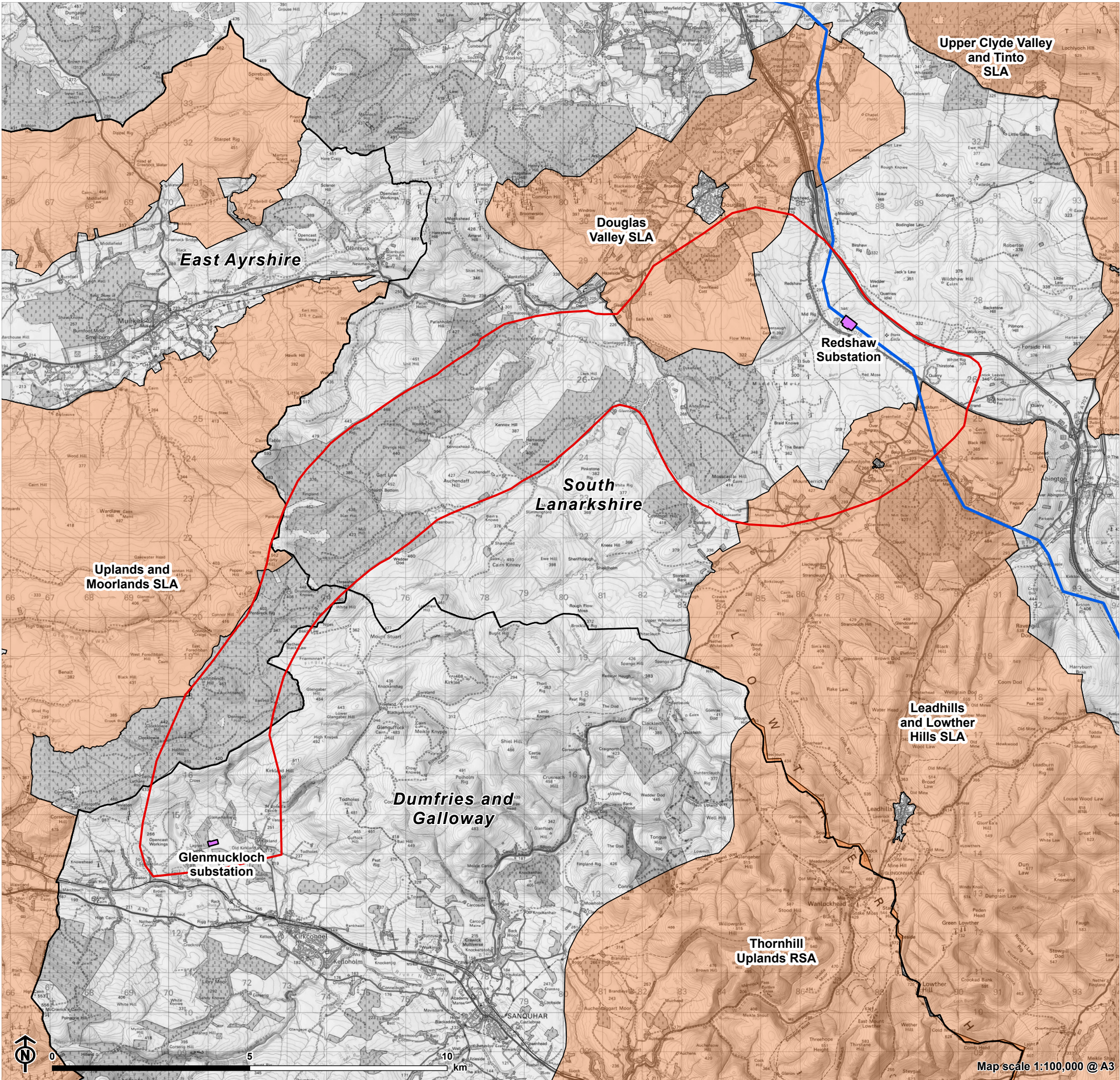


Locally Designated Landscape	Description and, Special Qualities and/or Key Characteristics <sup>43</sup>	Key Sensitivities and potential opportunities/challenges
	<p><b>settlements on the sides of glens;</b></p> <ul style="list-style-type: none"> <li>■ <i>Extensive areas of rough grassland and heather moorland vegetation</i> <i>The Southern Upland Way and other walking routes accessible via the M74 and main roads passing through to the west; <b>visitor attractions at Leadhills and fishing on the Daer reservoir.</b></i></li> </ul>	





Figure E.1: Local Landscape Designations



- Study Area
- Proposed Glenmuckloch substation
- Proposed Redshaw Substation
- Existing 400kV overhead line (OHL)
- Local Authority
- Local Landscape Designations
  - East Ayrshire Special Landscape Areas
  - South Lanarkshire Special Landscape Areas
  - Dumfries and Galloway Regional Scenic Areas