

# Heathland Wind Farm Grid Connection

Routeing and Consultation Document

SP Energy Networks

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**Prepared for:**

SP Energy Networks  
320 St Vincent St,  
Glasgow G2 5AD  
United Kingdom

**Prepared by:**

AECOM Limited  
One Trinity Gardens, First Floor  
Quayside  
Newcastle-upon-Tyne NE1 2HF  
United Kingdom

T: +44 (191) 224 6500  
aecom.com

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# 1. Introduction

## 1.1 Heathland Wind Farm Grid Connection

This Routeing and Consultation Document (RCD) has been prepared by AECOM on behalf of SP Energy Networks (SPEN)<sup>1</sup> as part of the identification of a preferred route option for the grid connection required for the Heathland Wind Farm as received from NGENSO on behalf of EDF Energy Renewables Limited. The grid connection, comprising a new wood pole 132 kilovolt (kV) overhead line (OHL) will connect Heathland Wind Farm to the electricity transmission system at Wishaw Substation. Heathland Wind Farm is located approximately 10 km southwest of West Calder, West Lothian and approximately 15 km east of Wishaw, North Lanarkshire with the grid connection extending to the east to Wishaw Substation located within Wishaw. **Figure 1** illustrates the location of Heathland Wind Farm and the transmission system.

The RCD explains the background to the grid connection and describes the approach to and results of the first stage of development of the grid connection; the routeing study which has been undertaken in order to identify a preferred route option for a new OHL between Heathland Wind Farm and Wishaw Substation, also shown in **Figure 1**.

## 1.2 Need for the Grid Connection

### 1.2.1 Background

As part of their commitments to tackling climate change the Scottish and UK Governments have set legally binding targets to reach net zero in their greenhouse gas emissions by 2045 in Scotland. In delivering net zero, the electricity system - how electricity is generated, transmitted, distributed and used - is undergoing transformational change.

The grid connection is needed to connect the 80 megawatt (MW) Heathland Wind Farm to the transmission network. As Transmission Licence Holder SP Transmission (represented by SPEN) is legally obliged under the Electricity Act 1989 to provide a grid connection.

### 1.2.2 SP Transmission's Statutory Duties and Licence Obligations

SP Transmission plc (SPT), the Transmission Owner (TO) and Licence Holder under the Electricity Act 1989 ('the Act'), is responsible for the electricity transmission network in central and southern Scotland including throughout North Lanarkshire, South Lanarkshire and West Lothian where Heathland Wind Farm and the grid connection is located. As the holder of a transmission licence under the Act, SPT is subject to a number of statutory duties and licence obligations.

These include a requirement "*to develop and maintain an efficient, coordinated and economical system of electricity transmission*" and "*to facilitate competition in the supply and generation of electricity*". This requires SPT to provide for new electricity generators wishing to connect to the transmission system in its licence area; 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.

In addition, in formulating proposals for network reinforcements or grid connections such as that proposed for the Heathland Wind Farm Grid Connection, SPT is subject to duties under Schedule 9 of

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<sup>1</sup> SP Energy Networks (SPEN) is the trading name for Scottish Power Energy Network Holdings Limited. SPEN owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly-owned subsidiaries SP Transmission plc and SP Distribution plc. These businesses are 'asset-owner companies' holding the regulated assets and Electricity Transmission and Distribution Licenses. SP Transmission plc is the holder of a transmission licensee. The references within this RCD 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.

the Act: *“(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and, (b) to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.”*

SPEN acting on behalf of SPT, is undertaking further studies including this routeing study to connect the Heathland Wind Farm to the transmission network. This work is undertaken in accordance with SPT’s statutory duties and licence obligations with the objective of ensuring that the grid connection is technically feasible, economically viable and on balance, causes the least disturbance to both the environment and the people who live, work and enjoy recreation within it.



PROJECT  
Heathland Wind Farm Grid Connection

CLIENT  
SP Energy Networks

- KEY
- Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV

TITLE  
Figure 1  
Location of the Project

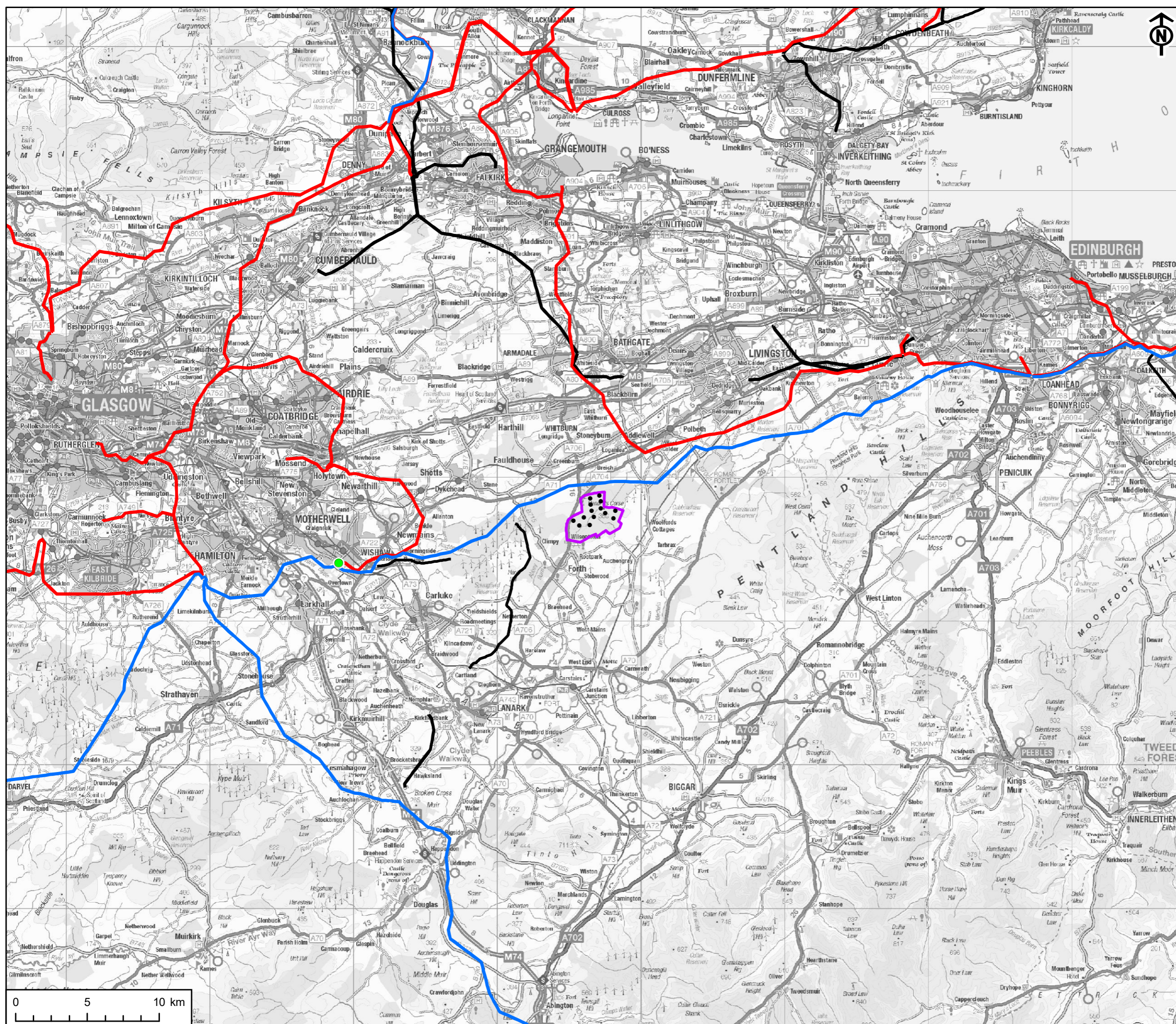
REFERENCE  
HGC\_20230321\_RC\_1\_v1

SHEET NUMBER  
1 of 1

DATE  
21/03/23

Project Management Initials: DR Designer: LC Checked: DF Approved: TC

Scale @ A3 1:250,000



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### 1.3 The Development and Consenting of the Grid Connection

The development of the grid connection will comprise the following key phases:

- **Phase 1. Routeing and Consultation.** Phase 1 comprises a routeing study in which alternative route options for the grid connection are identified and assessed taking into account a range of environmental, technical and economic considerations. It concludes with the identification of a preferred route option for the OHL which is then subject to consultation. 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. Responses to the consultation will be evaluated and inform confirmation of a proposed route to be taken forward to Phase 2.
- **Phase 2. Detailed Route Design and Environmental Impact Assessment (EIA).** The grid connection will require to be subject to EIA under the Electricity Works (EIA) (Scotland) Regulations 2017. Through Phase 2 the EIA process seeks to identify, assess and mitigate the likely significant adverse effects of the grid connection on the environment. The EIA process comprises several steps starting with scoping and concluding with the production of an EIA Report which will accompany the application for consent. During this phase SPEN will also undertake a second round of public consultation (referred to as Phase 2 Consultation) on the detailed design of the grid connection.
- **Phase 3. Applications for Consent.** SPEN will be applying to the Scottish Ministers for consent under Section 37 of the Electricity Act 1989, as amended, to install, and keep installed, the grid connection. The EIA Report will accompany the application for Section 37 consent. At the same time, SPEN will also apply to Scottish Ministers for deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997, as amended, for the grid connection including ancillary development. While the Scottish Ministers will be responsible for the decision to approve the grid connection or not, in reaching their decision they will consult with statutory stakeholders and members of the public.

### 1.4 Stakeholder Engagement

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.

SPEN recognises the importance of consulting effectively on proposals and is keen to engage with key stakeholders including local communities and others who may have an interest in the grid connection. This engagement process continues through to the construction of SPEN projects.

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>2</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 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.

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<sup>2</sup> Available at: [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)

- **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 RCD 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 may also be arranged. SPEN will 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 and broaden its accessibility.
- **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.

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.

## 1.5 Purpose and Structure of the Routeing and Consultation Document

The primary purpose of this RCD is to report on Phase 1 of the grid connection; the routeing study which has been undertaken and the preferred Route Option which has been identified for the grid connection. The RCD has been published in parallel with the start of public consultation on the grid connection. The objective of this is to seek feedback on the preferred Route Option from statutory and non-statutory consultees as well as local communities and use this feedback to inform subsequent stages of the grid connection.

The structure of the RCD is set out below. It describes the approach taken to identifying and assessing alternative route options in a clear, systematic manner in accordance with SPEN's statutory duties and licence obligations and taking into account industry-recognised approaches to the routeing of OHLs.

**Table 1. Structure of the Routeing and Consultation Document**

Section	Description of Contents
1. Introduction	Provides an introduction to the grid connection, SPEN's statutory obligations and an outline of the purpose and structure of the RCD.
2. Description of the Grid Connection	Provides an overview of the grid connection and its key physical components including details of construction requirements.
3. Approach to Routeing	Describes SPEN's general approach to the routeing following established practices and sets out the approach to the grid connection.
4. The Study Area	Identifies and describes the Study Area in which the routeing study is undertaken as well as key constraints or features within it.
5. Routeing Strategy	Describes the Routeing Strategy applied specifically to the Heathland Wind Farm grid connection to the identification and assessment of alternative route options.

<b>Section</b>	<b>Description of Contents</b>
6. Route Options	Describes the identification and assessment of alternative route options within the Study Area.
7. Preferred Route Option	Identifies and describes the preferred route option including the reasons for its selection.
8. Next Steps	Describes the key next steps in the grid connection including consultation on the preferred route option and how to provide feedback.



## 2. Description of the Grid Connection

### 2.1 Introduction

This section provides a brief description of the infrastructure which would be required for the grid connection. The grid connection comprises a new 132 kV wood pole OHL which is required between the consented Heathland Wind Farm and Wishaw 400 kV Substation. No substation works are to be consented or assessed as part of the grid connection for Heathland Wind Farm, however there are ongoing extension works at the Wishaw 400 kV Substation. It should be noted that given the early stage in the grid connection's development, this information is not confirmation of a final design, however, it is considered appropriate for the purposes of the routeing study and to inform the first round of consultation.

### 2.2 Overhead Line

#### 2.2.1 General Description

OHLs transmit electricity by conductors (or wires) which are suspended at a specified height above ground and supported by wood poles, spaced at intervals.

The conductors can be made of aluminium or steel strands. The Project will include a single circuit at 132 kV and is proposed to be carried on Trident wood poles. A typical trident wood pole is shown in **Figure 2** and the proposed design described below.



**Figure 2. Typical Trident Wood Pole**

### 2.2.2 Wood Pole Types

The OHL will be supported on Trident wood poles with galvanised steelwork cross-arms supporting aluminium conductors on insulators. These are suitable for supporting single circuit lines operating at 132 kV.

Wood poles are fabricated from pressure impregnated softwood, treated with a preservation to prevent damage to structural integrity.

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

- Suspension or Line: Where the pole structure forms part of a straight section of line and no change in direction is required. Straight sections of wood poles include section poles where segmentation is required to contain any failure in the OHL.
- Tension or Angle: Where there is a horizontal or vertical deviation in line direction. The maximum allowable angle deviations on single wood pole designs is 30 degrees, with deviations up to 75 degrees being permitted. All angle structures require to be back stayed.
- Terminal: Where the OHL terminates before entry into a substation or on to an underground cable section via a cable sealing end compound or platform.

### 2.2.3 Wood Pole Heights and Span Lengths

The standard height of trident poles (including steel work and insulators) varies from 11 m to 16 m. Whilst wood poles have a standard height above ground of 15 m, these can be extended or reduced in height, as required. Pole heights may require to be increased where circumstances dictate, e.g. over elevated land, structures or features.

The section of OHL between wood poles is known as the 'span', with the distance between them known as the 'span length'. Span lengths between wood poles average between 80 m to 120 m but can be increased if there is a requirement to span a larger distance due to the presence of a feature in the landscape such as a river or loch.

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

### 2.2.4 Wood Pole Appearance

Wood poles are fabricated from pressure impregnated softwood, treated with a preservative to prevent damage to structural integrity. New wood poles are dark brown in colour and weather over time to a light grey. The wood pole top cross-arms are galvanised steel and support the aluminium conductors on stacks of grey insulator discs. Both the steelwork and aluminium will weather and darken after a few years.

### 2.2.5 Typical Construction Requirements

The construction of OHLs follows a well-established process. As well as the OHL it also requires additional temporary land-take and infrastructure, for example temporary accesses and temporary construction compounds to store materials.

## Construction

Key phases of construction comprise the following activities:

- Tree felling or lopping (where required);
- Construction of temporary construction compounds;

- Preparation of accesses (where required);
- Excavation and construction of foundations;
- Assembly and erection of poles;
- Insulator and conductor erection and tensioning; and
- Clearance and reinstatement.

Construction of a wood pole takes place in one single operation, i.e., the hole is dug and the pole erected within the same day depending on ground conditions and location. Angle poles can take longer due to the need for “stay wires” to stabilise the pole in the ground.

Prior to constructing the OHL, temporary accesses will be constructed, as necessary, and laydown/storage areas established, usually mid-way along the route. Any trees which may impact on safety clearances will be removed or lopped. Following commissioning of the OHL, all equipment and temporary access of construction areas will be removed with the land being reinstated to its former use/condition.

The construction programme for the grid connection will be confirmed at detailed design stage and prior to project start following the granting of statutory consents and after all necessary land purchase/wayleave arrangements have been concluded. At this stage it is considered that construction of the proposed connection would be approximately 18 months with works scheduled to be complete by Q1 2027.

### **Operation and Maintenance**

OHLs require minimal maintenance. The condition of the wood poles will be inspected regularly for early identification of any unacceptable deterioration and to ensure action can be taken to maintain the security and safety of all components of the OHL. Poles which have deteriorated significantly may be removed and replaced. Access arrangements for maintenance will be agreed in advance with landowners and will be undertaken within the agreed wayleave. There is also an ongoing requirement to ensure that any vegetation within proximity to the OHL does not impact on safety clearances.

### **Decommissioning**

If an OHL line is to be decommissioned, wood poles will be removed with components re-used where possible. Foundations/supports are removed to a minimum depth of 1 m below ground level and the ground reinstated to the satisfaction of the landowner.

## 3. Approach to Routeing

### 3.1 Approach to Overhead Line Routeing

#### 3.1.1 SPEN's Approach to Routeing

In 2015, as part of a wider industry review involving Government and the Office of Gas and Electricity Markets (Ofgem), SPEN reviewed its approach to routeing. This review concluded that the requirement to balance statutory duties and licence obligations comprising economic, technical and environmental factors continues to support the development of an OHL in most circumstances. However, SPEN also concluded that there are certain circumstances in which development of an underground cable (UGC) should be considered.

SPEN undertook a further review of their approach in 2020 as part of preparing their RIIO-T2<sup>3</sup> Business Plan which reaffirmed these conclusions. As part of the review SPEN consulted on and published an updated version of '*Approach to Routeing and Environmental Impact Assessment*<sup>4</sup>' which describes their general approach to routeing new electricity transmission infrastructure.

The basic premise of the approach set out by SPEN is that the main effect of an OHL is visual and that the degree of visual impact can be reduced by careful routeing; for example by using topography and trees to provide screening and/or background to the OHL and by routeing the OHL at a distance from settlements and roads. In addition, OHL routeing takes into account other environmental and technical considerations and will avoid, wherever possible, the most sensitive and valued natural and man-made features.

#### 3.1.2 Established Practice for Overhead Line Routeing

In 1959, Lord Holford, then advisor to the Central Electricity Generating Board (CEGB), developed a series of guidelines with regard to the routeing of high voltage OHLs which have subsequently become known as the "Holford Rules" ('the Rules'). It is generally accepted across the industry that the Rules should continue to inform the routeing of high voltage OHLs. The Rules were reviewed in the early 1990s by the National Grid Company (NGC) Plc. (now National Grid Electricity Transmission (NGET)) with notes of clarification added to update them and reflect up to date circumstances. A subsequent review of the Rules including the NGC clarification notes was undertaken by Scottish Hydro Electric Transmission Limited (SHETL) (now SHE Transmission plc) in 2003 to reflect Scottish circumstances. A copy of the Rules as well including notes added through subsequent reviews by NGC, SHETL and most recently by SPEN is contained in Appendix A.

The basic premise of SPEN's general approach outlined above draws on the Rules including avoidance of areas of highest or high amenity value where possible as well as consideration of landform, topography and vegetation in order to reduce landscape and visual effects.

#### 3.1.3 General Routeing Considerations

In line with SPT's statutory duties and licence obligations and drawing upon established practice, routeing considerations comprise environmental, technical and economic factors. The routeing considerations inform the identification and assessment of route options ensuring that it is robust and transparent.

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<sup>3</sup> RIIO-T2 is the current price control and runs from April 2021 to March 2026. RIIO stands for 'Revenue = Incentives + Innovation + Outputs'. It's a framework used by Ofgem to ensure that network companies, like SPEN, provide a safe and reliable service, value for money, maximise performance, operate efficiently, innovate and ensure the resilience of their networks for current and future customers.

<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)

Routeing considerations also take account of the guidance contained in the Holford Rules and relevant notes or clarifications. In identifying routeing considerations which are relevant to the grid connection and Study Area (defined in Section 4) the Rules and relevant notes or clarifications have been interpreted and applied to the routeing study.

The Rules are broadly hierarchical with Rules 1 and 2 placing considerable emphasis on avoiding areas of the highest or high amenity value. Rule 1 advises that routes should avoid major areas of the highest amenity value where possible and Rule 2 that routes should avoid smaller areas of high amenity value by deviation. The term “amenity” has generally been interpreted as designated areas or sites of scenic, landscape, nature conservation, scientific, architectural or historical interest. This is consistent with SPT’s duties under Schedule 9 to the Electricity Act 1989, as amended. For the purposes of this routeing study, the term ‘amenity’ has been replaced by ‘environmental’ to more appropriately reflect the intrinsic environmental, social and cultural value of such designated areas.

The review undertaken by SHETL in 2003 provides examples of areas “highest” or “high” amenity or environmental value and states that such areas “require to be established on a project-by-project basis considering Schedule 9 of the Electricity Act 1989”. For the purposes of this study, such areas are considered to include international and national designations such as sites designated for nature conservation or heritage designations.

The Rules do not identify what constitutes “major areas” or “smaller areas” but indicate that consideration should also be given to the spatial extent of areas of highest or high amenity or environmental value. Value is not considered to be related to the size of an area, so for the purposes of this study this has been interpreted as the extent to which areas of the highest or high amenity or environmental value are avoidable in routeing.

The notes and clarifications provide guidance with regard to areas of moderate or low amenity or environmental value noting that regional or local areas or sites should be identified from development plans. For the purposes of this study, such areas are considered to comprise detailed routeing considerations and include local wildlife sites or reserves, woodland and outdoor recreational areas such as country parks.

While the Rules do not address residential areas, the subsequent notes and clarifications provide guidance stating “avoid routeing close to residential areas as far as possible on grounds of general amenity”. For the purposes of this study, settlements have been defined as areas of the highest amenity or environmental value. Smaller clusters or individual properties are considered to be a deviation issue and while of similar importance are considered to be a detailed routeing consideration that may be more appropriate addressed through the identification of a detailed alignment.

Rules 3, 4, 5 and 6 highlight the importance of considering landscape and visual matters in routeing including giving consideration to landscape character including sensitivity to OHLs, the use of landform and woodland to reduce visual intrusion or prevent skylining and the presence of other OHLs and the potential to create ‘wirescapes’. The Rules recognise existing woodland and forestry as features of value as well as presenting opportunities for minimising amenity impacts from new OHLs, noting that where possible routeing should 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, discussions should be undertaken with the relevant forestry regulator. Further to the Rules, the UK Forestry Standard (UKFS) was published in 2017 and provides the national reference standard for managing forests in the UK to meet current needs without hindering future generations requirements. The UKFS sets guidelines for sustainable forest management and recognises Scotland’s forests have a range of environmental, economic and social objectives. The Scottish Government is committed to maintaining and increasing Scotland’s woodland cover and has developed supporting policy guidance to strictly control removal and where felled, the requirement for compensatory replanting. National Planning Framework 4 (NPF4) was adopted and published by the Scottish Ministers on 13 February 2023. Policy 6 of NPF4 outlines

that development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered. In summary and recognising the UKFS and Scottish Government commitments, the routeing of OHLs for SPEN projects seeks to keep woodland removal at a minimum and only where it would achieve significant and clearly defined public benefits. For the purposes of this study, landscape and visual considerations, and the potential impact on forestry have informed the identification of route options taking account of considerations described above as far as possible.

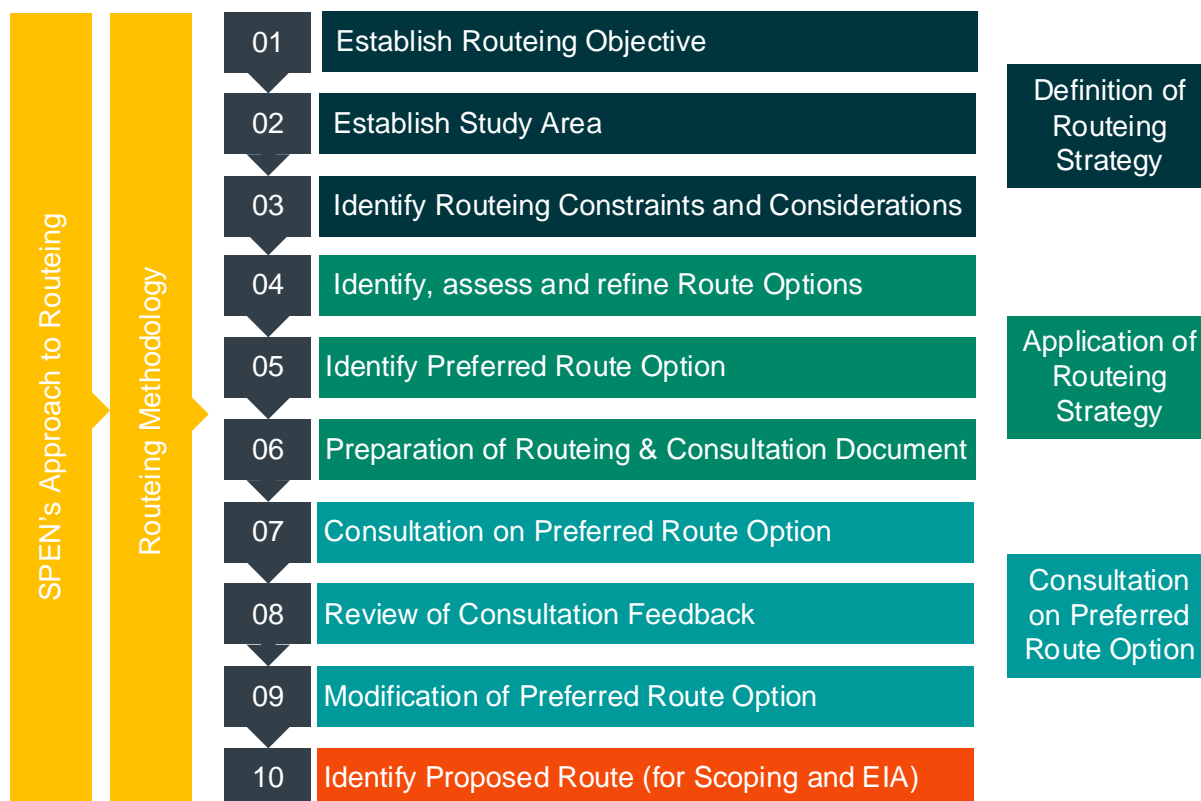
Specific technical or economic considerations are not identified in the Rules or notes and clarifications, however, these form part of SPT's statutory duties. For the purposes of this study this includes the directness of route options as well as matters affecting SPEN's ability to build, operate and maintain an OHL within the route options identified, for example taking account of existing electricity transmission or distribution infrastructure, topography, side slope gradients, altitude, ground conditions and accessibility.

## 3.2 Routeing Methodology

### 3.2.1 Overview of Approach to Routeing

The approach to identifying and assessing alternative route options for the grid connection is illustrated below in **Figure 3**. It follows SPEN's approach and draws upon established practice ensuring that it is robust and transparent. It is a systematic and iterative approach in which an increasing level of detail is applied at each step concluding with the identification of a preferred Route Option to be subject to consultation.

There are broadly three key activities, firstly informed by Steps 1 to 3, the definition of a routeing strategy specific to the grid connection, secondly in Steps 4 to 6 the identification and assessment of route options based on the strategy concluding with a preferred route option and finally consultation on the preferred route option through Steps 7 to 9. Steps 4 to 7 ensure that route options are tested and refined taking into account the routeing strategy as well as feedback received from consultation with key statutory stakeholders.



**Figure 3. Routeing Methodology**

### 3.2.2 Grid Connection Routeing Objective

The first step in the approach has been to identify a grid connection routeing objective which takes account of SPT's statutory duties and licence obligations. In accordance with SPEN's overall approach to routeing, the routeing objective for the grid connection is *"To identify a technically feasible and economically viable single circuit 132 kV overhead line route, supported on wood poles, between the consented Heathland Wind Farm and the Wishaw 400 kV Substation which causes, on balance, least disturbance to the environment of the Study Area and the people who live, work and enjoy recreation within it."*

## 4. The Study Area

### 4.1 Overview

This section describes the identification of the Study Area and routeing considerations within it as set out in Steps 2 and 3 of the routeing methodology illustrated in **Figure 3**. This takes into account established approaches to OHL routeing described in the previous section including SPEN's approach to routeing as well as the guidance contained in the Rules.

### 4.2 Description of the Study Area

#### 4.2.1 Overview

The extents of the Study Area, illustrated in **Figure 4**, have been informed by a combination of desk and field-based analysis coupled with an understanding of the need to balance potential adverse environmental effects with technical feasibility and economic viability.

The Study Area has largely been defined by the location of Heathland Wind Farm in the east and an approximate 20 km long section to Wishaw 400 kV Substation to the west. The Study Area lies within North Lanarkshire, South Lanarkshire and West Lothian. The highest elevations across the route reach around 350m.

The Study Area can generally be considered to be rural in the east and urban in the west. The upland areas at the east of the Study Area are largely defined by dense conifer plantations and operational wind farms (Blacklaw, Blacklaw Extension and Tormywheel). Smaller settlements such as Forth and Fauldhouse are also present within, or adjacent, to the Study Area in the east. The west of the Study Area is dominated by larger settlement area of Wishaw, Carluke and Newmains and associated infrastructure, including the A71, A73 and A706 as well as a rail corridor (Great Coast Main Line).

Existing infrastructure, beyond the operational wind farms, roads and railways, identified above, includes a number of wood pole lines that are distributed throughout the Study Area which is expanded upon in Section 4.2.3 and Section 4.2.5. In addition to the operational wind farms and the consented Heathland Wind Farm, an application has also been submitted for the Gladsmuir Wind Farm.

#### 4.2.2 Areas or Sites of Highest or High Amenity or Environmental Value

Garrion Gill Site of Special Scientific Interest (SSSI) and the Clyde Valley Woods Special Area of Conservation (SAC) are located within the western side of the Study Area, adjacent to the A71 (to the east). Clyde Valley Woods are the most extensive complex of woodland gorges with Tilio-Acerion forests found in Scotland. Garrion Gill is also partially designated as a Scottish Wildlife Trust Reserve (SWTR). Additionally, Braehead Moss SSSI and SAC is located in the south-eastern section of the Study Area, south of the settlement of Stobwood. Braehead Moss is protected as it is one of Scotland's best remaining examples of a raised bog and it is dominated by various species of sphagnum. The location of statutory designated ecological sites in relation to the Study Area are shown on Figure D2 in Appendix D.

There are pockets of ancient woodland throughout the Study Area with the majority located to the west on the outskirts of Wishaw. Ancient woodland is recognised as irreplaceable habitat within NPF4.

There are four scheduled monuments located in the south easterly section of the Study Area: Wilsontown Ironworks, Haywood mining town, Tashieburn, and Cleugh House. There are a number of listed buildings situated in the Study Area, the majority of these are located within the town of Wishaw.

There are no National Scenic Areas, Wild Land Areas, National Nature Reserves, World Heritage Sites or historic battlefields located within the Study Area.



### 4.2.3 Other Constraints and Areas or Sites of Local Amenity or Environmental Value

There are other constraints within the Study Area including scattered individual properties and sites or areas of local amenity or environmental value including core paths as shown on **Figure 5**.

Parts of two connected local landscape designations, the Clyde Valley Special Landscape Area (SLA) and the Middle Clyde Valley SLA are present in the southwest of the study area. The Clyde Valley SLA is within North Lanarkshire and covers an area south of Wishaw up to the River Clyde and Garrion Burn, and the Middle Clyde Valley SLA continues east from the Garrion Burn, to the west and south of Law and Carluke, within South Lanarkshire.

There are four local nature reserves situated in the western section of the Study Area these are: Kingshill, Greenhead Moss and Perchy Pond, Cambusnethan Woodland and Braedale Hill.

The Auchter Water river runs from the east, starting from its source South Calder Water, in a westerly direction across the Study Area. Springfield Reservoir is located on the southern boundary of the Study Area.

Existing infrastructure including the Blacklaw and Black Law Extension Wind Farms, and the Tormywheel Wind Farm are notable constraints across the central portion of the Study Area. In the north of the Study Area is the former Damside opencast mine site. This area has approved land management plans to reinstate the area plantation and broadleaf woodland. The existing infrastructure is illustrated on Figure D5, Appendix D.

### 4.2.4 Planning Policy

#### National Planning Policy

As noted above the Scottish Government has adopted NPF4 which sets out the priorities for the planning system up to 2045 with an emphasis on the transition to a net zero sustainable Scotland by 2045.

NPF4 sets out a number of priorities to guide the planning system. The need for increased renewable energy generation and the associate grid infrastructure is highlighted within the identified National Developments to Deliver Sustainable, Liveable Places, noting:

*“Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas.”* Annex B National Developments Statements of Need, pg. 103.

The aim of the grid connection supports Scotland's renewable energy targets by facilitating the connection of Heathland Wind Farm.

#### Local Planning Policy

The grid connection study area includes South Lanarkshire, West Lothian, and North Lanarkshire Council areas. In South Lanarkshire local planning policy is set out within the Local Development Plan 2 (SLLDP2) which was adopted in April 2019. The SLLDP2 provides the framework to encourage development that will benefit communities and safeguard the environment.

West Lothian Council planning policy is set within the Local Development Plan (LDP 1), adopted in September 2018. The LDP 1 looks forward for planned developments for the next 10 years and provides an indication of where further developments can take place over the next 20 years. West Lothian are currently preparing a new local development plan, however this is not expected to be adopted in 2026. The North Lanarkshire Local Development Plan was adopted in July 2022 and provides a 10 year strategy aiming to increase sustainable growth and regeneration whilst improving places in support of their new corporate vision. Their corporate vision strives to improve economic opportunities, support all children to reach their full potential as well as improving the health and wellbeing of communities.

#### 4.2.5 Landscape Character

Landscape character within the Study Area is defined largely by plateau farmland and moorland and upland fringe, but also includes parts of the broad Clyde Valley and areas of urban character to the west. Large scale wind farms are notable features within the upland fringe and moorland plateau landscapes which occupy the central and western parts of the Study Area. The following Landscape Character Types (LCT) as defined by the digital map-based national Landscape Character Assessment published by NatureScot (2019) are found within the Study Area, as presented in Figure D1, Appendix D.

- LCT 201 Plateau Farmland (Glasgow & Clyde Valley);
- LCT 213 Plateau Moorlands (Glasgow & Clyde Valley);
- LCT 219 Broad River Valley; and;
- LCT 269 Upland Fringes (Lothian).

The plateau farmland covers a band of lower slopes largely towards the west and south of the Study Area, acting as a transition between the extensive area of plateau moorland in the centre of the Study Area and the river valleys and urban areas further to the west. The plateau farmland is an open, exposed and large-scale landscape defined by an undulating landform and predominant agricultural land use. Settlement is variable with scattered farms in the east and a number of small and larger settlements to the west where this landscape transitions to urban character. Roads, rail and notable electrical infrastructure also have an influence on the impression of this landscape.

The plateau moorlands and upland fringes landscape dominate the central and eastern part of the Study Area, and are defined by a large scale gently undulating landform and simple pattern of extensive moorland and plantation forestry. Large areas of forestry have been felled and replanted in recent years to accommodate several large-scale wind farms which cover much of this landscape within the Study Area. Settlement is relatively limited across these landscapes, concentrated at Forth in the southeast and the edge of Allanton in the northwest. The settlements, wind farms and notable electrical infrastructure reduce the sense of remoteness and naturalness of these landscapes. The broad river valley covers a small part in the southwest of the Study Area encompassing the edge of the Clyde valley and connected smaller valley along the Garrion Burn. The landscape is largely defined by sloping farmland consisting of a variable field pattern defined by fragmented hedgerows and woodland. This landscape is bordered by settlement to the north and slopes down to the River Clyde to the south, and as such includes a mix of rural and urban fringe characteristics. Along the Garrion Burn, steeply sloping topography and extensive woodland provides a greater sense of enclosure and reduced influence from neighbouring settlement and development.

A network of roads and transport routes are present within the Study Area, including the A71 along the northern edge, the A704 and A706 running north-south across the west, and the A71, A73, A721, A722 and railway lines in the west. These principal routes are interconnected by a range of local and minor roads and numerous core paths. Scattered properties and farmsteads and occasional settlements are located throughout the landscape, with a greater concentration towards the west which is of urban character. There are four scheduled monuments located within the Study Area: Wilsontown Ironworks, Haywood mining town, Tashieburn, and Cleugh House.

Existing electrical infrastructure consists of a network of OHL, including a 400 kV line running from northwest to west, a 275 kV line in the west and a series of smaller wood pole lines which cross the Study Area becoming more apparent where they converge towards Wishaw in the west. Several large scale wind farms and smaller scattered wind turbines are also present throughout the Study Area.



## PROJECT

Heathland Wind Farm Grid Connection

## CLIENT

SP Energy Networks

## KEY

- Study Area
- Heathland Wind Farm Site Boundary
- Heathland Wind Farm Turbine Location
- Wishaw 400 kV Substation Location
- SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV

## TITLE

Figure 4  
Study Area

## REFERENCE

HGC\_20230321\_RC\_4\_v1

## SHEET NUMBER

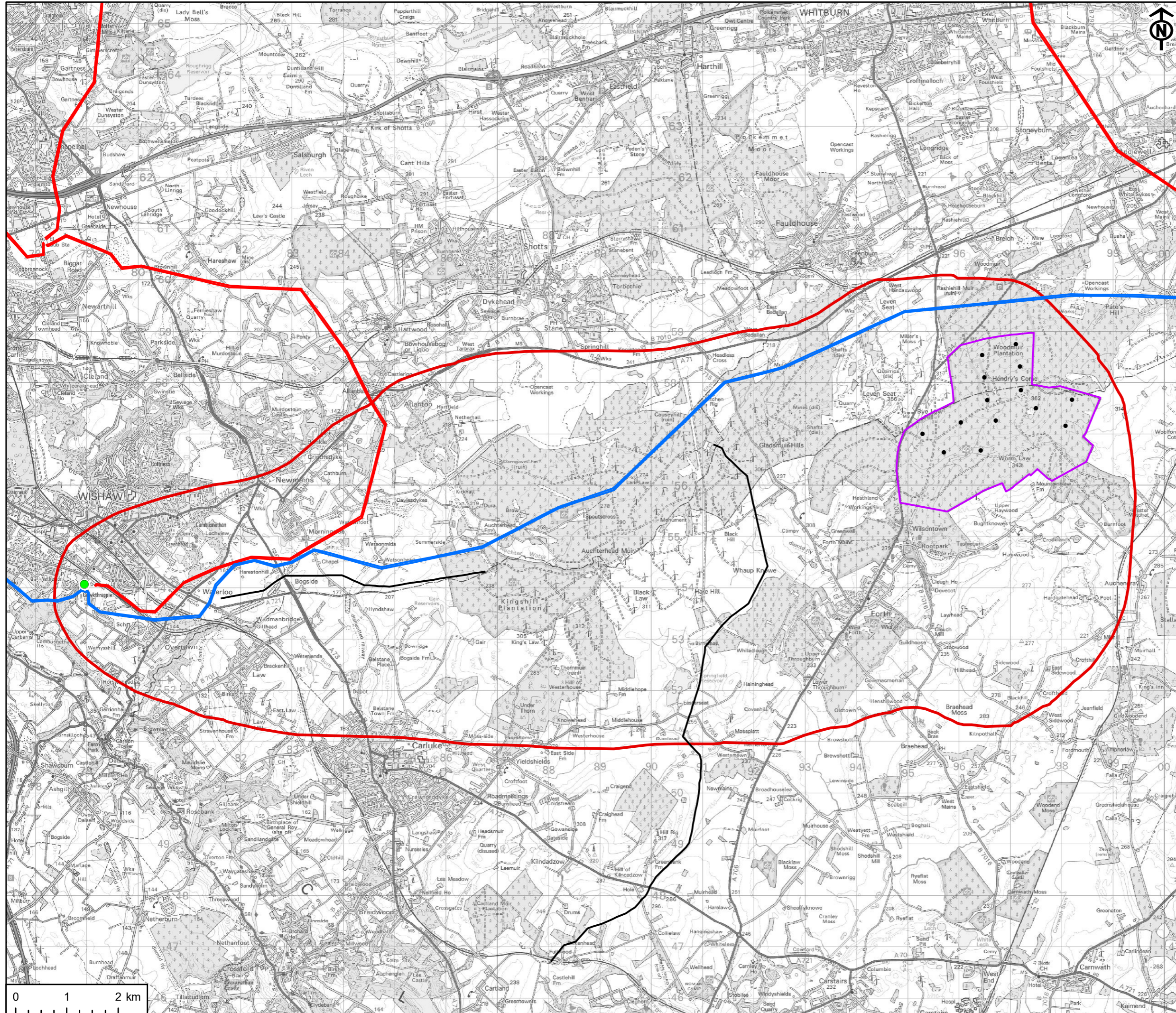
1 of 1

## DATE

21/03/23

Project Management Initials: DR Designer: LC Checked: DF Approved: TC

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### 4.3 Key Routeing Considerations

In line with Step 3 of the routeing methodology illustrated in **Figure 3** and described in Section 3, routeing considerations within the Study Area have been identified to help inform the routeing strategy and the identification and assessment of Route Options.

Full details of the key routeing considerations within and adjacent to the Study Area and how they relate to the Rules and subsequent notes are contained in **Appendix C**.

Key routeing considerations are those that have been identified in Section 4 that have informed the development of Route Options. These typically comprise large designated sites of international or national importance as well as larger settlements or areas of existing development which are considered to be areas of the highest or high environmental value within the Study Area, or areas where routeing is not technically feasible.

Within the Heathland Study Area this includes:

- The Clyde Valley Woods SAC and Garrion Gill SSSI are to the east of the A71 at Overtown in the west of the Study Area. The Clyde Valley Woods, and some adjacent pockets of woodland, are on the Ancient Woodland inventory.
- Settlements to the west including Wishaw, Carluke and surrounding villages such as Newmains, and the village of Forth to the east. The settlements of Wishaw and Forth contain a number of listed buildings.
- The extensive coverage of existing wind farms present to the centre and east of the Study Area, including Tormywheel Wind Farm, Blacklaw Wind Farm and its Blacklaw Extension Wind Farm. The Study Area also has applications in place for additional wind farms which are in various stages of the application process.

In addition to the above, there are a number of other designated sites which are considered to be of highest or high environmental value within the Study Area, however, these tend to be smaller in size and more widely dispersed. This does not diminish their importance within the routeing study but does mean when developing larger route options they may not be avoidable. Such constraints have been identified and are also illustrated on **Figure 5**, however, given their scale they will be considered in more detail in the assessment of route options and through the progression of detailed routeing, as necessary.



PROJECT  
Heathland Wind Farm Grid Connection

CLIENT  
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- KEY
- Study Area
  - Wishaw 400 kV Substation Location
  - Heathland Wind Farm Site Boundary
  - Category A Listed Building
  - Category B Listed Building
  - Category C Listed Building
  - Wind Turbine Location
  - Wind Turbine Location – Topple Buffer (Tip Height + 10%)
  - Special Area of Conservation (SAC)
  - Site of Special Scientific Interest (SSSI)
  - Sensitive Landscape Area / Area of Great Landscape Value
  - Ancient Woodland
  - Native Woodland
  - Scheduled Monument
  - Residential Dwelling - 150m Buffer
  - SPT Overhead Transmission Network
    - Existing 132kV
    - Existing 275kV
    - Existing 400kV

TITLE  
Figure 5  
Key Routing Considerations

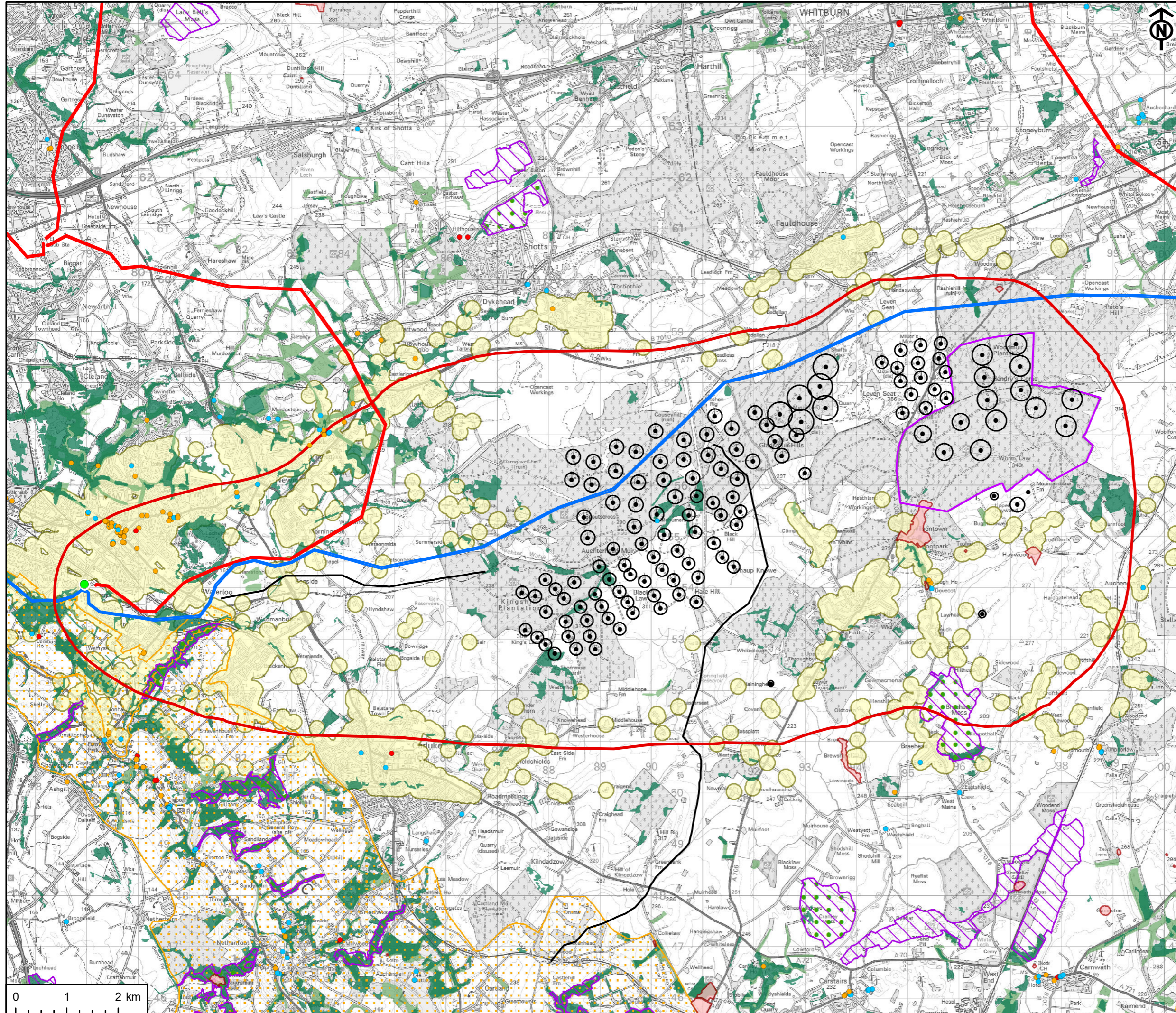
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1 of 1

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## 5. Routeing Strategy

### 5.1 Overview

The Routeing Strategy has been developed taking into account the routeing objective identified in Section 3 and the routeing considerations identified in Section 4. The purpose of the Routeing Strategy is to ensure a consistent approach to identifying and assessing route options leading to a preferred route option while ensuring that appropriate thought is given to balancing the routeing considerations which have been identified. Given the nature of OHLs, the key environmental effects are likely to be landscape and visual effects. To limit adverse effects on the landscape and visual amenity, careful routeing is undertaken, led by experienced landscape architects based on experience and informed by fieldwork.

### 5.2 Grid Connection Routeing Strategy

Route Options will be developed such that they:

- Are as direct as possible between the consented Heathland Wind Farm and Wishaw 400 kV Substation;
- Minimise as far as possible potentially adverse effects on residential and visual amenity by taking account of the pattern and distribution of settlement and individual/clustered properties;
- Minimise potential direct and indirect effects on:
  - All other statutory and non-statutory sites within the Study Area;
  - Habitats and protected species;
  - Recreational and access routes.
- Take account of existing and planned land use and infrastructure as far as possible including extension of settlements, proximity to existing OHLs and wind farms.

## 6. Route Options

### 6.1 Identification of Route Options

The Study Area was determined around Heathland Wind Farm to the east and Wishaw 400 kV Substation to the west. A number of route options were identified taking into account technical feasibility and the effect on the environment, amenity and people. The route options are identified on **Figure 6**, which should be considered in review of the descriptions in the sub-sections below.

The options identified have formed broadly around the key routeing considerations identified including existing settlements and various wind farms, either in operation or development. Options typically exist as either north or south of the various wind farms within the central section of the Study Area. The options expand or contract in width around or accounting for areas of highest and high amenity value.

Site visits have been undertaken to further ground-truth the results of desk-top analysis to determine the suitability for an OHL at various locations and to confirm that initial options were sound. Following the site visit a number of amendments were made to offer greater flexibility in some options to better allow for the avoidance of sensitive receptors within the options during more detailed routeing.

### 6.2 Route Section A

#### 6.2.1 Description of Route Section A

Route Section A starts at the consented Heathland Wind Farm in the east, and extends to the A73 in the west. In Route Section A there are four options for the grid connection.

From the Heathland Wind Farm Option A1 extends to the northwest to avoid turbines associated with the Blacklaw and Blacklaw Extension Wind Farms. The option then follows to the southwest adjacent to a disused railway line to the A73 at Bogside. Option A1 includes Option A1.1 which provides an option to route the grid connection along/ adjacent to the B715/ Climpy Road between Options A1 and A3. This has been identified due to a 'pinchpoint' in the eastern section of A1 where the option passes between Levenseat Quarry and an operational wind turbine in the Blacklaw Extension Wind Farm.

Option A2 is a variation of Option A1 that cuts to the south after the Blacklaw and Blacklaw Extension Wind Farms and the extends to the southwest following the alignment of the existing 400 kV OHL and on to the A73 at Bogside.

Extending from the Heathland Wind Farm to the southwest, Option A3 passes to the east and south of the Blacklaw and Blacklaw Extension Wind Farms, within the boundary of the wind farm site, beyond existing turbine locations. It is noted that a further Black Law development may be brought forward but is not yet in development<sup>5</sup>. Between the operational turbines and the B7056 the option extends to the west, to the north of Carluke the alignment goes north and then crosses the A73 at Bogside.

Option A4 goes to the south from Heathland Wind Farm and goes past the settlement of Forth to the east and south. South of Forth the alignment extends due west across the A706. Option A4 joins Option A3 south of the Blacklaw Wind Farm and follows the same alignment to the A73 as described above.

### 6.3 Route Section B

#### 6.3.1 Description of Route Section B

Route Section B starts at the A73 in the west and extends to Wishaw 400 kV Substation in the west. There are two options for the grid connection in Section B. Option B1 extends around the north of the

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<sup>5</sup> As per the Transmission Entry Capacity (TEC) register held by the Electricity System Operator (ESO), which identifies a third Black Law wind farm proposal currently at 'Scoping' stage. The TEC register is available here: <https://data.nationalgrideso.com/connection-registers/transmission-entry-capacity-tec-register>

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settlement areas of Gowkthrapple/ Overtown, south of Pather, following the West Coast Main Line railway corridor. The second option, Option B2, extends around Gowkthrapple/ Overtown to the south around the B754/ Castlehill Road to the Wishaw 400 kV Substation.



**PROJECT**  
Heathland Wind Farm Grid Connection

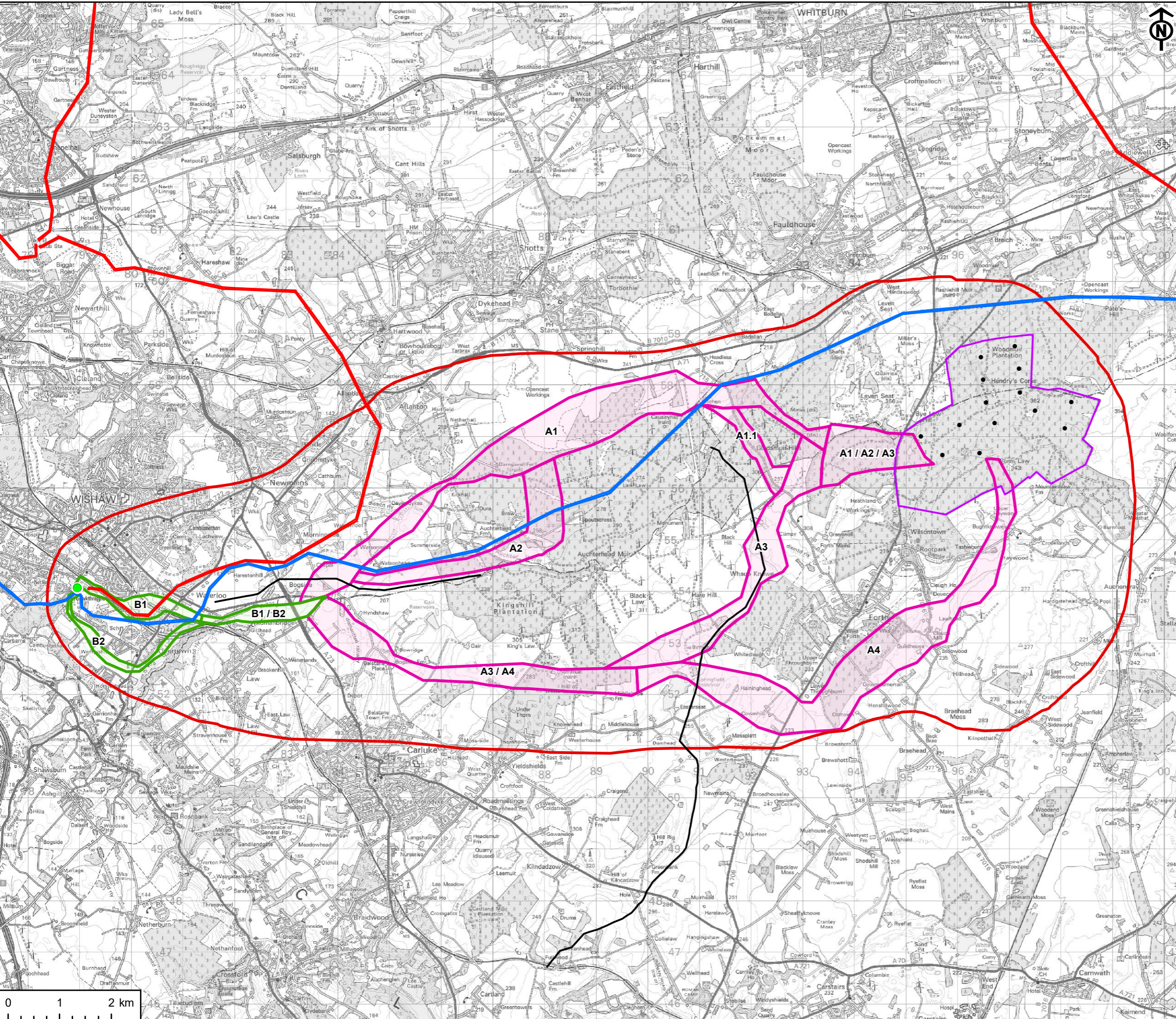
**CLIENT**  
SP Energy Networks

- KEY**
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV

- Route Corridor Options**
- A
  - B

Project Management Initials: DR Designer: LC Checked: DF Approved: TC

Scale @ A3 1:70,000



**TITLE**  
Figure 6  
Route Corridor Options

**REFERENCE**  
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22/03/23

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## 6.4 Summary of Assessment

Table 2. Summary of Assessment

Topic	Route Option A1 (inc. A1.1)	Route Option A2	Route Option A3	Route Option A4
Landscape	<p>This route option is predominantly within the Plateau Moorlands LCT, with a short section in the west falling within the Plateau Farmland LCT.</p> <p>The central and eastern parts of this route option are largely defined by undulating topography and a mix of commercial forestry, moorland and rough grassland. A former railway line provides a linear feature within the landscape which defines the edge of the route option and alongside the former opencast workings indicates historic industrial development within the area. The large-scale Black Law Wind Farm, located immediately south of this route option, has a strong influence on the local landscape character.</p> <p>Towards the west the landscape is largely defined by agricultural land use, with a variable field pattern locally altered by former railway lines and existing OHLs. Linear woodlands, and hedge and trees along field boundaries provide a variable sense of enclosure within the landscape.</p> <p>There are opportunities within this route option to make use of existing commercial forestry, woodland and field boundary vegetation to provide screening and/or back clothing of the proposed OHL, reducing its presence within the landscape.</p>	<p>This route option is predominantly within the Plateau Moorlands LCT, with a short section in the west falling within the Plateau Farmland LCT.</p> <p>The nature of the landscapes of this route option are broadly similar to those along Route Option A1, although with increased influence of commercial forestry towards the west. A section of the western part of this route option runs parallel to an existing 400kV OHL which represents a linear feature across the landscape.</p> <p>As with Route Option A1, commercial forestry and linear woodland provide opportunities to reduce the impact of an OHL in parts of this route option.</p>	<p>This route option is predominantly within the Plateau Moorlands LCT, with the western section falling within the Plateau Farmland LCT.</p> <p>The central and eastern parts of this route option largely consist of open moorland, although include blocks of commercial forestry both within and immediately bordering the route option. The central section of this route option runs along an existing 132kV OHL which itself is parallel to the edge of a forestry block along a shallow depression in the undulating topography.</p> <p>Black Law Wind Farm, located immediately north of this route option, has a strong influence on the local landscape character.</p> <p>Towards the west the landscape character becomes more agricultural, initially consisting of large-scale open fields and grassland, become smaller scale and more defined further west. Blocks of commercial forestry in the east and central parts of this route option provide opportunities to reduce potential impacts of the proposed OHL.</p>	<p>This route option is predominantly within the Plateau Moorlands LCT, with short sections in the south and east and a longer section in the west within the Plateau Farmland LCT.</p> <p>In central and eastern parts of this route option runs along the transition zone between the Plateau Moorlands to the north and Plateau Farmland to the south. This results in a variable character, consisting of a mix of large-scale open grassland and large blocks of commercial forestry, interspersed with slightly smaller scale agricultural fields.</p> <p>Towards the west the route option passes into the Plateau Farmland LCT, and the character becomes more defined by agricultural land use and field patterns.</p> <p>Blocks of commercial forestry in the east and central parts of this route option provide opportunities to reduce potential impacts of the proposed OHL. A shallow valley along the section to the east of the A706 provides additional opportunities to reduce the presence of the proposed OHL within the wider landscape.</p>

Topic	Route Option A1 (inc. A1.1)	Route Option A2	Route Option A3	Route Option A4
Visual Amenity	<p>There are no settlements or residential properties directly within this route option, although a small number of properties (including Kirkhall, Daviesdykes, Watsonmids, Chapel and Bogside) are in close proximity to the western section.</p> <p>Short sections of four core paths cross the western section of this route option. Careful routeing of an OHL, including use of existing forestry, woodland and field boundary vegetation would help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes.</p>	<p>There are no settlements or residential properties directly within this route option, although a small number of properties (including Brow, Kingshill, Watsonhead, Chapel and Bogside) are in close proximity to the western section.</p> <p>Short sections of three core paths cross the western section of this route option. Careful routeing of an OHL, including use of existing forestry, woodland and field boundary vegetation would help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes</p>	<p>There are no settlements along this route option. However, one property (Birniehall) is within this route option and a small number are in close proximity to the boundary.</p> <p>Short sections of four core paths and one aspirational core path cross parts of this route option. There are also a number of other local recreational routes and a fishery within and/or in close proximity to this route option.</p> <p>Careful routeing of an OHL, including use of existing forestry and topography, would help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes.</p>	<p>This route option passes in relatively close proximity to the south of Forth. A small number of scattered properties, including those along the B7016 between Burnfoot and Cleugh Mill, Guildhouse Farm, Covanhill and Haininghead are located within the route option extents.</p> <p>Short sections of three core paths and one aspirational core path cross parts of this route option. There are also a number of other local recreational routes and a fishery within and/or immediately adjacent to this route option.</p> <p>Careful routeing of an OHL, including use of existing forestry and topography, would help to avoid or minimise potential visual impacts from Forth and nearby residential properties and recreational routes.</p>
Cultural Heritage	<p>There are no cultural heritage designations within or adjacent to this route option.</p>	<p>There are no cultural heritage designations within or adjacent to this route option.</p>	<p>Whilst not located within the route option, the route passes a scheduled monument – Wilsontown Ironworks – located approximately 800 m to the south. Considering the intervening woodland it is unlikely that this will have any effect given the lack of visual connectivity.</p>	<p>Whilst not located within this route option, the route passes in close proximity to a number of listed buildings which are located to the north of the route option at Wilsontown. Five scheduled monuments (Wilsontown Ironworks, Tashieburn horse engine platform, Haywood deserted mining village, Cleugh House, and Brewshott limestone quarry) are also located within close proximity to the route, the closest of which is located approximately 200 m away and the farthest of which is located 1 km away. The impact on setting to the scheduled monuments, considering the intervening woodland, is likely to be minimal.</p>

Topic	Route Option A1 (inc. A1.1)	Route Option A2	Route Option A3	Route Option A4
Ecology	There are no national ecological designations within this route option. This option passes immediately adjacent to Kingshill Local Nature Reserve (LNR).	There are no national or local ecological designations within this route option.	There are no national or local ecological designations within this route option.	This route option passes approximately 500 m to the north of Braehead Moss SSSI.  Whilst not within the route corridor, there are areas of ancient woodland within close proximity (50 m at its closest point).
Woodland	The route corridor crosses areas of woodland as indicated by satellite imagery. Of which there are no areas identified as ancient woodland within or adjacent to this route option.  There are however small pockets of woodland classified as native woodland scattered throughout the corridor; a short section of which spans the width of corridor and so impacting this section of native woodland would be unavoidable.  It is noted that in the northern section of the route option, further plantation and broadleaf woodland are proposed as part of the reinstatement of the Damside quarry reinstatement.  Given the extent of woodland within the route option, tree removal will be necessary to fulfil clearance requirements for the OHL.	The route corridor crosses areas of woodland as indicated by satellite imagery. There are no areas identified as ancient woodland within or adjacent to the route option.  There are small pockets of woodland classified as native woodland scattered throughout the corridor; a short section of which spans the width of the corridor and so impacting this section of native woodland would be unavoidable.  It is noted that in the northern section of the route option, further plantation and broadleaf woodland are proposed as part of the reinstatement of the Damside quarry reinstatement.  Given the extent of woodland within the route option tree removal will be necessary to fulfil clearance requirements for the OHL.	Whilst not within the route corridor, there are areas of ancient woodland within close proximity (130 m at its closest point).  There are small pockets of woodland categorised as native by the Native Woodland Survey; native woodland spans the route corridor at a segment of the route option and so would be unavoidable (this section is shared with option A4).  Given the extent of woodland within the route option, tree removal will be necessary to fulfil clearance requirements for the OHL.	Whilst not within the route corridor, there are areas of ancient woodland within close proximity (approximately 150 m at its closest point).  There are areas of woodland as indicated by satellite imagery concentrated around Kingshaw Moss and Forth; the majority of this is not identified as ancient or native woodland but there are small pockets of native woodland which form a short section of the route span the width of the corridor and so would be unavoidable. To minimise impacts on woodland to the south of Forth the route could take a southern approach within this area.
Tourism and Recreation	The route crosses a number of core paths as is common across all route options; at least five directly cross the width of the route corridor and would need to be crossed by the OHL.	The route crosses a number of core paths as is common across all route options; at least four directly cross the width of the route corridor and would need to be crossed by the OHL.	The route crosses a number of core paths as is common across all route options; at least two directly cross the width of the route corridor and would need to be crossed by the OHL.	The route crosses a number of core paths as is common across all route options; two of which directly cross the width of the route corridor and would need to be crossed by the OHL.
Land Use and Other Infrastructure	The land use includes commercial forestry operations, and public access tracks, and passes considerable wind farm infrastructure including Black Law	The land use includes commercial forestry operations and public access tracks and passes considerable wind farm infrastructure including Black Law	Route option A3 passes through land which hosts considerable wind farm infrastructure and passes to the east of Black Law Wind Farm operational	Route Option A4 passes through land which hosts considerable wind farm infrastructure.

## Routeing and Consultation Document:

Heathland Wind Farm Grid Connection

Topic	Route Option A1 (inc. A1.1)	Route Option A2	Route Option A3	Route Option A4
	<p>and Black Law Extension Wind Farms – as a result the alignment will need to consider the turbine alignments at these wind farms to avoid any technical impacts caused by wake effects to the proposed OHL.</p> <p>The route option is mostly underlain by classes 4.2, 5.1 and 5.2 for land capability so is not considered to be prime agricultural land.</p> <p>Whilst there are no properties within the route option, there are a number of isolated properties in close proximity.</p> <p>To the immediate north-west of Heathland Wind Farm the existing quarry (Levenseat), and the proposed Glasdmuir Wind Farm turbines create a pinch point that may make routeing here unfeasible. Route Option A1.1 was identified to avoid this pinch point and route along the B715/Climpy Road.</p> <p>This route option would require crossing a 400 kV line twice. There are also a number of other OHLs as part of the distribution network which will require crossing.</p>	<p>and Black Law Extension Wind Farms – as a result the alignment will need to consider turbine alignments at these wind farms to avoid any technical impacts caused by wake effects to the proposed OHL.</p> <p>This route option would require crossing a 400 kV line twice. There are also a number of other OHLs as part of the distribution network which will require crossing.</p> <p>The route option is mostly underlain by classes 4.2, 5.1 and 5.2 for land capability so is not considered to be prime agricultural land.</p> <p>Whilst there are no properties within the route option, there are a number of isolated properties in close proximity to.</p> <p>Route Option A2 shares a common route approach with Route Option A1 to its eastern extent immediately north of Heathland Wind Farm. At this point the existing quarry (Levenseat), and the proposed Glasdmuir Wind Farm turbines create a pinch point that may make routeing here unfeasible. Route Option A1.1 was identified to avoid this pinch point and route along the B715/Climpy Road.</p>	<p>turbines, but within the wind farm site boundary; routeing activities will need to consider the turbine arrangements to avoid any technical impacts caused by wake effects to the proposed grid connection.</p> <p>Within the route corridor there is a single turbine (102m tip height) located off B715 / Climpy Road and so routeing should consider taking an approach at the edges of the route corridor to avoid this.</p> <p>The route option is mostly underlain by classes 4.2, 5.1 and 5.2 for land capability and is therefore not regarded to be prime agricultural land.</p>	<p>There is a single medium sized turbine (51m height to blade tip) and three additional small (19.98m to tip and 15.08m to hub) wind turbines to the west of the A706 at Covanhill Cottage located within the route corridor. The presence of these small wind turbines in combination with the property and buildings at Covanhill Cottage may influence routeing opportunities within this area.</p> <p>The route option is mostly underlain by classes 4.2, 5.1 and 5.2 for land capability and is therefore not regarded to be prime agricultural land.</p>
Physical Environment	<p>All routes in Section A are at an altitude beyond 200 m.</p> <p>The Carbon and Peatland Map 2016 indicates that part of Route Option A1 is underlain by peat soils.</p> <p>BGS maps also show considerable peat presence (at 50% of the route corridor).</p>	<p>All routes in Section A are at an altitude beyond 200 m.</p> <p>The Carbon and Peatland Map 2016 indicates that part of Route Option A2 is underlain by peat soils.</p> <p>BGS maps also show considerable peat presence (at 52% of the route corridor).</p>	<p>All routes in Section A are at an altitude beyond 200 m.</p> <p>The Carbon and Peatland Map 2016 indicates that part of Route Option A3 is underlain by peat soils, a proportion of which is identified as class 1 peat.</p> <p>BGS maps also show considerable peat presence (at 42% of the route corridor).</p>	<p>All routes in Section A are at an altitude beyond 200 m.</p> <p>The Carbon and Peatland Map 2016 indicates that part of Route Option A4 is underlain by peaty soils, a proportion of which is identified as class 1 peat.</p> <p>Only approximately 10% of the corridor is underlain by peat according to BGS maps and so option 4A represents the</p>

Topic	Route Option A1 (inc. A1.1)	Route Option A2	Route Option A3	Route Option A4
Conclusions	<p>An OHL within this route option is not anticipated to impact on any sites of highest amenity value.</p> <p>Careful routeing of an OHL, including use of existing forestry, woodland and field boundary vegetation would be necessary to best integrate the OHL within the existing landscape and help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes.</p> <p>Physical constraints including settlements and wind farm infrastructure will be considerable factors in routeing within Route Option A1. In addition, development proposals at Levenseat quarry to the northern extent of the route corridor may not accommodate the space required for an OHL.</p> <p>Considerable tree clearance will be required to accommodate the OHL, some of which is classified as native woodland.</p>	<p>An OHL within this route option is not anticipated to impact on any sites of highest amenity value.</p> <p>Careful routeing of an OHL, including use of existing forestry, woodland and field boundary vegetation would be necessary to best integrate the OHL within the existing landscape and help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes.</p> <p>Physical constraints including settlements and wind farm infrastructure will be considerable factors in routeing within Route Option A2. The development proposals at Levenseat quarry to the north of Heathland Wind Farm could determine whether this route could be progressed.</p> <p>Considerable tree clearance will be required to accommodate the OHL, some of which is classified as native woodland.</p>	<p>An OHL within this route option is not anticipated to impact on any sites of highest amenity value.</p> <p>Careful routeing of an OHL, including use of existing forestry and topography would be necessary to best integrate the OHL within the existing landscape and help to avoid or minimise potential visual impacts from nearby residential properties and recreational routes.</p> <p>Physical constraints including settlements and wind farm infrastructure are the greatest constraints to route option A3.</p> <p>There are considerable pinch points present where the corridor routes past Black Law Wind Farm. This presents a narrow corridor in which individual residential properties and small wind turbine infrastructure will need to be considered when progressing route options.</p> <p>Considerable tree clearance will be required to accommodate the OHL, some of which is classified as native woodland.</p>	<p>best ground conditions in order to avoid peat.</p> <p>An OHL within this route option is not anticipated to impact on any sites of highest amenity value.</p> <p>Careful routeing of an OHL, including use of existing forestry and topography would be necessary to best avoid impacts on the varying landscape character types and to avoid or minimise potential visual impacts from residents in Forth, nearby residential properties and recreational routes.</p> <p>Physical constraints including settlements and wind farm infrastructure are the greatest constraints to Route Option A4, and detailed routeing will need to consider the visual amenity of scattered properties to avoid and/or minimise impacts.</p> <p>Some tree clearance will be required within this route option to facilitate an OHL route, however this is broadly restricted to pockets of woodland. Some native woodland will likely need clearing.</p>

Topic	Route Option B1	Route Option B2
Landscape	<p>This route option passes in close proximity to the north of the Middle Clyde Valley SLA and slightly more distant to the north of the Clyde Valley SLA. In both cases woodland, built form and topography would limit potential impacts of an OHL along this route option.</p> <p>The landscape character along the route option is a combination of the fringes of the Broad River Valley LCT in the east and an area of more urban character in the west. Land use and land cover is a mix of irregular agricultural fields, woodland and forestry, leading to urban/ urban fringe greenspace further west. A range of linear infrastructure, including two railway lines and two larger scale OHLs, and adjacent built development and an existing substation have a strong influence on the character of the landscape of the route option and its context.</p> <p>Careful routeing of an OHL, considering the existing landscape pattern and linear features and making use of existing woodland, would help to reduce potential impacts on the character of this landscape.</p>	<p>This route option is immediate north, and partially within, the Clyde Valley SLA and within close proximity to the northern edge of the Middle Clyde Valley SLA. Woodland and topography would limit potential impacts of an OHL along this route option on the Middle Clyde Valley SLA.</p> <p>This route option is largely within and along the fringes of the Broad River Valley LCT at the boundary with an extensive urban area. Land use and land cover is a mix of irregular agricultural fields, woodland and forestry. Linear infrastructure, including parts of two rail lines and nearby OHLs and adjacent built development have a strong influence on the landscape, leading to an urban fringe character which differs slightly from the character of the wider Broad River Valley LCT.</p> <p>Careful routeing of an OHL, physically avoiding and minimising prominence from the SLA and making use of existing woodland, would help to reduce potential impacts on the character of this landscape.</p>
Visual Amenity	<p>This route option passes in close proximity to the south of Pather, Dimsdale and Waterloo areas of Wishaw. Two properties (along the A71 Overtown Road) are within this route option and a small number of scattered properties are also in close proximity to the boundary.</p> <p>Short sections of two core paths cross parts of this route option, with a further route running along/adjacent to the western section. There are also a number of local informal recreational routes and playing fields within and/or in close proximity to the western section of this route option.</p> <p>A number of existing OHLs, including a 275kV and a 400 kV line are within or adjacent to this route option, as are two railway lines with associated lower-level wires.</p> <p>Careful routeing of an OHL, including use of existing trees and woodland, and consideration of relationship with other linear infrastructure, would help to reduce potential visual impacts from nearby residential properties and recreational routes/facilities.</p>	<p>No residential properties are located directly within this route option. However, it passes in close proximity to the south and east of Overtown and Gowkthrapple areas of Wishaw and a small number of scattered properties further east.</p> <p>This route option is crossed by one core path and is in close proximity to a further core path towards the western end south of Castlehill Road. There are also a number of local informal recreational routes within and/or in close proximity to this route option, including at Cambusnethan Woods and along the Garrion Burn,</p> <p>Careful routeing of an OHL, including use of existing trees and woodland for screening and/or as a background, would help to reduce potential visual impacts from nearby residential properties and recreational routes/facilities.</p>
Cultural Heritage	<p>There are no cultural heritage designations within this route option.</p>	<p>There are no cultural heritage designations within this route option. The option passes approximately 160 m from a couple of Grade C listed buildings which are located within the settlement of Overtown. The setting of these buildings is therefore unlikely to be affected by the grid connection in the route option.</p>
Ecology	<p>Option B1 passes in close proximity, (approximately 70 m at its closest) to the Clyde Valley Woods Special Area of Conservation (SAC) and the Garrion Gill Site of Special Scientific Interest (SSSI) which largely share the same area. Garrion Gill Scottish Wildlife Trust Reserve (SWTR) is also located within part of the SSSI</p>	<p>Option B2 passes adjacent to the boundary of the Clyde Valley Woods SAC and the Garrion Gill SSSI which largely share the same area, typically running between 50-160 m from its boundary for a length of approximately 1.5 km. Garrion Gill SWTR is also located within part of the SSSI extent. The western extent of the</p>



## Routeing and Consultation Document:

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Topic	Route Option B1	Route Option B2
	<p>extent. The route option and the designated areas are separated by the West Coast Main Line railway corridor.</p>	<p>route option is immediately adjacent to the Cambusnethan Woodland Local Nature Reserve (LNR).</p>
Woodland	<p>Option B1 passes in close proximity to an area of ancient woodland, 20 m away at its closest point (separated by the West Coast Main Line rail corridor). Areas identified as native woodland are also contained within the route corridor; whilst some areas would need routing though these span over shorter areas of woodland compared to option B2.</p>	<p>Option B2 passes adjacent to an area of ancient woodland which is generally contained within the Clyde Valley Woods SAC and Garrion Gill boundary. The Highmainshead Wood ancient woodland is also immediately adjacent to the route option at Castlehill Road. There are areas of native woodland throughout the route corridor at this option. The majority of which is contained to small areas however some areas span the route corridor and are comparatively broader and may require clearance.</p>
Tourism and Recreation	<p>This route option will require crossing a number of core paths (potentially three) as identified on South Lanarkshire's core path plan.</p>	<p>The route will require crossing a single core path at this option as identified on the North Lanarkshire core path plan.</p>
Land Use and Other Infrastructure	<p>The land use is considered agricultural and open land in the east, and as it progresses to the west becomes increasingly urban-rural fringe and then urban around Wishaw 400 kV Substation. The route is underlain by soils classified as 4.1 and 4.2 according to the land capability for agriculture so is considered not to be prime agricultural land. The route will require crossing two railway lines. Within the shared portion of both section B options there is also a requirement to cross the A73. There are existing OHLs crossing the route corridor at various points as they route into Wishaw 400 kV Substation. This includes the 275 kV XR route that parallels to the north of the railway at Pather, and the 400 kV EX route that extends to the north of Overtown and through Gowkthrapple. The railway line and the transmission OHLs run in parallel and in close proximity combining to create a pinch point to the southern extent of the route option, and so it is likely that multiple crossings of the 275 kV XR route would be required. Whilst using the southern extent of the corridor at the pinch point would require less crossings, it may not be feasible due to the close proximity of the railway line and the OHLs. The route is crossed by several short segments of OHL belonging to the distribution network, including within the segment which is commonly shared with Route Option B2.</p>	<p>The land use is considered agricultural and open land in the east, and as it progresses to the west becomes increasingly urban-rural fringe and then urban around Wishaw 400 kV Substation. The route is underlain by soils classified as 4.1 and 4.2 according to the land capability for agriculture so is not considered to be prime agricultural land. The route will require two railway line crossings. Within the shared portion of both section B options there is also a requirement to cross the A73. On its approach to Wishaw 400 kV Substation, consideration will need to be given to the crossing or interface with the existing 400 kV OHL (EX route) which ties in to Wishaw 400 kV Substation from the southwest. The route is crossed by OHLs belonging to the distribution network within the common segment shared with Route Option B1.</p>
Physical Environment	<p>The route crosses slopes less than 6 degrees and so would present few technical difficulties. This route does not cross any areas of flooding potential as indicated by SEPA flood map data.</p>	<p>The routes crosses slopes less than 6 degrees and so would present few technical difficulties. According to SEPA data Route Option B2 crosses a short area with high surface water flood potential adjacent to Garrion Burn.</p>



Topic	Route Option B1	Route Option B2
	<p>The Carbon and Peatland Map indicates that Route Option B1 is mostly underlain by mineral soils, and has no areas identified as peat land.</p>	<p>The Carbon and Peatland Map indicates that the Option B1 is mostly underlain by mineral soils, and has no areas identified as peat land.</p>
<p>Conclusions</p>	<p>This route option passes in close proximity to the north of the Middle Clyde Valley SLA. Woodland, built form and topography would limit potential impacts of an OHL on the SLA in this route option. Residential properties in Pather, Dimsdale and Waterloo areas of Wishaw as well as some scattered properties to the east are in close proximity to the route option. Careful routeing of an OHL, including use of existing trees and woodland, and consideration of relationship with other linear infrastructure, would be necessary to best minimise any impacts to the landscape and residents.</p> <p>A number of constraints are common to both options, including the requirement to cross the railway line. Further consideration of the best approach from a technical standpoint to the railway line should be sought.</p> <p>Land use and infrastructure constraints are generally considered similar across both route options.</p> <p>The route will likely require tree clearance to accommodate the OHL, and this would likely be within areas of native woodland. This route presents the best option within this section in terms of ecological impacts given the greater distance to the Clyde Valley Woods SAC and the Garrion Gill SSSI, however further appraisal will be necessary to understand any potential for indirect effects on these receptors.</p>	<p>This route option is immediate north, and partially within, the Clyde Valley SLA and close to the northern edge of the Middle Clyde Valley SLA. However existing woodland and topography would limit any potential impacts of an OHL on these SLAs in this route option. The route option also passes in close proximity to the south and east of Overtown and Gowkthrapple areas of Wishaw and a small number of scattered properties further east. Careful routeing of an OHL, including use of existing trees and woodland for screening and/or as a background, would be required to reduce potential visual impacts on nearby residential properties and recreational routes/facilities.</p> <p>A number of constraints are common to both options, including the requirement to cross the railway line. Further consideration of the best approach across the railway line from a technical standpoint should be sought.</p> <p>Land use and infrastructure constraints are generally considered similar across both route options.</p> <p>The route will likely require tree clearance to accommodate the OHL, and this would likely be within areas of native woodland. Though the OHL would not pass through the Clyde Valley Woods SAC and the Garrion Gill SSSI, given its proximity there is the potential for it to generate impacts which would require further appraisal and mitigation.</p>

## 7. Preferred Route Option

### 7.1 Overview

This section describes the preferred route option and why it has been selected as set out in Step 5 of the routeing methodology illustrated in **Figure 3**. The preferred route option for the grid connection, taking account of the Routeing Objective and Strategy is shown on **Figure 7**. The preferred route option comprises the following route options:

- A4 and
- B1.

The preferred Route Option for the new-build single circuit, wood pole OHL will now be subject to consultation (referred to as Phase 1 Consultation). Responses to the consultation will then be evaluated and inform confirmation of a proposed route to be subject to detailed design and EIA.

### 7.2 The Preferred Route Option

The Routeing Objective was, in summary, to identify a technically feasible and economically viable route while minimising the impact on people and the environment as far as possible. The preferred route option is technically feasible and economically viable and, relative to other route options, avoids or reduces impacts on the environment and people who live, work and undertake recreational activities in the area as far as possible.

As set out in the Routeing Strategy this includes identifying as direct a route as possible between the Heathland Wind Farm and the Wishaw 400 kV Substation while taking account of landscape character, residential and visual amenity, designated sites (including the Clyde Valley Woods SAC) as well as other constraints such as areas of ancient and native woodland. The preferred route option has been developed and assessed taking account of the routeing strategy as summarised in the following sections.

#### 7.2.1 Route Section A

The preferred route option takes a southern alignment from the Heathland Wind Farm past the settlement of Haywood and towards Stobwood. This alignment avoids the majority of constraints associated with the wind farm developments in the centre of the Study Area (Route Option A3) and limits a significant amount of woodland clearance to accommodate the OHL alignment (Route Options A1 and A2). Past Stobwood and south of Forth, consideration will need to be given to the topography, existing woodland and forestry and existing OHLs when routeing in close proximity to scattered properties to minimise any impacts to visual amenity and the broader landscape. South of Forth at the A706 the route option extends due west on the margins of forestry which can likely be utilised as a backdrop to the OHL to scattered properties through this undulating rural landscape. Similarly any impacts to the users of the two public rights of way that are crossed by the route option will be mitigated by surrounding forestry and appropriate routeing.

Further to the west of the route option the OHL will be in a more open rural landscape however the preferred route option avoids potential issues associated with wirescapes from the existing larger overhead lines present to the western sections of route options A1 and A2.

#### 7.2.2 Route Section B

The preferred option in Route Section B is to take the most direct option to the point of connection at the north side of the Wishaw 400 kV Substation. This also allows for a greater standoff distance to the

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Clyde Valley Woods SAC and Garrion Gill SSSI and SWTR, and the associated ancient woodland, which is the only nationally designated ecological receptor within the Study Area. There are options within the route option at detailed routeing stage to route parallel the railway corridor on the north or the south side, subject to technical feasibility studies. Careful consideration of the potential impact of routeing adjacent to properties along Rannoch Drive in Pather will be needed as part of the detailed routeing, noting that there is an existing OHL on steel towers present already.

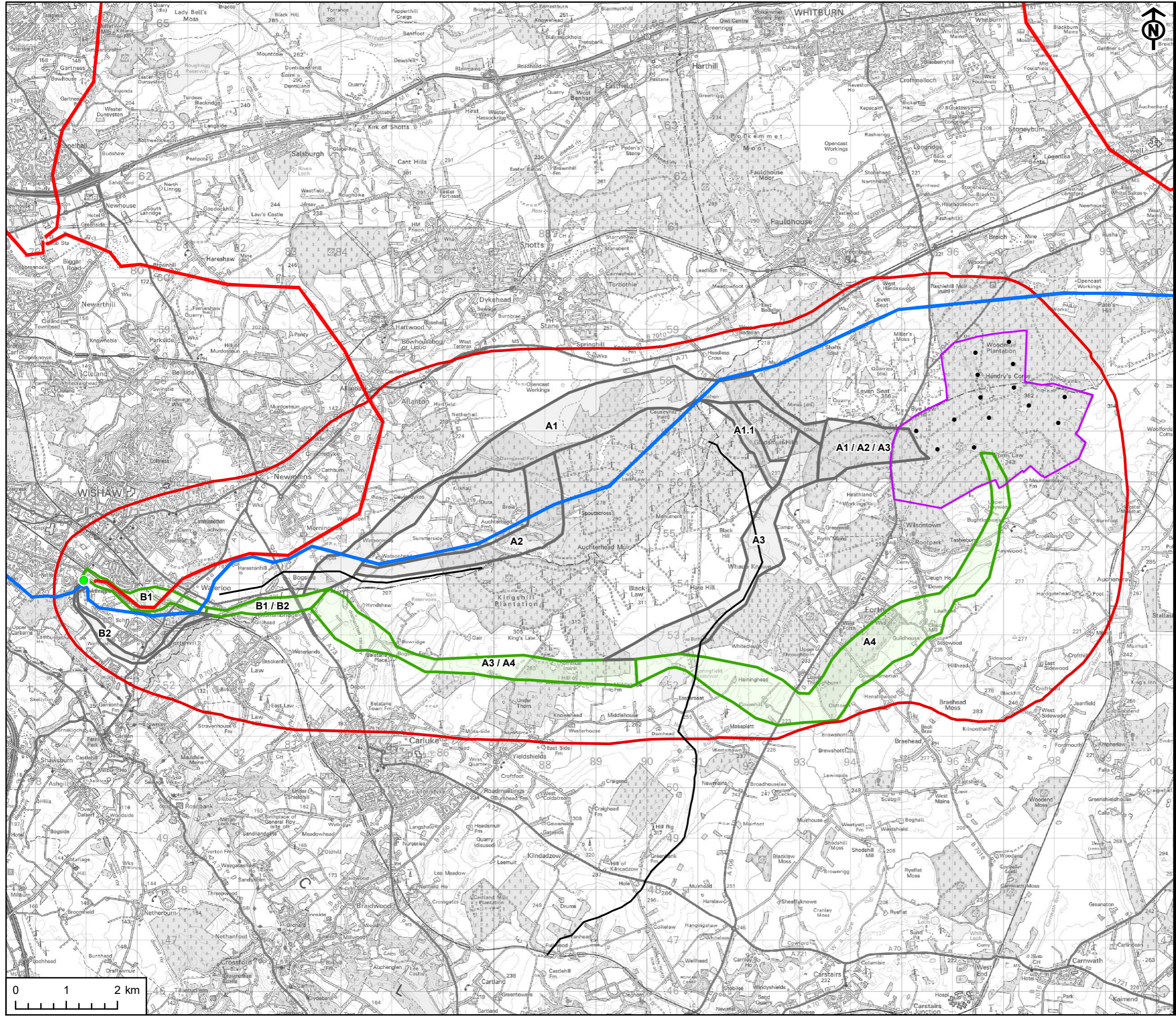


PROJECT  
Heathland Wind Farm Grid Connection

CLIENT  
SP Energy Networks

- KEY
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - Preferred Route Option
  - Discounted Route Option
  - SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV

Project Management Initials: DR Designer: LC Checked: DF Approved: TC



TITLE  
Figure 7  
Preferred Route Option

REFERENCE  
HGC\_20230322\_RC\_7\_v1

SHEET NUMBER  
1 of 1

DATE  
22/03/23

Scale @ A3 1:70,000

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## 8. Next Steps

### 8.1 Approach to Consultation

As set out in section 1.3, SPEN will be required to apply to Scottish Ministers for consent under Section 37 of the Electricity Act 1989, as amended, to install, and keep installed, the proposed OHL. At the same time, SPEN will also apply for deemed planning permission for the proposed OHL and associated works under Section 57(2) of the Town and Country Planning (Scotland) Act 1997, as amended.

As stated in Section 1.4 SPEN is embracing best practice as promoted by Scottish Government Energy Consents and Deployment Unit's and which encourages applicants to engage with stakeholders and the public in order to develop their proposals in advance of the application being made. SPEN has also embraced Scottish Government Planning Advice Note 3/2010 on Community Engagement. This guidance describes engagement as:

*"...giving people a genuine opportunity to have a say on a development plan or proposal which affects them; listening to what they say and reaching a decision in an open and transparent way taking account of all views expressed."*

Therefore, prior to the submissions, SPEN will carry out two rounds of consultation with stakeholders and the public. The two rounds are:

- Round One: Public consultation on the preferred route option, as detailed in this RCD.
- Round Two: Public consultation on the detailed route alignment of the OHL.

The deadline for receipt of feedback for this Round One consultation will be 19th June 2023.

Following the submission of application for Section 37 consent, the Scottish Government Energy Consents Unit will, on behalf of Scottish Ministers, carry out further statutory consultation with the public and stakeholders, including North Lanarkshire, South Lanarkshire and West Lothian Councils.

The overall objective of the consultation process is to ensure that all parties with an interest in the grid connection have access to accurate and 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. In addition, it is intended that the key issues identified through this process can be recorded and presented to decision makers in order to assist the consents process.

#### 8.1.1 Available Consultation Material

##### **Project website**

The website will act as a single source of truth for up-to-date information regarding the grid connection. This will host publicly available consultation documents for viewing or download, and an online feedback form. The feedback form will be available from 22<sup>nd</sup> May 2023 until the deadline for receipt of feedback at 17.00 on 19<sup>th</sup> June 2023.

##### **How people can make a comment**

There will be a number of ways for people to make comments:

- At one of our consultation events;
- Online, using the feedback form on the website;
- By post, using a paper feedback form, or by letter;
- By emailing the feedback form or in the body of an email; or
- By phone to the SPEN Project Consultation Contact Centre.



### **In person**

A number of in-person consultation events will be held within the Study Area. Details of these events will be publicised in local newspapers prior to the events being held, and details also included on the grid connection website (see below).

These events will include a number of information boards, similar to the information provided on the grid connection website. They will also be attended by members of the grid connection team who will be able to introduce the grid connection and will be available to answer questions on grid connection, the routeing approach and the preferred route option.

### **Online**

People will also be able to make comments online at [www.spenergynetworks.co.uk/pages/heathlands\\_wind\\_farm\\_connection](http://www.spenergynetworks.co.uk/pages/heathlands_wind_farm_connection) using an interactive online version of the in-person consultation boards, our virtual consultation. With the virtual consultation a feedback form will be available to raise comments and will be available until 17.00 on 19<sup>th</sup> June 2023.

## **8.2 Confirmation of the Proposed Route and EIA**

The responses received from the consultation process will be considered in combination with the findings of this RCD and inform the identification of the proposed route to be taken to next the phase. The proposed route will then progress to a more detailed review to identify an OHL alignment, including tower positions and transformer compound design. This will be informed by the EIA, detailed engineering ground surveys and discussions with landowners. The alignment, including all ancillary development, will be included in the application for Section 37 consent and deemed planning permission. Ancillary development will include all development necessary to construct and operate the grid connection. SPEN will consult fully with affected landowners and occupiers on all aspects of the grid connection and will give them an opportunity to comment on proposals as they progress.

## Appendix A Holford Rules

### Rule 1

Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

#### Note on Rule 1

(a) Investigate the possibility of alternative routes, avoiding altogether, if possible major areas of highest amenity value. The consideration of alternative routes must be an integral feature of environmental statements. If there is an existing transmission line through a major area of highest amenity value and the surrounding land use has to some extent adjusted to its presence, particularly in the case of commercial forestry, then 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, 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 (SAC)
- Special Protection Area (SPA)
- Ramsar Site
- National Scenic Areas (NSA)
- National Parks
- National Nature Reserves (NNR)
- Protected Coastal Zone Designations
- Sites of Special Scientific Interest (SSSI)
- Schedule of Ancient Monuments
- Listed Buildings
- Conservation Areas
- World Heritage Sites
- Historic Gardens and Designed Landscapes

### 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 land uses.



### **Rule 3**

Other things being equal, choose the most direct line, with no sharp changes of direction and thus fewer 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 background 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 the 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 higher voltage lines as far as possible independent of smaller lines, converging routes, distribution lines 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 where pleasant residential and recreational land intervenes between the approach line and substation, go carefully into the 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.

### 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.
- d) [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.



## Appendix B Horlock Rules

### Overall System Options and Site Selection

1. In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum.

### Amenity, Cultural or Scientific Value of Sites

2. The siting of new NGC substations, sealing end compounds and line entries should as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.

Notes:

1. Internationally and nationally designated areas of highest amenity, cultural or scientific value are:
    - National Parks;
    - Areas of Outstanding Natural Beauty;
    - Heritage Coasts;
    - World Heritage Sites;
    - Ramsar Sites;
    - Sites of Special Scientific Interest;
    - National Nature Reserves;
    - Special Protection Areas;
    - Special Areas of Conservation.
  2. Care should be taken in relation to all historic sites with statutory protection e.g. Ancient Monuments, Battlefields and Listed Buildings.
  3. Account should be taken of Government Planning Policy Guidance and established codes of practice.
  4. Account should be taken of any development plan policies relevant to the siting or design of substations.
- 
3. Areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable.

### Local Context, Land Use and Site Planning

4. The siting of substations, extensions and associated proposals should take advantage of the screening provided by land form and existing features and the potential use of site layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum.

Notes:

1. A preliminary study should be undertaken to identify the extent of land required to meet both operational and environmental needs.

2. In some instances it may be possible to site a substation partially or fully enclosed by existing woodlands.
  3. Topographical information should be obtained at an early stage. In some cases a geotechnical survey may be required.
5. The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum.

Notes:

1. Allow sufficient space for screening of views by mounding or planting.
  2. Consider appropriate noise attenuation measures where necessary.
  3. Use security measures which minimise visual intrusion from lighting.
  4. Consider appropriate on-site water pollution prevention measures.
  5. Consider adjoining uses and the amenity of local inhabitants.
6. The land use effects of the proposal should be considered when planning the siting of substations or extensions.

Notes:

1. Issues for consideration include potential sterilisation of nationally important land, e.g. Grade 1 agricultural land and sites of nationally scarce minerals.
2. Effects on land drainage.

## Design

7. In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum.

Notes:

1. With outdoor equipment, a preference should be given normally to a low profile design with low height structures and silhouettes appropriate to the background.
2. Use lightweight narrow section materials for taller structures especially for gantries over about 6 metres in height.
3. Commission exterior design and colours appropriate to the surroundings.
4. Materials and colours for buildings, equipment and fencing should be chosen to harmonise with local surroundings.
5. Where possible avoid the use of prominent insulators by consideration of available colours appropriate to the background.
6. Where possible site buildings to act as visual screens for switchgear.
7. Ensure that the design of high voltage and low voltage substations is co-ordinated by early consultation between NGC and its customers.
8. Where there are particular technical or environmental constraints, it may be appropriate to consider the use of Gas Insulated Switchgear (GIS) equipment which occupies less space and is usually enclosed within a building.
9. Early consideration should be given to the routeing of utility service connections.



8. Space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation.

Notes:

1. Assess the benefit of removing redundant substation equipment from existing sites where this would improve their appearance.
9. The design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings.

**Line Entries**

10. In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.
11. The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.

## Appendix C Project-Specific Routeing Considerations

Topic	Identified Constraint or Feature	Holford Rule	Routeing Consideration
<b>Landscape and Visual Amenity</b>	Visual amenity (settlements)	Rule 4 and Supplementary Notes	Route Options should be located away from settlement and residential properties as far as possible or make use of landform and woodland to minimise visual intrusion and reduce potentially adverse effects.
	Visual amenity scattered individual properties inc. 150m 'trigger' zone)	Rule 4 and Supplementary Notes	
	Landscape character (inc. sensitivity to or capacity for overhead lines)	Rules 4, 5 and 6	Route Options should avoid more sensitive landscapes as far as possible and respond to the character and grain of the landscape. Route Options should avoid crossing high points and ridgelines where possible and consider opportunities to make use of landform and woodland as a backcloth.
	Existing transmission and distribution network	Rule 6	Route Options should maintain a suitable separation distance from existing overhead lines in order to minimise the potential for adverse effects to occur as a result of a wirescape.
<b>Cultural Heritage</b>	Wilsontown Ironworks Scheduled Monument	Rule 1	Route Options should avoid or reduce as far as possible potentially adverse effects on designated archaeology and heritage sites including scheduled monuments, listed buildings and historic battlefields as well as their settings.
	Tashieburn, horse engine platform Scheduled Monument	Rule 1	
	Haywood deserted mining village Scheduled Monument	Rule 1	
	Woodmuir Farm, coke ovens and reservoir Scheduled Monument	Rule 1	
	Cleugh House, bell pits and inclined plane Scheduled Monument	Rule 1	
	Listed buildings	Rule 1	
	Non-designated archaeology (Historic Environment Record)	Rule 2	Route Options should avoid or reduce as far as possible potentially adverse effects on non-designated archaeology and heritage sites.
<b>Ecology (inc. woodland)</b>	Clyde Valley Woods Special Area of Conservation (SAC)	Rule 1	Route Options should take account of and avoid crossing the SSSIs which are present throughout the Study Area in order to avoid or reduce potentially adverse effects on them.
	Braehead Moss Site of Special Scientific Interest (SSSI)		
	Garrion Gill SSSI		
	Ancient Woodland Inventory Sites	Rule 2	Route Options should avoid areas of ancient and native woodland sites in order to avoid or reduce potentially adverse effects on woodland areas.
	Native Woodland for Scotland	Rules 4 & 5	



Topic	Identified Constraint or Feature	Holford Rule	Routeing Consideration
<b>Tourism and Recreation</b>	Recreational Walking/ Cycling Routes	Supplementary Notes	Route Options should avoid recognised walking or cycling routes where possible in order to avoid or reduce potentially adverse effects on users of them.
<b>Land Use and Other Infrastructure</b>	Settlements (including individual properties)	Supplementary Notes	Route Options should avoid routeing close to settlements or residential properties where possible in order to avoid or reduce potentially adverse effects on general amenity.
	Wind Farms	Rule 7	Where Route Options cross or are in the vicinity of existing or planned wind farms they should take account of a minimum separation distance from wind turbines of at least three times rotor diameter or the turbine height to blade tip plus ten percent in order to avoid any technical conflicts.
	Mineral extraction / opencast sites	Rule 7	Route Options should avoid operational mineral extraction sites, however, restored sites may provide feasible routeing opportunities.
	Other committed development	Rule 7	Route Options should consider other committed development in order to avoid or reduce potentially adverse effects or technical conflicts.
	Land Capability for Agriculture	n/a	Route Options should avoid higher classes of agricultural land capability where possible in order to avoid or reduce potentially adverse effects on agriculture.
	Commercial forestry	Rules 4 & 5	Route Options should avoid directly crossing commercial forestry where possible. Where avoidance is not possible consideration should be given to utilising existing wayleaves and reducing the amount of felling required.
<b>Physical Environment</b>	Watercourses/ bodies	n/a	Route Options should adhere to a 50 m separation zone from watercourses and bodies other than where they may require to be crossed.
	Flood zones	n/a	Route Options should in the first instance avoid flood zones. Where this is not possible, Route Options should cross flood zones where they are at their narrowest.
	Carbon and Peatland Mapping	Rule 2	Route Options should avoid areas identified as class 1 priority peatland habitat where possible in order to reduce potentially adverse effects as far as possible. Where such areas cannot be avoided Route Options should follow the shortest and most direct route where possible.
	Overhead lines route length	Rule 3	Route Options should follow the shortest and most direct route possible whilst taking account of other environmental and technical constraints or impacts.
	Existing transmission and distribution network	Rule 6	Route Options should take account of existing transmission and distribution network infrastructure in order to avoid any technical conflicts.
	Topography, elevation and side slopes	n/a	Route Options should take account of topography, elevation and side slopes avoiding areas which could affect constructability and/or operability.

Routeing and Consultation Document:  
Heathland Wind Farm Grid Connection

## Appendix D Routeing Consideration Figures



**PROJECT**  
Heathland Wind Farm Grid Connection

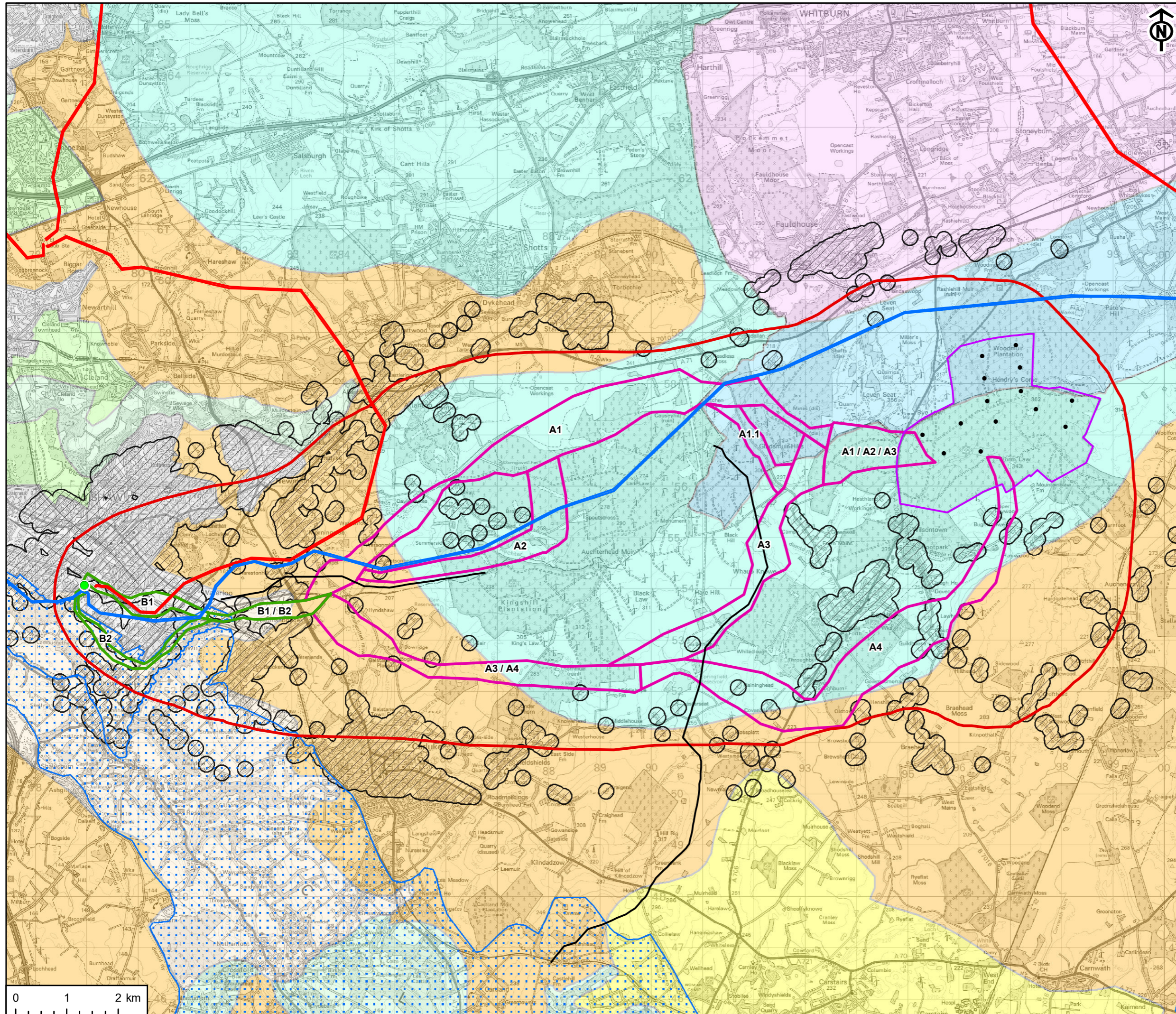
**CLIENT**  
SP Energy Networks

- KEY**
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - Sensitive Landscape Area / Area of Great Landscape Value
  - Residential Dwelling - 150m Buffer
  - SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV
  - Route Corridor Options**
  - A
  - B
  - Landscape Character Assessment (NatureScot)**
  - Broad River Valley
  - Incised River Valleys
  - Lowland Plateaux - Lothians
  - Plateau Farmland - Glasgow & Clyde Valley
  - Plateau Moorlands - Glasgow & Clyde Valley
  - Rolling Farmland - Glasgow & Clyde Valley
  - Upland Fringes - Lothians
  - Urban
  - Urban Fringe Farmland

**TITLE**  
Figure D1  
Landscape and Visual Considerations

**REFERENCE**  
HGC\_20230323\_RC\_A\_D1\_v2

**SHEET NUMBER** 1 of 1 **DATE** 23/03/23

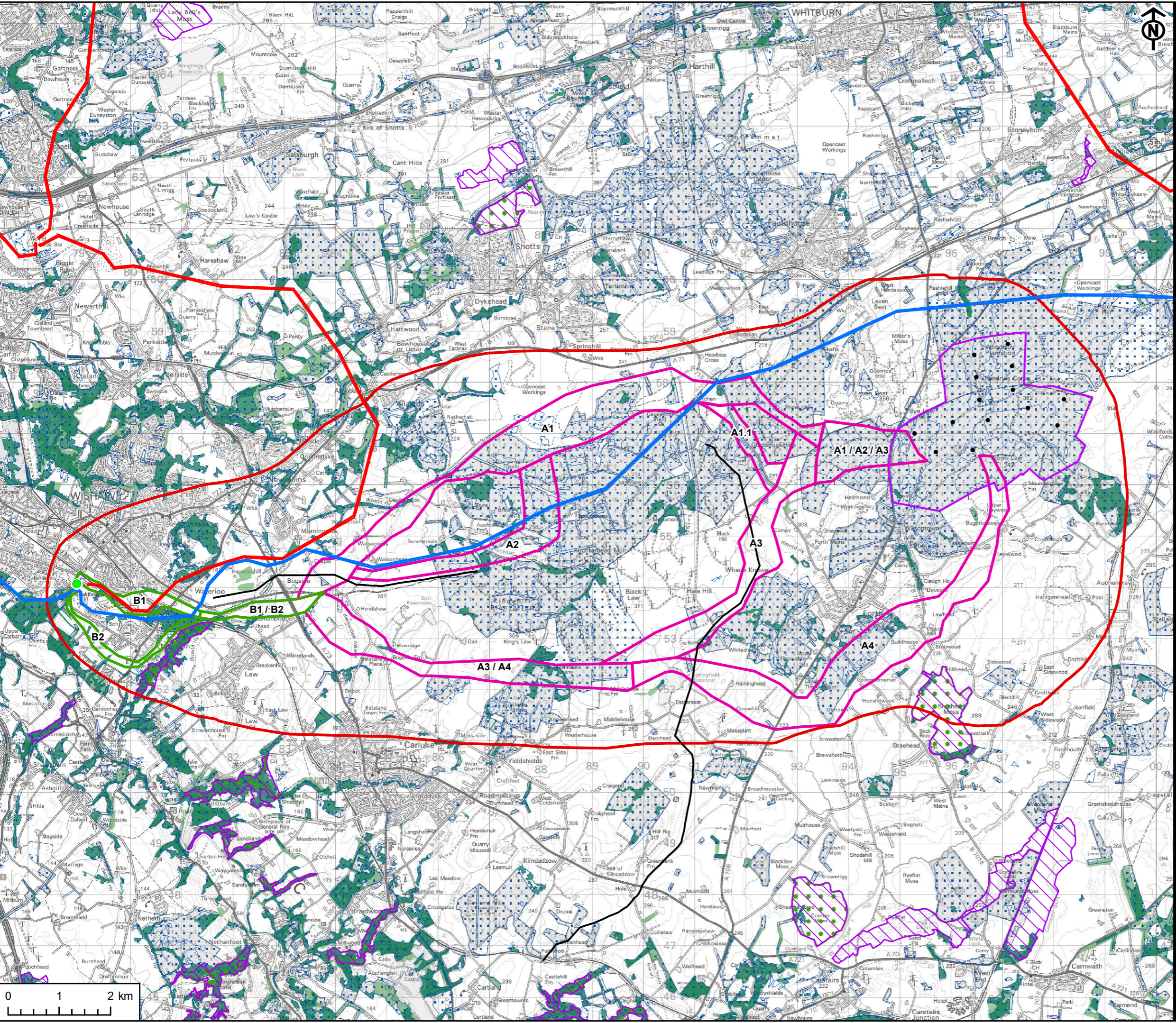


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Project Management Initials: DR Designer: LC Checked: DF Approved: TC

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- PROJECT**  
Heathland Wind Farm Grid Connection
- CLIENT**  
SP Energy Networks
- KEY**
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - Special Area of Conservation (SAC)
  - Site of Special Scientific Interest (SSSI)
  - Ancient Woodland
  - Native Woodland
  - National Forestry Inventory
  - SPT Overhead Transmission Network
  - Existing 132kV
  - Existing 275kV
  - Existing 400kV
  - Route Corridor Options
  - A
  - B

**TITLE**  
Figure D2  
Ecology & Forestry Considerations

**REFERENCE**  
HGC\_20230322\_RC\_A\_D2\_v1

**SHEET NUMBER**  
1 of 1

**DATE**  
22/03/23

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**PROJECT**  
Heathland Wind Farm Grid Connection

**CLIENT**  
SP Energy Networks

- KEY**
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - Category A Listed Building
  - Category B Listed Building
  - Category C Listed Building
  - Scheduled Monument
  - Conservation Area

- SPT Overhead Transmission Network**
- Existing 132kV
  - Existing 275kV
  - Existing 400kV

- Route Corridor Options**
- A
  - B

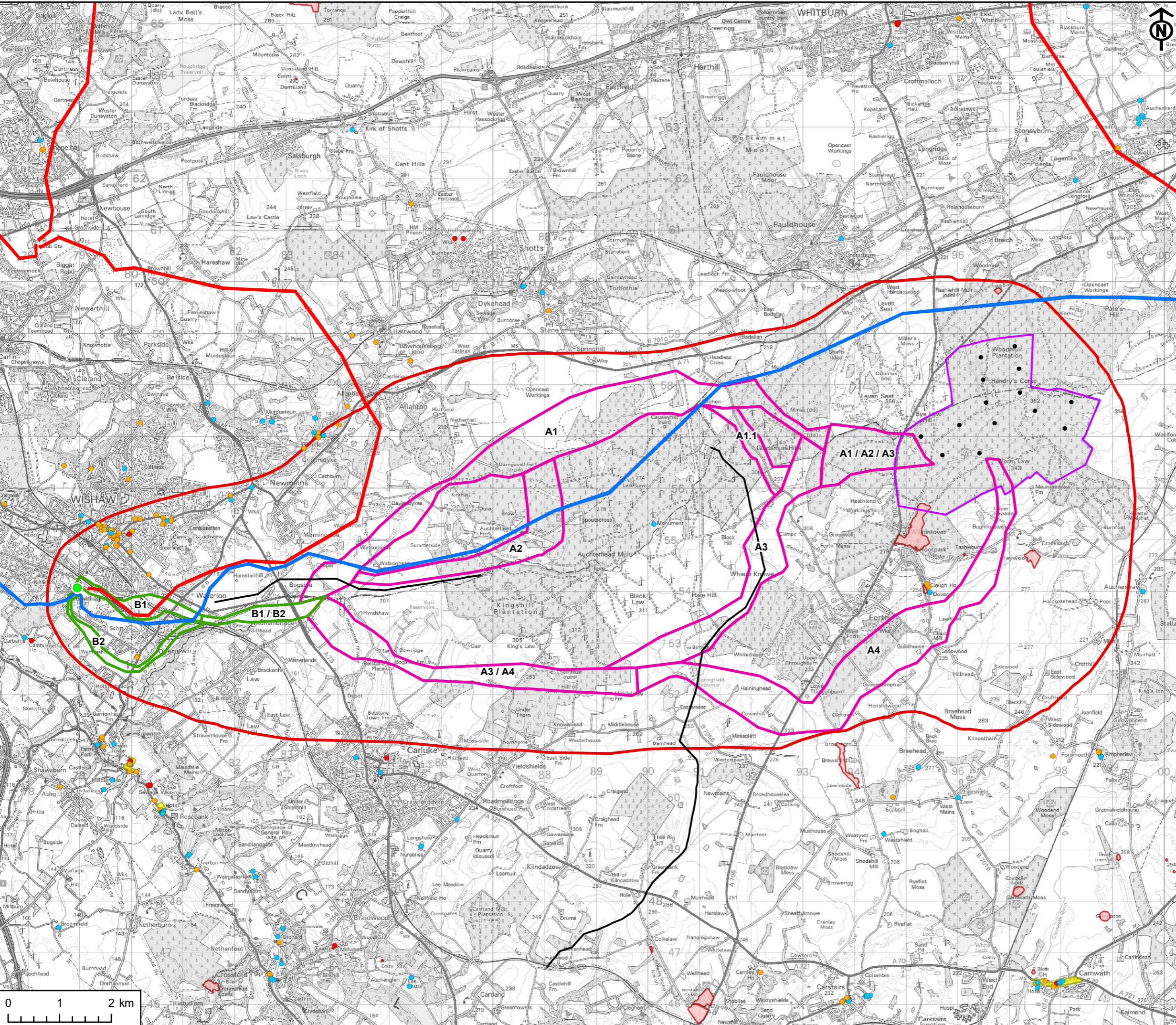
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Cultural Heritage Considerations

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HGC\_20230322\_RC\_A\_D3\_v1

**SHEET NUMBER** 1 of 1  
**DATE** 22/03/23

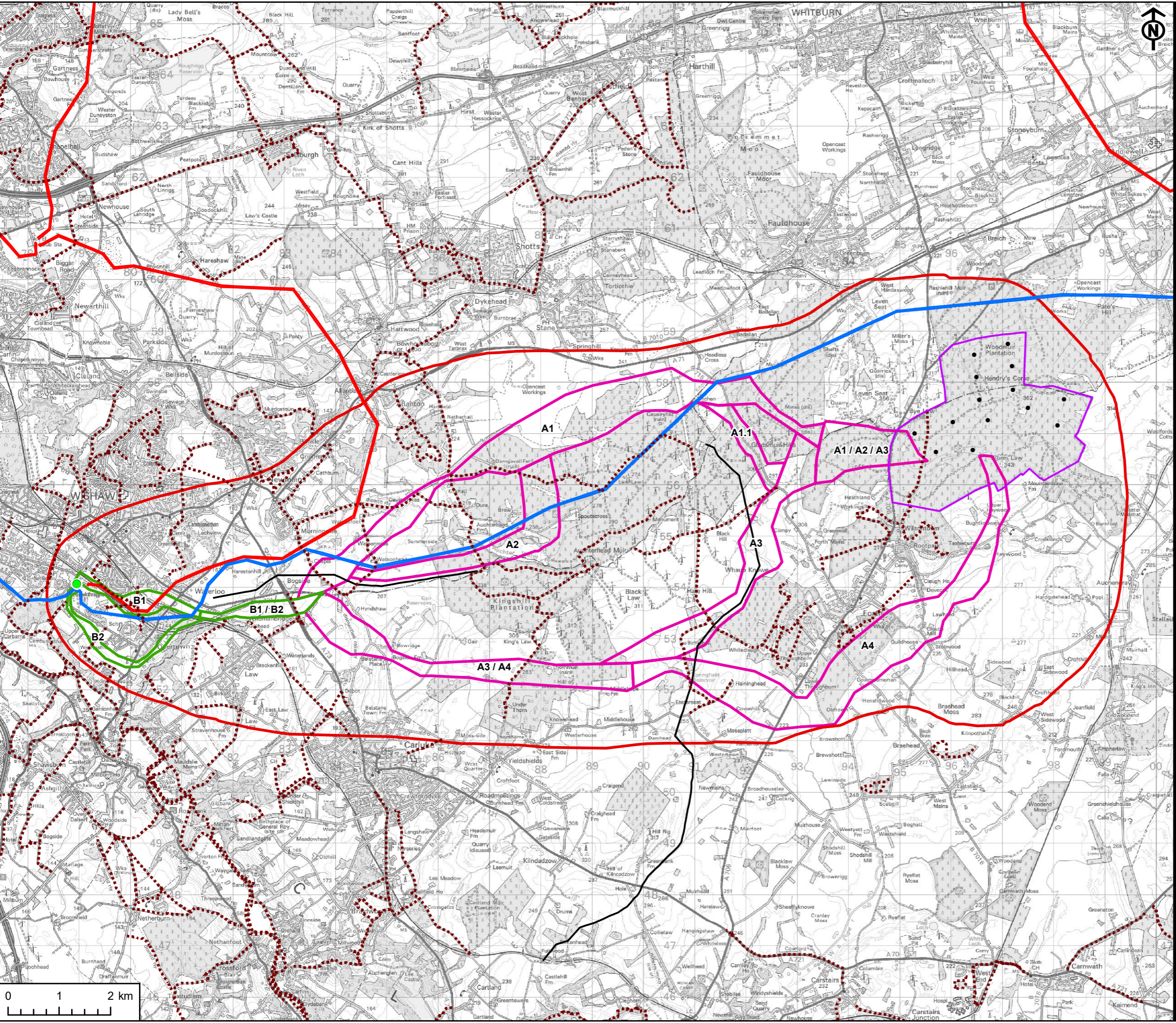
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**PROJECT**  
Heathland Wind Farm Grid Connection

**CLIENT**  
SP Energy Networks

**KEY**

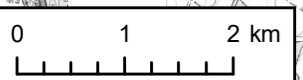
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- Heathland Wind Farm Site Boundary
- Heathland Wind Farm Turbine Location
- Wishaw 400 kV Substation Location
- Corepath
- SPT Overhead Transmission Network**
- Existing 132kV
- Existing 275kV
- Existing 400kV
- Route Corridor Options**
- A
- B

**TITLE**  
Figure D4  
Tourism and Recreation Considerations

**REFERENCE**  
HGC\_20230322\_RC\_A\_D4\_v1

**SHEET NUMBER**  
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**DATE**  
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PROJECT  
Heathland Wind Farm Grid Connection

CLIENT  
SP Energy Networks

- KEY
- Study Area
  - Heathland Wind Farm Site Boundary
  - Wishaw 400 kV Substation Location
  - Wind Turbine Location
  - Wind Turbine Location – Topple Buffer (Tip Height + 10%)
  - Levensat Quarry Reinstatement
  - Damside Opencast Reinstatement Area
  - SPT Overhead Transmission Network
    - Existing 132kV
    - Existing 275kV
    - Existing 400kV
  - Distribution Network
    - Existing 11kV
    - Existing 33kV
  - Route Corridor Options
    - A
    - B

TITLE  
Figure D5  
Land Use & Other Infrastructure Considerations

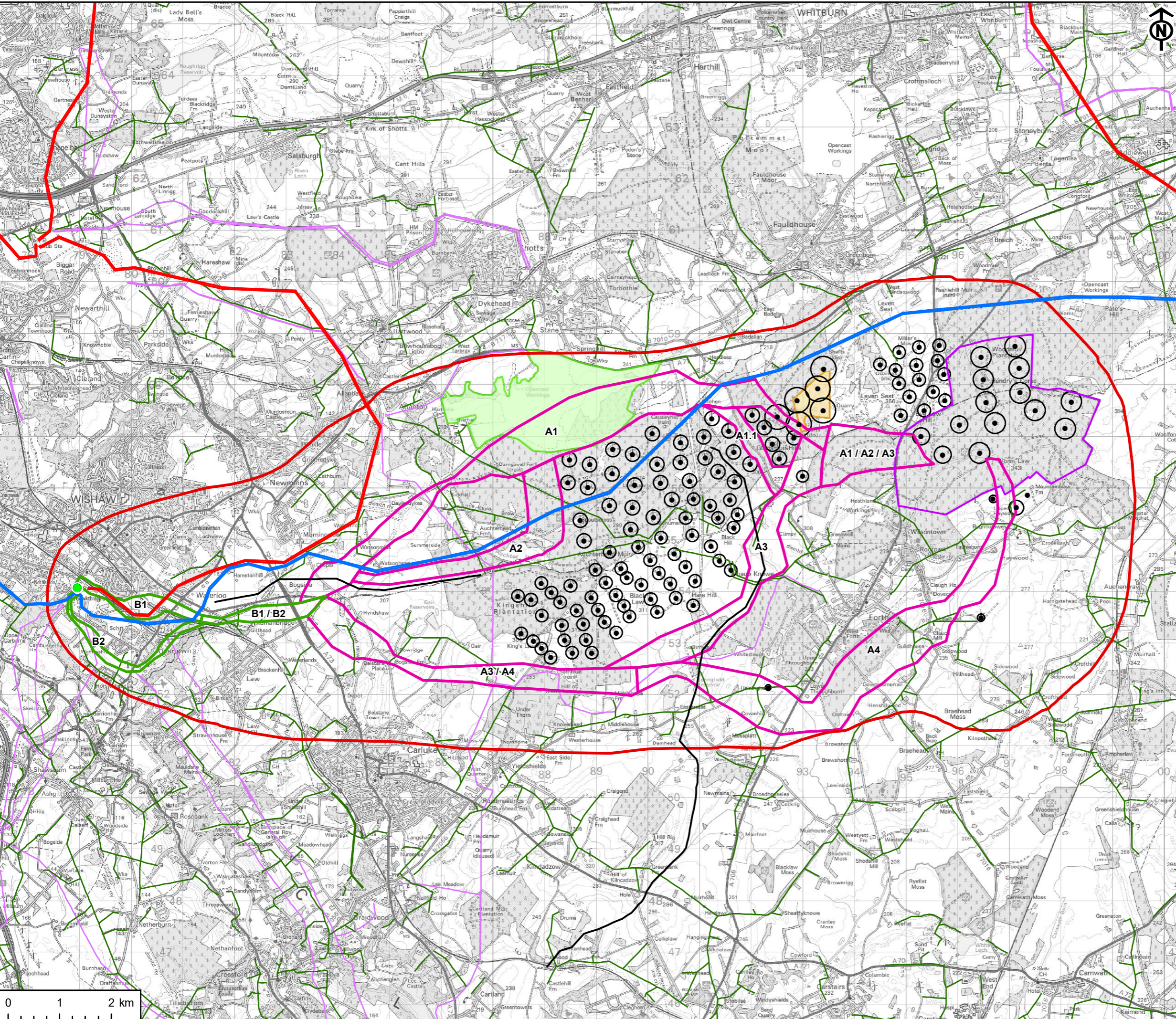
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SHEET NUMBER  
1 of 1

DATE  
23/03/23

Project Management Initials: DR Designer: LC Checked: DF Approved: TC

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**PROJECT**  
Heathland Wind Farm Grid Connection

**CLIENT**  
SP Energy Networks

- KEY**
- Study Area
  - Heathland Wind Farm Site Boundary
  - Heathland Wind Farm Turbine Location
  - Wishaw 400 kV Substation Location
  - Watercourse
  - Carbon-rich soil, deep peat and priority peatland habitat

- SPT Overhead Transmission Network**
- Existing 132kV
  - Existing 275kV
  - Existing 400kV

- Route Corridor Options**
- A
  - B

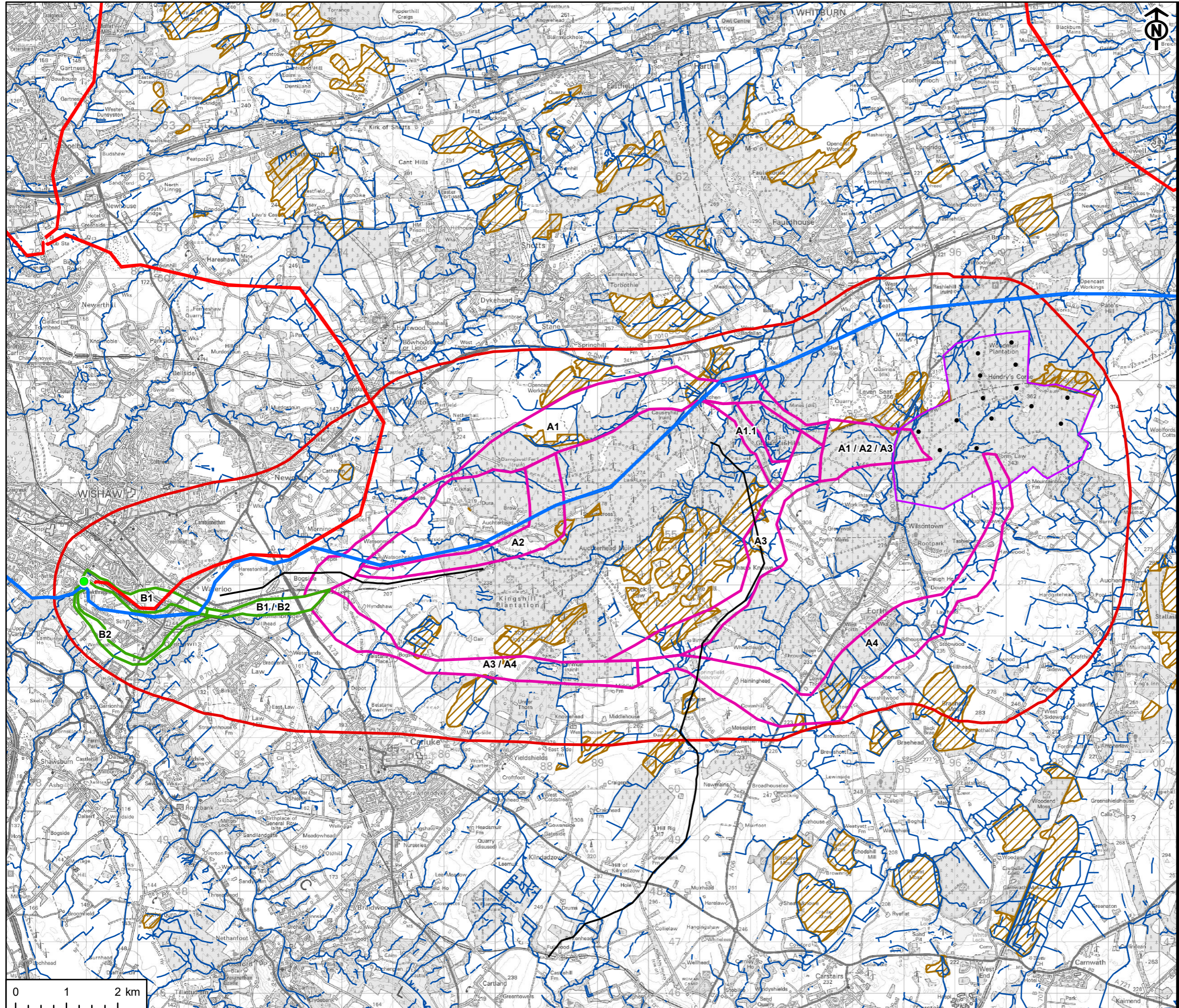
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Physical Environment Considerations

**REFERENCE**  
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**SHEET NUMBER** 1 of 1 **DATE** 22/03/23

Project Management Initials: DR Designer: LC Checked: DF Approved: TC

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