SP Energy Networks

PROPOSED 132KV CONNECTION, WETHER HILL

Routeing Consultation Report

March 2025

SP Energy Networks

QUALITY MANAGEMENT

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Glossary

Term	Definition
AOD	Above Ordnance Datum
ASA	Archaeologically Sensitive Area
BGS	British Geological Survey
EIA	Environmental Impact Assessment
Electricity Works Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000
Electricity Act	The Electricity Act 1989
ES	Environmental Statement
EIAR	Environmental Impact Appraisal Report
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HER	Historic Environment Record
Holford Rules	Guidelines developed by the late Lord Holford in 1959 for routeing overhead lines
Horlock Rules	Guidelines for the design and siting of substations
OS	Ordnance Survey
kV	Kilo-volt capacity of an electricity power line
LCT	Landscape Character Type
LCU	Landscape Character Unit
LDP	Local Development Plan
m	metres
MoD	Ministry of Defence
OHL	Overhead line: an electric line in the open air and above ground level
Preferred Site	The preferred site identified through this siting study process
Proposed Site	The amended proposed site which will go forward to Environmental Impact Assessment
RSA	Regional Scenic Area: area identified by local authorities of regional importance for scenic quality. Names vary between local authorities
RSPB	Royal Society for the Protection of Birds
Section 37 (s37) application	An application for development consent under Section 37 of the Electricity Act
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage, rebrand to NatureScot delayed
SPEN	Scottish Power Energy Networks

Term	Definition
SSSI	Site of Special Scientific Interest
TCPA	The Town & Country Planning (Scotland) Act 1997

1 INTRODUCTION

1.1 BACKGROUND TO THE PROPOSED DEVELOPMENT

1.1.1 SP Energy Networks (SPEN) has a legal duty under the Electricity Act 1989 to provide grid connections to new electricity generating developments and has been approached by the developers for the Wether Hill Wind Farm to provide a grid connection for the Wind Farm to the wider electricity transmission network.

1.1.2 In response to this, SPEN is proposing to construct a new 132kv grid connection (herein the 'Proposed Development') between Wether Hill Wind Farm and the proposed Quantans Hill Wind Farm Collector Substation (herein 'Quantans Hill Collector Substation'). The connection points for both wind farms are shown in **Figure 1**.

1.1.3 SPEN intend to submit an application for consent for the grid connection under Section 37 of the Electricity Act 1989.

1.2 PURPOSE OF THE REPORT

1.1.4 The primary purpose of the report is to identify a Preferred Route option to provide a connection from the Wether Hill Wind Farm Substation to the proposed Quantans Hill Collector Substation, taking account of technical, environmental and economic considerations.

1.1.5 This report presents information on the approach taken in the identification of route options, the methodology used for the appraisal of the route options and the findings of the studies and appraisals, culminating in the selection of the Preferred Route.

1.1.6 This report is intended to inform consultees of the Preferred Route selected, based on the environmental and technical studies undertaken, and offers the opportunity to provide feedback and comment on the proposals. The views and opinions of consultees will be considered and will feed into the development of the 'Proposed Route' which will be taken forward to the next stage in the process.

1.3 STRUCTURE OF THE REPORT

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

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

2 LEGAL FRAMEWORK

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

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

2.1 SCOTTISH POWER TRANSMISSION'S STATUTORY DUTIES

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

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

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

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

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

2.2 CONSENTING REQUIREMENTS

2.2.1 Section 37 (s37) of the Electricity Act requires that, with the exception of certain specific examples, all electricity lines exceeding 20 kV will require consent to be granted by the Scottish Ministers. This 's37 consent' gives approval to install, and keep installed, an overhead electricity line. To gain s37 consent a developer must make a s37 application.

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

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

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

2.2.5 Any works required to tie the Proposed Development to the operational Wether Hill Wind Farm Substation, including areas of temporary hard standing such as lay down areas and temporary accesses, are anticipated to be classed as Permitted Development'. However, SPEN will be applying for planning permission from Dumfries and Galloway Council as the planning authority for the proposed Quantans Hill Collector Substation separately under the TCPA.

2.3 THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017

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

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

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

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

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

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

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

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

- Characteristics of the development;
- Location of the development; and
- Characteristics of the potential impact, including the effectiveness of proposed mitigation.

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

3 PROPOSED DEVELOPMENT DESCRIPTION

3.1 CONNECTION REQUIREMENT

3.1.1 A new 132 kV transmission circuit, consisting of a mix of overhead line and underground cable, is required to connect the existing Wether Hill Wind Farm to the electricity network. The circuit will connect Wether Hill Wind Farm Substation to the proposed Quantans Hill Collector Substation. The total distance between the two connection points is approximately 9 km (in a straight line).

3.1.2 The approximate split of underground cable to overhead line is not yet known, as this will depend on several factors outlined in **Section 3.2** below.

3.2 DESIGN

3.1.3 SPEN's policy, in line with statutory license requirements is to seek a continuous OHL solution for all transmission connections and only where there are exceptional constraints are underground cables considered an acceptable design option. Such constraints can be found in urban areas and in rural areas of the highest scenic and amenity value. Additionally, underground cables may be required where the route passes in proximity to wind turbines; Section 6.3 outlines this consideration in more detail.

3.1.4 Whilst underground cables have visual benefits, there are associated technical and environmental and economic disadvantages including:

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

3.1.5 The key design assumption is that the Proposed Development will be a continuous OHL connection between the connection points, except for areas in which the connection passes in close proximity to existing or proposed turbines. For instance, underground cables will to be required for tie ins to the substations due to the existing and proposed Wind Farms in these locations. Should the appraisal identify any areas where a proposed OHL is likely to give rise to unacceptable effects, alternative options (such as further underground cable sections and alternative routes) will be considered at later stages of design.

WOOD POLES

3.1.6 The OHL is proposed as a 132kV connection to be supported by trident wood poles.

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

3.1.8 There are two configurations of trident wood pole; a 'single' pole and an ‘H’ pole. H-poles are used for ‘extreme environments’ (above 200 m Above Ordnance Datum (AOD)) as they are subject to greater ice and wind loadings, whereas single-poles are used in less extreme environments at lower altitudes. Plate 1 illustrates the main different pole types. Given areas surrounding the Proposed Development are above 200 m AOD, it is anticipated that both single pole and H-pole configurations will be used.

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

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

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

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

Trident Single Pole Intermediate (Foreground), Angle (Middle Ground)

Trident 'H' Pole Angle

Trident 'H' Pole Terminal

Plate 1: Trident Wood Pole Types

TIE-IN TO SUBSTATIONS

3.1.12 The circuit entry into each substation is anticipated to utilise underground cable. Any required works within the substation compounds will be covered within the individual planning application for the substation or via Permitted Development Rights, as required.

3.3 CONSTRUCTION

3.1.13 The OHL construction would comprise of the following stages:

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

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

4 APPROACH TO ROUTEING

4.1 SPEN'S APPROACH TO ROUTEING

4.1.1 The Government, Ofgem and the electricity industry, including SPEN, have reviewed their positions on OHLs. They remain of the view that the need to balance economic, technical and environmental factors, as a result of statutory duties and licence obligations, continues to support an OHL approach in most cases.

4.1.2 It is therefore SPEN's view that, wherever practical, an OHL approach is taken when planning and designing new transmission lines. However, SPEN accepts that there are specific circumstances in which an undergrounding approach should be considered

4.1.3 In 2020, SPEN published a summary document outlining the approach taken to routeing transmission infrastructure[1] (hereafter referred to as the 'SPEN's Approach to Routeing'). Section 2 of this document addresses 'The SPEN Approach to Routeing and Siting', following the Holford Rules. The Holford Rules are presented in **Appendix A** and include the following considerations:

Overall System Options and Route Selection

4.1.4 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

4.1.5 The routeing of the new transmission connection 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. 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 Route Planning

4.1.6 The routeing of cables should take advantage of the screening provided by landform and existing features and the potential use of route layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum. The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum. The land use effects of the proposal should be considered when planning the route.

[1] Major Electrical Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment, SPEN (2021). Available at https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf

Design

4.1.7 In the design of new cables, 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. 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. The design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the layout and design to fit in with the surroundings.

4.2 ROUTEING OBJECTIVE

4.2.1 This study follows established best practice in routeing first codified as the 'Holford Rules' (see **Appendix A)** in combination with SPEN's Approach to Routeing[1].

4.2.2 Under the Electricity Act, SPEN is required to consider environmental, technical and economic considerations, and to reach a balance between them. This means that the Proposed Route would be the one, selected after an appraisal of a number of route options, which balances technical feasibility and economic viability with the least disturbance to people and the environment. Following engagement with relevant stakeholders, including local communities, professional judgement is used to establish the balance.

4.2.3 SPEN's routeing objective is to identify a technically feasible and economically viable route, between the Wether Hill Wind Farm and the proposed Quantans Hill Collector Substation, which causes the least disturbance to people and the environment.

4.3 ESTABLISHED PRACTICE FOR ROUTEING

4.3.1 It is generally accepted across the electricity industry that the guidelines developed by the late Lord Holford in 1959 for routeing OHLs, 'The Holford Rules' should continue to be employed as the basis for routeing high voltage OHLs. The Holford Rules were reviewed circa 1992 by the National Grid Company (NGC) Plc (now National Grid Transmission (NGT)) as owner and operator of the electricity transmission network in England and Wales, with notes of clarification added to update the Holford Rules. A subsequent review of the Holford Rules (and NGC clarification notes) was undertaken by Scottish Hydro Electric Transmission Limited (SHETL) in 2003 to reflect Scottish circumstances.

4.3.2 The Holford Rules and the NGC and SHETL clarification notes are included in **Appendix A**. These guidelines for the routeing of new high voltage overhead transmission lines form the basis for routeing the Proposed Development. Key principles of the Holford Rules include avoiding prominent ridges and skylines, following broad wooded valleys, avoiding settlements and residential properties and maximising opportunities for 'backclothing' infrastructure.

4.3.3 The approach is an iterative, systematic evaluation of route alternatives with professional judgement used to establish explicitly the balance between factors. Consultation is an integral part of the routeing strategy process.

4.4 OVERVIEW OF ROUTEING PROCESS

STUDY AREA

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

ENVIRONMENTAL CONSIDERATIONS

4.4.1 Statutory duties imposed by Section 38 and Schedule 9 of the Electricity Act require licence holders to seek to preserve features of natural and cultural heritage interest, and mitigate where possible, any adverse effects which a development may have on such features. The construction and operation of the Proposed Development will have potential effects on people and the environment, including potential effects on (in no hierarchical order):

- Landscape, views and visual amenity;
- Cultural heritage;
- Ecology and nature conservation;
- Socioeconomics (tourism and recreation);
- Land Use (agriculture);
- Planning allocations and major applications;
- Forestry and woodland;
- Noise;
- Traffic (access for construction); and
- Geology, hydrology and hydrogeology.

4.4.2 Some effects can be avoided or limited through route selection. Other effects are best mitigated through embedded and additional mitigation measures. These are reviewed as part of the environmental appraisal process.

4.4.3 Following this, the potential constraints and opportunities for the Proposed Development can be identified and used to formulate a routeing strategy.

ECONOMIC CONSIDERATIONS

4.4.4 In compliance with Schedule 9 of the Electricity Act, the routeing objective requires the proposed connection to be economical. It is understood that this is interpreted by SPEN as meaning that as far as practicable, and all other things being equal, the route should minimise the required OHL diversions, and should avoid areas where technical difficulty or compensatory schemes would render the Proposed Development uneconomical.

TECHNICAL CONSIDERATIONS

4.4.5 Technical considerations potentially include existing infrastructure (in this case existing and proposed Wind Farms and existing OHLs), landowner constraints, altitude and slope angle and physical constraints such as large water bodies and flood zones.

4.4.6 These technical considerations are not considered as being absolute constraints but are a guide to routeing. The approach taken is to identify preferred environmental options informed by a staged review of technical issues.

4.5 IDENTIFICATION AND APPRAISAL OF ROUTE OPTIONS

4.5.1 Following identification of the Study Area, a number of possible ‘route options’ for the Proposed Development are identified. This process involves the avoidance where possible of areas of high ‘amenity’ value. These areas generally include areas of natural and cultural heritage value designated at a national, European or international level as these are afforded the highest levels of policy protection. The Study Area also includes consideration of existing features, such as wind turbines, through which technical limitations would mean future connections would be unachievable.

4.5.2 Each route options is then appraised against environmental criteria. At this early stage, a route option may be rejected, modified or studied in more detail. In conjunction with the collection of relevant data and the evaluation of route options, the routeing considerations may be re-appraised and updated as more information becomes available. Route options may then be rejected or modified, or new route options developed.

4.5.3 This stage is iterative based on the findings of the appraisal and consultation responses and may result in modification to the routeing strategy and/or the route options which then require reappraising.

4.6 SELECTION OF PREFERRED ROUTE

4.6.1 The comparative appraisal of route options leads to identification of an 'emerging preferred route' which is subjected to a technical review to confirm that the emerging preferred route is technically feasible. At this stage the emerging preferred route is subjected to a review of potential cumulative effects with other proposed connections within the Study Area, as outlined below for this Proposed Development. Following the cumulative review, with associated revisiting or modification of routes as necessary, the 'Preferred Route' is selected.

4.6.2 The Preferred Route is the option which is considered technically feasible and economically viable whilst causing the least disturbance to the environment and to people. This is then taken forward for stakeholder and public consultation. The Preferred Route is subjected to further consideration in response to public consultation and may be modified further in the light of these consultations. Modifications may result in further consultation if necessary.

4.6.3 The Preferred Route, modified to take into account consultations and the consideration of specific local issues, is then confirmed as the 'Preferred Route'. The Preferred Route is subjected to further environmental survey, detailed design and subsequent environmental appraisal, resulting in the further modifications required to avoid and/or minimise effects on the environment.

5 IDENTIFICATION OF ROUTE OPTIONS

5.1 STUDY AREA

5.7.1 An 'Initial Study Area' was identified as an area 2 km either side of a straight-line route between the two connection points and constituted the broad area within which options for the Proposed Development could reasonably be located.

5.7.2 A desktop review of environmental, socio-economic and technical features both within and surrounding the 'Initial Study Area' was conducted. The review identified areas of highest amenity value and major technical constraints. The 'Initial Study Area' was subsequently refined to avoid these features. Additionally, areas of expansion were identified, which could provide opportunities to reduce potential environmental impacts.

5.7.3 The result of this review was the identification of the Study Area, which is shown in **Figure 2**. An overview of the Study Area characteristics is provided below.

CHARACTERISTICS OF THE STUDY AREA

5.7.4 The topography of the Study Area comprises a series of gently undulating hilly terrain, interspersed by river valleys. Elevation of the routes ranges from approximately 190 m to 680 m Above Ordnance Datum (AOD). Hill summits are present and include: Quantans Hill, Craigengillan Hill, Auchrae Hill, Wether Hill, and Martour Hill which form notable features within the landscape of the area. Steep-sided River valleys are also, present, most notably to the south of Wether Hill near Carroch.

5.7.5 Approximately 50 to 60% of the Study Area is covered with forest and woodland. Woodland is predominantly coniferous, however, areas of young trees, felled areas, assumed woodlands, ground preparation areas, broadleaved and mixed mainly broadleaved woodland are also present. Merrick Kells Special Area of Conservation (SAC) and Upper Nithsdale Woods SAC are located within 10 km of the Study Area.

5.7.6 The Water of Ken forms the main hydrological feature within the Study Area. It meanders from north to south through the central portion of the Study Area, flowing into Kendoon Loch to the south. The Water of Ken has numerous tributaries which rise in the route. Auchrae Burn; Benloch Burn; Benbrack Burn, Black Burn; Corlae Burn; Cornharrow Burn; Craigengillan Burn; Craigencarse Burn; Craiglour Burn; Dibbin Lane; Dry Burn; Glenjaan Burn; Goat Strand; Hare Strand; Knockgray Burn; Little Auchrae Burn; Long Burn; Marbrack Burn; Minnick Burn; Poldores Burn; Polhay Burn and the Polshagg Burn. Furthermore, there are several unnamed and non-Water Franework Directive (WFD) designated watercourses throughout the Study Area.

5.7.7 A number of regionally important and minor local roads and tracks are present and include A713 and B729. The A713 is a long and scenic A-road which traverses the hills between Ayr and Galloway. The route enters in the northwest near Lamford Hill, routing through the central extent of the Study Area before exiting to the southeast near Polquhanity. The B729 is a long B-road which passes through scenic landscape in the southern part of Scotland, routing between Carsphairn in the northwest and the A76 in the southeast. Various unclassified roads and tracks are also present within the Study Area.

5.7.8 The Study Area is sparsely settled, with clusters of residential properties settled. A large cluster of properties is identified within the woodland to the west of Wether Hill, along Stroanfreggan Burn. A further cluster is identified along the Water of Ken at Moorbrock. Notable properties within this cluster include River Ken Cottage, which is also a Bed and Breakfast. The nearest large settlement is Carsphairn village, located approximately 2 km south west of the Study Area.

5.2 ROUTE OPTIONS

5.8.1 Given the nature of OHLs the primary environmental effects are likely to be landscape and visual effects, including effects on the setting of heritage assets. The best way to limit adverse effects on landscape and visual amenity is by careful line routeing, led by landscape architects, based on professional judgement and informed by fieldwork.

5.8.2 Holford Rules 1 and 2, as described in **Appendix A**, form the basis for the landscape led identification of route options. In addition, Rules 4 and 5 of the Holford Rules identify that OHL infrastructure is judged to be more widely visible from surrounding areas when located on higher ground, for example ridges and skylines. Holford Rule 3 which states that, other things being equal, the most direct line should be chosen, with no sharp changes in direction, is also taken account of in identifying route options.

5.8.3 The nature of the topography and of the technical and environmental constraints within the Study Area have been reviewed and informed the identification of two main 'route options': Route Option 1 and Route Option 2. These options have been broken down into route sections to assist in the options appraisal. Two alternative sections (Section 2b and Section 2c) have been identified for Route Option 2. These link into Route Option 1 to provide further routeing flexibility and as such have been included. The Route Options are shown in **Figure 3**.

6 BASELINE REVIEW

6.1 INTRODUCTION

6.1.1 To inform the appraisal of the identified Route Options, and to ensure information used as part of this appraisal is up to date, a review of the planning policy context, technical considerations and environmental considerations within the Study Area was undertaken. Bespoke buffers were applied to the Study Area in order to capture environmental considerations located outside the Study Area, but which could potentially still be impacted by the Proposed Development. The results of this review are outlined below.

6.2 PLANNING POLICY CONTEXT

NATIONAL PLANNING POLICY

NATIONAL PLANNING FRAMEWORK 4 (NPF4) 2023

6.1.2 The National Planning Framework 4[2] (NPF4) sets out the spatial strategy for Scotland's development and commits to increase renewable energy generation by 2045. In order to facilitate this and enhance the development of onshore wind in rural areas, electricity grid enhancements will need to take place across Scotland. The improvement of the high voltage electricity transmission network of or in excess of 132 kV is listed as a National Development.

SCOTTISH PLANNING POLICY (SPP) 2014

6.1.3 The SPP[3] was published in 2014 and reflects the Scottish Ministers' priorities for operation of the planning system and for the development and use of land.

6.1.4 Paragraph 155 states that *"Development plans should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved, in line with national climate change targets, giving due regard to relevant environmental, community and cumulative impact considerations"*.

LOCAL PLANNING POLICY

6.1.5 Local Development Plan (LDP) policies are material considerations in the decision-making process alongside national planning policy. The relevant local plan(s) with the Study Area is the Dumfries and Galloway's second Local Development Plan (LDP2)[4].

6.1.6 The LDP2 provides the planning framework and guides the future use and development of land in town, villages and the rural area. The LDP2 also indicates where development, including regeneration, should happen and where it should not.

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[2] National Planning Framework 4 (2023). Available online at: https://www.gov.scot/publications/national-planning-framework-4/ [Accessed 02/05/24]

3 Scottish Planning Policy (2014). Available online at: https://beta.gov.scot/publications/scottish-planning-policy/pages/2/ [Accessed 02/05/24]

4 Dumfries and Galloway Local Development Plan 2 (2019). Available online at: https://new.dumgal.gov.uk/planning-building/planning/planning-policy/local-development-plan/local-development-plan-2-ldp2 [Accessed 02/05/24]

6.1.7 One of the key aims of the LDP2 is to support the delivery of infrastructure. It states that *"The provision of infrastructure is fundamental to the deliverability of a development proposal and in many circumstances, development will not be allowed to proceed if the infrastructure and service improvement requirements cannot be met"*.

6.1.8 In particular, the LDP2 is supportive of the development of renewable energy schemes and associated infrastructure but recognises the potential environmental and socio-economic impacts this development may have. It states *"The Council has been supportive of the development of renewable energy and continues to be supportive of a diverse range of renewable energy sources. However, support for renewable energy proposals must be balanced against the impacts that such developments can have on the environment and communities"*.

6.1.9 Dumfries and Galloway are currently preparing a third Local Development Plan (LDP3). LDP3 is currently undergoing public consultation and will be adopted in late 2027.

6.3 TECHNICAL CONSIDERATIONS

6.3.1 The key technical considerations identified within the Study Area are related to constructability; slope of the ground and construction access.

6.3.2 The technical requirements for wood pole OHLs become more onerous with altitude because of issues such as wind loading and icing risk. Altitudes below 200 m are generally considered 'normal environments', and above 200 m 'extreme environments' where a H-pole design is appropriate. As previously discussed, large areas of the Study Area are above 200 m AOD.

6.3.3 Hill slopes in the area are generally relatively gentle but there are a number of areas of steeper ground. **Figure 4** shows the study area coloured by height which identifies the areas over 200 m AOD and the areas of steeper ground, over 10% gradient.

6.3.4 The proximity of the OHL to operational and proposed Wind Farms and transmission infrastructure has also been taken into consideration. There are three constraints to be considered as detailed in Energy Networks Association's document Separation between Wind Turbines and Overhead Lines[5,6] and summarised as follows:

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

6.3.5 Five operational or proposed Wind Farms have been identified within the Study Area. **Table 6-1** and **Figure 4** outline these Wind Farms, and their 3-times rotor diameter distances.

[5] Energy Networks Association (2012): Engineering Recommendation L44, Separation between Wind Turbines and Overhead Lines Principals of Good Practice

6 Energy Networks Association (2016): Technical Specification 43-8, Overhead Line Clearances

Table 6-1 Operational and Proposed Wind Farms within the Study Area, and their 3-times rotor diameter distances

Wind Farm Name	Operational or Proposed?	3-times rotor diameter distance (m)
Manquhill	Proposed	489
Quantans Hill	Proposed	510
Shepherds' Rig	Proposed	450
Wether Hill	Operational	486
Cornharrow	Proposed	489

6.4 ENVIRONMENTAL CONSIDERATIONS

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

- Designated or sensitive sites and other constraints from the MAGIC website, Scotland's environment map, NatureScot Site Link;
- Archaeological designations and other recorded sites from Historic Environment Scotland;
- Landscape Character Assessments and Landscape Character Types from NatureScot;
- Scottish Forestry Geographic Information System database and maps;
- Scottish Environment Protection Agency (SEPA) Scottish Flood Hazard and Risk areas;
- Review of the West Lothian Local Development Plan 2018;
- Review of OS mapping (1:50,000 and 1:25,000) and aerial photography (Google Earth Pro, Google Streetview, Bing maps);
- Scottish Government's Scotland's Noise Map;
- Extrapolation of OS OpenData to identify further features including locations of watercourses and waterbodies; and
- Review of other local information through online and published media such as tourism sites and walking routes.

6.4.2 An overview of the baseline environmental information for relevant environmental aspects is provided below and are illustrated on **Figures 5 to 10**.

LANDSCAPE AND VISUAL AMENITY

Topography

6.4.3 Within the Study Area, the topography comprises a series of gently undulating hilly terrain, interspersed by river valleys. Elevation of the Study Area ranges from approximately 190 m to 680 m AOD. Hill summits are present within the Study Area and include: Quantans Hill, Craigengillan Hill, Auchrae Hill, Wether Hill, and Martour Hill which form notable features within the landscape of the area. Steep-sided river valleys are also present, most notably to the south of Wether Hill near Carroch.

6.4.4 The topography within the 3 km visual buffer area within and surrounding the Study Area is striking and varied, shaped by the process of glaciation during the last ice age. Topographical features include the southern uplands (associated with the Cairnsmore of Carsphairn and Beninner, located within to the northeast of the Study Area), the rugged uplands and the upper dale comprising medium scale fields of arable fields and grassland.

Watercourses

6.4.5 The Water of Ken is the main water course within the Study Area. It flows from north to south through the central portion of the Study Area, flowing initially into Kendoon Loch to the south and onwards to Loch Ken. The Water of Ken has numerous tributaries which rise in the Study Area.

6.4.6 Several smaller watercourses are also present within the Study Area and 3 km buffer area which include but are not limited to: Polhay Burn, Marbrack Burn, Polshagg Burn, Craigengillan Burn, Stroanfregan Burn, Stroanshalloch Burn which has been dammed to form a small reservoir to the north-east of Carroch. These are discussed in more detail in the **Section 7**.

Forests

6.4.7 A large proportion of the Study Area is covered by forest which forms part of the National Forest. A large area of forest on Craigengillan Hill is Dedicated Woodland[7]. A small narrow strip of Ancient Woodland lies northeast of Wether Hill on the east boundary of the Study Area within the lower reaches of the steepsided incised valley of the Glenjaan Burn. There are no other Ancient Woodlands within the Study Area.

Landscape Designations

6.4.8 There are a number of international, national and regional environmental and landscape designations within the Study Area and a 3 km buffer area, as outlined in **Table 6-2** below. This buffer is determined based on professional judgment and assumes that there is little/no potential for adverse effects outside this area.

Table 6-2 Landscape Designations within the Study Area and 3 km buffer area

Designation Name	Details and Location in relation to the Study Area
International Designations	
UNESCO Galloway and South Ayreshire Biosphere Reserve	The Study Area lies entirely within the UNESCO Galloway and South Ayrshire Biosphere Reserve. This international designation recognises the area as “a world class visitor destination and pioneer of sustainable tourism” and promotes sustainable development, management and tourism in support of UNESCO’s 17 Sustainable Development Goals. It is managed by the Galloway and Southern Ayrshire Biosphere Partnership.
Galloway International Dark Sky Park	Galloway International Dark Sky Park (contiguous boundary with Galloway Forest Park) lies outside, and to the west of, the Study Area. As a Gold Tier Dark Sky Park, it is designated for exceptional

[7] Scottish Forestry Dedicated Scheme (Basis I & II was introduced in 1947 to encourage landowners to retain their land in forestry and to introduce good practice. Basis III was introduced in 1974, encouraging the planting of broadleafs and providing grants for planting.

Designation Name	Details and Location in relation to the Study Area
	quality of the night sky in this area. This is protected by policy ED11 of the Local Plan 2 and Supplementary Guidance . The Study Area lies within the designated Transition Zone (a 10 mile radius around the parks boundary), within which, "it is desirable that all external business and domestic lighting installed in the zone is dark sky friendly".
National Designations	
Proposed Galloway National Park	The Study Area lies within the proposed Galloway National Park[8] boundary, issued under Section 2 of the National Parks (Scotland) Act 2000. This Act states that *"Scottish Ministers may propose the designation of an area as a National Park and the establishment of a National Park authority if it appears to them that the conditions in Section 2(2) of the Act are or may be satisfied in relation to that area"*[9] The eastern boundary of the proposed National Park follows the line of the A713 through St John's Town of Dalry and Carsphairn to the west of the Study Area. The application for designation of a National Park is in progress, with the decision process, further public consultation and development of a Designation Order taking place between Spring 2025 – Spring 2026.
Regional Designations	
Galloway Forest Park – Dark Skies	Galloway Forest Park, established in 1947, is situated within Dumfries & Galloway outside the Study Area to the southwest/west. This represents 78,000 hectares of park. The central park area has been set aside as a central "core" for preservation of dark skies and wildlife, with a policy of no permanent illumination.
Non-inventory – Knockgray Park Gardens and Designated Landscape (GDL)	Knockgray Park, located north-east of Carsphairn, and approximately 300 m south-west of the Study Area, is recognised as a designed landscape of sufficient value to be recognised locally, although it is not on the Historic Environment Scotland Inventory of Gardens and Designed Landscapes. Whilst designed landscapes are considered to be Cultural Heritage assets, they are recognised as having a particular landscape value and form a constraint to routeing.

[8] Map of the National Park proposal available online at: https://static1.squarespace.com/static/62b44bc860c165721b088e9c/t/65ddfffaed791829fc1635aa/1709047807095/Galloway+National+Park+Proposal+Outline+Area+Map.jpg

[9] Supporting document available online at: https://www.gov.scot/publications/proposal-scottish-ministers-national-park-galloway/pages/4/

Designation Name	Details and Location in relation to the Study Area
Dumfries and Galloway Regional Scenic Areas (RSA) – RSA 4 Galloway Hills	The west of the Study Area is located within the Dumfries and Galloway Regional Scenic Area (RSA) – RSA 4 Galloway Hills. The Galloway Hills Regional Scenic Area is protected by policy NE2 of the Local Development Plan and is the largest regional scenic area in Scotland. It encompasses uplands, valleys and coastal landscapes, including the Galloway Uplands. The designation is important primarily for the strong contrast of the Galloway Hills in juxtaposition with the valley and coastal landscapes which give rise to 'a sweeping and dramatic views of hills'[10]. The Galloway Hills RSA extends across the western part of the Study Area.
Dumfries and Galloway Regional Scenic Areas (RSA) – RSA 8 Thornhill Uplands	RSA 8 Thornhill Uplands extend into the east of Study Area. The western-most part of this RSA includes the area immediately surrounding Wether Hill. This western boundary of the RSA encompasses the *"visual envelope of the …Dalwhat and Castlefair Upland Glens where the western tributaries of the Nith bisect the hills of the Southern Uplands and Foothills"*[10]. Key characteristics include: • the southern uplands - displaying particularly strong sculptural relief and concentrations of heather moorland, and where landscape types are scenically juxtaposed with deep, steep sided valleys), and • foothills - areas juxtaposed with and forming contrasting visual envelopes to main valleys.

Landscape Character

6.4.9 As a signatory to the European Landscape Convention (2000), the UK seeks to provide suitable protection, management and planning to maintain the quality of landscapes, whether designated or not. The Convention sets great store by identifying and assessing landscapes, and in line with this, NatureScot has characterised the whole of Scotland through its Landscape Character Assessment, creating a single digitised dataset (published in 2019) that splits the country into Landscape Character Types.

6.4.10 The characterisations provided in the 2019 NatureScot Character Assessment have been used for the purposes of this initial desktop review to identify key characteristics of the landscape in the Study Area.

6.4.11 There are five Landscape Character Types (LCTs) within the Study Area, as shown on **Figure 5**. These include:

- LCT 178 Southern Uplands with Forest – Dumfries & Galloway;
- LCT 160 Narrow Wooded River Valleys – Dumfries & Galloway;
- LCT 177 Southern Uplands – Dumfries & Galloway;

[10] Dumfries and Galloway Council: Local Development Plan – Regional Scenic Areas (2014). Available online at: https://www.dumgal.gov.uk/media/17552/Local-Plans-Technical-Paper-No-6-Identification-of-Regional-Scenic-Areas/pdf/Regional_Scenic_Areas_Technical_Paper_(including_Errata_pages).pdf [Accessed 24/10/24]

- LCT 165 Upper Dale – Dumfries & Galloway; and
- LCT 166 Upper Glens – Dumfries & Galloway.

6.4.12 The key characteristics of these LCTs are described in **Table 6-3** below.

Table 6-3 Landscape Character Types within the Study Area

Landscape Character Type	Characteristics
LCT 178 - Southern Uplands with Forest – Dumfries & Galloway	This LCT occurs on the northern and eastern fringes of Dumfriesshire and extends into neighbouring authority areas such as the Scottish Borders and South Ayrshire. The altitude ranges between 200-500 m and is characterised by large smooth domed or slightly conically shaped hills. The hills are dissected by steeply sided clefts and glens and there are some incised gullies, rock outcrops and screes. Sheep grazing. Areas of heather moor. Drystone dykes are infrequent but important features. Very sparsely populated, not readily visible from the wider landscape, being sited away from settled areas and public roads. Forest tracks, trails and core paths, including the Southern Upland Way, extend through the area. Large scale wind farms are key, and at times, defining characteristics of the LCT. In smaller scale landscapes such as steep slopes enclosing heads of valleys, and/or where uplands remain open, large scale wind farms in terms of height or extent, tend to dominate the local drama and scenic interest. Key characteristics include: • Large, smooth dome-shaped hills with large scale dark green coniferous forests on slopes and over lower summits; • Predominantly simple, gently rolling landform; • Some areas of more complex and smaller-scale landscapes, with steep slopes enclosing heads of valleys and/or where uplands remain open; • Changing landscapes with large scale forestry operations and wind farm development; • Forested areas dominated by Sitka Spruce, interspersed with mixed conifers and broadleaf planting, undergoing felling and replanting in large coupes; and • Expansive scale of landscape with wind farms forming a key characteristic in some sections of the LCT. The sensitivity of the landscape to change is cited as moderate, based on the existing rotational forestry management and wind farm developments.
LCT 160 - Narrow Wooded River Valley – Dumfries & Galloway	This LCT occurs in areas of more resistant solid geology where the extents of glacial and fluvial erosion have been limited to narrow incised channels. Within the valleys, the flat floor is at about 50 m

Landscape Character Type	Characteristics
	above sea level, while the steep valley sides rise up to more than 100 m. The proportions of these generally trough-shaped valleys vary, with wide flat valley floor dominating in the lower reaches while upper reaches are typically V-shaped. This LCT contains generally intimate, small-scale landscapes with enclosed views. Key features include: • Narrow incised valleys with wooded slopes enclosing pastural floors; • Small pastures and arable fields enclosed by hedgerows/ post and wire fencing on the lower reaches and drystone dykes in upper reaches; • Dominant broadleaf (semi-natural) woodland character with coniferous forestry plantations on higher slopes; • Lush trough-shaped river valleys with pasture/arable floors enclosed by deciduous wooded slopes' • Riparian trees and woodlands following meandering river courses in lower reaches; • Narrow lanes following valleys and linked isolated houses, occasional settlements and providing access to higher moorland; • Clusters of prehistoric landscapes and settlement up some valleys, notably in Eskdale; • Numerous arched stone bridges over the rivers; and • Intimate unspoilt landscape focussing on river views with some adjacent policy landscape. The sensitivity of this landscape to change is cited as high, due to the unspoilt landscape and special character generated by the variety of scene, light and shade and spatial enclosure.
LCT 177 - Southern Uplands – Dumfries & Galloway	This LCT occurs on the northern and eastern fringes of Dumfriesshire, extending into the Scottish Borders and South Lanarkshire. It is a large scale, dramatic landscape with an open, exposed remote quality, and ranges between 200-500 m height characterised by large, smooth domed or slightly conical shaped hills. The hill slopes are generally smooth, with some incised gullies, rock outcrops and screes. Steep sided clefts and glens lie between hills, many enlarged by glacial erosion. The LCT is very sparsely populated. In the lower fringes are remains of pre-improvement farmsteads, occasional prehistoric monuments and the legacy of mineral extraction. The landcover is predominantly coarse grassland, with some heather moorland in the highest areas. There are few trees, mainly confined to sheltered incised burns. Key features include:

Landscape Character Type	Characteristics
	• Large, smooth dome/ conical shaped hills, predominantly grass covered; • Open and exposed character, except within incised valleys; • Dramatically sculpted landforms and awe-inspiring scale; • Distinctive dark brown/purple colour of heather on some of the higher areas; • Pockets of woodland within incised valleys; • Stone dykes occasionally define the lower limit; • Legacy of lead and other mining activity, with extensive archaeological remains around the former mining village of Wanlockhead; • Distinctive dark brown/ purple colour of heather on some high areas of the LCT; and • Wind farms form a local characteristic, away from the more dramatic, scenic and sculptural slopes and skylines. The sensitivity of this landscape to change is cited as High due to the Regional Scenic Area designation over a large part of it, and the dramatically sculpted landforms and awe-inspiring scale of the landscape, valued for hill walking with some popular and iconic summits, and with strong wild character.
LCT 166 – Upland Glens – Dumfries & Galloway	This LCT occurs in the far east of the Study Area, though very little of the LCT is within the Study Area. The LCT is found along the upper reaches of rivers which cut through upland areas, and are largely in the north and north-east of Dumfries and Galloway. These landscapes form exemplary glacial features whose geomorphology can be readily interpreted. All of the Upland Glens - Dumfries & Galloway LCT are covered by Regional Scenic Area designations. Key features include: • Pronounced glaciated 'u'-shape glen, generally with floors at above 100 m with the glen sides rising to over 300 m, creating in places, dramatic enclosure. • Funnelled views along the glen, taking in the glen sides and slopes. Views are frequently contained where the glens are sinuous, but more extensive elsewhere, especially in linear sections or where tree belts are less common. • Small scale watercourses, but in places are prominent elements within the landscape. Tributary burns with

Landscape Character Type	Characteristics
	incised channels flowing from high ground create striking features. • Landcover is mainly rough grassland on the side slopes with grass and heather moor above. Some improved pastures occupy the glen floor, with distinctive lush green colour in contrast with surrounding yellow-greens, ochres and darker browns of moorland grasses, rushes and heather. • Drystone dyke walls are important characteristic features of the lower pastures. Field sizes are generally medium scale, but may be determined by the width of the glen floor. • Forests introduced into parts, usually across side slopes leaving the glen floor clear. • Remnants of semi-natural and ancient woodlands, including birch woods. • Settlement is sparse consisting of isolated farmsteads and occasional houses. • Evidence of earlier occupation is present in the form of sheepfolds, ruins of prehistoric settlements, pre-modern townships and shielings. • Single roads give access, often leading to dead ends. Occasional larger roads as through routes e.g. A7. • Some awe-inspiring views of great scenic value, e.g. the A702 Dalveen Pass). • Large scale wind farms are occasional features on the upland backdrops and skylines of some glens, although set back in a neighbouring Landscape Character Type. • The distinctive landforms, scenic qualities and heritage interests of these glens are the main assets in attracting visitors, encouraging various forms of informal recreation. • Some of the valleys are relatively remote, especially where they are dead-end valleys. The introduction of vertical elements such as wind farms in neighbouring LCT are notable features and are likely to affect the perceived remoteness and scenic value of the LCT. The LCT is considered to have a High sensitivity to change.
LCT 165 - Upper Dale – Dumfries & Galloway	This LCT occurs in the upper reaches of two main river valleys in Dumfriesshire, Upper Glenkens and Upper Nithsdale. They tend to

Landscape Character Type	Characteristics
	be narrower, and more enclosed in their transitions to the Middle Dale – Dumfries & Galloway or the Flooded Valley LCT but widen to larger scale further northwards. The upper river valleys are contained by much higher hills including southern uplands and other upland LCT. Gently undulating and flat valley floors give way to either uneven but gently graded side slopes, or to more steep sided and enclosing slopes. Much are covered by Regional Scenic Area Designations. Effects of glacial erosion are more evident. Agricultural landscape is dominant. Landscape is less cultivated and woodlands less extensive. Heather upland slopes, forestry large scale, less geometric than earlier estate forestry. Management of heather through muirburn. Settlements, dispersed houses and farmsteads on valley floors, with isolated farmsteads characteristic of upper slopes and side valleys. Carsphairn is remote in the Upper Glenkens. Legacy of coal mining evident in buildings of settlements and remains of mining activity. Hydro schemes, power lines and communication routes also feature of the landscape. Large scale wind farms characteristic of upland fringes and backdrop skylines of upland dale. Prominent in areas of Upper Nithdale. Designed landscape, three Archaeologically Sensitive areas, archaeological sites. Key characteristics include: • Wide valleys, enclosed by high peaks and moorland; • Open with long views; • Improved valley pastures becoming rougher up the valley sides; • Medium to large scale enclosures with dry stone dyke walls; • Riparian woodlands along the main river and up tributary channels; • Medium to large scale forests on the valley sides and extending over horizons from higher ground; • Large scale wind farm development characteristic of some adjacent upland fringes and backdrop skylines; and • Mining settlements and remnants of industrial activity such as mine ruins and bings. The sensitivity of this landscape to change is cited as Moderate due to the upland nature of this landscape and the legacy of discontinued industrial development creating quite a rough and abandoned character in places, contrasting with, and at times in close juxtaposition with, productive and well cared-for farmland and estates.

6.4.13 Visual receptors within the Study Area include those who may have a view towards the Study Area. At this stage, no Zone of Theoretical Visibility (ZTV) mapping has been carried out, so identification of visual receptors is initially based on presence within the Study Area, rather than potential visibility.

6.4.14 Visual receptors within the Study Area include:

- Residential - Residents of settlements and scattered properties;
- Recreational - Walkers on long range recreational trails including Core Paths;
- Recreational - Cyclists on national and local cycle ways;
- Recreational - Hill walkers at summits;
- Recreational - Tourists visiting cultural heritage locations, tourist attractions and viewpoints;
- Commercial - including workers in forestry and farmland, retail outlets, and in tourist accommodations or attractions; and
- Road users and receptors on transportation routes including tourists.

6.4.15 These visual receptors are considered further in **Table 6-4** below.

Table 6-4 Identified Visual Receptors within the Study Area

Receptor Type	Details
Residential	The nearest large settlement to the Study Area is Carsphairn village, located approximately 2 km south west of the Study Area. Clusters of residential properties are located within the Study Area and 3 km visual buffer area. A large cluster of residential properties is identified within the woodland to the west of Wether Hill, along Stroanfreggan Burn. A further cluster of residential properties is identified along the Water of Ken, in the north and centre of the Study Area. Notable properties within this cluster include River Ken Cottage, which is also a Bed and Breakfast. There are a number of individual dwellings scattered across the Study Area.
Recreation and Tourism	A number of hill summits are identified within the Study Area and within the 3 km visual buffer area. These include: • Cairnsmore of Carsphairn (797 m AOD); • Craig of Knockgray (383 m AOD); and • Green Hill (547 m AOD). Long distance paths include: • Southern Upland Way long distance footpath (route of core paths: UNNO/504/13; UNNO/504/14; UNNO/504/15) No cycle routes are identified within the Study Area or 3 km visual buffer area.

Receptor Type	Details
	There are a number of Core Paths within the Study Area. These include, but are not limited to: • Manquill Hill (CARS/216/3; CARS/216/4; CARS/216/5; CARS/216/6); • Cairnsmore of Carsphairn by Craig of Knockgrey (CARS/182/1); • Cairnsmore of Carsphairn by the Green Well (CARS/487/1); • Benbuie to Troston Hill (GLEN/51/1; GLEN/51/2; GLEN/51/3;GLEN/51/4); • Benbrack Glen (GLEN/446/1); and • Cairnhead to Blackmark Hill (GLEN/52/4; GLEN/52/5; GLEN/52/5). Land art, stone arches located at the summits of hills, along and near core paths include: • Striding arch, Benbrack (581 m) on the Southern Upland Way, approximately 1 km north of the Study Area; • Striding Arch, Colt Hill (598 m); near a core path, approximately 3 km north of the Study Area; • Striding Arch, Cairnhead (~295 m), near a core path, approximately 1.5 km north of the Study Area; and • Striding Arch, Bail Hill (517 m), near a core path, approximately 2 km east of the Study Area. Tourist attractions include: • Galloway Forest Park outside and southwest of the Study Area (approximately 2.5 km at its closest point). • Forest trails at Polmaddy and Dundeugh, south of the Study Area (approximately 2.5 km at the nearest point); • The Galloway Tourist Route follows the A713 through Carsphairn, a scenic road trip from Gretna to Ayr of 92 km length, runs southwest of the Study Area (approximately 2 km at the nearest point); and • Knockengoroch World Ceilidh and Festival Site, an annual festival in May, (approximately 4 km west of the Study Area at the nearest point).

Receptor Type	Details
	Tourist accommodation within the Study area and 3 km buffer area include: • Riven Ken Cottage Bed and Breakfast, located within the north of the Study Area; • Heart of the Glen camping cabin (approximately 0.5 km north of the Study Area); • Corlae Cottage accommodation (approximately 1.5 km north of the Study Area); • Cummock Knowes Country Retreat, near Carsphairn (approximately 1.5 km southwest of the Study Area); • Swallow Lodge, near Carsphairn (approximately 2 km southwest of the Study Area); • Lavender Cottage B&B, Carsphairn (approximately 3 km west of the Study Area); and • Rose Cottage B&B, Carsphairn (approximately 2.5 km west of the Study Area). • Craigdarrock Gardens cottage (approximately 4 km southeast of the Study Area). There are no hotels within the Study Area.
Commercial	There are a small number of commercial receptors including: • people working in forestry, estates, or farmland (outdoor workers); • workers at tourist attractions or in tourist accommodations; and • Workers in local shops and businesses (indoor workers).
Transportation	A number of regionally important roads are present both within the Study Area and within a 3 km buffer area, including: • A713 – The A713 is outside and west of the Study Area. This northwest to southeast road connects Carsphairn with Ayr and New Galloway. • B729 – The B729 is mainly outside and to the south of the Study Area, however, a section (approximately 2.5 – 3 km) runs within the southern part of the Study Area, where it is crossed by the Southern Upland Way. The B729 runs west to east and connects Carsphairn with Moniaive.

Receptor Type	Details
	A number of minor local roads and tracks are present both within the Study Area and within a 3 km buffer area, including: • Unclassified road from B729 north through the Water of Ken valley. • Forest management tracks and various other access tracks to isolated dwellings and farmsteads. There are no railways within or surrounding the Study Area.

CULTURAL HERITAGE

6.4.16 Designated and non-designated heritage assets were identified within the Study Area and an additional 1 km buffer area. This buffer area has also been reviewed to identify designated assets which have the potential to be impacted by the Proposed Development through changes to their setting. This buffer is determined based on professional judgment and assumes that there is little/no potential for adverse effects outside this area.

6.4.17 There is one Designated heritage asset identified within the Study Area, Craigengillan cairn (SM2238). Craigengillan cairn is located within the centre of the Study Area, approximately 6 km north-east of Carsphairn. Additional information is detailed in **Table 6-5**.

Table 6-5 Designated Heritage Assets

Asset Type	Asset Name and Reference Number	Asset Description and Reason for Designation
Scheduled Monument	Craigengillan cairn (SM2238)	A prehistoric ritual and funerary cairn. Circular with large rounded boulders along it's base. HES dos not provide a reason for designation however it can be assumed that it is of national significance for it's potential to contribute to knowledge about prehistoric funerary procedures.

6.4.18 In total, 155 non-designated heritage assets were identified within the Study Area. A further 56 non-designated heritage assets were identified within the 1 km buffer area.

Designated Sites

6.4.19 Designated sites were identified within the Study Area and an additional 20 km buffer area. This buffer is determined based on professional judgment and assumes that there is little/no potential for adverse effects outside this area. A number of designated sites were identified the buffer area, including Loch Ken and River Dee Marshes (Special Protection Area (SPA), Ramsar, Important Bird and Biodiversity Area (IBA)), Merrick Kells (SAC) and Upper Nithsdale Woods (SAC). Other areas of conservation importance were also identified within the Study Area, including Galloway Forest Park (IBA). See **Table 6-6** for details of the designated features relevant to each designated site and other area of conservation importance.

Table 6-6 – Designated sites and other areas of Conservation Importance within the Study Area and relevant Buffer Areas

Designation / Area of Conservation Importance	Designation Name and Location in relation to the Study Area	Reason for Designation
Designated Sites		
SAC	Upper Nithsdale Woods SAC is located 8.1 km east of the Study Area.	Presence of Annex I habitats, includingTilio-Acerion forests of slopes, screes and ravines.
SAC	Merrick Kells SAC is located 9.2 km south-west of the Study Area.	Presence of Annex I habitats including: • Northern Atlantic wet heaths with Erica tetralix; • Siliceous alpine and boreal grasslands; and • Blanket bogs.
Other Areas of Conservation Importance		
IBA	Galloway Forest Park IBA lies within the Study Area.	A very large area of forest, including lochs, rivers and moorland, that stretches from Newton Stewart in Dumfries and Galloway into the Strathclyde region. The IBA supports a range of breeding waders and waterbirds, in addition to species of forest and moorland[11].
Ancient woodland	A single woodland, Glenjann Linn,	Presence of Category 2a ancient woodland of semi-natural origin.

[11] BirdLife International (2024) Important Bird Area factsheet: Galloway Forest Park. Available online at: https://datazone.birdlife.org/site/factsheet/galloway-forest-park-iba-united-kingdom on 22/08/2024.

Designation / Area of Conservation Importance	Designation Name and Location in relation to the Study Area	Reason for Designation
	is located within the Study Area.	
Native Woodland Survey Scotland	Within the Survey Area there are 40 parcels of native woodland identified within the NWSS.	Presence of woodland where the canopy cover is composed mainly of native species (i.e. over 50%).
Carbon and Peatland Map 2016	Class 1, Class 2, and Class 3 peatland is present within the Study Area.	Presence of the following peatlands: • Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. • Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Class 3 – Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type.
Bug life B-Line	A Buglife B-line is located 0.5 km west of the Study Area.	The B-Lines are a series of 'insect pathways' running through countrysides and towns.

Habitats

6.4.20 Aerial imagery identifies that much of the Survey Area comprises coniferous plantation woodland and upland heathland and wetland habitats. Parcels of agricultural grassland are scattered throughout the southern extent of the Study Area alongside urban habitats (roads, private residential housing and a Wind Farm). Several watercourses are also present within the Study Area including (from west to east): Marbrack Burn, Polifferie Burn, Water of Ken, Auchrae Burn, Stroanfreggan Burn and Glenjann Burn as well as tributaries and burns which feed into these watercourses. Several water bodies are located within the Study Area.

6.4.21 A review of the Habitat Map of Scotland (HaBMoS) indicates that a large central portion of the Study Area contains woodland, forest and other wooded land. An area of regularly or recently cultivated agricultural, horticultural and domestic habitats are present within the south-west of the Study Area.

6.4.22 As identified within **Table 6-5**, Class 1, Class 2 and Class 3 peatland are all located within the Study Area. This includes blanket bog, heathland and wetlands.

Protected and Notable Species

6.4.23 The Study Area has suitability to support bat species, otter, red squirrel, pine marten, water vole, badger, fish species, amphibians and reptiles. The following protected/notable species have records publicly available within 10 km of the Study Area from 2014 – 2024; common pipistrelle, soprano pipistrelle, Natterer's bat, Daubenton's bat, Leisler's bat, noctule bat, brown long-eared bat, red squirrel, brown hare, common lizard and common toad.

Birds

6.4.24 The potential presence of notable (Annex I[12], SBL[13] or BoCC[14]) bird species in the Study Area was determined through professional experience of likely species based on habitats and geographical location, plus a search of NBN Gateway commercial use datasets for records recorded within the last 10 years (2014-2024).

6.4.25 Notable bird species records returned by NBN included the following:

- Raptors and owls – barn owl, tawny owl, kestrel and peregrine falcon;
- Waders – common sandpiper and curlew;
- Wildfowl and grouse – whooper swan, black grouse and greylag goose.

6.4.26 Habitats within the Study Area predominantly comprise commercial woodland and clear-fell as well as upland moorland with agricultural and grazing land interspersed in the south.

6.4.27 Agricultural areas and associated farm buildings could support breeding waders and barn owl. Moorland areas could potentially support breeding waders including curlew, and lekking black grouse. Woodland breeding raptors including kestrel and peregrine falcon could potentially be present within woodland habitats.

6.4.28 Agricultural areas could support wintering wildfowl. Loch Ken and River Dee Marshes SPA and Ramsar is located 13 km south of the Study Area and designated for Greenland white-fronted geese and greylag geese. Habitat within the study area is suitable for this species to forage, noting that the core foraging distances during winter season are recoded in the ranges of 5-8 km and 15-20 km respectively[15].

RECREATION AND TOURISM

6.4.29 The closest tourist attraction to the Study Area is the Striding Arches at Benbrack, approximately 1 km to the north. Additionally, in close proximity to the Study Area is Galloway Forest Park, which covers approximately 700 km^2 of south-west Scotland. A portion of the Park extends to the south of Carsphairn, approximately 3 km south west of the Study Area at its closest point. The Park is an important recreational area, popular with walkers and cyclists, and is also known as Scotland's first Dark Sky Park. None of the Park's visitor centres are located in proximity of the Study Area.

6.4.30 Riven Ken Cottage Bed and Breakfast is located in the north of the Study Area.

6.4.31 Further important outdoor recreation activities and tourist routes within the area include:

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[12] Annex I of The Birds Directive

13 Nature Scot (2020). Scottish Biodiversity List. Available online at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list

14 BTO (2021). Birds of Conservation Concern 5. Available online at: https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf

15 https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf – accessed 22/08/2024

- Southern Upland Way, a long-distance walking trail recognised as one of Scotland's Great Trails, located within the Study Area;
- Cairnsmore of Carsphairn (Corbett) summit, located approximately 1.2 km north of the Study Area;
- Forest trails at Polmaddy and Dundeugh; and
- The Galloway Tourist Route, which passes through Carsphairn, approximately 2 km south of the Study Area.

LAND USE

6.4.32 Land use within the Study Area are detailed in **Table 6-7**.

Table 6-7 Land Use within the Study Area

Designation	Features present within the Study Area
Settlements and Properties	Scattered properties are present within the Study Area and are mapped on **Figure 8**.
Land Capability for Agriculture	As shown on **Figure 8**, the majority of the Study Area is indicated as Class 6.3 which is defined as 'Land capable of use as rough grazings with low quality plants'. Areas of Class 5.3 and 5.2 land, defined as 'Land capable of use as improved grassland' are present within the centre of the Study Area, between Craigengillan Hill and Cornharrow Hll.
Commercial Uses	Commercial uses within the Study Area include: • Forestry and Commercial Management; and • Wether Hill Wind Farm.
Core Paths	Core Paths located within the Study Area are shown on **Figure 8** and include: • Southern Upland Way (UNNO/504/14); • Manquhill Hill (CARS/216/3) (CARS/216/4) (CARS/216/6); • Benbrack (GLEN/446/1); and • *Cairnhead to Blackmark Hill (GLEN/52/4), (GLEN/52/5).*
Planning Applications	Planning applications for four wind farms are identified within the Study Area. These include: • Quantans Hill Wind Farm (ECU Reference ECU00002097); • Shepherds' Rig Wind Farm (ECU Reference ECU00000735); • Corharrow Wind Farm (22/2486/S42 - appeal submitted) and • Manquhill Hill Wind Farm (23/0692/FUL). The proposed Lorg – Longburn OHL is proposed to route through the Study Area. Three Forestry Creation applications are identified within the Study Area: • Marbrack Forest Creation – Pending Issuance; • Furmiston Forest Creation – approved Forestry Grant Scheme; and • Blackmark Forest Creation – approved Forestry Grant Scheme.

FORESTRY AND WOODLAND

6.4.33 The baseline data review exercise for arboriculture and forestry was undertaken to identify areas of woodland (including ancient woodland) and forest within the Study Area. The baseline conditions identified are shown in **Figure 9**.

6.4.34 Approximately 50 to 60% of the Study Area is covered with forest and woodland as identified in the National Forestry Inventory. Woodland within the Study Area is predominantly coniferous, however, areas of young trees, felled areas, assumed woodlands, ground preparation areas, broadleaved and mixed mainly broadleaved woodland are also present.

6.4.35 The majority of the woodland within the Study Area is concentrated in large expanses within the central portion. Two areas of forest extend to cover the entire width of the Study Area. One of these areas is located to the west of Wether Hill and the other is to east of Quantans Hill.

6.4.36 The eastern extent of the Study Area at Wether Hill is relatively free of woodland, and likewise in the west of the Study Area at Quantans Hill, although sporadic patches of forest are present within this location.

6.4.37 One area of Ancient Woodland (semi-natural) partially falls within the extreme north-east of the Study Area, approximately 2 km north-east of the Wether Hill Wind Farm.

GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

6.4.38 The source-pathway-receptor approach has been used to identify geological, hydrogeological, and hydrologically sensitive receptors within the Study Area. In addition, a 1 km buffer is applied to the Study Area. This buffer is determined based on professional judgment and assumes that there is little/no potential for adverse hydrological effects beyond 1 km downstream because of dilution. For groundwater, a review of the BGS report, Scotland's Aquifers and Groundwater Bodies[Error! Bookmark not defined.] indicated that the underlying geology has a limited likelihood of groundwater flow pathways extending beyond 1 km in length.

6.4.39 This approach also recognises that the Study Area does not represent a physical/natural hydrological barrier within the context of avoiding environmental and technical constraints.

Geology

6.4.40 For geological receptors, consideration is given to designated/protected geological sites, superficial geology, bedrock geology, CMRA, DHRA, and SMA.

6.4.41 A review of Scotland's Environment Map indicates there are no CMRA, DHRA, or SMA within the Study area or the 1 km buffer around the Route Options.

6.4.42 According to NatureScot's SiteLink, the nearest geological designated site is the Loch Dungeon Geological Conservation Review Site (GCRS) which is located ~ 10 km to the southwest; however, this GCRS is not considered as having hydrological connectivity with the Study Area due to its elevated location on the opposite side of the valley.

6.4.43 According to the National Soil Map of Scotland[Error! Bookmark not defined.], soils present within the Study Area are predominantly of peat, peaty gleys and podzols; with some discrete areas of non-calcareous brown forest soils and alluvium. The BGS mapping indicates, superficial deposits are dominated by hummocky-glacial deposits composed of rock-debris, clayey-till, and poorly to well-stratified sand and gravel. Peat deposits are mapped within higher elevations in the valley, and alluvial deposits dominate adjacent to the alignment of existing watercourses.

6.4.44 Bedrock (1:50,000) geology within the Study Area is described by the BGS[Error! Bookmark not defined.] as consisting of the following predominant formations, in order of appearance west to east:

- Kirkholm Formation – Wacke;
- Glenwhargen Formation – Wacke;
- Portpatrick Formation – Wacke; and
- Shinnel Formations – Wacke.

6.4.45 There are also some minor occurrences of the North Britain Siluro-Devonian Calc-Alkaline Dyke suite; the Microdiorite Porphyritic dyke suite; and of Moffat shale-group mudstone, Chert, and Smectite-claystone.

Hydrology

6.4.46 For the identification of hydrological receptors, consideration is given to designated/protected sites, surface waterbodies, water supplies (public/private), and peat – the nature of which is controlled by hydrological processes. Furthermore, impacts on standing bodies of surface water are not considered as the nearest is Kendoon Loch which is located approximately 2 km downstream of the Study Area.

6.4.47 No hydrologically important designated/protected sites including Sites of Special Scientific Interest (SSSI), SAC, SPA or Ramsar sites were identified within the Study Area.

6.4.48 The Study Area is located within the Solway-Tweed River Basin District (RBD) and according to the SEPA Water Classification Hub[Error! Bookmark not defined.], there are four EU WFD-designated (2022) watercourses within the Study Area. A baseline description of these waterbodies is included below:

- Polifferie Burn (ID:10560): located in the centre of the Study Area, the Polifferie Burn is a right bank tributary to the Water of Ken and is designated as having a 'Poor' overall status. The water body originates within an upland area, on the southern slopes of windy standard, flowing from its source in a northwest to southeast direction to its confluence (NX 63826 94722) with the Water of Ken in the northern half of the Study Area.
- Water of Ken (Upstream High Bridge of Ken, ID:10559): located in the centre of the Study Area, the Water of Ken is designated as having a 'Poor' overall status. The water body is sourced on the eastern slopes of Meikledodd Hill and flows in a southeast direction from its source before flowing southwest through the Study Area towards Earlston Loch.
- Benbrack Burn/Stroanfreggan Burn (ID:10561): located in the east of the Study Area, the Stroanfreggan Burn is designated as having a 'Poor' overall status. The water body is sourced on the southern slopes of Benbrack, and flows in a south and southwest direction from its source towards the centre of the Study Area.
- Craigdarroch Water (ID:10606): located in the east of the Study Area, the Craigdarroch Water is designated as having a 'Good' overall status and is sourced on the eastern slopes of Mid Hill/Cornharrow Hill. From its source, the water body flows in a northwest to southeast direction towards Craigdarroch.

6.4.49 Named non-WFD designated watercourses identified from OS mapping within the Study Area include the Auchrae Burn; Benloch Burn; Benbrack Burn, Black Burn; Corlae Burn; Cornharrow Burn; Craigengillan Burn; Craigencarse Burn; Craiglour Burn; Dibbin Lane; Dry Burn; Glenjaan Burn; Goat Strand; Hare Strand; Knockgray Burn; Little Auchrae Burn; Long Burn; Marbrack Burn; Minnick Burn; Poldores Burn; Polhay Burn and the Polshagg Burn. Furthermore, there are several unnamed and non-WFD designated watercourses throughout the Study Area.

6.4.50 According to the SEPA Flood Maps, there are discrete areas, within the Study Area, at a high risk of fluvial flooding. These areas of high risk occur within the respective floodplains of the Polifferie Burn, Poldores Burn, Water of Ken, Stroanfreggan Burn and Marbrack Burn. There are also several smaller areas shown as being at a high risk of pluvial flooding, these are typically associated with low points /depressions in fields and on hillslopes and occur throughout the Study Area.

6.4.51 As there is no risk to the Study Area from coastal flooding and limited information is available to consider the risk from groundwater flooding, no further consideration is given to these types of flood risk.

6.4.52 According to Scotland's Environment Map[8] the Benloch Burn (surface) Drinking Water Protected Area (DWPA) (ID:10906) is in the west of the Study Area.

6.4.53 The nearest public water supply in proximity to the Study Area is thought to be located downstream at Carsphairn; whilst according to Dumfries and Galloway Public Water Supply (PWS) data, there are seven PWS within 1 km of the Study Area and six PWS which are > 1 km downstream.

6.4.54 As regards peat and carbon-rich soils, according to the NatureScot Carbon and Peatland map, peat/peaty are present throughout the Study Area; including areas of Class 1 and Class 2 (predominantly in the west) which are considered nationally important.

Hydrogeology

6.4.55 As regards hydrogeological receptors, consideration is given to designated/protected sites, groundwater bodies, groundwater-sourced water supplies (public and private), and Groundwater Dependent Terrestrial Ecosystems (GWDTE).

6.4.56 According to the BGS Geoindex, the Study Area is underlain (west to east) by the Crawford and Moffat Shale Group, Kirkholm Formation, Portpatrick and Glenwhargen Formation, and Shinnel and Glenlee Formation, aquifers. These aquifers are described as having a low productivity with limited groundwater in the near surface weathered zone and secondary fractures. In addition, the BGS Hydrogeological Maps, describe the Study Area as a region that is underlain by Silurian and Ordovician origin impermeable rocks, generally without groundwater, except at shallow depths.

6.4.57 In respect of water quality associated with ground waterbodies, the SEPA Water Classification Hub indicates that the Study Area is split by the Gallow (ID:150694) groundwater body in the west and the Moniave (ID:150644) groundwater body in the east. Both waterbodies were classed as being of 'Good' condition (2022) under the WFD and are designated as groundwater DWPA and Drinking Water Protection Zones (DWPZ).

6.4.58 Although there is the potential for GWDTE within the Study Area and for hydrological connectivity beyond, GWDTE have not been considered as a differentiating factor as habitat survey information was not available at the time of this appraisal.

7 APPRAISAL OF ROUTE OPTIONS AND SELECTION OF PREFERRED ROUTE

7.1 APPRAISAL METHODOLOGY

7.1.1 Following the review of planning policy and technical and environmental features within the Study Area, the Route Sections have been appraised. The objectives of this appraisal are to identify a Preferred Route for the Proposed Development, in a comparable, documented and transparent way. As outlined in the **Section 4**, where the characteristics of the Study Area are such that they required to be balanced to enable the overarching Routeing Objective to be met, professional judgement by appropriately qualified environmental professionals, informed by both desk studies and fieldwork, and reflecting the Holford Rules (**Appendix A**), will be employed to identify the Preferred Route. This professional judgement will be made on a case-by-case basis.

7.1.2 The process also seeks to:

- continue to reflect the overall Routeing Objective and Routeing Strategy;
- continue to reflect SPEN's Approach to Routeing and EIA document;
- continue to reflect the Holford Rules for Routeing Overhead Transmission Lines;
- continue to reflect the Horlock Rules for siting of a substation, overhead line entries and sealing end compounds; and
- draw out distinctions between the Route Options to enable the relative strengths and weaknesses of each to be identified.

7.1.3 The comparative appraisal of Route Options is undertaken in stages as set out below:

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

7.2 APPRAISAL CRITERIA

7.2.1 The appraisal criteria used is based on SPEN's Approach to Routing[1] and EIA guidelines, based upon the Holford Rules for routeing of an OHL, for the siting of the Proposed Development. The Route Options are appraised using the following criteria, which continue to reflect the key considerations of the routeing methodology. The reasoning for the use of these criteria and an outline of the methodology for appraising each Route Option is outlined below.

LANDSCAPE AND VISUAL AMENITY

7.2.2 A desk-based review was undertaken to understand how each Route Option intersects with designated and locally designated landscapes, landscape character, and visual amenity, as well as the sensitivity of visual receptors and the landscape to accommodate development of the type proposed. A site visit was conducted in October 2024 to visually supplement the desk-based review, confirm baseline conditions and to gain a better understanding of how the Proposed Development would fit into the landscape.

7.2.3 Where opportunities exist to avoid or mitigate landscape or visual impacts or impacts through changes within the landscape, these are noted in the appraisal. Sections are ranked according to opportunities noted in the desktop review. The National Forest Inventory map has been used to identify locations of forest landcover, however, the desk top review and appraisal does not consider the visual and landscape effects of ongoing cycles of forest coupe management, such as felling and replanting. As the timing of forest management is unknown and is likely to affect all Sections, it is not considered in the appraisal.

7.2.4 Sections are graded in accordance with their potential to accommodate the proposed poles and overhead lines, giving consideration to avoidance, mitigation, potential visual, physical and landscape effects.

7.2.5 All Route Sections lie within the internationally designated UNESCO Galloway and South Ayrshire Biosphere Reserve, and also in the Transition Zone of the Galloway International Dark Sky Park. As such, these criteria are not considered further in distinguishing between the Route Options in the appraisal.

CULTURAL HERITAGE

7.2.6 A desk-based review was undertaken to understand how each Route Section intersects with designated and non-designated heritage assets. Where a Route Section contains designated and non-designated heritage assets, the potential for physical impacts would be of paramount importance in ranking the routes. The importance of the setting of the heritage assets within the Study Area was also considered during the appraisal to ensure that visual impacts from the proposed development were a key consideration, especially in relation to designated heritage assets.

7.2.7 Where avoidance of physical impacts or impacts through changes within the setting of a heritage asset is not clearly achievable, the Section would typically be graded to limit the impacts to designated heritage assets over non-designated heritage assets, depending on what is important in the significance of the heritage asset, and the potential impact.

ECOLOGY

7.2.8 A desk-based review was undertaken to understand how each Route Section intersects with designated sites, habitats present (utilising aerial imagery, HaBMoS, Carbon and Peatland 2016 map) as well as the suitability of each Route Section to support protected and/or notable species.

7.2.9 All Route Sections are equidistant from the surrounding designated sites (Upper Nithsdale Woods SAC, Merrick Kells SAC, and Loch Ken and River Dee Marshes SPA and Ramsar). With regards to the SACs, they are designated for sedentary features (habitats) without direct ecological links to any of the Route Sections and so are not considered further.

RECREATION AND TOURISM

7.2.10 The impacts on recreation and tourism have been appraised within the visual amenity topic as the impacts relate to the visual experience of the recreational user. No direct impacts have been identified and temporary diversions during construction would be managed through the CEMP.

LAND USE

7.2.11 The land use topic covers several features including existing and committed developments, commercial uses, planning applications, agricultural land and core paths. Core paths are not considered as part of the Land Use appraisal as they are considered within the Landscape and Visual appraisal.

7.2.12 As shown in **Section 6.4**, land use receptors within the Study Area include agricultural land, commercial uses and several existing or proposed Wind Farm developments. A relative comparison of each Route Section against these receptors was completed in order to qualify preference between each Section.

FORESTRY / WOODLANDS

7.2.13 Given the presence of woodland within and surrounding the Study Area it is considered as an appraisal criterion. The ability to avoid the identified areas of commercial forestry and non-commercial woodland has been used as a main factor to differentiate between Route Sections.

GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

7.2.14 A desk-based review was undertaken to understand how each Route Section interacts with geological, hydrological and hydrogeological features. Route Sections were graded based on the following considerations:

- Potential for hydrological connectivity with surface/groundwater bodies.
- Potential for flooding during the 200-year return-period (high risk) event as identified from the SEPA Flood Maps.
- Potential for impacts on designated/protected sites including GCRS, RAMSAR, SAC, SPA and SSSI; as well as CMRA, DHRA and SMA.
- Potential for impacts on public and private water supplies; DWPA and DWPZ.
- Potential for impacts on peat and carbon-rich soils

7.2.15 Impacts to the Benloch Burn Drinking Water Protected Area (DWPA) is unlikely due to catchment topography and is therefore not considered further as a differentiating criterion. Likewise, whilst there is potential hydrological connection with both the Galloway and Moniave groundwater protection zones, these are not considered a differentiating factor in the appraisals.

7.3 APPRAISAL OF ROUTE SECTIONS

7.3.1 The findings of the detailed appraisal for the Route Sections for each criterion are outlined below. Each topic has assigned a grading to each section, according to the matrix in **Table 7-1**. No weightings have been applied to each of the topics to determine the grades. An overview of Kev Environmental Features in relation to the Route Options is shown in **Figure 11**.

Table 7-1 Environmental Appraisal Matrix

Grade	Description
High Potential	No likely significant effects are anticipated.
Medium Potential	Potential for some significant effects.
Low Potential	Higher risk of significant effects.

Section 1a

Landscape and Visual Amenity

7.3.2 The Landscape and Visual appraisal of Section 1a is included within **Table 7-2** and conclusions are drawn below.

Table 7-2 Landscape and Visual Appraisal of Section 1a

Feature Type	Appraisal of Section 1a
Landscape Designations	Section 1a is outside the Regional Scenic Area RSA 4 Galloway Hills and is in close proximity / adjacent to RSA 8 Thornhill Uplands. There are no designated heritage assets within Section 1a.
Landscape Character	Section 1a lies entirely within LCT 178 Southern Uplands with Forest – Dumfries & Galloway.
Visual Amenity	There are no dwellings within Section 1a corridor however, the nearest residential visual receptors outside 1a include residents of Cornharrow and Carroch. The Southern Upland Way west of Cornharrow and currently, core path 216 around the eastern slopes of Manquhill Hill have open, direct views towards Section 1a. The lower route of core path 216 through the Cornharrow valley runs along the west boundary of Section 1a in a north-south direction. The core path is not currently accessible to the public and the route cannot be used. About two thirds of the Section 1a lies within the national forest, coniferous plantation with a network of forest tracks and paths.

7.3.3 Wind Farms form a key characteristic of some parts of LCT 178, the landscape has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. Section 1a runs downhill from Cornharrow Hill through the gentle valley of the Cornharrow Burn, ending at the Stroanfreggan Burn. The open areas appear to be rough grassland. Gaps in the plantation forest show the route of the Cornharrow Burn in the landscape. Efforts have been made to feather the edge of the plantation beside the Burn to provide visually aesthetic forest edges.

7.3.4 Wether Hill Wind Farm turbines are present within this section, therefore vertical elements are already features of the landscape. Poles and overhead lines could be aligned along existing tracks from the Wind Farm, downhill towards the forest.

7.3.5 It is recommended that existing gaps in the forest e.g. fire breaks, forest management access tracks, and the Cornharrow Burn corridor are used to route the poles and overhead line through the forest, siting the poles near the periphery of the forest such that trees feather towards the poles. It is important to avoid siting the poles and overhead lines where they would be visible on the skyline. Poles should not exceed the height of the trees.

7.3.6 With careful routeing of the poles and overhead lines, Section 1a has **High Potential** due to the extensive opportunities that existing forest and the rolling landform provide to conceal or screen them from view, and where visible, to provide a forested background such that the poles and overhead lines may be integrated into the landscape.

Cultural Heritage

7.3.7 There are no designated heritage assets within Section 1a or an additional 1 km buffer area.

7.3.8 There are eight non-designated heritage assets within Section 1a. All non-designated heritage assets relate to post-medieval agricultural activity, and all include either marker and clearance cairns alongside various agricultural structures including enclosures and farmsteads.

7.3.9 Section 1a has **High Potential** to accommodate the infrastructure as physical impacts to non-designated heritage assets can be mitigated through demarcation and avoidance or preservation by record.

Ecology

7.3.10 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 15 km south of Section 1a. Section 1a has limited habitats to support wintering geese which this site is designated for.

7.3.11 One woodland (wet woodland) listed within the NWSS is found within Section 1a. The majority of Section 1a contains plantation coniferous woodland with some smaller areas of listed as Class 2 and Class 3 on the carbon peatland map 2016 identifying that peatland and wetland habitats are present within this section.

7.3.12 Section 1a contains habitat suitable to support foraging, commuting and roosting bats along the woodland edge and riparian corridor with roost opportunities likely present within broadleaved trees present here. The unnamed burn within Section 1a has suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 1a habitat suitable to support breeding and wintering birds is present.

7.3.13 Section 1a has **High Potential** to accommodate the infrastructure with only small areas of priority habitats likely present across the section which could be microsited or avoided.

Land Use

7.3.14 Land capability for Agriculture in Section 1a is predominantly Class 6.3 (Land capable of use as rough grazings with low quality plants).

7.3.15 Wether Hill Wind Farm turbines are present within this section and their 3-times rotor diameter distance cannot be avoided. Additionally, this section passes through the planning application boundaries for both Cornharrow Wind Farm and Manquhill Wind Farm.

7.3.16 Section 1a has **Medium Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.17 A large proportion of Section 1a is covered by forestry. Avoidance may be possible by routeing along existing tracks or gaps within trees. No areas of Ancient Woodland are present. Section 1a has **Medium Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.18 There is potential for direct hydrological connectivity with Benbrack Burn/Stroanfreggan Burn and Cornharrow Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.19 There are no areas at a high risk of flooding within Section 1a.

7.3.20 No designated/protected sites are located within Section 1a.

7.3.21 There are no Private Water Supplies (PWS) within Section 1a; and although Cornharrow PWS is located within 250 m of this section, it is located upgradient.

7.3.22 No Class 1 or 2 carbon-rich soils are located within Section 1a.

7.3.23 Section 1a has **High Potential** to accommodate the infrastructure required; as it is the most preferential from a flood risk perspective; as well as from the perspective of avoiding areas of nationally important (Class 1 and 2) carbon-rich soils/deep peat.

Section 1b

Landscape and Visual Amenity

7.3.24 The Landscape and Visual appraisal of Section 1b is included within **Table 7-3** and conclusions are drawn below.

Table 7-3 Landscape and Visual Appraisal of Section 1b

Feature Type	Appraisal of Section 1b
Landscape Designations	Section 1b is outside the Regional Scenic Areas RSA 4 Galloway Hills and RSA 8 Thornhill Uplands.
Landscape Character	Section 1b is entirely within LCT 178 Southern Uplands with Forest – Dumfries & Galloway. The west boundary connects with LCT 160 – Narrow Wooded River Valley – Dumfries & Galloway to the east of the Water of Ken. The LCT 178 landscape is changing and vertical elements such as large-scale wind farms are beginning to characterise the LCT. Though there are timber poles and overhead lines within LCT 160, along the lower contours of the Water of Ken valley within LCT 160, these do not extend over the hillslopes towards LCT 178.
Visual Amenity	Visual receptors include users of the Southern Upland Way and core path 216; and visual receptors in the adjacent visual envelope e.g. users of the unclassified road by the Water of Ken. Though there are no dwellings in the Section 1b corridor, visual receptors are likely to include the residents of Meikle Auchrae, Stroanpatrick and Craigengillan. A timber bench marks a panoramic viewpoint, facing south on the Southern Upland Way, situated where Section 1b crosses the Southern Upland Way. This is a visually sensitive spot on the route corridor.

7.3.25 Wind farms form a key characteristic of some parts of LCT 178, the landscape has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. LCT 160 comprises trough shaped valleys with wooded slopes, though in the area occupied by Section 1b, is broader and more open. Section 1b crosses predominantly open, exposed landscape, though there are some areas of the national forest within and along the northern periphery.

7.3.26 Section 1b runs across open land, craggy and textured, rolling landform between 250 m (approximately) by Stroanfreggan Burn, and 320 m at Dunnans Craig, 323 m at Round Craigs, Stellhead (approximately 310 m) and Scalloch (approximately 260 m) dropping to 250 m at the west boundary, before dropping further to the Water of Ken.

7.3.27 The desktop survey suggests the landscape is rough grassland, with sheepfolds, cairns and a few small quadrilaterally shaped plantations and dry-stone wall dykes. Across the corridor of Section 1b are a couple of burns including the headwaters of Little Auchrae Burn, Long Burn, and Stroanfreggan Burn. On site, the landform is uneven, undulating, wet in places, with rough grassland.

7.3.28 Vertical poles and overhead lines are very likely to be noticeable in the landscape, particularly towards the western edge where they would appear to be on the skyline above the Water of Ken, viewed from the adjacent LCT and unclassified road. Though the route lies within LCT 178, there are no wind farms within close proximity of this Section 1b corridor, and the additional vertical OHL elements will appear incongruous in the open exposed landscape. It is suggested that the poles and overhead lines are aligned in sinuous routes in close proximity to the existing forest and stone wall boundaries and that linear routes over the open landscape are avoided, such that the poles and overhead lines can obtain a forested background and integrate into the landscape. This is particularly important as long, extensive, panoramic views are likely from the Southern Upland Way.

7.3.29 With very careful routeing of the poles and overhead lines, existing forest to the north and landform may to partially conceal or screen them from view along much of the section, and where present, to provide a forested background such that the poles and overhead lines may be integrated into the landscape. However, where the Section 1b enters LCT 160, the views of poles and overhead lines will be difficult to mitigate.

7.3.30 There are parts of Section 1b, with open exposed areas, near the Southern Upland Way and core paths, and in these areas, the OHL would not be screened from view of users of these paths. As such Section 1b has **Low Potential** to accommodate the infrastructure.

Cultural Heritage

7.3.31 There are no designated heritage assets within Section 1b or an additional 1 km buffer area.

7.3.32 There are six non-designated heritage assets within Section 1b, grouped in the west of the section. Four non-designated heritage assets are examples of post medieval agricultural activity and include: a farmstead, cultivation remains, clearance cairns, and a sheepfold. Two non-designated heritage assets within Section 1b are examples of prehistoric settlement activity within the area. This includes a burnt mound (Canmore ID 83881) and burial cairns (Canmore ID 64354). Section 1b also passes through the northern section of an Archaeologically Sensitive Area (ASA 13 – Stroanfreggan) and part of a heritage trail.

7.3.33 Section 1b has **Medium Potential** to accommodate the infrastructure as physical impact to non-designated heritage assets can be mitigated through demarcation and avoidance or preservation by record. The finalisation of the alignment would need to be carefully considered as there may be impacts to setting from the Proposed Development. For the council to support the Proposed Development, the character, archaeological interest and setting of the ASA would need to be safeguarded, as outlined in Policy HE4 of the Dumfries and Galloway Local Development Plan[16].

Ecology

7.3.34 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 15 km south of Section 1b. Section 1b has habitats to support wintering geese which this site is designated for.

[16] Dumfries and Galloway Local Development Plan 2 (2019). Available online at: https://new.dumgal.gov.uk/planning-building/planning/planning-policy/local-development-plan/local-development-plan-2-ldp2 [Accessed 02/05/24]

7.3.35 Section 1b contains four woodlands (two unidentifiable woodland types and two wet woodlands) listed within the NWSS. In addition, Class 1, Class 2 and Class 3 habitats listed within the carbon and peatland map 2016 are present within this section including blanket bog habitat. Section 1b appears to contain primarily marshy grassland and bog habitat across the section.

7.3.36 Section 1b contains habitat suitable to support foraging, commuting and roosting bats along the woodland edge and riparian corridor with roost opportunities likely present within broadleaved trees present. The Auchrae Burn and Stroanfreggan Burn within Section 1b have suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 1b, habitat suitable to support breeding and wintering birds is present.

7.3.37 Section 1b has **Medium Potential** to accommodate the infrastructure with areas of priority habitats likely present across the section which would need to be microsited or avoided.

Land Use

7.3.38 Land capability for Agriculture in Section 1b is predominantly class 6.3 (Land capable of use as rough grazings with low quality plants).

7.3.39 This section passes in close proximity to forestry management premises. The northern extent of this section intersects with the planning application boundary for Manquhill Wind Farm; however this could be avoided by routeing to the south.

7.3.40 Section 1b has **High Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.41 Areas of forestry are present to the north of Section 1b. These could be avoided by routeing within the south of the section. Section 1b has **High Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.42 There is potential for direct hydrological connectivity with Benbrack Burn/Stroanfreggan Burn and Auchrae Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.43 There are some areas at a high risk of flooding within Section 1b, located around the Benbrack Burn/Stroanfreggan Burn and Auchrae Burn.

7.3.44 No designated/protected sites are located within Section 1b.

7.3.45 There are no PWS within Section 1b or within 1 km downgradient.

7.3.46 Some areas of Class 1 and 2 carbon-rich soils are present within Section 1b, these are in particular located adjacent to Auchrae Burn.

7.3.47 Section 1b has **Medium Potential** to accommodate the infrastructure required and is preferential from a water supply perspective as it is not likely to affect PWS; however, the presence of some nationally important (Class 1 and 2) carbon-rich soils/deep peat is a constraint.

Section 1c

Landscape and Visual Amenity

7.3.48 The Landscape and Visual appraisal of Section 1c is included within **Table 7-4** and conclusions are drawn below.

Table 7-4 Landscape and Visual Appraisal of Section 1c

Feature Type	Appraisal of Section 1c
Landscape Designations	The western part of Section 1c is within the designated Regional Scenic Area RSA4 Galloway Hills.
Landscape Character	Section 1c runs east to west through three LCTs, LCT 160 – Narrow Wooded River Valley – Dumfries & Galloway, LCT 178 Southern Uplands with Forest – Dumfries & Galloway and LCT 177 – Southern Uplands – Dumfries & Galloway with about a third of Section 1c in each. The route ends in the west in LCT177. Wind farms form a key characteristic of some parts of LCT 178, the landscape has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. LCT 160 comprises trough shaped valleys with wooded slopes and flat narrow valley bottoms. LCT 177 is a landscape of large smooth dome shaped, grass covered hills and an open, exposed character with woodland confined to incised valleys and like LCT178, in places, wind farms are becoming characteristic of the landscape.
Visual Amenity	Visual receptors include users of unclassified road, and two forest tracks (residents, cyclists, recreational walkers, forest workers). The route goes through uneven countryside surrounding Marbrack Burn. There are no residential receptors in the Section 1c corridor however, outside Section 1c corridor are potential residential receptors including residents of Marbrack Farm, Furmiston, Craigengillan, Maikle Auchrae. There are no core paths in the Section 1c corridor. The Southern Upland Way is approximately 1.5 km east of Section 1c.

7.3.49 The eastern half of Section 1c is predominantly forest covered, whilst the west half is almost entirely open.

7.3.50 The landform of Section 1c appears to be rolling, initially falling to Water of Ken in its valley, then climbing through forest with watercourses, Craigenillan Burn, Hare Strand, Black Burn all falling into Water of Ken, on gently climbing rolling, irregular topography towards a ridge at 292 m before dropping towards the tributaries and headwaters of Marbrack Burn before rising westwards towards its end at 280 m with the 498 m peak of Knockwhirm outside the Section 1c. South of Section 1c is the forested Marscalloch Hill 381 m and the open Furmiston Craig 324 m. Vegetation appears to be rough grassland with coniferous forest.

7.3.51 It is likely that there will be views of the Section 1c poles and overhead lines in the Water of Ken valley and through the forest where linear views along pathways and fire breaks are possible from the valley. It is also likely that there will be views of the poles and overhead lines within the western open section, particularly from nearby hill summits and slopes to the northwest such as Furmiston Craig (324 m) and Knockwhirn (498 m), however views down on the poles and overhead lines will predominantly have a grassed background, not skyline. From the higher and further summit viewpoints to the northwest such as Beninner (710 m) and Cairnsmore of Carsphairn (797 m), the poles would likely not be noticeable in comparison with the extensive landscape views across the Regional Scenic Area 4 Galloway Hills. However, views of the poles and overhead lines may be possible from the settlement of Carsphairn and isolated residential properties at Marbrack, Furmiston, Burnfoot, Bardennoch and Knockgray. From these, views are likely to be against the skyline, with some low-level forest backdrop.

7.3.52 Section 1c is clearly visible from some parts of the A713 immediately south of Carsphairn due to recent forest management. The intervening landform and small blocks of forest between Carsphairn and Section 1c corridor will conceal and screen the OHL route from view of residents. Residents of isolated dwellings at Knockgray, Burnfoot and Marbrack may have glimpses of the Section 1c corridor, though most will be screened from view by intervening landforms and small blocks of forest. Uses of the B729 and recreational paths in the vicinity of Marbrack are likely to see intermittent and potentially wide views of Section 1c across the undulating landform.

7.3.53 Views of poles and overhead lines in Section 1c could be minimised through locating them behind elevated landform and along lower contours such that the poles are hidden in potential views from dwellings, and siting the poles by the forest edge will further integrate them with the landscape. It is recommended that the route uphill from the Water of Ken valley takes a sinuous route through the forest, making use of forest tracks and fire breaks to minimise the extent of visibility.

7.3.54 However, it may be difficult to integrate the route of poles and overhead lines into the landscape of LCT 177 and RSA 4 due to its open, exposed nature. Here, topography will have to be carefully used to align the poles and overhead lines.

7.3.55 With careful routeing of the poles and overhead lines, Section 1c has **Medium Potential** to accommodate the infrastructure, due to the opportunity that existing forest and landform provides to conceal or screen them from view, and where the poles and lines will be visible, to provide a forested background such that the poles and overhead lines may be integrated into the landscape.

Cultural Heritage

7.3.56 There are no designated heritage assets within Section 1c. There is one Scheduled Monument within a 1 km buffer area, located 260 m north of section 1c, Craigengillan cairn (SM2238).

7.3.57 Craigengillan cairn (SM2238) is a prehistoric ritual and funerary cairn, and changes within its setting would impact the value of the heritage asset. Therefore, section 1c has the potential to directly impact the Craigengillan cairn.

7.3.58 Additionally, there are two non-designated heritage assets within the Section 1c. This includes a post medieval farmstead and field system (Canmore ID 104686) and prehistoric flint tools (Canmore ID 64369). The find spot of flint tools could be indicative of other archaeological remains in the area.

7.3.59 Section 1c has **Low Potential** to accommodate infrastructure as impacts to the setting of the scheduled monument can only be mitigated through minimising visual impact through design changes. Physical impact to non-designated heritage assets can be mitigated through demarcation and avoidance or preservation by record.

Ecology

7.3.60 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 15 km south of Section 1c. Section 1c has habitats to support wintering geese which this site is designated for. Woodland shares continuous connectivity to woodlands within the Galloway Forest Park IBA.

7.3.61 No native woodland is present within Section 1c. Section 1c contains Class 1, Class 2 and Class 3 habitats as listed within the carbon and peatland map 2016 this includes blanket bog habitat. These habitats are present primarily in the western portion of Section 1c, with the eastern portion primarily containing plantation coniferous woodland.

7.3.62 Section 1c contains habitat suitable to support foraging and commuting bats along the woodland edge and riparian corridor. The Marbreck Burn and Water of Ken within Section 1c have suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 1c, habitat suitable to support breeding and wintering birds is present.

7.3.63 Section 1c has **Medium Potential** to accommodate the infrastructure with areas of priority habitats likely present across the section which would need to be microsited or avoided.

Land Use

7.3.64 Land capability for Agriculture in Section 1c is predominantly Class 6.3 (Land capable of use as rough grazings with low quality plants).

7.3.65 This section passes through the proposed boundary for Shepherds' Rig Wind Farm, and ties into the proposed Quantans Hill Wind Farm. This section therefore passes within the 3-times rotor diameter distances of turbines associated with these proposed Wind Farms. Section 1c has **Medium Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.66 Areas of forestry are present within the east of Section 1c. These could be avoided with careful routeing. Section 1c has **High Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.67 There is potential for direct hydrological connectivity with the Water of Ken (U/S High Bridge of Ken), Craigengillan Burn and Black Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.68 There are some areas at a high risk of flooding within Section 1c, located around the Water of Ken and Marbrack Burn.

7.3.69 No designated/protected sites are located within Section 1c.

7.3.70 There are no PWS within Section 1c, however Kensglen PWS is located less than 1 km downgradient of the section.

7.3.71 Large areas of Class 1 and 2 carbon-rich soils are present within Section 1b, with Class 1 and 2 coverage over half of the section.

7.3.72 Section 1c has **Medium Potential** to accommodate the infrastructure required; however, there is a risk to the surface water sourced Kensglen PWS and the presence of some nationally important (Class 1 and 2) carbon-rich soils/deep peat which is also a constraint.

Section 2a

Landscape and Visual Amenity

7.3.73 The Landscape and Visual appraisal of Section 2a is included within **Table 7-5** and conclusions are drawn below.

Table 7-5 Landscape and Visual Appraisal of Section 2a

Feature Type	Appraisal of Section 2a
Landscape Designations	Section 2a is outside the Regional Scenic Area RSA 4 Galloway Hills, but within close proximity/adjacent to (tbc) the western extent of RSA 8 Thornhill Uplands.
Landscape Character	Section 2a is in LCT 178 Southern Uplands with Forest – Dumfries & Galloway and the far west end is within LCT 160 – Narrow Wooded River Valley – Dumfries & Galloway. Wind farms form a key characteristic of some parts of LCT 178, the landscape has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. LCT 160 comprises trough shaped valleys with wooded slopes and flat narrow valley bottoms.
Visual Amenity	Receptors include residents of Strahanna Farm to the west (by the Water of Ken), recreational users of 2 core paths, the Southern Upland Way, forest workers and recreational users of a number of forest tracks.

7.3.74 Section 2a is predominantly forest covered, with only the far west Water of Ken and the farthest east sections being open and exposed.

7.3.75 Section 2a is elevated from approximately 500 m, following the ridge of Corlae Hill (482 m) through forest downhill along a fire break and valley of a tributary of Dibbin Lane down a steep sided valley and up the other side skirting north of Eldrick (319 m) across several tributaries of the Benbrack Burn, Craigencarse Burn and Auchrae Burn, over the forested Auchrae Hill (384 m), dropping down steep sided slopes to the valley of the Water of Ken and unclassified road at Strahanna Bridge (226 m approximately). Open land vegetation such as rough grassland is present. Forests are predominantly coniferous, there are some deciduous trees in the valley of the Water of Ken.

7.3.76 The extent of forest offers good opportunities to integrate the overhead lines and poles into the existing forest, making use of existing forest management access routes and fire breaks to Section 2a and taking a sinuous route to break up the extent of long, funnelled views. Skyline in the east of Section 2a should be avoided to minimise visual and landscape effects upon the RSA 8 Thornhill Uplands. There will be the potential effects due to the existing vertical elements in the vicinity, i.e. existing wind turbines, but these potential effects should be minimised through carefully aligning poles and overhead lines to the western slopes of Corlae Hill.

7.3.77 Open, exposed landscape is present within the east of Section 2a, and here it is important to avoid skyline effects on both LCT 178 and RSA 8 and upon visual receptors. It is also important to avoid vistas and the aesthetically pleasing broad breaks in the forest, particularly those which are crossed by the Southern Upland Way. Here, the consideration sensitive design is highly recommended.

7.3.78 With careful routeing of the poles and overhead lines, parallel to existing forest management access tracks, Section 2a is considered to have **High Potential** to accommodate the infrastructure, due to the opportunity that existing forest and landform provides to conceal or screen them from view, and where the poles and lines will be visible, to provide a forested background such that the poles and overhead lines may be integrated into the landscape.

Cultural Heritage

7.3.79 There are no designated heritage assets within the Section 2a or an additional 1km buffer area.

7.3.80 There are 26 non-designated heritage assets within Section 2a. The non-designated heritage assets are grouped in the east of the section, with the exception of Strathanna Bridge (Canmore ID 177490) which is located in the west of the section.

7.3.81 The heritage assets within Section 2a range from prehistoric to modern and relate to settlement and agricultural activity. Examples of modern heritage assets within the area include a 19th century shooting stand (Canmore ID 95231) and marker cairns (Canmore ID 95229).

7.3.82 Section 2a has **Medium Potential** to accommodate the infrastructure as physical impacts to non-designated heritage assets can be mitigated through demarcation and avoidance or preservation by record.

Ecology

7.3.83 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 17 km south of Section 2a. Section 2a has limited habitats to support wintering geese which this site is designated for.

7.3.84 Five woodlands (one upland birch, one dwarf shrub heath and three wet woodlands) listed within the NWSS are present within Section 2a. The habitat present here primarily consists of plantation coniferous woodland with some Class 3 habitats listed on the carbon and peatland map 2016 and one Class 1 habitat which on aerial imagery appears to have been overplanted by coniferous plantation suggesting that it is highly degraded.

7.3.85 Section 2a contains habitat suitable to support foraging, commuting and roosting bats along the woodland edge and riparian corridor with roost opportunities likely present within broadleaved trees present here. The Water of Ken, Dibbin Lane and Benbrack Burn within Section 2a have suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 2a habitat suitable to support breeding and wintering birds is present.

7.3.86 Section 2a has **High Potential** to accommodate infrastructure with areas of priority habitats limited within this section which could be microsited or avoided.

Land Use

7.3.87 Land capability for Agriculture in Section 2a is predominantly Class 6.3 (Land capable of use as rough grazings with low quality plants).

7.3.88 Section 2a passes through the planning application boundaries for Wether Hill Wind Farm, Manquhill Wind Farm and Cornharrow Wind Farm. This Section passes through the 3-times rotor diameter distances for turbines associated with these proposed Wind Farms.

7.3.89 Section 2a has **Medium Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.90 The majority of Section 2a is covered by forestry. Avoidance may be possible by routeing along existing tracks or gaps within trees. No areas of Ancient Woodland are present. Section 2a has **Medium Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.91 There is potential for direct hydrological connectivity with the Water of Ken (Upstream High Bridge of Ken) watercourse. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.92 There are some areas at a high risk of flooding within Section 2a, located around the Water of Ken.

7.3.93 No designated/protected sites are located within Section 2a.

7.3.94 Auchrae Farm PWS is located within Section 2a.

7.3.95 Some areas of Class 1 and 2 carbon-rich soils are present within Section 1b, these are in particular located adjacent to Auchrae Burn.

7.3.96 This section has **Medium Potential** to accommodate the infrastructure required; however, it is least preferential given the location of the Auchrae Farm PWS (sourced from a spring/watercourse) within this section, and the presence of some nationally important (Class 1 and 2) carbon-rich soils/deep peat.

Section 2b

Landscape and Visual Amenity

7.3.97 The Landscape and Visual appraisal of Section 2b is included within **Table 7-6** and conclusions are drawn below.

Table 7-6 Landscape and Visual Appraisal of Section 2b

Feature Type	Appraisal of Section 2b
Landscape Designations	Section 2b is outside the Regional Scenic Areas, RSA 4 Galloway Hills and RSA 8 Thornhill Uplands.
Landscape Character	Section 2b is entirely within LCT 178 Southern Uplands with Forest – Dumfries & Galloway. The landscape has rolling landform, dome shaped hills, large scale forest on slopes and lower summits.
Visual Amenity	Visual receptors include residents of Manquhill and users of two core path routes, (both form part of core path 216) and forest tracks, including recreational walkers and workers. There is an open area at an elevation of 300 m, associated with Manquhill Cottage which offers core path users framed views over Section 2b.

7.3.98 Section 2b comprises a combination of forest and open valley forest glade / open exposed land through Manquhill and the valley of the Corlae Burn.

7.3.99 Section 2b follows the route of the Corlae Burn from headwaters by Section corridor 2a until it joins Sections 1a and 1b. It follows low ground within the valley past disused pits from around 350 m down to 255 m approximately through a gap in forestry and past small patches of conifers over areas of bracken heath or rough grassland (OS map).

7.3.100 Section 2b has **Medium Potential** to accommodate the infrastructure, making use of the existing forest to partly screen the route and aligning the route in close proximity to the forest edge to make use of the forested background and potential screening by groups of trees that extend out of the forest bulk to visually integrate the route with the forest and minimise the potential extent of views from the core paths and Manquhill. Careful routeing and sensitive design of the poles and overhead lines, should be considered, including giving consideration to the overall height of the poles, keeping them below the mature height of trees.

Cultural Heritage

7.3.101 There are no designated heritage assets within Section 2b or an additional 1 km buffer area.

7.3.102 There are four non-designated heritage assets within Section 2b. All are examples of post medieval agricultural activity.

7.3.103 Section 2b has **High Potential** to accommodate the infrastructure due to containing minimal numbers of heritage assets. Impacts to heritage assets can be mitigated through demarcations and avoidance or preservation by record.

Ecology

7.3.104 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 16 km south of Section 2b. Section 2b has habitats to support wintering geese which this site is designated for.

7.3.105 Eight woodlands (three upland birch and five wet woodlands) are present within Section 2b which are listed in the NWSS. In addition, some areas are listed in the carbon and peatland map 2016 as Class 1 and Class 3. Section 2b consists primarily of a riparian marshy grassland corridor flanked by plantation coniferous woodland with three ponds present within this section.

7.3.106 Section 2b contains habitat suitable to support foraging, commuting and roosting bats along the woodland edge and riparian corridor with roost opportunities likely present within broadleaved trees present here. The Stroanfreggan Burn, Corlae Burn and Benbrack Burn within Section 2b have suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 2b habitat suitable to support breeding and wintering birds is present.

7.3.107 Section 2b has **Medium Potential** to accommodate the infrastructure with areas of priority habitats likely present across the section which would need to be microsited or avoided.

Geology, Hydrology and Hydrogeology

7.3.108 There is potential for direct hydrological connectivity with the Benbrack Burn/Stroanfreggan Burn and the Corlae Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.109 There are some areas at a high risk of flooding within Section 2b, located around the Benbrack Burn.

7.3.110 No designated/protected sites are located within Section 2b.

7.3.111 There are no PWS located within Section 2b, however Cornharrow PWS is located less than 1 km downgradient of the section.

7.3.112 Large areas of Class 1 and 2 carbon-rich soils are present within Section 2b, with Class 1 and 2 coverage over half of the section.

7.3.113 Section 2b section has **Medium Potential** to accommodate the infrastructure required; however, there is a risk to the groundwater-sourced Cornharrow PWS which is < 1 km downgradient of this section, and the presence of some nationally important (Class 1 and 2) carbon-rich soils/deep peat.

Land Use

7.3.114 Land capability for Agriculture in Section 2b is predominantly Class 5.3 (Land capable of use as improved grassland. Pasture deteriorates quickly).

7.3.115 Section 2b passes through the proposed boundaries both for Manquhill Wind Farm and Cornharrow Wind Farm. This Section passes through the 3-times rotor diameter distances for turbines associated with these proposed Wind Farms. Section 2b has **Medium Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.116 The majority of Section 2b is free from forestry. The western extent of the section is constrained by forestry on both sides, however there is an existing track/fire break that could be used to avoid the forestry within this area. Section 2b has **Medium Potential** to accommodate the infrastructure.

Section 2c

Landscape and Visual Amenity

7.3.117 The Landscape and Visual appraisal of Section 2c is included within **Table 7-7** and conclusions are drawn below.

Table 7-7 Landscape and Visual Appraisal of Section 2c

Feature Type	Appraisal of Section 2c
Landscape Designations	Section 2c is outside the Regional Scenic Areas RSA 4 Galloway Hills and RSA 8 Thornhill Uplands.
Landscape Character	Section 2c is bisected along north to south line (parallel with the Water of Ken) by the boundary between LCT 178 Southern Uplands with Forest – Dumfries & Galloway and LCT 160 – Narrow Wooded River Valley – Dumfries & Galloway. The landscape of LCT 178 has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. LCT 160 comprises trough shaped valleys with wooded slopes and flat narrow valley bottoms.
Visual Amenity	There are no residential receptors within the Section 2c corridor, however dwellings are present in close to proximity to Section 2c – Strahanna Farm, Craigengillan, Craigengillan Old Cottage, Meikle Auchrae with potential views towards OHL. Moorbrock properties also have potential views towards the OHL route. There are no core paths in the corridor, however it runs parallel to the Southern Upland Way with potential views down towards and overlooking Section 2c. An unclassified road runs along the west boundary of Section 2c.

7.3.118 Section 2c is predominantly forest. Only the western periphery is open and forest edge, with a very small open area to the southwest corner. Forest is characteristic of both LCT so there are opportunities to accommodate the poles and overhead lines without affecting their character.

7.3.119 Section 2c corridor follows the east slope of the Water of Ken valley, ranging from 215 m (approximately) to 300 m in level, with the northeast corner rising towards Auchrae Hill at about 350 m, through conifer forest and forest tracks parallel with the contours. There is a mast at approximately 280 m halfway up this slope and within Section 2c. Watercourses include the Water of Ken and the Polifferie Burn a tributary to the west, and Auchrae Burn, a tributary to the south.

7.3.120 Consideration should be given to the use of existing tracks and fire break gaps through the forest areas to align the route, minimising visual and landscape effects, or, alternatively, aligning the poles and overhead lines with the edge of the forest to benefit from a forested background, such that the poles and overhead lines do not appear on the skyline and can be integrated with the landscape.

7.3.121 With careful routeing of the poles and overhead lines, and in consideration of the visual receptors using the valley of the Water of Ken, Section 2c has **Medium Potential** to accommodate the infrastructure due to the opportunity that existing forest and landform provides to conceal or screen them from view, and where the poles and lines will be visible, to provide a forested background such that the poles and overhead lines may be integrated into the landscape.

Cultural Heritage

7.3.122 There are no designated heritage assets within Section 2c. There is one designated heritage asset within a 1 km buffer area, located 970 m south west of the section, Craigengillan cairn (SM2238).

7.3.123 Craigengillan cairn (SM2238) is a prehistoric ritual and funerary cairn and changes within its setting would impact the value of the heritage asset. Therefore, Section 2c has the potential to directly impact the Craigengillan cairn, but these impacts would be minimal due to distances from Section 2a.

7.3.124 Additionally, there is one non-designated heritage asset within Section 2c. The non-designated heritage asset is a sheepfold and field system (Canmore ID 177499) which is an example of post medieval agricultural activity within the area.

7.3.125 Section 2c has **Medium Potential** to accommodate infrastructure as physical impact to the non-designated heritage asset can be mitigated through demarcation and avoidance or preservation by record. However, impact to the setting of the Scheduled Monument (SM2238) can only be mitigated through minimising visual impact through design.

Ecology

7.3.126 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 16 km south Section 2c. Section 2c has habitats to support wintering geese which this site is designated for.

7.3.127 No woodlands are present within Section 2c listed within the Native Woodland Survey Scotland. There are no Class 1, Class 2 or Class 3 habitats as listed in the carbon and peatland map 2016. Section 2c is dominated by coniferous plantation woodland with riparian habitats present primarily grassland habitats along the Water of Ken.

7.3.128 Section 2c contains habitat suitable to support foraging and commuting bats along the woodland edge and riparian corridor. The Water of Ken within Section 2c has suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 2c, habitat suitable to support breeding and wintering birds is present.

7.3.129 Section 2c has **High Potential** to accommodate the infrastructure with areas of priority habitats limited within this section which could be microsited or avoided.

Land Use

7.3.130 Land capability for Agriculture in Section 2c is predominantly Class 5.2 (Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain).

7.3.131 No planning applications are identified within Section 2c. Section 2c has **High Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.132 Large areas of forestry are present within the centre of Section 2c, however these could be avoided by routeing to the west of the section, or by using existing tracks. Section 2c has **Medium Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.133 There is potential for direct hydrological connectivity with Water of Ken (Upstream High Bridge of Ken) and the Polifferie Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.134 There are some areas at a high risk of flooding within Section 2c, located around the Water of Ken and Auchrae Burn.

7.3.135 No designated/protected sites are located within Section 2c.

7.3.136 There are no PWS located within Section 2c, or within 1 km downgradient.

7.3.137 No Class 1 or 2 carbon-rich soils are located within Section 1a.

7.3.138 Section 2c has **High Potential** to accommodate the infrastructure required as there are no PWS within this section or within 1 km downgradient; whilst there are no nationally important (Class 1 and 2) carbon-rich soils/deep peat are present.

Section 2d

Landscape and Visual Amenity

7.3.139 The Landscape and Visual appraisal of Section 2d is included within **Table 7-8** and conclusions are drawn below.

Table 7-8 Landscape and Visual Appraisal of Section 2d

Feature Type	Appraisal of Section 2d
Landscape Designations	The western part of Section 2d is within the designated Regional Scenic Area. RSA 4 Galloway Hills.
Landscape Character	Section 2d lies predominantly within LCT 177 – Southern Uplands – Dumfries & Galloway which lies to the west. The east of the route crosses LCT 178 Southern Uplands with Forest – Dumfries & Galloway and the furthest east segment lies in LCT 160 – Narrow Wooded River Valley – Dumfries & Galloway. LCT 177 is a landscape of large smooth dome shaped, grass covered hills and an open, exposed character with woodland confined to incised valleys. Some parts of LCT 177 are now characterised by wind farms. Likewise, wind farms form a key characteristic of some parts of LCT 178, the landscape of LCT 178 has rolling landform, dome shaped hills, large scale forest on slopes and lower summits. LCT 160 comprises trough shaped valleys with wooded slopes and flat narrow valley bottoms.
Visual Amenity	Residential receptors include Moorbrock, Scar Knowe, Soms Knowe, Strahanna Farm. There is an unclassified road and several forest tracks. There are no core paths within Section 2c. The Moorbrock estate visual receptors include the

Feature Type	Appraisal of Section 2d
	landowner, recreational guests and workers, the panoramic vistas of the estate are important to these receptors.

7.3.140 Section 2d runs through a combination of patches of forest and open land, though is mainly open land. From the Water of Ken valley at 226 m by the Strahanna Bridge, it climbs the south slopes of Glenhead Rig to around 300 m before dropping to 250 m in the valley of the Polifferie Burn and its tributaries, the Politie Burn, Minnick Burn and Poldores Burn which conjoin near and below a cluster of dwellings at Moorbrook which is around 280-300 m. The vegetation is predominantly coniferous forest, with some open landcover such as rough grassland. The route takes a broad route around the north of Craigengillan Hill (401 m) a forested hill) before entering open land and rough grassland / heath at around 340 m, near Rider's Knowe, crossing the Poldores Burn. The route then occupies the lower slopes or shoulders of Beninner between 425 m and 350 m approximately to head south west over the Marbrack Burn, Polshagg Burn and headwater tributaries over open landcover such as rough grassland, past dry-stone dykes and sheepfolds. It will be more difficult to mitigate for poles and overhead lines within open exposed areas of LCT 177 and LCT 178. Here, every effort should be made to avoid the skyline and to use topography and landform to partly conceal and screen the poles and overhead lines from view.

7.3.141 There is opportunity to site the route alongside existing tracks, forest edges and dry stone dykes, this association with existing signs of contemporary human activity (not archaeological) and enclosures will help to integrate timber poles into the landscape, particularly within views of residential receptors and recreational receptor routes. There are extensive, open, exposed parts of Section 2d associated with the Moorbrock Estate in which the consideration of sensitive design is strongly recommended. There are already timber poles carrying overhead lines in this area, running through the valley of the Water of Ken from the B729 northwards, likely supplying the isolated dwellings and farmsteads,

7.3.142 With careful routeing of the poles and overhead lines, Section 2d has **Medium Potential** to accommodate the infrastructure due to the opportunity that existing forest and landform provides to conceal or screen them from view, and where the poles and lines will be visible, to provide a forested background such that the poles and overhead lines may be integrated into the landscape.

Cultural Heritage

7.3.143 There are no designated heritage assets within the Section 2d or an additional 1 km buffer area.

7.3.144 There are two non-designated heritage assets within Section 2d. The two non-designated heritage assets are examples of post medieval agricultural activity and include clearance cairns alongside an enclosure (Canmore ID 64325) and a farmstead within a field system (Canmore ID 177489).

7.3.145 Section 2d has **High Potential** to accommodate the infrastructure due to containing the least number of heritage assets. Impacts to heritage assets can be mitigated through demarcations and avoidance or preservation by record.

Ecology

7.3.146 Loch Ken and River Dee Marshes (SPA and RAMSAR) is approximately 17 km of Section 2d. Section 2d has habitats to support wintering geese which this site is designated for. Woodland shares continuous connectivity to woodlands within the Galloway Forest Park IBA.

7.3.147 Six native woodlands (five wet woodlands and one upland oakwood) as listed within the Native Woodland Survey Scotland are present within Section 2d. Class 1, Class 2 and Class 3 habitats are present across Section 2d with much of the habitat present within Section 2d being open habitats such as grassland and bog. Some plantation woodland is present in the centre of this section flanking the unnamed burn as well four ponds.

7.3.148 Section 2d contains habitat suitable to support foraging, commuting and roosting bats along the woodland edge and riparian corridor with roost opportunities likely present within broadleaved trees and scattered buildings present here. The Polifferie Burn and Water of Ken within Section 2d have suitability to support otter, water vole and fish species. The woodland present here has suitability to support pine marten and red squirrel with habitats present suitable to support badger, amphibian and reptile species. Across Section 2d habitat suitable to support breeding and wintering birds is present.

7.3.149 Section 2d has **Medium Potential** to accommodate the infrastructure with areas of priority habitats likely present across the section which would need to be microsited or avoided.

Land Use

7.3.150 Land capability for Agriculture in Section 2d is predominantly Class 5.2 (Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain).

7.3.151 Section 2d passes in close proximity to several residential properties, although these could be avoided through careful routeing.

7.3.152 Section 2d ties into the proposed Quantans Hill Wind Farm Collector Substation. This section therefore passes within the 3-times rotor diameter distances of turbines associated with this proposed Wind Farm.

7.3.153 Section 2d has **Medium Potential** to accommodate the infrastructure.

Forestry/Woodland

7.3.154 Section 2d consists of a combination of patches of forest and open land, though is mainly open land. Patches of forest are present within both the extreme east, and central portion of this section, however these could be avoided by careful routeing using existing fire breaks and tracks. Section 2d has **High Potential** to accommodate the infrastructure.

Geology, Hydrology and Hydrogeology

7.3.155 There is potential for direct hydrological connectivity with Polifferie Burn, Poldores Burn, Marbrack Burn and the Polshagg Burn watercourses. There is limited potential for direct hydrological connectivity with groundwater bodies.

7.3.156 There are some areas at a high risk of flooding within Section 2d, located around the Water of Ken, Polifferie Burn and Poldores Burn.

7.3.157 No designated/protected sites are located within Section 2d.

7.3.158 Strahanna PWS is located within Section 2d.

7.3.159 Some areas of Class 1 and 2 carbon-rich soils are present within Section 2d, these are in particular located adjacent to Poldores Burn, Polshagg Burn and Marbrack Burn.

7.3.160 Section 2d has **Medium Potential** to accommodate the infrastructure required; however, there is a risk to the spring-sourced Strahanna PWS which is within this section, and the presence of some nationally important (Class 1 and 2) carbon-rich soils/deep peat is also a constraint.

7.4 SUMMARY OF ROUTE OPTIONS APPRAISALS

7.3.161 A summary of the Environmental appraisal of the Route Sections is provided in **Table 7-9** below. This table is based upon the grades assigned by each topic in **Section 7.3** and the matrix provided in **Table 7-1**.

Table 7-9 Summary of Environmental Route Section Appraisal

Route Section	Heritage	Landscape	Ecology	Water	Forestry	Land Use
1a						
1b						
1c						
2a						
2b						
2c						
2d						

7.5 PREFERRED ROUTE

7.3.162 Taking account of environmental, technical, and cumulative considerations, and in consideration of SPEN's Approach to Routeing[1] (as outlined in **Section 4**) and the Holford Rules (**Appendix A**), the Preferred Route consists of Sections 1a, 1b and 1c, as shown in **Figure 12**. This route is approximately 9.5 km in length.

7.3.163 As mentioned in **Section 3.2**, it is assumed that the Proposed Development will be a continuous OHL connection, except for areas in which the Proposed Development passes in close to proximity to proposed or existing wind turbines. In these areas, the use of underground cables may be required. Underground cable options in other areas may also be considered at later stages of design, should further appraisal of the Preferred Route deem unacceptable impacts are likely.

ENVIRONMENTAL CONSIDERATIONS

7.3.164 The greatest impact associated with routeing the Proposed Development through the Study Area is likely to be Landscape and Visual. As such, it is considered vital to identify a Preferred Route which minimises Landscape and Visual impacts as far as reasonably practicable.

7.3.165 The Preferred Route provides the shortest possible connection, minimising the length of OHL to be constructed, and the number of angle poles required, thus aligning with Holford Rule 3 (see **Appendix A**). Whilst the Preferred Route passes across the Southern Upland Way in a relatively open area, it provides an opportunity to follow the boundaries of existing forestry areas. This forestry would help mitigate potential visual impacts by providing background screening to the OHL. The Preferred Route also provides the maximum clearance away from residential receptors. This is in contrast to other options such as Section 2d, where the OHL would be highly visible to residential receptors at Moorbrock Estate.

7.3.166 Additionally, since the Preferred Route provides the shortest possible connection, the area of habitat that may be impacted is minimised.

7.3.167 Whilst Section 1c passes within close proximity to Craigengillan Cairn Scheduled Monument, micrositing and careful alignment of the route within the south of Section 1c could mitigate any potential settings impacts to this asset.

TECHNICAL REVIEW OF ROUTE OPTIONS

7.3.168 The Route Options were reviewed by SPEN in relation to the technical constraints and system/network design requirements. This review was undertaken to ensure that, based on the level of detail available, the Route Options are within the technical parameters required to construct OHLs. The review considered technical features including altitude, topography, slope gradients, watercourse crossings, landowner constraints, existing OHLs and other infrastructure.

7.3.169 The technical review identified that the constraints associated with Route Option 2 are greater than those for Route Option 1. Sections 2a and 2b pass through the cores of the proposed Cornharrow and Manquhill Wind Farms, meaning that avoidance of turbine 3-times rotor diameter distances will likely not be possible. As such, an OHL solution through these Sections is not considered technically feasible, and significant lengths of underground cable would likely be required to provide a connection through these Sections. Taking into account SPEN's Approach to Routeing[17], the use of underground cable should be minimised as far as practicable.

7.3.170 Whilst Section 1c passes within the 3-times rotor diameter distances of turbines for the proposed Shepherds' Rig Wind Farm, any length of underground cable required would be significantly shorter than for Sections 2a and 2b.

7.3.171 Both Route Option 1 and Route Option 2 pass within the 3-times rotor diameter distances of turbines for the existing Wether Hill Wind Farm and proposed Quantans Hill Wind Farm. These Wind Farms are therefore not considered as differentiating factors between the Options.

7.3.172 Other technical constraints identified in relation Route Option 1 and Route Option 2 are considered similar; these include topography; presence of peat; watercourse and road crossings; and existing transmission infrastructure.

7.3.173 The technical review has therefore identified that Route Option 1 would be preferable.

REVIEW OF POTENTIAL CUMULATIVE IMPACTS

7.3.174 There is the potential for cumulative effects to arise in relation to the Proposed Development due to the presence of several Other Proposed Developments in close proximity to the Route Options. These developments include Wind Farm proposals and other electricity infrastructure proposals, as detailed in **Table 6-6**.

7.3.175 Due to the locations of the Wind Farm proposals in relation to the Route Options, any chosen Route Option would likely pass through, or in close proximity to, turbine locations. There would be the potential for cumulative landscape and visual impacts in these areas due to the addition of new vertical elements within the landscape. As outlined in **Section 6.3**, consideration will be given to the Energy Networks Association's guidance to separate the Proposed Development from any proposed turbine locations, and underground cable options will be considered, which may mitigate any potential cumulative landscape and visual impact.

7.3.176 In addition, any chosen Route Option would pass in close proximity to the proposed Lorg – Longburn OHL route. Consideration will be given to alignment of the Proposed Development in proximity to any other proposed electrical infrastructure to minimise potential cumulative Landscape and Visual impacts, whilst maintaining safe clearance distances.

[17] Major Electrical Infrastructure Projects: Approach to Routeing and Environmental Impact Assessment, SPEN (2021). Available at https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf

7.3.177 As the potential cumulative effects of the Route Options are similar, it is considered that any Route Option could be taken, dependent on the mitigations outlined above being incorporated into the design of the Proposed Development.

7.6 PLANNING POLICY COMPLIANCE

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

8 CONSULTATION PROCESS AND NEXT STEPS

8.1 CONSULTATION ON THE PREFERRED ROUTE

8.1.1 SPEN will seek for consent for the Proposed Development under three separate legal provisions. These provisions are outlined in **Section 2** of this report and are as follows:

- Consent to install and keep installed the OHL will be requested from Scottish ministers under s37 of the Electricity Act.
- SPEN will apply for deemed planning permission for works that are 'ancillary' or necessary to the operation of the overhead line such as cable sealing and compounds (if required) under Section 57(2) of the TCPA.
- Installation of sections of underground cable, including the tie-ins to the substations, will fall under SPEN's Permitted Development rights. As such these works will not require specific express consent.

8.1.2 While there are no formal pre-application requirements for consultation in seeking s37 consent / deemed planning permission, SPEN is embracing best practice as outlined in the Scottish Government Energy Consents Unit's Good Practice Guidance[18]. This guidance encourages applicants to engage with stakeholders and the public in order to develop their proposals in advance of such applications being made. Therefore, prior to the submission of the s37 consent and deemed planning permission, SPEN is carrying out consultation with stakeholders and the public.

8.1.3 The list of consultees included in this consultation is provided in **Appendix C**. Following the submission of application for s37 consent and deemed planning permission, the Scottish Government Energy Consents Unit will, on behalf of Scottish Ministers, carry out further consultation with the public and stakeholders, including Dumfries and Galloway Council.

8.1.4 SPEN attaches great importance to the effect that its works may have on the environment and local communities and is very keen to hear the views of local people. The consultation will run for four weeks from the **22nd of April** until the **23rd of May 2025**. In-person consultation events will be held for one day over the four-week consultation period. Further information on these events is available from the project website detailed below.

8.1.5 The general public is encouraged to be involved in the process and consultation materials will be made available online at: https://www.spenergynetworks.co.uk/pages/wether_hill_wind_farm_connection.aspx.

8.1.6 This document is being provided to inform consultees of the initial proposals for the Proposed Development and to provide a mechanism by which consultees can comment on the proposals.

FOCUS OF THE CONSULTATION

8.1.7 This report presents the findings of the routeing process undertaken for the Proposed Development, resulting in the identification of a Preferred Route. The focus of the consultation will be to ask for people's views on:

- *the Preferred Route;*

[18] Energy Consents Unit Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989 (2022). https://www.gov.scot/publications/good-practice-guidance-applications-under-sections-36-37-electricity-act-1989/ [Accessed 24/10/24]

- *the alternative route options considered during the routeing process; and*
- *any other issues, suggestions or feedback; particularly views on the local area, for example areas used for recreation, local environmental features, and any plans to build along the Preferred Route.*

SOURCES OF FURTHER INFORMATION

8.1.8 If you would like to comment on any aspect of this Proposed Development, please email us at: wetherhillconnection@spenergynetworks.co.uk or by post to: **Wether Hill Connection Project, SP Energy Networks, 55 Fullarton Drive, Glasgow, G32 8FA.**

8.1.9 SPEN would seek comment and responses on the 'Preferred Route' described within this Routeing Consultation Report by **23rd of May 2025.**

8.2 NEXT STEPS

8.2.1 The responses received from the consultation process will be considered in combination with the findings of this report to enable SPEN to decide on the 'Proposed Route' to be progressed to the next stage of the Proposed Development.

8.2.2 A request for an EIA Screening Opinion will subsequently be issued to the Energy Consents Unit for the Proposed Route. This will be accompanied by an EIA Screening Report which will be compliant with the regulations set out in the TCPA and EIA legislation. The Proposed Route, including all ancillary development, will be included in the application for s37 Consent and deemed planning permission.

8.2.3 SPEN will consult fully with the public, affected landowners and occupiers on all aspects of the Proposed Development and will give them an opportunity to comment on proposals as they progress.

SP Energy Networks

Appendices

APPENDIX A – HOLFORD RULES

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

RULES 1-7

Rule 1

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

NOTE ON RULE 1

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

b) Areas of highest amenity value require to be established on a project-by-project basis considering Schedule 9 to The Electricity Act 1989, Scottish Planning Policies, National Planning Policy Guidelines[19], Circulars and Planning Advice Notes and the spatial extent of areas identified.

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

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

Rule 2

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

NOTE ON RULE 2

[19] National Planning Policy Guideline series (NPPG) has been superseded by Scottish Planning Policy (SPP) published on 23 June 2014. The areas of highest amenity value are now included within SPP.

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

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

c) If there is an existing transmission line through an area of high amenity value and the surrounding land uses have to some extent adjusted to its presence, particularly in the case of commercial forestry, then the effect of remaining on this line must be considered in terms of the effect of a new route deviating around the area.

Rule 3

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

NOTE ON RULE 3

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

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

Rule 4

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

Rule 5

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

NOTES ON RULES 4 AND 5

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

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

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

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

Rule 6

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

NOTE ON RULE 6

a) In all locations minimise confusing appearance.

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

Rule 7

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

NOTE ON RULE 7

a) When a line needs to pass through a development area, route it so as to minimise as far as possible the effect on development.

b) Alignments should be chosen after consideration of effects on the amenity of existing development and on proposals for new development.

c) When siting substations take account of the effects of the terminal towers and line connections that will need to be made and take advantage of screening features such as ground form and vegetation.

EXPLANATORY NOTE ON RULE 7

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

SUPPLEMENTARY NOTES

a) Residential Areas

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

b) Designations of Regional and Local Importance

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

c) Alternative Lattice Steel Tower Designs

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

FURTHER NOTES ON CLARIFICATION TO THE HOLFORD RULES

LINE ROUTEING AND PEOPLE

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

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

b) In rural areas avoid as far as possible dominating isolated houses, farms or other small-scale settlements.

c) Minimise the visual effect perceived by users of roads and public rights of way, paying particular attention to the effects of recreational, tourist and other well-used routes.

SUPPLEMENTARY NOTES ON THE SITING OF SUBSTATIONS

a) Respect areas of high amenity value (see Rule 1) and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area.

b) Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas.

c) Use space effectively to limit the area required for development, minimizing the effects on existing land use and rights of way.

d) Alternative designs of substations may also be considered, e.g. 'enclosed', rather than 'open', where additional cost can be justified.

e) Consider the relationship of towers and substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints.

f) When siting substations take account of the effects of line connections that will need to be made.

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

1 Interpretation of The Holford Rules 1 and 2

1.1 Introduction

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

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

1.2 Designations

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

1.3 Amenity

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

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

he reasonably can do to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any flora, fauna, features, sites, buildings or objects.

1.4 Hierarchy of Amenity Value

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

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

1.5 Major and Smaller Areas

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

1.6 Conclusion

Given that both the spatial extent in terms of major and smaller and the amenity value in terms of highest and high that must be considered in applying Rules 1 and 2, that no value in these terms is provided by either Schedule 9 to the Act, relevant Scottish Planning Policies or National Planning Policy Guidelines, then these must be established on a project-by-project basis. Designations can be useful in giving an indication of the level of importance and thus value of the interest safeguarded. The note to The Holford Rules can thus only give examples of the designations which may be considered to be of the highest amenity value.

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

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

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

MAJOR AREAS OF HIGHEST AMENITY VALUE

1 In Scotland relevant national or international designations for major areas of highest amenity value include the following identified from Scottish Planning Policies and National Planning Policy Guidelines[20].

Special Areas of Conservation	(NPPG 14)
Special Protection Areas	(NPPG 14)
Ramsar Sites	(NPPG 14)
National Scenic Areas	(NPPG 14)
National Parks	(NPPG 14)

[20] See footnotes under Holford Rule 1 (note on Rule 1) for references update.

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

Other Smaller Areas of High Amenity Value

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

Areas of Great Landscape Value

Regional Scenic Areas

Regional Parks

Country Parks

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

Flora and Fauna

3 Legislation sets out the procedure for designation of areas relating to flora, fauna and to geographical and physio geographical features. Designations relevant to the routeing of transmission lines will include Special Area of Conservation, Special Protection Area, Sites of Special Scientific Interest, National Nature Reserves, Ramsar Sites and may also include local designations such as Local Nature Reserve.

4 Area of Historic, Archaeological or Architectural Value

Certain designations covering more limited areas are of relevance to the protection of views and the settings of towns, villages, buildings of historic, archaeological or architectural value. These designations include features which may be of exceptional interest. Of particular importance in this connection are:-

Schedule of Ancient Monuments

Listed Buildings, especially Grade A and Grade B

Conservation Areas

Gardens and Designed Landscapes included in the Inventory of Gardens and Designed Landscapes of Scotland

Green Belts

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

APPENDIX B – ENVIRONMENTAL DATA SOURCES

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

Feature	Data Source
Special Area of Conservation	SNH
Special Landscape Areas	SNH
Special Protection Areas	SNH
Waterbodies	SEPA
Wild Land Areas	SNH
World Heritage Sites	Historic Environment Scotland

APPENDIX C – LIST OF CONSULTEES

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

APPENDIX D - FIGURES

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 1 – Connection Points.mxd

N

Legend:

- Wether Hill Wind Farm Substation
- Quantans Hill Wind Farm Collector Substation

0 500 1,000

Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Connection Points

Drawing No:	Figure 1	Drawn:	PS
Date:	10/25/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 2 – Study Area.mxd

N

Legend:

- Wether Hill Wind Farm Substation
- Quantans Hill Wind Farm Collector Substation
- Study Area

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Study Area

Drawing No:	Figure 2	Drawn:	PS
Date:	10/25/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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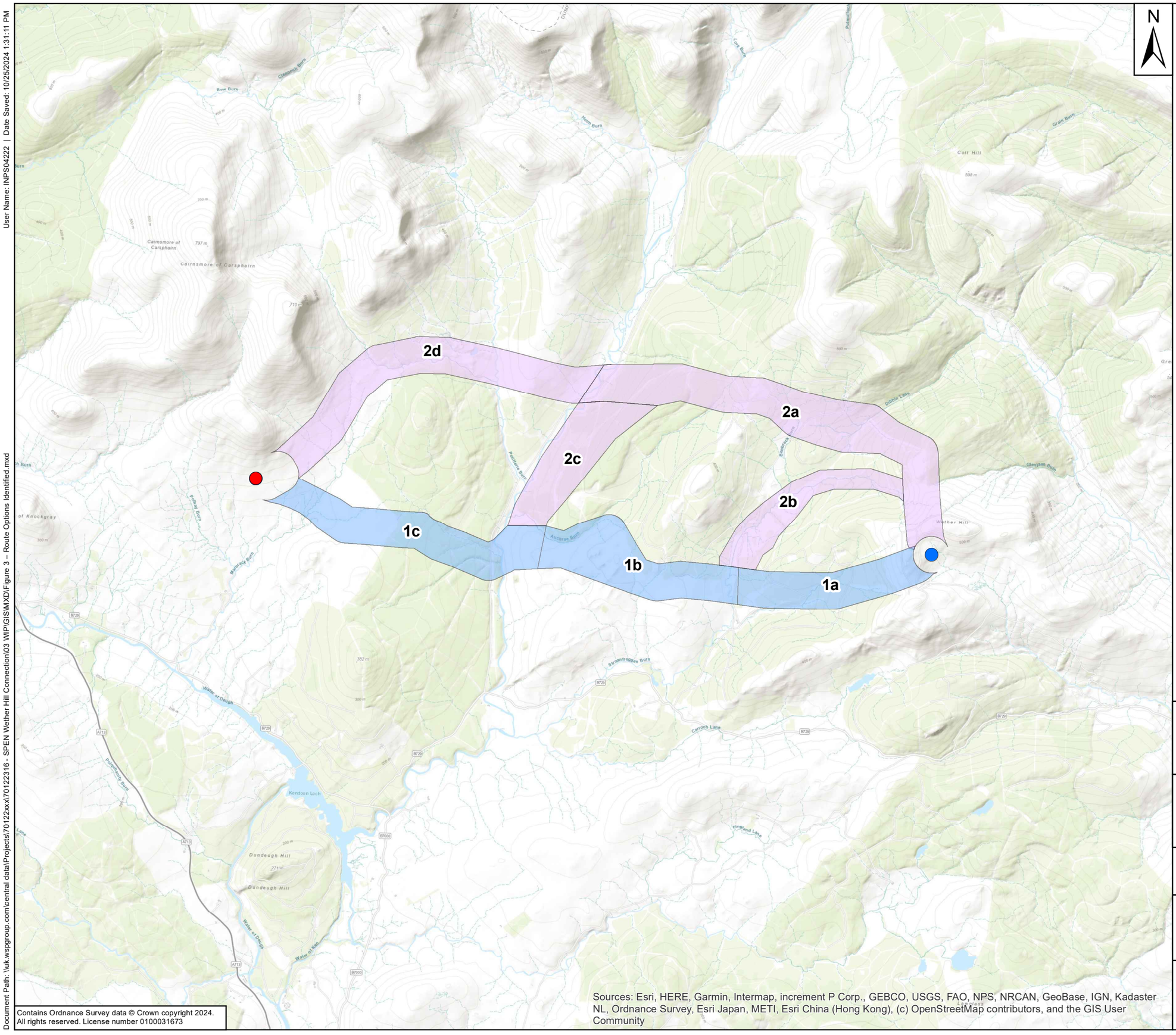

Legend:

- ● Wether Hill Wind Farm Substation
- ● Quantans Hill Wind Farm Collector Substation
- 🟦 Route Option 1
- 🟪 Route Option 2

0 500 1,000

Metres

wsp

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client:

SP ENERGY NETWORKS

Project:

SPEN Wether Hill Connection

Title:

Route Options Identified

Drawing No:	Figure 3	Drawn:	PS
Date:	10/25/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 3 – Route Options Identified.mxd

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 4 – Technical Considerations.mxd

N

Legend:

- Wether Hill Wind Farm Substation
- Quantans Hill Wind Farm Collector Substation
- Study Area
- Existing Overhead Lines
- Topography over 200m AOD
- Areas where topography gradient is in excess of 10%
- Manquhill Turbine Locations
- Quantans Hill Turbine Locations
- Shepherds Rig Turbine Locations
- Wether Hill Turbine Locations
- Cornharrow Turbine Locations
- Buffer Area

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Technical Considerations

Drawing No:	Figure 4	Drawn:	PS
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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 6 – Landscape Designations and Classifications.mxd

N

Legend:

- Study Area
- Galloway Forest Park
- Knockgray Park Designated Landscape

Landscape Character Assessment

- Foothills - Dumfries & Galloway
- Foothills with Forest - Dumfries & Galloway
- Narrow Wooded River Valley - Dumfries & Galloway
- Southern Uplands - Ayrshire
- Southern Uplands - Dumfries & Galloway
- Southern Uplands with Forest - Dumfries & Galloway
- Upland Glens - Dumfries & Galloway
- Upper Dale - Dumfries & Galloway

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Landscape Designations and Classifications

Drawing No: Figure 5
Date: 10/17/2024
Scale: 50,000 @ A3
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Checked: HR
Approved: JW

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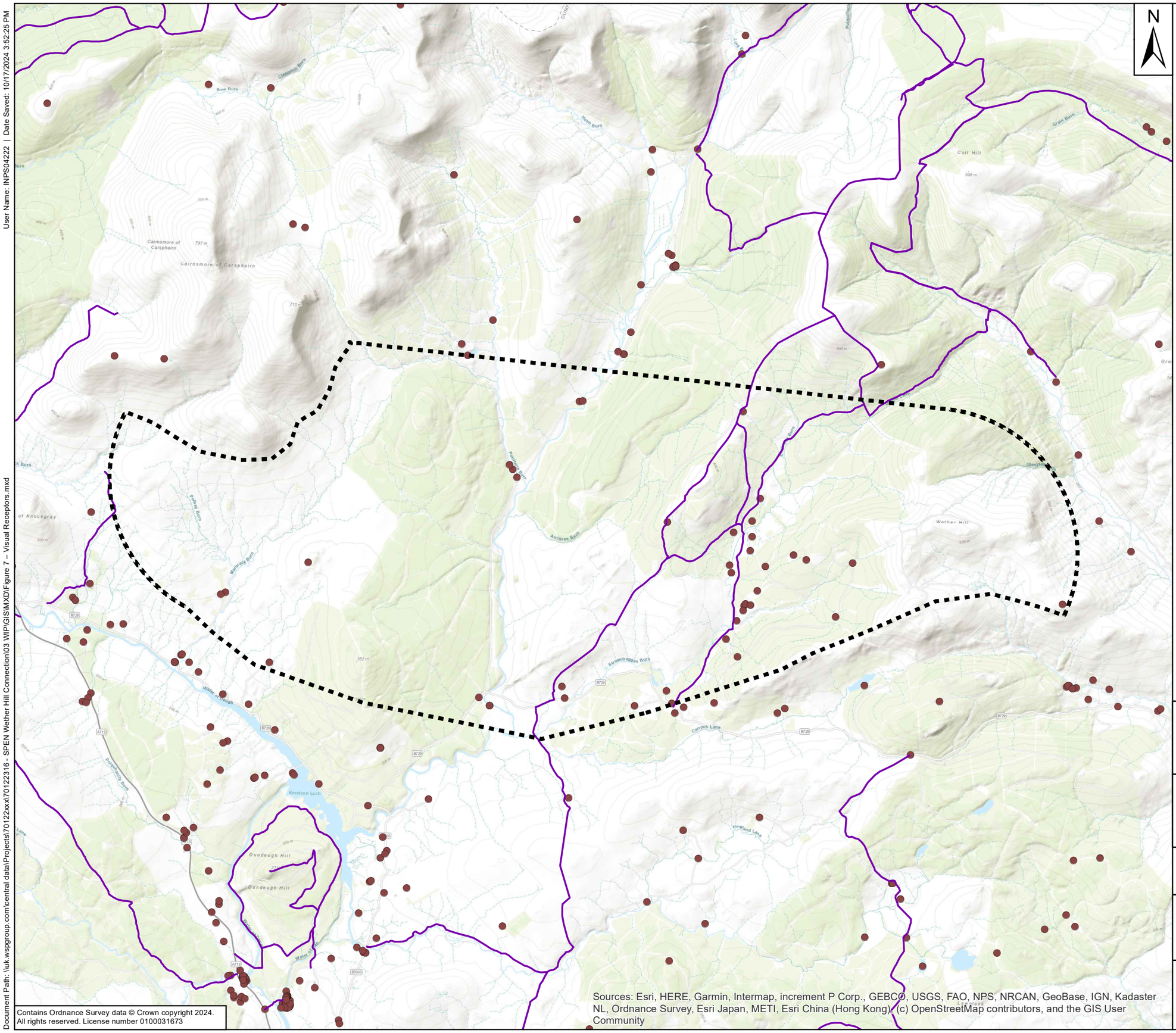
Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 7 – Visual Receptors.mxd



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Legend:

- Study Area
- Ordanance Survey (OS) Open Unique Property Reference Number (UPRN)
- Core Paths

0 500 1,000
Metres

wsp
8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Visual Receptors

Drawing No:	Figure 6	Drawn:	PS
Date:	10/17/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 8 – Cultural Heritage Designations.mxd

N

Legend:

- Study Area
- Scheduled Monuments
- National Record of the Historic Environment: Canmore

Listed Buildings

- Category B
- Category C

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Cultural Heritage Designations

Drawing No:	Figure 7	Drawn:	PS
Date:	10/17/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 9 – Land Use and Recreation.mxd

N

Legend:

- Study Area
- Onshore Windfarms – Proposed, Being Consented, or Operational
- Ordanance Survey (OS) Open Unique Property Reference Number (UPRN)
- Core Paths

Land Capability for Agriculture

- Class 4.2
- Class 5.1
- Class 5.2
- Class 5.3
- Class 6.1
- Class 6.2
- Class 6.3
- Class 7
- Class 9

0 500 1,000
Metres

wsp
8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Land Use and Recreation

Drawing No:	Figure 8	Drawn:	PS
Date:	10/25/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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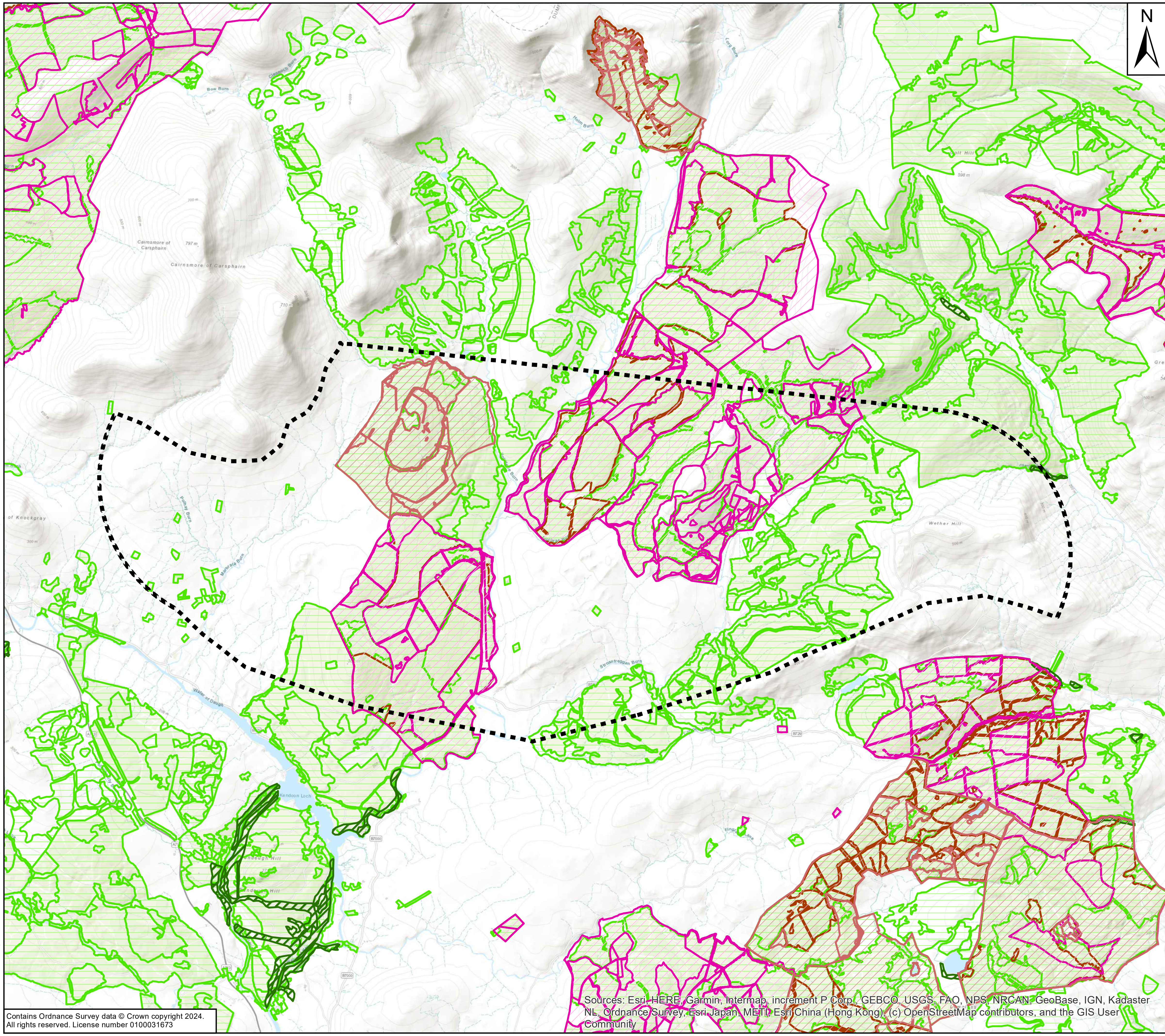

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 10 – Forestry and Woodland.mxd

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N

Legend:

- Study Area
- Ancient Woodland Inventory
- National Forestry Inventory Scotland 2020
- FGS WIG Forest Plans
- RDC Forest Plans
- SFGS Forest Plans

FGS WIG: Forestry Grant Scheme Woodland Improvement Grant
RDC: Rural Development Contract
SFGS: Scottish Forestry Grants Scheme

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client:

SP ENERGY NETWORKS

Project:

SPEN Wether Hill Connection

Title:

Forestry and Woodland

Drawing No:	Figure 9	Drawn:	PS
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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 11 – Geology, Hydrology and Hydrogeology Features.mxd

N

Legend:

- Study Area

Carbon Peatland

- Class 1
- Class 2
- Main Rivers and Ordinary Watercourses
- River Flood Maps High
- River Flood Maps Medium
- River Flood Maps Low
- River Flood Maps Medium Climate Change

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Geology, Hydrology and Hydrogeology Features

Drawing No:	Figure 10	Drawn:	PS
Date:	10/17/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 5 – Route Options and Key Environmental Features.mxd

N

Legend:

- Route Option 1
- Route Option 2
- National Forestry Inventory Scotland 2020
- River Flood Maps High
- River Flood Maps Medium
- River Flood Maps Low

Carbon Peatland

- Class 1
- Class 2
- Scheduled Monuments

0 500 1,000
Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Route Options and Key Environmental Features

Drawing No:	Figure 11	Drawn:	PS
Date:	10/25/2024	Checked:	HR
Scale:	50,000 @ A3	Approved:	JW

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Document Path: \\uk.wspgroup.com\central data\Projects\70122xxx\70122316 - SPEN Wether Hill Connection\03 WIP\GIS\MXD\Figure 12 – Preferred Route.mxd

N

Legend:

- Wether Hill Wind Farm Substation
- Quantans Hill Wind Farm Collector Substation
- Preferred Route

1a

1b

1c

0 500 1,000

Metres

8 First Street
Manchester,
M15 4RP,
UK
T+ 44 161 200 5000

Client: SP ENERGY NETWORKS

Project: SPEN Wether Hill Connection

Title: Preferred Route

Drawing No: Figure 12
Date: 1/27/2025
Scale: 50,000 @ A3
Drawn: PS
Checked: HR
Approved: JW

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