Enoch Hill 2 – 33 kV Overhead Line Grid Connection

Revised Routeing Consultation Document

662109

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Executive Summary

1. SP Energy Networks (SPEN) has been contracted by National Grid Electricity Transmission (NGET) to provide a 33 kV overhead line (OHL) grid connection from the proposed Enoch Hill 2 (formerly Monquhill) Wind Farm to the consented Enoch Hill Wind Farm substation in East Ayrshire. The wood poles will typically be between 12 and 15 m high, with typical spans of 80 m, although the design parameters will depend on terrain and altitude and may be subject to change within agreed limits of deviation.

2. SPEN identified and assessed three potential route options for the Enoch Hill 2 OHL in 2020, identifying a preferred route. Statutory consultees were consulted on the preferred route, and no objections were raised. However, as the project progressed to the next stage of design, it emerged that the preferred route would not be feasible from an engineering perspective. Consequently, three additional revised potential route options were identified by SPEN that would be technically feasible. The three revised routes required environmental appraisal.

3. This document presents information on the approach taken in the identification of the revised route options for the proposed connection, appraisal methodology, and the findings of the appraisals and assessments, concluding in the selection of a revised preferred route option.

4. The purpose of this document is two-fold:

- To present the information and revised route options that have been identified by SPEN for the planned Enoch Hill 2 OHL grid connection, and
- To elicit comments from and participation of key stakeholders, to inform SPEN further and aid in the selection of a proposed OHL grid connection route.

5. The approach to developing and assessing the route options follows SPEN's two stage approach to routeing[1], as follows:

- Stage 1: Identification and appraisal of route options to select a preferred route including consultation with stakeholders to establish a proposed route.
- Stage 2: Once a final proposed route has been selected, the project will move forward into the consenting process under the Electricity Act, 1989.

6. Stage 1 is currently underway, with a preferred route having been identified which provides a technically feasible and economically viable continuous overhead line to connect the proposed Enoch Hill 2 (formerly Monquhill) Wind Farm to the grid whilst taking into consideration environmental, technical and economic constraints. This means that the proposed route would be the one that on balance, causes the least disturbance to the environment and the people who live, work and enjoy outdoor recreation within it. SPEN attach great importance to the effect the work could have on the environment and local communities and are keen to engage with stakeholders so that views can be taken into account through the development of the project.

7. SPEN would like to request comments and input from stakeholders to the route selection for the Enoch Hill 2 OHL grid connection. All comments and input are highly valued and appreciated. It would be appreciated if the following could be taken into consideration when commenting:

- Are there any comments regarding the rationale for the project, as set out within this route selection consultation document?
- Are there any comments regarding the approach to the selection of the preferred route as set out in this route selection consultation document?

[1] SP Energy Networks (February 2020), Major Electrical Infrastructure Project: Approach to Routeing and Environmental Impact Assessment, https://www.spenergynetworks.co.uk/userfiles/file/SPEN_Approach_to_Routeing_Document_2nd_version.pdf.

- Are there any factors that may have been overlooked, or given either too much or insufficient consideration during the route selection process?

8. All comments received will inform further consideration of the preferred route alignment and the selection of a proposed route alignment, which will be taken forward for more detailed environmental assessment prior to submission of an application for consent.

1 Introduction

1.1 Project Background

1. SP Energy Networks (SPEN) has been contracted by National Grid Electricity Transmission (NGET) to provide a grid connection between the proposed Enoch Hill 2 Wind Farm to the consented Enoch Hill Wind Farm substation in East Ayrshire. The location of the study area associated with the planned grid connection is presented in Figure 1 of Appendix 1.

2. The Enoch Hill Wind Farm was granted planning permission by the Scottish Ministers in September 2019, with a variation for increased tip height and rotor diameter being consented in December 2021. The location of the planned Enoch Hill Wind Farm turbines and collector substation are shown on Figure 1 in Appendix 1.

3. Another wind farm is proposed to be developed on property to the south east of the wind farm, called Enoch Hill 2. The proposed Enoch Hill 2 Wind Farm, formerly named the Monquhill Wind Farm, is still in the early planning stages and information pertaining to the planned wind farm development is limited to the information in the Enoch Hill 2 Scoping Report, dated February 2020. The location of the planned connection points are also shown on Figure 1 in Appendix 1. The contracted grid reference connection point for Enoch Hill 2 Wind Farm is E 259214, N 606931.

4. Based on the fixed start and end points, a study area was delineated within which it was anticipated that the grid connection will would be located. A significant amount of detailed environmental information is available for the part of the Enoch Hill 2 OHL study area falling within the Enoch Hill Wind Farm boundary. This information was made publicly available in the following documents:

- Enoch Hill Wind Farm Environmental Statement, 2015;
- Enoch Hill Wind Farm Further Environmental Information 2017; and
- Enoch Hill Wind Farm S36 Variation Application 2020.

5. Further information was extracted from the ecological and cultural heritage baseline surveys that were previously undertaken for the Enoch Hill 2 Wind Farm. Initial consultation with the then Scottish Natural Heritage (now known as NatureScot) regarding the level of environmental information required for the planned Enoch Hill 2 OHL grid connection concluded that a light-touch, gap-filling approach would be acceptable to provide information for the areas within the study area that were not included in the Enoch Hill Wind Farm environmental studies. In line with this, several environmental surveys were undertaken in 2019 and 2020, the results of which were used, together with technical constraints, to identify and appraise three potential route options for the OHL grid connection.

6. A Routeing Consultation Document (RCD) was prepared in June 2020 which discussed how the three initial route options had been identified. The route options were referred to as Route Options 1, 2 and 3 (see Figure 2 in Appendix 2). The RCD also assessed the potential environmental effects of each route option. The RCD ultimately identified one of the three initial route options which, on balance, would be the most preferable from an environmental perspective. The preferred route was Route Option 2 (see Figure 2 in Appendix 2). However, upon commencement of the detailed design of the OHL, it emerged that the identified route options were not feasible from an engineering perspective. This necessitated the identification of new (revised) route options that would be technically feasible – these new route options, referred to as Route Options 4, 5, and 6, are shown on Figure 2 in Appendix 1. The new route options are different from the initial three route options, and have been assessed from an environmental perspective, as set out in the remainder of this document.

7. SPEN's approach to routeing of connection infrastructure includes consultation with stakeholders and the wider public to establish a proposed route which would be taken forward into the EIA screening phase. The purpose of this document is therefore two-fold:

- To present Route Options 4, 5 and 6 and information relating to these revised route options;
- To elicit comments from and participation of stakeholders, to inform SPEN further and aid in the selection of a revised proposed grid connection route.

8. SPEN are committed to minimising the potential impacts of the Enoch Hill 2 OHL grid connection on the receiving environment and the people who live, work and enjoy outdoor recreation within or near the study area. Best practice requires environmental impacts to be managed as proactively as possible, and SPEN are committed to doing so through design as far as practicable. Consistent with this, SPEN are keen to engage with stakeholders, with views taken forward to the next stage in the consenting process.

1.2 Project Description

1.2.1 Grid Connection Design and Infrastructure

9. SPEN's 'Approach to Routeing' document for major electrical infrastructure (2020) seeks a continuous overhead line 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.

10. On this basis, the key design assumption is that the Enoch Hill 2 grid connection will be a continuous OHL connection throughout. Should the appraisal identify any areas where a proposed OHL is likely to give rise to unacceptable effects, alternative routes will be considered and only once all reasonable OHL alternatives have been exhausted would SPEN consider the use of underground cable. If, in certain circumstances, it is determined that an underground cable is required instead of an overhead line, the approach is to minimise the length of underground cable necessary to overcome the constraint to overhead line routeing, consistent with a balance between technical and economic viability, deliverability and environmental considerations. It is not uncommon for a length of cable to be required to enter or exit a substation for technical reasons.

11. SPEN has identified that the planned grid connection will require a 33 kV OHL connection and will transmit electricity generated at the planned Enoch Hill 2 Wind Farm from the connection point, delivering it to the collector point at the Enoch Hill Wind Farm substation. The connection and collector points are shown on the figures in Appendix 1.

1.2.2 OHL Design Parameters

12. The design parameters and constraints of the 33 kV OHL have been preliminarily identified as set out in **Table 1.1**, below:

Table 1.1: Technical Constraints Directing the Design of the Proposed OHL

Technical Constraint	Description	Details
Design	OHL Design	Trident 33 kV H-Poles and single poles
	Structure height	Typical 15 m, max. 18 m, min. 12 m
	Span lengths	Typical 80 m, max. 110 m, min. 70 m
	Corridor required for construction	Typical 60 m
Environmental	Slope angle tolerance for design	<22°
	Maximum altitude for design	<500 m AOD
		At altitudes over 200 m AOD, spans will be required to be shorter than average, typically 80 m or less.
Infrastructure	Stand-off required from wind turbines	Falling distance (tip height) + 10 %

Technical Constraint	Description	Details
	Stand-off required from other infrastructure as appropriate	Stand off from other infrastructure would require advice from the appropriate body.

13. The 33 kV OHL will consist of 3 conductors (wires) in a horizontal flat formation, which will be supported by double (H) wood poles. The wood poles are fabricated from pressure impregnated softwood and treated with a preservative to prevent damage to structural integrity. The size of poles and span lengths will vary depending on several factors. The design parameters will depend on terrain and altitude and may be subject to change within agreed limits of deviation.

14. The wood poles will typically be between 12 and 15 m (maximum 18 m) high, with typical spans of 80 m. These design parameters have been used as the basis for identification of a new preferred route, however, the precise pole configuration, height and the spans will be determined after a detailed line design following confirmation of the proposed route. It is expected that the OHL will be undergrounded for a length of approximately 50 m on each end leading to the connection points.

15. **Photographs 1.1** and **1.2** below show some examples of OHLs with similar infrastructure to the proposed Enoch Hill 2 OHL.

Photograph 1: Example of an existing OHL which uses both single and double wood poles (SPEN, 2022)

Photograph 1.2: Double wood pole example infrastructure (SPEN, 2022)

1.2.3 OHL Routeing

16. SPEN adopts a structured approach to OHL routeing that takes account of established practice for line routeing, consultation with stakeholders, technical requirements and potential environmental effects. SPEN's approach to overhead line routeing is set out in SP Energy Networks document titled, "Approach to Routeing and Environmental Impact Assessment" (February 2020). **Figure 1.1**, below, sets out SPEN's routeing process.

17. SPEN's overall approach is based on the premise that the major effect of an overhead line is visual. SPEN's approach to OHL routeing is to reduce the degree of visual intrusion as far as practicable by careful routeing. A reduction in visual intrusion can be achieved by routeing the line to fit the topography, by using topography and trees to provide screening and/or background, and by routeing the line at a distance from settlements and roads. In addition, a well-routed line considers other environmental and technical considerations and would avoid, wherever possible, the most sensitive and valued natural and man-made features. SPEN's approach to routeing has been followed to identify potential route options for the planned Enoch Hill 2 OHL grid connection. **Section 2** of this report discusses the routeing approach and methodology used to identify the potential route options for the OHL.

Figure 1.1: Routeing and Environmental Impact Assessment process diagram (SPEN, 2020)

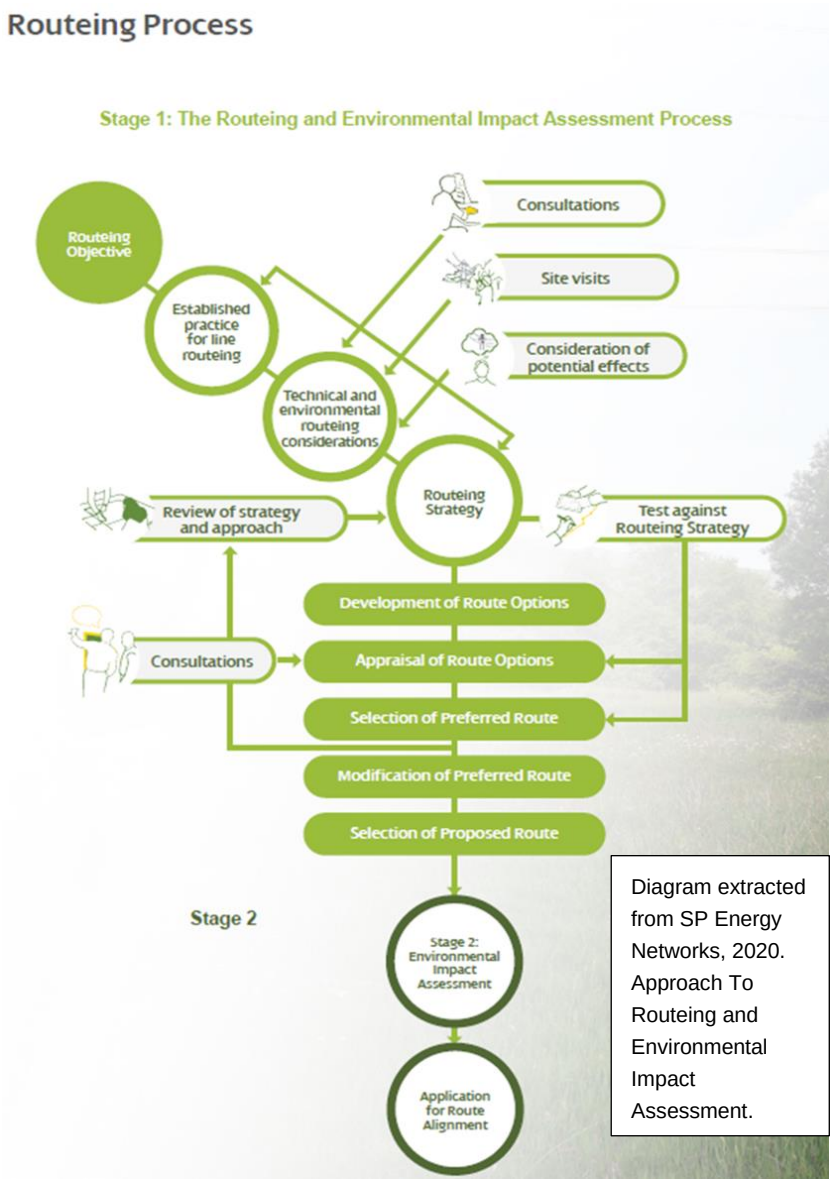

Diagram extracted from SP Energy Networks, 2020. Approach To Routeing and Environmental Impact Assessment.

1.2.4 Construction of OHL Infrastructure

18. OHL construction typically follows a standard sequence of events as follows:

- Prepare access to the pole locations;
- Erect wood poles;
- String conductors; and
- Reinstate pole sites and any other disturbed ground.

19. It is not anticipated at this stage that any new access tracks will be required to construct the Enoch Hill 2 OHL grid connection. Access to the pole sites will be gained using low ground pressure vehicles, and the tracks to be constructed for the Enoch Hill and Enoch Hill 2 Wind Farms will be used as far as practicable. Pulling positions may require some form of access.

20. For wood pole line construction, the 'poles' are typically erected using normal agricultural machinery such as an excavator with a lifting arm (see Photographs 1.3 and 1.4 below). A tracked excavator and low ground-pressure vehicles, (e.g. tractor, ATV, quad bikes) are used to deliver, assemble and erect each wood pole structure at each location. The erection of the wood poles requires a typical excavation of 10 m2 x 2 m deep, although this depends on the soil type and terrain. The excavated material is segregated into appropriate layers and used for backfilling. It is relatively rare for concrete or other backfill to be used in the foundations of wood poles. This would normally only be used where ground conditions are particularly unstable (identified by site investigations). An excavator is typically used to hoist the assembled structure into position and once the structure has been braced in position the trench is backfilled.

21. 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 overhead line 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. Pole sites would be reinstated and temporary infrastructure sites would be removed and reinstated.

22. In all cases, every effort is made to cause the least disturbance to landowners and residents during construction. Following completion, all ground disturbance resulting from the construction of the new line is reinstated to the satisfaction of the landowner and in compliance with conditions imposed by any consent / licence granted by the authorities prior to the commencement of construction.

1.2.5 Operation and Maintenance of OHL Infrastructure

23. Once operational, the OHL would be periodically monitored and inspected by SPEN overhead linesmen, most likely patrolling on foot. Where maintenance is required, SPEN standard procedures would be followed, but would limit the use of vehicles to low ground pressure vehicles and would adhere to the same principles of reinstatement of disturbed ground to the satisfaction of the landowner, and in compliance with conditions imposed by any consent / licence granted by the authorities prior to the commencement of construction. Information pertaining to any sensitive environmental aspects along the route of the OHL and any consent and/or licence conditions will be passed on to SPEN field operatives ahead of maintenance patrols and repair work to minimise potential impacts during the operational phase of the OHL.

1.3 Legal and Planning Context

1.3.1 Overarching Legislation

24. The overarching legislation applicable to the Enoch Hill 2 OHL grid connection is the Electricity Act 1989. Scottish Power Transmission's licensed businesses are authorised to transmit and distribute electricity within its network areas under the Electricity Act 1989. As such, SPEN has a statutory obligation to carry out the duties outlined within the Electricity Act 1989.

25. As a transmission licence holder for southern Scotland, SPEN is required under Section 9(2) of the Electricity Act 1989 to:

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

26. Under Schedule 9 of the Electricity Act 1989, SPEN has a duty to ensure that all its developments: *"have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological of physiological features or special interest of protected sites, buildings, objects of architectural, historical or archaeological interest; and to do what it reasonably can to mitigate any effects which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects."*

27. SPEN recognises that its installations, whether overhead or underground, can have an effect on the environment, and seek to minimise this through careful routeing and execution of its projects. At this early stage, the design of the Enoch Hill 2 OHL is directed by the consideration of both technical and potential environmental constraints to identify possible routes for the OHL, as presented in this consultation document.

1.3.2 Consenting Requirements

28. Once the route options have been identified and appraised (see **Section 4** of this report), and a final proposed route has been selected, the project will move forward into the consenting process under the Electricity Act, 1989.

1.3.2.1 Electricity Act 1989

29. Section 37 of the Electricity Act 1989 requires that, except for certain specific examples, all electricity lines exceeding 20 kV will require consent to be granted by the Scottish Ministers. This 'Section 37 consent' gives approval to install, and keep installed, an overhead electricity line. As the planned Enoch Hill 2 OHL grid connection will be a 33kV line, consent will be required under Section 37 of the Electricity Act 1989.

1.3.2.2 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2019

30. The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2019 require that, before consent is granted for certain developments, an Environmental Impact Assessment (EIA) must be undertaken. The EIA Regulations set out the types of development that are always subject to an EIA (Schedule 1 developments) and other developments which may require an EIA if they exceed certain thresholds and are likely to give rise to significant environmental effects (Schedule 2 developments). The planned Enoch Hill 2 OHL grid connection currently falls under Schedule 2:

- *"(2) an electric line installed above ground -*
- *(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."*

31. It is SPEN's intention to submit an EIA screening application to the Scottish Ministers as part of the application for consent under Section 37 of the Electricity Act (1989) for the Enoch Hill 2 OHL grid connection. The screening response may confirm that EIA is not a requirement. In this context an environmental appraisal would be undertaken to support the Section 37 application instead.

1.3.2.3 Town and Country Planning (Scotland) Act 1997 and The Planning etc. (Scotland) Act 2006

32. Section 57 of the Town & Country Planning (Scotland) Act 1997 as amended by The Planning etc. (Scotland) Act 2006 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 such as cable sealing end compounds.

33. Some forms of development, including underground cables, are typically 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.

34. Sections 25 and 37 (2) of the Town and Country Planning (Scotland) Act 1997 (as amended by the Planning etc. (Scotland) Act 2006) require that planning decisions are made in accordance with the development plan, unless material considerations indicate otherwise. The East Ayrshire Local Development Plan and Policies are discussed below in Section 1.3.3.

1.3.2.3.1 Planning Considerations

35. The Enoch Hill 2 OHL development will contribute to energy infrastructure, without which new renewable energy generation projects would be unable to contribute towards achieving these targets.

36. Sections 25 and 37 (2) of the Town and Country Planning (Scotland) Act 1997 (as amended by the Planning etc. (Scotland) Act 2006) require that planning decisions are made in accordance with the development plan, unless material considerations indicate otherwise.

1.3.2.4 Local Development Plan and Policy

37. The adopted East Ayrshire Council Local Development Plan (2017) puts forward the local authority's position on the development of service infrastructure in Policy INF1, stating that *"The Council will encourage all service providers to improve, augment, and expand existing service infrastructure throughout East Ayrshire in order to meet demand. Such developments will be supported by the Council where it can be demonstrated that there would be no detrimental impacts on the landscape, natural and built heritage designations or on the road network and where the proposal meets with all other relevant LDP policies"*.

38. It is therefore reasonable to expect the Enoch Hill 2 OHL grid connection to be supported by the local authority, providing the environmental impacts of the project can be demonstrated to be acceptable to the consenting authority.

39. The East Ayrshire Local Development Plan 2 was being prepared by East Ayrshire Council, but was not yet available to the public, at the time of writing of this report.

1.3.2.5 Other Policy Material Considerations

40. Policy within the following are also considered material considerations:

- The National Planning Frameworks(NPF) 3 (2014) and 4 (yet to be issued);
- Scottish Planning Policy (SPP) (2020);
- The Climate Change Scotland Act (2009), as amended by the Climate Change (Emissions Reduction Targets)(Scotland) Act 2019;
- The Future of Energy in Scotland (2017);
- Planning Advice Notes (PANs); and
- Scottish Government Web-based renewable energy advice.

41. In October 2020, the UK government announced its commitment towards net zero emissions by 2050. This forms part of the government's "wider efforts to ensure the UK meets the legally binding target of reaching net zero emissions by 2050 and build back greener from coronavirus". The Scottish Government's Energy Strategy (January 2021), highlights the vital role that energy networks will play in meeting Scotland's decarbonisation and net zero targets. It also identified that infrastructure capable of delivering net zero needs to be delivered recognising and rewarding the impact of efficient, timely investment on our economy, on the development of skilled jobs, and the development of a dynamic supply chain, while ultimately providing a good deal for energy consumers. The Scottish Government's Climate Change Plan Update (December 2020) identified that the transition of our energy system to net zero presents Scotland's businesses with many opportunities to create a competitive advantage whilst creating jobs.

42. The connection of renewable energy developments such as the Enoch Hill 2 Wind Farm to the grid would ensure that the energy generated by the wind farm is able to contribute to the target of net zero carbon emissions.

1.4 Consultation Undertaken to Date

43. In line with SPEN's approach to routeing, key stakeholders were consulted on various occasions during the development of the initial three route options for the Enoch Hill 2 OHL in 2019 and 2020. The main aims of the consultation was to obtain any pertinent information that may help to inform route option identification and environmental appraisal, as well as to share information gathered through surveys, background data analysis, desk based studies and environmental appraisal by suitably

qualified and experienced professionals on the OHL route options. option, ultimately identifying a preferred route option. The consultation provided an opportunity for the stakeholders to provide input to the project at an early stage.

1.4.1 Initial Contact with Key Stakeholders in 2019

44. In 2019, some consultation of stakeholders was undertaken for the two-fold purpose of introducing the project and to request input in the early stages of the project with regard to aspects such as delineating a study area, methodology to be used for, scope of, and information pertaining to, ecology and ornithology surveys and environmental information gathering, etc. Consulting the stakeholders at this early stage of the project planning phase also enabled any potential issues that may arise as a result of the Enoch Hill 2 OHL grid connection to be identified and considered during the identification of the route options discussed in Section 4 of this report.

45. The following authorities and stakeholders were consulted in 2019:

- The then Scottish Natural Heritage (now NatureScot). A meeting was held with the then SNH on 20 August 2019. The notes of the meeting are attached in Appendix 3. In summary:
  - The parameters of the ecology and ornithology surveys to be carried out were agreed;
  - Survey efforts should be light touch and focus on ground truthing existing baseline data and gap-filling where necessary;
  - Impacts of the Enoch Hill 2 OHL should be considered cumulatively with those of the Enoch Hill 2 Wind Farm;
  - SNH (now NatureScot) to be engaged with once a proposed route option has been selected.
- East Ayrshire Council. A meeting was held with representatives of the Planning Department of the East Ayrshire Council on 18 November 2019; the notes of the meeting are attached in Appendix 3. Key points raised:
  - A point was raised relating to the timing of the OHL routeing perhaps being premature, since the wind farm information or planning application was not yet in the public domain.
  - Would there be a visual impact from the OHL on the houses located to the north west of the proposed OHL?
  - Would there be an impact on people driving past the infrastructure?
- There are already existing distribution lines in this area, so not expecting a new line in an area where no lines exist.

46. The suggestions and recommendations provided by the then SNH and the local authority were taken into consideration and implemented as far as possible during the data gathering stage and during the environmental appraisal of the three original Route Options 1, 2, and 3. The questions and concerns raised were also addressed as far as possible in the Routeing Consultation Document, dated March 2020.

1.4.2 Consultation of Stakeholders on RCD in 2020

47. In May 2020, a copy of the Enoch Hill 2 OHL Routeing Consultation Document, dated March 2020, was submitted to the following consultees for comment:

- East Ayrshire Council;
- Scottish Environment Protection Agency (SEPA);
- NatureScot; and
- Historic Environment Scotland (HES).

48. Responses were received from all of the consultees. No objections were raised, and all were satisfied that all matters were being adequately considered for that stage of the project. Copies of the responses that were received are attached in **Appendix 3**.

49. East Ayrshire Council did, however, question whether the Enoch Hill 2 Wind Farm could connect into the underground cabling of the consented Enoch Hill Wind Farm, thereby removing the need to have an overhead line grid connection. SPEN responded that due to the steep gradient of the land around the Enoch Hill 2 Wind Farm it would have been extremely difficult to install such infrastructure to link the two sites. In addition, Enoch Hill 2 Wind Farm would be a separately funded project, rather than an extension to Enoch Hill, with different landowners and was therefore considered to require its own stand-alone consent. One the basis of this, the East Ayrshire Council was content that the rationale for the overhead line had been addressed.

50. NatureScot was satisfied that all factors had been considered and that the motivation for the selection of the preferred route was convincing. NatureScot agreed with the choice of preferred route option. However, it was noted that one particular concern is the potential disturbance to nesting merlins. Mature trees and dense heather were mentioned in the RCD and so it was assumed that the merlins may be ground nesting or tree nesting, or both if there is more than one pair. NatureScot welcomed the proposal to carry out pre-construction checks of such areas if the route passes close to them but, clearly, construction outwith the bird breeding season would remove most of this concern, as it would for most other bird species.

51. SEPA was satisfied that all matters were being adequately considered. Although it was considered unlikely that SEPA would have any detailed comments to make as the project evolves but would welcome being kept up to date with the project as it progresses. SEPA also recommended that when an application is submitted for the proposal that SEPA's most up to date guidance[2] be considered.

52. HES recommended contacting the local authority archaeology and conservation services. A copy of the RCD and a request for comment were provided to the West of Scotland Archaeology Service (WoSAS) by email. No response was received.

1.4.3 Ongoing Consultation of Key Stakeholders

53. Stakeholders will continue to be contacted over the course of the OHL project. As mentioned previously, it is the aim of this document to both provide information regarding the proposed project and to elicit comment and input from key stakeholders regarding the routeing of the preferred OHL grid connection. It is therefore anticipated that further input and comments will be received from stakeholders in response to this document. Such input would be taken into account when selecting a final proposed route to be taken forward to the next phase, EIA Screening. A more detailed description of the consultation process to be followed during the routeing stage of this project is included in **Section 5** of this document, as is a list of the consultees.

2 Routeing Methodology

1. The methodology used to identify route options for the planned Enoch Hill 2 OHL grid connection is discussed below and is consistent with SPEN's approach to routeing (see **Section 1.2.3** of this report). SPEN's guidance broadly recommends that projects should adhere to the following process:

- Set the Routeing Objective;
- Utilise established practice for OHL routeing;
- Consider potential effects, taking account of technical & environmental routeing considerations;
- Develop project specific Routeing Strategy;
- Develop Route Options;
- Appraise route options and select preferred route;
- Consult on the preferred route
- Modify the preferred route, if necessary or required;
- Select the proposed route.

2. The proposed route selection is then taken forward to the next stage in the consenting process and is used as a basis for an application for consent. The way in which the routeing assessment has been undertaken is described in the sections below.

2.1 Routeing Objective

3. The objective of the route selection process is to identify a technically feasible and economically viable OHL route between the planned Enoch Hill 2 Wind Farm connection point and the consented Enoch Hill Substation collection point, which causes least disturbance to people and the environment.

[2] https://www.sepa.org.uk/environment/land/planning/

2.2 Established Practice for Overhead Line Routeing

4. SPEN standardise their route planning methodology by using established standard industry practice for the routeing of overhead lines; guidance on this was first developed by the late Lord Holford in 1959, known as the Holford Rules (attached in **Appendix 7** for ease of reference). 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. A summary of the Holford Rules is presented in **Figure 2.1**, below.

5. Other guidance that is available regarding the routeing of overhead lines is the Forestry Commission Guidelines. The Scottish Government's policy on control of woodland removal: implementation guidance (February 2019) states that "electricity operators are expected to avoid areas of woodland and forestry when they identify route corridors for new connections or upgrades and when a proposed line requires to go through forestry, considerations should be given to forest design guidelines. Mitigation measures must be fully assessed in the EIA Report and both replanting and off-site compensatory planting must form part of the assessment". Furthermore, these guidelines state that overhead lines should be routed to follow open space and to run alongside, not through, woodland, unless there is no alternative. The Forestry Commission (now Scottish Forestry) produced guidelines in 2014 regarding forestry design, where forests could be designed with open spaces to allow for the integration of OHL wayleaves. Furthermore, the Scottish government published implementation guidance on the control of woodland removal in February 2019, which also references the 2014 design guidelines.

Figure 2.1: Holford Rules

6. As mentioned previously, SPEN's approach to routeing OHLs is primarily based on the idea that any major effect of an overhead line will be visual, and that the degree of visual intrusion can be reduced by carefully routeing the development. Techniques to reduce visual intrusion of OHLs include using the topography and trees to provide screening and background, as well as ensuring the OHL is routed at a distance away from settlements and roads where possible. Particularly sensitive and valued natural and man-made features should also be avoided, with a well-routed OHL also taking into account any other technical and environmental considerations.

2.3 Routing Considerations

7. Overhead lines are linear elements in the landscape. They are likely to affect, to varying degrees, visual and other environmental aspects of the area through which they run. This part of the process predominantly comprises information gathering and consideration of the potential for effects.

8. The initial stage is to determine a study area and gather baseline information within this area through desk-based studies, site visits, and consultations in order to identify potential constraints and opportunities to routeing.

9. To define a route that meets the requirements of the Electricity Act 1989, a balance must be struck between three sets of considerations:

- Environmental;
- Technical; and
- Economic.

2.3.1 Environmental Considerations

10. Statutory duties imposed by Schedule 9 of the Electricity Act 1989 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. Experience across the electricity industry shows that an overhead transmission line is likely to affect to varying degrees the following:

- Visual amenity and landscape character;
- Ecology, ornithology and nature conservation;
- Hydrology, hydrogeology, geology (such as carbon-rich soils and deep peat) and water resources;
- Cultural heritage including archaeology;
- Forestry and woodland (including areas of ancient and native woodland); and
- Recreation and Tourism.
- Other considerations which may affect routeing to a greater or lesser degree include:
- Planning allocations and major applications;
- Noise and Statutory nuisance;
- Traffic (access for construction);
- Land use; and
- Socio-Economics.

2.3.2 Technical Considerations

11. Technical considerations potentially include the existing electricity transmission network and other existing infrastructure, access requirements, altitude and slope gradient, and physical constraints such as water bodies, peat and the existence of wind farms.

12. 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 aspects.

2.3.3 Economic Considerations

13. In compliance with Schedule 9 of the Electricity Act 1989 the routeing objective requires the proposed connection to be economical. It is understood that this is interpreted by SPEN as meaning that as far as possible, and all other things being

equal, the connections should be as direct as possible, and the route should avoid areas where technical difficulty or compensatory schemes would render the connection uneconomical.

2.4 Consideration of Potential Effects, Technical & Environmental Routeing Options

2.4.1 Study Area

14. A study area was defined for this routeing process, large enough to accommodate the identification of several potential route options. The study area for the proposed development was defined through:

15. Identification of the start and end points for the connection, which represent the fixed geographical elements of the route. In this case, these comprise the planned Enoch Hill 2 Wind Farm connection point and the consented Enoch Hill Wind Farm substation collector point;

16. Identification of the technical and environmental drivers which exist in the area between these two points. These drivers include topography, landscape character, areas of environmental value and historical interest, and planned (consented) wind farm infrastructure.

17. The study area is shown on the figures in **Appendix 1**.

18. The boundary of the study area was delineated based on several high-level constraints. These include:

- The location of the two connection points;
- Topography, altitude and slopes;
- Presence of deeply incised watercourses and rugged upland terrain towards the north-east of the two connection points;
- The presence of residential receptors to the north east of the connection points near the B741;
- Extensive coniferous forestry plantations with commercial wind farms to the west; and
- Planned infrastructure constraints associated with the Enoch Hill and Enoch Hill 2 Wind Farms, including turbines, tracks and ancillary infrastructure e.g. the Enoch Hill substation.

19. Since the initial delineation of the study area, environmental and technical information has led to the identification of a route option that falls partially outside of the original study area. However, background data searches covered an area of search of between 2 and 10 km around the study area, and the ecology surveys that were conducted in 2020 included the area to the north-east to account for a potential OHL route option in this area. There is also extensive existing information that was generated for the Enoch Hill and Enoch Hill 2 Wind Farms that cover the majority of the study area and beyond. The Enoch Hill 2 OHL ornithology vantage points (VPs) used for bird surveys in 2019 and 2020 did not cover the whole area to the north-east of the study area. This data gap will be addressed when further (update) bird surveys (including VP surveys) are conducted prior to submission of an application for consent for the proposed Enoch Hill 2 OHL.

2.4.2 Background Information

20. Following the establishment of the study area, an initial evaluation of environmental and technical constraints was undertaken. Key constraints were initially mapped for the study area using Geographical Information Systems (GIS) and collated from sources in the public domain and via external consultation with stakeholders where required. This data was supplemented where required by field survey. Constraints and potential issues considered when collecting background information have been outlined within **Table 2.1**.

Table 2.1: Key Constraints

Consideration	Constraints/Issues
Environmental	Ecology
	Ornithology
	Landscape (designations and character)

Consideration	Constraints/Issues
	Visual amenity
	Archaeology and cultural heritage
	Recreation and tourism
	Hydrology, hydrogeology and geology (including peat)
	Residential dwellings and land use
	Traffic and transport
	Other land uses (e.g., forestry, transmission lines, mineral operations, windfarms, agricultural, and roads)
Technical	Slope/gradient (topography)
	Existing, consented and planned infrastructure
	Altitude
	Ground Conditions
	Presence of large waterbodies
Economic	Ensure viability – as far as reasonably possible, the line should be direct and avoid areas where technical difficulty or compensatory requirements would render the scheme unviable on economic grounds.

3 Technical and Environmental Routeing Considerations

3.1 Environmental and Technical Baseline

3.1.1 Environmental Baseline

1. Baseline information that identifies key environmental constraints was used as the basis of analysis and to inform the identification and appraisal of route options. The details of the environmental baseline data sources and information are presented in **Appendices 3** and **4**. Some of the key points summarising the environmental baseline are:

- Ecology:
  - All the route options fall within the Connel Burn/Benty Cowan provisional Wildlife Site;
  - There are two areas of ancient woodland within 2 km of the study area;
  - There are twelve NVC vegetation types within the study area, of which five comprised mire or blanket mire, five were grassland, and two were rush-pasture.
  - Protected species:
  - Otter (Lutra lutra) and Red Squirrel (Sciurus vulgaris) have been recorded within 2 km of the OHL study area;
  - Evidence of Otter was recorded during surveys conducted for both the Enoch Hill and Enoch Hill 2 Wind Farms, and NatureScot stated that this species is known to be present in the area. The small watercourses throughout the OHL study area have foraging potential for Otter.

- No evidence of protected species was found during the gap-filling walkover surveys, however the wooded areas were confirmed to have potential to support bats, Badger and Red Squirrel, as well as potentially Pine Marten. Areas of gorse in the north of Route Option 6 also provide good cover for Badgers excavating setts.

- Ornithology:
  - All the route options fall within the Connel Burn/Benty Cowan provisional Wildlife Site which has been reported to be 'of interest to birds'.
  - Twenty species of important birds have been recorded from within and around the study area, two of which are Schedule 1 Species, namely:
    - Common Crossbill (Loxia curvirostra); and
    - Barn Owl (Tyto alba).
  - Golden Plover (Pluvialis apricaria) were identified during baseline surveys for Enoch Hill Wind Farm on high ground e.g. around Rigg Hill, although no breeding territories were recorded. Golden Plover were also seen during vantage point surveys at potential collision risk height in close proximity to, or crossing, all three route options for the OHL, although activity over the winter period was generally low.
  - Occasional flights by Hen Harrier (Circus cyaneus) (passage only) were also identified.
  - Black Grouse (Tetrix tetrix) leks were identified although all were outside the Enoch Hill Wind Farm site boundary. With regard to Black Grouse lek sites, pre-construction surveys of the preferred route will also be required to identify any new lekking sites.
  - Goshawk (Accipiter gentilis), Merlin (Falco columbarius) and Peregrine Falcon (Falco peregrinus) are all known to nest in the local area, with Merlin confirmed as nesting within the study area.
  - In respect of birds of conservation concern, the greatest sensitivities are likely to be potential disturbance to Merlin nest sites. The habitat within parts of the study area is considered most suitable for Merlin where there are areas of dense heather or rocky patches, or plantations that contain mature trees. Preconstruction surveys of such habitats will therefore be required where the preferred route falls close to such habitat.
  - Curlews (Numenius arquata) are frequent in the upland parts of the route corridors and Curlew territories are present within the overhead line routes options. This species is likely to be widely distributed at low densities within the study area in areas of wet grassland and bog which are common throughout the study area.
  - Secondary species recorded at potential collision risk height include Buzzard (Buteo buteo), Kestrel (Falco tinnunculus) and Raven (Corvus corax). A Kestrel carrying a small mammal was observed during the protected species walkover in December 2019, north of Chang Hill.
  - As breeding bird surveys have not yet been undertaken, there is no current data on potential nesting sites for target species.

- Archaeology and Cultural Heritage:
  - There is an absence of known historic environment assets in the study area. There are no designated heritage assets (e.g. scheduled monuments, listed buildings) within the study area.
  - There are two non-designated assets recorded on the Historic Environment Record (HER) and/or National Record of the Historic Environment (NRHE) within the study area. These are:
    - A sheepfold near Crockradie Burn (NRHE No. 170126; HER No. 47363); and
    - A record of possible standing stones in two locations at Lethans Hill/ Loup Burn (HER No. 22369).
    - Further non-designated assets were identified during the baseline surveys and assessments for the proposed Enoch Hill Wind Farm and the proposed Enoch Hill 2 Wind Farm. These include:
    - A footbridge (DBA5);
    - A former building and enclosure called Carcow close to the Enoch Hill 2 Wind Farm substation (DBA10);
    - A sheepfold (DBA12, 15, 34 and 36); and
    - Circular enclosures (DBA37 and 39).
  - Overall, the upland nature of the landscape within the study area means that past human activity and use of the land is likely to have taken the form of stock-raising and animal husbandry (e.g. sheep), hunting and fishing rather than arable agriculture.
  - Human occupation of the land is more likely to have been of low density and temporary or seasonal (such as the occupation of summer grazings, shielings and bothies) rather than permanent year-round settlement.

- Landscape and Visual Amenity:
  - No international or national landscape designations.
  - All the Route Options fall within a locally designated Sensitive Landscape Area;

- All the Route Options fall within NatureScot Landscape Character Type (LCT) 81 Southern Uplands – Ayrshire landscape character area; excluding the very eastern end of the route options and the windfarm point of connection, which are within LCT 82 Southern Uplands with Forest – Ayrshire.
- The study area is on the northern edge of the Southern Uplands and this topography heavily influences the visual envelope. In addition, a considerable area of commercial forestry to the west, south and east of the study area acts as a significant screen to long distance views to and from the study area to and from these directions.
- The open areas of moorland to the north and east of the study area create a landscape where long distance views are possible, however, this is generally from other areas of high ground within the same northern fringe of the Southern Uplands and vicinity of the proposed routes, or from high ground at least 3 km to the north and north-east of the site.
- Closest settlement is a small group of properties at Dalleagles approximately 1.8 km north of the study area, but views from here towards the OHL route options are likely to be screened entirely by the intervening landform; however there would potentially be long-distance views of a short section of the northern most route option (Route Option 6) to the south-east of Dalleagles.
- The study area and its locality is not a destination for tourism and there is little in the way of formal or informal recreation within the vicinity of the study area.

- Geology, Hydrology, Hydrogeology and Peat:
  - Much of the site is overlain by peat deposits, especially the south-western half of the study area.
  - Some of the hill summits and ridge crests have no mapped superficial cover.
  - The study area is located outwith the main coal mining area of East Ayrshire and has no recorded history of mining.
  - Benbeoch SSSI, designated for geological qualifying interests, is located 4.6 km to the west of the study area;
  - Soil cover is dominated by blanket peat, which occupies approximately two thirds of the study area.
  - Most of the peat within the study area is 1.0 m deep or less. Some areas of peat up to 3.0 m have been identified, but these tend to be relatively restricted. One pocket with peat up to 3.3 m was identified, but this is not located within any of the identified OHL route options.
  - The study area is underlain entirely by low productivity bedrock aquifers.
  - There are no significant groundwater-bearing superficial deposits present within the study area.
  - The groundwater in the study area has been assigned vulnerability class 4 - defined as ‘Vulnerable to those pollutants not readily adsorbed or transformed’.
  - There are five watercourses / burn systems within the study area draining into the River Nith catchment, and three burns draining into the Water of Deugh catchment area.
  - Several of the watercourses within the study area have significantly incised channels
  - The study area is not at risk of flooding.
  - A private water supply source is noted at Enoch Hill 2, but this is known to be out of use. The substation at Enoch Hill has an operational private water supply.

- Traffic and Transport:
  - Access to the north-western part of the study area is gained via the B741, a single two-way carriageway highway between New Cumnock and Dalmellington.
  - Access to the south eastern part of the study area can be gained via the Afton Road leading southwards from New Cumnock, and forestry tracks through the Carsphairn Forest.
  - There are currently no roads or tracks within the study area, other than the forestry tracks to the south and west of the three OHL route options.

- Land Use and Recreation:
  - The majority of the land within the study area is currently used for rough grazing of sheep and a small number of cattle.
  - Some areas are also used for forestry in the western, south-western and southern parts of the study area.
  - The study area and its locality are not a destination for tourism and there is little in the way of formal or informal recreation within the vicinity of the study area.
  - The majority of the study area is subject to the ‘right to roam’ under the Land Reform (Scotland) Act 2003 such that access for recreation (including walking and horse riding) is permitted over most of the study area.
  - The locally designated Sensitive Landscape Area which falls partially within the study area describes the uplands to the east of Glen Afton as an important area for recreation and hill walking. However, the study area does not include any publicly accessible footpaths (designated or non-designated) which could easily facilitate recreational activities.

3.1.2 Development and Planning Baseline

2. In November 2020, an application for planning permission (Reference No: 21/0842/PP) was submitted to East Ayrshire Council by Scottish Woodlands for the construction of a forestry road which would provide access to the planned Knockburnie Woodland Creation area. Planning permission was granted by East Ayrshire Council for the construction of the forest road in January 2022. The Knockburnie Woodland Creation area will be located near the consented Enoch Hill Wind Farm substation, and overlaps slightly with all three of the revised Enoch Hill 2 OHL route options, i.e., Route Options 4, 5 and 6 (see **Figure 2,** in **Appendix** 2). However, the land within and adjacent to the OHL route option corridors is indicated on the Scottish Woodlands creation plan to be unplantable and is therefore likely to remain as open land. It is therefore not expected that there will be any conflict between the construction of an OHL and the woodland creation area.

3. There were no other planning applications that had been submitted to the East Ayrshire Council within or near the Enoch Hill 2 OHL route options at the time of writing. Other recent submissions to the council within or near the Enoch Hill 2 OHL study area included the discharge of planning conditions relating to the Enoch Hill Wind Farm.

3.1.3 Technical Baseline

4. Key technical issues for the OHL route options include:

- Altitude of the OHL – altitudes over 200 AOD in Scotland require shorter spans as they are classed as extreme environment and are subject to greater safety checks. OHL's above 400 AOD generally require shorter spans between poles resulting in an increase in the number of poles required;
- Topography – steeper slopes (in excess of 11°) and undulation of topography. The main concern is that the steeper slopes and significant undulation of the OHL could cause difficulties (safety concerns) during construction; and
- The planned location of the wind turbines and related infrastructure at Enoch Hill Wind Farm. OHL route options need to take the turbine tip height +10%, as well as 3 x the turbine rotor diameter into account. The main concern in this regard is the risk of possible wake effect from the wind turbines to the OHL. The wake effect could cause the overhead lines to sway and could consequently impact on the performance and maintenance requirements of the OHL.

3.2 Routeing Strategy

5. In accordance with SPEN's approach to routeing, the routeing strategy for the Enoch Hill 2 OHL grid connection project is:

- To identify a technically feasible and economically viable route between the Enoch Hill 2 Wind Farm connection point and the Enoch Hill substation collector point, whilst taking into consideration environmental, technical and economic constraints. The route should, on balance, cause the least disturbance to the environment and the people who live, work and enjoy outdoor recreation within it.
- To help minimise landscape and visual effects, in accordance with the Holford Rules and SPEN's routeing methodology, the proposed overhead line has also sought to avoid high ground and ridgelines, responding to the grain of the landscape, subject to avoiding areas of highest amenity and environmental values as far as practicable (as above). To help assess temporary and permanent cumulative effects, careful consideration has also been given to the relationship of the proposed OHL with other electricity infrastructure within the study area.

6. In line with the Routeing Strategy the following sequential stages were adhered to, in accordance with SPEN's approach to routeing guidance:

3.2.1 Stage 1: Development of Route Options

7. Considerations identified in the routeing strategy were applied to the study area to establish a number of possible 'route options'. This process involved designing routes in accordance with the Holford Rules, that best fit the landscape and minimise effects on visual amenity, whilst avoiding wherever possible areas of high environmental 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.

8. In response to the identification of the key environmental and technical constraints and strategy, a sensitivity weighting (hard constraint, moderate constraint or soft constraint) is defined on an aspect-by-aspect basis, for each environmental feature

identified. This is undertaken with reference to Holford Rules 1 and 2 and by using relevant guidance and professional judgement relating to designations and their sensitivities.

> **Holford 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

9. In addition, there are constraints which would be considered under Holford Rule 2, which are also included as strategic constraints.

> **Holford Rule 2**: Avoid smaller areas of high amenity value, or scientific interests 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

10. To identify route options within the study area the strategic constraints were categorised in terms of their potential to impact on the process of route option identification as follows:

- Hard Constraint: Feature to be avoided wherever possible. These areas are shown in red on Figure 2 in Appendix 1.
- Moderate Constraint: Feature normally avoided where other alternative routes/ alignments are available. If no other alternatives available, feature can be passed through with mitigation. These areas are shown in amber on Figure 2 in Appendix 1.
- Soft Constraint: Feature present that could be relatively easy to mitigate, either by design, micro-siting or construction practices.

11. **Table 3.1**, below, details how this categorisation applies to the strategic constraints identified for within the study area.

Table 3.1: Strategic Constraint Categorisation

Sensitivity	Justification	Examples	Route Identification Response
Hard (red)	Holford Rule 1 features (international and national designations) or environmental features considered particularly sensitive to transmission infrastructure. Technical constraints of key significance.	European designated sites (e.g. Special Protection Areas).	Avoid wherever possible and prioritise for mitigation.
		National Parks.	
		National Scenic Areas.	
		Category A Listed Buildings.	
		Scheduled Monuments	
		Inventory Designed Gardens and Landscapes	
		Inventory Battlefields	
		Slopes greater than 22°.	
		50 m micrositing buffer area for each turbine, turbine tip height +10%.	
		Enoch Hill Wind Farm infrastructure.	
		Enoch Hill 2 Wind Farm area.	
		Areas where peat is present at >2 m depth.	

Sensitivity	Justification	Examples	Route Identification Response
Moderate (amber)	Holford Rule 1 features considered less sensitive to transmission infrastructure; Holford Rule 2 features (regional and local designations).	Geological SSSIs.	Proceed with caution, taking potential mitigation measures into account during design and planning.
		Category B and C Listed Buildings.	
		Local Nature Reserves.	
		50 m buffer areas around water bodies.	
		Woodland areas.	
		Turbine 3x rotor diameter and micrositing buffer area (indicated on Figure 2 in Appendix 1).	
		Areas of potential GWDTE / or sensitive habitat areas.	
		Peat 1-2m depth and archaeological features.	
Soft	Holford Rule 2 features considered not to be sensitive to transmission infrastructure.	Geological Conservation Review Sites.	Some constraints of lesser sensitivity – not expected to be an issue for route identification.

12. A 'heat map' was generated which assigns colours (red, amber, green) to hard, moderate and soft constraints, respectively - see Figure 2 in Appendix 1. The purpose of heat mapping is to provide a graphic indication of overall receptor sensitivity and technical constraints across the study area.

13. Holford Rules 1 and 2 were applied to these site-specific strategic constraints using the following hierarchy to identify and refine potential route options:

14. Avoid SACs, Class 1 peat areas, residences, scheduled monuments, listed buildings and non-designated heritage assets of potentially national significance.

15. Preferably avoid or limit the distance travelled within SSSI; RSPB Bird Sensitive Areas; SSSI, Native/Nearly-native woodland and 100m buffer to existing and committed residential properties.

16. Cultural heritage assets should be considered from a setting perspective where they are of national importance, or where the setting is pertinent to its citation. When assessing the impact on setting, a buffer of 2 km from the cultural heritage asset should be used. Setting effects should be considered within the route option appraisal.

17. Where it is possible to do so, avoid or limit the distance travelled within sensitive habitats (e.g. Groundwater Dependent Terrestrial Ecosystems (GWDTEs)), forested areas and peat.

18. Using the existing environmental and technical information available for the study area, three potential route options (Route Options 1, 2 and 3) were identified and taken forward for environmental and technical appraisal (Stage 2, discussed below). However, as described previously, due to technical challenges associated with the construction of an OHL along any of the route options identified in 2020, these would not be feasible from an engineering perspective. Therefore, three new route options (Route Options 4, 5 and 6) have been identified taking the environmental constraints into account as far as practicable (see **Figure 2** in **Appendix 1**). Route Options 4, 5 and 6 have therefore been taken through to Stage 2 – see below.

3.2.2 Stage 2: Appraisal of Route Options and Selection of Preferred Route

19. To allow identification of a Preferred Route, an appraisal of the route options is undertaken and described in a Routeing Consultation Document. The purpose of this is to identify the relative potential of each route option to accommodate an OHL, including a focus on potential landscape and visual impacts of the options as directed by Holford Rules 3 to 7.

20. The conclusion of this appraisal is the identification of a 'Preferred Route'. Whilst this route has been defined based upon the information available to date, further consultation may lead to technical matters emerging which require a review of the Preferred Route. Where this occurs, a review of the route options would be undertaken to confirm the proposed route. The routeing process is an iterative one.

21. The appraisal of route options for the planned Enoch Hill 2 OHL grid connection was carried out by means of the following key steps:

3.2.3 Step 1: Desk-Based and Field Assessments

3.2.3.1 Desk-Based Assessments

22. Several desk-based studies were undertaken where sufficient existing information was available.

23. An ecology desk-based assessment was undertaken which considered publicly accessible ecological data from the adjacent consented wind farm and other nearby wind farms, overhead lines and other developments collated between 2010 to 2019 as well as advice from NatureScot and data from a background data search (BDS).

24. An ornithology desk-based assessment was also undertaken which considered publicly accessible ornithological data from wind farms, overhead lines and other developments collated between 2007 to 2019 as well as advice from NatureScot.

25. A review of designated heritage assets was undertaken at an early stage of the project. This identified that there were no archaeological constraints influencing route option selection within the study area based on existing information and a desktop study. Therefore, an archaeological site visit was not undertaken at that stage.

26. However, it was identified at an early stage that no information was available for the eastern part of the study area, the section lying outside of the Enoch Hill Wind Farm boundary area. Environmental baseline information was generated for this area through field surveys, described below.

3.2.3.2 Field Assessment

27. Following consultation with NatureScot, a light-touch gap filling approach was taken to generate environmental baseline information for the eastern section of the study area that falls outwith the Enoch Hill Wind Farm boundary area. The following field surveys were undertaken to establish site specific conditions to inform route option appraisal:

28. National Vegetation Classification (NVC) survey. The main outcome of this is to identify potentially sensitive habitats such as groundwater dependent terrestrial ecosystems (GWDTEs).

29. Ecology surveys. The main outcome of this is to determine the presence of any protected species within the study area.

30. Ornithology surveys. The main outcome of this is to determine whether there are any wild birds present and / or nesting within the study area.

3.2.4 Step 2: Environmental Appraisal

31. An appraisal of identified route options was undertaken by each environmental discipline in order to identify a Preferred Route.

32. The environmental appraisal comprised a qualitative appraisal of each route option, based upon the criteria defined in **Section 4.2** and professional judgement. The appraisal considered the potential interaction of the planned OHL with key

environmental features and associated sensitivities for each route option (as presented in **Appendices 4, 5** and **6**) so that these could be directly compared.

3.2.4.1 Selection of the Preferred Route for Consultation

33. Following the appraisal of each route option a Preferred Route has been identified based on the comparative merits of each option. The route that has been selected offered the greatest balance of technical, environmental and commercial considerations as far as possible, and offered the greatest potential for mitigation where required. The Preferred Route is based on professional judgement, in consideration of aspects set out above in relation to the overall potential of each route to accommodate the OHL.

34. The requirements of Stages 1 and 2 above are essentially fulfilled by the contents of this report. Stages 3 to 5 below are those that will completed subsequently and are outlined as follows:

3.2.5 Stage 3: Consultation on the Preferred Route

35. Having identified the preferred route option in this report, in order to ensure that views and opinions have been gathered from relevant stakeholders to inform the route option selection process, it is required to undertake consultation. The consultation process to be followed, and the stakeholders who will be consulted using this Routeing Consultation Document are identified and discussed in **Section 5** of this report.

3.2.6 Stage 4: Modification of the Preferred Route

36. Following consultation, all responses will be considered and their relevance to the selection of the route options/preferred option assessed/identified. Where relevant to the routeing process, the options will be reviewed in light of such response and necessary adjustments made.

3.2.7 Stage 5: Selection of the Proposed Route and Environmental Screening

37. Following the consultation period and modification/confirmation of the Preferred Route, a Proposed Route will then be identified for the purposes of obtaining consent. An Environmental Impact Assessment (EIA) screening request will be submitted to the Scottish Ministers to determine whether a full EIA will be required for the planned Enoch Hill 2 OHL grid connection.

4 Route Selection

1. This section focuses on stages 1 to 3 of the procedure set out in **Section 3.2** – Routeing Strategy for the selection of a preferred route option for the proposed Enoch Hill 2 OHL grid connection.

4.1 Stage 1: Identification of Route Options

2. The first stage of the procedure requires the identification of potential route options from which a preferred option can then be selected.

3. Once baseline environmental, planning and technical information had been gathered (discussed in **Section 3.1**), a constraints heat map was generated (see **Section 3.2.1**) to provide a georeferenced visual indication of areas to be avoided (red constraints) wherever possible, and areas where caution should be applied or where mitigation may need to be implemented (amber constraints) to minimise potential impacts on sensitive receptors and on the OHL infrastructure itself. The constraints heat map is shown on **Figure 2** in **Appendix 1**.

4. Areas indicated in red are considered ‘hard’ constraints or areas of high environmental sensitivity and have been avoided as far as practicable. Within and around the study area, these include:

- Infrastructure and technical:

- Wind turbines and ancillary infrastructure (e.g. met mast, substation);
- Settlements and individual properties;
- Slopes steeper than 22 degrees;

- Landscape and visual:
  - Settlements and individual properties (100 m avoidance buffer)
- Geology and soils:
  - Class 1 and 2 carbon and peatland (50 m avoidance buffer);
  - Areas where peat is deeper than 2 m (50 m avoidance buffer); and
- Hydrology:
  - Private Water Supplies (150 m avoidance buffer).

5. Amber areas indicate areas of moderate constraint or sensitivity, i.e., areas that would be preferable to avoid, but would be considered if other options are exhausted. Within and around the study area, these include:

- Infrastructure and technical:
  - Micrositing buffers of planned infrastructure (e.g. wind turbines and ancillary infrastructure e.g. met mast, substation, etc.);
  - Planned Knockburnie Woodland Creation area;
  - Areas where wake effect may be an issue (indicated by the hashed areas on Figure 2 in Appendix 1);
- Ecology and ornithology:
  - Areas of potential GWDTE / or sensitive habitat areas;
- Cultural heritage:
  - Non-designated assets (10 m avoidance buffer);
- Geology and soils:
  - Areas where peat is between 1 and 2 m deep.
- Hydrology:
  - Water bodies (50 m avoidance buffer).

6. The nature of the study area and the location of red and amber constraints dictated where an OHL might possibly be located to minimise environmental impacts while also meeting technical requirements and conforming to technical constraints (e.g. slope angle). The locations of the Enoch Hill Wind Farm turbines and potential of the turbines to create a wake effect presented a significant challenge for OHL routeing between the turbines. The route options were identified bearing this constraint in mind. No wake effect is expected to be generated by the Enoch Hill 2 wind turbines due to the distance of the turbines from the OHL connection point (further then 3 x rotor diameter) and the elevation of the OHL connection point (below the bottom sweep of the tip of the rotor blade).

7. Using the environmental and technical constraints as a baseline (see **Figure 2** in **Appendix 1),** it was possible to identify several areas where it would be possible to route an OHL. Three potential route options were initially identified in 2020, namely Route Options 1, 2 and 3 (see **Figure 2** in **Appendix 2**). Environmental and technical appraisal of each of the three routes enabled the identification of a preferred route (Route Option 2) that, on balance, would have the least negative effects on the receiving environment and people who live, work and recreate within the area. However, as mentioned previously, following a subsequent technical appraisal of (Route Options 1 to 3, it was determined that they were not feasible from an engineering / technical perspective.

8. Consequently, and once again using the environmental and technical constraints as a baseline, three new potential OHL routes were identified that would be feasible from an engineering perspective while avoiding hard (red) environmental and technical constraints, and avoiding medium (amber) constraints as far as possible. These routes, namely Route Options 4, 5 and 6, are not entirely dissimilar from the original route options (1, 2 and 3) since the hard environmental and technical constraints remained the same, but the possible OHL routes are more ‘buildable’. Potential Route Options 4, 5 and 6 are shown on **Figure 2** in **Appendix 1**.

9. The revised route options would have approximate lengths as follows:

- Route Option 4 - 5.0 km;
- Route Option 5 - 4.9 km; and
- Route Option 6 - 5.9 km.

4.2 Stage 2: Appraisal of Route Options and Selection of Preferred Route

4.2.1 Appraisal of Technical Aspects of Route Options

10. The three new route options, Route Options 4, 5 and 6, were identified by SPEN using the environmental and technical constraints base map, also considering:

- Altitude;
  - Generally, within Scotland, altitudes above 200 m AOD are technically, by design, considered to be within an extreme environment due to high wind and ice loading;
  - Spans between support poles would need to be short to take account of the high winds and ice loading;
  - Parts of the OHL that will be at an altitude of 400 AOD or higher will require shorter spans between poles (between 70 m and 80 m spans). An increase in altitude above 400 AOD therefore results in an increase in the number of poles required;
- Topography (slopes);
  - Steeper slopes cause difficulties (safety concerns) during construction and are avoided if possible.
  - All three route options were identified using technical and environmental constraints as a baseline. Consequently, all three route options have been sited away from steeper slopes, although an OHL within Route Option 6 would need to be sited away from the steeply incised valley near the consented Enoch Hill substation.
- Buildability access constraints;
- Crossings to existing OHL transmission and distribution infrastructure;
- Proximity to existing OHL transmission and distribution infrastructure;
- Mine and mineral working areas;
- Ground conditions (e.g. presence of peat, sliding ground, etc.);
  - Areas of deep peat would present significant construction challenges, but could be mitigated by using special foundations for poles in areas of peat;
  - Peat is present in all three revised route options, and is unavoidable where present. There is therefore no preference for one route option over the others from a technical perspective.
- Watercourse / catchment areas, crossings (i.e. river, loch, reservoir);
  - All of the potential route options would require watercourses to be crossed.
  - From the environmental appraisal (see **Table 4.5**, below), the number of water crossings that would be required within each of the route options is as follows:
    - Route Option 4 would require seven watercourse crossings;
    - Route Option 5 would require six watercourse crossings;
    - Route Option 6 would require between six and nine watercourse crossings.
- Flooding;
  - Flooding does not present an immediate risk to any of the potential route options, and there is therefore no preference for any of the route options over the others from this perspective.
- Road / railway crossings along route option;
  - There are no road crossings or railway crossings along any of the potential route options;
  - Route Options 4 and 5 would cross the access track between Turbine 11 and Turbine 14 of the consented Enoch Hill Wind Farm.
- Residential / Industrial areas;
  - There are no residential or industrial areas through which the route options travel;
- Other land uses which might potentially conflict with an overhead line (e.g. forestry); and
  - All three route options will cross through a corner of the planned Scottish Woodlands Knockburnie Woodland Creation boundary area, but would cross over land that was designated, at the time of writing, to be open land[3];
- Presence of wind farms and related infrastructure.
  - Route Option 4 would weave between more of the Enoch Hill turbines than the other two route options and have a reduced corridor within which to site the OHL support poles due to avoidance buffers such as topple distances and micrositing buffers;
  - Route Option 5 will weave between Enoch Hill T11 and T14 (turbine locations set out in the Enoch Hill Wind Farm Variation Application, dated March 2020), and will pass briefly over a potential borrow pit search area, but otherwise this route option has been designed to avoid wind farm infrastructure as far as practicable;

[3] Scottish Woodlands, 2020. Knockburnie Woodland Creation. Map 5 – Options and Fencing v3.

- Route Option 6 avoids wind farm infrastructure, with the exception of a potential borrow pit search area.
- Wake effect. The wake effect occurs when 'wind roses' moving off the rotating wind turbine rotors create a horizontal air movement which causes overhead lines to sway and consequently impacts on the performance, lifespan and maintenance requirements of an OHL. It is therefore preferable from a technical perspective to site OHL routes outside of the wake effect zone as far as practicable (either beyond a distance of 3 x rotor diameter, or above or below the horizontal wind rose). The areas within which the Enoch Hill 2 OHL would most likely experience wake effect have been modelled using GIS. The wake effect zone is shown as a grey hatched area on **Figure 2** in **Appendix 1.**
  - Approximately a quarter of Route Option 4 is located within the wake effect zone.
  - A relatively short section of Route Option 5 also falls within the wake effect 'zone'.
  - Route Option 6 avoids the wake effect zone entirely.

11. Overall, none of the three revised route options pose any technical constraints or difficulties which are unacceptable or cannot be overcome or countered during construction. In summary, all three revised route options are technically feasible, but each will present difficulties and challenges that are different from the other two revised route options. From a technical perspective, Route Option 4 is least favourable due to its partial location within the wake effect zone.

4.2.2 Appraisal of Environmental Aspects of Route Options

4.2.2.1 Appraisal Criteria

12. To enable the three possible route options to be appraised and compared consistently across various environmental disciplines, a set of hierarchical criteria was developed and is presented in **Table 4.1**, below.

Table 4.1: Appraisal Criteria

Option	Details
Preferred Option	Greatest potential to accommodate the infrastructure required within the context of the identified environmental and technical constraints.
Some Potential	Some potential to accommodate the infrastructure required within the context of the identified environmental and technical constraints.
Least Potential	Least potential to accommodate the infrastructure required within the context of the identified environmental and technical constraints.

13. Note that these colour codings represent relative weightings. A green colour code does not mean that no environmental issues have been identified, nor does a red colour indicate an insurmountable environmental constraint. The coding enables a qualitative analysis to be undertaken, applying professional judgement and experience on an aspect-by-aspect basis for each environmental feature.

4.2.2.2 Appraisal Methodology

14. The general methodology followed for the appraisal of the identified possible route options was to gather existing information, generate further site-specific information through field surveys (where necessary), apply / overlay this information along each route option, provide an objective, scientific opinion as to the expected effects that the OHL might have on the environmental aspect being assessed, and advise which of the three options would be preferred.

15. The detailed methodology for appraising the environmental aspects of each route option is discussed below.

4.2.2.2.1 Ecology and Ornithology Appraisal Methodology

16. An ecology desk-based assessment was undertaken which considered ecological and ornithological data from Enoch Hill Wind Farm and Enoch Hill 2 (formerly Monquhill) Wind Farm as well as advice from NatureScot (see meeting notes in

Appendix 3) and data from a background data search (BDS) undertaken by RSK in July 2019. The BDS included data received from South West Scotland Environmental Information Centre and the RSPB.

17. A review of the ecological and ornithological baseline for the proposed study area for the OHL was undertaken and a proposed scope for ecological assessments was agreed with NatureScot.

18. A gap filling exercise was then undertaken by RSK whereby any areas not covered by existing information were surveyed for their botanical and protected species interests.

19. Ornithological surveys commenced in September 2019 and continued until March 2020. To date, these have included vantage point (VP) surveys from locations that were designed to cover the three original route options (Route Options 1, 2, and 3). The locations of the VPs are shown on **Figure 4** in **Appendix 1**. The VP locations also cover the revised Route Options 4 and 5, but Route Option 6 falls outside of the field of view of these VP locations. This was due to Route Option 6 having been identified after the VP surveys had been completed.

20. Future surveys will include a further year of VP surveys, winter walkover surveys, breeding bird surveys and raptor nest searches. The future surveys will also cover the area to the north-east of the study area boundary, within which Route Option 6 falls, to ensure that sufficient information is obtained to fill any gaps in available information relating to Route Option 6. It was agreed with NatureScot (see meeting minutes attached in **Appendix 3**) that Black Grouse lek surveys are not required during the routeing phase, but that preconstruction walkover surveys will be undertaken which may identify additional lek sites and will be followed by subsequent mitigation e.g. seasonal restrictions on construction activities within the area of a confirmed lek.

Habitat Appraisal Methodology

21. A National Vegetation Classification (NVC) survey was carried out between 19th-20th September and 9th-10th December 2019 by a suitably qualified habitat specialist. The NVC survey was undertaken to fill any gaps in available baseline information within the study area and to update the existing information available regarding the habitats, in case of any potential changes from the initial surveys undertaken in 2015 and 2017 for the (consented) Enoch Hill Wind Farm. A walkthrough of the site was conducted where individual plants and plant communities (or mosaics and transitions thereof) were recorded with the use of quadrats, and whole community species lists were compiled.

22. Suitably sized quadrats were recorded to aid classification of the primary vegetation types, and their locations mapped. Quadrat data were used to confirm NVC classification, using the descriptions and keys in the NVC handbooks (Rodwell, 1991a, 1991b, 1992, 1995, 2000). The presence and percentage cover for each plant species was recorded within each quadrat. In the NVC this is estimated using the Domin Scale by which a score is attributed to different ranges of cover/abundance as in **Table 4.2**.

Table 4.1: Domin Scale

Score	% cover	Score	% cover
10	Over 90 %	5	11 % - 25 %
9	76 % - 90 %	4	5 % - 10 %
8	51 % - 75 %	3	< 5 % (frequent)
7	34 % - 50 %	2	< 5 % (occasional)
6	26 % - 33 %	1	< 1 % (rare)

23. For each survey area, quadrat data was compiled, and results tabulated to provide figures for cover expressed as a Domin value, range and constancy of occurrence across the quadrats. The term frequency is used to describe how often a species is encountered in different stands or samples of a vegetation type, irrespective of species cover in each stand or sample. It is

summarised in floristic tables using the Roman numerals I – V and referred to in descriptions of vegetation using the terms listed in **Table 4.3**.

Table 4.3: Vegetation Frequency Class

Frequency Class	Range of Frequency Class	Terms used to describe Frequency Class
I	1-20%	Scarce
II	21-40%	Occasional
III	41-60%	Frequent
IV	61-80%	Constant
V	81-100%	Constant

24. Habitats were also classified as 'Priority Habitats' - Habitats of Principal Importance as listed in UK Biodiversity Action Plan Priority Habitat Descriptions (2011). Vascular plants follow the nomenclature of The Botanical Society for the British Isles database (BSBI, 2007) with all other flora and fauna following the UK Species Inventory (Natural History Museum, 2016), New Flora of the British Isles, Third edition (Stace, 2010), Atherton et al (2010) for bryophytes and Purvis et al (1992) for lichens.

Habitat Survey Limitations

25. The results of the survey and assessment work undertaken are representative at the time of surveying. Botanical lists should not be considered fully comprehensive, as rarely-occurring or early or late-flowering species may have been missed. However, this would not affect the broader assessment of the ecological value of the site and its habitats.

Habitat Evaluation Criteria

26. The nature conservation value of habitats and species will be assessed according to widely accepted criteria that relates to important factors such as naturalness, extent, rarity and diversity of ecological receptors. These and others are described extensively in literature (IEEM 2006, Rackham 1986, Ratcliffe 1977, Stewart et al. 1994, Usher 1986, Wiggington 1999) and consolidated into Table 4.4.

Table 4.4: Nature Conservation Evaluation Criteria

Habitats
International Importance
Critically endangered, Endangered or Vulnerable on the IUCN Red list
European Importance
Legally protected by European law
National Importance
Legally protected by UK wildlife law
Nationally rare &/or Nationally Scarce
UK BAP Priority Habitats and Species
Great Britain Red Data Book
Regional/Local Importance

Habitats
Local Red Data Book

27. In addition, Ratcliffe (1977) and Usher (1986) recognize that the nature conservation value of habitats can be influenced by size, diversity, naturalness, rarity, fragility, typicalness, geographical location, recorded history, potential wildlife value and intrinsic appeal. An ecological value has been assigned to each habitat type in accordance with CIEEM guidelines (CIEEM 2017).

4.2.2.2.2 Archaeology and Cultural Heritage Appraisal Methodology

28. A review undertaken at an early stage of the project identified that there are no designated historic environment assets (such as scheduled monuments or listed buildings) within or near the study area that are likely to be adversely affected by the proposed project.

29. A review of information available from the Historic Environment Record (HER) maintained by the West of Scotland Archaeology Service (WoSAS) and the National Record of the Historic Environment (NRHE) maintained by Historic Environment Scotland (HES) identified few known non-designated assets within the study area. Further detailed assessment of the archaeological and cultural heritage baseline of the study area was made available through the previously published Environmental Statement for the Enoch Hill Wind Farm (Amec Foster Wheeler 2015), and further baseline information was provided by the developer of the Enoch Hill 2 (formerly Monquhill) Wind Farm during the routeing process.

30. There is a robust baseline available for the study area from local authority and national databases and these previous studies, and a lack of designated or non-designated assets of national or regional importance in the vicinity of the study area. Therefore, an archaeological site visit has not been undertaken at this stage.

4.2.2.2.3 Landscape and Visual Amenity Appraisal Methodology

31. With respect to the potential routes considered for this connection it is relevant to note that the different routes are in relatively close proximity to each other (including considerable levels of overlap) and are crossing broadly the same landscape, with limited scope for much differentiation in terms of likely landscape and visual amenity impacts. Nevertheless, it remains good practice to consider the different potential routes as for any other scheme, and the broad methodology for this is detailed below.

32. For landscape and visual amenity six criteria were applied at the route corridor appraisal stage as outlined below:

- Landscape sensitivity – To find the best possible landscape ‘fit’. To avoid landscapes with greatest potential sensitivity to change (from overhead lines);
- Residential amenity – To avoid proximity to residential properties as far as possible on the grounds of general amenity including views from private property;
- Visual amenity – To minimise impacts on public visual amenity, including residents in settlements, users of main transport routes, and users of key recreational areas;
- Landscape designations – To minimise impacts on areas designated for their landscape value;
- Length of corridor – To minimise impacts on the landscape, all else being equal choose the most direct line; and
- Forestry – Areas of ancient woodland should be avoided and, if possible, impact on other woodland/ forestry types should be kept to a minimum.

33. When considering these criteria for each route option, an initial judgement has been made with regard to their likely presence within the vicinity of each route and therefore potential susceptibility to the proposed OHL and likely concerns. A judgement of ‘high’ indicated that a particular aspect would most likely be adversely affected by the introduction of an OHL and a judgement of ‘low’ indicated that the route option would likely avoid adverse effects on this criterion. A judgement of none means that the criteria would not be of concern e.g. if there were no residential properties within the vicinity of a route then the likely effects on residential amenity would be considered ‘none’.

34. The landscape appraisal took into account the landscape character and sensitivity of the different landscape designations affected, the degree to which the route options and potential alignments could be considered to have the least impact on landscape resource, and the degree to which the options conformed to the Holford Rules. Consideration was given not only to the route itself but to the potential requirement for construction access tracks.

35. For this project, potential landscape and visual amenity impacts were not a key factor in designing the route options, because the differences between them is relatively limited. However, the appraisal still takes a qualitative, expansive approach and attempts to draw out the key differences between the options where possible.

36. Consideration was given to the potential visibility of the OHL from sensitive receptors within the vicinity of the study area, in particular, residential and recreational receptors. However, it is noted that due to the location of the development and the landscape of the wider area there are limited visual receptors to be considered.

37. With respect to potential visibility, the degree to which an OHL would actually be perceptible was taken into account. Previous visibility studies and past experience on similar projects has shown that a wood pole overhead line is highly unlikely to give rise to significant visual effects from a distance of 1 km or greater. The degree to which wood poles are perceived depends on various factors including weather conditions, the time of day (i.e. the direction of the sun), whether the wood poles are seen against a backdrop or against the sky and the design of the wood pole (e.g. H-poles are more noticeable than single poles). As with any external material, wood poles are susceptible to weathering and consequent colour variations. The colour of the poles at the time of construction would be dark brown but this would fade over time to a noticeably lighter silver-grey. The rate of colour change would depend on the prevailing weather conditions and to some degree on the type of timber and timber treatment used. Over time these changes would tend to reduce the perceptibility of elements viewed above the skyline but may increase the visibility of structures when viewed against a dark background such as coniferous plantation. The metal bracing and the conductors would be constructed from aluminium, which is initially shiny but tends to dull over time to dark matt silver.

38. Taking this into account and taking account of existing screening provided by landform and forestry, the appraisal identified if any receptors were sufficiently close to the route to be considered to be at risk of significant adverse effects on visual amenity.

4.2.2.2.4 Geology, Peat and Hydrology Appraisal Methodology

39. The appraisal for hydrology, geology and peat considered the main aspects of concern to routeing and the main environmental sensitivities that require protection. The sensitivities that require consideration in route identification are:

- Private water supplies, including source location, properties served and any connecting infrastructure;
- Surface watercourses and waterbodies;
- Areas of peatland.
- The main aspects of concern in relation to routeing options are:
- Areas of peatland and associated buildability concerns;
- Steep or unstable slopes.

40. Other considerations included potential sensitivities relating to bedrock or superficial geology, former or current mining or mineral working areas, and potential future mineral resources that would require protection from sterilisation.

41. The baseline conditions within the study area relating to the hydrology, geology and peat were established through desk-based activities, using publicly available information and the existing information that was generated for the Enoch Hill Wind Farm.

42. Each of the route options were then appraised taking the baseline and likely effects of the construction, operation and decommissioning of the OHL into account, and compared with one another to determine a preference for the route(s).

4.2.2.2.5 Traffic and Transport Appraisal Methodology

43. Baseline information was gathered using publicly available information and information that was generated during the EIA for the Enoch Hill Wind Farm. Aspects that were considered include access to the Enoch Hill substation connection point, the

Enoch Hill 2 (formerly Monquhill) Wind Farm collector point, and any other access tracks within or in close proximity to the three route options under consideration.

4.2.2.2.6 Land Use and Recreation Appraisal Methodology

44. The baseline conditions relating to land use and recreation were established using publicly available information and the information that was generated as part of the EIA for the Enoch Hill Wind Farm.

4.2.2.3 Environmental Aspects that were not Considered

Hydrogeology

45. As groundwork for overhead lines is minimal, there are no specific sensitivities relating to groundwater that need to be considered. Sensitivities relating to groundwater-dependent terrestrial ecosystems (GWDTE) were considered as part of the ecology appraisal.

Forestry

46. All three of the route options were designed to avoid existing forested areas, and as such, the construction, operation and decommissioning of the OHL is not anticipated to impact on the current forestry within the study area. Although all three of the revised OHL route options (Route Options 4, 5 and 6) will traverse over a small corner of the planned Scottish Woodlands Knockburnie Woodland Creation area (as discussed in **Section 3.1.2**), the land is designated in the Scottish Woodlands plan as open ground. It is therefore not expected that the Enoch Hill 2 OHL will conflict with the Knockburnie Woodland Creation plan. An appraisal of the revised route options from a forestry perspective was therefore not required.

4.2.2.4 Environmental Appraisal Findings and Discussion

47. **Table 4.5**, below, provides a summary of the revised route options appraisal findings. The detailed analysis of the revised route options is provided in **Appendix 6**, and is colour coded to show which route is preferred according to the appraisal criteria presented in the section above.

Table 4.5: Summary of Route Options Appraisal Undertaken by Environmental Specialists

Route Option 4	Route Option 5	Route Option 6
Ecology		
This route is the least favoured with regard to protected animal species as it is the closest to woodland where protected species such as Badger, Pine Marten or Red Squirrel are more likely to be present. As with all three routes, it lies within Connel Burn / Benty Cowan potential wildlife site. Route Option 4 is also the least favoured with regard to botany as this route contains larger areas of blanket mire communities, and although degraded due to grazing and gripping, they are of ecological importance. There is a higher concentration of grips/ditches containing *Sphagnum* species within this route and although man-made are still of ecological importance.	This route overlaps with Route Option 4 near the wind farm point of connection but moves to the east before re-joining Route Options 4 and 6 close to the substation. This route has limited potential for protected species other than Otter in the lower watercourses and Badger in areas of gorse in the north easternmost section. With regard to protected species, there is little difference in habitat between this route and Route Option 6, however as Route Option 5 is slightly shorter, it is preferred with regard to protected species. As with all three routes, it lies within Connel Burn / Benty Cowan potential wildlife site. Route Option 5 contains more grassland habitat on mineral soil or small areas with low peat depths than Route Option 4, but less than Route Option 6. These grasslands are not classed as Annex 1 habitat, although some of these habitats are part of the LBAP. There are fewer mire communities along this route than Route Option 4 and more grassland communities which may be regarded as being of lesser sensitivity and not expected to be an issue.	Similarly to Route Option 5, Route Option 6 has limited potential for protected species other than Otter in the lower watercourses and Badger in the areas of gorse in the northern sections of the route. There is little difference in protected species habitat between this route and Route Option 5, however as Route Option 6 is the longest of the route options, there is more chance for potential disruption to protected species. As with all three routes, it lies within Connel Burn / Benty Cowan potential wildlife site. Route Option 6 is the longest of the three route options and overlaps with Route Options 4 and 5 in the northern and southern sections. However, Route Option 6 covers less mire habitats than Route Options 4 and 5. For this reason, Route Option 6 would be the preferred option with regard to botany.
Ornithology		
This route is the least favoured from an ornithological point of view as it passes through the most high wet grassland and mire habitat which is suitable habitat for wintering waders such as Curlew and Golden Plover. Overall it is also the closest to woodland where nesting birds such as Goshawk may be present. During the initial	This route option has also had four target species either crossing it or flying through it during the initial VP surveys. Overall this route stays furthest from the woodland areas and therefore is the preferred route with regards to ornithology.	Similarly to Route Options 4 and 5, Route Option 6 has also had four target species either crossing or flying through it during the 2019-2020 VP surveys. This route is the longest and therefore has more potential to cause disruption to bird communities on site. It also sweeps close to the edge of the woodland at the crossing over

Route Option 4	Route Option 5	Route Option 6
VP surveys in 2019-2020, this route had four target species either crossing it or flying through it.		Connel Burn and so is less preferred than Route Option 5. Furthermore, Route Option 6 does not fall entirely within the area of coverage for the VP surveys that have been undertaken to date. This data gap would be addressed through future VP surveys.
Archaeology and Cultural Heritage		
There are no identified designated assets in the route option corridor. There are two previously recorded non-designated heritage assets in the route option corridor: a sheepfold (DBA34) and Carcow farmstead (DBA10). The route option is 5.0 km in length – neither the shortest nor the longest of the three route options. Route Option 4 is among the most preferable route options, but – with appropriate evaluation and/or mitigation – all three route options could be progressed without significant effects on archaeology and cultural heritage.	There are no designated assets in the route option corridor. There are three non-designated assets comprising two sheepfolds (DBA 12, DBA34) and Carcow farmstead (DBA10). The route option is 4.9 km in length – the shortest of the three route options. Route Option 5 is among the most preferable route options, but – with appropriate evaluation and/or mitigation – all three route options could be progressed without significant effects on archaeology and cultural heritage.	There are no designated assets in the route option corridor. There are three non-designated assets comprising near to the route option comprising Carcow farmstead (DBA10); and sheepfolds at Little Chang (DBA12) and Connel Polga (DBA34). The route option is 5.9 km in length – longest of the three route options. Route Option 6 is the least preferable route option, but – with appropriate evaluation and/or mitigation – all three route options could be progressed without significant effects on archaeology and cultural heritage.
Landscape		
From a landscape perspective there is no preference between any of the three routes, with all routes crossing a broadly identical landscape with equal susceptibility to adverse landscape impacts. There are no landscape designations of national or international importance within the vicinity of the study area. The East Ayrshire Local Development Plan has identified a locally Sensitive Landscape Area, which all three routes cross and, due to a combination of engineering	From a landscape perspective there is no preference between any of the three routes, with all routes crossing a broadly identical landscape with equal susceptibility to adverse landscape impacts. There are no landscape designations of national or international importance within the vicinity of the study area. The East Ayrshire Local Development Plan has identified a locally Sensitive Landscape Area, which all three routes cross and, due to a combination of engineering	From a landscape perspective there is no preference between any of the three routes, with all routes crossing a broadly identical landscape with equal susceptibility to adverse landscape impacts. There are no landscape designations of national or international importance within the vicinity of the study area. The East Ayrshire Local Development Plan has identified a locally Sensitive Landscape Area, which all three routes cross and, due to a combination of engineering

Route Option 4	Route Option 5	Route Option 6
constraints and the location of turbines at the consented Enoch Hill Wind Farm, cannot be avoided. Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point. The route is approximately 5 km in length. The western section of this route runs through the proposed Enoch Hill Wind Farm and within relative close proximity to turbine locations (though outside the turbine buffer zone) for approximately 1.2 km. The route then runs to the south of the outlying north-eastern turbine. This route crosses the higher ground within the south of the study area; and is on higher landform than either of the other two options as it crossed the higher slopes of Chang Hill (463 m AOD) and Benty Cowan Hill (477 m AOD), before the landform drops in height and the route crosses the narrow crevice created by Connel Burn before ending at the Enoch Hill 2 (formerly Monquhill) Wind Farm point of connection. This route crosses seven watercourses. At this early stage of appraisal, it is considered unlikely that any significant landscape impacts would be identified should the development be located within Route Option 4. The main landscape effects would arise from the introduction of construction access tracks and the OHL into a relatively untouched moorland landscape. However this effect would be reduced by the OHLs proximity to the proposed Enoch Hill Wind Farm, particularly within the western and central areas of the route. . Overall the sensitivity of the landscape to the Proposed Development has been judged as low (reduced from medium based upon the consented wind farm at Enoch Hill).	constraints and the location of turbines at the consented Enoch Hill Wind Farm, cannot be avoided Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point. The route is approximately 4.9 km in length. Within the west this route passes to the north of the proposed Enoch Hill Wind Farm on the slightly lower lying slopes of Chang Hill and Benty Cowan Hill, and as a result has to cross wider crevices than Route Option 4. To the north-east of Chang Hill the route turns southwards and for the remaining central and eastern sections broadly follows the same path as Route Option 4, including passing to the south of outlying north-eastern turbine (T14). This route crosses six watercourses. At this early stage of appraisal, it is considered unlikely that any significant landscape impacts would be identified should the development be located within Route Option 5. The main landscape effects would arise from the introduction of construction access tracks and the OHL into a relatively untouched moorland landscape. However this effect would be reduced by the OHLs proximity to the proposed Enoch Hill Wind Farm, particularly within the western and central areas of the route. Overall the sensitivity of the landscape to the Proposed Development has been judged as low (reduced from medium based upon the consented wind farm at Enoch Hill).	constraints and the location of turbines at the consented Enoch Hill Wind Farm, cannot be avoided Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point. The route is approximately 5.9 km in length. The route heads broadly eastwards for 3 km, avoiding the turbines of Enoch Hill Wind Farm, and to the north of the higher ground of Chang Hill and Benty Cowan Hill. The route then turns southwards along the eastern slopes of Benty Cowan Hill and to the west of Conmel Burn, before turning south-east across the crevice and ending at the Enoch Hill 2 (formerly Monquhill) Wind Farm point of connection. This route crosses between six and nine watercourses. At this early stage of appraisal, it is considered unlikely that any significant landscape impacts would be identified should the development be located within Route Option 6. The main landscape effects would arise from the introduction of construction access tracks and the OHL into a relatively untouched moorland landscape. This Route Option is further from the consented Enoch Hill Wind Farm and approximately 20% longer than either Route Option 4 or 5. Overall the sensitivity of the landscape to the Proposed Development has been judged as medium.

Route Option 4	Route Option 5	Route Option 6
Visual Amenity		
From a visual amenity perspective Route Option 4 is the preferred route. This route is furthest from the identified visual receptors within the vicinity of the study area, notably residential properties along the B741 and within New Cumnock. Due to the location of the route and the local landform, plus forestry to the west and south, there are only a very small number of potential visual receptors, and it is not anticipated that any would experience significant visual effects. In addition a large section of Route Option 4 would be in the vicinity of the consented Enoch Hill Wind Farm and therefore reduce the area of likely visual intrusion created by new energy infrastructure.	From a visual amenity perspective Route Option 5 is a viable option for the Proposed Development. Due to the location of the route and the local landform, plus forestry to the west and south, there are only a very small number of potential visual receptors, and it is not anticipated that any would experience significant visual effects should Route Option 5 be taken forward as the preferred final route. Some sections of Route Option 5 would be in the vicinity of the consented Enoch Hill Wind Farm and therefore reduce the area of likely visual intrusion created by new energy infrastructure.	From a visual amenity perspective Route Option 6 is a viable option for the Proposed Development. Whilst the location of the route and the local landform mean there would only be limited visibility of the OHL and only a very small number of visual receptors, the more northerly route of Route Option 6 brings the route within perceptibility of extra receptors which would not be able to see either of the more southern routes, in particular properties at Dalleagles. However, it is not anticipated that any receptors would experience significant visual effects should Route Option 6 be taken forward as the preferred final route.
Geology, Peat and Hydrology		
Seven watercourse crossings; approximately 2.5 km blanket peat and 140 m peaty gleys.	Six watercourse crossings; approximately 1.9 km blanket peat and 1 km peaty gleys. Preferred option due to fewest watercourse crossings and smallest area of peat coverage.	Between six and nine watercourse crossings; approximately 1.2 km blanket peat and 2.8 km peaty gleys.
Traffic and Transport		
Route Option 4 follows more slowly undulating terrain to the southwest of Benty Cowan Hill, passing through the Enoch Wind Farm site compared to Route Option 6 and the northern section of Route Option 5. Route Option 4 could therefore potentially offer easier access for construction purposes.	Route Options 5 follows the general terrain of Route Option 4 through the Enoch Wind Farm site before splitting off to the northeast and following more rugged terrain parallel with Route Option 6, and therefore the northern section may be more difficult to access.	Route Option 6 passes to the north east of Benty Cowan Hill and follows more rugged terrain than Route Options 4 and 5 and may therefore be more difficult to access.

Route Option 4	Route Option 5	Route Option 6
Land Use and Recreation		
Land use and recreation is the same for all three route options, therefore no preference.	Land use and recreation is the same for all three route options, therefore no preference.	Land use and recreation is the same for all three route options, therefore no preference.

4.2.2.5 Preferred Route Option

48. The following main points were taken into consideration when identifying the preferred route option:

- The location of the study area within a provisional Wildlife Site affords the ecology greater protection and therefore lends more weight to the preferred route from an ecological and ornithological perspective. Route Option 4 was identified as having the least potential to accommodate an OHL from an ecological and ornithological perspective and is also the least preferred route overall.
- From a historic environment perspective, Route Option 6 has some potential to accommodate an OHL but is the least preferred of the three route options under consideration;
- Route Option 6 has some potential to accommodate an OHL from a landscape and visual amenity perspective, but is the least preferred of the three route options under consideration;
- Route Option 5 would have the fewest watercourse crossings and the smallest area of peat coverage and is therefore preferred from a geology, peat and hydrology perspective;
- Route Option 4 would be most preferable from a traffic and transport (accessibility) perspective, since it will be closer to the consented Enoch Hill Wind Farm tracks and therefore more easily accessible. However, since SPEN intends to use the wind farm tracks where possible, along with low ground pressure vehicles and equipment, it is not anticipated that the accessibility of Route Options 5 and 6 will present a significant constraint;
- Overall, Route Option 4 was the only route option to be appraised as having the least potential to accommodate an OHL within the context of the identified environmental constraints. Route Option 4 is therefore considered to be the least suitable of the three route options under consideration.
- Route Option 6 was appraised as having some potential to accommodate an OHL for most of the environmental aspects that were considered, and was selected as a preferred option for only one environmental aspect. This, together with the greater length of this OHL route and the potential to have more of an impact on the landscape and visual amenity aspects than Route Options 4 and 5 mean that Route Option 6 is less preferable than Route Option 5;
- Route Option 5 was identified as the preferred route for all the environmental aspects that were considered, other than for traffic and transport (which related to reduced accessibility due to being further away from the consented Enoch Hill Wind Farm track(s)) and for land use and recreation, since there was no preference for any of the route options from this perspective.

49. Considering all of the above, and the preferred route options discussed in **Table 4.5**, above, Route Option 5 would be the most preferable from an environmental perspective.

5 Consultation on the Proposal and Next Steps

50. As mentioned previously, the purpose of this document is therefore two-fold:

- To present Route Options 4, 5 and 6 and information relating to these revised route options.
- To elicit comments from and participation of stakeholders, to inform SPEN further and aid in the selection of a revised proposed grid connection route.

51. The route options for the Enoch Hill 2 OHL grid connection were presented in Section 4 of this report. SPEN would like to invite the consultees to comment/provide input to further inform the preferred route.

52. The following consultees are invited to comment on this report:

- East Ayrshire Council Planning;
- Historic Environment Scotland;
- Scottish Environment Protection Agency
- NatureScot;
- West of Scotland Archaeology Service;

- Scottish Woodlands; and
- Landowners.

53. All comments and input to the route selection for the Enoch Hill 2 OHL grid connection are highly valued and appreciated. It would be appreciated if the following could be taken into consideration when commenting:

- Are there any comments regarding the rationale for the project, as set out within this route selection consultation document?
- Are there any comments regarding the approach to the selection of the preferred route as set out in this route selection consultation document?
- Are there any factors that may have been overlooked, or given either too much or insufficient consideration during the route selection process?

54. Please email comments to Enoch2OHL@spenergynetworks.co.uk, or post to Land and Planning, 55 Fullerton Drive, Cambuslang, G32 8FA.

55. All comments received will inform further consideration of the preferred route alignment and the selection of a proposed route alignment, which will be taken forward for more detailed environmental assessment prior to submission of an application for consent.

6 References

6.1.1 Publications and Reports

Amec Foster Wheeler Environment & Infrastructure UK Limited. (2015) 'E.On Enoch Hill Wind Farm Environmental Statement, September 2015'.

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Wood (2016), Monquhill Wind Farm Protected Species Survey Report, July 2017

Wood (2018), Monquhill Wind Farm Baseline Ecology Report of proposed access route, May 2018

Wood (2018), Monquhill Wind Farm Bat Survey Report, May 2018

6.1.2 Environmental Data Sources

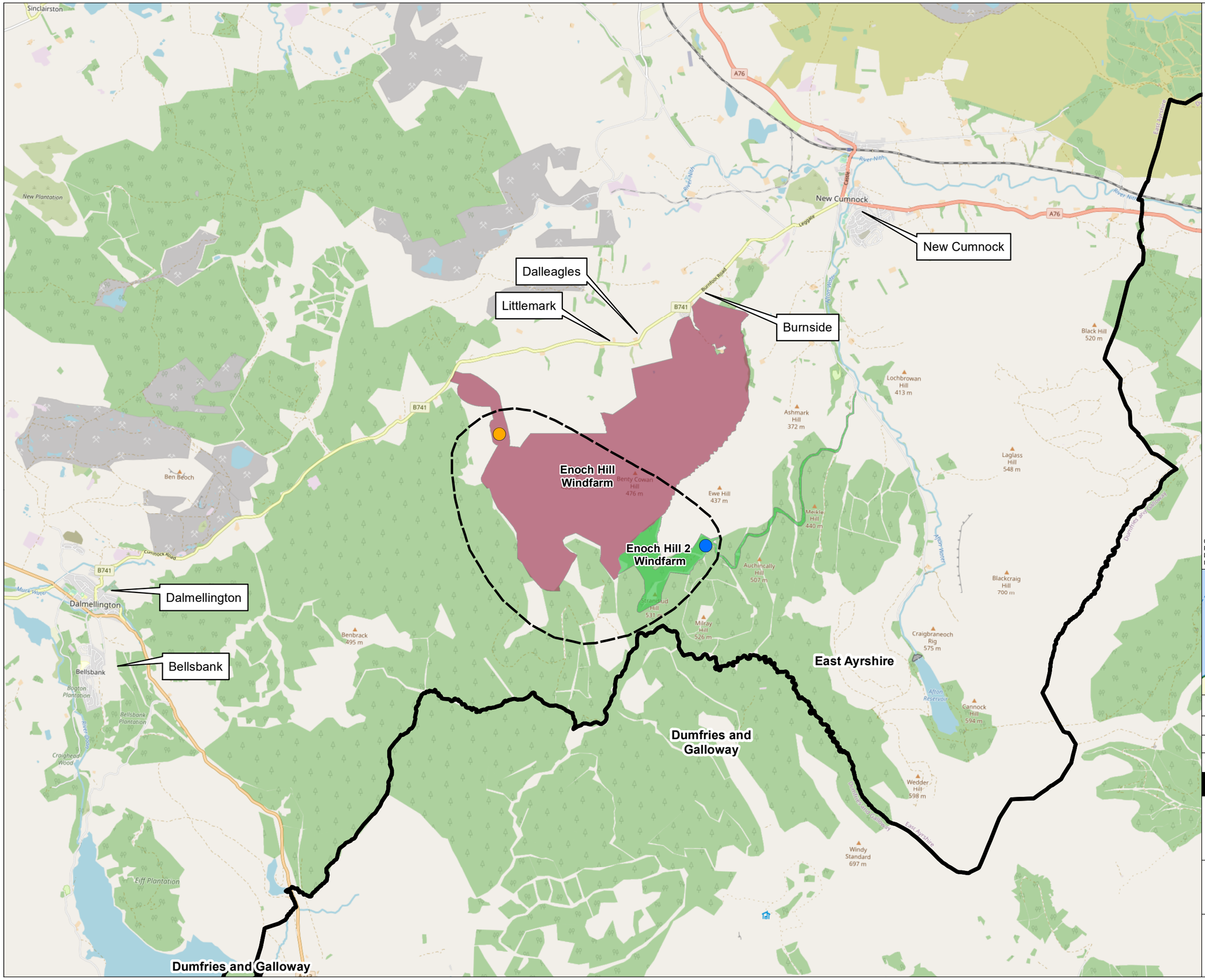
Table 6.1: Environmental Data Sources

Feature	Abb	Source
Ancient Woodland Inventory	AW	NatureScot
Conservation Areas	CA	Historic Environment Scotland
Core Paths	-	South Lanarkshire Council
Cycle Routes	-	SUSTRANS
Existing Transmission Infrastructure	-	SPEN
Flood Risk Zones	FRZ	SEPA online flood mapping
Geology & Hydrogeology	-	BGS (online)
Geological Conservation Review sites	GCR	Joint Nature Conservation Committee

Feature	Abb	Source
Historic Environment Record	HER	Canmore (canmore.org.uk)
Hydrogeology	-	Bgs (ONLINE)
Landscape Character Types (Landscape Character Assessment)	LCT (LCA)	NatureScot
Listed Buildings	LB	Historic Environment Scotland
National Tourist Routes	-	VisitScotland
National Scenic Areas	NSA	Scottish Government
Regional Scenic Areas	RSA	South Lanarkshire Council
OS Maps 1-250k	-	OS Open Data
OS Maps 1-50k	-	Emapsite
Ramsar sites	-	NatureScot

Appendix 1: Figures

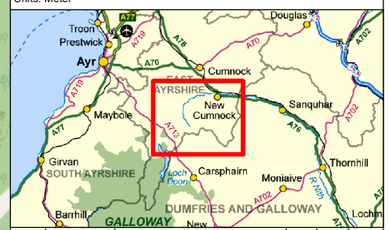
Figure no.	Figure Title
1	Site Location Plan
2	Route Alignment Constraints and Route Options
3	Ecological Designated Sites
4	Ornithology Survey Vantage Points
5	Archaeological Site Constraints
6	Other Site Constraints
7	Landscape Site Constraints
8	Landscape Character Areas
9	Distribution of carbon and peatland classes across the study area and route options



Legend:

- Collector Substation
- Windfarm Point of Connection
- Indicative Study Area
- District Unitary Boundary
- Enoch Hill Windfarm
- Enoch Hill 2 Windfarm

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



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03	23/03/2022	Revised Windfarm Boundaries	DL	DB	DB
02	13/03/2020	Windfarm Boundaries Added	FC	JS	JS
01	12/08/2019	Updated Substations	FC	JS	JS

Monquhill 33kV Overhead Line

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TITLE:

Figure 1 -
Site Location Plan

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Legend:

- Indicative Study Area
- Hard Constraints
- Wake effect zone (moderate constraint)
- Moderate Constraints

Route Alignment

- Monquhill Route Option 4 Corridor
- Monquhill Route Option 5 Corridor
- Monquhill Route Option 6 Corridor
- Monquhill Route Option 4
- Monquhill Route Option 5
- Monquhill Route Option 6
- Collector Substation
- Windfarm Point of Connection
- Enoch Hill Turbine Location
- EH2(MH) Turbine Location

Route Alignment Option Widths

Option 4 - 50m to 204m wide

Option 5 - 128m to 225m wide

Option 6 - 204m to 218m wide

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
04	06/05/2022	Revised Legend	DL	DB	DB
03	31/03/2022	Revised EH2 Turbines	DL	DB	DB
02	01/10/2021	Route Alignments Amended	DL	DB	JS

Monquhill 33kV Overhead Line

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Figure 2 -
Route Alignment Constraints
and Route Options

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Dalleagles Woodland

Connel Burn / Benty Cowan

East Ayrshire

Afton Uplands

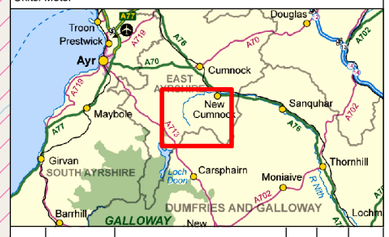
Dumfries and Galloway

Legend:

- Collector Substation
- Windfarm Point of Connection
- Indicative Study
- District Unitary Boundary
- Site of Special Scientific Interest
- Indicative Boundary of Provisional Wildlife Site
- Ancient Woodland
- Scottish Wildlife Trust

Provisional Wildlife Sites digitised from information available on the East Ayrshire Council online portal http://webgis.east-ayrshire.gov.uk/webgis2016/

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



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03	23/03/2022	Provisional Wildlife Sites	DL	DB	DB
02	18/12/2019	Updated Figure Number	FC	JS	JS
01	12/08/2019	Updated Substations	FC	JS	JS

Monquhill 33kV Overhead Line

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Figure 3 -
Ecological Site Constraints

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Kilometers
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VP01

VP02

Legend:

- Indicative Study Area
- Monquhill Route Option 4
- Monquhill Route Option 5
- Monquhill Route Option 6
- Monquhill Route Option 4 Corridor
- Monquhill Route Option 5 Corridor
- Monquhill Route Option 6 Corridor
- Collector Substation
- Windfarm Point of Connection
- Vantage Point Location
- Vantage Point Sector (180 degrees, 2km)
- Vantage Point Zone of Theoretical Visibility

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
01	23/03/2022	Route Options Added	DL	DB	DB
00	13/03/2020	First Draft	FC	JS	JS

Monquhill 33kV Overhead Line

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Figure 4 -
Ornithology Survey
Vantage Points

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Metres

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

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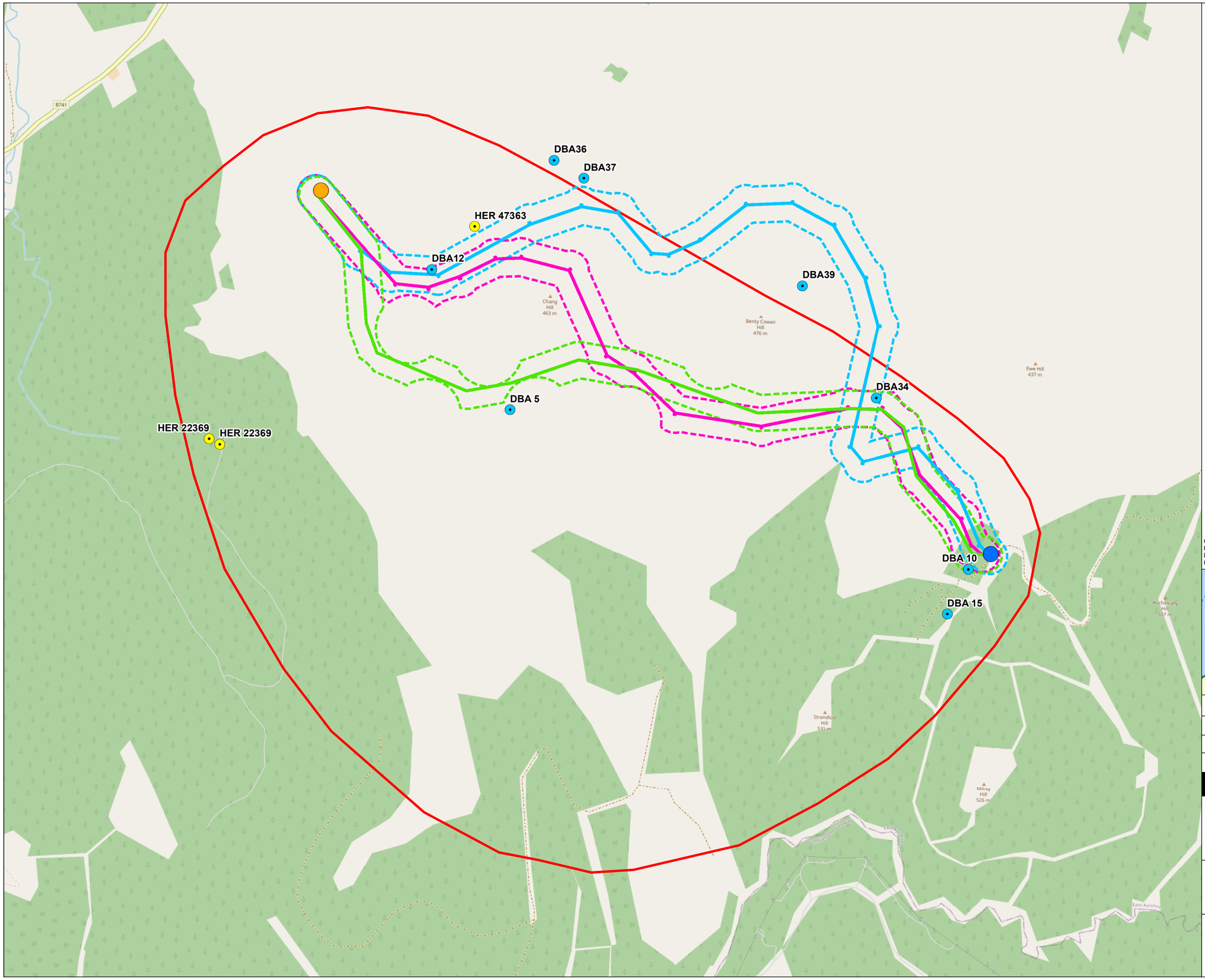

Legend:

- Indicative Study Area
- Collector Substation
- Windfarm Point of Connection
- Monquhill Route Option 4
- Monquhill Route Option 5
- Monquhill Route Option 6

Route Alignment

- Monquhill Route Option 4 Corridor
- Monquhill Route Option 5 Corridor
- Monquhill Route Option 6 Corridor
- Non-Designated Asset Point - WoSAS HER
- Non-Designated Asset Point – Desk-Based Assessment (DBA)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
04	23/03/2022	Revised Title Block	DL	DB	DB
03	13/03/2021	HER/DBA Added	AJ	JS	JS
02	18/12/2019	Updated Figure Number	FC	JS	JS

Monquhill 33kV Overhead Line

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Figure 5 -
Archaeological Site Constraints

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Metres

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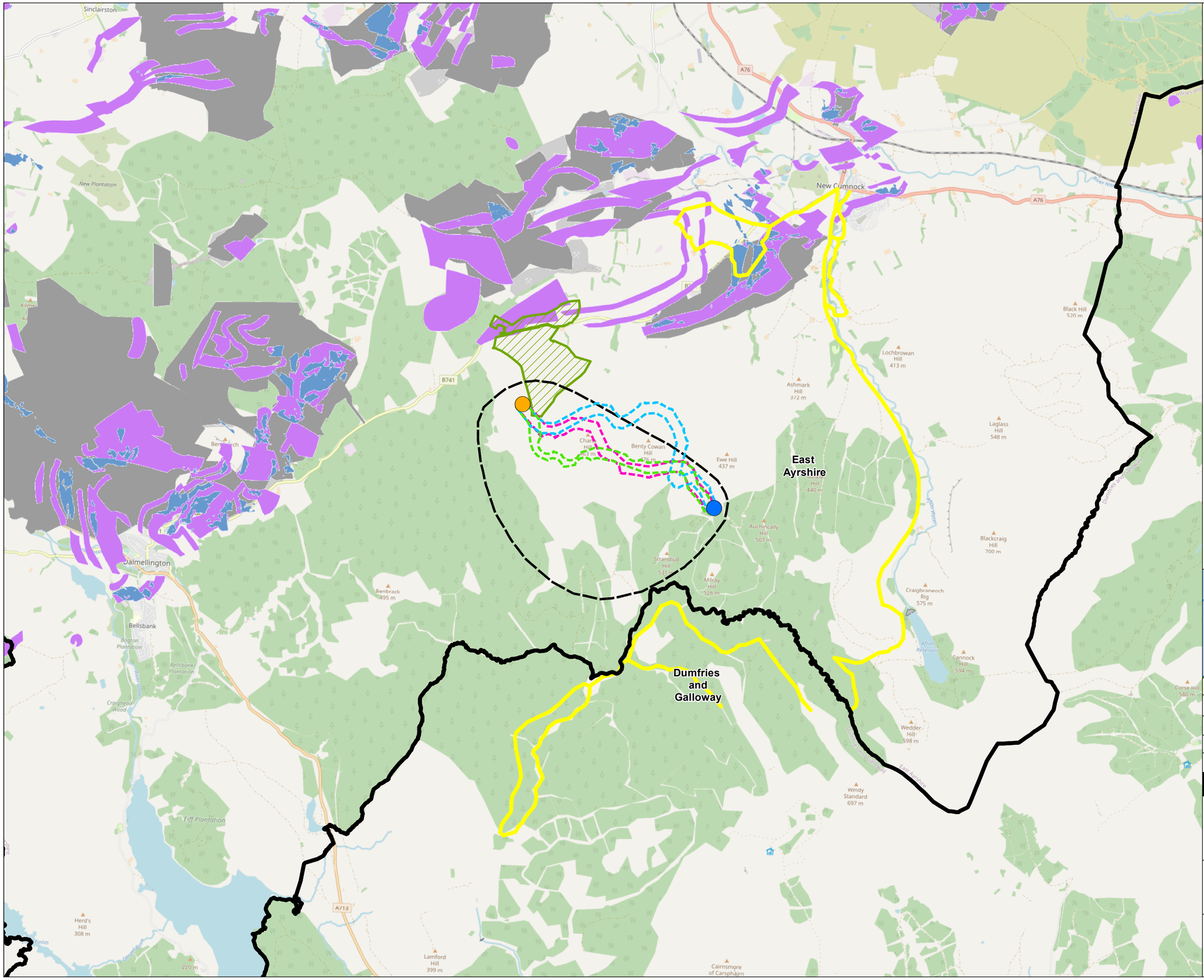
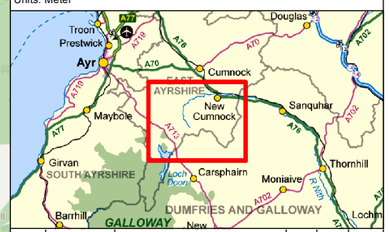


Legend:

- Collector Substation
- Windfarm Point of Connection
- Monquhill Route Option 4 Corridor
- Monquhill Route Option 5 Corridor
- Monquhill Route Option 6 Corridor
- Indicative Study
- District Unitary Boundary
- Surface Mining (Past and Current)
- Probable Shallow Coal Mine Workings
- Past Shallow Coal Mine Workings
- Core Path
- Planned Scottish Woodlands Knockburnie Woodland Creation Boundary

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



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03	23/03/2022	Updated Legend	DL	DB	DB
02	13/03/2020	Updated Figure Number	FC	JS	JS
01	26/08/2019	Updated Substations	FC	JS	JS

Monquhill 33kV Overhead Line

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Figure 6 -
Other Site Constraints

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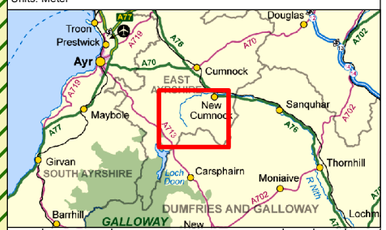
East Ayrshire

Dumfries and Galloway

Legend:

- Collector Substation
- Windfarm Point of Connection
- District Unitary Boundary
- Indicative Study
- Category A Listed
- Category B Listed Building
- Category C Listed Building
- Scheduled Monument
- Sensitive Landscape Area
- Environmentally Sensitive Area

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



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02	13/03/2020	Updated Figure Number	FC	JS	JS
01	12/08/2019	Updated Substations	FC	JS	JS

Monquhill 33kV Overhead Line

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Figure 7 -
Landscape Site Constraints

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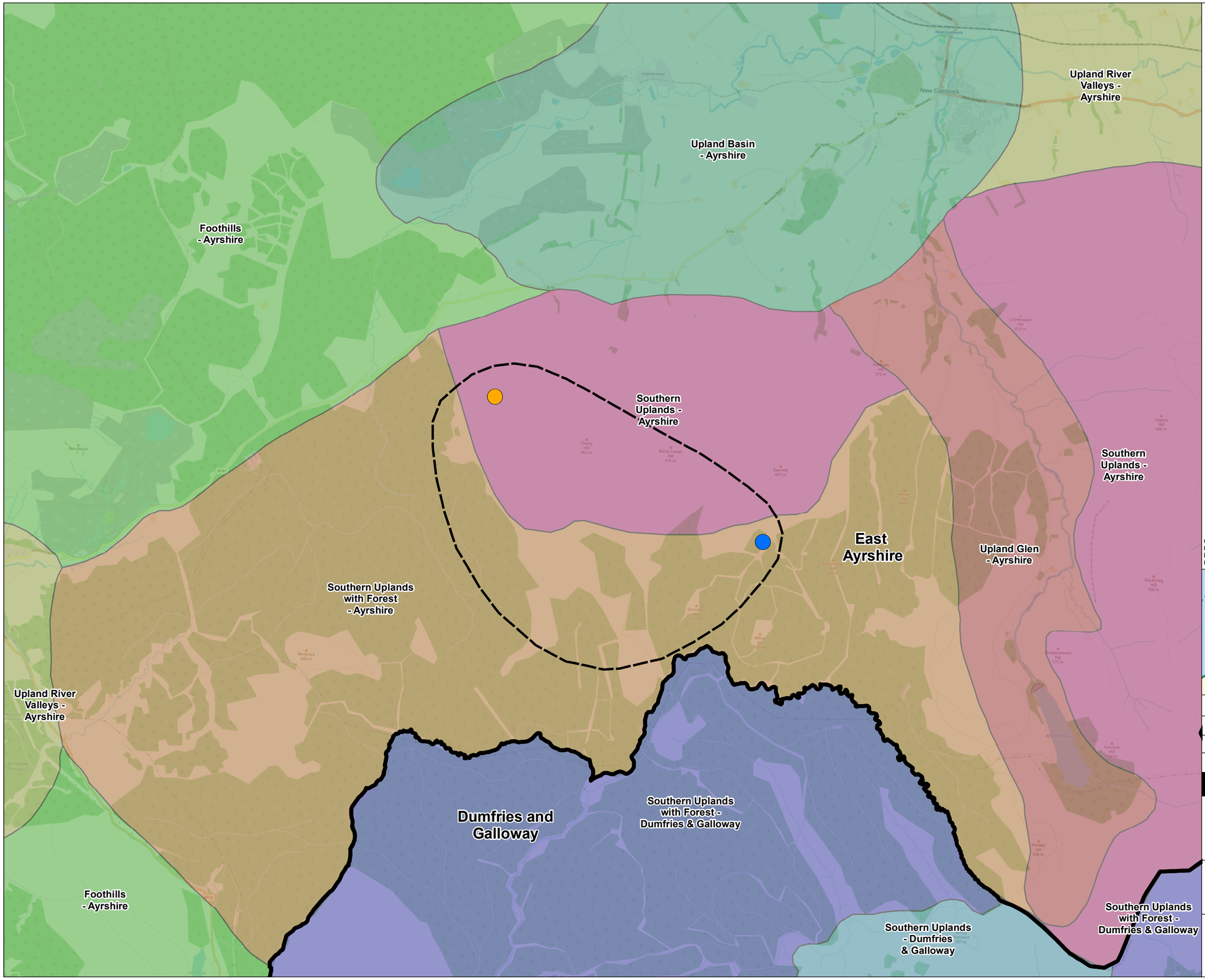


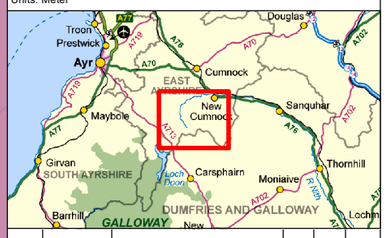
Legend:

- Collector Substation
- Windfarm Point of Connection
- District Unitary Boundary
- Indicative Study

Landscape Character

- Foothills -
- Southern Uplands -
- Southern Uplands - Dumfries & Galloway
- Southern Uplands with Forest - Ayrshire
- Southern Uplands with Forest - Dumfries & Galloway
- Upland Basin -
- Upland Glen -
- Upland River Valleys -

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
04	23/03/2022	Updated Legend	DL	DB	DB
03	13/03/2020	Updated Figure Number	FC	JS	JS
02	26/08/2019	Updated LCA's	FC	JS	JS

Monquhill 33kV Overhead Line

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TITLE:

Figure 8 -
Landscape Character Areas

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Kilometres

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Legend:

- Collector Substation
- Windfarm Point of Connection
- Indicative Study Area

Route Alignment

- Monquhill Route Option 4 Corridor
- Monquhill Route Option 5 Corridor
- Monquhill Route Option 6 Corridor

Carbon and Peatland Classification*:

- Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value
- Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential
- Class 3 - Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat
- Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils
- Class 5 - Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.
- Mineral soil - Peatland habitats are not typically found on such soils (Class 0)
- Non-soil (e.g. loch, built up area, rock and scree) (Class -2)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
02	23/03/2022	Connection Points Added	DL	DB	DB
01	16/09/2021	Route Alignments Amended	DL	DB	JS
00	13/03/2021	First Draft	AJ	DB	JS

Monquhill 33kV Overhead Line

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TITLE:

Figure 9 -
Distribution of carbon and peatland classes across the study area and route options

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Metres
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Appendix 2: Route Options 1, 2 and 3

1. Please note, Route Options 1, 2 and 3 are no longer under consideration. Refer to **Section 1.1** of this report for more detail.

Legend:

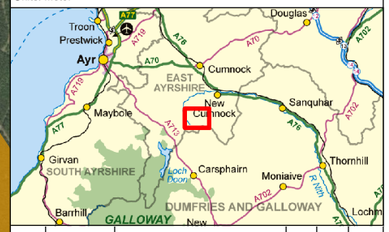
- Indicative Study Area
- Hard Constraints
- Possible Hard Constraints
- Moderate Constraints

Route Alignment

- Route Option 1
- Route Option 2
- Route Option 3
- Collector Substation
- Windfarm Point of Connection
- Monquhill Turbine Location
- Enoch Hill Turbine Location

Route Alignment Option Widths
Option 1 - 95m to 225m wide
Option 2 - 125m to 415m wide
Option 3 - 95m to 415m wide

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
01	13/03/2020	Route Alignments Amended	AJ	DB	JS
00	18/12/2019	First Draft	FC	JS	JS

Monquhill Windfarm
33kV OHL Grid Connection

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Figure 2 -
Route Alignment Constraints
and Route Options

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Appendix 3: Consultation Undertaken to Date

Item	Description
Item 3.1	East Ayrshire Council Consultation meeting notes (November 2019)
Item 3.2	NatureScot Introductory meeting notes (August 2019)
Item 3.3	East Ayrshire Council consultation response (June & July 2020)
Item 3.4	SEPA consultation response (June 2020)
Item 3.5	HES response (June 2020)
Item 3.6	NatureScot response (June 2020)

Enoch Hill Wind Farm Overhead Line Grid Connection

East Ayrshire Council Planning Consultation Meeting

Project No: 662109
Meeting Notes

The Opera House, 8 John Finnie Street, Kilmarnock, KA1 1DD

18/11/2019 15:30 – 16:20

Present:

Brendan Tinney (BT)	Environmental Planner, Scottish Power Energy Networks (SPEN)
Joe Somerville (JS)	Project Lead, RSK
Donnette Briggs (DB)	Senior Environmental Consultant, RSK
Christine Morris (CM)	East Ayrshire Council
Craig Iles (CI)	East Ayrshire Council

Apologies:

David Wilson	East Ayrshire Council

Circulation:

All of the above.

Marcos Israeliantz	Project Manager, SPEN

Item No	Item	Action By & Log No.
1.	**Purpose of Meeting**	
1.1	The purpose of this meeting was to introduce key members of the East Ayrshire Council Planning team to the proposed Monquhill Wind Farm Overhead Line (OHL) Grid Connection project.	
2.	**Discussion**	
2.1	Introduction *Planned project* SPEN has been contracted by National Grid (NGET) to provide a 33kv wood pole overhead line over approximately 4 km, for the purpose of connecting the proposed Monquhill wind farm to the planned Enoch Hill wind farm substation. Several routeing options are currently under consideration, within the study area shown on the attached map (see Appendix A). *Background information* The developer of Enoch Hill Wind Farm, E.On, was granted planning permission on 13 September 2019. It is understood at this time that the proposed Monquhill Wind Farm is intended to be an extension of the Enoch Hill Wind Farm, and that E.On has recently sold the planned extension to	

Item No	Item	Action By & Log No.
	RWE. At the time of the meeting, the proposed Monquhill Wind Farm was likely to consist of 3 wind turbines with a combined output of 10 MW. The planned substation at Enoch Hill Wind Farm will be connected to the New Cumnock substation by underground cable.	
2.2	Environmental information gathering Environmental baseline information is available for a large part of the OHL study area, as it was generated during the Environmental Impact Assessment for the Enoch Hill Wind Farm. However, there are some areas where no environmental information is available, and as such we are taking a gap filling approach. Some environmental studies are already underway for the OHL, including bird surveys, sensitive habitat assessment (peatland and Groundwater Dependent Terrestrial Ecosystems), protected species assessment, etc. Scottish Natural Heritage has already been consulted and have provided some input to the environmental studies that will be carried out for the OHL project. There are no nationally important designated areas within the study area.	
2.3	OHL route options Using the information provided by E.ON regarding the Enoch Hill Wind Farm and the associated proposed Monquhill Wind Farm, as well as information garnered from desktop surveys conducted by RSK for the areas within the study area where there are information gaps, three potential routes for the proposed Monquhill OHL Grid Connection have been preliminarily identified. JS presented a map (see Appendix B) showing the proposed route options and the technical constraints that have influenced these routes. He explained that one option is for the OHL to go north of the Enoch Hill Wind Farm area (Route Option B), and one that will go between turbines 11 and 14 of the Wind Farm (Route Option A). The third option is a combination of the two, with a cross over section shown on the map as Route Option C.	
2.3.1	*Technical constraints influencing OHL route options* The red areas on the map (Appendix B) show the hard technical constraints – the OHL route cannot be within the topple distance of the wind turbines, and the black hashed areas on the map show where the OHL would experience the wake effect and need to be avoided. These technical constraints have limited the route options considerably and have necessitated the consideration of a route outside of the Wind Farm area boundary, hence the need for additional (gap-filling) environmental studies. There was some discussion about the location of existing and planned electrical infrastructure in the vicinity of the OHL. CM asked if such information is available, as it would be good to see the Monquhill OHL in the context of both existing infrastructure and, as far as possible, future planned infrastructure. BT said that SPEN System Design specifically look at this and consider the future proofing and consolidation of infrastructure as far as is practicable. Generally, delivery timeframes for new infrastructure is 5 to 7 years, so SPEN's System Designers try to plan infrastructure for the future. BT said that we could possibly provide a map that shows where all the existing and currently planned infrastructure is in the area around the proposed Monquhill OHL route.	BT – SPEN 01

Item No	Item	Action By & Log No.
2.3.2	*Other constraints influencing OHL route options* The route options map (Appendix B) presented at the meeting showed the hard constraints in red, and moderate constraints in orange. CM and CI asked what the moderate constraints were. JS said they were a combination of things but one example is the forested areas – the purpose of this constraint is to try to minimise the amount of compensatory woodland that would be required if the OHL were to impact on the existing forested areas, hence forested areas have been identified as a moderate constraint – preferable to be avoided, but could be considered if other options are exhausted. JS said there is still some environmental information gap filling to be done for route B (shown in purple on the attached map – see Appendix B).	
2.4	Consenting process CI asked what the intention is in terms of which consenting process the developer will follow. BT said they are expecting to submit a Simplified Notification to the local authority, prior to submitting an application to the Scottish Government under Section 37 of the Electricity Act.	
2.5	Infrastructure required for the construction of the OHL It is not anticipated that any new access tracks will be required for the OHL – SPEN will use existing tracks and the tracks that will have been constructed for the Enoch Hill Wind Farm as much as possible to avoid having to construct new tracks for the OHL. It is also not expected that any temporary tracks will be required unless there is deep peat on site. The process envisaged to erect the infrastructure is to dig a hole, place the pole in it, fill it again. Generally, SPEN expect around 6 poles to be erected in a day this way. The construction compound will be located at the Enoch Hill substation. CI asked what the distance between the poles is likely to be. BT said it would be 80 to 100 m, but the higher the altitude, poles might need to be put closer together.	
2.6	Timelines CM asked what the expected timelines are for the project. BT said they are planning to get Section 37consent by 2021, with the OHL construction to be completed by 2022. As it is a wood pole OHL, it will be relatively quick to construct. JS said that we are currently planning for the routeing document to be out in January 2020, with consent by June 2021. CM asked if the expected timeframes for consent for the Monquhill Wind Farm were known yet. JS and BT said no, that information is not available yet. CM raised a concern that if the Monquhill OHL were to be granted consent before the Monquhill Wind Farm is consented, it might end up being premature. If the Monquhill Wind Farm were to end up not being consented, the OHL would become redundant infrastructure. BT responded that SPEN have been contracted by NGET to provide this infrastructure, and that if planning consent were to be refused because it is premature, then that outcome would have to be presented to NGET.	
2.7	Visual aspects CI wondered if there would be a visual impact on the houses located to the west / north west of the proposed OHL. CM wondered if there might be an impact on people driving past the infrastructure.	RSK 001-consider visual impacts

Item No	Item	Action By & Log No.
	JS mentioned that the route planning will also be done in such a way as to prevent the OHL from being sky-lined to protect birds and to minimise visual impacts. CM mentioned that there are already existing distribution lines, so not expecting a new line in an area where no lines exist.	
3	**Distribution of maps**	
3.1	CM asked if the maps presented at the meeting could be emailed to David Wilson, as he was unable to attend.	RSK 002
4	**End**	

Monquhill Wind Farm Overhead Line Grid Connection

Project No: 662109

Scottish Natural Heritage Consultation Meeting

Scottish Natural Heritage (SNH), 31 Miller Road, Ayr, KA7 2AX
20/08/19 10:30 – 11.30

Present:

Joe Somerville (JS)	EIA Project Manager, RSK
Brendan Tinney (BT)	Environmental planner, Scottish Power Energy Networks (SPEN)
Graeme Walker (GW)	Operations Area Officer, SNH Strathclyde and Ayrshire
Ross Preston (RP)	Ornithologist, RSK

Circulation: All of the above, plus Ruth Morton (RM) and Julia Richards (JR) and Mike Kelly (MK), RSK

Item No	Item	Action By & Log No.
1.	**Brief Introduction to overhead line (OHL) Project and purpose of meeting**	
1.1	JS: Introduced aim of the meeting (introduce project, show study area, scope, and discuss any ecological/ornithological or environmental concerns SNH have relating to project. Referred to the study area map, ecology baseline data study (BDS) and ornithology strategy report issued to GW in advance of the meeting. JS and RP: Showed maps highlighting refined study area, surface watercourses and described the most current ecological data in the area based on the information gathered for Enoch Hill Wind Farm, Monquhill Wind Farm and the baseline information gathered for the grid connection to date.	Info
1.2	JS: In summary the project will consist of an OHL woodpole route up to 15 m in height. Whether it is a single or double woodpole will depend on the altitude. BT: Outside the scope of this project, but as part of the wider context around the project, there will be a buried cable connecting the Enoch Hill substation with the new substation at New Cumnock (south of the B741).	
1.3	JS: Programme for the project involves the following: • Q4 of 2019 and Q1 of 2020: identify a proposed route, and	

	consult with key stakeholders (inc. SNH) to arrive at a preferred route. • Q1 2020: submit an EIA screening request to Energy Consents Unit (ECU) under Section 37 of the Electricity Act and 2017 EIA regulations.	
2.	**Summary of ecological and ornithological background**	
2.1	RP: Golden Plover identified during baseline surveys for Enoch Hill Wind Farm on high ground, e.g. around Rigg Hill. Hen Harrier (passaging), Merlin and Goshawk occasional flights identified from Enoch Hill Wind Farm baseline surveys. Likely proposed mitigation for these for the OHL will be species risk assessments and consideration of the timing of the works. No goose flights picked up in the baseline data. Black Grouse leks identified. Impacts to be mitigated by the timing of the works and establishing set-backs/buffer areas from leks.	
2.2	No information provided yet by raptor groups – tried via the national channel. GW: Kenny Sludden is the local data captain for south Strathclyde. May be worth chasing.	**RSK to chase Raptor Group responses**
2.3	JS: Provisional Wildlife Site (PWS) of Connel Burn/Benty Cowan covers a large proportion of the study area. GW: Full Phase 1 survey of the wider area done in 1990s. The PWS was identified on the basis of that Phase 1 survey. GW can pass on the information.	**GW to pass on Phase 1 information**
3.	**Discussion**	
3.1	GW: Worth considering whether an alternative substation location for the Monquhill Wind Farm and/or Enoch Hill WF would be acceptable. BT: Explained that the start and end points (namely to the two substation locations) are defined by the developer, with SPEN contracted to identify a route between the two, considering cost, engineering and environmental factors in the routeing process.	Info
3.2	GW: If the OHL requires an EIA, SNH will recommend that impacts from the Monquhill OHL be considered cumulatively with the proposed Monquhill Wind Farm. Enoch Hill WF to be considered part of the baseline.	Info
3.3	RP: in terms of scope of surveys and survey effort, there is a good baseline on the site as a result of the 2 wind farm developments. Baseline survey results are being passed on to RSK and informed the ornithology strategy. RSK advise the 12 months of vantage point (VP) surveys should be appropriate. GW: Agree that 12 months should be adequate. Survey efforts should be light touch and focus on ground-truthing the existing baseline data and	**RSK to**

	gap-filling where necessary. No Woodland Point counts required. Commencement of VP surveys can slip into October if that is required. JS: We have identified a gap (between Small Burn and Carcow Burn, centred at approx. NGR NS5870 0709) which was not within the survey areas for either Enoch Hill or Monquhill WFs which will need gap-filling. Survey effort will focus there.	**undertake surveys accordingly**
3.4	GW: Query in relation to changes in the wind farms. There are a considerable number of proposals to modify existing consents/ developments in planning towards re-powering and/or taller turbines. Would this have an effect on the proposed OHL? BT: The developer would need to renegotiate their existing contract with SPEN for a bigger capacity.	Info
3.5	RP: Discussion of VP locations. VP locations proposed allow for a broad geographical coverage of the study area for the OHL. Locations are based on VP1 from Enoch Hill WF, located close to summit of Peat Hill (see accompanying Environmental Statement for further information) and VP1 of the Monquhill WF located on Ewe Hill. Precise locations to be confirmed once they have been visited.	Info
3.6	GW: no Great Crested Newt (GCN) in the area, so no need to survey for these. Suggest you leave surveys for mammals until the pre-construction phase. Pine Marten is the "new kid on the block" in the area. Some Otter activity in the area but not Water Voles.	**RSK to adjust timing and scope of surveys accordingly**
3.7	GW: Groundwater dependent terrestrial ecosystems (GWDTE). Likely to be some GWDTE within the Study Area, but should be able to micro-site around them.	Info
4	**Next steps**	
3.1	RSK to progress with gap-filling and surveys RSK and SPEN to engage with SNH and other key stakeholders once a proposed route option has been selected.	Info
3.2	Overall plan is to seek consent by June 2021, and for the OHL to be constructed by June 2023.	
5	**AOB**	
	None identified	
	END	

Donnette Briggs

From: Wilson, David [redacted]
Sent: 03 July 2020 15:09
To: Btinney; Donnette Briggs
Cc: Joe Somerville; Iles, Craig; Little, Jane; Morris, Christine
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request [OFFICIAL]

CLASSIFICATION: OFFICIAL

Hi Brendan,

Thanks for the email. I note the clarity that has been providing regarding Monquhill being a separate windfarm and not a formal extension of the Enoch Hill development. I also note that there are potential technical issues associated with connecting the infrastructure of both sites. On the basis of this explanation I am content that the query I raised regarding the rationale for the overhead line has been addressed.

If you need anything else in the meantime please don't hesitate to get in touch with me.

Regards,
David

David Wilson
Senior Planning Officer

East Ayrshire Council, The Opera House, 8 John Finnie Street, Kilmarnock, KA1 1DD

[redacted]

From: Tinney, Brendan [redacted]
Sent: 19 June 2020 10:10
To: Wilson, David [redacted]
Cc: Joe Somerville [redacted] Iles, Craig [redacted] Little, Jane [redacted] Morris, Christine [redacted]
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request [OFFICIAL]

David,

Thank you for your email and query relating to the rationale for the Monquhill wind farm overhead line connection. As you note, SPEN is obliged to seek to connect new generation projects following a formal request from a developer, via NGET. This is the process under which we intend to progress the Monquhill wind farm connection. You have asked for clarity as to why it is not feasible to connect the proposed turbines at Monquhill to the existing, consented underground cable network within Enoch Hill wind farm, rather than consent a new overhead line. Having discussed this with the developer, RWE have confirmed that given the steep gradient of the land around Monquhill it would have been extremely difficult to install such infrastructure to link the two sites. In addition, Monquhill wind farm would be a separately funded project, rather than an extension to Enoch Hill, with different landowners and was therefore considered to require its own stand-alone consent. Hopefully this provides you with the information you require to complete your response.

Any reference to Monquhill being an extension is erroneous and should have been picked up in the drafting of the Routeing and Consultation Report, which I apologise for. At the very early outset of the project there was text circulating to this effect but I can confirm that this has never been the case. I will have the Routeing and Consultation Document amended to remove reference to 'extension' and forward to statutory consultees for information purposes.

Regards,
Brendan.

SP ENERGY NETWORKS

Brendan Tinney
Environmental Planner

Land & Planning
55 Fullarton Drive, Glasgow, G32 8FA
[redacted]

btinney@spenergynetworks.co.uk

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POWER CUT? CALL 105

- Information on the SP Energy Networks Data Privacy Policy can be found by using the following link
- https://www.spenergynetworks.co.uk/pages/privacy.aspx

From: Wilson, David [redacted]
Sent: 12 June 2020 10:15
To: 'Donnette Briggs' <[redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted] Iles, Craig [redacted] Little, Jane [redacted] Morris, Christine

[redacted]
Subject: EXTERNAL: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request [OFFICIAL]

CLASSIFICATION: **OFFICIAL**

Good morning Donnette,

Thank you for sending the consultation document to us for comment. I have reviewed the documents and discussed them with colleagues to enable me to come back to you.

On the whole we think that the approach to the selection of the preferred route is acceptable. The approach seems to be fairly well balanced and understandable and nothing of any great importance appears to have been missed.

However, there is one matter that we would like to highlight which probably relates to the rationale for the development. Section 1.1 notes that Monquhill is an extension to the consented Enoch Hill windfarm. The overhead line would require to pass around many of the turbines of Enoch Hill which themselves will be connected via underground cabling. If Monquhill is indeed an extension to Enoch Hill and to be operated as such, it would seem that there would be merit in connecting the Monquhill turbines to the Enoch Hill turbines using the consented underground cabling rather than create a new overhead line. Whilst I understand that SPEN has been contracted to look at providing the connection, it seems to the Council that this overlooks the nature of the relationship between the two windfarms and could therefore be addressed with significantly lesser environmental effects by the windfarm developer rather than through a separate grid connection. On this basis the Council would question the need for a separate overhead line to be provided. If it could be demonstrated that there is a clear rationale for the current approach of providing a separate overhead line I would be content to confirm that the current approach to route selection is acceptable to the Council.

I'm on annual leave week commencing 15th of June but I return on the 22nd of June and would be happy to have a discussion thereafter if that would be helpful.

In the meantime I trust that the above is useful to you.

Regards,
David

David Wilson
Senior Planning Officer

East Ayrshire Council, The Opera House, 8 John Finnie Street, Kilmarnock, KA1 1DD

[redacted]

From: Donnette Briggs [redacted]
Sent: 06 May 2020 12:28
To: Wilson, David [redacted] Iles, Craig [redacted] Morris, Christine [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted]
Subject: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Hi David, Craig and Christine

I hope you are all well and keeping safe during these uncertain times.

As you may recall from our meeting in October last year, SP Energy Networks (SPEN) has been contracted by National Grid Electricity Transmission to provide a 33 kV overhead line (OHL) grid connection from the proposed Monquhill Wind Farm to the consented Enoch Hill Wind Farm substation in East Ayrshire.

Please find attached the Routeing Consultation Document (RCD) for the planned Monquhill OHL Grid Connection, along with a cover letter. We would like to request your comments on the route selection for the Monquhill OHL Grid Connection. Your input will be used to inform further consideration of the preferred route alignment and the selection of a proposed route alignment, which will be taken forward for more detailed environmental assessment prior to submission of a Screening Request to the Scottish Ministers, as part of an application for consent under Section 37 of the Electricity Act, 1989.

Please return your comments by the 17th of June 2020.

We value your input and comments, and look forward to hearing from you. Should you have any queries or require further information, please do not hesitate to contact me or Joe Somerville (copied in).

Best regards,

Donnette Briggs MSc
Senior Environmental Consultant
EIA, Planning & Design
RSK
65 Sussex Street, Glasgow, G41 1DX, UK
Mobile [redacted]
http://www.rsk.co.uk

****

COVID-19: For all the latest information and details of support available across East Ayrshire, please visit www.east-ayrshire.gov.uk/coronavirus

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Donnette Briggs

From: Candlish, Alex <[redacted]
Sent: 18 June 2020 14:03
To: Donnette Briggs
Cc: Joe Somerville; 'Tinney, Brendan'
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Donnette,

Thank you for consulting SEPA on the above proposal.

After review of the Routeing Consultation Document, we are satisfied that all matters are being adequately considered for this stage of the project. It is unlikely that we will have any detailed comments to make as the project evolves however we would welcome being kept up to date with this.

We recommend that when an application is submitted for the proposal that SEPA's most update to date guidance is considered which can be found here - https://www.sepa.org.uk/environment/land/planning/.

Please do not hesitate to contact me if you have any queries about the above.

Kind Regards,

Alex

Alex Candlish
Senior Planning Officer – Linear Infrastructure Projects
Planning Service, SEPA, Silvan House, 231 Corstorphine Road, Edinburgh, EH12 7AT
[redacted]

Please note that I do not normally work on a Wednesday.

CORONAVIRUS

In response to recent Government announcements, SEPA is seeking to continue to deliver its services with the minimum of business disruption. Most of our officers will be working from home as of 17 March, and staff have been advised against attending face-to-face and instead to use teleconferencing where possible. To help minimise non-urgent phone calls, please contact us by email in the first instance, via [redacted]. We will endeavour to continue to respond to planning consultations as usual, but there may be delays or further disruption should the situation with coronavirus worsen as it is predicted to do. We will issue further updates as and when required.

From: Candlish, Alex
Sent: 18 June 2020 12:54
To: 'Donnette Briggs' [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan <[redacted]
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Hi Donnette,

Apologies about the delay in our response. The response date is down as next Wednesday (24th). I will prioritise this and try and get back to you this afternoon.

Many thanks,

Alex

Alex Candlish
Senior Planning Officer – Linear Infrastructure Projects
Planning Service, SEPA, Silvan House, 231 Corstorphine Road, Edinburgh, EH12 7AT
[redacted]

Please note that I do not normally work on a Wednesday.

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From: Donnette Briggs [redacted]
Sent: 18 June 2020 12:43
To: Candlish, Alex <[redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan <[redacted]
Subject: FW: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Dear Alex

I hope you are still well and able to enjoy the summer weather! We have been very lucky here in Glasgow with beautiful sunny skies most of the time over the last few weeks.

The email requesting SEPA's input to and comments on the Monquhill Overhead Line Grid Connection Routeing Consultation Document, dated 6th May 2020, has reference (please see below). We would like to take this opportunity to say that although the comment period ended yesterday (17th June 2020), your input is most valuable and we would still appreciate your comments on the RCD. Please advise if you will still be able to review the RCD and if so, provide an indication of when you might be able to provide your feedback and comments?

Many thanks
Donnette Briggs

From: Donnette Briggs
Sent: 15 May 2020 09:59
To: Planning Infrastructure [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted]
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Hi Alex

Thanks for your email. I am glad to hear you are well. Thanks for letting me know you are able to comment on the document, please let me know if you have any queries or need anything else. We appreciate your input and look forward to hearing from you.

Kind regards
Donnette

From: Planning Infrastructure [redacted]
Sent: 15 May 2020 09:12
To: Donnette Briggs [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted]
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Donnette,

Thank you for the e-mail. I hope you are keeping safe too. I will upload this to our system and aim get comments back to you by the time stated in the e-mail.

Kind Regards,

Alex

Alex Candlish
Senior Planning Officer – Linear Infrastructure Projects
Planning Service, SEPA, Silvan House, 231 Corstorphine Road, Edinburgh, EH12 7AT
[redacted]

Please note that I do not normally work on a Wednesday.

CORONAVIRUS

In response to recent Government announcements, SEPA is seeking to continue to deliver its services with the minimum of business disruption. Most of our officers will be working from home as of 17 March, and staff have been advised against attending face-to-face and instead to use teleconferencing where possible. To help minimise non-urgent phone calls, please contact us by email in the first instance, via [redacted] We will endeavour to continue to respond to planning consultations as usual, but there may be delays or further disruption should the situation with coronavirus worsen as it is predicted to do. We will issue further updates as and when required.

From: Donnette Briggs [redacted]
Sent: 06 May 2020 12:45
To: Candlish, Alex [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted]
Subject: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Hi Alex

I hope you are well and keeping safe during these difficult and challenging times.

As you may recall from our telephone conversation in November last year, SP Energy Networks (SPEN) has been contracted by National Grid Electricity Transmission to provide a 33 kV overhead line (OHL) grid connection from the proposed Monquhill Wind Farm to the consented Enoch Hill Wind Farm substation in East Ayrshire.

Please find attached the Routeing Consultation Document (RCD) for the planned Monquhill OHL Grid Connection, along with a cover letter. We would like to request your comments on the route selection for the Monquhill OHL Grid Connection. Your input will be used to inform further consideration of the preferred route alignment and the selection of a proposed route alignment, which will be taken forward for more detailed environmental assessment prior to

submission of a Screening Request to the Scottish Ministers, as part of an application for consent under Section 37 of the Electricity Act, 1989.

Please return your comments by the 17th of June 2020.

We value your input and comments, and look forward to hearing from you. Should you have any queries or require further information, please do not hesitate to contact me or Joe Somerville (copied in).

Best regards,

Donnette Briggs MSc
Senior Environmental Consultant
EIA, Planning & Design
RSK
65 Sussex Street, Glasgow, G41 1DX, UK
[redacted]
http://www.rsk.co.uk

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HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

By email: [redacted]

Donnette Briggs
EIA, Planning & Design
RSK
65 Sussex Street
Glasgow
G41 1DX

Longmore House
Salisbury Place
Edinburgh
EH9 1SH

[redacted]

Our case ID: 300044719

19 May 2020

Dear Ms Briggs

Planned Monquhill Overhead Line Grid Connection: Routeing Consultation

Thank you for your consultation on the above, which we received on 6 May. We have reviewed the details you provided, and our comments here focus on our historic environment interests. This covers scheduled monuments and their settings, category A listed buildings and their settings, Inventory battlefields, Inventory gardens and designed landscapes, World Heritage Sites, and marine archaeology.

We note that the consultation document identifies no historic assets covered by our interests as a consideration in the routeing process. As the nearest assets are more than 5km from the study area, we are content that this is appropriate and therefore have no detailed advice to offer on the proposals.

We recommend that you also consult the relevant local authority archaeology and conservation services, as they will also have advice to offer on the historic environment. This may include wider historic environment issues not covered by our interests.

We hope that this letter is helpful to you. If you have any questions about it, please contact Ruth Cameron – whose details can be found at the top of this letter. If you would like to submit any further details on this or any other project please use our consultations mailbox – [redacted]

Yours sincerely

Historic Environment Scotland

Donnette Briggs

From: John Adair [redacted]
Sent: 17 June 2020 19:25
To: Donnette Briggs
Cc: Joe Somerville; Tinney, Brendan
Subject: RE: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Dear Donnette,

Your ref: Monquhill Overhead Line Grid Connection Routeing Consultation Request
Our ref: CNS/ELY/EA/CPA159185
Date: 17th June 2020

Your enquiry has been passed to me to respond to. I am one of David's colleagues, based in the SNH Ayr office.

Thank you for sending the Routeing Consultation Document (RCD), dated March 2020, and prepared by RSK Environment Ltd.

Having read the report I can offer the following comments.

In general I find the report to be impressively thorough, detailed and informative. Not being familiar with the wind farms in question, I found the background information and the description of the project and its rationale to be very helpful.

The route options appraisal at Appendix 6 and its summary within Table 4.5 are convincing, and I can confirm that SNH is satisfied that the most appropriate route option has been identified (route option 2). Please note that I am restricting my comment here to the project's potential to impact on the natural heritage only.

On page 13, it is noted that one particular concern is the potential disturbance to nesting merlins. Mature trees and dense heather are mentioned and so I am assuming that the merlins may be ground nesting or tree nesting, or both if there is more than one pair. We welcome the proposal to carry out pre-construction checks of such areas if the route passes close to them but, clearly, construction outwith the bird breeding season would remove most of this concern, as it would for most other bird species. As I'm sure you are aware, merlins tend to nest in approximately the same location each year, as long as the surrounding habitat hasn't altered much in the meantime.

The Executive Summary asks if any factors have been overlooked but, as far as the natural heritage is concerned, I'm happy to say that I do not think so.

On a separate but related note, I appreciate that the planned breeding bird survey for 2020 may have been wholly or partially curtailed. This is very unfortunate and, ideally, the whole survey period would be carried out in 2021 although this may affect the timing of the Consent process. You probably have it already but here is a link to SNH's guidance on disruption to survey: https://www.nature.scot/coronavirus/planning-development-services . Ecological consultants are best placed to judge on this issue, depending on their knowledge of the site and their own experience, and may well be able to make predictions or assumptions for the survey gaps based on the rest of their data. It is a matter of judgement in each case as to how essential the missing data is in avoiding any significant impacts or any species offences being committed. Precautionary assumptions and approaches to mitigation can allow for some of the uncertainty.

I hope the above comments are helpful. I appreciate that they are brief but that is due to the thoroughness of the report.

Please contact me if you have any queries.

Yours sincerely.
John

John Adair
Operations Officer
Scottish Natural Heritage, 31 Miller Road, AYR, KA7 2AX
Home working tel [redacted]
Dualchas Nàdair na h-Alba, 31 Rathad a' Mhùilneir, Inbhir Àir, KA7 2AX
nature.scot – *Connecting People and Nature in Scotland* - *@nature_scot*

From: Donnette Briggs [redacted]
Sent: 06 May 2020 12:51
To: David Kelly [redacted]
Cc: Joe Somerville [redacted] Tinney, Brendan [redacted]
Subject: Monquhill Overhead Line Grid Connection Routeing Consultation Request

Hi David,

I hope you are still well and keeping safe during these uncertain times.

As you may recall from our video call last month, SP Energy Networks (SPEN) has been contracted by National Grid Electricity Transmission to provide a 33 kV overhead line (OHL) grid connection from the proposed Monquhill Wind Farm to the consented Enoch Hill Wind Farm substation in East Ayrshire.

Please find attached the Routeing Consultation Document (RCD) for the planned Monquhill OHL Grid Connection, along with a cover letter. We would like to request your comments on the route selection for the Monquhill OHL Grid Connection. Your input will be used to inform further consideration of the preferred route alignment and the selection of a proposed route alignment, which will be taken forward for more detailed environmental assessment prior to submission of a Screening Request to the Scottish Ministers, as part of an application for consent under Section 37 of the Electricity Act, 1989.

Please return your comments by the 17th of June 2020.

We value your input and comments, and look forward to hearing from you. Should you have any queries or require further information, please do not hesitate to contact me or Joe Somerville (copied in).

Best regards,

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Appendix 4: Environmental Baselines

1. The study area is located within an area identified by the Scottish Government in 1987 as being an 'Environmentally Sensitive Area' . There are ten such areas in Scotland and were identified to help conserve specially designated areas of the countryside where the landscape, wildlife or historic interest is of particular importance and where these environmental features can be affected by farming operations. The location of the study area in relation to the Environmentally Sensitive Area is shown on **Figure 7** in **Appendix 1.**

2. It should also be noted that Route Option 6 lies to the north-east of the study area boundary that was delineated for the Enoch Hill 2 OHL at project inception. This section of the report establishes the baseline environmental conditions within the study area boundary as well as the area within which Route Option 6 is located. Baseline environmental information was also obtained for areas of search relevant for each environmental topic, e.g. international and national ecological designations have been identified within a 10 km area of search, protected species records obtained for a 1 km area of search around the study area, and archaeological records within a 2 km area of search, etc.

Ecology and Ornithology

3. The following reports were used to inform these sections:

- Monquhill Protected Species Survey Report (Wood, 2016);
- Monquhill Bat Report (Wood, 2018);
- Monquhill Wind Farm Baseline Ecology Report of proposed access route (Wood, 2018);
- Enoch Hill Non-Technical Summary (Amec Foster Wheeler, 2015); and
- Enoch Hill Environmental Statement (Amec Foster Wheeler, 2015 and 2017).

Designated Sites

4. There are no statutory designated sites within 2 km of the study area; however, there are three non-statutory designated sites within 2 km of the study area, all of which are provisional wildlife sites (pWSs). The designated sites are shown on **Figure 3** in **Appendix 1**. pWSs are sites of nature conservation interest identified by the Scottish Wildlife Trust which are considered worthy of non-statutory protection from insensitive or inappropriate development.

5. These sites are listed in **Table A4.1** in order of proximity to the site; short descriptions are given for the sites.

6. As described below, Connel Burn/Benty Cowan falls within the study area for the project.

Table A41: Non-Statutory Sites Within 2 km of the Study Area

Site Name	Designation	Approximate Distance
Connel Burn / Benty Cowan	pWS	0
Connel Burn / Benty Cowan pWS comprises a variety of upland habitats along the upper Connel Burn including acidic and marshy grassland, blanket bog, species-rich ledges and flushes. There is also a small, semi-natural valley woodland dominated by *Alnus glutinosa* (Alder), *Betula pendula* (Silver Birch) and *Fraxinus excelsior* (Ash). The woodland has a diverse ground flora. The pWS is also of interest for its birds. **Approximately 60% of the study area is within the pWS**.	NatureScot Introductory meeting notes (August 2019)	
Dalleagles Woodland	pWS	1,140

Site Name	Designation	Approximate Distance
Dalleagles Woodland pWS is an area of ancient woodland. The woodland is an old mixed plantation dominated by *Fagus sylvatica* (Beech), *Larix decidua* (European Larch) *and Quercus sp*. (Oak). There is *Alnus glutinosa* (Alder) and *Fraxinus excelsior* (Ash) by the burn.	SEPA consultation response (June 2020)	
Afton Uplands	pWS	1,720
Afton Uplands pWS is a large upland site with mire, montane heath and grassland habitats. Species recorded in the site include *Carex bigelowii* (Stiff Sedge), *Diphasiastrum alpinum* (Alpine Clubmoss) and *Juniperus communis* (Common Juniper).	NatureScot response (June 2020)	

7. There are two areas of ancient woodland within 2 km of the study area, the closest area is Dalleagles Woodland 1.14 km to the north-east.

Habitats (Botanical Survey)

8. A total of twelve NVC vegetation types and were found in this survey and are listed in **Table A4.2** and described below. Where vegetation communities occurred as mosaics, the descriptions are summarised for ease.

Table A4.2: National Vegetation Classification Types Recorded within the Study Area

NVC Type	Description
M6c	*Carex echinata - Sphagnum recurvum/auriculatum* mire*, Juncus effusus* sub-community
M6d	*Carex echinata - Sphagnum recurvum/auriculatum* mire*, Juncus acutiflorus* sub-community
M17a	*Trichophorium germanicum- Eriophorum vaginatum* blanket mire: *Drosera rotundifolia – Sphagnum spp*. sub-community
M20a	*Eriophorum vaginatum* blanket mire, species poor sub-community
M23a	*Juncus effusus/acutiflorus - Galium palustre* rush-pasture*, Juncus acutiflorus* sub-community
M23b	*Juncus effusus/acutiflorus - Galium palustre* rush-pasture*, Juncus effusus* sub-community
M25	*Molinia caerulea - Potentilla erecta* mire
U4b	*Festuca ovina - Agrostis capillaris-Galium saxatile* grassland; *Holcus lanatus - Trifolium repens* sub-community
U5a	*Nardus stricta - Galium saxatile* grassland; species poor sub-community
U6d	*Juncus squarrosus - Festuca ovina* grassland*; Agrostis capillaris – Luzula multiflora:* sub-community
MG6	*Lolium perenne - Cynosurus cristatus* grassland

NVC Type	Description
MG9	*Holcus lanatus – Deschampsia cespitosa* grassland

NVC Categories within Study Area

M6c Carex echinata-Sphagnum recurvum/auriculatum mire, Juncus effusus sub-community

9. This is tall rush mire in which tussocks of Juncus effusus (Soft rush) grow abundantly among lower carpets of the mosses Sphagnum fallax (Flat-topped Bog-moss), Sphagnum palustre (Blunt-leaved Bog-moss), Sphagnum compactum (Compact Bog-moss) and Sphagnum papillosum (Fat Bog-moss) and Polytrichum commune (Haircap moss). Other species include Potentilla erecta (Tormentil), Galium saxatile (Heath bedstraw), Carex echinata (Star sedge), Viola palustris (Marsh violet), Festuca ovina (Sheeps fescue) Hypnum jutlandicum (Heath-plait moss) and Molinia caerulea (Purple-Moor grass). Cirsium palustre (Marsh thistle) was also found occasionally on slopes and seepage lines. This habitat can be found along wet hollows, flushes seepage lines, dips and gullies. This community is found mainly on level lower lying ground and on slopes, including along grip/ditch lines created to remove water from the hills. M6c forms a mosaic with M6d habitats and occasionally with M23 and M25.

10. Much of the area surveyed comprises Juncus effusus (Soft rush) and Juncus acutiflorus (Sharp-flowered rush) which are located on damp to wet ground. These rush-dominated mires are regularly found as a network over the site following small hollows, ditches and minor watercourses. The ditches are prevalent in many sections of the site and although filled with Sphagnum mosses they still act as drainage of water for the hills. This has led to the degradation of the bog habitat and erosion of peat in certain areas.

M6d Carex echinata-Sphagnum recurvum/auriculatum mire, Juncus acutiflorus sub-community

11. This M6d community is characterised by the deep green sward of Juncus acutiflorus (Sharp-flowered rush) and the same herbs as in M6c are frequent. M6d can be found as a mosaic with M23, M25 and M6c. The M6 mires occur in wet hollows, seepage lines, flushes, shallow gullies and along the margins of streams within expanses of blanket mire, dwarf shrub heath or acid grassland. Much of this habitat is located as described for M6c community.

M17a Trichophorium germanicum- Eriophorum vaginatum blanket mire: Drosera rotundifolia – Sphagnum spp. sub community

12. This vegetation consists of Eriophorum vaginatum (Hare's-tail cotton grass), Calluna vulgaris (Heather) and Erica tetralix (Cross leaved-heath), with varying densities of Narthecium ossifragum (Bog asphodel). There are mixtures of the mosses Sphagnum capillifolium (Red Bog-moss), Sphagnum papillosum (Fat Bog-moss), Hypnum jutlandicum (Heath plait-moss), and Pleurozium schreberi (Red-stemmed feather-moss), and small quantities of other vascular species including Molinea caerulea (Purple moor-grass), and trailing shoots of Potentilla erecta (Tormentil). Vaccinium oxycoccos (Small cranberry) was locally abundant within this wet heath.

13. This habitat is found in the wetter conditions on site, although lacking in its associated Sphagnum pool communities. However, there is the occasional swathe of denser Sphagnum growth in among the M17a.

M20a Eriophorum vaginatum blanket mire, species poor sub-community

14. The species-poor sub-community M20a is a rough, patchy sward made up of tussocks of Eriophorum vaginatum (Hare's-tail cotton grass). In the north east and east of the site there are also small sections with occasional Deschampsia flexuosa (Wavy hair-grass). The tussocks of E. vaginatum are sometimes overgrown with masses of Hypnum jutlandicum (Heath Plait-moss) and Pleurozium schreberi (Red-stemmed feather-moss) and on occasion Sphagnum papillosum (Papillose Bog-moss), S. capillifolium (Red Bog-moss), and Polytrichum commune (Haircap moss). M20 occasionally forms a mosaic with M6 and M25 communities.

M23a Juncus effusus/acutiflorus-Galium palustre rush-pasture; Juncus acutiflorus sub community.

15. The sub-community M23a is the richer form of M23 and Juncus acutiflorus (Sharp-flowered rush) predominates in the sward. There are also grasses present, such as Holcus lanatus (Yorkshire fog), Deschampsia cespitosa (Tufted hair-grass), Molinia caerulea (Purple-Moor grass), including Galium palustre (Marsh bedstraw), Cirsium palustre (Marsh thistle), Carex panicea (Carnation sedge), Rumex acetosa (Common sorrel), and Ranunculus repens (Creeping buttercup). Where it is wetter there is a ground cover of a variety of bryophytes.

16. The M23 rush pastures occur on peaty mineral soils and in stagnant areas, with soils acid to neutral and are kept wet due to flushing and seepage and some standing water. The M23 community occurs in poorly drained valleys, gentle sloping hillsides and along margins of watercourses, kept wet by seepage and flushing. The water table is at or above the surface with standing water a main feature of this community. The M23 community is often found as a mosaic with other M6 soligenous mires on site and less so with M17, M20 and M25.

M23b Juncus effusus/acutiflorus-Galium palustre rush-pasture; Juncus effusus sub community.

17. The sub-community M23b is not as rich as M23a, but does have some of the same grasses and herbs as M23a and Juncus effusus (Soft rush) predominates in the sward. It forms mosaics with M23a and can be found along watercourses and seepage zones. This sub-community was also found forming mosaics with the grasslands U4 and U5 more to the north east, along Route Option 5, where grasslands were more abundant.

M25 Molinia caerulea-Potentilla erecta mire

18. This is a wet grassland of dense tussocks of Molinia caerulea (Purple-Moor grass), with a network of small winding channels. There are some Potentilla erecta (Tormentil), Erica tetralix (Cross-leaved-heath) and occasional Calluna vulgaris (Heather) found among the Molinia. There are a few other bog species, such as Myrica gale (Bog myrtle), Sphagnum papillosum (Fat Bog-moss), Sphagnum capillifolium (Red Bog-moss), Polytrichum commune (Haircap moss), Rhytidiadelphus squarrosus (Springy Turf-moss) and Hypnum jutlandicum (Heath plait-moss). M25 was not a common community on site and tended to be located in lower lying ground and as a mosaic with M23.

U4b Festuca ovina-Agrostis capillaris-Galium saxatile grassland; Holcus lanatus - Trifolium repens sub-community

19. This is grassland with a sward c.20-30 cm tall, composed mainly of Agrostis capillaris (Common bent), Agrostis vinealis (Brown bent), Festuca rubra (Red fescue), Anthoxanthum odoratum (Sweet vernal grass) and Deschampsia flexuosa (Wavy hair-grass). Nardus stricta (Mat grass), Holcus lanatus (Yorkshire fog), Poa pratensis (Smooth meadow grass) and herbs such as Potentilla erecta (Tormentil), Galium saxatile (Heath bedstraw) and Succisa pratensis (Devil's-bit scabious) were also present. U4 grassland can be found to the north east on well-drained or steep ground where increased grazing is evident. The grazed grassland is short and green and is quite distinct from the surrounding communities. There are also patches of Juncus effusus and stands of Pteridium aquilinum (Bracken) growing in the grassland areas. This acid grassland habitat grades into a more wet habitat with M23b Juncus effusus dominated marshy grassland near watercourses and seepage areas. U4 is found to form mosaics with U5 and U6.

20. The grassland communities form much of the steep slopes in the north east section of the site and along Route Option 5 and 6 where there is a higher percentage occurring. These communities are also found where there is less or no peaty soils.

U5a Nardus stricta - Galium saxatile grassland; species poor sub-community

21. This is the species-poor sub-community U5a which forms pale swards of the wiry clumps of Nardus stricta (Mat grass) and has no other distinguishing species, although shares some with U5 and U6, notable in the mosaics. The U5a makes up a large percentage of the drier grasslands on site forming mosaics with U4 and U6.

U6d Juncus squarrosus - Festuca ovina grassland; Agrostis capillaris – Luzula multiflora sub-community

22. U6 forms deep-green, tussocky swards which stand out on the slopes and flatter areas. There is an abundance of Juncus squarrosus (Heath rush), Potentilla erecta (Tormentil) and Galium saxatile (Heath bedstraw), and the mosses Pleurozium schreberi (Red stemmed feather-moss), Polytrichum commune (Common haircap-moss) and Rhytidiadelphus squarrosus

(Springy Turf-moss). There are also grassier sections containing Agrostis canina (Velvet bent), Anthoxanthum odoratum (Sweet vernal-grass), Deschampsia flexuosa (Wavy hair-grass) and Nardus stricta (Matt grass). U6 is often seen as a succession community to mires that have been dried out, degraded or improved for grazing purposes.

MG6 Lolium perenne - Cynosurus cristatus grassland

23. The mesotrophic grassland MG6 is a semi-improved grassland located in areas to the north east and used for grazing purposes. This grassland is dominated by Holcus lanatus (Yorkshire fog) and Cynosurus cristatus (Crested Dogs-Tail), with Anthoxanthum odoratum (Sweet vernal grass), Trifolium repens (White clover) and Ranunculus repens (Creeping buttercup). This grassland community was found to be located in the north east section of the site and along Route Option 5 and 6.

MG9 Holcus lanatus – Deschampsia cespitosa grassland

24. The mesotrophic MG9 grassland community is typically found in waterlogged areas, is highly characteristic of permanently moist soils and is of a lower botanical value. MG9 is dominated by Deschampsia cespitosa (Tufted hair-grass) with a constant Holcus lanatus (Yorkshire fog) and tends to be associated with MG6 where the drainage has failed.

Protected Species

25. The background data search undertaken by RSK returned at least 52 noteworthy species records from places within 2 km of the study area. Of these, 44 were birds, 6 were invertebrates and 2 were mammals. These include the following species which are protected by law under Schedules 2 and 4 of The Conservation (Natural Habitats, & c.) Regulations 1994 (as amended); Schedules 2, 5 and 8 of The Wildlife and Countryside Act 1981 as amended by The Wildlife and Natural Environment (Scotland) Act 2011 or The Protection of Badgers Act 1992:

- Otter (Lutra lutra); and
- Red Squirrel (Sciurus vulgaris).

26. In addition, five records of Scottish biodiversity list (SBL) invertebrate species and one nationally scarce (NS) invertebrate were returned.

27. Evidence of Otter was recorded during the Enoch Hill Wind Farm surveys as well as the Enoch Hill 2 (formerly Monquhill) Wind Farm surveys, and NatureScot also stated that this species is known to be present in the area. No evidence of Water Vole (Arvicola amphibius) was found during the surveys and NatureScot reported that there are no records of this species in the study area, although there is suitable habitat, albeit limited.

28. Evidence of Badgers was only found during the Enoch Hill 2 (formerly Monquhill) Wind Farm surveys although this only comprised a single print, with no setts being found in the study area at that time. No evidence of Pine Marten (Martes martes) was found during any of the surveys although it is known that Pine Marten are expanding in range therefore could be present in forested areas. Red Squirrels were not identified during the Enoch Hill Wind Farm surveys, however a single Red Squirrel was recorded during surveys of the access track for the Enoch Hill 2 (formerly Monquhill) Wind Farm in 2017 so they are known to be present in woodland in the wider area, albeit likely to be in low numbers.

29. Great Crested Newt (Triturus cristatus) have not been recorded in the area and are believed to be absent – negative results were returned during presence/absence surveys of two ponds during the Enoch Hill 2 (formerly Monquhill) Wind Farm surveys. No reptiles were recorded during any of the wind farm surveys although there is some suitable habitat in the area for Adder (Vipera berus) and Common Lizard (Zootoca vivipara) which are likely to be present in low numbers.

30. Bat species recorded during the Enoch Hill Wind Farm surveys included Common Pipistrelle (Pipistrellus pipistrellus), Soprano Pipistrelle (Pipistrellus pygmaeus), Myotis species, Plecotus species and Nyctalus species; however, no bat roosts were identified, and bat activity recorded was generally low. During the Enoch Hill 2 (formerly Monquhill) Wind Farm surveys, bat roosts were confirmed at Monquhill Farmhouse (abandoned), comprising small occasional/day roosts of Common Pipistrelle, Soprano Pipistrelle and a Myotis species. Bat activity recorded on the Enoch Hill 2 (formerly Monquhill) Wind Farm site was low with Common and Soprano Pipistelle dominating (similar to Enoch Hill Wind Farm) with a low number of passes from Leisler's Bat (Nyctalus leisleri) and Myotis species (including Daubenton's Bat (Myotis daubentonii)) as well as a single pass from a Brown Long-eared Bat (Plecotus auritus). In addition, there is a known large hibernaculum for bats at Craigdullyeart Mine, reported to be located c.11km north west of the Enoch Hill 2 (formerly Monquhill) Wind Farm site.

31. Surveys for fish and Fresh Water Pearl Mussel (Margaritifera margaritifera) were undertaken within the Enoch Hill Wind Farm site in 2014. No Fresh Water Pearl Mussels were recorded, and the habitats and watercourses surveyed offered limited potential for this species. Salmon (Salmo salar), Stone Loach (Barbatula barbatula), Trout (Salmo trutta), minnows and lamprey species were all recorded during fish surveys although suitable spawning habitat was not found. It is likely that these species will be present in similar watercourses throughout the current study area.

32. During the gap-filling walkover surveys undertaken to establish the baseline within the study area, no evidence of protected species was found, however the wooded areas were confirmed to have potential to support bats, Badger and Red Squirrel, as well as potentially Pine Marten. Areas of gorse in the north of route 2 also provide good cover for Badgers excavating setts. The small water courses throughout the site have foraging potential for Otter and, as discussed above, signs of Otter have been identified in past surveys in the wider area. There is also potential for Water Vole in the northern part of the site, but none of the routes cross this area. The routes mainly go across hilltops where the habitat is limited in terms of supporting protected species.

Ornithology

33. There are no designated sites specifically for birds within the immediate vicinity of, or between, the wind farm or substations. However, the Connel Burn / Benty Cowan provisional wildlife site (pWS), which has been reported to be 'of interest to birds', lies within the study area, as discussed above and shown in **Figure 3** in **Appendix 1**.

34. The background data search undertaken by RSK returned records of the following Schedule 1 species:

- Common Crossbill (Loxia curvirostra); and
- Barn Owl (Tyto alba).

35. In addition, there are numerous records of bird species listed on the Scottish biodiversity list (SBL), local biodiversity action plan (LBAP) and Amber or Red lists. The raptor group was contacted for records of birds however no response was received.

36. The area has previously been subject to extensive ornithological investigation for the Enoch Hill Wind Farm, Enoch Hill 2 Wind Farm, South Kyle Wind Farm and South West Scotland Renewables Connection project. Golden Plover (Pluvialis apricaria) were identified during baseline surveys for Enoch Hill Wind Farm on high ground e.g. around Rigg Hill, although no breeding territories were recorded. Occasional flights by Hen Harrier (Circus cyaneus) (passage only) were also identified. Black Grouse (Tetrix tetrix) leks were identified although all were outside the Enoch Hill Wind Farm site boundary. Goshawk (Accipiter gentilis), Merlin (Falco columbarius) and Peregrine Falcon (Falco peregrinus) are all known to nest in the local area, with Merlin confirmed as nesting within the study area. No goose flights are known in the study area.

37. The protected bird species which could be potentially affected by the proposed development (based on the BDS and RSK ornithologist's personal knowledge) are summarised in **Table A4.3**.

Table A4.3 Important Birds Identified Within or Close to the Study Area

Common Name	Scientific Name	Area/Location Within Study Area
Barn Owl	*Tyto alba*	Recorded within the study area.
Black Grouse	*Tetrix*	Recorded within 10 km of the study area. Black Grouse are known to lek both within South Kyle Forest and around its fringes (R Preston Pers. Comm.) Data from RSPB show Black Grouse are found north west of the site.
Common Crossbill	*Loxia curvirostra*	Recorded within the study area.
Common Sandpiper	*Actitis hypoleucos*	Recorded from within 2 km of the study area.

Common Name	Scientific Name	Area/Location Within Study Area
Curlew	*Numenius arquata*	Recorded from within 2 km of the study area.
Goldcrest	*Regulus*	Recorded within 10 km of the study area. Data from RSPB shows Crossbill have been found using forest plantations to the north west of the site.
Greylag Goose	*Anser*	Recorded within 10 km of the study area. Data from RSPB shows Greylag Geese have been recorded to the north west of the site.
Goshawk	*Accipiter gentilis*	Recorded within 10 km of the study area. Goshawk are known to have bred within South Kyle Forest (R Preston pers. Comm).
Hen Harrier	*Circus cyaneus*	Recorded within the study area.
Kestrel	*Falco tinnunculus*	Recorded within 10 km of the study area. Data from RSPB shows Kestrel have been found using forest plantations to the north west of the site.
Lapwing	*Vanellus*	Recorded from within 2 km of the study area.
Merlin	*Falco columbarius*	Merlin are known to have bred within South Kyle Forest (R Preston pers. Comm) on the edge of the site.
Oystercatcher	*Haematopus ostralegus*	Recorded from within 2 km of the study area.
Peregrine Falcon	*Falco peregrinus*	Peregrine Falcons are known to have bred within 10 km of the site (R Preston pers. Comm)
Pink-footed goose	*Anser brachyrhynchus*	Pink-footed Geese have been observed in the wider area (R Preston pers. Comm)
Ringed Plover	*Charadrius hiaticula*	Recorded from within 2 km of the study area.
Skylark	*Alauda arvensis*	Recorded from within 2 km of the study area.
Snipe	*Gallinago*	Recorded from within 2 km of the study area.
Tawny Owl	*Strix aluco*	Recorded from within 2 km of the study area.
Woodcock	*Scolopax rusticola*	Recorded from within 2 km of the study area.

38. In respect of birds of conservation concern, the greatest sensitivities are likely to be potential disturbance to Merlin nest sites. The habitat within parts of the study area is considered most suitable for Merlin where there are areas of dense heather or rocky patches, or plantations that contain mature trees. Preconstruction surveys of such habitats will therefore be required where the preferred route falls close to such habitat. With regard to Black Grouse lek sites, pre-construction surveys of the preferred route will also be required to identify any new lekking sites.

39. Curlews (Numenius arquata) are frequent in the upland parts of the route corridors and Curlew territories are present within existing overhead line routes. This species is likely to be widely distributed at low densities within the study area in areas of wet grassland and mire which are common throughout the site. Where possible route selection should avoid optimum habitat for this species and where this is not possible preconstruction nest checks and subsequent mitigation e.g. a buffer around identified nest sites is considered appropriate.

40. Up until October 2021, the vantage point surveys had identified four target species at potential collision risk (PCR) height in close proximity, or crossing, all three route options: Hen Harrier, Golden Plover, a single Peregrine (Falco peregrinus) and Snipe (Gallinago gallinago). Golden Plover are the most numerous of the four, but activity over the winter period has generally been low. Secondary species which have been recorded at PCR height include Buzzard (Buteo buteo), Kestrel (Falco tinnunculus) and Raven (Corvus corax). A Kestrel carrying a small mammal was observed during the protected species walkover in December 2019, just north of Chang Hill, near Route Option 5. As breeding bird surveys have not yet been undertaken, there is no current data on potential nesting sites for target species.

Archaeology and Cultural Heritage

41. The study area consists of upland open moorland interspersed with steeply incised watercourses such as the Connel Burn, generally draining towards the north-west. The south-eastern, southern, western and north-western boundaries of the study area are fringed with commercial coniferous forestry plantation. The various route options originate at the proposed Enoch Hill 2 (formerly Monquhill) Wind Farm substation at an altitude of approximately 380 m AOD, terminating at the proposed Enoch Hill Wind Farm substation at a similar altitude.

42. There is an absence of known historic environment assets in the study area. There are no designated heritage assets (e.g. scheduled monuments, listed buildings) within the study area. The nearest designated assets are listed buildings located within New Cumnock, 5.6 km north-east of the study area, and the King's Cairn chambered cairn scheduled monument (SM1046) 4.2 km to the south-west.

43. There are two non-designated assets recorded on the Historic Environment Record (HER) and/or National Record of the Historic Environment (NRHE) within the study area. These are a sheepfold near Crockradie Burn (NRHE No. 170126; HER No. 47363), and a record of possible standing stones in two locations at Lethans Hill/ Loup Burn (HER No. 22369).

44. Further non-designated assets were identified during the baseline surveys and assessments for the proposed Enoch Hill Wind Farm and the proposed Enoch Hill 2 (formerly Monquhill Wind Farm): these include a footbridge (DBA5); a former building and enclosure called Carcow close to the Enoch Hill 2 Wind Farm substation (DBA10); sheepfolds (DBA12, 15, 34 and 36); and circular enclosures (DBA37 and 39).

45. The locations of the identified archaeological and cultural heritage assets are shown on **Figure 5**.

46. Overall, the upland nature of the landscape within the study area means that past human activity and use of the land is likely to have taken the form of stock-raising and animal husbandry (e.g. sheep), hunting and fishing rather than arable agriculture. Human occupation of the land is more likely to have been of low density and temporary or seasonal (such as the occupation of summer grazings, shielings and bothies) rather than permanent year-round settlement.

Landscape and Visual Amenity

47. The study area is entirely within East Ayrshire.

Landscape Designations and Classifications

48. There are no designated landscapes of international or national importance within the study area or its immediate vicinity. **Figure 7** (in **Appendix 1**) shows the landscape designations and classifications relative to the study area.

East Ayrshire Sensitive Landscape Area (SLA)

49. The East Ayrshire SLA is not a designated landscape but has been locally classified as an area requiring protection and enhancement by East Ayrshire Council. The SLA covers all the central and eastern area of the study area. Policy ENV 7 of The East Ayrshire Local Development Plan (LDP) (Adopted 2017) states:

'The Council will give priority and prime consideration to the protection and enhancement of the landscape in its consideration of development proposals within the Sensitive Landscape Areas identified on the LDP maps. Any development deemed to have unacceptable impacts on wild land and SLAs will not be supported by the Council. All development proposals within these areas will also require to be assessed against policy ENV 8: Protecting and Enhancing the Landscape'.

50. The policy also states that non-statutory guidance on SLA would provide further detail on which particular qualities make the SLA valuable and important on a local and regional scale. However, as of 21 September 2021, this guidance is not yet available from East Ayrshire Council[4].

51. A March 2015 background paper to the LDP does provide further information on the SLA, which has been used to inform this report. The background paper states the following:

52. The criteria used to identify those landscapes with special qualities comprised:

- Landscape as resource;
- Scenic quality;
- Unspoilt character;
- Sense of place;
- Conservation interest; and
- Consensus.

53. *'The Sensitive Landscape Area designation does not prevent development. Instead, it requires development proposals to fully consider the qualities that make the landscape valuable and to seek sites and design solutions that respect these qualities and minimise adverse impacts'.*

54. The stated reasons for the area being classified as an SLA are,

'The steep sided, rugged open hills of the Southern Uplands form a dramatic backdrop to the adjacent low-lying upland basin, and form an important part of East Ayrshire's southern skyline. The well-defined, steep-sided hills on the eastern edge of Glen Afton, Blackcraig and Craigbraneoch, are important landmark features and provide for some spectacular views. The Uplands to the east of Glen Afton is an important area for recreation / hill walking. The eastern section of the Southern Uplands with Forestry is included within the Sensitive Landscape Area. This landscape parcel forms an important buffer between Glen Afton and the non-forested section of the Southern Uplands, and helps provide a logical boundary to the Sensitive Landscape Area.'

55. The East Ayrshire SLA is considered to have a medium value, and, due to the consented windfarms within the study area and its immediate vicinity, a low susceptibility to a proposed overhead wood pole line. In addition, the study area is at the western edge of the SLA and therefore less likely to impact the key elements of the SLA, such as Glen Afton, which are towards the centre and east of the SLA. Therefore, the SLA would be considered to have a low sensitivity to the proposed development.

56. There are no other designated landscapes within the study area.

[4] https://www.east-ayrshire.gov.uk/PlanningAndTheEnvironment/Planning-applications/Planning-guidance/Supplementaryplanningguidance.aspx Accessed21 September 2021.

Landscape Character (2019 NatureScot Update)

57. The Landscape Character of the area was classified in the NatureScot (formerly Scottish Natural Heritage) July 2019 mapping of landscape character types within Scotland. The landscape is classified in terms of broad character types and areas referred to as Landscape Character Types (LCT). As per NatureScot, *'the 2019 Landscape Character Type map and associated Landscape Character Type Descriptions now supersede the 1990s landscape character descriptions and mapping… [and]… should be used for new development proposals, plans and strategies.'*

58. The study area is broadly split into two halves, with the north-eastern half of the study area within LCT81 Southern Uplands – Ayrshire; and the south-western half of the study area within LCT82 Southern Uplands with Forest – Ayrshire. The location of the study area relative to the landscape character areas is shown on **Figure 8** in **Appendix 1**.

LCT81 Southern Uplands – Ayrshire

As described by NatureScot,

'The hills are characterised by steep, smooth slopes rising to rounded summits. Cut into the uplands are a series of distinctive glacial valleys, with u-shaped cross sections, precipitous side slopes, hanging valleys, waterfalls, crags and screes. The combination of these features, and the contrast with lower moorlands and the lowlands to the north, gives an impression of uplands which are more extensive, remote and higher than is actually the case.'

'Landcover is typically coarse grassland, though the highest areas often comprise heather moorland. Areas of rough grazing generally lack walled enclosures. Semi-natural woodland is scarce, limited to a few more sheltered glens, gullies and clefts. There are also occasional areas of conifer forest, particularly around the fringes of the higher hills leaving the domed peaks exposed.'

'Modern settlement is absent from these exposed uplands, being concentrated in river valleys and the larger glens. Wind farms have altered the character of the landscape from the Southern Uplands to the east of Ayrshire, south-west of New Cumnock, and to the far south of Ayrshire, to the west of the Duisk Valley.'

'This is an extensive, remote and largely untamed landscape. Views are long distance and panoramic and encompass the settled Ayrshire lowlands to the north and west.'

59. Within the July 2019 NatureScot assessment the key characteristics of the LCT are listed as:

- Steep, smooth slopes rising to rounded summits.
  - Series of distinctive valleys cut into the uplands created by glacial erosion, with U-shaped cross sections, precipitous side slopes, hanging valleys, waterfalls, crags and screes.
- Relatively simple landcover.
  - Heather-flecked grassland on summits.
- Scarce semi-natural woodland is, limited to a few more sheltered glens, gullies and clefts.
  - Occasional forested areas and shelterbelts on lower side slopes leaving the domed peaks exposed.
- Absence of modern settlement in these exposed uplands, it being concentrated in river valleys and the larger glens.
  - Expansive, remote and largely untamed landscape, most parts of the uplands are accessible on foot only.
- Long distance and panoramic views encompass the settled Ayrshire lowlands to the north and west and remote Galloway Hills to the south and east.

LCT82 Southern Uplands with Forest – Ayrshire

60. As described by NatureScot,

'The hills are characterised by steep, smooth slopes rising to rounded summits. Cut into the uplands are a series of distinctive glacial valleys, with u-shaped cross sections, precipitous side slopes, hanging valleys, waterfalls, crags and screes. The combination of these features, and the contrast with lower moorlands and the lowlands to the north, gives an impression of uplands which are more extensive, remote and higher than is actually the case.'

'Landcover is typically dominated by extensive areas of coniferous forest which extends over the summits or is concentrated on side slopes leaving the domed peaks exposed. This is predominantly Sitka spruce, the main variations being in mixes with larch which provides colour contrasts between the dark green of spruce and the light greens to browns of larch.'

'Modern settlement is absent from these exposed uplands, being concentrated in nearby river valleys and the larger glens.'

'This is a relatively remote landscape. Forestry limits and foreshortens views, increasing the sense of isolation, although access for wind farms and the presence of wind turbines has reduced this in places. These uplands often create landmark features when seen from adjacent hills and roads.'

61. Within the July 2019 NatureScot assessment the key characteristics of the LCT are listed as:

- Steep, smooth slopes rising to rounded summits.
- Series of distinctive valleys cut into the uplands created by glacial erosion, with U-shaped cross sections, precipitous side slopes, hanging valleys, waterfalls, crags and screes.
- Relatively simple landcover: coniferous forest is dominant. It generally extends over the summits or is concentrated on the side slopes leaving the domed peaks exposed.
- Heather-flecked grassland on unforested summits.
- Scarce semi-natural woodland is limited to a few more sheltered glens, gullies and clefts.
- Absence of modern settlement in these exposed uplands, it being concentrated in river valleys and the larger glens.
- Network of upland tracks, often associated with the forestry.
- Enclosure and foreshortened views created by forest cover contribute to create a remote, isolated character.

Cumulative Context

62. The study area contains consented wind farms at South Kyle and Enoch Hill. There are currently no overhead electricity transmission lines within the study area.

Visual Envelope

63. The study area is on the northern edge of the Southern Uplands and this topography heavily influences the visual envelope. In addition, a considerable area of commercial forestry to the west, south and east of the of the study area acts as a significant screen to long distance views to and from the study area from these directions.

64. The open areas of moorland to the north and east of the study area create a landscape where long distance views are possible, however, this is generally from other areas of high ground within the same northern fringe of the southern uplands and vicinity of the proposed routes, or from high ground at least 3 km to the north and north-east of the site. The sloping landform immediately to the north of the proposed route options would screen the development from the lower ground / valley floor around the B741 (Burnfoot Road), between 1.3 and 2 km north of the study area. Whereas tall structures within the study area are likely to be highly visible for long distances to the north and north-east, this is unlikely to be the case for structures such as trident wood poles (e.g. between 12 and 18 m above ground), which would generally only be visible from other areas of high ground but screened from valley floor locations.

65. The site is located along the eastern fringe of the consented Enoch Hill Wind Farm, a proposal for 16 turbines with a height to tip of 130 m. The 2015 Environmental Statement for this development concluded that visual effects were most likely to occur to the north and north-east of the development and this will also be true for the proposed overhead line. This is borne out by some basic viewsheds produced for structures with an above ground height of 15 m, which all show the main areas of potential visibility to the north and north-east of the study area. The viewsheds are worst-case scenarios and do not consider existing screening provided by vegetation (i.e. the large swathes of forestry) or built form. It is also clear from the viewsheds that, for those areas where the wood poles would potentially be visible, the overhead wood pole line would barely be perceptible due to the distance of views and would not produce significant adverse visual effects e.g. whilst the town of New Cumnock is between 5 and 7 km from the proposed development and will likely be within the zone of theoretical visibility (ZTV), the intervening distance from the proposed route would result in negligible effects on the visual amenity of receptors within the town.

Settlements

66. The village of New Cumnock is located between 5 and 7 km north-east of the study area and is associated with opencast coal mining within the region. The village is 7 km south of the town of Cumnock and focused around the A76 which runs broadly south-east to north-west through the village.

67. The B741 connects with the A76 in New Cumnock and heads west along the valley floor, connecting to the A713 (Ayr Road) 16 km west of the village. Along this road, which passes to the north of the study area, there are a small number of scattered properties including a small group of properties at Dalleagles approximately 1.8 km north of the study area. There are also scattered properties along the valley floor of the River Afton, between 4 and 6 km east of the study area.

68. All residential receptors are considered to have a high susceptibility and sensitivity to the potential development. However, this decreases with distance from the development, and it is considered that although potentially visible any effects on the visual amenity of residents in New Cumnock would be negligible or imperceptible; and for those properties closest to the study area, along the B741, the operational overhead line is likely to be entirely screened by the intervening landform. Therefore, it is considered that the potential development would have very little, if any, overall visual impact on residential receptors.

Transport Routes

69. Road users within the study area would be considered to have a low susceptibility and sensitivity to the proposed development. The only transport route to be considered is the B741, and as per the residential receptors along this route it is considered unlikely there would be any visual effects as a result of the proposed development.

Tourism and Recreation

70. The study area and its locality is not a destination for tourism and there is little in the way of formal or informal recreation within the vicinity of the study area. Within East Ayrshire only two core paths, C12 New Cumnock Circular (New Cumnock) and C10 Coalfield Cycle Route (Cumnock to Dalmellington), are within the vicinity of the study area (see **Figure 6** in **Appendix 1).** Any views would be at a distance (minimum of 4 km) where the overhead line would barely be perceptible and are likely to be limited to glimpsed views above and between intervening vegetation and / or landform (e.g. C10 Coalfield Cycle Route is predominantly along the River Afton valley floor).

71. Within Dumfries and Galloway, the core paths, e.g. Path No. 667 Water of Deugh, are all over 2 km from the southern end of the study area and are separated by forestry from the study area; walkers would not have their visual amenity impacted by the development.

Geology, Peat, Hydrology and Hydrogeology

Geology

Bedrock and Structural Geology

72. The geology of the study area is made up of three sub-parallel, north-east to south-west trending formations. All are fault bounded to both the north-west and south-east, with faults in association with the regional Southern Uplands Fault. In age order, the formations are as follows:

- In the south-eastern part of the study area is the Kirkcolm Formation. This is of Odrovician age and is described as a sandstone/siltstone turbidite sequence.
  - Immediately north-west is the Marchburn Formation, also of Ordovician age. This is described as a turbiditic succession of wacke sandstones, siltstones and sporadic conglomerates.
- The north-western part of the study area is underlain by the Carrick Volcanic Formation. This is early Devonian in age and consists of a volcanic succession of basalt and basaltic andesite sheets and flows with some volcaniclastic and epiclastic sandstones and conglomerates.

73. A narrow band belonging to the Southern Midland Valley Felsite Sills is noted along the south-eastern margin of the Carrick Volcanic Formation, between Rigg and Chang Hills. This sill has been exploited by the Crocradie Burn, which follows the outcrop for nearly 2 km. These sills are of Silurian to Devonian age.

74. Some narrow bands of conglomerate are noted within the Carrick Volcanic Formation; these belong to the Lanark Group and are of Silurian to early Devonian age.

75. The Carrick Volcanic Formation is separated from the older wacke sandstones by the main branch of the Southern Uplands Fault.

Superficial Geology

76. Much of the site is overlain by peat deposits, especially the south-western half of the study area.

77. Diamicton till is present in most of the watercourse valleys, particularly those in the north-eastern part of the study area. Diamicton is a variable deposit consisting of mixed clay, silt, sand and gravel with cobbles in places, and is or glacial origin. It typically forms a blanket across slopes and within river valleys.

78. Some of the hill summits and ridge crests have no mapped superficial cover.

Minerals and Mining

79. The study area is located outwith the main coal mining area of East Ayrshire (see **Figure 6** in **Appendix 1**) and has no recorded history of mining.

80. Opencast mine workings and a former quarry are identified to the north of the B741, between the towns of Dalmellington and New Cumnock. These form the southern extent of the coal mining region.

Designated sites

81. There is one designated site within 5 km of the study area that has been designated for reasons associated with geology, hydrogeology, hydrology or peat. This site is listed as both a Site of Special Scientific Interest (SSSI) and a Geological Conservation Review (GCR) site – see **Table A4.**4, below. GCR is not a statutory designation but identifies sites of national importance for geological features.

Table A4.4: Distances to Designated Sites

Name	Designation	Approximate Distance and Direction	Qualifying Interest
Benbeoch	SSSI, GCR	4.6 km west	Geological: Carboniferous-Permian, igneous petrology

Soils

82. Soil cover is dominated by blanket peat, which occupies approximately two thirds of the study area. The northern part of the study area includes some peaty gleys and noncalcareous gleys. The eastern part of the study area includes some peaty podzols, peaty gleys and peat. Two small areas of brown forest soils and noncalcareous gleys are present at the margins of the study area, covering 2% of the study area.

Peat

83. **Figure 9** in **Appendix 1** indicates the distribution of carbon and peatland within the study area and route options for the Enoch Hill 2 OHL grid connection. Data shown on the map is high level and provides an indication of the types of soil and associated habitat that might be expected within the study area. However, peat depth surveying for Enoch Hill Wind Farm

(Amec Foster Wheeler, 2015) provided more site-specific information, finding that most of the peat within the study area is 1.0 m deep or less. Some areas of peat up to 3.0 m have been identified, but these tend to be relatively restricted. One pocket with peat up to 3.3 m was identified, but this is not located within any of the identified OHL route options.

Hydrogeology

84. The study area is underlain entirely by low productivity bedrock aquifers. The Carrick Volcanic Formation strata are noted to contain small volumes of groundwater in the near-surface weathered zone and in secondary fractures, with rare springs yielding up to 2 l/s. The Marchburn and Kirkcolm Formations both have limited groundwater in the near-surface weathered zone and in secondary fractures.

85. There are no significant groundwater-bearing superficial deposits present within the study area.

86. The peat bodies and peaty soils will also hold some groundwater, although peaty gleys are known to have poorly drained characteristics. Flow within peat is known to be extremely slow, although it can contribute some limited baseflow to local burns.

87. The groundwater in the study area has been assigned vulnerability class 4. Groundwater vulnerability classes range from 1 (vulnerable only to persistent activity; very slow travel time) to 5 (vulnerable to individual events; rapid travel time). Class 4 is subdivided into a (more vulnerable) and b (less vulnerable).

88. Class 4 is defined as 'Vulnerable to those pollutants not readily adsorbed or transformed'. 4a may have low permeability soil and is less likely to have clay present in superficial deposits; 4b is more likely to have clay present in superficial deposits. These classifications reflect the variability in superficial geology, with blanket peat and diamicton present in some areas which would act to slow the transmission of pollutants.

Hydrology

Meteorology and Climate

89. The study area is located in the south-west of Scotland, within the UK Meteorological (Met) Office's Western Scotland regional climatic area. Much of Western Scotland is exposed to the rain-bearing westerly winds, particularly areas along the west coast. Although in the more western part of the region, the study area lies over 30 km inland, affording it some protection from the westerly rain-bearing winds.

90. Average annual rainfall (based on data from 1981-2010) for the climate monitoring station at Glenlee, Dumfries and Galloway, is 1720.9 mm and 938.8 mm at Prestwick Airport, Ayrshire. Rainfall is stronger during the autumn and winter months, with the driest period between April and July.

Watercourses

91. The study area is located across the divide between the upper River Nith and the Water of Deugh catchments. Most of the watercourses within the study area are tributaries to the River Nith. These mainly drain to the north and north-east, although some near the western study area boundary drain west and north-west to join the Nith mainstem or principal tributary the Afton Water.

92. In the River Nith catchment, the main waterbodies within the study area are the Peddinan Burn, Polmath Burn, Knockburnie Burn, Littlechang/Catlock/Crocradie Burn system, Trough Burn, Polga/Small/Connel Burn system, and the Carcow/Glenhastel/Auchincally Burn system.

93. The River Nith catchment from the Afton Water confluence, near New Cumnock, covers an area of 115.7 km2.

94. In the Water of Deugh catchment, the main waterbodies within the study area are the Bitch Burn, Strathwiggan Burn and Prickeny Burn. The Water of Deugh catchment covers an area of 32.8 km2 to the point where the three tributaries have joined the mainstem.

95. A number of the watercourses within the study area have significantly incised channels.

Water quality

96. Water quality data are summarised in **Table A4.5**, below, from SEPA's Water Environment Hub (SEPA, 2020a), which gives classifications for 2014 and future objectives for watercourses throughout Scotland.

Table A4.5: Summary of Waterbody Classifications

Watercourse	Overall Condition	Physical Condition	Water Quality	Pressures
ID: 10612 River Nith u/s New Cumnock	Moderate	Moderate	High	Physical condition, modifications to bed, banks and shores
ID: 10613 Lane Burn (including Knockburnie, Crocradie & Trough Burn systems	Good	Good	High	None
ID: 10614 Afton Water (including Carcow Burn system)	Good	Good	High	None
ID: 10563 Water of Deugh u/s Carsphairn Lane	Poor	Good	Good	Barrier to fish migration; water abstraction and water storage for hydroelectricity generation

Flood Risk

97. SEPA's Flood Map (2020b) indicated that the study area is not at risk of flooding. A few very minor areas are indicated as having a risk of surface water flooding; these are all located along main watercourse channels and are very localised.

Private Water Supplies

98. A private water supply source is noted at Enoch Hill 2, but this is known to be out of use. The substation at Enoch Hill has an operational private water supply.

99. A number of private water supplies located outwith the study area has been identified. These are all in sub-catchment areas that are unlikely to be affected by any OHL works, although the locations of the supply sources would be carefully assessed once a preferred route has been identified.

Traffic and Transport

100. Currently, access to the northern part of the study area can be gained by road from the B741, which connects New Cumnock and the town of Delmellington, although at the time of writing there was no road or track leading to the location of the planned Enoch Hill Substation. From its junction with the A76 in New Cumnock, the B741 provides a single two-way carriageway highway subject to a speed limit of 30mph. Within approximately 2 miles of the aforementioned junction the speed limit increases to the national speed limit, with some reduction (typically to 40mph) when passing through some of the small villages/hamlets. The highway is fronted mainly by residential properties upon leaving New Cumnock, and agricultural land

uses heading towards the planned site access of the Enoch Hill Wind Farm. Once the Enoch Hill Wind Farm is constructed, access to the substation will be gained along a track that will provide access from the B741 just north of the Polmathburn Bridge.

101. Access to Enoch Hill 2 can be gained via the Afton Road leading southwards out of New Cumnock, and then turning off south westwards onto an unnamed road to Pencloe, before using an existing forestry track through the Casphairn Forest. Access to the Enoch Hill 2 (formerly Monquhill) Wind Farm connection point will be gained via the wind farm access track.

Land Use and Recreation

102. The majority of the land within the study area is currently used for rough grazing of sheep and a small number of cattle. Some areas are also used for forestry in the western, south-western and southern parts of the study area, with the Knockburnie Woodland Creation area planned to be located near the Enoch Hill Wind Farm substation. There are several hills within the study area, including:

- Chang Hill;
- Benty Cowan Hill;
- High Chang Hill;
- Rigg Hill;
- Enoch Hill;
- McCowan's Knowe; and
- Barbey's Hill.

103. The study area and its locality is not a destination for tourism and there is little in the way of formal or informal recreation within the vicinity of the study area. The majority of the study area is subject to the 'right to roam' under the Land Reform (Scotland) Act 2003 such that access for recreation (including walking and horse riding) is permitted over most of the study area. The locally designated Sensitive Landscape Area which falls partially within the study area describes the uplands to the east of Glen Afton as an important area for recreation and hill walking. However, the study area does not include any publicly accessible footpaths (designated or non-designated) which could easily facilitate recreational activities. There are some tracks providing access through the forested areas.

104. The upland grassland characteristics of the study area are considered to offer a variety of potential recreational pursuits including but not limited to walking, running, orienteering and wild camping. Similar recreational pursuits can be undertaken within the surrounding area due to the presence of similar topography and similar land uses.

105. Although the study area itself does not contain waterbodies likely to be suitable for water based recreational activities, suitable waterbodies (including the River Nith and Water of Deugh) are located within 3 km and are directly connected to tributaries which originate within the study area. It should also be noted that the River Nith and Water of Deugh (as part of the River Dee) are both designated Freshwater Fish Salmonid Waters.

106. There are no core paths or other designated or non-designated walking routes within the study area. Two core paths, C12 New Cumnock Circular (New Cumnock) and C10 Coalfield Cycle Route (Cumnock to Dalmellington), are within the vicinity of the study area, but are more than 4 km away. The locations of core paths in the area around the study area are shown on **Figure 6** in **Appendix 1**.

Appendix 5: Environmental Constraint Sensitivity Assessment

1. The relative sensitivity of the environmental constraints presented in **Table A5.1** below was used to inform the heat mapping of hard, moderate and soft constraints discussed in **Section 4.1** of this report. Environmental constraints of high sensitivity were treated as hard constraints, of medium sensitivity were treated as moderate constraints and this of low or no sensitivity were considered to be soft constraints.

Table A5.1: Sensitivity of Environmental Constraints Within the Enoch Hill 2 OHL Grid Connection Study Area And Immediate Surrounds

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
Landscape & Visual					
Garden and Designed Landscape	High	200	Hard	No	
National Park	High	200	Hard	No	
National Scenic Area	High	200	Hard	No	
Regional Scenic Area	High	200	Hard	No	
Settlements and residential properties	High	100	Hard	No	
Long distance trail	High	100	Moderate	No	
Core path	High	100	Moderate	No	
National Cycle Routes (National Byway Cycle Route)	Medium	100	Moderate	No	

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
Ancient Woodland	Medium	100	Moderate	No	
Scottish Dark Sky	High	100	Hard	No	
Scottish Wild Land	High	100	Hard	No	
Special Landscape Area	High	200	Hard	No	
Sensitive Landscape Area	Low	N/A	None	Yes	East Ayrshire Council local designation falls over most of the study area (see **Figure 7** in **Appendix 1**).
Archaeology & Cultural Heritage					
World Heritage Sites	High	100	Hard	No	
Properties in Care	High	100	Hard	No	
Listed Buildings - A	High	50	Hard	No	
Listed Buildings - B	Medium	50	Moderate	No	
Listed Buildings - C	Low	50	Moderate	No	
Scheduled Monuments	High	50	Hard	No	
Conservation Areas	Medium	50	Moderate	No	
Inventory Gardens and Designed Landscapes	High	25	Hard	No	
Battlefield Inventory Sites	High	25	Hard	No	

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
Non-designated assets	Low	10	Moderate	Yes	11 non-designated historic environment assets within study area and route options.
Ecology & Ornithology					
Site of Special Scientific Interest (SSSI)	High	50	Hard	No	
Special Protection Area (SPA)	High	50	Hard	No	
Special Areas Conservation (SAC)	High	50	Hard	No	
Ramsar site	High	100	Hard	No	
Important Bird Area	Medium	100	Moderate	No	
Local Nature Reserves	Medium	50	Moderate	No	
Provisional Wildlife Site	Low	50	None	Yes	Designation falls over most of the study area (see **Figure 3** in **Appendix 1**). Not possible to avoid, thus buffer and constraint level not applicable, as applies to whole site.
Ancient Semi Natural Woodlands (ASNW)	High	50	Hard	No	
Plantations on Ancient Woodland Sites (PAWS)	Moderate	0	Moderate	No	
Carbon and peatland (Class 1)	High	50	Moderate	Yes	Class 1 is a nationally important carbon rich soil with deep peat and is a priority peatland habitat with high conservation value. Where there is degradation due to

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
					gripping and grazing it is likely that these areas can be restored. Class 1 areas are located mostly to the south west of the site from Rigg Hill, Chang Hill and Poiga Burn. Rigg Hill contains both Class 1 and 2 categories with Class 3 also located on the downslopes to the north east, where it can be predominantly peaty, with some heath and mire communities (see **Figure 9** in **Appendix 1**). Class 5 is located at the top of Rigg Hill where it is recorded as having peaty soil, but less or no peatland habitat. In this instance the soil data takes precedence over the vegetation data. Where Route Options 5 and 6 are located it is mostly Class 3 and 5 and mineral soil (Carbon and Peatland Data (2016) https://map.environment.gov.scot/sewebmap/). The Carbon Data map is a course map and therefore the peatland survey results should be taken into account.
Areas of potential GWDTE / or sensitive habitat areas	Medium	50	Moderate	Potentially	
Waterbodies (potential otter and water vole habitat)	High	30	Hard	Yes	

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
Geology, Peat, Hydrology and Hydrogeology					
Carbon and peatland (Class 1 or 2)	High	50	Moderate	Yes	
Peat > 2.5 m	High	50	Hard	Yes, depth to be confirmed.	Preference is to avoid work in peatland if possible, and minimise footprint if avoidance is not possible.
Peat 1.5 - 2.5 m	Medium	50	Moderate		
Private water supply sources	High	150	Hard	No	
Waterbodies (Rivers, burns, lakes, ponds etc.)	High	20 / 50	Hard / Moderate	Yes	
Groundwater-dependent terrestrial ecosystems	Medium	50	Moderate	Potentially	
Geological Conservation Review Site	Medium	20	Soft	No	
Infrastructure					
Existing HV lines	Medium	70	Moderate	No.	
Settlements and individual properties	High	100	Hard	No	Buffer to reduce potential impacts on residential amenity.
Wind Farm infrastructure (e.g. turbines, met mast)	High	Turbine height plus 10% = topple distance.	Hard	Yes	Buffer defined as 3 x maximum wind turbine rotor diameter to avoid technical issues (wake effects).

Constraint	Sensitivity	Buffer (m)	Constraint Level (Hard, Moderate Soft, None)	Within Study Area and Immediate Surrounds	Notes
Turbine micrositing buffer	Medium	50	Moderate	Yes	
Consented mineral sites	High		Hard	No	
Areas of potential future mineral extraction (low-medium)	Medium		Moderate	No	
Slope > 22°	High		Hard	Yes	
Traffic and Transport					
Site topography	Low		Soft	Yes	
Ground conditions	Low		Soft	Yes	
Core paths	Low		Soft	No	

Appendix 6: Environmental Analysis of Route Options

1. The revised route options that are under consideration for the proposed Enoch Hill 2 OHL grid connection were discussed in **Section 4.1** of this report and are shown on **Figure 2** in **Appendix 1**. This appendix presents the detailed environmental analysis of each route option, a summary of which is presented in **Table 4.5** of this report.

Ecology and Ornithology

General Study Area

2. All three of the route options go through the Connel Burn / Benty Cowan provisional wildlife site (pWS), therefore, consultation with East Ayrshire Council will be required prior to any works commencing.

3. The proposed routes go through mire and grassland habitats. The mire habitats are degraded due to historical gripping and grazing over the site. However, the bog communities on peatland are of ecological value. The grassland areas further north west are used for grazing with evidence of improvement in the grasses, with mesotrophic grasslands of lesser botanical value than that of the mires and bog habitats. The bog habitats have potential for restoration where the ditches can be blocked and grazing reduced. Where the route options (5 and 6) traverse through higher percentage of grassland habitat would be preferred, although grasslands are also located on the steeper slopes as well as low lying ground.

4. The wooded areas within the study area have potential for bats, Badger and Red Squirrel and potentially Pine Marten. The watercourses throughout the area have foraging potential for Otter, and signs have been identified in past surveys. There is also potential for Water Vole, especially in the northern part of the study site, but none of the route options cross this area. Badger, Otter and Red Squirrel have all been recorded within the wider area surrounding the proposed route options, however evidence was very limited in terms of Badger and Red Squirrel. Most of the habitat is open with limited potential for foraging and commuting bats although the wooded areas provide suitable edge habitat and may potentially provide roosting sites.

5. The study area is known to support a range of bird species, including Black Grouse, Golden Plover, Goshawk, Hen Harrier, Merlin, Peregrine Falcon and Snipe. Merlin has previously been confirmed breeding in the study area and Black Grouse leks are known from the wider area. Curlew are also known to be present in the wider area although no Curlews have been recorded during the current surveys to date.

Route Option 4

6. Route Option 4 is generally high terrain with an area of bog/marsh at the western end of the route. This route option passes through the largest area of blanket mire communities of all three route options. Route Option 4 also crosses several waterbodies which may support Otter but is less likely to do so in the higher areas. However, this route option passes closer to the woodland around the south and eastern borders of the study area. There is therefore potential for forest-nesting birds and potentially Badgers, Red Squirrel or Pine Marten, to be disturbed by any works in close proximity.

Route Option 5

7. Route Option 5 follows Route Option 4 closely in the northern and southern sections but passes around the edge of the proposed wind farm instead of weaving through the turbines like Route Option 4. Where the route lies further to the north east, it passes through fewer blanket mire communities. Areas of gorse are present along the northern part of the route which could conceal Badger setts as these areas could not be thoroughly searched during the current walkover survey. If any pole locations are proposed to be within 30 m of these areas, then hand clearance of these areas in the presence of an ecologist is required.

Route Option 6

8. Route Option 6 is the longest of the three route options, however it also passes through the smallest area of potential GWDTEs. It has similar potential for protected species and bird species as Route Option 5, however, it runs closer to the woodland on Strandlud hill. It also passes through watercourses at lower elevations than the other routes, where they may be more suitable for Otter.

Summary

Table A6.1: Route Preference from an Ecology and Ornithology Perspective

Route Option	Ecological and Ornithological Preferability
4	Falls within Connel Burn / Benty Cowan pWS. Limited constraints in terms of protected species other than watercourses which may support Otter and Water Vole. Bird species recorded are similar to Route Options 5 and 6 however this option has more mire habitat which is suitable for wintering waders. It is also the closest to the woodland, so there is more potential for nesting birds such as Goshawk to be present. This route has the least potential from a botanical point of view as this route contains larger areas of blanket mire communities, and although degraded due to grazing and gripping, they are of ecological importance. There is a higher concentration of grips/ditches containing *Sphagnum* species within this route and although man-made are still of ecological importance. This route would be the least preferred route with regard to habitat, ecology and ornithology.
5	Falls within Connel Burn / Benty Cowan pWS. Limited constraints in terms of protected species other than watercourses which may support Otter and Water Vole. Also, areas of dense gorse may support Badger. Bird species recorded are similar to Route Options 4 and 6. Overall this route stays furthest from the woodland areas and therefore is the preferred route with regards to ornithology and ecology. This route shares a section with Route Option 4 near the Wind Farm point of connection but moves to the north east before it heads back to the substation. Route Option 5 contains more grassland habitat on mineral soil or small areas with low peat depths. These grasslands are not classed as Annex 1 habitat, although some of these habitats are part of the LBAP. There are fewer mire communities along this route and more grassland communities which may be regarded as being of lesser sensitivity and not expected to be an issue.
6	Falls within Connel Burn / Benty Cowan pWS. Limited constraints in terms of protected species other than watercourses which may support Otter and Water Vole, and areas of gorse to the north. Bird species recorded are similar to Route Options 4 and 5. Route Option 6 runs closest to the woodland on Strandlud hill and so is less preferred than Route Option 5 with regard to ecology and ornithology Route Option 6 is the longest of the three route options and overlaps with Route Options 4 and 5 in the northern and southern sections. However, Route Option 6 covers less mire habitats than Route Options 4 and 5 with regard to botany.

9. Based on the detailed assessment of ecological and ornithological factors above and using the criteria set out in **Section 4.1.3** of this report, Route Options 5 and 6 are preferable to Route Option 4.

Archaeology and Cultural Heritage

10. The degree of interaction between each route option and identified archaeological and cultural heritage sensitivities has been considered. The route option able to avoid identified sensitivities, wherever possible, is assessed as preferable.

General Study Area

11. Given the nature of the proposed development, a double wood pole overhead line of up to 15 m in height, and the intervening distance between the three route options and identified designated assets, no significant effects on heritage assets is anticipated. This consideration has not therefore influenced the analysis of the three route options below.

Route Option 4

12. Measuring 5.0 km, Route Option 4 is the among the shortest of the three routes considered. Route Option 4 at its lowest point (crossing Connel Burn) lies at approximately 350 m AOD, rising to a maximum of 460 m AOD where it passes along the northern-eastern slopes of High Chang Hill.

13. There are two previously identified historic environment assets within Route Option 4: a sheepfold (DBA34 and Carcow farmstead (DBA10).

Route Option 5

14. Measuring 4.9 km, the length of Route Option 5 is the shortest (though comparable to the length of Route Option 4). Route Option 5 lies at approximately 350 m AOD (crossing Connel Burn) and rises close to the summit of Chang Hill at approximately 440 m AOD.

15. There are three previously identified historic environment assets within Route Option 5: a sheepfold at Connel Polga (DBA34); a sheepfold at Little Chang (DBA12); and Carcow farmstead (DBA10).

Route Option 6

16. Measuring 5.9 km in length, Route Option 6 is the longest of the three routes considered and takes the least direct route. Route Option 6 is at its lowest point crossing Connel Burn at approximately 350 m AOD, rising to 420 m AOD where it skirts the northern shoulder of Benty Cowan Hill.

17. There are three previously identified historic environment assets within Route Option 6: Carcow farmstead (DBA10); and sheepfolds at Little Chang (DBA12) and Connel Polga (DBA34).

Summary

18. All three route options could be progressed without causing potentially significant effects on archaeology and cultural heritage assets. Based on the detailed assessment of archaeological and cultural heritage factors above and using the criteria set out in **Section 4.1.3** of this report, Route Options 4 and 5 are the preferred options, and Route Option 6 is the least preferred option.

19. Route Options 4 and 5 could be constructed without causing physical impacts to any previously identified assets, and are respectively 1.0 km and 0.9 km shorter than Route Option 6.

20. Longer route options are likely to require more wood poles to span a longer distance, which means a larger area of ground potentially containing archaeological remains at risk of disturbance. However, the relative amount of disturbance likely in a 5.9 km-long OHL compared to a 4.9 km-long OHL is not anticipated to be significant, and – with the inclusion of appropriate assessment (e.g. archaeological evaluation) and mitigation (e.g. avoidance of assets by design, a watching brief, or marking off and avoidance of impacts to identified assets) - all three route options could be viable without significant effects on archaeology and cultural heritage assets.

Landscape and Visual Amenity

General study area

21. **Appendix 4** Environmental Baseline describes the main landscape elements and visual amenity identified within the study area, including landscape designations and Landscape Character Types (LCT), settlements, transport routes, core footpaths and recreational landscapes which could be directly affected by the proposed development. The degree of interaction of each route option with these identified landscape and visual receptors has been considered in order to identify differentiators, if any exist, between the route options under consideration.

22. As detailed in **Section 4.2.2.2** of this report, six criteria have been applied at the initial route corridor appraisal stage for landscape and visual amenity as outlined below:

- Landscape Sensitivity – To find the best possible landscape 'fit'. To avoid landscapes with greatest potential sensitivity to change (from overhead lines).
- Residential Amenity – To avoid proximity to residential properties as far as possible on the grounds of general amenity including views from private property.
- Visual Amenity – To minimise impacts on public visual amenity, including residents in settlements, users of main transport routes, and users of key recreational areas.
- Landscape Designations – To minimise impacts on areas designated for their landscape value.
- Length of corridor – To minimise impacts on the landscape, all else being equal.
- Forestry – Areas of ancient woodland should be avoided and, if possible, impact on other woodland/ forestry types should be kept to a minimum.

23. When considering these criteria for each route option, an initial judgement has been made with regard to their likely presence within the vicinity of each route and therefore potential susceptibility to the proposed overhead line and likely concerns. A judgement of high indicated that a particular aspect would most likely be adversely affected by the introduction of an overhead line and a judgement of low indicated that the route option would likely avoid adverse effects on this criterion. A judgement of none means that the criteria is not of concern e.g. if were no residential properties within the vicinity of a route then the likely effects on residential amenity would be considered 'none'.

Route Option 4

24. Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point 4.4 km to the south-east. Within the central section of the route the OHL would cross a plateau of higher ground including Chang Hill (463 m AOD) and an area of high ground (approximately 469 m AOD) separating the higher peaks of High Chang Hill to the south-west and Benty Cowan Hill to the north-east. This route option crosses a minimum of six watercourses.

25. Although not a designated landscape the route is fully within an identified East Ayrshire Sensitive Landscape Area (SLA). No other designated or sensitive landscapes would be impacted by the proposed development. As detailed in **Appendix 4**, it is considered that the SLA has a low sensitivity to the proposed development.

26. Route Option 4 is almost entirely within LCT81 Southern Uplands – Ayrshire, with only the final section of the route crossing into LCT82 Southern Uplands with Forest – Ayrshire.

27. The closest visual receptors to Route Option 4 are users of the B741 (which passes 1.4 km north of the Enoch Hill Substation collector point) and properties adjacent to the B741, in particular the small group of properties at Dalleagles approximately 2.4 km north-east of Route Option 4 at its closest point.

28. The proposed route cuts through the eastern edge of the consented Enoch Hill Wind Farm, and the eastern most turbine would be located to the east of the proposed route.

29. With respect to the criteria detailed above the susceptibility of Route Option 4 has been judged as follows:

- Landscape Sensitivity – Low;

- Residential Amenity – Low;
- Visual Amenity – Low;
- Landscape Designations – None;
- Length of corridor – 4.4 km; and
- Forestry – None.

Route Option 5

30. Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point 4.6 km to the south-east. This route has greater undulations than Route 1 and the central section of the route would cross the high ground of Benty Cowan Hill (477 m AOD), before dropping to approximately 339 m AOD at Connel Burn and then rising again to 445 m AOD on the north-eastern slopes of Strandlud Hill. This route crosses a minimum of six watercourses.

31. Although not a designated landscape the route is fully within an identified East Ayrshire SLA. No other designated or sensitive landscapes would be impacted by the proposed development. As detailed in **Appendix 4**, it is considered that the SLA has a low sensitivity to the proposed development.

32. Route Option 5 is almost entirely within LCT81 Southern Uplands – Ayrshire, with only the final section of the route crossing into LCT82 Southern Uplands with Forest – Ayrshire.

33. The closest visual receptors to Route Option 4 are users of the B741 (which passes 1.4 km north of the Enoch Hill Substation collector point) and properties adjacent to the B741, in particular the small group of properties at Dalleagles approximately 1.9 km north of Route Option 5 at its closest point.

34. The proposed route loops round the eastern edge of the consented Enoch Hill Wind Farm and is therefore closer than Route Option 4 or the northern end of Route Option 6 to potential visual receptors along the B741 and at New Cumnock.

35. With respect to the criteria detailed above the susceptibility of Route Option 5 has been judged as follows:

- Landscape Sensitivity – Low;
- Residential Amenity – Low;
- Visual Amenity – Low;
- Landscape Designations – None;
- Length of corridor – 4.6 km; and
- Forestry – None.

Route Option 6

36. Heading south-east from the Enoch Hill Substation collector point the route crosses an undulating moorland landscape before connecting with Enoch Hill 2 (formerly Monquhill) Wind Farm connector point 4.8 km to the south-east. This route has the greatest undulations, crossing two distinct peaks Chang Hill (463 m AOD), Benty Cowan Hill (477 m AOD), before dropping to approximately 339 m AOD at Connel Burn and then rising again to 445 m AOD on the north-eastern slopes of Strandlund Hill. This route crosses a minimum of six watercourses.

37. Although not a designated landscape the route is fully within an identified East Ayrshire SLA. No other designated or sensitive landscapes would be impacted by the proposed development. As detailed in **Appendix 4**, it is considered that the SLA has a low sensitivity to the proposed development.

38. Route Option 6 is almost entirely within LCT81 Southern Uplands – Ayrshire, with only the final section of the route crossing into LCT82 Southern Uplands with Forest – Ayrshire.

39. The closest visual receptors to Route Option 6 are users of the B741 (which passes 1.4 km north of the Enoch Hill Substation collector point) and properties adjacent to the B741, in particular the small group of properties at Dalleagles approximately 1.9 km north of Route Option 6 at its closest point.

40. The proposed route loops round the eastern edge of the consented Enoch Hill windfarm and is therefore closer to potential visual receptors along the B741 and at New Cumnock, than Route Option 4, although the northern end of Route Option 6 is not as close to the receptors as Route Option 5.

41. With respect to the criteria detailed above the susceptibility of Route Option 6 has been judged as follows:

- Landscape Sensitivity – Low;
- Residential Amenity – Low;
- Visual Amenity – Low;
- Landscape Designations – None;
- Length of corridor – 4.8 km; and
- Forestry – None.

Summary

42. From a likely landscape and visual amenity impact perspective the three routes are almost identical with very little likelihood of significant operational landscape or visual impacts. A slight preference is given to Route Option 4, as although visual impacts are anticipated to be negligible, the central section of this route is up to 700 m west of Route Options 5 and 6 and less likely to be perceptible from residential receptors along the B741, or elsewhere within the vicinity of the study area. In addition, this route follows the western slopes of Benty Cowan Hill, the peak of which provides an extra level of visual screening from receptors to the north and north-east.

Table A6.2: Route Preference from a Landscape and Visual Amenity Perspective

Route Option	Landscape and Visual Amenity Preferability
4	Preferred route (less likely to be perceptible from the wider landscape and 200m and 400m shorter than Route Options 5 and 6 respectively)
5	Acceptable route with minimal anticipated landscape and visual impacts
6	Acceptable route with minimal anticipated landscape and visual impacts

Hydrology, Geology and Peat

General Study Area

43. The main geological, hydrological and peat-related interests and constraints identified within the study area are covered in **Appendix 4**. The main sensitivities that require consideration are private water supply intakes and infrastructure, surface watercourses and waterbodies, and areas of peatland.

44. There are no specific sensitivities relating to bedrock or superficial geology that have influence on the routeing options. As groundwork for overhead lines is minimal, there are also no specific sensitivities relating to groundwater that need to be considered. The study area has no risk of flooding from any source.

45. The following sections discuss the level of interaction for each route option, with any key sensitivities identified.

Route Option 4

46. Route Option 4 includes seven watercourse crossings. This section also crosses over 2.5 km of blanket peat and approximately 140 m of peaty gley soils.

47. A private water supply source is noted at Enoch Hill 2, but this is known to be out of use. The substation at Enoch Hill has an operational private water supply. No other private water supplies have been identified within 500 m of the route corridor.

Route Option 5

48. Route Option 5 includes six watercourse crossings. This section crosses approximately 1.9 km of blanket peat and approximately 1 km of peaty gley soils.

49. As with Route Option 4, the private water supplies at Enoch Hill 2 and Enoch Hill are noted adjacent to the route. No other private water supplies have been identified within 500 m of the route corridor.

Route Option 6

50. Route Option 6 includes between six and nine watercourse crossings. This section crosses approximately 1.2 km of blanket peat and approximately 2.8 km of peaty gley soils.

51. As with Route Option 4, the private water supplies at Enoch Hill 2 and Enoch Hill are noted adjacent to the route. No other private water supplies have been identified within 500 m of the route corridor.

Summary

52. Based on the detailed assessment of the hydrology and peat above and using the criteria set out in **Section 4.1.3** of this report, Route Option 6 is the preferred option because it potentially equals the fewest watercourse crossings dependent on the exact route, and smallest area of peat coverage.

Table A6.3: Route Preference from a Hydrology, Geology and Peat Perspective

Route Option	Hydrology, Geology and Peat Preferability
4	Seven watercourse crossings; approximately 2.5 km blanket peat and 140 m peaty gleys.
5	Six watercourse crossings; approximately 1.9 km blanket peat and 1 km peaty gleys.
6	Between six and nine watercourse crossings; approximately 1.2 km blanket peat and 2.8 km peaty gleys. Preferred option due to fewest watercourse crossings and smallest area of peat coverage.

Traffic and Transport

53. All three route options under consideration start and end at the same two points, namely the Enoch Hill Substation Connection Point and the Enoch Hill 2 (formerly Monquhill) Wind Farm Collector Point. No roads, tracks or other paths cross any of the route options. The only aspect that might be compared to determine which route is preferred is that of the gradient(s) of the route(s) to be used to gain access to construct the OHL.

54. Route Options 5 and 6 pass closer to Benty Cowan Hill (and therefore would most likely have steeper gradients to traverse) than Route Option 4, and therefore Route Option 4 could potentially offer easier access for construction purposes.

Land Use and Recreation

55. The land use along all three route options is very similar, and there are also no recreation differences between the route options. All three routes will traverse very similar terrain, although Route options 5 and 6 would be higher in altitude and possibly more undulatory than Route Option 4. The only aspect that might influence a preference would be the visibility of the OHL for recreational users, which has been discussed in the section above. Visibility of all three options would be restricted mostly to within the study area, owing to the landforms (hills) on either side of the route options blocking the view of the OHL from viewpoints further away. There is therefore no preference for any of the routes from a land use and/or recreational point of view.

Appendix 7: Holford Rules

1. A copy of the Holford Rules (taken from the SPEN Approach to Routeing and Environmental Impact Assessment document, dated 2020 – see Section 6: References) is attached to this report for ease of reference. How these rules have been applied throughout the routeing strategy and methodology was discussed in **Sections 2** and **3** of this report.

Appendix 1 : The Holford Rules

The Holford Rules for the Routeing of New High Voltage Overhead Transmission Lines

It is generally accepted across the electricity industry that the guidelines developed by the late Lord Holford in 1959 for routeing overhead transmission lines, 'The Holford Rules', should continue to be employed as the basis for routeing high voltage overhead transmission lines. 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 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. The principles of these guidelines for the routeing of new high voltage overhead transmission lines, with the NGC 1992 and SHETL 2003 notes have been considered within this Strategic Environmental Review. The Holford Rules are detailed below.

Rule 1

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

Note on Rule 1

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

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

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

- Special Area of Conservation (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

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

(d) Impacts on the setting of historic buildings and other cultural heritage features should be minimised.

(e) If there is an existing transmission line through an area of high amenity value and the surrounding landuses

have to some extent adjusted to its presence, particularly in the case of commercial forestry, then the effect of remaining on this line must be considered in terms of the effect of a new route deviating around the area.

Rule 3

Other things being equal, choose the most direct line, with no sharp changes of direction and thus with few angle towers.

Note on Rule 3

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

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

Rule 4

Choose tree and hill backgrounds in preference to sky backgrounds, wherever possible; and when the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees.

Rule 5

Prefer moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees.

Notes on Rules 4 and 5

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

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

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

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

Rule 6

In country which is flat and sparsely planted, keep the high voltage lines as far as possible independent of smaller lines, converging routes, distribution poles and other masts, wires and cables, so as to avoid a concatenation or 'wirescape'.

Note on Rule 6

(a) In all locations minimise confusing appearance.

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

Rule 7

Approach urban areas through industrial zones, where they exist; and when pleasant residential and recreational land intervenes between the approach line and the substation, go carefully into the comparative costs of undergrounding, for lines other than those of the highest voltage.

Note on Rule 7

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

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

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

Explanatory Note on Rule 7

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

Supplementary Notes

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

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

(c) Alternative Lattice Steel Tower Designs

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

Further Notes on Clarification to The Holford Rules

Line Routeing and People

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

The following notes are intended to reflect this.

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

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

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

Supplementary Notes on the Siting of Substations

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

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

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

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

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

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

APPENDIX A

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

1 Interpretation of The Holford Rules 1 and 2

1.1 Introduction

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

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

1.2 Designations

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

1.3 Amenity

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

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

1.4 Hierarchy of Amenity Value

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

Schedule 9 to the Act gives no indication of hierarchy of value and there is no suggestion of a hierarchy of value in either NPPG5: Archaeology and Planning, NPPG 13: Coastal Planning, NPPG 14: Natural Heritage or NPPG 18: Planning and the Historic Environment. Nevertheless, designations give an indication of the level of importance of the interest to be safeguarded.

1.5 Major and Smaller Areas

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

1.6 Conclusion

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

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

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

APPENDIX B

ENVIRONMENTAL AND PLANNING DESIGNATIONS – EXAMPLES OF DESIGNATIONS TO BE TAKEN INTO ACCOUND 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 Policy Guidelines:

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

Other Smaller Areas of High Amenity Value

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 b given to these areas than to National Scenic Areas and National Parks.

Flora and Fauna

3 Legislation sets out the procedure for designation of areas relating to flora, fauna and to geographical and physiogeographical features. Designations relevant to the 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.

Area of Historic, Archaeological or Architectural Value

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

Schedule of Ancient Monuments

Listed Buildings, especially Grade A and Grade B

Conservation Areas

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

Green Belts

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

Enoch Hill 2 – 33 kV Overhead Line Grid Connection
Revised Routeing Consultation Document

November, 2022

SP ENERGY NETWORKS