

Bryn Gilwern Grid Connection

Routeing Alignment Report

September 2024

Contents

Glossary	3
Chapter 1: Introduction	5
Purpose of the Report.....	5
Who is Green GEN Cymru?.....	5
Background and Needs Case	6
The Development and Consenting Process	8
The Developments of National Significance (DNS) Consenting Regime ..	8
Structure of the Report.....	9
Chapter 2: The Proposed Grid Connection	10
Points of Connection.....	10
OHL Infrastructure	10
Construction Works.....	11
Operation and Maintenance.....	12
Decommissioning.....	12
Chapter 3: Approach to Routeing.....	13
Introduction	13
Routeing Methodology	13
Overview of Routeing Process.....	15
Identification and Appraisal of Route Options.....	16
Review of Preferred Route Post-Consultation and Confirmation of Proposed Route	17
Chapter 4: Route Option Identification and Selection of Preferred Route.....	18
GIS Mapping and Identification of Route Options	18
Appraisal of Route Options	19
Determining the Overall Preferred Route Option	22
Chapter 5: Route Options Appraisal Findings.....	24
Identification of a Preferred Route.....	24
Confirmation of the Preferred Route Option.....	25
Chapter 6: Consultation Process and Next Steps	26
The Consultation Process	26
Next Steps: Route Alignment and EIA Screening/Scoping	30

Appendix A: Routeing Methodology	32
Appendix B: Route Options Environmental Appraisal Table	33
Appendix C: Route Options Technical Review Appraisal Table	34

Glossary

Term	Explanation
All Aluminium Alloy Conductor (AAAC)	A conductor is the part of an overhead line which transmits the electricity and looks like a long wire. The conductors proposed will be made from an aluminium alloy.
Amenity	The term “Amenity” is not defined in the Holford rules but is generally interpreted as designated areas of scenic, nature conservation, scientific, architectural or historical interest (SHETL, 2004).
Backclothing	Describes the careful use of topography and the surrounding context in the routeing process to reduce the visibility of an overhead line.
Biodiversity Net Gain (BNG)	An approach to development, and/or land management, that aims to leave the natural environment in a measurably better state than it was beforehand. The Environment Act (2021) sets a minimum of 10% net gain is acceptable for developments in England, this is calculated using the Defra Biodiversity Metric. In Wales, Biodiversity Enhancement is a requirement, but there is no threshold or metric
Carbon budget	A cumulative amount of carbon dioxide emissions permitted over a period of time to keep in line with a legally binding amount set by UK law.
Criterion / criteria	A standard or principle for judging, evaluation of, or selecting something.
Development of National Significance (DNS)	DNS are infrastructure development projects of national importance, and the majority of planning applications for DNS are decided by the Welsh Ministers. The DNS consenting process is specific to Wales, and includes bespoke requirements for pre-application consultation to take place later in the connection project development process.
Decommissioning phase	Activity to remove the development from the environment once it is no longer in operational use.
Deviation	In an overhead line context, this is where an overhead line moves away from a parallel alignment with another overhead line.
Electrical conductor	An object or type of material that allows the flow of charge (electric current) in one or more directions
Environmental Impact Assessment (EIA)	The process used for describing, analysing and evaluating the range of environmental effects that are caused by a proposed development.
Energy Park	An area used and planned for clean energy development.
Greenhouse Gas (GHG)	Greenhouse Gases are gases in the atmosphere which raise the temperature of the Earth.
Grid Connection	Either an overhead line or an underground cable used to transmit electricity.
Holford Rules	Established practice for routeing overhead lines in the UK.
Independent Distribution Network Operator (IDNO) licence	The Electricity Act 1989 imposes a statutory duty on IDNO licence holders to develop a grid network. The licence is obtained from Ofgem
kV	Kilovolt (one thousand volts)
Micro-siting	The process through which the specific location of wood poles is determined
Minor Roads	B Roads and C Roads
Mitigation Measure	A measure to avoid or reduce adverse effects.
National Electricity Transmission System (NETS)	The national high voltage electricity transmission system operated by National Grid.
National Grid	National Grid operate the national electricity transmission network across Great Britain and own and maintain the network in England and Wales, providing electricity supplies from generating stations to local distribution companies. It does not

Term	Explanation
	distribute electricity to individual premises, but its role in the wholesale market is vital to ensuring a reliable, secure and quality supply to all.
Net zero	The target of completely negating the amount of greenhouse gases produced by human activity.
Office of Gas and Electricity Markets (Ofgem)	Ofgem is a non-ministerial government department and an independent National Regulatory Authority, who regulates energy (gas and electricity) for Great Britain.
Overhead line	Comprise the wood poles and the suspended conductors (wires) used to transport electrical power.
Operation Phase	In the context of the project, the comprises standard operation after commissioning.
Ornithology	The scientific study of birds.
Planning Policy Wales (PPW)	This document sets out the Welsh Government's policies on different aspects of land use planning. Local planning authorities must take PPW into account in preparing their development plans and the guidance may also be material to decisions on individual planning applications and appeals within Wales.
Preferred Route	Following a comparative environmental review of Route Options, the route following technical evaluation which is taken forward to initial consultations.
Proposed Route	Following consultation regarding the Preferred Route, the route taken forward for environmental impact assessment.
Quantitative	Describing something in a numerical way in terms of quantity.
Reinstatement	The actions undertaken to return
Route Alignment	The Proposed Route as detailed and refined during the environmental impact assessment and technical engineering review process and submitted for development consent.
Route Options	Potential connection routes identified within the strategic Corridors for comparative environmental appraisal to determine the Preferred Route.
Safety clearance	Specified minimum safety clearances that must be maintained between overhead lines and the ground, obstacles, buildings, roads, railways and other power lines.
Screening (Environmental Impact Assessment (EIA))	Initial process by which project proposals are assessed to decide whether they require a formal Environmental Impact Assessment.
Site of Special Scientific Interest (SSSI)	UK protected nature conservation sites, designated for their wildlife or geological value, under the Wildlife and Countryside Act 1981 (as amended).
Span length	The distance usually measured horizontally between two wood poles.
Substation	Controls the voltage and direction of electricity. Transforming stations are used to increase the supply of electricity to 275kV or 400kV into the national grid system for transmission, and to reduce the voltage to lower levels to 132kV for distribution. Switching, controls the direction of electricity and ensures fault protection.
Underground Cables	One or more electricity circuits buried below ground in cable trenches or troughs.
Unviable	This term is used to describe when something is not possible.
Visual Amenity	Value of a particular area or view in terms of what is seen
Walkover survey	A basic site survey which provides an initial site assessment that highlights potential ecological issues or constraints to development such as the presence of protected species.
Wayleave	An agreement granted by the owner or occupier of land whereby transmission equipment is permitted to be installed on, over or under the land so owned or occupied in return for annual payments.

Chapter 1: Introduction

Purpose of the Report

- 1.1. This document has been prepared on behalf of Green Generation Energy Networks Cymru Limited (Green GEN Cymru). It relates to the identification and appraisal of route options for a new 132 kilovolt (kV) overhead line (OHL) supported on wood poles from Bute Energy's proposed Bryn Gilwern Energy Park to Green GEN Cymru's proposed Towy Usk switching station, hereafter referred to as the '*Bryn Gilwern Grid Connection*'.
- 1.2. Figure 1.1 shows the indicative location of the proposed Towy Usk Grid Connection switching station, the proposed Bryn Gilwern Energy Park red line boundary and the indicative energy park substation siting area.
- 1.3. This report presents the methodology used to identify the preferred route for the Bryn Gilwern Grid Connection and provides an overview of the routeing work completed to date, culminating with a description of the preferred route. This report also sets out the proposed method by which consultation is to be undertaken to obtain feedback from relevant stakeholders on the preferred route.

Who is Green GEN Cymru?

- 1.4. Green GEN Cymru and Bute Energy are both part of the Windward Energy Group. Green GEN Cymru is based in Wales and develops electricity grid projects to help meet the future needs of people, communities and businesses, by taking renewable energy safely and securely from where it is generated and connecting it into our homes, hospitals, schools, businesses, and communities.
- 1.5. To allow it to distribute electricity, Green GEN Cymru has obtained an Independent Distribution Network Operator (IDNO) licence from Ofgem. The Electricity Act 1989 imposes a statutory duty on IDNO licence holders to develop a grid network which balances technical, economic, and environmental factors whilst having regard to the desirability of preserving the environment and doing what can reasonably be done to mitigate any affect the proposals may have on the natural environment.
- 1.6. Green GEN Cymru intends to design, build and operate the proposed 132kV distribution network needed to connect Bryn Gilwern Energy Park to the electricity transmission network, helping to get green energy to homes and businesses across Wales and beyond.
- 1.7. Green GEN Cymru, subject to appropriate planning consents, will construct and maintain the new electricity distribution network.

Green GEN Cymru, as a licenced IDNO, is required to offer connections to third party developments in line with the licence conditions.

- 1.8. Green GEN Cymru is playing a pivotal role in providing a reliable and robust distribution network that will support tackling the energy crisis and climate crisis. In addition to supplying electricity, the proposed grid network has the potential to support technologies like 5G that could help farmers, schools and businesses be at the cutting edge of technology while being based in rural areas.

Background and Needs Case

- 1.9. In 2008, the Climate Change Act 2008¹ entered into force in UK law. Section 1 of the 2008 Act, which was amended in 2019, requires the Secretary of State to ensure that the net UK carbon account for 2050 is at least 100% lower than the 1990 baseline. This is often referred to as the net zero target. The 2008 Act also requires the Secretary of State to set, at five year intervals beginning in 2008, legally binding carbon budgets, which place a restriction on the total amount of greenhouse gases the UK can emit over those five year periods. The underlying objective of these carbon budgets is to set a trajectory towards the achievement of the net zero target by 2050. The sixth carbon budget², which relates to the period 2033-2037, was made in 2021. The UK Government's October 2021 Net Zero Strategy³ sets out its policies and proposals for decarbonising all sectors of the UK economy in order to meet its net zero target by 2050.
- 1.10. The Environment (Wales) Act 2016⁴ also requires the Welsh Government to reduce greenhouse gas emissions (GGEs) in Wales to net zero for the year 2050, with a system of interim emissions targets and carbon budgets.
- 1.11. In April 2019, the Welsh Government declared a climate emergency. As part of its plan to tackle this emergency, the Welsh Government has brought forward policies to encourage innovative ways of creating energy that are sustainable, secure and cost effective. This includes Future Wales⁵ and the twelfth edition of Planning Policy Wales⁶. As part of these new policies, the Welsh Government has confirmed that *"in determining planning applications for renewable and low carbon energy development, decision makers must give significant weight to the need to meet Wales' international*

¹ Climate Change Act 2008: <https://legislation.gov.uk/ukpga/2008/27/contents>

² The Carbon Budget Order 2021: <https://www.legislation.gov.uk/uksi/2021/750/contents/made>

³ Net Zero Strategy: Build Back Greener (2021): <https://www.gov.uk/government/publications/net-zero-strategy>

⁴ Environment (Wales) Act 2016: <https://www.legislation.gov.uk/anaw/2016/3/contents>

⁵ Future Wales: The National Plan 2040: <https://www.gov.wales/future-wales-national-plan-2040>

⁶ Planning Policy Wales (Edition 12): <https://www.gov.wales/planning-policy-wales>

commitments and our target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency”.

- 1.12. In 2023, the Welsh Government set out a target for all (100%) of its electricity needs to be met from renewable resources by 2035⁷. This is an updated target on the previous target set in 2017 for 70% of all electricity in Wales to be generated by renewables by 2023.
- 1.13. The proposed Bryn Gilwern Energy Park comprises of the construction and operation of 16 wind turbines with a maximum blade tip height of up to 220 metres (m) and associated infrastructure, including access tracks and cabling. The Proposed Development will be a ‘*Development of National Significance*’ (DNS), as the wind turbines will have a combined installed capacity of greater than 10 megawatts (MW).
- 1.14. The proposed grid connection will provide a key opportunity to help to address the climate emergency in a timely manner by connecting the proposed strategic renewable energy generation hub to the existing grid network.
- 1.15. Operation of infrastructure at 132kV within England and Wales is classified as ‘*electricity distribution*’. These assets are in the main owned and operated by Distribution Network Operators (DNOs). However, in order to increase competition in the electricity distribution market, the Office of Gas and Electricity Markets (Ofgem), as the UK’s energy regulator, now licences Independent Distribution Network Operators (IDNOs). Once licenced by Ofgem, IDNOs are able to develop, operate and maintain electricity distribution networks. IDNOs connect their networks onwards into the local distribution network or transmission network.
- 1.16. Green GEN Cymru as an IDNO licence holder is able to move forward with its plans to design, develop and construct the most appropriate solution for connecting the proposed new energy parks, ensuring the best solutions for the local area. It also enables Green GEN Cymru to deliver efficient and reliable grid infrastructure, opening broader opportunities for connections in the future.
- 1.17. As with DNOs, an IDNO holds an electricity licence under Section 6(1)(c) of the Electricity Act 1989⁸. DNO and IDNO licences also share the same Standard Licence Conditions. This places specific requirements on an IDNO, including “*the development, maintenance, and operation of an efficient, co-ordinated, and economical system for the distribution of electricity*”.

⁷ Wales aims to meet 100% of its electricity needs from renewable sources by 2035:

<https://www.gov.wales/wales-aims-meet-100-its-electricity-needs-renewable-sources-2035>

⁸ Section 6(1)(c) of the Electricity Act 1989: <https://www.legislation.gov.uk/ukpga/1989/29/section/6>

- 1.18. As a licence holder, Green GEN Cymru is required to adhere to the Electricity Act 1989, including Schedule 9, which confirms that the license “*shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects*”.
- 1.19. As a Welsh-based company, and an IDNO licence holder, Green GEN Cymru is able to play a proactive role in the progression towards achieving Net Zero in Wales. Bute Energy Group will support the development of the proposed energy park and, through the proposed connection to the National Electricity Transmission System (NETS) promoted by Green GEN Cymru, will also be able to support the efficient and timely connection of future renewable energy projects across Wales, demonstrating the benefits of the IDNO framework.

The Development and Consenting Process

- 1.20. This document reports on the routeing stage of the Bryn Gilwern Grid Connection, as described in the guidance document produced by ‘*Green GEN Cymru Approach to Routeing Grid Infrastructure in Wales*’⁹ in Stage 2B: Route Identification and Selection (available for review alongside this Routeing Alignment Report).
- 1.21. The routeing process is iterative in nature with the output of each stage informing the subsequent stages. However, feedback received from consultation and/or technical review can also result in earlier stages being repeated as necessary in an iterative manner.

The Developments of National Significance (DNS) Consenting Regime

- 1.22. The Bryn Gilwern Grid Connection will be a ‘Development of National Significance’ (DNS) according to the Planning (Wales) Act 2015. DNS are infrastructure development projects of national importance, and the majority of planning applications for DNS are decided by the Welsh Ministers. The DNS consenting process is specific to Wales, and includes bespoke requirements for pre-application consultation to take place later in the connection project development process.

⁹ Green GEN Cymru ‘Approach to Routeing Grid Infrastructure Across England and Wales’ : [A4_Approach+to+Routeing+Grid+Infrastructure+Across+England+and+Wales.pdf](https://d141qvydpnmd03.cloudfront.net/A4_Approach+to+Routeing+Grid+Infrastructure+Across+England+and+Wales.pdf) (d141qvydpnmd03.cloudfront.net)

Structure of the Report

1.23. This Routeing Alignment Report is structured as follows:

- **Chapter 2** introduces the proposed Bryn Gilwern Grid Connection;
- **Chapter 3** describes the overall methodological principles applied to the routeing stage of the connection project;
- **Chapter 4** describes the method used to identify and appraise route options;
- **Chapter 5** details the outcome of the route option appraisal process and describes the preferred route; and
- **Chapter 6** sets out the proposals for the consultation on the preferred route.

Chapter 2: The Proposed Grid Connection

Points of Connection

- 2.1. The purpose of the proposed new 132kV OHL, is to facilitate the connection to the Bryn Gilwern Energy Park to the grid network. On this basis the new 132kV OHL will start at the onsite substation for the Bryn Gilwern Energy Park. The Bryn Gilwern Energy Park is located in Powys, Mid Wales, approximately 3km south-east of Llandrindod Wells (see Figure 1.1).
- 2.2. The application for consent for the onsite substation for the Energy Park will form part of the Energy Park DNS application, where its location and indicative design will be provided along with assessment of its environmental effects. This substation will not therefore be considered further in this report, however the indicative Bryn Gilwern Energy Park substation location (see Figure 1.1) forms the start point of connection for the Project.
- 2.3. At the southern end of the route, the point of connection for the new 132kV OHL is the proposed switching station located north-east of Builth Wells at the foot of Aberedw Hill. This switching station is being proposed as part of the Towy Usk Grid Connection project and will not be considered further in this report, however the indicative Towy Usk switching station location (see Figure 1.1) forms the end point of connection for the Project.

OHL Infrastructure

- 2.4. The proposed OHL will be supported on wood poles, as shown in Figure 2.1. The OHL will be operated at a voltage of 132kV.
- 2.5. All Aluminium Alloy Conductors (AAAC) are proposed for the OHL. The connection will comprise a three-phase circuit without an earth wire but with the potential inclusion of an underslung communications wire.

Wood Pole Structure

- 2.6. The OHL will be supported on wood poles with galvanised steel cross-arms, appropriate to 132kV single circuit lines. Angle and terminal poles are stayed to balance loads acting on wood poles. Wood poles are made from pressure-treated softwood and preserved to maintain structural integrity.

Wood Pole Heights and Span Lengths

- 2.7. As with all OHLs support heights and span lengths range, dictated by site specific constraints, topography, clearance requirements, support capacity and other factors.
- 2.8. Wood poles generally have a nominal height above ground of approximately 14 to 16 metres and nominal span lengths of approximately 110 metres.

Colouring of Wood Poles

- 2.9. Newly erected wood poles are generally a dark brown colour, which may discolour over time due to exposure to sunlight, rain, wind, moisture or other factors. Newly installed galvanised steel cross-arms have a shiny metallic finish, which dulls over time due to weathering.

Construction Works

- 2.10. In addition to the proposed wood poles, ancillary development will be required to facilitate the construction of the OHL. Ancillary development will include working areas around wood poles, temporary access tracks, access entrance upgrades or new entrances, winching/pulling areas and construction compounds/laydown areas. This ancillary development will be temporary and will be removed and the ground reinstated following completion of construction of the OHL.

Wood Pole Construction

- 2.11. The construction of the OHL will follow a well-established sequence of activities outlined below:
 - Felling of forestry (where required);
 - Preparation of accesses;
 - Excavation of foundations;
 - Delivery of poles;
 - Erection of poles and stays;
 - Delivery of conductors and stringing equipment;
 - Insulator and conductor erection and tensioning; and
 - Reinstatement.

Access

- 2.12. Prior to construction of the OHL, temporary access routes will be constructed, as needed, and laydown/storage areas set up.

- 2.13. Any trees which may have an impact on safety clearances will be removed or lopped. Following commissioning of the OHL, all equipment and temporary access of construction areas will be removed, with the land being reinstated.

Temporary Working

- 2.14. Temporary working areas will be required for the duration of construction works. There is a requirement for temporary vehicular access to every wood pole location.
- 2.15. Wood pole locations will have a working area of approximately 25m x 25m and could also extend to accommodate conductor pulling if required. In certain circumstances, the shape/size of the working area is controlled by the environmental/land-use constraints that are located nearby.
- 2.16. The temporary working areas will be returned and restored to former conditions following the completion of the construction works.

Operation and Maintenance

- 2.17. OHLs require periodic inspection and maintenance to ensure adequate levels of safety, reliability and efficiency are maintained over their lifespan.
- 2.18. The frequency of periodic inspections and maintenance activities may be influenced by environmental factors, exposure to the elements, or network planning requirements. Any felled easement areas will also be managed to maintain the required clearances whilst the connection remains active. Walkover surveys or flyovers will identify where there is requirement to clear wayleaves of new growth.

Decommissioning

- 2.19. When the operational life¹⁰ of the proposed Bryn Gilwern Grid Connection ends, it is possible the OHL may be re-equipped with new conductors, insulators and refurbished. However, the OHL may also be decommissioned fully.

¹⁰ The operational life is 40 years, or when the operational life of the Bryn Gilwern Energy Park ends.

Chapter 3: Approach to Routeing

Introduction

- 3.1. This chapter provides an overview of the approach that Green GEN Cymru has undertaken to the routeing stage for the Bryn Gilwern Grid Connection. This stage is described as Stage 2b in the Approach to Routing Grid Infrastructure in Wales Guidance document.

Routeing Methodology

Overarching Approach to Routeing

- 3.2. A number of environmental and technical considerations are taken into account during the routeing process. The overall approach to routeing is based on the acknowledgement that the main effects of OHLs are visual, due particularly to scale of OHL wood poles relative to surrounding features within the landscape. As visual effects of OHLs cannot always be mitigated (for example via screening), careful routeing is the primary way in which visual effects may be minimised. Other environmental and technical constraints need to be taken into account alongside, and balanced with, visual effects.

The Holford Rules

- 3.3. It is generally accepted across the electricity industry that the guidelines developed by the late Lord Holford in 1959 for routeing OHLs (*'The Holford Rules'*) should continue to be employed as the basis for routeing high voltage OHLs. The Holford Rules were reviewed circa 1992 by the National Grid Company (NGC) Plc. (now National Grid Electricity Transmission Plc (NGT)) as owner and operator of the electricity transmission network in England and Wales, with notes of clarification being added to update the Rules. A subsequent review of the Holford Rules (and NGC clarification notes) was undertaken by ScottishHydro Electric Transmission Limited (SHETL) in 2003.
- 3.4. The Holford Rules are presented in Table 3.1. These guidelines for the routeing of new high voltage overhead lines provide the basis for the approach that has been taken to routeing of the Bryn Gilwern Grid Connection. Key principles of the Holford Rules include avoiding prominent ridges and skylines; following broad wooded valleys; avoiding settlements and residential properties; and

maximising opportunities for ‘backclothing’¹¹ and the screening of infrastructure.

- 3.5. The methodology is also informed by Green GEN Cymru and LUC experience of routeing OHLs and relevant national and local planning policy and guidance.
- 3.6. The routeing process can be represented in a simplified form as linear with the findings of each step informing the next step as the routeing design is progressively refined based on increasingly detailed assessment. However, in practice the process is iterative, due particularly to the consideration of the results of consultation at various individual steps. The iterative approach enables the validity of previously applied assumptions to be confirmed and ensures confidence in the findings of individual steps in the routeing process before subsequent steps begin.
- 3.7. Application of the routeing methodology, including the findings are set out in Chapter 4 and Chapter 5, culminating in the confirmation of the preferred route in Chapter 5.

Table 3.1: The Holford Rules

The Holford Rules
Rule 1: <i>Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the first line in the first place, even if the total mileage is somewhat increased in consequence.</i>
Rule 2: <i>Avoid smaller areas of high amenity value, or scientific interests by deviation; provided that this can be done without using too many angle poles, i.e. the more massive structures which are used when lines change direction.</i>
Rule 3: <i>Other things being equal, choose the most direct line, with no sharp changes of direction and thus with fewer angle poles.</i>
Rule 4: <i>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.</i>
Rule 5: <i>Prefer moderately open valleys with woods where the apparent height of poles will be reduced, and views of the line will be broken by trees.</i>

¹¹ The term ‘backclothing’ means: the careful use of topography and surrounding context in the routeing process to reduce the visibility of an overhead line.

The Holford Rules

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 concentration or 'wirescape'.*

Rule 7: *Approach urban area 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 the undergrounding, for lines other than those of the highest voltage.*

Overview of Routeing Process

Study Area

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

Environmental Considerations

- 3.9. Statutory duties imposed by Section 38 and Schedule 9 of the Electricity Act 1989 require licence holders to seek to preserve features of natural and cultural heritage interest, and to mitigate where possible, any effects which their proposals may have on such features. The construction and operation of an OHL will have potential effects on people and the environment, including potential effects on (in no hierarchical order):
- Landscape and visual amenity (including recreation and tourism);
 - Cultural heritage (including archaeology);
 - Biodiversity (including ecology and ornithology designations);
 - Forestry and woodland (including areas of ancient woodland and native woodland);
 - Hydrology, hydrogeology, peat and water resources; and
 - Planning and land uses (including agriculture).
- 3.10. Some effects can be avoided or limited through careful routeing. Other effects are best mitigated through local deviations of the route, the micro-siting of wood pole locations and mitigation deployed during construction. These are reviewed as part of the ongoing design and environmental appraisal process.

- 3.11. There are other topics such as traffic and transport, noise and air quality that could be considered during the EIA/environmental appraisal stage of the development and consenting process but are not included within this document as they are not considered to materially influence the routing stage.

Technical and Engineering Considerations

- 3.12. In addition to environmental considerations, technical and engineering considerations also influence the alignment, pole positions, span lengths, pole heights, etc. Technical considerations include the existing electricity network, access requirements, slope gradient, altitude, waterbodies, and the presence of wind turbines and wind farms. The technical appraisal findings are in Appendix C.

Economic Considerations

- 3.13. Section 9 of the Electricity Act 1989, states that *'It shall be the duty of an electricity distributor... to develop and maintain an efficient, co-ordinated and economical system of electricity distribution...'*. This duty has been interpreted by Green GEN Cymru to mean that, as far as is reasonably practicable, and all other concerns being equal, the proposed OHL should be as direct as possible and the route should avoid areas which would render the scheme unviable on economic grounds.

Identification and Appraisal of Route Options

- 3.14. The Approach to Routing Grid Infrastructure in Wales document refers to using for example 200m width route options, which is not a prescriptive width and therefore the route options can be narrower or wider, dependent on the technology that is being proposed or at selected locations in response to identified pinch points or constraints.
- 3.15. The route options identified for Bryn Gilwern have a width of 100m to allow scope for further refinement of routing and wood pole locations during subsequent stages of the development process. In refining the wood pole locations, this 100m width is not a hard boundary and can be increased to ensure the best possible design solution for the OHL.
- 3.16. The appraisal of route options includes balancing of the environmental considerations, with this resulting in identification of an *'emerging preferred route'*. A technical appraisal is also undertaken, which may result in further modifications to the emerging preferred route (Appendix C of this report).
- 3.17. Following the identification of the preferred route, a desk-based exercise is undertaken to identify where indicative wood pole positions could be located. These have been included within this

Routeing Alignment Report (Figures 5.2 and 5.3) for the purposes of consultation, however these are subject to further detailed survey work.

Review of Preferred Route Post-Consultation and Confirmation of Proposed Route

3.18. Following consultation with stakeholders, including landowners and the community, and a careful review of all the feedback received, the preferred route will be reviewed and may be refined further to take account of feedback. Site surveys will also take place following consultation. This process results in confirmation of a proposed route for the purposes of progression to EIA screening or scoping. Statutory consultation on a detailed route alignment for the project, including locations for poles and for any ancillary development required such as temporary construction access tracks, laydown areas and construction compounds will also take place during the pre-application stage.

Chapter 4: Route Option Identification and Selection of Preferred Route

GIS Mapping and Identification of Route Options

- 4.1. The purpose of identifying route options is to allow comparison between alternative route options to identify a preferred route without having to develop detailed design proposals for each.
- 4.2. The aim of this stage was to define a proportionate number of route options for comparative appraisal against environmental and technical constraints. It is noted that the appraisal process may lead to route options being amended or combined as part of the iterative routeing process. Six route options were identified between the two connection points and defined as having a width of 100m to allow for detailed design of the OHL alignment in subsequent development stages. The 100m width of each route option is a flexible boundary and can be increased when refining the alignment of the wood poles to ensure avoidance/minimisation of effects on the environment. The six route options are shown in Figures 4.1.1 to 4.1.6.
- 4.3. Reflecting guidance within the Holford Rules and planning policy, the presence of the following environmental routeing considerations was used to inform the identification of route options, as shown on Figure 4.2:
 - Special Areas of Conservation (SAC);
 - Sites of Special Scientific Interest (SSSI);
 - Environment (Wales) Act 2016 Priority Habitats;
 - Residential properties (including a 150m buffer);
 - Scheduled Monuments;
 - Listed Buildings;
 - Non-Designated Heritage Assets;
 - Ancient Woodland;
 - National Forest Inventory (NFI); and
 - Watercourses and water bodies.
- 4.4. These constraints were avoided and/or interactions with them minimised where possible. Other potential constraints were mapped at this stage and considered within the route option identification process, without being considered necessarily as absolute

constraints for the purposes of route option identification. These included flood risk zones, private water supplies (PWS), peat, and common land.

- 4.5. The route identification process reflected the Holford Rules, taking account of the environmental constraints listed above, topography/gradient and technical and engineering considerations to identify the most direct route with minimal angle poles where possible.
- 4.6. Following a desk-based mapping exercise to define potential route options based on the environmental and technical constraints, site visits were undertaken by LUC's landscape planning team in February 2024 to further refine the potential route options for taking forward to the appraisal stage.

Appraisal of Route Options

Environmental Appraisal

- 4.7. The objective of the environmental appraisal of the route options was to identify a preferred route based on a transparent assessment of the options against a range of environmental considerations. These considerations needed to be sufficiently comprehensive whilst also being proportionate to the geographical scale of analysis and the degree of flexibility that would apply to any preferred route (i.e. with respect to detailed future siting of infrastructure) later in the development process.
- 4.8. The appraisal of route options was undertaken against a series of topic-based criteria comprising more detailed sub-criteria. These are set out in Table 4.1 below. Discrete objectives were also identified for each criterion and applied to appraise the route options.
- 4.9. The detail of the appraisal method varied by criterion. A full list of criteria, sub-criteria and objectives, together with a description of the appraisal methodology applied for each criterion, is provided in Appendix A. Where there was no potential interaction between individual sub-criteria and route options, these sub-criteria are not referenced in the appraisal tables.
- 4.10. The appraisal for each topic-based criterion included:
 - A professional judgement of the preferred route option by individual sub-criterion, with the objective of avoiding/minimising likely significant effects; and
 - A professional judgement of the preferred route option for the topic-based criterion overall, based on the balance of all sub-criteria for that topic.
- 4.11. The environmental appraisal findings are set out in Appendix B and supported by Figures 4.3 to 4.7 which show the environmental

constraints as separate technical topics against the six route options.

Table 4.1: Summary of route option appraisal criteria and sub-criteria

Criterion	Sub-criterion	Figure
Approximate Length of Route Option	N/A	N/A
Biodiversity	<ul style="list-style-type: none"> • Special Areas of Conservation (SAC) • Sites of Special Scientific Interest (SSSI) • Local Nature Reserves • Wildlife Reserves managed by the Radnorshire Wildlife Trust • Local Wildlife Sites (LWS)/Sites of Importance for Nature Conservation (SINC)/Designated Road Verges (note that different authorities use a range of different names for these features) • Environment (Wales) Act 2016 Priority Habitats 	Figure 4.3
Landscape Sensitivity and Visual Amenity	<ul style="list-style-type: none"> • LANDMAP areas with 'outstanding' or 'high' evaluations • Powys Landscape Character Areas • Analysis of Landscape Character¹² • Visual amenity from residential properties (Residential Visual Amenity) • Views from tourism and recreation sites and routes (including promoted viewpoints, cycle routes, PRowS and tourist attractions) • Visual amenity from transport routes i.e. public roads (including roads used by tourists) and railways 	Figure 4.4

¹² Since completion of the routeing and appraisal work, the Powys Landscape Character Assessment (2022) has been published by Powys County Council. This document provides updated evidence relating to landscape character, but does not supersede the site-specific analysis of landscape character undertaken to inform the routeing and appraisal.

Criterion	Sub-criterion	Figure
Historic Environment	<ul style="list-style-type: none"> • Scheduled Monuments (SM) • Listed Buildings (Grades I, II*, II) • Non-designated historic assets including archaeological remains, structures and historic landscape areas/components 	Figure 4.5
Forestry and Woodland	<ul style="list-style-type: none"> • Ancient Woodland Inventory (AWI) • Commercial conifer and other woodlands as identifies in the National Forestry Inventory (NFI) 	Figure 4.6
Hydrology (including Flood Risk), Hydrogeology and Geology	<ul style="list-style-type: none"> • Flood risk zones • Waterbodies/watercourses • Peat • SSSI (with geodiversity features) • Geological Conservation Review Sites (GCRs) • Restored opencast mining sites/mining spoil heaps • Mine entries • Private Water Supplies (PWS) 	Figure 4.7
Land Use	<ul style="list-style-type: none"> • Infrastructure (existing OHL infrastructure, existing gas infrastructure, existing road (A roads and trunk roads), rail infrastructure and existing, consented or proposed wind energy developments) • Committed Development (Consented and Undetermined¹³ Planning Applications) • Local Development Plan (LDP) Allocations • Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a) • Common Land 	Figure 4.8

¹³ Undetermined planning applications are those which have been validated, i.e. are 'live' applications, but have not yet been decided.

Determining the Overall Preferred Route Option

4.12. The final stage in the environmental appraisal of route options was identification of a '*preferred route option*' in environmental terms.

4.13. The decision-making process concerning the overall route preference involved making a professional judgement concerning the preferred route option in cases where preferences by topic-based criterion differed. This involved the consideration of the following questions:

- **Can constraints be avoided through spanning or mitigated through detailed wood pole siting?** Whether constraints and associated significant effects can be avoided or reduced during wood pole siting, or if effects in relation to these constraints could potentially be mitigated. Considerations such as the scale over which unavoidable effects might occur were also taken into account. For example, landscape and visual effects may be experienced over large geographical scales and affect large numbers of people, and often cannot be avoided through wood pole siting. Considerations of this kind needed to be balanced, where appropriate, against the protection given to various environmental features in principle via policy (for example ancient woodland).
- **What is the degree of preference for each environmental topic between each of the different route options?** Consideration was needed of the degree of preference between different route options, as reflected in the appraisal text and whether any of the preferences were marginal.
- **If unavoidable, which environmental constraint would be impacted most?** Where conflicts could not be addressed via avoidance of constraint or other mitigation, the weighting and balancing of differing preferences were undertaken on the basis of professional judgement.
- **Would avoiding one criterion impact another criterion?** Where the avoidance of one criterion might lead to impacting other criteria (and therefore the one criterion could not in fact be avoided in practice at the detailed routeing stage) professional judgement was used. This might include locations, for example, where avoiding an area of ancient woodland would involve encroaching on an area of peat. If conflicts of this kind were identified, a professional judgement was applied concerning the relative weight to be given to the differing constraints involved. This included consideration of the possibility of mitigating environmental effects by other means than avoiding the constraint through wood pole siting.

- 4.14. Professional judgements were informed by a workshop, allowing further clarification of the degree of preference between different route options and its basis, and the prospect of mitigating potential impacts via detailed design (including where conflicting constraints were present).
- 4.15. Whilst appraisals for individual criteria contained quantitative elements e.g. hectarage of a constraint present within the route option, the overall approach to decision-making concerning the route preference on environmental grounds was qualitative and based on professional judgement.

Technical Review

- 4.16. A technical review of the route options was also undertaken by Green GEN Cymru. Further information on this technical review is detailed in paragraph 5.12 below and in Appendix C.

Chapter 5: Route Options Appraisal Findings

Identification of a Preferred Route

- 5.1. The environmental appraisal table for the Bryn Gilwern six route options (as shown in Figure 4.1) is presented in Appendix B with all the environmental constraints for each of the six route options shown on Figure 4.2. This includes an environmental-led summary of the overall conclusions on emerging route preference. Figures 4.3 to 4.7 show the route options in relation to key environmental constraints, set out by environmental topic, that were taken into account during the environmental appraisal.
- 5.2. A technical appraisal table for the Bryn Gilwern six route options is presented in Appendix C.
- 5.3. A summary of the emerging route preference and key judgements reflecting the balancing and decision making made using professional judgement that informed this preference is provided below.

Environmental Appraisal

- 5.4. Route Option 2 is the shortest route option.
- 5.5. Route Options 4 and 6 are preferred from a biodiversity perspective as they have the potential to interact with the smallest area of Priority Habitat (see Figure 4.3). However, whilst Route Option 2 crosses Priority Habitats, these could be avoided/spanned at the detailed alignment stage.
- 5.6. Route Option 2 is the preferred route option in relation to the landscape and visual criteria (see Figure 4.4), as it avoids Castle Bank, avoids paralleling with the Towy Usk proposals, is located furthest away from residential receptors and avoids the most vegetation (landscape features).
- 5.7. Route Options 5 and 6 is preferred on cultural heritage grounds (see Figure 4.5), as they have fewest interactions with designated and non-designated assets which could lead to harm.
- 5.8. Route Options 2 and 3 are the preferred route options in relation to forestry and woodland (see Figure 4.6) as the route options have no Ancient Woodland and National Forest within them.
- 5.9. Route Options 5 and 6 are the preferred route options in relation to land use, due to there being the smallest amount of common land within the Route Options.

- 5.10. Route Option 2 is the preferred route option in relation to flood risk (see Figure 4.7) as the Route Option provides the best opportunity to avoid siting wood poles in flood risk zones and passes through one PWS buffer.
- 5.11. On balance, from the environmental appraisal (see Figure 4.2 for all the constraints against the six route options), Route Option 2 is preferred as it is the shortest Route Option, likely to have the least impact on the landscape and visual amenity, avoid impacts on forestry, woodland, and Flood Risk. However, effects on the setting of the Castle Bank Hillfort, Court Stone Row and its interrelated Court Standing Stone (SMs), and minimising effects on common land will form a key consideration at the detailed alignment stage.

Technical Review

- 5.12. A high-level technical appraisal of the six route options was undertaken, and the findings provided in Appendix C. In summary, the conclusion of this appraisal is that all route options appear viable from an engineering perspective, from a high-level desk based assessment only, and that there is no clear engineering preference.

Confirmation of the Preferred Route Option

- 5.13. In conclusion, the overall route preference is Route Option 2 (see Figures 5.1 and 5.2) as it would result in the least impact on the environment and is considered technically viable.
- 5.14. An initial wood pole OHL alignment has been developed for preferred Route Option 2 which is shown in Figure 5.3. This has been based on a desk-based assessment only and further site survey assessment work (including detailed ground survey) will need to inform the final wood pole positions. Furthermore, the refinement of the proposed switching station location and layout as part of the Towy Usk Grid Connection will also inform the wood pole siting of the Bryn Gilwern Grid Connection alignment. Therefore, this is indicative at this stage and subject to change following surveys and the consideration of consultation feedback, and the finalisation of the switching station location.

Chapter 6: Consultation Process and Next Steps

The Consultation Process

The Consultation Strategy

- 6.1. Planning and Environment Decisions Wales ('PEDW') has set out its expectations for public consultation and engagement on infrastructure projects in its document Pre-Application Community Consultation: Best Practice Guidance for Developers (December 2021)¹⁴, in which Section 3.1 states *"The challenge is for a developer to consult widely and clearly to capture a balanced and informed response. When executed well, engagement should increase the level of transparency, develop relationships, and shape the project by considering and responding to feedback"*.
- 6.2. As a company based in Wales, and investing in Wales, Green GEN Cymru attaches great importance to the effect that its work may have on the environment and local communities in Wales. Green GEN Cymru is committed to providing clear and up-to-date information on its proposals and listening to local people and consulting them at each stage where their views can help to shape Green GEN Cymru's proposals before a consent application is submitted.
- 6.3. Green GEN Cymru recognises that finding a route for the Bryn Gilwern Grid Connection is a complex process, and its consultation strategy goes beyond the PEDW good practice guidance to ensure that local people have the opportunity to comment at each stage of the routeing process. Therefore, two rounds of pre-application consultation will be carried out, as follows:
 - Stage One: Non-statutory public consultation on the preferred route for the Bryn Gilwern Grid Connection, during Autumn 2024.
 - Stage Two: Statutory public consultation on the proposed DNS application for the Bryn Gilwern Grid Connection, including proposed wood pole locations, temporary access routes, working areas, and construction works expected in Autumn 2026.
- 6.4. Following submission of the consent application, PEDW will carry out further statutory consultation with the public and stakeholders before making any decisions on the plans.

¹⁴ Welsh Government (2021) Pre-application Community Consultation: Best Practice Guidance for Developers: <https://www.gov.wales/sites/default/files/publications/2021-12/planning-major-developments-guidance-on-pre-application-consultation.pdf>

- 6.5. The overall objective of the consultation process is to ensure that all parties with an interest in the project have access to up-to-date information and are given clear and easy ways in which to comment, so they can help to shape and inform Green GEN Cymru's proposals at the pre-application stage.
- 6.6. The key issues identified through the pre-Scoping consultation process will be recorded and presented to decision makers in the Consultation Report to be submitted with the DNS application.
- 6.7. To ensure that all residents and stakeholders potentially affected by the proposals are consulted, Green GEN Cymru has defined a consultation zone. In considering the consultation zone for the Bryn Gilwern Grid Connection, Green GEN Cymru has also taken into account its proposed Aberedw Grid Connection as both will connect to the local network at the same location.
- 6.8. These are two separate projects, requiring individual applications to PEDW, but they are being consulted on together due to their shared connection point.
- 6.9. To ensure that all residents and stakeholders potentially affected by the proposed connections are consulted, a combined consultation zone has been defined. The consultation zone includes all residential and business addresses within 100 metres of the preferred routing corridors and extends up to 3 kilometres on either side of the outermost route options for both projects.
- 6.10. Where the boundary of the zone may bisect a community, it will be extended to include the whole settlement. However, any member of the public (whether living within or outside the consultation zone) is welcome to participate in the consultation, attend an event, or provide feedback through any of the channels outlined within this document.
- 6.11. The consultation will include the following broad groups:
 - Statutory and non-statutory consultees, including PEDW, community councils, Natural Resources Wales (NRW), Cadw, archaeological trusts and local planning authority (Powys County Council);
 - Approximately 750 homes and businesses in the combined consultation zone;
 - Known local interest and community groups operating in the area affected by the proposals;
 - Elected members of Powys County Council, Members of the Senedd (MSs) and Members of Parliament (MPs) whose constituencies are within the consultation zone; and
 - The public in general.

6.12. Green GEN Cymru will also consult fully with affected landowners and occupiers, who will have an ongoing opportunity to comment on proposals as they progress.

6.13. Details of the consultation process are set out below.

Consultation Dates and Duration

6.14. The consultation will run for six weeks, from Wednesday 11 September to Wednesday 23 October 2024.

6.15. Prior to the start of consultation, adverts will appear in local weekly newspapers promoting the consultation events and explaining where to find information and how to take part. A news release will be issued to local media announcing the impending start of the consultation. Information leaflets explaining the project and the consultation will be posted to homes, businesses, and known local interest and community groups within the local area making them aware of the start of the consultation and inviting them to take part. Other stakeholder groups will also be contacted directly, informed and invited to take part.

6.16. The closing date for sending responses to Green GEN Cymru will be Wednesday 23 October 2024.

6.17. Following this date, the information will remain accessible online on the project website and available to download from www.greengenbryngilwern.com.

The Focus of the First Round of Consultation

6.18. This report presents the outcome of the routeing stage of the Bryn Gilwern Grid Connection, resulting in the identification of a preferred route.

6.19. The focus of the first round of consultation will be to invite people to provide their views on:

- The preferred route and indicative wood pole positions;
- Any of the alternative route options considered during the appraisal process; and
- Any other issues, suggestions or feedback; particularly views on the local area (for example, areas used for recreation, local environmental features, and any plans to build along the OHL route).

Sources of Information about the Consultation

Project Website

6.20. The project website will be accessible via the following link and will contain publicly available consultation documents available for

viewing or download, and an online feedback form. The feedback form will be available from Wednesday 11 September until the deadline for receipt of feedback at 11.59 on Wednesday 23 October 2024.

- www.greenengbryngilwern.com

Project Leaflet

6.21. The project leaflet will be mailed to every home and business in the consultation zone (within 3km of the outermost route option). It will include details of the scheme, the consultation process, how to find out more and how to submit comments by feedback form, website, post or email, and by when.

How People can make Comments

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

- In person at a consultation event;
- Online, using the feedback form on the website www.greenengbryngilwern.com;
- By post, using a paper feedback form, or by letter to FREEPOST GREEN GEN BRYN GILWERN;
- By email to the project email address info@greenengbryngilwern.com; or
- By phone to the project contact centre Freephone number 0800 0129 884.

In Person

6.23. Green GEN Cymru will hold three public consultation exhibitions within the local area where people can view project maps and documents, talk to members of the project team and pick up a feedback form and FREEPOST envelopes. Locations have been chosen so that people within the consultation zone are only a short distance from their nearest exhibition by car or public transport. The dates and venues are listed in full in the project leaflet and on the website. The format will be an afternoon/evening drop-in.

6.24. The exhibitions will be held at the following locations at the dates and times stated:

- Thursday 26 September 2024, 2pm to 7pm: Howey Village Hall.
- Friday 27 September 2024, 2pm to 7pm: Hundred House Village Hall.
- Saturday 28 September 2024, 10.30am to 3.30pm: Aberedw Church Hall.

Online

6.25. People will be able to make comments online at www.greenengbryngilwern.com using an interactive online version of the feedback form, which will be available until 11.59 on Wednesday 23 October 2024.

By Post

6.26. A hard-copy feedback form will be available at public exhibitions, for download from the website, by request to the project contact centre on 0800 0129 884 or by email to info@greengenbryngilwern.com.

6.27. Completed forms must be returned to FREEPOST GREEN GEN BRYN GILWERN by 11.59 on Wednesday 23 October 2024.

By Email

6.28. Green GEN Cymru will also accept consultation responses by e-mail to info@greengenbryngilwern.com by 11.59 on Wednesday 23 October 2024.

By Phone

6.29. Green GEN Cymru prefers to receive comments in writing as this helps avoid the risk of misinterpretation. However, where no other means are available, people can comment via phone call free on 0800 0129 884. The project contact centre is open Monday to Friday (except bank holidays) between the hours of 9am and 5.30pm. There is a voicemail facility outside of these hours where people can leave messages.

After the Consultation

6.30. The responses received in the first round of consultation will be evaluated by Green GEN Cymru and reported back in the form of a Consultation Summary Report. Although Green GEN Cymru may not be able to respond to all individual comments, people will be able to request to be informed by email as and when there are project developments, such as the availability of the Consultation Summary Report.

6.31. People interested in being kept informed in this way can register on the website or send their email address to info@greengenbryngilwern.com.

Next Steps: Route Alignment and EIA Screening/Scoping

6.32. The responses received from the consultation process will be considered in combination with the findings of the environmental and technical work undertaken to date the findings of various

environmental and technical surveys following their completion, as well as feedback from landowners. Green GEN will revise the alignment, resulting in a 'proposed' alignment that will be progressed to the next stage in the development process.

- 6.33. The wood pole locations will be revised through the design process as further environmental, technical and landowner information becomes available and the alignment, including all ancillary development will be included in the application to PEDW for planning permission.
- 6.34. Green GEN Cymru intends to consult fully with affected landowners and occupiers on all aspects of the Bryn Gilwern Connection project and will give them opportunity to comment on the proposals as they progress. This will include the statutory consultation on the alignment.

Appendix A: Routeing Methodology

Table A.1: Routeing methodology

Criterion	Sub-criteria	Objectives	Methodology
Length of Route Option	N/A	<ul style="list-style-type: none"> To choose the shortest and most direct route. 	<p>Holford Rule 3 states "other things being equal, choose the most direct line". Although this rule primarily relates to avoiding sharp changes in direction, and therefore the need for more visually intrusive angle towers, choosing the most direct route may result in fewer adverse effects than a longer, less direct route (taking due consideration of other constraints). The length of the centre line of each route option is calculated using Geographical Information Systems (GIS).</p>
Biodiversity	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI) Local Nature Reserves Wildlife Reserves managed by Radnorshire Wildlife Trust Environment (Wales) Act 2016 Priority Habitats Local Wildlife Sites/Sites of Nature Conservation Importance/Designated Road Verges 	<ul style="list-style-type: none"> To seek to avoid/minimise, as far as practical, effects on the qualifying features of designated sites of ecological and ornithological conservation importance and priority habitats. 	<p>Physical effects on designated sites and priority habitats are identified based on the size/location of the designated sites/habitats within or overlapping the route option, reflecting the potential to avoid locating the towers supporting the overhead line (OHL) within the designated site at the detailed design stage. Where a site cannot be avoided due to its size or geographic location, the general preference is to route through the larger site as this is likely to be able to accommodate an OHL more readily than a smaller site (due to the smaller proportion of the overall site area that the OHL would affect). The qualifying features of the site and the nature of any potential effects on these qualifying features are also considered when determining preference.</p> <p>The appraisal considers the distance of the route options to ecological designations and their qualifying features and identifies a route preference taking into account distance from the designated areas. Where possible, the connectivity and pathways for impact (e.g. via watercourse or functionally-linked habitat) are also considered with the routes, with the lowest potential for pathway-related effects on designations being preferred. Where designated sites with non-avian qualifying species are located within 1km of a route option, these are considered within the appraisal. The habitats and species within the designation are considered, as well as any functional ecological connectivity to the route option and the likelihood of effects on the species' metapopulations within and beyond the boundaries of the designated sites.</p> <p>Local Nature Reserves and Wildlife Reserves managed by Radnorshire Wildlife Trust are considered within 1km of the route options. Powys County Council has designated LWS/SINCs.</p> <p>An ornithological 'trigger for consideration' zone of 2km is applied around designations for which birds are a qualifying feature including Colwyn Brook Marshes North and South SSSI, River Wye/Afon Gwy SAC & SSSI) . This 2km zone is used to select designations to consider within the appraisal with respect to ornithology. A 2km zone is applied because bird species that are qualifying features of designated sites are likely to be reliant on habitats adjacent to, but outside the designated site boundaries: for example, for foraging, and in some cases for nesting. Hence, the presence of a route within a 2km 'trigger for consideration' zone may present a risk of disturbance and collision for individuals of these species, and the risk is considered to be proportionate to the length of the route which intersects with the 2km zone. The appraisal states the length of route which intersects with the 'trigger for consideration zone' and considers whether this zone</p>

Criterion	Sub-criteria	Objectives	Methodology
			<p>can be avoided during the alignment stage and/or whether suitable mitigation can be implemented during construction.</p> <p>Priority Habitats, listed under the Environment (Wales) Act 2016, Section 7 (Habitats of Principal Importance for the Purpose of Maintaining and Enhancing Biodiversity in Relation to Wales), are considered within 1km of the route option. It is recognised that the Priority Habitat data available from NRW is incomplete and mapped at a range of scales and resolutions; therefore, the data set is not considered a full and comprehensive source of Priority Habitat data. As far as possible, hydrology and forestry data sets are reviewed as they indicate the presence of Priority Habitats such as peat, open water and woodland. The appraisal considers the level of sensitivity of the Priority Habitat, the species this habitat is likely to support, and its distance from/degree of overlap with the route option. Ancient Woodland would also be considered within this category.</p> <p>Other species such as breeding Schedule 1 birds (outwith the boundaries of designated sites), European Protected Species (such as otters) and other nationally protected species (such as water vole and badger) will be considered during the detailed alignment and subsequent appraisal/assessment stage, informed by the findings of field surveys.</p> <p>The absence of an ecological feature from the datasets cannot be taken to represent actual absence. Habitat distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.</p>
Landscape Sensitivity and Visual Amenity	<ul style="list-style-type: none"> • LANDMAP areas with 'outstanding' or 'high' evaluations • Powys Landscape Character Areas • Analysis of landscape character • Visual amenity from residential properties (Residential Visual Amenity) • Views from tourism and recreation sites and routes (including promoted viewpoints, cycle routes, Public Rights of Way (PRoW), and tourist attractions) • Visual amenity from transport routes i.e. public 	<ul style="list-style-type: none"> • To seek a positive fit between the OHL and the receiving landscape, informed by landscape character, and assessment of landscape and visual sensitivity and value. • Avoidance/minimisation, as far as practicable, of potential effects on views from residential receptors. • Avoidance/minimisation, as far as practicable, of potential effects on sensitive views from roads, cycle routes, PRoW, informal recreational areas and tourism features. 	<p>A study area of 1km has been applied for the Landscape Sensitivity and Visual Amenity Assessment.</p> <p>LANDMAP areas with overall 'outstanding' or 'high' evaluation are considered areas of relative higher landscape value. The length of each route within these areas is calculated using GIS and routes that minimise the length of OHL within such areas are favoured.</p> <p>Reflecting Holford Rules 4, 5 and 6, the appraisal considers aspects of landscape character including landform and the pattern or 'grain' of the landscape (e.g. in terms of topography or field boundaries). In all areas, routing should seek a positive fit between the type and scale of OHL and the receiving landscape character. Routes with a positive landscape fit are likely to give rise to fewer and less widespread effects on landscape character. Routes with a poorer landscape fit, for example running along ridge lines, or cutting across valleys, are likely to have greater effects on landscape character.</p> <p>Residential dwellings are mapped, and 150m buffers on these applied as a 'trigger for consideration' for residential visual amenity. Potential effects on residential visual amenity are considered with regard to locations where these buffers would overlap with each route option. Particular consideration is given to higher concentrations of residential receptors close to route options that may result in pinch points. The implications for principal views from individual properties are considered at these pinch points, informed by aerial photography and field work.</p>

Criterion	Sub-criteria	Objectives	Methodology
	roads (including roads used by tourists) and railways		<p>Approved and validated planning applications for residential dwellings which are not yet constructed are considered where they are within 150m of the route option, in which respect they are considered in the identification of pinch points.</p> <p>PRoW and long-distance walking routes are identified from Ordnance Survey maps and GIS datasets. Outdoor tourist attractions and promoted viewpoints are identified from Ordnance Survey maps, fieldwork and tourist information. Transport routes are identified from Ordnance Survey maps. The potential for effects on visual amenity of users of these features is considered in relation to professional judgements about the likely sensitivity of receptors, observations made during fieldwork and the type and scale of the proposed OHL.</p>
Historic Environment	<ul style="list-style-type: none"> Scheduled Monuments (SM) Listed Buildings (Grades I, II*, II) Non-designated historic assets including archaeological remains, structures and historic landscape areas/components 	<ul style="list-style-type: none"> To seek to avoid/minimise, as far as practical, direct physical change on designated features of historic environment interest ('historic assets') or change in their settings which would harm their significance or perception. 	<p>Legislation, policy and guidance seeks the preservation¹ of historic assets and the routeing appraisal therefore focuses on the ways in which harm could arise to assets via:</p> <ul style="list-style-type: none"> Direct physical change²; Change in the setting of assets which affects their heritage significance³; and Change in the setting of assets which affects how the asset and its heritage significance is appreciated⁴. <p>Powys County Council does not appear to maintain a local list of historic assets⁵ and so no locally listed buildings are known within or up to 3km from the route options. Locally listed buildings are therefore not included as a sub-criterion within the appraisal.</p> <p>The methodology for assessing potential direct physical effects comprises identifying the number, extent and nature of historic assets within the route option (designated historic assets⁶ and Historic Environment Record (HER) entries likely to constitute historic assets⁷ (hereafter referred to as non-designated historic assets)). These are then noted in relation to the opportunity, or otherwise, for avoiding direct effects at the detailed routeing stage.</p> <p>Potential effects of the OHL arising from how it may change the setting of historic assets are assessed by initially identifying assets within 3km of the route options. These are then reviewed to indicate those likely to be subject to effects related to setting change which lie within 1km of the route (the distance within which potentially significant effects are considered likely to occur). Further</p>

¹ Generally held, as a result of legal precedent, as meaning "to do no harm", i.e. an asset could change but if this change is not harmful then it would be understood as having been preserved.

² For example, this could include change to the key characteristics of a designated asset such as a registered historic park and garden.

³ For example, this could include blocking the line of sight from a defensive asset and a topographic feature it was sited to observe/control (e.g. from a medieval castle to the river crossing it policed).

⁴ For example, this could include placing infrastructure in a location which affects appreciation of an asset (e.g. a tower being visible on a hillside when the principal elevation of a listed building is seen from its approach road/drive).

⁵ Checks of PCC and CCC websites yielded no information on local lists. The CPAT and DAT HER data was reviewed and no values were identified in their record's 'status' field which flagged entries as locally listed.

⁶ i.e. World Heritage Sites (WHS), Scheduled Monuments (SM), Listed Buildings (LB), Conservation Areas (CA), Registered Historic Parks and Gardens (RHPG) and Registered Historic Landscapes (RHL).

⁷ Entries in HERs do not necessarily constitute historic assets for the purposes of planning and environmental assessment. It is therefore necessary for appropriately qualified and experienced professionals to undertake a sift of HER data to exclude, inter alia, find-spots, archaeological events (location of excavations, watching briefs etc.), assets previously lost/destroyed, records with insufficient spatial resolution, and other records not relevant to the purpose in hand.

Criterion	Sub-criteria	Objectives	Methodology
			<p>assessment/appraisal will use a Core Study Area of 1km from the route/alignment for all assets, and the wider study area of 3km will be used to identify any additional designated historic assets where views and vistas play a key part in their significance.</p> <p>With some exceptions, consideration is not given to effects related to setting change for non-designated assets at this stage. The non-designated assets where effects associated with setting change are considered are due to those assets forming part of a related system with a designated asset and where the proposed OHL may affect how these relationships can be understood (e.g. Roman fort SM and associated non-designated sections of Roman road).</p>
Forestry and Woodland	<ul style="list-style-type: none"> • Ancient Woodland Inventory (AWI) • Commercial conifer and other woodlands as identified in the National Forestry Inventory (NFI) 	<ul style="list-style-type: none"> • Avoid/minimise, as far as practical, effects on woodland/forest, and particularly areas of ancient woodland. 	<p>Forest and woodland areas within each of the route options are identified through the use of aerial photography, combined with digital data available from Natural Resources Wales (NRW) and the Forestry Commission.</p> <p>Forests and woodland are then divided into two broad groupings:</p> <ul style="list-style-type: none"> • 1. Ancient Woodland (AW), which the Ancient Woodland Inventory (AWI) places into four sub-categories: <ul style="list-style-type: none"> ○ Ancient Semi-Natural Woodland (ASNW); ○ Plantation on Ancient Woodland Sites (PAWS); ○ Restored Ancient Woodland Sites (RAWS); and ○ Ancient Woodland Site of Unknown Category (AWSU). • 2. Commercial conifer and other woodlands, which the National Forestry Inventory (NFI) places into the following categories: <ul style="list-style-type: none"> ○ Broadleaved; ○ Young trees; ○ Shrub; ○ Mixed mainly broadleaved; ○ Assumed woodland; ○ Conifer; ○ Mixed mainly conifer; and ○ Other (undefined conifer or broadleaved woodland). <p>It is recognised that there is often overlap between woodland types 1 and 2. Where such overlap occurred, the appraisal identifies the woodland as AWI and its sub-categories where applicable, with NFI categories used to identify woodland type for both AWI and non-AWI woodlands.</p> <p>Appraisal against the forestry and woodland topic includes analysis of the extent and location of each forest and woodland type within the route options to identify areas. A GIS-based calculation is run to identify the total area (hectares (ha)) of</p>

Criterion	Sub-criteria	Objectives	Methodology
			<p>woodland, of each forestry category listed above, present within each route option. As ancient woodland areas are included in the NFI, the total area of 'other' (non-ancient) woodland is calculated by subtracting the total AWI area from the total NFI area. Although the AWI and NFI datasets do not always precisely align in individual cases (it is possible for areas contained within the AWI to not feature in the NFI). Visual inspection indicates that the datasets are sufficiently aligned across the route options for the purposes of route option appraisal using this calculation method.</p> <p>In general terms, the objective in identifying a preferred route option is minimisation of loss of all types of forest and woodland. This reflects the importance of the local resource of all woodland types and as such, the implications of the proposed removal of these types of woodland within the wayleave (area of woodland felled to accommodate the OHL). However, the method of appraisal of route options seeks to avoid/minimise, as far as practical, the effects particularly on areas of ancient woodland, due to the value of this resource as reflected in Welsh national policy and guidance. In addition, for the identified AWI areas, consideration is given to whether this woodland type is currently commercial forestry planted on an ancient woodland site, rather than native woodland species.</p> <p>The GIS mapping is used to support commentary in the appraisal table as to whether woodland of different types can potentially be avoided through detailed design or whether it cannot e.g. if it spans the entire width of the route option, with observations being made concerning the implications of this. Due to the often scattered and broken nature of natural forests and woodland, for example, there is frequently the opportunity to avoid areas through careful consideration of the route alignment.</p> <p>Based on the above, a judgement is made as to which route option is preferred.</p> <p>Consideration will also be given to minimising impacts on forestry and woodland at the stage of detailed route alignment design, taking account of the need to create long term stable forest edges and to minimise impacts on any forestry and woodland management practices. During the alignment/EIA stage, consideration will be given to all forest and woodland types through:</p> <ul style="list-style-type: none"> • Taking account of existing, and planned, windfirm boundaries to minimise sterilisation of commercial forestry and woodland areas and reduce the requirements for additional felling outwith the wayleave; • Taking account of forest design plans and liaising with forestry owners/managers to avoid, or reduce restrictions on, forest management operations/techniques e.g. maintaining access to woodland blocks for harvesting/safety; and • Identification of opportunities to retain and/or plant particularly lower growing shrub species within the wayleave.
Hydrology (including Flood Risk),	<ul style="list-style-type: none"> • Flood risk zones • Waterbodies/watercourses 	<ul style="list-style-type: none"> • To cross flood zones at their narrowest point to minimise locating 	The sub-criteria within this topic would be categorised as either 'Category A' or 'Category B' development constraints. Category A constraints are those which the route options should avoid if possible; Category B constraints are those for which,

Criterion	Sub-criteria	Objectives	Methodology
Hydrogeology and Geology	<ul style="list-style-type: none"> • Peat • SSSI (with geodiversity features) • Geological Conservation Review Sites (GCRs) • Restored opencast mining sites/mining spoil heaps • Mine entries • Private Water Supplies (PWS) 	<p>infrastructure within flood zones where possible. Only high and medium flood risk zones would be considered in this respect as, based on the proposed development type, the OHL poles would be deemed to be Essential Infrastructure and therefore permissible in all flood zones, but subject to an exception test in high risk areas.</p> <ul style="list-style-type: none"> • To avoid locating infrastructure within watercourses and waterbodies. • To seek to avoid/minimise loss of peatlands in accordance with Welsh Planning and other Policy and using available resources such as the National Peatlands Action Programme. • To seek to avoid, as far as practical, effects on areas with highest amenity value, i.e. SSSIs and GCRs (Category A constraints). • To seek to avoid, as far as is practical, other features that may adversely affect OHL construction, i.e. areas of peat, private water supplies, restored opencast mining sites/mining spoil heaps and min entries (Category A constraints). 	<p>subject to suitable mitigation and design, inclusion of the constraint within the route would potentially be acceptable.</p> <p>Category A constraints are:</p> <ul style="list-style-type: none"> • Areas with highest amenity value (Holford Rule 1): <ul style="list-style-type: none"> ○ Sites of Special Scientific Interest (with geodiversity features). • Other sites/areas: <ul style="list-style-type: none"> ○ Peat deposits; ○ Restored opencast mining sites/mining spoil heaps; ○ Mine entries; and ○ Private Water Supplies (if route option with 250m). <p>There are no Category B constraints within the study area.</p> <ul style="list-style-type: none"> • Other sites/areas: <ul style="list-style-type: none"> ○ Flood risk – high and medium. <p>The category that sub-criteria fall into is then taken into account when applying professional judgement regarding the preference, and degree of preference, between route options.</p> <p>GIS is used in each case to identify the location of each constraint with respect to the route option; the length and/or area of intersection of the constraint with the route option. Professional judgement is applied to identify the possibility of avoiding effects upon the constraint via detailed design; and, where the constraint would be unavoidable, the severity of potential effects upon it, taking into account mitigation.</p> <p>It should be noted that, due to the lack of data available from Powys Council, safeguarded and active mineral sites are largely identified using a combination of 'flying' the route options using aerial imagery. BGS data and, where possible, the use of planning information for active sites are used to identify the presence of materials suitable for safeguarding. Therefore, it is acknowledged that a degree of uncertainty must necessarily attach to the appraisal in this respect.</p>
Land Use	<ul style="list-style-type: none"> • Infrastructure (existing OHL transmission and 	<ul style="list-style-type: none"> • Avoid existing, consented or proposed (with a valid 	<p>The land use appraisal identifies potential conflicts between the route options and existing and future, i.e. planned or consented but not yet constructed, land uses.</p>

Criterion	Sub-criteria	Objectives	Methodology
	<p>distribution infrastructure and existing road (A roads and trunk roads), existing, consented or proposed wind energy developments)</p> <ul style="list-style-type: none"> • Committed Development (Consented and Undetermined⁸ Planning Applications) • Local Development Plan (LDP) Allocations • Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a) • Common Land 	<p>planning application) wind energy developments due to the potential for line interactions with the wind turbines.</p> <ul style="list-style-type: none"> • Avoid/minimise, as far as practical, the crossings of or encroachment on infrastructure (including any 66kV and 33kV OHLs, and 'A'/trunk roads). • Avoid, where possible, land use conflict with committed development including consented and undetermined planning applications and land allocated within an LDP. 	<p>Potential land use conflicts can occur due to the presence of infrastructure within the route options such as overhead (OHL) transmission and distribution infrastructure and 'A'/trunk roads, as well as due to the presence of land types such as BMV agricultural land. Land which is already allocated for development within the route options, for example, through a Local Development Plan (LDP), and land which is subject to a valid planning application or planning permission, also presents the potential for future land use conflicts. Land of this type is referred to as 'committed development' in the appraisal, although it would be taken into account that the degree of likelihood of future land use conflict varies within this type (e.g. land with a planning consent as against land with a validated planning application that has not yet been determined).</p> <p>Developments consented prior to 2019 are considered either likely not to be constructed (as the consent will likely have expired⁹) or to have already been constructed and therefore captured as existing development within relevant data used to inform the appraisal across all topics. To ensure that all relevant planning permissions are captured in the appraisal, planning applications consented from 2019 onwards are appraised, as it is considered that this cut-off date allowed sufficient time for prior consents to be fully implemented and for the OS basemaps/data/aerial photography to be updated to include them as existing developments. Applications considered within the cut-off period include applications which have received full or outline planning permission; applications for reserved matters associated with outline planning permissions granted prior to the 2019 cut-off date; and applications which have been validated, i.e. are 'live' applications, but not yet determined. To avoid duplication, applications for Non-Material Amendments, Condition Variations, Discharge of Conditions or for Reserved Matters are not referenced in the appraisal where these relate to a planning application which has already been captured under other categories.</p> <p>When appraising the route options, where a committed development is located (fully or partially) within the route option, the implications of this for the detailed routeing/alignment design and/or subsequent environmental assessment stage is highlighted. Both residential and non-residential committed developments are considered within the appraisal: for example, residential dwellings, holiday lets, agricultural buildings, etc. The implications of committed development within 150m of the route options for residential visual amenity is assessed under the Landscape and Visual Amenity topic above. Route options with the lowest number of committed developments present, or where the committed developments can be avoided through detailed design, are preferred.</p> <p>As outlined above, the land use appraisal considers land which is allocated for a specific purpose within the Powys County Council LDP. The appraisal assesses the extent to which areas allocated within the LDP is present within the route options. These areas include residential allocations, employment allocations and</p>

⁸ Undetermined planning applications are those which have been validated, i.e. are 'live' applications, but have not yet been decided.

⁹ Under Section 36 of the Planning (Wales) Act 2015, a planning permission for the development of land in Wales expires after five years from the date on which the permission was granted. Generally, unless the planning permission states otherwise, planning permissions expire three years following the date granted to commence development.

Criterion	Sub-criteria	Objectives	Methodology
			<p>development limits/development boundaries. According to the Powys County Council LDP, a 'development boundary' is a boundary drawn around towns and large villages to control development. Through the Powys LDP's sustainable settlement hierarchy, growth is focussed upon towns and large villages through LDP land allocations and the designation of development boundaries, which are the locations with the greatest range of facilities and services. A judgement will be made as to whether areas allocated under either LDP can or cannot be avoided during the detailed design stage. Route options which avoid or cross fewer allocated areas within the Powys LDP are preferred.</p> <p>The appraisal considers whether existing infrastructure is sited within the route options. Infrastructure appraised include existing OHL transmission and distribution infrastructure, existing roads (A roads and trunk roads), and existing, consented or proposed (with a valid planning application) wind developments. A search will be conducted of Welsh Government¹⁰ and Planning Inspectorate¹¹ sources to identify whether any infrastructure projects present within the route options were subject to a current consent application. The land use appraisal also considers the Agricultural Land Classification (ALC) system which is used to rank land based on its potential productivity and cropping flexibility. This is determined by the extent to which the physical characteristics of the land (soil, climate and relief) impose long term restrictions on its use. Planning policy in Wales defines the BMV agricultural land as Grades 1, 2 and 3a. This is excellent to good quality land with respect to agricultural productivity and is protected as such in national planning policy. These grades of agricultural land are subject to predictive mapping and opportunities to avoid them during the routeing appraisal. The appraisal assesses the area of BMV agricultural land present within each of the route options and the route which avoids the most BMV agricultural land is preferred. Grades 3b, 4 and 5 are described as moderate, poor and very poor quality agricultural land, respectively, and are not treated as a constraint within the assessment.</p> <p>Common land is land for which a party other than the owner has certain rights: for example, to graze livestock. The Countryside and Rights of Way Act 2000 also extends public rights of access to all registered common land in England and Wales. There are additional consenting requirements for developments on common land, over and above the requirement for planning permission, and developers are either required or expected (depending on the development extent) to provide alternative land to compensate for any lost common land. When appraising the route options, areas of common land are mapped and opportunities to avoid, or minimise crossing them during routeing are appraised, with routes avoiding common land being preferred. The total area of common land within each route option is estimated by adding the area of 'Registered Common Land' within each route option with the area of 'Other Statutory Access Land' within each route option according to NRW data.</p>

¹⁰ Welsh Government (undated) Developments of National Significance Applications: <https://planningcasework.service.gov.wales/dnsapplications> and Welsh Government (undated), Current road improvement projects: <https://www.gov.wales/current-road-improvement-projects>

¹¹ The Planning Inspectorate (undated) National Infrastructure Planning – Projects: <https://infrastructure.planninginspectorate.gov.uk/projects/>

Appendix B: Route Options Environmental Appraisal Table

Table B.1: Bryn Gilwern route options appraisal¹

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
Approximate Length of Route	N/A	4.9km	4.7km	5.6km	5.4km	5.7km	5.5km	Route Option 2 is the preferred route as it is the shortest.
Biodiversity and Geological Conservation	Special Area of Conservation (SAC)	<p>Route Options 1, 2 and 3 cross the Afon Gwy/ River Wye SAC near Bryntwppa.</p> <p>The SAC is designated for transition mires and quaking bogs, rivers with floating vegetation, fish species, crayfish and otter.</p> <p>At the crossing point is improved grassland and tree lines. The River is <10m wide with valuable river corridor spanning max 25m wide. The river/SAC can be spanned by the OHL and key considerations for the alignment will be minimising tree and scrub loss, and any loss of habitats suitable for otter.</p>			<p>Route Option 4 crosses the Afon Gwy/ River Wye SAC near Penfforest between P80 and P81 of Towy Usk. The River is <10m wide with valuable river corridor.</p> <p>All considerations for Route Options 1-3 apply to Route Option 4 in terms of river/SAC being spanned by the OHL.</p>	<p>Route Option 5 crosses the Afon Gwy/ River Wye SAC near Bryntwppa at the same point as Route Option 1.</p> <p>As such all considerations for Route Options 1-3 apply to Route Option 5.</p>	<p>Route Option 6 crosses the Afon Gwy/ River Wye SAC near Penfforest between P80 and P81 of Towy Usk at the same point as Route Option 4.</p> <p>As such all considerations for Route Options 1-4 apply to Route Option 6.</p>	<p>There is a slight preference for Route Options 1, 2, 3 and 5, due to the lower value of the surrounding improved grassland, and likely reduced tree removal required.</p> <p>However, all Route Options are likely to be able to avoid direct impacts to the SAC, through oversailing and spanning at the detailed pole siting stage.</p>
	Site of Special Scientific Interest (SSSI)	<p>Route Option 1 crosses the Afon Gwy/ River Wye SSSI near Bryntwppa. The SSSI is designated for aquatic plants, fish, crayfish and otter. Impact consideration as above, avoiding riparian zone works for otter,</p>	<p>Route Option 2 crosses the Afon Gwy/ River Wye SSSI near Bryntwppa at the same point as Route Option 1. As such all considerations for Route Option 1 apply to Route Option 2.</p>	<p>Route Option 3 crosses the Afon Gwy/ River Wye SSSI near Bryntwppa at the same point as Route Option 1. As such all considerations for Route Option 1 apply to Route Option 3.</p>	<p>Route Option 4 crosses the Afon Gwy/ River Wye SSSI near Penfforest between P80 and P81 of Towy Usk. Impact consideration as above, avoiding riparian zone works for otter,</p>	<p>Route Option 5 crosses the Afon Gwy/ River Wye SSSI near Bryntwppa at the same point as Route Option 1. As such all considerations for Route Option 1 apply to Route Option 5.</p>	<p>Route Option 6 crosses the Afon Gwy/ River Wye SSSI near Penfforest between P80 and P81 of Towy Usk at the same point as Route Option 4. As such all considerations for Route Option 1 apply to Route Option 6.</p>	<p>On the basis that detailed pole siting will ensure Route Options 1, 2, 3 and 5 pass to the west of Colwyn Brook Marshes South SSSI without impact, there is no preference between all six route options in</p>

¹ Distances have been rounded to the nearest 5.

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>and scrub and tree removal.</p> <p>Route Option 1 passes just west (immediately adjacent) of Colwyn Brook Marshes South SSSI. The SSSI is designated for swamp fen meadow and damp grassland as well as otter and scarce invertebrate species.</p> <p>Route Option 1 is 490m east of Colwyn Brook Marshes North SSSI.</p> <p>Route Option 1 is 420m west of New Castle Meadows SSSI, designated for species-rich pasture and hay meadow: route passes over (oversails) stream that feeds the SSSI – no connectivity issue.</p>	<p>Route Option 2 passes just west (immediately adjacent) of Colwyn Brook Marshes South SSSI.</p> <p>Route Option 2 is 250m west of New Castle Meadows SSSI (no functional link).</p>	<p>Route Option 3 passes just west (immediately adjacent) of Colwyn Brook Marshes South SSSI.</p> <p>Route Option 3 is 30m northeast of New Castle Meadows SSSI, separated by heathland, scrub and a local road (no functional link).</p> <p>Route Option 3 is 350m west of Banc Hirllwyn SSSI.</p>	<p>and scrub and tree removal.</p> <p>Route Option 4 is 150m south of Colwyn Brook Marshes South SSSI, separated by agricultural fields, tree lines and the A481.</p> <p>Route Option 4 is 30m north-east of New Castle Meadows SSSI, separated by heathland, scrub and a local road (no functional link).</p> <p>Route Option 4 is 20m east of Banc Hirllwyn SSSI and functionally connected through existing tree lines.</p>	<p>Route Option 5 passes just west (immediately adjacent) of Colwyn Brook Marshes South SSSI.</p> <p>Route Option 5 is 670m east of New Castle Meadows SSSI (no functional link).</p> <p>Route Option 5 is 350m west of Banc Hirllwyn SSSI.</p>	<p>4 apply to Route Option 6.</p> <p>Route Option 6 overlaps with Route Option 4, and so also is 150m south of Colwyn Brook Marshes South SSSI.</p> <p>Route Option 6 is 670m east of New Castle Meadows SSSI (no functional link).</p> <p>Route Option 6 is 20m east of Banc Hirllwyn SSSI and functionally connected through existing tree lines.</p>	<p>relation to SSSI impacts.</p>
	Environment (Wales) Act 2016 Priority Habitats	Route Option 1 crosses two parcels of upland heathland with the route crossing the eastern parcel at	Route Option 2 crosses two parcels of upland heathland. Both parcels could be avoided via spanning/ siting	Route Option 3 crosses a parcel of upland heathland in the north at two points, spanning 45m and 20m	Route Option 4 crosses a parcel of upland heathland in the north at two points, spanning 45m and 20m	Route Option 5 crosses a parcel of upland heathland in the north, spanning ~85m. As such this could be	Route Option 6 crosses a parcel of upland heathland in the north, spanning ~85m. As such this could be	Route Options 2, 4 or 6 impact the least amount of priority habitats. At the points where these Route Options

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>two points, spanning lengths of 150m and 50m respectively. The western parcel crossing is 30m. Both parcels could be avoided via spanning at the detailed pole siting stage.</p> <p>Route Option 1 crosses four parcels of 'Upland Flushes, Fens and Swamps', spanning 140m two 20m sections, 30m and 100m. All but the former could potentially be avoided through spanning at the detailed pole siting stage.</p> <p>Route Option 1 crosses two parcels of Purple Moor Grass and Rush Pastures. The first parcel is crossed at two points, spanning 160m in the south, and spanning 115m in the north. The second parcel is crossed at one</p>	<p>of poles at the detailed pole siting stage.</p> <ul style="list-style-type: none"> Northern parcel can be spanned as it is 50m wide. Southern parcel can be spanned as it is 80m wide or avoided during the detailed pole siting stage. <p>Route Option 2 crosses three parcels of 'Upland Flushes, Fens and Swamps'. All three parcels can be avoided.</p> <ul style="list-style-type: none"> Northern parcel spans 90m and could be avoided through spanning at the detailed pole siting stage (could cross only c.65m). 	<p>respectively. This could be avoided by spanning at the detailed pole siting stage. The route also passes just west of the same parcel further north, which could be avoided by oversailing or siting at the detailed pole siting stage.</p> <p>Route Option 3 crosses a parcel of Upland Flushes, Fens, and Swamps, spanning 45m. This could be avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 3 crosses two parcels of Purple Moor Grass and Rush Pastures. The first parcel is crossed at two points, spanning 160m and 115m respectively. The second parcel is crossed at one point, spanning 7m.</p> <p>Route Option 3 crosses a parcel of Lowland Fens</p>	<p>respectively. This could be avoided by spanning at the detailed pole siting stage. The route also passes just west of the same parcel further north, which could be avoided by oversailing or siting at the detailed pole siting stage.</p> <p>Route Option 4 crosses a parcel of Upland Flushes, Fens, and Swamps, spanning 45m. This could be avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 4 crosses two parcels of Purple Moor Grass and Rush Pasture spanning a maximum of 70m and 20m respectively.</p> <p>Route Option 4 crosses a parcel of Lowland Dry Acid Grassland near Hirllwyn Bank, with the route spanning a maximum of 20m.</p>	<p>avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 5 crosses a parcel of 'Upland Flushes, Fens and Swamps' in the north, spanning 80m. Although the parcel is relatively large, due to crossing at the edge it may cause habitat fragmentation. This could be avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 5 crosses two parcels of Purple Moor Grass and Rush Pastures spanning 160m and 115m respectively. The second parcel is crossed at one point, spanning 7m.</p> <p>Route Option 5 crosses a parcel of Lowland Fens and Reedbed, spanning 30m.</p>	<p>avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 6 crosses a parcel of 'Upland Flushes, Fens and Swamps' in the north, spanning 80m. Although the parcel is relatively large, due to crossing at the edge it may cause habitat fragmentation. This could be avoided by spanning at the detailed pole siting stage.</p> <p>Route Option 6 crosses two parcels of Purple Moor Grass and Rush Pasture, spanning 70m, and 20m respectively.</p> <p>Route Option 6 crosses a parcel of Lowland Dry Acid Grassland near Hirllwyn Bank, with the route spanning a maximum of 20m.</p>	<p>cross priority habitat parcels, there may be the potential to oversail the habitats and reduce impacts through spanning at the detailed pole siting stage.</p>

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>point, spanning 7m.</p> <p>Route Option 1 crosses a parcel of Lowland Fens and Reedbed, spanning 30m.</p> <p>Route Option 1 crosses a parcel of Inland Rock Outcrop and Scree at Castle Bank, spanning a maximum of 60m.</p>	<ul style="list-style-type: none"> Two other parcels span 10-12m and could be avoided at the detailed pole siting stage. <p>Route Option 2 crosses two parcels of Purple Moor Grass and Rush Pastures. It runs alongside the first point, for 90m then spans 130m.</p> <p>Route Option 2 crosses a parcel of Lowland Fens and Reedbed, spanning 30m.</p>	and Reedbed, spanning 30m.				
	Overall Preference for Biodiversity	All Route Options cross the river SAC/ SSSI (Afon Gwy). Route Options 4 and 6 impacts the smallest area of S7 Priority Habitat and are therefore the slight preference. However, whilst Route Option 2 crosses Priority Habitats, these can be avoided/ spanned at the detailed routeing stage.						
Landscape and Visual Amenity	<p>LANDMAP</p> <ul style="list-style-type: none"> Visual and Sensory Landscape Habitats Historic Landscape Geological Landscape Cultural Landscape 	<p>The routes cross three visual and sensory LANDMAP areas, all having an overall evaluation of moderate.</p> <p>The routes cross two landscape habitat LANDMAP areas, the northernmost, including Castle Bank having an overall evaluation of high, with the area to the south being moderate.</p> <p>The routes cross three historic landscape areas, of which two cover most of the area and have an overall evaluation of outstanding.</p> <p>The routes cross two geological landscape LANDMAP areas, the northernmost having an overall evaluation of high and the southern having an overall evaluation of moderate.</p> <p>The routes cross three cultural landscape LANDMAP areas, two of which have an overall evaluation of high and the southern having an overall evaluation of moderate.</p>						There is no preference between the six options.
	Landscape Character	Route Option 1 crosses higher	Route Option 2 avoids the higher	Route Option 3 avoids higher	Route Option 4 avoids higher	Route Option 5 avoids higher	Route Option 6 avoids higher	Route Option 1 is least preferred

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>ground at Castle Bank and would be visible on the skyline along this open and unwooded landform.</p> <p>Route Option 1 avoids scattered areas of woodland between agricultural fields and generally follows lower topography beyond Castle Bank. The route avoids most watercourses but would cross Colwyn Brook and one of its tributaries.</p> <p>Some limited tree loss may occur in proximity to the A481 however, this is unlikely to affect the overall landscape character.</p>	<p>land associated with Castle Bank, however it crosses mature tree lined field boundaries, with the potential for some limited tree losses.</p> <p>Route Option 2 avoids most watercourses, however it would cross a tributary of Camnant Brook, as well as Colwyn Brook and one of its tributaries.</p> <p>Some limited tree loss may occur in proximity to the A481 however, this is unlikely to affect the overall landscape character.</p>	<p>land to the north of Camnant and the wooded field pattern surrounding the settlement, however, is on higher land to the east of Camnant.</p> <p>Route Option 3 avoids scattered areas of woodland, but would cross the wooded Camnant Brook, which may result in the loss of vegetation.</p> <p>Beyond Camnant Brook, the Route Option generally follows lower topography, but would cross Colwyn Brook and one of its tributaries.</p> <p>Some limited tree loss may occur in proximity to the A481 however, this is unlikely to affect the overall landscape character.</p>	<p>land to the north of Camnant and the wooded field pattern surrounding the settlement, however, is on higher land to the east of Camnant.</p> <p>Route Option 4 avoids scattered areas of woodland, but would cross a number of wooded field boundaries and vegetation aligning a tributary to the River Edw, which may result in the deterioration of mature field boundaries surrounding Llansantffraed-in-Elwel.</p> <p>Route Option 4 may affect vegetation along the Colwyn Brook and would potentially create a concentration of wirescape either side of the A481 in conjunction with the Towy Usk OHL proposals, including additional tree</p>	<p>land to the east of the substation, however, would pass close to woodland in proximity to Gwernfach. The Route Option would also be on higher land to the east of Camnant.</p> <p>Route Option 5 avoids scattered areas of woodland, however, would cross a number of wooded field boundaries and vegetation aligning a tributary to the River Edw, which may result in the deterioration of mature field boundaries surrounding Llansantffraed-in-Elwel.</p> <p>Beyond Camnant Brook, Route Option 5 generally follows lower topography, but would cross Colwyn Brook and one of its tributaries.</p> <p>Some limited tree loss may</p>	<p>land to the east of the substation, however, would pass close to woodland in proximity to Gwernfach. The Route Option would also be on higher land to the east of Camnant.</p> <p>Route Option 6 avoids scattered areas of woodland, however, would cross a number of wooded field boundaries and vegetation aligning a tributary to the River Edw, which may result in the deterioration of mature field boundaries surrounding Llansantffraed-in-Elwel.</p> <p>Route Option 6 may affect vegetation along the Colwyn Brook and would potentially create a concentration of wirescape either side of the A481 in conjunction with the Towy Usk OHL proposals,</p>	<p>due to the Route Option's location along Castle Bank.</p> <p>Route Options 4 and 6 would have the potential to create additional wirescape cumulatively with the Towy Usk project.</p> <p>Route Options 2, 3 and 5 would have the potential to cross Camnant Brook and Colwyn Brook, affecting the pattern of vegetation, with options 4 and 6 also affecting mature field boundaries surrounding Llansantffraed-in-Elwel.</p> <p>On balance, Route Option 2 is preferred from the perspective of retaining the existing landscape character of the area.</p>

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
					removal along field boundaries.	occur in proximity to the A481 however, this is unlikely to affect the overall landscape character.	including additional tree removal along field boundaries.	
	Residential Visual Amenity with '150m trigger for consideration zone'	<p>Due to Route Option 1's elevated location along Castle Bank, skyline views are likely to be possible from Garth, located just beyond 150m and by other scattered properties further to the west.</p> <p>Open views are likely from Bryntwappa farm towards the route, located on slightly elevated ground in comparison to the property. However, vegetation along Camnant Beck would filter views from properties east of the water course.</p> <p>Some glimpses towards the route would be possible from elevated</p>	<p>Route Option 2 passes close to Pendre, however, is located away from properties within Camnant, with most views filtered by intervening vegetation.</p> <p>The route would pass close to properties at Llwynmadoc, with some views filtered by vegetation surrounding the properties, as well as the route being located lower than the properties.</p> <p>Open views are likely from Bryntwappa farm towards the route, located on slightly elevated ground in comparison to the property. However, vegetation along Camnant Beck would filter views from properties</p>	<p>Route Option 3 passes close to Pendre and other properties within Camnant. Although most would have views filtered by intervening vegetation, Bryn-glas would have clear and open views of the route close to the eastern edge.</p> <p>The route would pass close to Ddole, with some views filtered by vegetation aligning Camnant Brook, however, with clear views of the route located to the east of the water course.</p> <p>Open views are likely from Bryntwappa farm towards the route, located on slightly elevated ground in comparison to the property.</p>	<p>Route Option 4 passes close to Pendre and other properties within Camnant. Although most would have views filtered by intervening vegetation, Bryn-glas would have clear and open views of the route close to the eastern edge.</p> <p>The route would pass in between properties within Llansantffraed-in-Elwel and has the potential to be visible from most buildings within the settlement. It would not be possible to avoid the 150m zones in this area, creating a pinch point.</p> <p>The route would be visible from those properties aligning the A481 and seen in</p>	<p>Route Option 5 passes close to Gwernfach and another nearby property, as well as being visible from Garnfawr on the opposing valley to the north-east.</p> <p>The route passes close properties within Camnant. Although most would have views filtered by intervening vegetation, Bryn-glas would have clear and open views of the route close to the eastern edge.</p> <p>The route would pass close to Ddole, with some views filtered by vegetation aligning Camnant Brook, however, with clear views of the route where located to the</p>	<p>Route Option 6 passes close to Gwernfach and another nearby property, as well as being visible from Garnfawr on the opposing valley to the north-east.</p> <p>The route passes close properties within Camnant. Although most would have views filtered by intervening vegetation, Bryn-glas would have clear and open views of the route close to the eastern edge.</p> <p>The route would pass in between properties within Llansantffraed-in-Elwel and has the potential to be visible from most buildings within the settlement. It would not be possible to avoid the 150m zones</p>	On balance, Route Options 1 and 2 could avoid siting wood poles within 150m of properties with no pinch points predicted.

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>properties south of Castle Bank.</p> <p>The route passes within 150m of Tynrhoel to the east and close to properties to the west in proximity to the A481.</p>	<p>east of the water course.</p> <p>The route passes within 150m of Tynrhoel to the east and close to properties to the west in proximity to the A481.</p>	<p>However, vegetation along Camnant Beck would filter views from properties east of the water course.</p> <p>The route passes within 150m of Tynrhoel to the east and close to properties to the west in proximity to the A481.</p>	<p>conjunction with those wood poles proposed as part of Towy Usk, albeit closer to most buildings.</p>	<p>east of the water course.</p> <p>The route passes within 150m of Tynrhoel to the east and close to properties to the west in proximity to the A481.</p>	<p>in this area, creating a pinch point.</p> <p>The route would be visible from those properties aligning the A481 and seen in conjunction with those wood poles proposed as part of Towy Usk, albeit closer to most buildings.</p>	
	<p>Tourism and Recreation (visual amenity – viewpoints, cycle routes, public rights of way (PRoW) and tourist attractions)</p>	<p>Route Option 1 crosses open access land, including along Castle Bank. Castle Bank is crossed by public rights of way, with some sections following the same route as the proposed route. Castle Bank also has heritage value which may be a tourist attraction.</p> <p>The route avoids Perthi Common, however, crosses a number of public rights of way to the north of the A481.</p>	<p>Route Option 2 crosses open access land, however, avoids Castle Bank and its associated public rights of way.</p> <p>The route avoids Perthi Common, however, crosses a number of public rights of way to the north of the A481.</p>	<p>Route Option 3 crosses open access land, however, avoids Castle Bank and its associated public rights of way and much of the open access land surrounding Camnant.</p> <p>The route avoids Perthi Common, however, crosses a number of public rights of way to the north of the A481.</p>	<p>Route Option 4 crosses open access land, however, avoids Castle Bank and its associated public rights of way and much of the open access land surrounding Camnant.</p> <p>The route avoids Perthi Common and avoids public rights of way to the south, however, passes close to Matt Common adjacent to the A481.</p> <p>The route would run close to Fforest Fields caravan site, as well as Bryn-crach Caravan and</p>	<p>Route Option 5 avoids most open access land.</p> <p>The route avoids Perthi Common, however, crosses a number of public rights of way to the north of the A481.</p>	<p>Route Option 6 avoids most open access land.</p> <p>The route avoids Perthi Common and avoids public rights of way to the south, however, passes close to Matt Common adjacent to the A481.</p> <p>The route would run close to Fforest Fields caravan site, as well as Bryn-crach Caravan and Camping Site to the south-east.</p>	<p>Route Option 1 is considered likely to have the greatest effect upon tourism and recreation due to its location along Castle Bank.</p> <p>All other Route Options (2 -6) are finely balanced, with no clear preference.</p>

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
					Camping Site to the south-east.			
	Public roads, including tourist routes	Route Options 1 crosses two minor roads and the A481.	Route Option 2 crosses three minor roads and the A481.	Route Option 3 crosses three minor roads and the A481. However, the route follows the minor road north of Camnant.	Route Option 4 crosses three minor roads and the A481. However, the route follows the minor road north of Camnant and follows part of the A481 where adjacent to the proposed Towy Usk wood poles.	Route Option 5 crosses three minor roads and the A481.	Route Option 6 crosses three minor roads and the A481. However, the route follows part of the A481 where adjacent to the proposed Towy Usk wood poles.	Route Options 4 and 6 are least preferred due to their location following the A481 with cumulative interactions with Towy Usk. Parts of Route Option 3 follow the road north of Camnant, resulting in it also being not preferred. Route Options 1 and 2 are the preferred routes.
	Overall Preference for Landscape and Visual Amenity	On balance, Route Option 2 is the preferred Route Option from a landscape and visual perspective as it avoids Castle Bank, avoids aligning with the Towy Usk proposals, is located furthest from residential properties and avoids the most vegetation (landscape features). However, it should be noted that Route Option 2 is not without landscape and visual constraints as set out above.						
Historic Environment	Scheduled Monuments (SMs)	There is one SM (Castle Bank Hillfort; RD149) within Route Option 1. 37 SMs lie within 3km of the Route Option. The following locations have potential sensitivities related to the presence of SMs: <ul style="list-style-type: none">• Castle Bank	There are no SMs within this Route Option. 44 SMs lie within 3km of Route Option 2. The following locations have potential sensitivities related to the presence of SMs: <ul style="list-style-type: none">• Castle Bank Court Stone Row (RD224) is	There are no SMs within these Route Options. 42 SMs lie within 3km of Route Options 3 and 4. The following locations have potential sensitivities related to the presence of SMs: <ul style="list-style-type: none">• Camnant The Route Options are approximately 200m east of Court Stone Row (RD224), c.240m south and c.430m west of Gwernfach Round Cairn (RD227) and 120m to the east Cwm Standing Stone (RD229). While these Route Options have the potential to introduce overhead line infrastructure into the	There are no SMs within this Route Option. 42 SMs lie within 3km of Route Option 5. The following locations have potential sensitivities related to the presence of SMs: <ul style="list-style-type: none">• Camnant The Route Option is approximately 120m to the east	There are no SMs within this Route Option. 39 SMs lie within 3km of Route Option 6. The following locations have potential sensitivities related to the presence of SMs: <ul style="list-style-type: none">• Camnant The same considerations on harm relating	Route Options 5 or 6 are preferred since they have fewer interactions, and no obvious potential for harm to arise to, SMs.	

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>Two Bronze Age ritual monuments, Court Standing Stone (RD225) and Court Stone Row (RD224) are located approximately 50m west and 140m east of the Route Option respectively north of Castle Bank. The relationship between these two assets is likely to have been an important consideration in their siting. This Route Option would run between these assets and alter the appreciation and understanding of this relationship and how it is experienced. Affecting this key element of their setting is likely to cause harm to both assets.</p> <p>A small section of the scheduled area to the south of Castle Bank Hillfort (RD149) lies within the Route Option.</p>	<p>located approximately 11m west of the Route Option, north of Castle Bank. This Route Option would introduce OHL into the setting of this asset, and into in-combination views from Court Standing Stone (RD225) c.400m to the west of the stone row. The line of trees to the east of the route option would present an opportunity to backcloth the wood poles at detailed pole siting stage, which would minimise the impact.</p> <p>Route Option 2 is approximately 75m to the north-east of Castle Bank Hillfort (RD149). The Route Option crosses the north-east facing slope of Castle Bank below and to the north-east of the hillfort.</p> <p>The same considerations on harm relating</p>	<p>setting of these assets, potentially affecting the way they are experienced, this is unlikely to cause harm to these assets.</p>		<p>of Cwm Standing Stone (RD229). While this Route Option has the potential to introduce overhead line infrastructure into the setting of this asset, potentially affecting the way it is experienced, this is unlikely to cause harm to this asset.</p>	<p>to setting change made on Route Option 5 apply Cwm Standing Stone (RD229).</p>	

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>SMs are protected by law from unauthorised disturbance so no infrastructure will be located within the scheduled area. The Route Option crosses the west facing slope of Castle Bank below and to the west of the hillfort. This would affect the contribution the asset's setting – its elevated position, views out and over the surrounding landscape – makes to its heritage significance. Affecting these key elements of this asset's setting is likely to cause harm to the asset.</p>	<p>to setting change made on Route Option 1 apply for this asset.</p> <p>It is likely that harm to these SMs could be reduced or avoided during the detailed pole siting stage.</p>					
	Listed Buildings (I, II*, II) (LBs)	<p>There are no LBs within this Route Option. 12 LBs lie within 3km of the Route Option.</p> <p>No LBs are predicted to be affected by this Route Option.</p>	<p>There are no LBs within this Route Option. 11 LBs lie within 3km of the Route Option.</p> <p>No LBs are predicted to be affected by this Route Option.</p>	<p>There are no LBs within this Route Option. 12 LBs lie within 3km of the Route Option.</p> <p>No LBs are predicted to be affected by this Route Option.</p>	<p>There are no LBs within this Route Option. 13 LBs lie within 3km of the Route Option.</p> <p>No LBs are predicted to be affected by this Route Option.</p>	<p>There are no LBs within these Route Options. 12 LBs lie within 3km of the Route Options.</p> <p>No LBs are predicted to be affected by these Route Options.</p>		<p>No preference between Route Options as none appear likely to have a harmful interaction with LBs.</p>

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
	Non-designated historic assets including archaeological remains, structures and historic landscape areas/components	<p>There are five Historic Environment Record (HER) entries within the Route Option.</p> <p>There are 937 HER entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Gilwern Hill, north of Camnant • Castle Bank, Nr Camnant <p>The majority of HER entries relate to post-medieval land-use and agriculture. To the north the Route Option crosses areas of upstanding cultivation earthworks (HER Refs. PRN213187; PRN213186; PRN213323).</p>	<p>There are seven HER entries within the Route Option.</p> <p>There are 976 entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Castle Bank, Nr Camnant <p>The majority of HER entries relate to post-medieval land-use and agriculture. The Route Option crosses three areas of cultivation ridges (HER Refs. PRN213367; PRN213183; PRN213182), three linear earthworks (HER Refs. PRN213365; PRN213421; PRN213325) and the find location of a recovered prehistoric flint</p>	<p>There are four HER entries within the Route Option.</p> <p>There are 1132 entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Gilwern Hill, north of Camnant • Camnant, east of Castle Bank <p>The majority of HER entries relate to post-medieval land-use and agriculture. To the north the Route Option crosses areas of upstanding cultivation earthworks (HER Refs. PRN213367; PRN213323), and a trackway (HER Ref. PRN213350).</p>	<p>There are three HER entries within the Route Option.</p> <p>There are 1130 entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Gilwern Hill, north of Camnant • Camnant, east of Castle Bank • Bryn-glas, Nr Camnant and Beili-bychan, west of Perthi Common • Llansantffraed in Elvel <p>The majority of HER entries relate to post-medieval land-use and agriculture. To the north the</p>	<p>There is one HER entry within the Route Option.</p> <p>There are 1175 entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Camnant, east of Castle Bank • Bryn-glas, Nr Camnant and Beili-bychan, west of Perthi Common <p>The majority of HER entries relate to post-medieval land-use and agriculture. Within the Route Option to the south is a natural feature previously interpreted as a possible prehistoric funerary</p>	<p>There are no HER entries within the Route Option.</p> <p>There are 1138 entries located within 3km of the Route Option.</p> <p>The following locations have potential sensitivities associated with the presence of non-designated historic assets:</p> <ul style="list-style-type: none"> • Bryn-glas, Nr Camnant • Llansantffraed in Elvel <p>The majority of HER entries relate to post-medieval land-use and agriculture. A group of traditional farm buildings at Bryn-glas Farm (HER Ref. PRN193251) are located adjacent to the Route Option. While this Route Option has the potential to introduce overhead line infrastructure into the rural</p>	Route Options 5 and 6 are preferred as they have fewest interactions with non-designated assets.

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		<p>Within the Route Option is the remains of a post-medieval hut/ building on the north facing slope of Castle Bank (HER Ref. PRN143634) and crosses a trackway (HER Ref. PRN213328). These assets will be avoided to prevent direct physical effects which could result in harm.</p>	<p>(HER Ref. PRN13214. These assets and HER entries will be avoided to prevent direct physical effects which could result in harm.</p>	<p>Within the Route Option to the south is a natural feature previously interpreted as a prehistoric funerary monument (HER Ref. PRN2196). These assets will be avoided to prevent direct physical effects which could result in harm.</p>	<p>Route Option crosses areas of upstanding cultivation earthworks (HER Refs. PRN213367; PRN213323), and a trackway (HER Ref. PRN213350). These assets will be avoided to prevent physical direct effects which could result in harm.</p> <p>Two groups of traditional farm buildings at Bryn-glas Farm and Beili-bychan Farm (HER Refs. PRN193251; PRN193339) are located adjacent to the Route Option. While this Route Option has the potential to introduce overhead line infrastructure into the rural setting of these assets, this is unlikely to cause harm, as their relationship with one another and the surrounding agricultural fields, key elements of their setting, would</p>	<p>monument (HER Ref. PRN2196). These assets will be avoided to prevent direct physical effects which could result in harm.</p> <p>Two groups of traditional farm buildings at Bryn-glas Farm and Bryn-twppa Farm (HER Refs. PRN193251; PRN193300) are located adjacent to the Route Option. While this Route Option has the potential to introduce overhead line infrastructure into the rural setting of these assets, this is unlikely to cause harm, as their relationship with one another and the surrounding agricultural fields, key elements of their setting, would not be affected during operation.</p>	<p>setting of this asset, this is unlikely to cause harm to this group of assets.</p> <p>Llansantffraed in Elvel Church (HER Ref. 16888) is located approximately 50m to the west of the Route Option. The site of a Cistercian nunnery founded before 1176, this asset includes a post-medieval church whose setting includes its associated churchyard. The same considerations on harm relating to setting change made on Route Option 4 apply for this asset.</p>	

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
					<p>not be affected during operation.</p> <p>Llansantffraed in Elvel Church (HER Ref. 16888) is located approximately 50m to the west of the Route Option. The site of a Cistercian nunnery founded before 1176, this asset includes a post-medieval church whose setting includes its associated churchyard. While this Route Option has the potential to introduce overhead line infrastructure into the setting of this asset, it is unlikely to cause harm to this asset, as they are likely to be screened by mature trees and hedgerows.</p>			
	Overall Preference for Cultural Heritage	Route Options 5 and 6 are preferred as they have fewest interactions with designated and non-designated assets which could lead to harm.						
Land Use	Infrastructure	<p>There are no existing, consented or proposed wind energy development turbines (including the turbine tip height plus 10% buffer) located within the Route Options.</p> <p>The Route Options cross a 11 kilovolt (kV) overhead line (OHL) which runs across the width of the Route Options at this location for each route.</p> <p>There is no National Gas Pipe located within the Route Options.</p>						There is no preference between the Route Options from a land use perspective.

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		There is an A Road (A481) located within the Route Options.						
	Local Development Plan (LDP) Allocations	All Route Options cross an area allocated within the Powys LDP as a Resource Safeguarding Area (the relevant policy within the LDP is SP7).						There is no preference between the Route Options.
	Common Land	There is 20.1ha of common land present within the Route Option.	There is 18.49ha of common land present within the Route Option.	There is 15.60ha of common land present within the Route Options.		There is 3.35ha of common land present within the Route Options.		Route Options 5 and 6 are the preference as the routes contain the smallest areas of Common Land.
	Overall Preference for Land Use	Route Options 5 and 6 are the marginally preferred Route Options due to there being the smallest amount of common land within the Route Options.						
Forestry and Woodland	Ancient Woodland (as per the Ancient Woodland Inventory (AWI))	The total area of AWI within the Route Option is 0.68 hectares (ha) of Ancient Semi Natural Woodlands (ASNW) which are located east of Castle Bank. AWI within the Route Option can be avoided during the detailed pole siting stage.	There is no AWI located within these Route Options.			The total area of AWI within the Route Option is 0.31ha of ASNW located immediately west of Gwernfach Hill. AWI within the Route Option can be avoided during the detailed pole siting stage.		Route Options 2, 3 and 4 are the preferred Route Options as there is no AWI located within these Route Options.
	National Forest Inventory (NFI)	There is no NFI located within the Route Option.			The total area of NFI within the Route Option is 3.58ha. The Route Option includes young trees. NFI within the Route Option can	The total area of NFI within the Route Option is 0.54ha. The Route Option includes young trees. NFI within the Route Option can	The total area of NFI within the Route Option is 4.12ha. The Route Option includes young trees. NFI within the Route Option can	

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
					be avoided during the detailed pole siting stage.	be avoided during the detailed pole siting stage.	be avoided during the detailed pole siting stage.	
	Overall Preference for Forestry and Woodland	Route Options 2 and 3 are the preferred Route Options as the routes have no AWI and NFI within them.						
Flood Risk	Flood Zones (High Risk) and Private Water Supplies (PWSs)	<p>Route Option 1 follows a surface water flood zone north of 'The Court' near start of route which would likely require siting a wood pole or multiple wood poles within the flood zone.</p> <p>Crosses Colwyn Brook floodplain at a narrow point which can be spanned.</p> <p>PWS (Bryntwppa) is 119m from the Route Option, and as it is over 100m it is not likely to be affected, and any impact can be mitigated. A water resources assessment and site visit would confirm this.</p> <p>Route Option 1 is also approx. 150m from a</p>	<p>Route Option 2 crosses Floodplain of Colwyn Brook at a narrow point which can be spanned.</p> <p>Route Option 2 comes within 250m of a PWS (Perthi Common), as it is over 100m it is not likely to be affected, and any impact can be mitigated. A water resources assessment and site visit will confirm this.</p>	<p>Route Option 3 crosses Camnant Brook floodplain at an angle width of 184m at the max span which may require siting a wood pole within the flood zone.</p> <p>The route also passes through Parth Llifogydd flood plain which is approx 150m wide and cannot be spanned.</p> <p>Crosses Colwyn Brook floodplain at a narrow point which can be spanned.</p> <p>PWS (Bryntwppa) is 119m from the Route Option, and as it is over 100m it is not likely to be affected, and any impact can be mitigated. A water resources assessment and</p>	<p>Route Option 4 crosses Floodplain of Colwyn Brook at a 100m wide point which may require siting a wood pole within the flood zone.</p> <p>The route also passes through Parth Llifogydd flood plain which is approx 150m wide and cannot be spanned.</p>	<p>Route Option 5 crosses Camnant Brook floodplain at an angle (184m max case) which may require siting a wood pole within the flood zone.</p> <p>The route also passes through Parth Llifogydd flood plain which is approx 150m wide and cannot be spanned.</p> <p>Crosses Colwyn Brook floodplain at a narrow point which can be spanned.</p> <p>PWS (Bryntwppa) is 119m from the Route Option, and as it is over 100m it is not likely to be affected, and any impact can be mitigated. A water resources assessment and</p>	<p>Route Option 6 crosses Floodplain of Colwyn Brook at wide point (approx. 100m wide) which may require siting a wood pole within the flood zone.</p> <p>The route also passes through Parth Llifogydd flood plain which is approx 150m wide and cannot be spanned.</p>	<p>Route Option 2 is marginally preferred as this provides the best opportunity to avoid siting wood poles in flood risk zones and passes through one PWS buffer.</p> <p>Route Options 1, 3, 4, 5 and 6 are least preferable as they cross flood plains which are not spannable and would require a wood pole to be sited within the flood plain.</p>

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6	Preference
		PWS at 'Garth' but will not affect this catchment.		site visit would confirm this.		site visit would confirm this.		
	Peat	There are several pockets of peatlands located at the northern end of the route options. These pockets can either be avoided or spanned during the detailed pole siting stage. Peat probing will be undertaken to confirm the presence, extent and depth of peat in these areas.						There is no preference as all route options contain pockets of peatland which can be avoided or spanned during the detailed pole siting stage.
	Overall Preference for Flood Risk	Route Option 2 is preferred as it provides the best opportunity to avoid siting wood poles in flood risk zones and passes through one PWS buffer.						
Overall Emerging Preference	<p>Route Option 2 is preferred in terms of overall length as it is the shortest route.</p> <p>In relation to Biodiversity and Geological Conservation, Route Option 4 & 6 are the marginally preferred Route Options as they impact the smallest area of S7 Priority Habitat.</p> <p>In relation to Landscape and Visual Amenity, Route Option 2 is preferred as it has the least impact on the existing character of the area, avoid Castle Bank, avoids aligning with the Towy Usk proposals, and is located furthest from residential properties and avoid the most vegetation (landscape features).</p> <p>In relation to Historic Environment, Route Options 5 and 6 are preferred as they have fewest interactions with designated and non-designated assets which could lead to harm.</p> <p>In relation to Land Use, Route Options 5 and 6 are the marginally preferred Route Options as they interact with the smallest amount of common land.</p> <p>In relation to Forestry and Woodland, Route Options 2 and 3 are preferred as they have no AWI and NFI within them.</p> <p>In relation to Flood Risk, Route Options 2 is preferred as it provides the best opportunity to avoid siting wood poles in flood risk zones.</p> <p>Overall, on balance, Route Option 2 is the emerging preferred Route Option as it is the shortest Route Option, likely to have the least impact on the landscape and visual amenity, avoid impacts on forestry, woodland, and Flood Risk. However, effects on the setting of the Castle Bank Hillfort, Court Stone Row and its interrelated Court Standing Stone (SMs), and minimising effects on common land will form a key consideration at the detailed pole siting stage.</p>							

Appendix C: Route Options Technical Review Appraisal Table

Table C.1: Bryn Gilwern route options appraisal

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6
Route Facts	Total Length	4.9km	4.7km	5.6km	5.4km	5.7km	5.5km
	Length within Energy Park Red Line Boundary	2.0km	1.9km	2.0km	2.0km	1.3km	1.3km
	Land Uses	Rural: Predominantly arable farming. 2.0km over rough grassland (common land).	Rural: Predominantly arable farming. 1.9km over rough grassland (common land).	Rural: Predominantly arable farming. 1.5km over rough grassland (common land).	Rural: Predominantly arable farming. 1.5km over rough grassland (common land).	Rural: Predominantly arable farming. 360m over rough grassland (common land).	Rural: Predominantly arable farming. 360m over rough grassland (common land).
Engineering Technical	Potential Crossings and Type	Roads: A481; x1 B Road; x2 minor roads. Utilities: x1 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Watercourses: Colwyn Brook; x3 minor (OS mapping).	Roads: A481; x1 B Road; x3 minor roads. Utilities: x1 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Rivers/watercourses: Colwyn Brook; x2 minor (OS mapping).	Roads: A481; x1 B Road; x3 minor roads. Utilities: x1 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Rivers/watercourses: Camnant Brook; Colwyn Brook; x4 minor (OS mapping).	Roads: A481; x1 B Road; x2 minor roads. Utilities: x3 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Rivers/watercourses: Colwyn Brook; x4 minor (OS mapping).	Roads: A481; x1 B Road; x3 minor roads. Utilities: x1 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Rivers/watercourses: Camnant Brook; Colwyn Brook; x3 minor (OS mapping).	Road: A481; x1 B Road; x2 minor roads. Utilities: x1 NGED 11kV OHL; x1 BT OH; x1 BT UGC; x1 Welsh Water Pipeline. Rivers/watercourses: Colwyn Brook; x4 minor (OS mapping).
	Access (construction and maintenance)	Notable gradient at points along route. Routed between 3 peaks, with notable gradient. Topography and limited existing road/ track network at start of route may pose challenging for construction. Opportunity for long sections of	Notable gradient at points along route. Opportunity for long sections of haul road: not many physical constraints limiting continuation of haul road other than rivers/ watercourses.	Notable gradient at points along route. Access to section that runs through common land, from east of Pendre advantageous as route runs parallel to existing minor road/ track. Opportunity for long sections of haul road: not many physical constraints	Notable gradient at points along route. Access to section that runs through common land, from east of Pendre advantageous as route runs parallel to existing minor road/ track. Existing road network around Llansantffraed-In-Elwel presents good	Notable gradient at points along route. Access to section that runs through common land, from east of Pendre advantageous as route runs parallel to existing minor road/ track. Existing road network around Llansantffraed-In-Elwel presents good	Notable gradient at points along route. Opportunity for long sections of haul road: not many physical constraints limiting continuation of haul road other than rivers/ watercourses.

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4	Route Option 5	Route Option 6
		haul road: not many physical constraints limiting continuation of haul road other than rivers/ watercourses.		limiting continuation of haul road other than rivers/ watercourses.	opportunities for construction access. Opportunity for long sections of haul road: not many physical constraints limiting continuation of haul road other than rivers/ watercourses. Potential opportunity for shared access routes with Towy Usk at end of route on approach to switching station (approx. 1.2km).		road other than rivers/ watercourses. Potential opportunity for shared access routes with Towy Usk at end of route on approach to switching station (approx. 1.2km).
	Technical Complexity/ Commentary	Routing between the peaks (Castle Bank, mid-northern section of route) will likely require short spans due to significant slope (short spans results in more poles). Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.	Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.	Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.	Limits of Deviation considerations: <ul style="list-style-type: none"> Towy Usk draft alignment at southern end of route may significantly restrict LoD. Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.	Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.	Limits of Deviation considerations: <ul style="list-style-type: none"> Towy Usk draft alignment at southern end of route may significantly restrict LoD. Number of poles, angle poles, pole heights and Limits of Deviation considerations to be determined if route taken forward.
	Benefits	Technically feasible route.	Technically feasible route.	Technically feasible route.	Technically feasible route. Opportunity to parallel Towy Usk: <ul style="list-style-type: none"> Shared access (construction 	Technically feasible route.	Technically feasible route. Opportunity to parallel Towy Usk: <ul style="list-style-type: none"> Shared access (construction

Criterion	Sub-criteria	Route Option 1	Route Option 2	Route Option 3	Route Option 4 and maintenance)	Route Option 5	Route Option 6 and maintenance)
	Project Risks/Other Considerations	<p>To consider:</p> <ul style="list-style-type: none"> • General topography (primarily hilly and undulating) may require more construction effort overall. • Geotechnical attributes of sloped area may influence construction requirements for planting of poles here. • Stay wire positions in sloped areas – practical limits of stay wire lengths to be considered in bend point positioning. 	As option 1.	As option 1.	<p>As option 1.</p> <p>Parallelling Towy Usk:</p> <ul style="list-style-type: none"> • Towy Usk design not finalised, may change. Interrelationship of alignments would require careful project planning and timing. 	As option 1.	<p>As option 1.</p> <p>Parallelling Towy Usk:</p> <ul style="list-style-type: none"> • Towy Usk design not finalised, may change. Interrelationship of alignments would require careful project planning and timing.
Overall Emerging Preference		No clear engineering preference: all route options appear viable from high level desk top assessment.					