Appendix A – The Holford Rules and Clarification Notes

The Holford Rules and SHETL Clarification Notes

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

Rule 1

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

Note on Rule 1

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

b. Areas of highest amenity value require to be established on a project-by-project basis considering Schedule 9 to The Electricity Act 1989, Scottish Planning Policies, National Planning Policy Guidelines[7], Circulars and Planning Advice Notes and the spatial extent of areas identified.

Examples of areas of highest amenity value which should be considered are:
Special Area of Conservation (NPPG 14)[8]
Special Protection Area (NPPG 14)[9]
Ramsar Site (NPPG 14)[10]
National Scenic Areas (NPPG 14)[11]
National Parks (NPPG 14)[12]
National Nature Reserves (NPPG 14)[13]
Protected Coastal Zone Designations (NPPG 13)[14]
Sites of Special Scientific Interest (SSSI) (NPPG 14)[15]
Schedule of Ancient Monuments (NPPG 5)[16]
Listed Buildings (NPPG 18)[17]
Conservation Areas (NPPG 18)[18]
World Heritage Sites (a non-statutory designation) (NPPG 18)[19]
Historic Gardens and Designed Landscapes (a non-statutory designation) (NPPG 18)[20]

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[7] The National Planning Policy Guidelines ("NPPG") have been superseded by the Scottish Planning Policy ("SPP") published on 23 June 2014. The references to the relevant equivalent paragraphs of the SPP are noted.
[8] Now noted in SPP paragraph 207.
[9] Now noted in SPP paragraph 207.
[10] Now noted in SPP paragraph 211.
[11] Now noted in SPP paragraph 212.
[12] Now noted in SPP paragraph 212.
[13] Now noted in SPP paragraph 212.
[14] Now noted in SPP paragraph 87.
[15] Now noted in SPP paragraphs 211-212.
[16] Now noted in SPP paragraph 145.
[17] Now noted in SPP paragraph 141.
[18] Now noted in SPP paragraph 143.
[19] Now noted in SPP paragraph 147.
[20] Now noted in SPP paragraph 148.

Rule 2

Avoid smaller areas of high amenity value, or scientific interest by deviation; provided that this can be done without using too many angle towers, i.e. the more massive structures which are used when lines change direction.

Note on Rule 2

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

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

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

Rule 3

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

Note on Rule 3

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

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

Rule 4

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

Rule 5

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

Notes on Rules 4 and 5

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

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

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

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

Rule 6

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

Note on Rule 6

a. In all locations minimise confusing appearance.

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

Rule 7

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

Note on Rule 7

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

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

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

Explanatory Note on Rule 7

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

Supplementary Notes

a. **Residential Areas**

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

b. **Designations of Regional and Local Importance**

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

c. **Alternative Lattice Steel Tower Designs**

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

FURTHER NOTES ON CLARIFICATION TO THE HOLFORD RULES

Line Routeing and People

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

The following notes are intended to reflect this.

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

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

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

Supplementary Notes on the Siting of Substations

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

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

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

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

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

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

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

1. Interpretation of The Holford Rules 1 and 2

1.1. Introduction

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

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

1.2. Designations

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

1.3. Amenity

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

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

1.4. Hierarchy of Amenity Value

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

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

1.5. Major and Smaller Areas

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

1.6. Conclusion

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

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

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

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

Major Areas of Highest Amenity Value

1. In Scotland relevant national or international designations for major areas of highest amenity value include the following identified from Scottish Planning Policies and National Policy Guidelines[21]:

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

Other Smaller Areas of High Amenity Value

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

   Areas of Great Landscape Value

   Regional Scenic Areas

   Regional Parks

   Country Parks

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

Flora and Fauna

3. Legislation sets out the procedure for designation of areas relating to flora, fauna and to geographical and physiogeographical features. Designations relevant to the routeing of transmission lines will include Special Area of

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

Conservation, Special Protection Area, Sites of Special Scientific Interest, National Nature Reserves, Ramsar Sites and may also include local designations such as Local Nature Reserve.

Area of Historic, Archaeological or Architectural Value

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

   Schedule of Ancient Monuments

   Listed Buildings, especially Grade A and Grade B Conservation Areas

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

Green Belts

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

Appendix B – Corridor Appraisal Tables

Table B.1: Corridor Options A1 and A2 Appraisal

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
Approximate length of corridor (kilometres (km))	N/A	Corridor option A1a is approximately 58.8km, while corridor option A1b is approximately 57.3km and A1c is approximately 58.8km.	Corridor option A2a is approximately 55.4km, while corridor option A2b is approximately 54.3km and A2c is approximately 53.4km.	**A2c** is the preferred corridor because it is the shortest.
Biodiversity and Geological Conservation	Special Areas of Conservation (SAC)	All corridor options include two SACs that are associated with watercourses. These are the Afon Tywi and the Afon Gwy. The Afon Gwy crosses all corridor options in several locations. However, opportunities exist to either avoid or span the SAC during the detailed routeing stage.		There is no preference as all corridor options include two SACs, one of which is crossed by each corridor option in several locations.
	Sites of Special Scientific Interest (SSSI)	There are 15 SSSIs included within corridor option A1a. Of these, four are associated with watercourses (Afon Tywi, River Wye (Upper Wye and Tributaries), Afon Irfon and the River Ithon; the Afron Tywi is also a marine protected SSSI. The remaining SSSIs are located east and west of Penybont, north-east and east of Llanyre, west of Howey, south of Lower Gaufron, south-east of Tyncoed, north-west of Llanelwedd, south of Beulah, and at Waen Rydd. Corridor option A1b also includes the 15 SSSIs mentioned above in addition to one located south-west of Cynghordy. However, all SSSIs included within corridor options A1a and A1b can be either avoided or spanned during the detailed routeing. For corridor option A1c there are 17 SSSIs included within this corridor option. Of these four are associated with watercourses (Afon Tywi, River Wye (Upper Wye and Tributaries), Afon Irfon and River Ithon); the Afon Tywi is also a marine protected SSSI. The remaining SSSIs are located south-west of Cynghordy, north and south of Cefn-gorwydd, east and west of Penybont, north-east and east of Llanyre, west of Howey, south of Lower Gaufron, south-east of Tyncoed, south of Beulah and north of Llanechan. All SSSIs included within corridor option A1c can be either avoided or spanned during the detailed routeing.	There are eight SSSIs included within corridor option A2a. Of these, three are associated with watercourses (Afon Tywi, River Wye (Upper Wye and Tributaries) and Afon Irfon); the Afon Tywi is also a marine protected SSSI. The remaining SSSIs are located north of Camnant, north of Llanelwedd, south of Llansantffraed-n-Elwe and at Waen Rydd. Corridor option A2b also includes the nine SSSIs mentioned above in addition to one located south-west of Cynghordy. However, all SSSIs included within corridor options A2a and A2b can be either avoided or spanned during the detailed routeing. For corridor option A2c there are 10 SSSIs included within this corridor option. Of these three are associated with watercourses (Afon Tywi, River Wye (Upper Wye and Tributaries), Afon Irfon); the Afon Tywi is also a marine protected SSSI. The remaining SSSIs are located south-west of Cynghordy, north and south of Cefn-gorwydd, north of Llanelwedd, north of Camnant, south of Llansantffraed-in-Elwel. All SSSIs included within corridor option A2c can be either avoided or spanned during the detailed routeing.	**A2a** is preferred because this corridor option would affect the lowest number of SSSIs. However, all SSSIs included within all corridor options could be either avoided or spanned during the detailed routeing stage.
	Regionally Important Geological and Geomorphological Sites (RIGS)	There are two RIGS located within corridor options A1a and A1b. One is located north of Garth and is likely to be avoidable. The other is located south-east of Bryn Nicol and is likely to be unavoidable during the detailed routeing stage. Corridor option A1c contains two RIGS, located north of Garth and the other located within Crychan Forest. Both are likely to be avoidable during detailed routeing.	Within corridor options A2a and A2b there is one RIGS located south-east of Bryn Nicol. This is likely to be unavoidable during the detailed routeing stage. There is one RIGS present within corridor option A2c, located within the Crychan Forest. This is likely to be avoidable during detailed routeing.	**A2c** is the preference because this corridor option affects only one RIGS which is likely avoidable during the detailed routeing stage.
	Geological Conservation Review Sites (GCRS)	There is one GCRS located within corridor options A1a, A1b and A1c, located south of Rhonllwyn. This is likely avoidable during the detailed routeing stage.	There is one GCRS located within corridor option A2a, A2b and A2c, located north of Llanelwedd. This is likely avoidable during the detailed routeing stage.	There is no preference because each GCRS present within these corridor options are all likely to be avoidable during the detailed routeing stage.
	Peat	There is approximately 51 hectares (ha) of peat within corridor options A1a and A1b, and 24ha within corridor option A1c. However, opportunities exist to either avoid or span the peatland habitat during the detailed routeing stage.	There is approximately 40ha of peat within corridor options A2a and A2b and 14ha within corridor option A2c. However, opportunities exist to either avoid or span the peatland habitat during the detailed routeing stage.	**A2c** is preferred because it contains the smallest total area of peat to be avoided during the detailed routeing stage.
	Overall preference for Biodiversity	**In relation to biodiversity, A2c is the preference as this corridor option has the opportunity to avoid RIGS and contains the smallest total area of peat to either be spanned or avoided during the detailed routeing stage (it does not contain the fewest SSSIs; however, these can be avoided or spanned).**		
Landscape and Visual Amenity	National Park	Corridor options A1a, A1b and A1c and A2a, A2b and A2c pass within 1-2km of the edge of the Brecon Beacons National Park, to the north and west of Llandovery. A1a and A2a remain slightly further from the National Park boundary. No effects on the special qualities of the National Park would be anticipated.		Slightly less of A1a and A2a pass within close proximity of the National Park boundary, however there is no strong preference as all corridors pass within 1-2km of the National Park near Llandovery.
	Locally Designated Landscapes (Special Landscape Area (SLA))	Corridor option A1a passes through the Bran Valley SLA (Carmarthenshire) for approximately 6.5km, then the Tywi Valley SLA for approximately 9km. Corridor option A1b passes through the Bran Valley SLA for approximately 10km, then the Tywi Valley SLA for approximately 2km.	Corridor option A2a passes through the Bran Valley SLA (Carmarthenshire) for approximately 6.5km, then the Tywi Valley SLA for approximately 9km. Corridor option A2b passes through the Bran Valley SLA for approximately 10km, then the Tywi Valley SLA for approximately 2km.	All corridor options pass through both the Bran Valley and Tywi Valley SLAs. **A1c** and **A2c** are slightly preferred as they have the shortest overall length within the SLAs.

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
		Corridor option A1c passes through the Bran Valley SLA for approximately 8km, then the Tywi Valley SLA for approximately 2km. The Overhead Line (OHL) could affect mature hedgerow and fields trees that are a characteristic of the Tywi Valley SLA, as well as the gateway nature of the Bran Valley SLA.	Corridor option A2c passes through the Bran Valley SLA for approximately 8km, then the Tywi Valley SLA for approximately 2km. The OHL could affect mature hedgerow and fields trees that are a characteristic of the Tywi Valley SLA, as well as the gateway nature of the Bran Valley SLA.	
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	Corridor options A1a, A1b and A1c pass through mainly 'moderate' Visual and Sensory (V+S) aspect areas, with small areas of 'high' evaluation, e.g. at the River Wye west of Builth Wells. All three corridor options pass through 'high' V+S aspect areas south and west of Llanwrtyd Wells (10km). Corridor options A1a and A1b pass through a small 'outstanding' V+S area south of the Sugar Loaf (<1km). Corridor option A1a passes through an 'outstanding' V+S aspect area for around 9km, in the Towy Valley to the north of Llandovery. Corridor options A1b and A1c pass through this area for around 3km near Llandovery. Corridor options A1a and A1b pass through small and scattered 'outstanding' Landscape Habitat aspect areas near Llanwrtyd Wells. Corridor options A1a, A1b and A1c all pass through 'outstanding' Historic Landscape aspect areas north and west of Llandrindod Wells (7km). Corridor option A1a passes through an 'outstanding' Historic Landscape aspect area in the upper Towy Valley (5km). Corridor options A1a, A1b and A1c all pass through 'outstanding' Geological Landscape aspect areas south of Llandrindod Wells (7km) and south of the River Wye (4km). Corridor options A1a, A1b and A1c pass through 'outstanding' Cultural Landscape aspect areas along the River Ithon (9km), and the River Wye (2km). Corridor option A1a passes through an 'outstanding' Cultural Landscape aspect area in the upper Towy Valley (5km).	Corridor options A2a, A2b and A2c pass through mainly 'moderate' V+S aspect areas, with areas of 'outstanding' (2km) and 'high' (2km) evaluation south and east of Builth Wells. All three corridor options pass through 'high' V+S aspect areas south and west of Llanwrtyd Wells (10km). Corridor options A2a and A2b pass through a small 'outstanding' V+S area south of the Sugar Loaf (<1km). Corridor option A2a passes through an 'outstanding' V+S aspect area for around 9km, in the Towy Valley to the north of Llandovery. Corridor options A2b and A2c pass through this area for around 3km near Llandovery. Corridor options A2a and A2b pass through small and scattered 'outstanding' Landscape Habitat aspect areas near Llanwrtyd Wells. Corridor options A2a, A2b and A2c all pass through 'outstanding' Historic Landscape aspect areas to the north-east of Builth Wells (6km). Corridor option A2a passes through an 'outstanding' Historic Landscape aspect area in the upper Towy Valley (5km). Corridor options A2a, A2b and A2c all pass through 'outstanding' Geological Landscape aspect areas south and west of Builth Wells (12km). Corridor options A2a, A2b and A2c pass through 'outstanding' Cultural Landscape aspect areas east and south of Builth Wells (5km). Corridor option A2a passes through an 'outstanding' Cultural Landscape aspect area in the upper Towy Valley (5km).	A1c and A2c avoid the small 'outstanding' V+S aspect area south of the Sugar Loaf, and minimise the length of OHL in the 'outstanding' Towy Valley (Historic and Cultural). **A1c** and **A2c** are therefore the preferred corridor options.
	Landscape Character	Although beginning in open upland (National Landscape Character Area (NLCA) 20 Radnorshire Hills), corridor options A1a, A1b and A1c all descend into the vale of the River Ithon (NLCA 27 the Spas and Wells of Central Wales). This undulating lowland is rural in character and dense with hedges and hedgerow trees and is relatively sensitive to OHL. Although generally following the sweep of the vale, there are sections where OHL would cut across the undulating topography. Corridor options A1a and A1b cross over a narrow pass beside the Sugar Loaf (following the north-western edge of NLCA 28 Epynt Plateau and Valleys), before descending across steep slopes into the Afon Bran Valley (within NLCA 41 Tywi Valley). Corridor option A1a crosses over hills into the Towy Valley. Corridor option A1c passes through Crychan Forest (within NLCA 28 Epynt Plateau and Valleys) where OHL could be absorbed by plantations. The OHL would then descend more smoothly into the Afon Bran Valley.	Corridor options A2a, A2b and A2c pass through the open uplands of the Radnorshire Hills (NLCA 20), which are likely to be less sensitive to OHL. The corridor options cross the Wye east of Builth Wells (NLCA 27 the Spas and Wells of Central Wales), passing through a narrower side valley and cutting across the foothills to the south of the town. To the west the three corridor options follow the broad vale of the Irfon Valley. Corridor options A2a and A2b cross over a narrow pass beside the Sugar Loaf (following the north-western edge of NLCA 28 Epynt Plateau and Valleys), before descending across steep slopes into the Afon Bran Valley (within NLCA 41 Tywi Valley). Corridor option A2a crosses over hills into the Towy Valley. Corridor option A2c passes through Crychan Forest (within NLCA 28 Epynt Plateau and Valleys) where OHL could be absorbed by plantations. The OHL would then descend more smoothly into the Afon Bran Valley.	There is a slight preference for A2 over A1 in the northern part of the corridors. There is a preference for sub-option c in the southern part, which avoids the narrow pass at Sugar Loaf. **A2c** is therefore preferred.
	Residential Visual Amenity with '150m trigger for consideration zone'	Corridor options A1a, A1b and A1c include the villages of Llandegley, Penybont and Crossgates, with a particular concentration of dwellings around the last that might limit routeing opportunities. These corridor options also include the edge of Llanyre and the village of Builth Road. Corridor options A1a and A1b include the edge of Llanwrtyd Wells, with houses to the south potentially restricting routeing. Corridor options A1b and particularly A1c include an area of the settlement of Cynghordy. Corridor option A1a may be limited by dwellings in the Towy Valley. Dwellings to the north of Llandovery may limit opportunities for all corridor options.	Corridor options A2a, A2b and A2c include the small villages of Frank's Bridge and Llansantffraed-in-Elwel, as well as houses on the south of Builth Wells. Corridor options A2a and A2b include the edge of Llanwrtyd Wells, with houses to the south potentially restricting routeing. Corridor options A2b and particularly A2c include an area of the settlement of Cynghordy. Corridor option A2a may be limited by dwellings in the Towy Valley. Dwellings to the north of Llandovery may limit opportunities for all corridor options.	All corridor options pass a number of dwellings. A2c is likely to have effects on fewer of the concentrations of dwellings noted, though this is not a strong preference.

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
	Tourism and Recreation (visual amenity – viewpoints, cycle corridors, public rights of way (PRoW), long distance trails, tourist attractions and recreational areas)	Corridor options A1a, A1b and A1c all cross the Heart of Wales Trail at multiple locations along their length. All corridor options cross the Cambrian Way at the southern end. All corridor options cross the National Cycle Network at Llandrindod Wells, the River Wye, and at Llanwrtyd Wells (A1a and A1b). Corridor options A1a, A1b and A1c all cross a large number of PRoWs. Corridor options A1a and A1b pass the Sugar Loaf, a marked viewpoint with car park access. Corridor option A1c passes through the north edge of Crychan Forest, which has a number of walking and cycling trails. All corridor options pass close to Builth Wells and cross the River Wye, a popular location for tourists and visitors to the area.	Corridor options A2a, A2b and A2c all cross the Heart of Wales Trail at multiple locations between Builth Wells and Llandovery. All corridor options cross the Cambrian Way at the southern end. All corridor options cross the National Cycle Network at Frank's Bridge, Builth Wells, and at Llanwrtyd Wells (A2a and A2b). Corridor options A2a, A2b and A2c all cross a large number of PRoWs. Corridor options A2a and A2b pass the Sugar Loaf, a marked viewpoint with car park access. Corridor option A2c passes through the north edge of Crychan Forest, which has a number of walking and cycling trails. All corridor options pass close to Builth Wells and cross the River Wye, a popular location for tourists and visitors to the area.	**A2c** and **A1c** have slightly fewer crossings of National Trails and would avoid passing the Sugar Loaf viewpoint.
	Public roads, including tourist corridors, railways	Corridor options A1a, A1b and A1c would follow the A44 between the Nant Mithil Energy Park and Crossgates and would cross the A483 and railway at Crossgates. Sections of the A470 and railway are within the corridor option around Builth Road. Corridor options A1a and A1b follow the A483 and railway between Llanwrtyd Wells and Cynghordy and may be prominent in some locations. Corridor options A1b and A1c follow the A483 and railway between Cynghordy and Llandovery.	Corridor options A2a, A2b and A2c follow the A481 for around 9km between Frank's Bridge and the River Wye. OHL is likely to be highly visible from the road in the southern section near the Wye. OHL is likely to be visible crossing the Wye from the A470 and B4567. All corridor options also follow the A483 for 5km between Cilmery and Garth, and the railway for 9km between Cilmery and Llangammarch Wells. Corridor options A2a and A2b follow the A483 and railway between Llanwrtyd Wells and Cynghordy, and may be prominent in some locations. Corridor options A2b and A2c follow the A483 and railway between Cynghordy and Llandovery.	All corridor options have the potential to be visible to people on principal roads and railways, and there is no clear preference.
	Overall preference for Landscape and Visual Amenity	**In relation to landscape and visual amenity, A2c is preferred, as it avoids the Sugar Loaf viewpoint in the south and runs through more open upland landscapes in the north. A2c is also preferred due to fewer groups of properties, fewer views from national trails, and it avoids higher-evaluation LANDMAP areas.**		
Cultural Heritage	Scheduled Monuments (Cadw (SMs))	There are 7 SMs within corridor option A1a, 6 within corridor option A1b and 6 within corridor option A1c. SMs Castell Collen (located to the north-west of Llandrindod Wells) and Cwrt Llechryd moated site (located to the north-west of Builth Wells) occupy a relatively large area of a more narrow part of the A1a, A1b and A1c corridor. Although these SMs can both be avoided to the west, they may present an issue following the consideration of other potential environmental constraints. Where the corridor options deviate, there are no discernible differences as although corridor option A1a contains one more SM than both A1b and A1c, due to its size and location it can be avoided. Therefore, direct impacts can be avoided. The following numbers of SMs are in or within 3km of these corridor options: ■ A1a – 68. ■ A1b – 67. ■ A1c – 63. The following areas have potential issues related to setting: ■ All A1 Western end (Llandovery) – a section of Roman road lies approximately 300m north of the corridor options and a Roman fort lies approximately 90m south of the corridor options. Views from the fort into the landscape, particularly along the scheduled road, are likely to be important and vice versa. A medieval castle also lies approximately 800m south of the corridor options. Views from this into the landscape, and vice versa, are likely to be	There are 5 SMs within corridor option A2a, 4 within corridor option A2b and 4 within corridor option A2c. However, these occupy a very small area of the corridor. Therefore, direct impacts can be avoided. The following numbers of SMs are in or within 3km of these corridor options: ■ A2a – 82. ■ A2b – 81. ■ A2c – 76. The corridor options have the following potential issues related to setting: ■ All A2 Western end (Llandovery) – a section of Roman road lies approximately 300m north of the corridor options and a Roman fort lies approximately 90m south of the corridor options. Views from the fort into the landscape, particularly along the scheduled road, are likely to be important and vice versa. A medieval castle also lies approximately 800m south of the corridor options. Views from this into the landscape, and vice versa, are likely to be important. This includes from and to the Roman road which apparently remains in use as the northward route from Llandovery. ■ A2c Southern section (Abererbwll) – a Roman fort lies on a summit approximately 100m north of the corridor option. Views from the fort across the landscape are important. ■ A2a and A2b Central section (Llanwrtyd Wells) – prehistoric standing stone[6] approximately 260m north of corridor options.	Overall, A1b, A1c, A2b and A2c offer the greatest opportunity to avoid direct impacts. However, due to their size and location, SMs could be avoided in all of the corridor options and therefore there is no preference. The **A1** corridor options are preferred in terms of potential for effects related to setting change. None is particularly better or worse in terms of setting issues and the implications for detailed routeing and tower siting. The A2 corridor options include two pinch points (Carneddau and Graigfawr) where prehistoric ritual assets will likely limit options for detailed routing and infrastructure placement.

[6] BR132

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
		important. This includes from and to the Roman road which apparently remains in use as the north-ward route from Llandovery. ■ A1c Southern section (Abererbwll) – a Roman fort lies on a summit approximately 100m north of the corridor option. Views from the fort across the landscape are important. ■ A1a and A1b Central section (Llanwrtyd Wells) – prehistoric standing stone[1] approximately 260m north of corridor. Views of the asset from the surrounding landscape are likely to be important. ■ All A1 Central section (Beulah) – a Roman fort[2] lies immediately north of the corridor options. Views from the fort into the landscape, particularly along the adjacent unscheduled Roman road, are likely to be important and vice versa. ■ All A1 Northern Arm (Llanyre) – a Roman fort[3] lies in the corridor options. Views from the fort into the landscape, particularly along the adjacent unscheduled Roman road, are likely to be important and vice versa. ■ All A1 Northern Arm (Penybont) – an extensive medieval settlement[4] lies within the corridor options. Experiencing it in a relatively unaltered (i.e. low on modern infrastructure) rural landscape is likely to be important. ■ All A1 Northern Arm (Llandegley) – Llandegley Rocks hillfort[5] lies approximately 80m west of the corridor options. Views from the fort into the landscape, and vice versa, are likely to be important. It is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. running below the crest of hills so the OHL and steel towers are not skylined in views between assets; avoiding towers placed centrally on line-of-sight from the Roman road to the Roman fort/medieval castle). Views from the fort into the landscape, and vice versa, are likely to be important.	Views of the asset from the surrounding landscape are likely to be important. ■ All A2 Northern section (Llandegley) – Llandegley Rocks hillfort[7] lies approximately 80m west of the corridor options. Views from the fort into the landscape, and vice versa, are likely to be important. ■ All A2 Central section (Builth Wells) – Builth Castle[8] lies approximately 220m north-west of the corridor. Views from the fort into the landscape, and vice versa, are likely to be important. ■ All A2 Northern section (Carneddau) – two hillforts[9] and a settlement lie adjacent to the corridor options. Views from the fort into the landscape, and vice versa, are likely to be important. Several prehistoric ritual assets lie within or adjacent to this section of the corridor options.[10] Relationships and intervisibility between assets of this kind are generally important. ■ All A2 Northern section (Hundred House) – two castle sites lie close to the south of the corridor options.[11] Views from the castles into the landscape, and vice versa, plus between the castles are likely to be important. ■ All A2 Northern section (Graigfawr) – two prehistoric ritual assets[12] lie within the corridor options. Relationships and intervisibility between assets of this kind are generally important. A hillfort[13] lies immediately north of the corridor options. Views from the fort into the landscape, and vice versa, are likely to be important. It is likely that most issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. running below the crest of hills so the OHL and steel towers are not skylined in views between assets; avoiding towers placed centrally on line-of-sight from the Roman road to the Roman fort/medieval castle). Views from the fort into the landscape, and vice versa, are likely to be important. At the Carneddau and Graigfawr prehistoric ritual asset clusters, the siting of assets within the corridor options means that options for routing that avoids the OHL being placed between the assets are limited.	
	Listed Buildings (I, II*, II) (LBs)	There are 59 LBs within corridor option A1a, including 3 Grade I, 6 Grade II* and 50 Grade II. There are 42 LBs within corridor options A1b and A1c, including 1 Grade I, 2 Grade II* and 39 Grade II. Where the corridor options deviate, there are two Grade II* LBs located to the north-east of Llandovery that occupy a narrow part of the A1a corridor. Although these can be avoided, they may present an issue following the consideration of other potential environmental constraints. The corridor options have the following numbers of LBs in or within 3km of the corridor options: ■ A1a – 450. ■ A1b – 408. ■ A1c – 404.	There are 41 LBs within corridor option A2a, including 2 Grade I, 4 Grade II* and 35 Grade II. There are 24 LBs within corridor options A2b and A2c, all of which are Grade II. Where the corridor options deviate, there are two Grade II* LBs located to the north-east of Llandovery that occupy a narrow part of the A2a corridor. Although these can be avoided, they may present an issue following the consideration of other potential environmental constraints. The corridor options have the following numbers of LBs in or within 3km of the corridor options: ■ A2a – 379. ■ A2b – 337. ■ A2c – 332.	Overall, A1b, A1c, A2b and A2c include the smallest number of Grade II* and Grade II LBs and offer the greatest opportunity to avoid them. Direct physical effects to LBs will be avoided for all of the corridor options and, therefore, there is no preference. The **A1** corridor options are slightly preferred in terms of potential for effects related to setting change since fewer LBs (and associated Conservation Areas) are in or near these options. None is particularly better or worse in terms of setting issues and the implications for detailed routeing and tower siting are similar across all.

[1] BR132
[2] BR148
[3] RD001
[4] RD157
[5] RD264
[7] RD264
[8] BR031
[9] RD014 and RD237
[10] Cairns RD122, RD222, RD226 and RD230; stone row RD236.
[11] RD035, RD036
[12] RD027, RD113
[13] RD112

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
		The majority of these are in Llandovery, Builth Wells and Llandrindod Wells and in the associated Conservation Areas. The remaining buildings either relate to individual farms, small hamlets and bridges. In all cases it is likely that issues related to setting change can be avoided or sufficiently minimised to not present a consenting risk through positioning of infrastructure (e.g. placing steel towers so that they do not 'loom over' and/or stand directly behind the LB when it is seen from its principal elevation; and avoidance of siting the OHL between related buildings).	The majority of these are in Llandovery and Builth Wells and in the associated Conservation Areas. The remaining buildings either relate to individual farms, small hamlets and bridges. In all cases it is likely that issues related to setting change can be avoided or sufficiently minimised to not present a consenting risk through positioning of infrastructure (e.g. placing steel towers so that they do not 'loom over' and/or stand directly behind the LB when it is seen from its principal elevation; and avoidance of siting the OHL between related buildings).	
	Historic Parks and Gardens (I, II*, II)	There are no Historic Parks and Gardens included within corridor options A1a/b/c. The corridor options have the following Historic Parks and Gardens within 3km: ■ All A1 – Llandrindod Wells Public Parks (Grade II*); Llwynywormwood and Pencerrig (both Grade II). No setting issues are anticipated with Llwynywormwood or Pencerrig owing to their positioning relative to the corridor options and probable screening by intervening topography and mature woodland. There may be setting issues related to Llandrindod Wells Public Parks but these are likely to be minor and addressable via routeing choice and steel tower placement (e.g. not having steel towers axially in key views out from the parks).	There are no Historic Parks and Gardens included within corridor options A2a/b/c. The corridor options have the following Historic Parks and Gardens within 3km: ■ All A2 – Llwynywormwood and Pencerrig (both Grade II). No setting issues are anticipated with Llwynywormwood or Pencerrig owing to their positioning relative to the corridor options and probable screening by intervening topography and mature woodland.	The **A2** corridor options are preferred in terms of potential for effects related to setting change. Setting appears to be a potential issue only in the Llandrindod Wells Public Park Historic Park and Garden, present only on A1.
	Registered Historic Landscapes (RHL)	Corridor options A1a, A1b and A1c pass through the Tywi Valley Landscape of Outstanding Historic Interest. Corridor option A1a passes through approximately 1027ha of the RHL, while both A1b and A1c pass through approximately 336ha of the RHL. This means that sections of the corridor options also lie within 3km of the Tywi Valley Landscape of Outstanding Historic Interest. The southern end of all corridor options also lies within 3km of the Black Mountain and Mynydd Myddfai Landscape of Outstanding Historic Interest. The primary purpose of this designation is to manage large-scale change within the designated area. Presence of a grid route within land that may be considered as the setting of these assets is unlikely to give rise to harm to the characteristics the assets were designated for so is unlikely to present a major consenting risk.	Corridor options A2a, A2b and A2c pass through the Tywi Valley Landscape of Outstanding Historic Interest. Corridor option A2a passes through approximately 1027ha of the RHL, while both A2b and A2c pass through approximately 336ha of the RHL. This means that sections of the corridor options also lie within 3km of the Tywi Valley Landscape of Outstanding Historic Interest. The southern end of all corridor options also lies within 3km of the Black Mountain and Mynydd Myddfai Landscape of Outstanding Historic Interest. The primary purpose of this designation is to manage large-scale change within the designated area. Presence of a grid route within land that may be considered as the setting of these assets is unlikely to give rise to harm to the characteristics the assets were designated for so is unlikely to present a major consenting risk.	Of the A1 corridor options, A1b and A1c pass through a considerably smaller area of RHL than A1a. Therefore, A1b and A1c are preferred. Of the A2 corridor options, A2b and A2c pass through a considerably smaller area of RHL than A2a. Therefore, A2b and A2c are preferred. Overall, **A1b, A1c, A2b** and **A2c** pass through the same area of RHL. Therefore, although they are indistinguishable in regard to the avoidance of RHL, they are the preferred corridor options.
	Conservation Areas	There are no Conservation Areas included within corridor options A1a/b/c. The corridor options have the following Conservation Areas in or within 3km: ■ A1 options – Llandovery, Builth Wells and Llandrindod Wells. It is likely that issues related to setting change can be avoided through positioning of infrastructure (e.g. placing steel towers so that they do not appear axially on views out of the Conservation Area along main routes, such as the high street).	There are no Conservation Areas included within corridor options A2a/b/c. The corridor options have the following Conservation Areas in or within 3km: ■ A2a options – Llandovery, Builth Wells. It is likely that issues related to setting change can be avoided through positioning of infrastructure (e.g. placing steel towers so that they do not appear axially on views out of the Conservation Area along main routes, such as the high street).	The **A2** corridor options are preferred in terms of potential for effects related to setting change since these interact with the setting of two Conservation Areas as opposed to three on the A1 corridor options.
	Overall preference for Cultural Heritage	**In relation to cultural heritage, each corridor option appears largely similar in terms of direct effects to designated historic assets and the ability to avoid these with detailed routeing. The A1 corridors are preferred as these corridors are likely to result in fewer potential setting effects, and with more potential for mitigation through detailed design, than A2.**		
Land Use	Agricultural Land	Corridor option A1a contains approximately 570ha of Best and Most Versatile (BMV) agricultural land, while A1b and A1c both contain approximately 681ha, which is all Grade 3a. However, there are several locations including to the north of Llandrindod Wells and to the north-west of Builth Wells where this cannot be avoided. Corridor option A1a contains an area of BMV agricultural land to the north of Llandovery that, although it can be avoided, creates a pinch point. Where the corridor options deviate, A1b and A1c include a much larger area of BMV agricultural land to the north of Llandovery that, although can also be avoided, creates a much longer pinch point.	Corridor option A2a contains approximately 475ha of BMV agricultural land, while A2b and A2c both contain approximately 586ha. This is mostly Grade 3a, however, there is an area of Grade 2 agricultural land to the west of Builth Wells which cannot be avoided. There are also several locations including to the north-west of Builth Wells where the Glade 3a land cannot be avoided. Corridor option A2a contains an area of BMV agricultural land to the north of Llandovery that, although can be avoided, creates a pinch point. Where the corridor options deviate, A2b and A2c include a much larger area of BMV agricultural land to the north of Llandovery that, although can also be avoided, creates a much longer pinch point.	Of the A1 corridor options, A1a is preferred because it contains the smallest area of BMV agricultural land and would avoid the much larger pinch point within A1b and A1c. Of the A2 corridor options, A2a is preferred because it contains the smallest area of BMV agricultural land and would avoid the much larger pinch point within A2b and A2c.

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
				Overall, **A1a** is the preference because it will avoid crossing the Grade 2 agricultural land located to the west of Builth Wells.
	Common Land	Corridor options A1a and A1b both contain approximately 278ha of Common Land, while A1c contains approximately 264ha. Common Land located to the west of Builth Wells occupies an area within all of the corridor options and therefore cannot be avoided. Although they can be avoided, areas of Common Land to the east of Penybont and north of Garth create pinch points within all of the corridor options.	Corridor options A2a, A2b and A2c contain approximately 110ha of Common Land. Common Land is located primarily within the northern end of the corridor (north-east of Builth Wells and south-west of Trewern) which creates pinch points in all of the A2 corridor options, however this could be avoided.	The **A2** corridor options (a/b/c) are preferred as these could all avoid the Common Land.
	Overall preference for Land Use	**In relation to land use, A1a or the A2 corridors are preferred as they offer the greatest opportunity to minimise effects on BMV agricultural land and Common Land respectively.**		
Forestry and Woodland	Ancient Woodland (as per the Ancient Woodland Inventory (AWI))	Of the A1 corridor options, there is approximately 237ha of AWI within corridor option A1a, 234ha within corridor option A1b and 272ha within corridor option A1c. For all corridor options, the AWI comprises a number of small woodland blocks which are likely to be avoidable during the detailed routeing stage. However, for all corridor options there is a section of woodland south-west of Llandrindod Wells which is unavoidable. Corridor options A1a and A1b also include an unavoidable section of woodland at Sugar Loaf.	Of the A2 corridor options, there is approximately 169ha of AWI within corridor option A2a, 166ha within corridor option A2b and 206ha within corridor option A2c. For all corridor options, the AWI comprises a number of small woodland blocks which are likely to be avoidable during the detailed routeing stage. However, for all corridor options there are two sections (south of Builth Wells and Garth) where avoidance of AWI is unlikely.	**A2b** is preferred as this offers the opportunity to affect the smallest area of AWI and affect the lowest number of AWI blocks.
	National Forest Inventory (NFI)	Of broadleaved woodland, there is approximately 346ha included in A1a, 313ha included in A1b and 354ha included in A1c. Of coniferous woodland, there is approximately 105ha included in A1a, 80ha included in A1b and 206ha included in A1c. Of other woodland habitat, there is approximately 48ha included in A1a, 42ha included in A1b and 64ha included in A1c. The majority of the NFI woodland in all corridor options comprises scattered small woodland blocks that are likely avoidable during detailed routeing stage. However for all corridor options there are several sections of woodland north and south of Builth Road, south of Llanwrtyd Wells and at Sugar Loaf that are unavoidable during the routeing stage. In addition, there are sections of woodland east of Siloh and east of Cilycwm that are unavoidable in corridor option A1a and A1c. Corridor option A1c also includes three sections of unavoidable woodland near Tirabad.	Of broadleaved woodland, there is approximately 271ha included in A2a, 238ha included in A2b and 281ha included in A2c. Of coniferous woodland, there is approximately 53ha included in A2a, 27ha included in A2b and 154ha included in A2c. Of other woodland habitat, there is approximately 32ha included in A2a, 26ha included in A2b and 48ha included in A2c. The majority of the NFI woodland in all corridor options comprises scattered small woodland blocks that are likely avoidable during detailed routeing stage. However, for all corridor options there are several sections of woodland located east of Garth, east of Builth Wells and at Sugar Loaf that are unavoidable during the routeing stage. In addition, there are sections of woodland east of Siloh, east of Cilycwm and east of Llanwrtyd Wells that are unavoidable in corridor option A2a. Corridor option A2c also includes three sections of unavoidable woodland near Tirabad.	Overall, **A2b** is preferred as this corridor option includes the smallest area of woodland as well as including the fewest sections of woodland that is unavoidable during the routeing stage.
	Overall preference for Forestry and Woodland	**In relation to woodland, A2b is preferred as it offers the best opportunity to minimise loss of Ancient Woodland and other forestry.**		
Flood Risk	Flood Zones (High Risk)	Corridor options A1a, A1b and A1c cross a number of watercourses which have High risk flood zone areas, including an area close to Penybont in the northern part of the corridor that is mostly wider than 180m. The narrowest part of this High risk flood zone area is approximately 50m wide which could be spanned, however, it is in close proximity to the A44 road. Where the corridor options deviate from each other, corridor option A1a would require the OHL to cross several more High risk flood zone areas than corridor options A1b and A1c, while corridor option A1c crosses more High risk flood zone areas than corridor option A1b. These are <180m wide and therefore can be spanned. However, corridor options A1b and A1c include a relatively wide area (>180m) of High risk flood zone at the southern part of the corridor close to Cynghordy which cannot be spanned that may present an issue following the consideration of other potential environmental constraints.	Corridor options A2a, A2b and A2c cross a number of watercourses which have High risk flood zone areas, the majority of which are narrower than 180m. However, there is an unavoidable area of High risk flood zone to the north-east of Builth Wells that is 280m at the narrowest point. In addition, there is an area of High risk flood zone to the east of Garth that is 100m at its narrowest point and there is opportunity to avoid crossing it in the northern part of the corridor, this area may present an issue following the consideration of other potential environment constraints. Corridor option A2a would require the crossing of several more High risk flood zone areas than corridor options A2b and A2c. Corridor option A2b includes a relatively wide area (>180m) of High risk flood zone at the southern part of the corridor, close to Cynghordy, which runs parallel to the corridor which could be avoided subject to other potential environmental constraints. Corridor option A2c follows a linear area of High risk flood zone that stretches between Cefn Glancamddwr and Tirabad. Although it is possible to avoid crossing this area of flood zone, this area may present an issue following the consideration of other potential environmental constraints which may result in the requirement to cross	**A1a** is preferred because it would not require the crossing of the wide (>180m) High risk flood zone to the north-east of Builth Wells.

Criterion	Sub-criteria	Corridor Option A1 (a, b and c)	Corridor Option A2 (a, b and c)	Preference
			the flood zone a number of times. In addition, it would not be possible to avoid crossing the area of High risk flood zone adjacent to Cynghordy within corridor option A2c, which is wider than 180m at most points and so cannot be spanned.	
Overall Preference	A2c is the preferred corridor option in terms of overall length as it is the shortest corridor. In relation to biodiversity, A2c is preferred as this corridor option has the opportunity to avoid RIGS and contains the smallest total area of peat to either be spanned or avoided during routeing design (it does not contain the fewest SSSIs, however these can be avoided). In relation to landscape and visual amenity, corridor option A2c is preferred, as it avoids the Sugar Loaf viewpoint in the south and runs through more open upland landscapes in the north. A2c is also preferred due to fewer groups of properties, fewer views from national trails, and it avoids higher-evaluation LANDMAP areas. In relation to cultural heritage, each corridor option appears largely similar in terms of direct effects to designated historic assets and the ability to avoid these with detailed routeing. The A1 corridor options are preferred as these corridor options are likely to result in fewer potential setting effects, and with more potential for mitigation through detailed design, than A2. In relation to land use, A1a or the A2 corridor options are the preferred corridors as they offer the greatest opportunity to minimise effects on BMV agricultural land and Common Land respectively. In relation to woodland, A2b is the preferred corridor option as it offers the best opportunity to minimise loss of Ancient Woodland and other forestry. In relation to flood risk, A1a is the preferred corridor option primarily as it avoids the High Flood Risk Areas at Builth Wells. **Overall, on balance A2c is the preferred corridor option as this is the shortest corridor and is preferred in relation to biodiversity and on landscape and visual grounds. However, effects on the setting of cultural heritage features as well as minimising loss of woodland and minimising infrastructure within the flood risk areas will form key considerations at the detailed routeing stage.**			

Table B.2: Corridor Options B1, B2 and B3 Appraisal

Criterion	Sub-criteria	Corridor Option B1	Corridor Option B2	Corridor Option B3	Preference
Approximate length of corridor (kilometres (km))	N/A	Corridor option B1 is approximately 42km.	Corridor option B2 is approximately 41km.	Corridor option B3 is approximately 40km.	There is a slight preference for **B3** as it is the shortest.
Biodiversity and Geological Conservation	Special Areas of Conservation (SAC)	There is one SAC located within corridor options B1, B2 and B3. It is associated with a watercourse (the Afon Tywi) which largely follows the corridor options from Llandovery for approximately 12km and crosses each of the corridor options at one location east of Carmarthen. However, opportunities exist to either avoid or span this SAC during the detailed routeing stage.			There is no preference as all corridor options would affect one SAC. However, opportunities exist to either span or avoid this during the detailed routeing stage.
	Sites of Special Scientific Interest (SSSI)	There are four SSSIs located within corridor option B1. One is associated with a watercourse (the Afon Tywi SAC – see above); the Afon Tywi is also a marine protected SSSI. The remaining three SSSIs are located south-west of Ashfield, south and east of Carmarthen. However, opportunities exist to avoid or span these SSSIs during the detailed routeing stage.	There are three SSSIs located within corridor option B2. One is associated with a watercourse (the Afon Tywi SAC – see above); the Afon Tywi is also a marine protected SSSI. The remaining two SSSIs are located south-west of Ashfield and west of Nantycaws. However, opportunities exist to avoid or span these SSSIs during the detailed routeing stage.	There are three SSSIs located within corridor option B3. One is associated with a watercourse (the Afon Tywi SAC – see above); the Afon Tywi is also a marine protected SSSI The remaining two SSSIs are located south-west of Ashfield and north-east of Llanddarog. However, opportunities exist to avoid or span these SSSIs during the detailed routeing stage.	**B2** or **B3** are preferred as these corridor options would affect the lowest number of SSSIs.
	Geological Conservation Review Sites (GCRS)	There is one GCRS partially within this corridor option, located south of Carmarthen. This can be avoided during the detailed routeing stage.	There is one GCRS included within corridor option B2, located west of Nantycaws. This can be avoided during the detailed routeing stage.	There is one GCRS included within corridor option B3, located north-east of Llanddarog. This can be avoided during the detailed routeing stage.	There is no preference as all corridor options would affect one GCRS. These could all be avoided during the detailed routeing stage.
	Peat	There is no peat within corridor option B1.	There is approximately 10 hectares (ha) of peat within corridor option B2. However, opportunities exist to either avoid or span the peatland habitat during the detailed routeing stage.	There is approximately 53ha of peat within corridor option B3. However, opportunities exist to either avoid or span the peatland habitat during the detailed routeing stage.	**B1** is the preferred corridor option as it does not contain any peat.
	Overall preference for Biodiversity	**There is no preference in biodiversity criteria, however B1 contains no peat whilst B2 and B3 contain the fewest SSSIs.**			
Landscape and Visual Amenity	National Park	Corridor options B1, B2 and B3 all pass within 2km of the edge of the Brecon Beacons National Park for around 6km between Llandovery and Llandeilo. No effects on the special qualities of the National Park would be anticipated.			There is no preference as all the corridor options pass within 2km of the National Park; however, no effects on the special qualities of the National Park would be anticipated.
	Locally Designated Landscapes (Special Landscape Area (SLA))	Corridor option B1 runs within the Tywi Valley SLA (Carmarthenshire) for approximately 35km between Llandovery and Abergwili. The Overhead Line (OHL) could affect mature hedgerow and field trees that are a characteristic of the SLA.	Corridor option B2 runs within the Tywi Valley SLA (Carmarthenshire) for approximately 33km between Llandovery and Nantgaredig. The OHL could affect mature hedgerow and field trees that are a characteristic of the SLA.	Corridor option B3 runs within the Tywi Valley SLA (Carmarthenshire) for approximately 29km between Llandovery and Llanarthne. The OHL could affect mature hedgerow and field trees that are a characteristic of the SLA.	All corridor options would pass through the Tywi Valley SLA for a substantial distance. **B3** has the shortest distance within the SLA and is therefore preferred.
	Landscape Character	Corridor options B1, B2 and B3 all generally follow the Towy Valley and pass through National Landscape Character Area (NLCA) 41 (Tywi Valley). The valley is relatively broad but occasionally densely wooded on the floor and sides of the valley, including mature field boundaries. The scale of the valley can accommodate OHLs, which would reflect its role as a strategic corridor. All corridor options would need to traverse the wooded slopes at the south side of the valley. The south-western most sections of corridor option B3 passes through NLCA 22 (Gwendraeth Vales), whereas corridor options B1 and B2 mainly pass through NLCA 45 (Taf, Tywi and Gwendraeth Estuaries).			There is no preference as all corridor options generally follow the Towy Valley and the scale of the valley can accommodate an OHL.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	Corridor option B1 runs through ‘outstanding’ Visual and Sensory (V+S) aspect areas within the Towy Valley, for approximately 34km. All corridor options skirt an 'outstanding' Landscape Habitats aspect area at Llandeilo. All corridor options pass through a mix of 'outstanding' and 'high' Historic Landscape aspect areas for their whole length. Corridor option B1 briefly crosses an 'outstanding' Geological Landscape aspect area near Nantycaws.	Corridor option B2 runs through ‘outstanding’ V+S aspect areas within the Towy Valley, for approximately 31km. All corridor options skirt an 'outstanding' Landscape Habitats aspect area at Llandeilo. All corridor options pass through a mix of 'outstanding' and 'high' Historic Landscape aspect areas for their whole length.	Corridor option B3 runs through ‘outstanding’ V+S aspect areas within the Towy Valley, for approximately 28km. All corridor options skirt an 'outstanding' Landscape Habitats aspect area at Llandeilo. All corridor options pass through a mix of 'outstanding' and 'high' Historic Landscape aspect areas for their whole length.	There is a preference for **B3**, as it has the shortest length within 'outstanding' V+S and Cultural Landscape aspect areas in the Towy Valley.

Criterion	Sub-criteria	Corridor Option B1	Corridor Option B2	Corridor Option B3	Preference
		All corridor options pass through a mix of 'outstanding' and 'high' Cultural Landscape aspect areas within the Towy Valley.	Corridor option B2 crosses an 'outstanding' Geological Landscape aspect area for approximately 4km near Nantycaws. All corridor options pass through a mix of 'outstanding' and 'high' Cultural Landscape aspect areas within the Towy Valley.	Corridor option B3 crosses an 'outstanding' Geological Landscape aspect area for approximately 7km near Llanarthney. All corridor options pass through a mix of 'outstanding' and 'high' Cultural Landscape aspect areas within the Towy Valley.	
	Residential Visual Amenity with '150m trigger for consideration zone'	All corridor options contain the settlements of Llanwrda, Manordeilo, Cwmifor, Pen-y-banc and Broad Oak. There are properties south of Cwrt- henri that may limit routeing. Corridor options B1 and B2 also include the settlements of Llanegwed, Pont-ar-gothi and Nantgaredig. The last runs north-south, potentially restricting routeing. Corridor option B1 also contains the settlements of Cwmffrwd and Idole, which may limit routeing.	All corridor options contain the settlements of Llanwrda, Manordeilo, Cwmifor, Pen-y-banc and Broad Oak. There are properties south of Cwrt- henri that may limit routeing. Corridor options B1 and B2 also include the settlements of Llanegwed, Pont-ar-gothi and Nantgaredig. The last runs north-south, potentially restricting routeing. Corridor option B2 also contains the settlements of Capel Dewi and Idole.	All corridor options contain the settlements of Llanwrda, Manordeilo, Cwmifor, Pen-y-banc and Broad Oak. There are properties south of Cwrt-henri that may limit routeing. Corridor option B3 also includes the settlement of Llanarthney, and scattered properties to the south-west that may limit routeing.	All corridor options would pass a number of dwellings. The settlement of Nantgaredig is considered likely to present the greatest constraint to routeing, therefore **B3** is preferred.
	Tourism and Recreation (visual amenity – viewpoints, cycle routes, public rights of way (PRoW), long distance trails, tourist attractions and recreational areas)	The Towy Valley is generally a popular area for tourists and visitors. All corridor options pass close to the key centres of Llandovery and Llandeilo. An OHL in all corridor options would be visible from key viewpoints such as Dryslwyn Castle, although routeing avoids proximity to these. All corridor options run broadly parallel to a short section of the Heart of Wales long distance trail near Llanwrda. All corridor options cross or run close to the Celtic Way long distance trail around Llanarthne and Nantgaredig. Corridor options B1 and B2 follow and cross the National Cycle Route 47 west of Llanarthney.		The Towy Valley is generally a popular area for tourists and visitors. All corridor options pass close to the key centres of Llandovery and Llandeilo. An OHL in all corridor options would be visible from key viewpoints such as Dryslwyn Castle, although routeing avoids proximity to these. All corridor options run broadly parallel to a short section of the Heart of Wales long distance trail near Llanwrda. All corridor options cross or run close to the Celtic Way long distance trail around Llanarthne and Nantgaredig. Corridor option B3 crosses and follows the National Cycle Route 47 between Llanarthne and the National Botanic Garden of Wales, which is just outside the corridor.	There is no clear preference as all corridor options would affect tourism and recreation assets to some extent.
	Public roads, including tourist routes, railways	Corridor options B1, B2 and B3 all follow the A40 through the Towy Valley for most of their length. The corridor options also follow the railway line between Llandovery and Llandeilo. OHL would be prominent if routed alongside these routes. All corridor options cross the A48 dual carriageway, though effects would be limited due to higher speeds on this road.			All corridor options have the potential to be visible to people on principal roads and railways, and there is no clear preference.
	Overall preference for Landscape and Visual Amenity	**B3 is preferred in relation to landscape and visual criteria as it routes through locally designated landscapes for a slightly shorter distance and passes through fewer higher-evaluation LANDMAP aspect areas. B3 also has fewer dwellings that may pose a constraint to routeing.**			
Cultural Heritage	Scheduled Monuments (Cadw (SMs))	There are 6 SMs within corridor option B1 and although there are two SMs located in the centre of the corridor option within Nantgaredig, these occupy a very small area of the corridor. Therefore, direct impacts can be avoided. There are 32 SMs in or within 3km of the corridor option. The following areas have potential issues related to setting: ■ Western section (Merlin's Hill) – a prehistoric barrow[1] lies within the corridor option. Views of the asset from the surrounding landscape are likely to be important. A hillfort[2] lies approximately 120m north of the corridor option. Views from the fort into	There are 5 SMs within corridor option B2 and although there are two SMs located in the centre of the corridor option within Nantgaredig, these occupy a very small area of the corridor. Therefore, direct impacts can be avoided. There are 29 SMs in or within 3km of the corridor option. The following areas have potential issues related to setting: ■ Western section (Nantgaredig) – two prehistoric ritual assets[7] lie	There are 2 SMs within corridor option B3. However, these occupy a very small area of the corridor option. Therefore, direct impacts can be avoided. There are 27 SMs in or within 3km of the corridor option. The following areas have potential issues related to setting: ■ Western section (Dryslwyn) – a medieval castle[11] lies approximately 710m south-east of the corridor option on a crossing point of the River Twyi. Views from the castle into	There are more SMs within corridor option B1 than corridor options B2 and B3. However, due to their size and location, direct physical effects on SMs could be avoided for all of the corridor options and therefore there is no preference. In setting terms, B3 has the fewest areas with potential issues, however the setting issues that relate to the castle at Dryslwyn are likely to be difficult to address (i.e. tower interval to avoid affecting the line-of-sight along the River

[1] CM228
[2] CM231
[7] CM042, CM328
[11] CM030

Criterion	Sub-criteria	Corridor Option B1	Corridor Option B2	Corridor Option B3	Preference
		the landscape, and vice versa, are likely to be important. ■ Western section (Nantgaredig) – two prehistoric ritual assets[3] lie within the corridor option. Relationships and intervisibility between assets of this kind are generally important. ■ Western section (Llanegwad) – a medieval castle[4] site lies within the corridor option. Views from the castle into the landscape, and vice versa, are likely to be important. ■ Western section (Dryslwyn) – a medieval castle[5] lies approximately 840m south of corridor option on a crossing point of the River Twyi. Views from the castle into the landscape, and vice versa, are likely to be important, particularly those along the Tywi Valley. ■ Eastern section (Llanwrda) – a prehistoric defensive enclosure[6] lies within the corridor option. Views from the enclosure into the landscape, and vice versa, are likely to be important. It is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. avoiding OHL running between related assets and towers on direct line- of-sight between them; running below the crest of hills so the OHL and steel towers are not skylined in views between assets).	within the corridor option. Relationships and intervisibility between assets of this kind are generally important. ■ Western section (Llanegwad) – a medieval castle[8] site lies within the corridor option. Views from the castle into the landscape, and vice versa, are likely to be important. ■ Western section (Dryslwyn) – a medieval castle[9] lies approximately 840m south of the corridor option on a crossing point of the River Twyi. Views from the castle into the landscape, and vice versa, are likely to be important, particularly those along the Tywi Valley. ■ Eastern section (Llanwrda) – a prehistoric defensive enclosure[10] lies within the corridor option. Views from the enclosure into the landscape, and vice versa, are likely to be important. It is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. avoiding OHL running between related assets and towers on direct line- of-sight between them; running below the crest of hills so the OHL and steel towers are not skylined in views between assets).	the landscape, and vice versa, are likely to be important, particularly those along the Tywi Valley. This corridor option cuts directly across the valley floor. ■ Eastern section (Llanwrda) – a prehistoric defensive enclosure[12] lies within the corridor option. Views from the enclosure into the landscape, and vice versa, are likely to be important. It is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. running below the crest of hills so the OHL and steel towers are not skylined in views between assets; avoiding placing towers in direct line of sight along the river form the castle).	Tywi is likely to be too high to be achievable). On this basis, **B2** is preferred as it has slightly fewer setting issues than B1.
	Listed Buildings (I, II*, II) (LBs)	There are 47 LBs within corridor option B1, including 6 Grade II* and 41 Grade II. Although there are clusters at Llanegwad, Ashfield, Llansadwrn and Llanwrda, direct impacts can be avoided. There are 525 LBs in or within 3km of the corridor option. The majority of these lie in Carmarthen, Llandeilo, Llangathen, Llangadog and Llandovery and in the associated Conservation Areas. The remaining buildings either relate to individual farms, small hamlets and bridges. Buildings in both Carmarthen and Llandovery are distant from the corridor options (1.6km and 1km away respectively). The presence of an OHL at this distance is unlikely to give rise to any meaningful setting change or affect how these assets are experienced so no issues are anticipated. In all cases it is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. placing steel towers so that they do not 'loom over' and/or stand directly behind the LB when it is seen from its principal elevation; and avoidance of siting the OHL between related buildings).	There are 49 LBs within corridor option B2, including 5 Grade II* and 44 Grade II. Although there are clusters at Llanegwad, Ashfield, Llansadwrn and Llanwrda, direct impacts can be avoided. There are 449 LBs in or within 3km of the corridor option. The majority of these lie in Carmarthen, Llandeilo, Llangathen, Llangadog and Llandovery and in the associated Conservation Areas. The remaining buildings either relate to individual farms, small hamlets and bridges. Buildings in both Carmarthen and Llandovery are distant from the corridor options (2.6km and 1km away respectively). The presence of an OHL at this distance is unlikely to give rise to any meaningful setting change or affect how these assets are experienced so no issues are anticipated. In all cases it is likely that issues related to setting change can be avoided or	There are 47 Listed Buildings within corridor option B3, including 6 Grade II* and 41 Grade II. However, these are not clustered. Therefore, direct impacts can be avoided. There are 442 LBs in or within 3km of the corridor option. The majority of these lie in Llandeilo, Llangathen, Llangadog and Llandovery and in the associated Conservation Areas. The remaining buildings either relate to individual farms, small hamlets and bridges. Buildings in Llandovery are 1km from the corridor options. The presence of an OHL at this distance is unlikely to give rise to any meaningful setting change or affect how these assets are experienced so no issues are anticipated. In all cases it is likely that issues related to setting change can be avoided or sufficiently minimised through positioning of infrastructure (e.g. placing steel towers so that they do not 'loom over' and/or stand directly behind the LB when it is seen from its principal elevation; and avoidance of siting the OHL between related buildings).	Although B1 and B3 include the same number of Grade II* and Grade II LBs, LBs are likely to be able to be avoided for all three corridor options. **B2** and **B3** are slightly preferred over B1 in terms of potential for effects related to setting change since fewer LBs (and associated Conservation Areas) are in or near these corridor options.

[3] CM042, CM328
[4] CM151
[5] CM030
[6] CM171
[8] CM151
[9] CM030
[10] CM171
[12] CM171

Criterion	Sub-criteria	Corridor Option B1	Corridor Option B2	Corridor Option B3	Preference
			sufficiently minimised through positioning of infrastructure (e.g. placing steel towers so that they do not 'loom over' and/or stand directly behind the listed building when it is seen from its principal elevation; and avoidance of siting the OHL between related buildings).		
	Historic Parks and Gardens (I, II*, II)	There are no Historic Parks and Gardens included within corridor options B1, B2 or B3. There are nine Historic Parks and Gardens in or within 3km of the corridor options: ■ Grade I – Plas Dinefwr. ■ Grade II* – Golden Grove, Paxton's Tower. ■ Grade II – Abergwili Bishop's Palace, Llwynywormwood, Taliaris, Pantglas, Aberglasney and Middleton Hall. The following are likely to have setting issues: ■ Plas Dinefwr (all corridor options) – lies approximately 50m south of the corridor option and may have designed elements facing the corridor option. ■ Abergwili Bishop's Palace (B1 only) – lies approximately 390m west of the corridor option and may have designed elements facing the corridor option. ■ Middleton Hall (B3 only) – the corridor option runs along the north-western side of the asset at a distance of approximately 60-220m. The corridor option is likely to feature in views out from the asset. It is likely that that issues related to setting change could be avoided or minimised through positioning of infrastructure (e.g. avoiding OHL visibility in key views out of gardens).			**B2** is slightly preferred in terms of potential for effects related to setting change since only one Historic Park and Garden appears likely to be affected by this corridor option.
	Registered Historic Landscapes (RHL)	Corridor option B1 passes through approximately 4039ha of the Tywi Valley Landscape of Outstanding Historic Interest between Llandovery and Carmarthen. This cannot be avoided, however the effect will be minimised during the detailed design stage. The southern sections of all corridor options lie within 3km of Landscape of Outstanding Historic Interest. The primary purpose of this designation is to manage large-scale change within the designated area. Presence of a grid route within land that may be considered as the setting of these assets is unlikely to give rise to harm to the characteristics the assets were designated for.	Corridor option B2 passes through approximately 3768ha of the Tywi Valley Landscape of Outstanding Historic Interest between Llandovery and Carmarthen. This cannot be avoided, however the effect will be minimised during the detailed design stage. The southern sections of all corridor options lie within 3km of Landscape of Outstanding Historic Interest. The primary purpose of this designation is to manage large-scale change within the designated area. Presence of a grid route within land that may be considered as the setting of these assets is unlikely to give rise to harm to the characteristics the assets were designated for.	Corridor option B3 passes through approximately 3123ha of the Tywi Valley Landscape of Outstanding Historic Interest between Llandovery and Carmarthen. This cannot be avoided, however the effect will be minimised during the detailed design stage. The southern sections of all corridor options lie within 3km of Landscape of Outstanding Historic Interest. The primary purpose of this designation is to manage large-scale change within the designated area. Presence of a grid route within land that may be considered as the setting of these assets is unlikely to give rise to harm to the characteristics the assets were designated for.	Overall, **B3** is the preferred corridor option because it passes through the smallest area of the Landscape of Outstanding Historic Interest.
	Conservation Areas	There are no Conservation Areas included within corridor options B1, B2 or B3. There are nine Conservation Areas in or within 3km of the corridor options. Five of these are in Carmarthen and represent the differing elements of the town's historic core. The closest corridor option to these is B1, approximately 1.6km to the south and east. The presence of an OHL at this distance is unlikely to give rise to any meaningful setting change or affect how these assets are experienced so no issues are anticipated. The following of the remaining Conservation Areas may have issues related to setting change: ■ Llandeilo (all corridor options) – this includes numerous LBs and the Grade I Plas Dinefwr Historic Park and Garden. Setting issues are unlikely with relation to the historic core of the town but may arise for the same reasons given for Plas Dinefwr above. ■ Llangathen (all corridor options) – lies approximately 320m south of the corridor options. Presence of an OHL may affect how this historic settlement's rural context is experienced. ■ Llangadog (all corridor options) – lies approximately 320m south of the corridor options. Presence of an OHL may affect how this historic settlement's rural context is experienced. It is likely that issues related to setting change can be minimised or avoided through positioning of infrastructure (e.g. placing steel towers so that they do not appear axially on views out of the Conservation Area along main routes). Measures to address effects due to change in the setting of the Plas Dinefwr Historic Park and Garden (outlined above) will similarly address issues with the Llandeilo Conservation Area.			**B2** and **B3** are slightly preferred over B1 in terms of potential for effects related to setting change since fewer Conservation Areas are in or near these corridor options.
	Overall preference for Cultural Heritage	**In relation to cultural heritage, each corridor option appears largely similar in terms of potential direct effects to designated historic assets and the ability to avoid these with detailed routeing. Whilst B2 has long sections within the Tywi Valley Landscape of Outstanding Historic Interest, all corridor options do, so this is preferred on balance as it is likely to have the fewest setting issues.**			

Criterion	Sub-criteria	Corridor Option B1	Corridor Option B2	Corridor Option B3	Preference
Land Use	Agricultural Land	Corridor option B1 contains approximately 2242ha of Best and Most Versatile (BMV) agricultural land which is Grade 3a that cannot be avoided.	Corridor option B2 contains approximately 1923ha of BMV agricultural land which is Grade 3a that cannot be avoided.	Corridor option B3 contains approximately 1557ha of BMV agricultural land which is Grade 3a that cannot be avoided.	**B3** is the preferred corridor option because it contains the smallest area of BMV agricultural land and offers the greatest opportunity to avoid it.
	Common Land	Corridor options B1, B2 and B3 all contain approximately 8.7ha of Common Land. However, this occupies a very small area of the corridor options and can therefore be avoided during the detailed routeing stage.			B1, B2 and B3 contain the same area of Common Land. However, due to the size and location, it is anticipated that this area could be avoided for all of the corridor options and therefore there is no preference.
	Overall preference for Land Use	**B3 is the preferred corridor option because it contains the smallest area of BMV agricultural land and offers the greatest opportunity to avoid it.**			
Forestry and woodland	Ancient Woodland (as per the Ancient Woodland Inventory (AWI))	There is approximately 117ha of AWI within this corridor option. The AWI comprises a number of small woodland blocks which are likely to be avoidable during the detailed routeing stage.	There is approximately 124ha of AWI within this corridor option. The AWI comprises a number of small woodland blocks which are likely to be avoidable during the detailed design stage, however this may be more difficult to the west of Nantycaws.	There is approximately 100ha of AWI within this corridor option. The AWI comprises small woodland blocks which are all likely to be avoidable during the detailed routeing stage.	**B3** is the preferred corridor option as this has the smallest area of Ancient Woodland, with the Ancient Woodland blocks also likely to be avoidable.
	National Forest Inventory (NFI)	There is approximately 216ha of broadleaved woodland, 11ha of coniferous woodland and approximately 34ha of other woodland habitats within this corridor option. The NFI woodland comprises a number of small, scattered woodland blocks that can be avoided during detailed routeing.	There is approximately 253ha of broadleaved woodland, 26ha of coniferous woodland and approximately 43ha of other woodland habitat within this corridor option. The majority of NFI woodland comprises a number of small, scattered woodland blocks that can be avoided during detailed routeing. However, there are two sections of woodland east of Cwmffrwd that cannot be avoided.	There is approximately 227ha of broadleaved woodland, 9ha of coniferous woodland and approximately 41ha of other woodland habitat within this corridor option. The NFI woodland comprises a number of small, scattered woodland blocks that can be avoided during detailed routeing.	**B1** is preferred because this corridor option contains the smallest area of woodland and can likely avoid all woodland blocks during detailed routeing.
	Overall preference for Forestry and Woodland	**B3 is the preferred corridor option as this has the smallest area of Ancient Woodland which is likely to be avoidable.**			
Flood Risk	Flood Zones (High Risk)	All corridor options contain a number of High risk flood zone areas that are <180m and therefore can be spanned. However, an area of High risk flood zone which is mostly >180m wide and is associated with the River Towy follows the River and the route of the corridor option from the north to the south-west towards Felindre, which is unlikely to be avoided. Corridor option B1 continues to follow the River Towy to the west and includes an area of High risk flood zone that is >180m across the corridor option, which cannot be spanned (>1km wide).	All corridor options contain a number of High risk flood zone areas that are <180m and therefore can be spanned. However, an area of High risk flood zone which is mostly >180m wide and is associated with the River Towy follows the River and the route of the corridor option from the north to the south-west towards Felindre, which is unlikely to be avoided. Where corridor option B2 diverges from corridor option B1, it crosses the River Towy and includes an area of High risk flood zone that is >180m wide which cannot be spanned (approximately 400m at narrowest point).	All corridor options contain a number of High risk flood zone areas that are <180m and therefore can be spanned. However, an area of High risk flood zone which is mostly >180m wide and is associated with the River Towy follows the River and the route of the corridor option from the north to the south-west towards Felindre, which is unlikely to be avoided. Where corridor option B3 diverges from corridor options B1 and B2, it crosses the River Towy and includes an area of High risk flood zone that is >180m wide and cannot be spanned (approximately 300m at narrowest point).	Corridor options B1 and B2 include areas of High risk flood zone that are >180m and therefore could not be spanned. **B3** contains the narrowest crossing point, which would therefore be the preference.
Overall Preference	B3 is the preferred corridor option in terms of overall length as it is the shortest corridor. There is no preference in biodiversity criteria, however B1 contains no peat whilst B2 and B3 contain the fewest SSSIs. B3 is preferred in relation to landscape and visual amenity criteria as it routes through locally designated landscapes for a slightly shorter distance, and passes through fewer higher-evaluation LANDMAP aspect areas. B3 also has fewer dwellings that may pose a constraint to routeing. In relation to cultural heritage, each corridor option appears largely similar in terms of potential direct effects to designated historic assets and the ability to avoid these with detailed routeing. Whilst B2 has long sections within the Tywi Valley Landscape of Outstanding Historic Interest, all corridor options do, so this is preferred on balance as it is likely to have the fewest setting issues. B3 also contains the smallest area of BMV agricultural land and Ancient Woodland (but not the smallest area of broadleaf woodland). Whilst no corridor option can avoid the High Flood Risk area, B3 has the narrowest crossing point of the floodplain. **Overall, on balance B3 is the preferred corridor option as it is the shortest corridor and is preferred in relation to landscape and visual criteria, contains the smallest area of BMV agricultural land and Ancient Woodland and offers the narrowest crossing of the floodplain. However, potential effects on peat and on the setting of cultural heritage features will form key considerations at the detailed routeing stage.**				

Appendix C – Routeing Methodology

Criterion	Sub-criteria	Objectives	Methodology
Length of Route Option	n/a	■ To choose the shortest and most direct route.	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 was calculated using Geographical Information Systems (GIS).
Biodiversity	■ Ramsar Sites ■ Special Protection Areas (SPA) ■ Special Areas of Conservation (SAC) ■ Sites of Special Scientific Interest (SSSI) ■ National Nature Reserves ■ Wildlife Reserves managed by the Carmarthenshire and Radnorshire Wildlife Trusts ■ Local Nature Reserves (incl. RSPB Reserves) ■ 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	■ To seek to avoid/reduce, as far as practical, effects on the qualifying features of designated sites of ecological and ornithological conservation importance.	Physical effects on designated sites were identified based on the size/location of the designated sites 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 would be to route through the larger site as this is likely to be able to accommodate an OHL more readily than a smaller site (due to the smaller proportion of the overall site area that the OHL would affect). The qualifying features of the site and the nature of any potential effects on these qualifying features was also considered when determining preference. The appraisal also considered the distance of the route options to ecological designations and their qualifying features and identified 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) were 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 were considered within the appraisal. The habitats and species within the designation were 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. Powys County Council has designated LWS/SINCs; Carmarthenshire County Council has not, but SINCs within Carmarthenshire have been identified by the Brecon Beacons National Park Authority. None of the SINCs identified within Carmarthenshire fall within 1km of a route option, and so they were not referenced in the appraisal, although a small number appear on accompanying figures. An ornithological ‘trigger for consideration’ zone of 2km was applied around designations for which birds are a qualifying feature, including SPAs, Ramsar Sites and RSPB Reserves. This 2km zone was used to select designations to consider within the appraisal with respect to ornithology. A 2km zone was 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 stated the length of route which intersects with the ‘trigger for consideration zone’ and considered whether this zone can be avoided during the alignment stage and/or whether suitable mitigation can be implemented during construction. 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), were 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 have also been reviewed as they indicate the presence of Priority Habitats such as open water and woodland. The appraisal considered 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 was also considered within this category. 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. 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. Powys and Carmarthenshire contain Marine Protected Areas (MPAs). However, MPAs of potential relevance to the OHL are already subject to designation of other kinds (for example, as a SSSI). MPAs were therefore not treated as a discrete biodiversity sub-criterion within the appraisal to avoid double counting.

Criterion	Sub-criteria	Objectives	Methodology
Landscape Sensitivity and Visual Amenity	■ National landscape designations, (National Parks), Local landscape designations (Special Landscape Areas (SLA)) ■ LANDMAP areas with 'outstanding' or 'high' evaluations ■ National Landscape Character Areas (NLCA) ■ 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), long distance trails, NRW National Trails, tourist attractions and formal recreational areas such as golf courses)	■ Visual amenity from transport routes i.e. public roads (including roads used by tourists) and railways. ■ Avoidance/reduction, as far as practical, effects on the special qualities of designated landscapes. ■ To seek a positive fit between the OHL and the receiving landscape, informed by landscape character and assessment of landscape and visual sensitivities. ■ 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, PRoWs, long-distance routes, formal/informal recreational areas and tourism features.	All route options avoid passing through nationally designated landscapes including National Parks. All route options pass within 2km of the Brecon Beacons National Park. The potential for effects on the identified special qualities of the National Park were appraised. All route options pass within the Upper Towy Valley Special Landscape Area (SLA), designated by Carmarthenshire County Council. Route options were appraised based on the potential for effects on the identified special qualities of the SLA. LANDMAP areas with overall 'outstanding' or 'high' evaluation are considered areas of relative higher landscape value. The length of each route within these areas was calculated using GIS and routes that minimise the length of OHL within such areas were favoured. Reflecting Holford Rules 4, 5 and 6, the appraisal considered 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, routeing 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.[1] Residential dwellings were mapped, and 150m buffers on these were applied as a 'trigger for consideration' for residential visual amenity. Potential effects on residential visual amenity were considered with regard to locations where these buffers overlapped with each route option. Particular consideration was given to higher concentrations of residential receptors within close proximity of route options that may result in pinch points. The implications for principal views from individual properties were considered at these pinch points, informed by aerial photography and field work. Approved and validated planning applications for residential dwellings which are not yet constructed were considered as 'committed development' under the Land Use topic where within the route option (see Land Use below); and in relation to residential amenity where they were within 150m of the route option, in which respect they were considered in the identification of pinch points. It is recognised that the degree of certainty of construction of these two types of potential future development differs. PRoW and promoted long-distance routes (e.g. the Celtic Way, Cambrian Way, Heart of Wales Trail, Wye Valley Walk) were identified from Ordnance Survey maps and GIS datasets. Outdoor tourist attractions, promoted viewpoints and formal recreational facilities, where the surrounding landscape contributes to the recreational experience, were identified from Ordnance Survey maps, fieldwork and tourist information. Transport routes were identified from Ordnance Survey maps. The potential for visual amenity effects on users of these features was 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.
Cultural Heritage	■ World Heritage Sites (WHS) ■ Scheduled Monuments (SM) ■ Listed Buildings (Grades I, II*, II) ■ Registered Historic Parks and Gardens (RHPG) ■ Registered Historic Landscapes (RHLs) ■ Conservation Areas (CA) ■ Non-designated historic assets including archaeological remains, structures and historic landscape areas/components.	■ To seek to avoid/minimise, as far as practical, direct physical change on designated features of cultural heritage interest ('historic assets') or change in their settings which would harm their significance or perception.	Policy and guidance seeks the preservation[2] of heritage assets and the routeing appraisal therefore focused on the ways in which harm could arise to assets via: ■ Direct physical change[3]; ■ Change in the setting of assets which affects their heritage significance[4]; and ■ Change in the setting of assets which affects how the asset and its heritage significance is appreciated[5] Neither Powys County Council nor Carmarthenshire County Council appear to maintain a local list of historic assets[6] and so no locally listed buildings are known within or up to 3km from the route options. Locally listed buildings were therefore not included as a sub-criterion within the appraisal. The methodology for assessing potential direct physical effects comprises identifying the number, extent and nature of historic assets within the route option (designated historic assets[7] and Historic Environment Record (HER) entries likely to constitute historic assets[8] (hereafter referred to as non-designated heritage assets)). These were then noted in relation to the opportunity, or otherwise, for avoiding direct effects at the detailed routeing stage. Where RHPGs and RHLs could not be wholly avoided due to the extent of the preferred corridor and other constraints, the length of OHL proposed to route within them plus the presence of any other existing OHL infrastructure was considered. This was in order to understand whether other OHLs were in existence at the time of designation and/or had an apparently harmful effect to the asset. RHLs are a form of designated historic asset found only in Wales. The RHLs are each subdivided into a series of Historic Landscape Character Areas (HLCAs). Potential effects of the OHL arising from how it may change the setting of historic assets was assessed by initially identifying assets within the route option itself and within 3km of the route options (the distance within which potentially significant effects are considered likely to occur). These were then reviewed to identify those with susceptibility for harm associated with the proposed OHL being within their setting. With some exceptions, consideration has not been given to effects related to setting change for non-designated assets at this stage. The non-designated assets where effects associated with setting change have been 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).

[1] 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.
[2] Generally held, as a result of legal precedent, as meaning "to do no harm to", i.e. an asset could change but if this change is not harmful then it would be understood as having been preserved.
[3] For example, this could include change to the key characteristics of a designated asset such as a registered historic park and garden.
[4] 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).
[5] 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).
[6] 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.
[7] 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)
[8] 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
Forestry and Woodland	■ Ancient Woodland Inventory (AWI) ■ Commercial conifer and other woodlands as identified in the National Forestry Inventory (NFI)	■ Avoid/minimise, as far as practical, effects on woodland/forest, and particularly areas of ancient woodland.,	Forest and woodland areas within each of the route options were identified through the use of aerial photography, combined with digital data available from Natural Resources Wales (NRW) and the Forestry Commission. Forests and woodland were then divided into two broad groupings: 1. Ancient Woodland (AW), which the Ancient Woodland Inventory (AWI) places into four sub-categories: – Ancient Semi-Natural Woodland (ASNW) – Plantation on Ancient Woodland Sites (PAWS) – Restored Ancient Woodland Sites (RAWS) – Ancient Woodland Site of Unknown Category (AWSU) 2. Commercial conifer and other woodlands, which the National Forestry Inventory (NFI) places into the following categories: – Broadleaved – Young trees – Shrub – Mixed mainly broadleaved – Assumed woodland – Conifer – Mixed mainly conifer – Other (undefined conifer or broadleaved woodland) It is recognised that there is often overlap between woodland types 1 and 2. Where such overlap occurred, the appraisal identified the woodland as AWI and its sub-categories where applicable, with NFI categories being used to identify woodland type for both AWI and non-AWI woodlands. Appraisal against the forestry and woodland topic included analysis of the extent and location of each forest and woodland type within the route options to identify areas. A GIS-based calculation was run to identify the total area (hectares (ha)) of woodland, of each forestry category listed above, present within each route option. As ancient woodland areas are also included in the NFI, the total area of 'other' (non-ancient) woodland was calculated by subtracting the total AWI area from the total NFI area. Although the AWI and NFI datasets do not always precisely align in individual cases (it is possible for areas contained within the AWI not to feature in the NFI), visual inspection indicated that the datasets were sufficiently aligned across the route options for the purposes of route option appraisal using this calculation method. In general terms, the objective in identifying a preferred route option was 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 was given as to whether this woodland type is currently commercial forestry planted on an ancient woodland site, rather than native woodland species. The GIS mapping was 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. Based on the above, a judgement was made as to which route option is preferred. 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: ■ 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), Hydrogeology and Geology	■ Flood risk zones ■ Waterbodies/watercourses ■ Peat ■ SSSI (with geodiversity features)	■ To cross flood zones at their narrowest point to minimise locating steel towers within flood zones where possible. Only high and medium flood risk zones were considered in this respect as, based on the proposed development type, the OHL towers would be deemed to be Essential Infrastructure and therefore permissible in all	The sub-criteria within this topic were 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, subject to suitable mitigation and design, inclusion of the constraint within the route would potentially be acceptable. **Category A constraints are:** ■ Areas with highest amenity value (Holford Rule 1): – Sites of Special Scientific Interest (with geodiversity features);

Criterion	Sub-criteria	Objectives	Methodology
	■ Geological Conservation Review Sites (GCRs) ■ World Heritage Sites (with geological interest) ■ UNESCO Geoparks ■ Regionally Important Geodiversity Sites (RIGS) ■ Landfill sites ■ Operational mineral extraction sites ■ Restored opencast mining sites/mining spoil heaps ■ Mine entries ■ Areas of landslide or ground instability ■ Source protection zones ■ Local Authority Mineral Consultation and Protection Areas	flood zones, but subject to an exception test in high risk areas. ■ To avoid locating steel towers 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 World Heritage Sites with geological interest, GCRs, UNESCO Geoparks. (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, landfill sites, operational mineral extraction sites, restored opencast mining sites/mining spoil heaps, mine entries and areas of landslide or ground instability. (Category A constraints–). ■ To seek to avoid potential adverse effects on smaller areas of high amenity value, i.e. RIGS. (Category B constraints). ■ To seek to avoid potential adverse effects on other sites which present a degree of design consideration/ constraint including source protection zones and local authority mineral consultation and protection areas. (Category B constraints).	– Geological Conservation Review Sites; – World Heritage Sites (with geological interest); and – UNESCO Geoparks ■ Other sites/areas: – Landfill sites – Peat deposits – Operational mineral extraction sites – Restored opencast mining sites/ mining spoil heaps – Mine entries – Areas of landslide or ground instability Category B constraints are: ■ Smaller areas of high amenity value (Holford Rule 2): – Regionally Important Geodiversity Sites (RIGS) ■ Other sites/areas: – Flood risk- high and medium – Source protection zones – Local Authority Mineral Consultation, safeguarding and Protection Areas The category that sub-criteria fell into was then taken into account when applying professional judgement regarding the preference, and degree of preference, between route options. GIS was 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 was then applied to identify the possibility of avoiding effects upon the constraint via detailed design; and, where the constraint was unavoidable, the severity of potential effects upon it, taking into account mitigation. It should be noted that, due to the lack of data available from both Powys and Carmarthenshire councils, safeguarded and active mineral sites have largely been identified using a combination of 'flying' the route options using aerial imagery. BGS data on the presence of materials suitable for safeguarding and, where possible, the use of planning information for active sites. Therefore, it is acknowledged that a degree of uncertainty must necessarily attach to the appraisal in this respect. .
Land Use	■ Infrastructure (existing OHL transmission and distribution 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 Undetermined[9] Planning Applications) ■ Local Development Plan (LDP) Allocations ■ Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a) ■ Common Land ■ Sennybridge MoD Training Area	■ Avoid existing, consented or proposed (with a valid planning application) wind energy developments. ■ Avoid/minimise, as far as practical, the crossings of or encroachment on infrastructure (including any 400kV, 275kV, 132kV, 66kV and 33kV OHLs, high pressure gas pipelines, 'A'/trunk roads and rail infrastructure. ■ Avoid, where possible, land use conflict with committed development including consented and undetermined planning applications and land allocated within an LDP. ■ Avoid/minimise effects on Best and Most Versatile (BMV) agricultural land. ■ Avoid, where possible, encroaching on Common Land. ■ Avoid the Sennybridge Training Area (owned and utilised by the Ministry of Defence (MoD).	The land use appraisal identified potential conflicts between the route options and existing and future, i.e. planned or consented but not yet constructed, land uses. Potential land use conflicts may occur due to the presence of infrastructure within the route options such as overhead (OHL) transmission and distribution infrastructure, high-pressure gas pipelines, wind energy developments, 'A'/trunk roads and rail infrastructure, as well as due to the presence of land types such as common land, BMV agricultural land and land in active military use. 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 was 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). Developments consented prior to 2017 were considered either likely not to be constructed (as the consent will likely have expired[10]) 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 were captured in the appraisal, planning applications consented from 2015 onwards were appraised, as it was considered that this cut-off date allowed sufficient time for prior consents to be fully implemented and for the OS basemaps/data/aerial photography to be updated to include them as existing developments. Applications considered within the cut-off period included applications which have received full or outline planning permission; applications for reserved matters associated with outline planning permissions granted prior to the 2015 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 were not referenced in the appraisal where these related to a planning application which had already been captured under other categories. When appraising the route options, where a committed development was located (fully or partially) within the route option, the implications of this for the detailed routeing/alignment design and/or subsequent environmental assessment stage was highlighted. Both residential and non-residential committed developments were considered within the appraisal: for example, residential dwellings, holiday lets, agricultural buildings, etc. The implications of committed development within 150m of route options for residential visual

[9] Undetermined planning applications are those which have been validated, i.e. are 'live' applications, but have not yet been decided.
[10] 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
			amenity were treated under the Landscape and Visual Amenity topic above. Route options with the lowest number of committed developments present, or where the committed developments could be avoided through detailed design, were preferred. As outlined above, the land use appraisal also considered land which is allocated for a specific purpose within the Powys County Council LDP and Carmarthenshire County Council LDP. The appraisal assessed the extent to which areas allocated within the LDPs are present within the route options. These areas included residential allocations, employment allocations and development limits/development boundaries. According to Policy GP2 of the Carmarthenshire County Council LDP, 'development limits' are defined for settlements identified as Growth Areas, Service Centres, Local Service Centres and identified Sustainable Communities within the settlement framework. Proposals within defined development limits will be permitted, subject to policies and proposals of the LDP, national policies and other material planning considerations. 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 LDPs 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 was 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 Carmarthenshire and Powys LDPs were preferred. The appraisal also considered whether existing infrastructure is sited within the route options. Infrastructure appraised included existing OHL transmission and distribution infrastructure, existing gas infrastructure, existing roads (A roads and trunk roads), rail infrastructure, and existing, consented or proposed (with a valid planning application) wind developments. A search was conducted of Welsh Government[11] and Planning Inspectorate[12] sources to identify whether any infrastructure projects present within the route options were subject to a current consent application. This search identified no such infrastructure projects; therefore, only existing infrastructure was included in the appraisal. With regard to the wind developments, it was considered preferable to avoid these by a separation distance equal to turbine tip height +10% for health and safety reasons. The land use appraisal also considered 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[13]. These grades of agricultural land have been subject to predictive mapping and opportunities to avoid them during routeing was appraised. The appraisal assessed the area of BMV agricultural land present within each of the route options and the route which avoids the most BMV agricultural land was preferred. Grades 3b, 4 and 5 are described as moderate, poor and very poor quality agricultural land, respectively, and were not treated as a constraint within the assessment. 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 were mapped and opportunities to avoid, or minimise crossing them during routeing was appraised, with routes avoiding common land being preferred. The total area of common land within each route option was estimated by adding the area of 'Registered Common Land' within each route option with the area of 'Other Statutory Access Land[14]' within each route option according to NRW data. The land use appraisal also considered whether the route options cross the Sennybridge Training Area (owned and used by the Ministry of Defence (MoD)). Preference was given to route options which do not cross this land.

[11] Welsh Government, Developments of National Significance Applications. Available [online] at: https://planningcasework.service.gov.wales/dnsapplications, Accessed; 25/07/22 and Welsh Government, Current road improvement projects. Available [online] at : https://gov.wales/current-road-improvement-projects, Accessed: 25/07/22

[12] The Planning Inspectorate, National Infrastructure Planning. Available [online] at: https://infrastructure.planninginspectorate.gov.uk/projects/, Accessed; 25/07/22

[13] Planning Policy Wales (PPW11) paragraph 3.58 and 3.59 outlines national policy towards conserving Wales' Best and Most Versatile (BMV) agricultural land.

Appendix D – Data Schedule

Topic	Data[1]	Source	Notes
Landscape and Visual	Residential Properties	OS AddressBase Core	The AddressBase Core Data has been filtered to select residential properties. There is always some risk of error in the classification of property types by the OS within the dataset (e.g. some residential properties might be classified as commercial) and newly built properties may not be included in the dataset.
		OS 1:25k map, local planning authority GIS data (planning applications and permissions), and ESRI aerial imagery	The AddessBase Core Data has been supplemented by data from these sources where additional residential properties have been noted.
	Settlement Boundaries	Powys County Council Local Development Plan (LDP) (GIS data), Carmarthenshire County Council LDP (online mapping).	Settlement boundaries for Carmarthenshire were manually digitised within GIS based on available online maps.
	National Parks	Natural Resources Wales (NRW)	
	Area of Outstanding Natural Beauty	NRW	
	Special Landscape Area	NRW	
	Long distance trail	Long Distance Walking Association (LDWA)	
	Carmarthenshire Public Rights of Way (PRoW)	Carmarthenshire County Council data (Rowmaps)	
	Powys PRoW	Powys County Council	
	National Cycle Network	Sustrans	
	NRW National Trails	NRW	
	LANDMAP (various datasets)	NRW	
	National Landscape Character Areas	NRW	
Biodiversity	Wildlife Trust Reserves	Locations taken for Wildlife Trust Reserves online mapping: ■ Carmarthenshire: https://www.welshwildlife.org/nature-reserves ■ Powys: https://www.rwtwales.org/nature-reserves	Wildlife reserve locations have been manually digitised within GIS based on online mapping from the cited sources. Reserve boundaries were checked visually against the online maps.
	Sites of Importance for Nature Conservation (SINCs)	Biological Records Centre	
	National Nature Reserve	NRW	
	RSPB Reserves	RSPB	
	Local Nature Reserves	NRW	
	Special Protection Areas	NRW	
	Special Areas of Conservation	NRW	
	Ramsar	NRW	
	Sites of Special Scientific Interest (SSSI)	NRW	
	Marine Protected Areas	NRW	
	Priority Habitats	NRW	
Cultural Heritage	Historic Environment Record (HER)	Relevant Welsh Archaeological Trusts: ■ Dyfed Archaeological Trust (DAT)	HER data has been used instead of data from the National Monuments Record of Wales (NMRW) as it has been been assumed that the HER data will cover anything which would also be covered by the NMRW and

[1] Where not referenced in this column, environmental considerations were identified using OS base mapping (largest scale 1:25,000) and ESRI aerial imagery.

		▪ Clwyd-Powys Archaeological Trust (CPAT)	that should be considered at this stage. Data from the NMRW will be cross-checked for finer detail during subsequent development stages.
	World Heritage Site (Wales)	Cadw	
	Conservation Area Boundaries	Welsh Government	
	Gardens and Kitchen Gardens (Wales)	Cadw	
	Historic Park and Garden (Wales)	Cadw	
	Scheduled Monuments	Cadw	
	Registered Historic Landscapes	Cadw	
	Listed Buildings	Cadw	
	Ancient Woodland Inventory	NRW	
	National Forest Inventory Woodland Great Britain	Forestry Commission	
Forestry and Woodland	Geodiversity SSSIs	NRW	
	Geological Conservation Review (GCR) Sites	NRW	
	Regionally Important Geological Sites (RIGS)	NRW	
Hydrology, Hydrogeology and Geology	Unified Peat Map of Wales	NRW	
	Peatlands of Wales (thickness)	BGS	Both the Unified Peat Map of Wales and the Peatlands of Wales (thickness) were considered; however, only the Unified Peat Map of Wales is shown on figures as it is not possible to display both clearly.
	Artificial Ground[2]	BGS	Data contained in detailed geology Web Map Services (WMS) feed.
	Mass movement (landslides) geology	BGS	Data contained in detailed geology WMS feeds and BGS Report[3].
	Mineral Consultation Areas	BGS (Mineral Safeguarding Map for Wales and Aggregate Safeguarding Map for Wales	Local planning authorities refer to cited BGS map, a PDF resource which needed to be inspected visually.
	Active mineral extraction sites	BGS (Onshore Geoindex for Mines and Quarries) OS Basemapping and aerial photography	No data available from local planning authorities; the cited data has been consulted visually.
	Coal mining reporting areas	Coal Authority	
	Coal mining mine entries	Coal authority	
	Superficial Deposits	British Geological Survey (BGS)	Used to corroborate minerals data referenced above (visual inspection of online data).
	Historic Landfill Sites	NRW	
	Active Authorised Landfill Sites	NRW	
	Rivers	Ordnance Survey Vectormap OS Basemapping and aerial photography	
	Waterbodies	Ordnance Survey Vectormap and aerial photography	
	Flood Risk from Rivers	NRW (Main Rivers and Ordinary Watercourses datasets)	

[2] This and a number of other geological datasets (particularly those available as live WMS) were considered within appraisals but are not shown on figures due to one or a combination of size/scale of features and available symbology preventing the data from being clearly presentable.
[3] Wrighton C.E. and Humpage A.J (2012) Aggregates Safeguarding Maps of Wales, British Geological Survey Commissioned Report, CR/12/039. 20pp. Available [online] at: https://www2.bgs.ac.uk/mineralsuk/download/wales/AggregatesSafeguardingMapOfWales.pdf

	Developments of National Significance Applications	Welsh Government website (online)[4]	
	Nationally Significant Infrastructure Projects (NSIPs) (Consents and Applications)	The Planning Inspectorate website (online)[5]	
	Current road improvement projects	Welsh Government website (online)[6]	
	Powys Local Development Plan Allocations	Powys Local Development Plan 2011-2026 (Adopted 2018) (online)[7]; GIS data (residential allocations only) as of 27th May 2022 (received from Powys County Council on 30th May 2022)	
Land Use	Powys Planning Permissions and Applications	Powys County Council data as of 27th May 2022 (received from Powys County Council on 30th May 2022)	
	Carmarthenshire Local Development Plan Allocations	Carmarthenshire County Council Adopted Local Development Plan 2006-2021 (adopted 2014) (online)[8]; Carmarthenshire County Council LDP GIS data (received from Carmarthenshire County Council on 14th June 2022)	
	Carmarthenshire Planning Applications and Permissions	Carmarthenshire County Council data from 2007 onwards (received from Carmarthenshire County Council on 3rd August 2022)	
	Agricultural Land Classification	LLe (Welsh Government)	The appraisal considered Best and Most Versatile (BMV) agricultural land only. Planning policy in Wales defines BMV agricultural land as Grades 1, 2 and 3a.
	Common Land (Registered Common Land and Other Statutory Access Land)	NRW	Data dates from 2014 (this is the latest available dataset).
	Sennybridge Training Area	OS 1:25k map	
	Wind Farms/Wind Turbines	LUC Wind Farm Database	
	Existing Overhead Lines and Underground Cables	National Grid and Western Power Distribution (WPD) data	WPD has now become National Grid; however, the data relating to the distribution network for this project was received prior to this occurring.
	Railway and Roads	OS Open Roads and OS Open Map	
	High Pressure Gas Pipelines	National Grid	
	Sennybridge Training Area	Open Street Map	This is an open data resource.

[4] Welsh Government, Developments of National Significance Applications. Available [online] at: https://planningcasework.service.gov.wales/dnsapplications, Accessed; 25/07/22
[5] The Planning Inspectorate, National Infrastructure Planning. Available [online] at: https://infrastructure.planninginspectorate.gov.uk/projects/, Accessed; 25/07/22
[6] Welsh Government, Current road improvement projects. Available [online] at: https://gov.wales/current-road-improvement-projects, Accessed: 25/07/22
[7] Powys Local Development Plan 2011-2026 (Adopted 2018). Available [online] at: https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026
[8] Carmarthenshire County Council Adopted Local Development Plan 2006-2021 (adopted 2014). Available [online] at: https://www.carmarthenshire.gov.wales/home/council-services/planning/planning-policy/local-development-plan-2006-2021/#.YuJPFXbMKUk

Appendix E – Route Options Environmental Appraisal Tables

Table E.1: Section 1 Route Options Environmental Appraisal

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
Approximate Length of Route Option (kilometres (km))	N/A	13.68	13.61	13.75	**1C** is the slight preference as this is the shortest route.
Biodiversity	Special Area of Conservation (SAC)	All route options cross the Afon Gwy (River Wye) SAC at two locations and these crossings cannot be avoided, however effects on the qualifying features of the SAC can be prevented through spanning the watercourse. Route option 1C lies within 100 metres (m) of the SAC for approximately 1.5km but can be avoided during the detailed design stage through tower siting and/or spanning. The primary reasons for the SAC designation are watercourses of plain to montane levels, invertebrate and fish populations and otter *Lutra lutra*. In addition, transition mires and quaking bogs and allis shad *Alosa alosa* are qualifying features but not primary reasons for designation.			There is a slight preference for **1N** and **1S** due to the proximity of 1C to the SAC.
	Sites of Special Scientific Interest (SSSI)	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at two locations. In addition, route option 1N also overlaps with the Banc Hirllwyn SSSI for approximately 400m. This SSSI is designated for its acid grassland and nationally scarce plant species. The SSSI only extends by approximately 100m into the route option and therefore it could be avoided through detailed design. Route option 1N also overlaps with the Colwyn Brook Marshes (South) SSSI for approximately 100m. This SSSI can be readily avoided or spanned. This SSSI is designated for its diverse mixture of swamp fen meadow, marshy grassland and importance for otter. Route option 1N also lies approximately 250m to the east of Graig Fawr SSSI, which is designated for its acidic and calcareous grasslands, broadleaved woodland and lichen community. Route option 1N also lies approximately 450m east of the Caeau Coed Mawr (Coedmawr Fields) SSSI, which is designated for its extensive areas of agriculturally unimproved grassland and the importance of its riverine habitats for otter, invertebrate and fish populations.	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at two locations. In addition, route option 1C also overlaps with the Colwyn Brook Marshes (South) SSSI . The SSSI only extends into the route option by approximately 85m at maximum, and the maximum extent that it follows the route is approximately 255m. It could therefore be avoided or spanned through detailed design. Route option 1C also lies approximately 300m south-east of the Banc Hirllwyn SSSI and is separated from this SSSI by a road.	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at two locations. After the Afon Gwy, the next closest SSSIs to route option 1S are Colwyn Brook Marshes (South) SSSI and Banc Hirllwyn SSSI, which are both located approximately 300m to the north-west and separated from route option 1S by roads.	There is a preference for **1S**, as this route option crosses only one SSSI (the Afon Gwy, which none of the route options could avoid crossing).
	Wildlife Reserves managed by the Carmarthenshire and Radnorshire Wildlife Trusts	Route option 1N is the closest route option to a Wildlife Trust Reserve; it is located approximately 175m to the south-east of Werndryd Wildlife Trust Reserve, which is managed for its boggy habitats, plants, invertebrates and birds.	Route options 1C and 1C are located approximately 310m to the south-east of Werndryd Wildlife Trust Reserve.		There is a slight preference for **1S** and **1C**. However, the difference in distances is minimal, and with appropriate mitigation, effects could be avoided for any route option.
	Local Wildlife Sites (LWS)/ Sites of Importance for Nature Conservation (SINC)/Designated Road Verges	Route option 1N is located approximately 110m to the south-east of a Designated Road Verge at the southern end of its route, and approximately 220m from another Designated Road Verge in the centre of its route.	Route options 1S and 1C are the closest route options to the Llanboidy Wood SINC, which is located approximately 220m to the west, and which has been designated for its mixed deciduous woodland.		There is no preference, as the distances are similar for all route options. With appropriate mitigation, effects could be avoided for any route option.
	Environment (Wales) Act 2016 Priority Habitats	All route options pass through a number of small parcels of Lowland Mixed Deciduous Woodland, including Ancient Woodland, particularly in the southern half of the routes. Route option 1C passes through fewer parcels, though the difference is minimal. All route options cross Rivers at multiple locations and these crossings cannot be avoided, though the Rivers can be spanned. Route option 1C passes through and/or adjacent to five small parcels of Lowland Fens and Reedbeds, and route option 1N passes adjacent to one small parcel of this type. Given their small size and position, it is likely that these parcels can be avoided at the detailed design stage through spanning and or tower siting. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their small size and position, it is likely that these parcels can be avoided at the detailed design stage through spanning and or tower siting.			There is no preference, as on balance all route options have potential for similar levels of effects, in the absence of mitigation.
	Overall Preference for Biodiversity	**Overall, 1S is preferred in relation to biodiversity as this route option overlaps with only one SAC/SSSI designation, and placement of towers within this can be avoided through spanning. However, SACs/SSSIs encroaching into other route options could also be avoided or spanned.**			

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
Landscape and Visual Amenity	National Parks	All route options are located at distances exceeding 18km from the Brecon Beacons National Park. No effects are anticipated on the special qualities of the National Park.			There is no preference.
	Locally Designated Landscapes	All route options are located at distances exceeding 23km from the nearest Carmarthenshire County Council Special Landscape Area (SLA). No effects are anticipated on the special qualities of the SLA.			There is no preference.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	All route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. Route option 1N passes through approximately 2.2km of a landscape habitat aspect area with a 'high' overall evaluation to the north-east of Builth Wells. Route option 1N passes through approximately 7.9km of a historic landscape aspect area with an 'outstanding' overall evaluation and approximately 1.9km of a historic landscape aspect area with a 'high' overall evaluation. Route option 1N passes through approximately 4.8km of a geological landscape aspect area with a 'high' overall evaluation. Route option 1N passes through approximately 5.5km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. Route option 1C passes through approximately 1.7km of a landscape habitat aspect area with a 'high' overall evaluation to the north-east of Builth Wells. Route option 1C passes through approximately 5.9km of a historic landscape aspect area with an 'outstanding' overall evaluation and approximately 3.8km of a historic landscape aspect area with a 'high' overall evaluation. Route option 1C passes through approximately 1.9km of a geological landscape aspect area with a 'high' overall evaluation. Route option 1C passes through approximately 4.2km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. Route option 1S passes through approximately 2.3km of a landscape habitat aspect area with a 'high' overall evaluation to the north-east of Builth Wells. Route option 1S passes through approximately 6.1km of a historic landscape aspect area with an 'outstanding' overall evaluation and approximately 3.8km of a historic landscape aspect area with a 'high' overall evaluation. Route option 1S passes through approximately 1.9km of a geological landscape aspect area with a 'high' overall evaluation. Route option 1S passes through approximately 550m of a cultural landscape aspect area with an 'outstanding' overall evaluation and approximately 4.6km of a cultural landscape aspect area with a 'high' overall evaluation.	There is a slight preference for **1C**, which passes through slightly lesser extents of 'outstanding' and 'high' aspect areas.
	Landscape Character	All route options pass through the open upland valleys of the Radnorshire Hills National Landscape Character Area 20 (NLCA 20). The smooth undulating nature of topography and the larger scale of the upland landscape decrease sensitivity to overhead line (OHL). However, the strong sense of remoteness and occasionally varied topography with some distinctive skylines increase sensitivity, particularly in the smaller-scale valley to the south-west of Hundred House. All route options cross the more open and elevated upland landscape north-east of Frank's Bridge, where the OHL can be accommodated into the scale of the landscape. Between Frank's Bridge and the River Wye, all route options generally follow the lower-lying side valley. Route option 1N passes at higher elevation along valley slopes to the south-east of Carneddau and near Llansantffraed-in-Elwel. Route option 1S passes at higher elevation along valley slopes to the north-west and north of Aberedw Hill. All route options may result in loss of '*mixed native hedgerows interspersed with broadleaf woodland*', which define the '*network of geometric fields*' characteristic of NLCA 20. All route options pass through pockets of broadleaf woodland. There is opportunity to avoid areas of woodland at the detailed routeing stage for route options 1C and 1S. Route option 1N cannot avoid passing through woodland near Pantgwin, south-west of Llansantffraed-in-Elwel.			There is a slight preference for **1C**, which follows the grain of the side valley between the River Wye and Hundred House, avoids passing at higher elevation along the valley sides for this section of the route and can potentially avoid passing through pockets of woodland. However, 1C is likely to require frequent changes of direction that would require additional infrastructure, compared to 1N.
	Residential Visual Amenity (with 150m 'trigger for consideration zone')	Route option 1N passes through the 150m 'trigger for consideration' zone of 33 residential properties. There are potential pinch points for route option 1N: ■ Near Upper Pentre/Rhiwlas, where the principal views of the northernmost properties in this group are focused looking across the valley and towards route option 1N; and ■ North of Llansantffraed-in-Elwel. In both cases detailed routeing could avoid the 150m 'trigger for consideration' zone.	Route option 1C passes through the 150m 'trigger for consideration' zone of 26 residential properties. There are pinch points for route option 1C, which passes through the 150m 'trigger for consideration zone' of properties: ■ Near Lower Pentre/Copperfield, where principal views of residential properties are partially screened by intervening woodland, however views are focused looking towards route option 1C; and ■ Near Valley View/Woodcroft. Detailed routeing will not be able to avoid the 150m 'trigger for consideration' zones.	Route option passes through the 150m 'trigger for consideration' zone of 23 residential properties. There is a pinch point for route option 1S, which passes through the 'trigger for consideration zone' of properties near Neuadd Fach and Tremaen, where the principal view of the property located along the A481 is focused looking towards route option 1S. Detailed routeing will not be able to avoid the150m 'trigger for consideration' zones.	All route options pass within 150m of multiple residential properties. There is a slight preference for **1N**. Whilst there are more residential properties within 1N as well as two pinch points along this route, there is a relatively greater opportunity for detailed routeing to avoid the 150m 'trigger for consideration' zones of residential properties within 1N.

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
	Views from Tourism and Recreation Sites and Routes	All route options cross National Cycle Network (NCN) Route 825 north of Hundred House. All route options cross numerous public rights of way. All route options will be seen in distant views from elevated sections of the Wye Valley Walk to the south of Builth Wells, and from an elevated and interconnected network of public rights of way which pass through common land at the Gilwern Hills uplands and near Aberedw Hill.			There is no preference.
	Views from Public Roads, including Tourist Routes, and Railways	All route options cross the A481 between Builth Wells and Hundred House and will be visible in views for much of the length of the road.	All route options cross the A481 between Builth Wells and Hundred House and will be visible in views for much of the length of the road. Route options 1C and 1S will pass within closer proximity and appear prominently from sections of the road to the north-east of Hundred House.		There is a slight preference for **1N** given the route passes at a slightly greater intervening distance from the A481.
		All route options cross the A44 near the Nant Mithil Energy Park site.			
	Overall Preference for Landscape and Visual Amenity	**Overall, there is a slight preference for 1N in relation to landscape and visual amenity. This route provides better opportunities to minimise effects on residential receptors. It is routed on more open upper valley slopes towards the Wye valley, potentially affecting small woodlands but avoiding the need for frequent direction changes to follow the lower valley.**			
Cultural Heritage	Scheduled Monuments (SM)	There are 43 SMs located within 3km of the route option. The following locations have potential sensitivities related to the presence of SMs: ■ Graigfawr ■ Hundred House – Llanelwedd Three prehistoric SMs lie near Graigfawr. A standing stone and stone circle[1] lie on the valley floor, either side of the River Edw, 100m and 700m east of the route option respectively. Relationships and intervisibility between assets of this kind are generally important. The route option is unlikely to disrupt the relationship between these two assets as it does not run between them, and it does not appear likely that towers would sit directly behind the standing stone when seen from the stone circle. A hillfort[2] lies on a low hill overlooking the valley 300m north-west of the route option. Views from the fort into the landscape, and vice versa, and a sense of the fort lying in a commanding position to oversee the landscape are likely to be important. The route option is unlikely to undermine any sense of dominance the hillfort has since it is routed so as not to be skylined. Placing towers directly between the hillfort and the River Edw is to be avoided. A pass between the Edw Valley and Wye Valley runs between Hundred House and Llanelwedd. A series of later prehistoric SMs lie on the summits on the north side of the pass whilst a group of three medieval castle sites lie on the south. The later prehistoric assets fall into two broad categories – funerary features (cairns) and hillforts. Intervisibility and perception of their place in the landscape are key factors for assets of these kinds. The route option is sited to run through the lower slopes and valley floor and is beyond the group of prehistoric assets. It is, therefore, unlikely to challenge any prominence the assets have nor affect any intervisibility between them. Similarly, the route option runs at a lower elevation to the positions of the castles and does not run between them. It is unlikely to challenge any prominence the castles retain nor affect visibility between them and to the valleys which they were designed to oversee.	There are 41 SMs located within 3km of the route option. The following locations have potential sensitivities related to the presence of SMs: ■ Graigfawr ■ Hundred House – Llanelwedd The same three prehistoric SMs near Graigfawr discussed for route option 1N lie close to route option 1C. The standing stone is 130m north of the route option and stone circle 140m south-east of it. The route option may disrupt the relationship between these assets as it runs between them. Placing towers clear of the line of sight between them may potentially remove this issue but will at least mitigate it. The hillfort is 800m north-west of the route option. The route option is unlikely to undermine the any sense of dominance the hillfort has since it is routed so as not to be skylined. There is no obvious need to avoid placing towers directly between the hillfort and the River Edw. This route option is at a lower elevation and greater distance from the asset than route option 1N so towers are less likely to affect how the river valley can be perceived from the asset. The route option is sited similarly to route option 1N relative to the SMs between Hundred House and Llanelwedd. As such it is similarly unlikely to disrupt aspects of their setting which feed into their significance nor meaningfully alter perception of them. There is one later prehistoric SM in this group – Bryntwppa stone row[3] – where this is not the case and where harm may arise. This relates to how the route option would run between both the SM it and a related non-designated asset (Bronze Age burial mound[4]) and the Colwyn Brook. As relationships between assets of this kind and watercourses can be important it is recommended that no towers be placed within the line of sight from the assets to the brook.	There are 41 SMs located within 3km of the route option. The following locations have potential sensitivities related to the presence of SMs: ■ Graigfawr ■ Hundred House – Llanelwedd Route option 1S is the same as route option 1C at Graigfawr so the same assets and considerations apply as outlined for route option 1C. The route option is sited similarly to route options 1N and 1C relative to the SMs between Hundred House and Llanelwedd. As such it is similarly unlikely to disrupt aspects of their setting which feed into their significance nor meaningfully alter perception of them.	There is a slight preference for **1N** as it has the fewest potential sensitivities related to the presence of SMs.

[1] RD113, RD027
[2] RD112
[3] RD236
[4] CPAT HER PRN. 1630

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
	Listed Buildings (Grades I, II*, II) (LB)	There are 102 LBs located within 3km of the route option. The following locations have potential sensitivities related to the presence of LBs: ■ Bwlch-y-trawspen near Cilberllan ■ A481 near Newhouse Farm Bwlch-y-trawspen, an 18-19th century farmstead west of Cilberllan, is a Grade II LB. The route option runs approximately 90m south of the farmhouse, lower down the slope from it, and crosses the access track to the farm. An angle tower may be required approximately 100m south-west of the farmhouse though it is likely that would be screened to an extent by intervening sheds and ancillary buildings in the farmyard. Owing to the building's orientation and its positioning, it is unlikely that there will be meaningful views of the farmhouse's principal elevation in combination with the OHL. There will be some visibility of the OHL on the approach to the farm and possibly from the farmhouse and farmyard. This may be perceived as harmful through some erosion of the rural nature of the LBs setting. A milestone which is a Grade II LB is sited at the side of the A481 where the route option crosses the road east of Builth Wells. This is unlikely to present an issue as the key element of this LB's setting is its relationship to the road which is unlikely to be affected by the presence of the OHL. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 105 LBs located within 3km of the route option. No locations were identified where potential sensitivities related to the presence of LBs are likely to arise. LBs do lie close to the route option in some places but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 100 LBs located within 3km of the route option. No locations were identified where potential sensitivities related to the presence of LBs are likely to arise. LBs do lie close to the route option in some places but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There is a slight preference for **1S** as this has the fewest LBs in proximity to the route option.
	Conservation Areas (CA)	There is one CA, Builth Wells, located within 3km of the route options. The route options run around the south of the town and, at its closest, lie approximately 2.3km from the CA (eastern end). The route options do not appear to be sited on key views along routes through and toward the CA so are unlikely to affect how it is experienced or perceived.		There is one CA, Builth Wells, located within 3km of the route option. The route option runs around the south of the town and, at closest, lies approximately 2.4km from the CA (eastern end). The route option does not appear to be sited on key views along routes through and toward the CA so is unlikely to affect how it is experienced or perceived.	There is no preference as none of the route options appear likely to affect the significance or experience of the CA in proximity to them.
	Historic Parks and Gardens (HPG)	There is one HPG, Pencerrig, located within 3km of the route options. Pencerrig lies north of Builth Wells and approximately 2.2km west of the route options. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views are likely to be away from all the route options.			There is no preference as none of the route options appear likely to affect the significance or experience of the HPG in proximity to them.
	Non-Designated Historic Assets	There are 12 Historic Environment Record (HER) entries located within the route option. There are 2129 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Cwmmaerdy The majority of HER entries at Cwmmaerdy relate to the historic farmstead of Cwmmaerdy[5] and there is	There are 3 HER entries located within the route option. There are 2037 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Llansantffraed-in-Elwel	There are 7 HER entries located within the route option. There are 2066 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Pen-cloddiau Three HER entries lie at Pen-cloddiau, two relate to post-medieval activity (cottage and	**1N** is preferred as the non-designated assets which the route option may interact with are readily avoided, since they manifest as above-ground remains (i.e. buildings and structures), unlike those on the other options which manifest chiefly as below-ground archaeological remains whose

[5] CPAT HER PRN 193163, 136622-136624.

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
		also a natural feature previously thought to be a Bronze Age burial mound.[6] The farmstead assets can be avoided by tower locations and/or other ground infrastructure.	To the west of Llansantffraed-in-Elwel, the HER records the site of a Bronze Age burial mound[7] and a medieval nunnery (Cistercian)[8] immediately north of the Colywn Brook. A contemporary stone alignment which is a Scheduled Monument (Bryntwppa stone row; RD236)[9] lies immediately to north of the burial mound. These assets are likely to have been sited to relate to the Colwyn Brook. The route option lies between these assets and the brook so may undermine an aspect of their setting which contributes to their significance and affect how this is perceived. Placing towers clear of the line of sight from the assets to the watercourse may potentially remove this issue but will at least mitigate it. The location shown for the nunnery is not accurate[10] and its site is thought to be somewhere in the vicinity of Llansantffraed-in-Elwel.[11] Whilst it is unlikely the buried archaeological remains associated with this foundation are present, consultation with the archaeological advisor to the LPA (CPAT) would need to be undertaken.	small-scale quarry)[12] whilst the other is an enclosure of possible later prehistoric date.[13] These assets can be avoided by tower locations or other ground infrastructure. .	extent and nature is not conclusively known.
	Overall Preference for Cultural Heritage	**All route options have similar potential for direct physical effects and effects related to change in the setting of assets. There is a slight preference for 1N in relation to cultural heritage as, although it has potential effects related to a LB near Cilberllan, it offers better opportunities to avoid most potential effects.**			
Hydrology, Hydrogeology and Geology	Main Rivers – Flood Risk	■ Camnant Brook: An approximately 95m span would be required to avoid the high risk zone at Bryntwppa (308694,254384). ■ River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506).	■ River Edw: An approximately 145m span would be required to avoid the high risk zone south of Blaen Edw (314797,259016). ■ River Edw: An approximately 240m span would be required to avoid the high risk zone south of Blaen Edw (314360,258412). ■ Camnant Brook: An approximately 360m to 620m span would be required to avoid the high risk zone north of Matts Common (309141,254036). This is wider than the likely maximum span distance and would therefore, likely require placing towers within a high risk zone. ■ River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506).	■ River Edw: An approximately 145m span would be required to avoid the high risk zone south of Blaen Edw (314797,259016). ■ River Edw: An approximately 240m span would be required to avoid the high risk zone south of Blaen Edw (314360,258412). ■ River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506).	**1N** is the slight preference as it has fewer and shorter spans required to avoid high risk flood zones. 1C would require placing a tower within a high risk zone. Placing of towers in the high risk flood zone may be possible subject to Flood Consequence Assessment, but it is preferable for this to be avoided.
	Ordinary Waterbodies/Watercourses – Flood Risk	All route options cross numerous small watercourses, each with a narrow (less than 75m) zone of high or medium risk with respect to surface and/ or river flooding. All could be spanned.			There is no preference.
	Peat	The route option includes an area of peat within the southern edge, near Glascwm to the north-east of Frank's Bridge (312919,257070), although this is a small area (approximately 5,110 square metres (m^2)) and could be avoided or spanned during detailed design.	A peat body (approximately 18,800m^2) covers approximately 122m of the route option near Franks Bridge (313585,257100) although this could be avoided and/or spanned during detailed design.	A peat body (approximately 18,800m^2) covers approximately 122m of the route option near Franks Bridge (313585,257100) although this could easily be avoided and/or spanned and not considered a significant constraint. A very small lobe of peat (approximately 1,420m^2) is present within the route option east of Matts Common (309919,253648)	**1N** is the slight preference as it avoids the area of peat at Franks Bridge.

[6] CPAT HER PRN 328
[7] CPAT HER PRN 1631
[8] CPAT HER PRN 4271
[9] RD236
[10] A generalised grid reference is likely to have been recorded to 6 figures originally but has been subsequently plotted in GIS using its default 12 figure grid reference, meaning the point will sit at the origin of the 1km square the original grid reference referred to.
[11] https://archwilio.org.uk/arch/query/page.php?watprn=CPAT4271&dbname=$geoGroupId&tbname=core
[12] CPAT HER PRN 141258, 22441.
[13] CPAT HER PRN 6134

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
				which could be avoided during detailed design.	
	Regionally Important Geodiversity Sites (RIGS)	None present.	There are no RIGS located within the route options. Gwernargllwydd Cutting RIGS in Fronddyrys (315556,259662) is within 400m at its closest point but does not pose a constraint.		There is no preference.
	Local Authority Mineral Consultation Areas (MCAs) and Mineral Protection Areas (MPAs)	There is a small area of sand and gravel deposits near Mithil Brook (313701,258356). This is approximately 130m wide at its widest point and can be spanned. There is a small area of sand and gravel deposits near Llaneon, Hundred House (312427,255845). This is approximately 190m wide at its widest point and can be spanned. Where the route option crosses the River Edw there is an associated small area of sand and gravel south of Frank's Bridge (311670,255470). The deposit is approximately 160m wide at its widest point and can be spanned. To the west of Llansantffraed-in-Elwel (308675,254379) there is a small area of sand and gravel deposits. This is approximately 120m wide at its widest point and can be spanned. Also west of Llansantffraed-in-Elwel, an approximately 575m section of the route option crosses a potential igneous resource (dolerite) which is a potential high grade aggregate. Based on the deposit size, this will require a tower to be sited within it to cross it.	There is a small area of sand and gravel deposits south of Blaen Edw (314834,258994). This is approximately 205m wide at its widest point and can be spanned. There is a small area of sand and gravel deposits near Mithil Brook (314952,259031). This is approximately 250m wide at its widest point and can be spanned. There is a small area of sand and gravel deposits near Llaneon, Hundred House (312427,255845). This is approximately 190m wide at its widest point and can be spanned. Where the route option crosses the River Edw, there is an associated small area of sand and gravel south of Frank's Bridge (311670,255470). The deposit is approximately 160m wide at its widest point and can be spanned. To the south-west of Llansantffraed-in-Elwel (310705,254675), a potential igneous rock resource is located along approximately 1.3km of the route option. It is approximately 160m wide at its widest point; however, as the deposit is oriented in parallel to the route option, multiple towers will be required to be sited within the deposit to cross it. The route option crosses a linear west-east trending area of sand and gravel, south-west of Llansantffraed-in-Elwel (309153,254010). The deposit is approximately 360m wide at the point the route option intersects it and will require a tower sited within the deposit to cross it.	There is a small area of sand and gravel deposits south of Blaen Edw (314834,258994). This is approximately 205m wide at its widest point and can be spanned. There is a small area of sand and gravel deposits near Mithil Brook (314952,259031). This is approximately 250m wide at its widest point and can be spanned. There is a small area of sand and gravel deposits near Llaneon, Hundred House (312427,255845). This is approximately 190m wide at its widest point and can be spanned. Where the route option crosses the River Edw, there is an associated small area of sand and gravel south of Frank's Bridge (311670,255470). The deposit is approximately 160m wide at its widest point and can be spanned. To the south-east of Llansantffraed-in-Elwel (310705 254675), the route options follow a potential igneous rock resource for approximately 1.1km. The deposit is approximately 600m wide at its widest point; however, as the deposit is oriented in parallel to the route option, multiple towers will be required to be sited within the deposit to cross it.	**1N** is the slight preference due to the relative potential it offers for avoidance of towers within sand and gravel deposits plus the larger potential igneous deposits.
	Restored Opencast Mining Sites/Mining Spoil Heaps	Approximately 300m north-west and 250m north-east of Llansantffraed-in-Elwel, two ceased borrow pits are present within the route option; these can be easily spanned and are not considered a constraint.	None present.	None present.	There is no preference.
	Overall Preference for Hydrology, Hydrogeology and Geology	**1N is the preference as it has the fewest interactions with potential constraints associated with hydrology, hydrogeology and geology.**			
Forestry	Ancient Woodland as per the Ancient Woodland Inventory (AWI)	The total area of AWI within the route option is 8.07 hectares (ha). Route option 1N includes a number of small AWI listed as Ancient Semi Natural Woodlands (ASNW) with some Restored Ancient Woodland Sites (RAWS). These woodlands are generally small in size, ranging from less than 0.5 ha to approximately 1.5 ha. It will not be possible to avoid all areas of AWI, including ASNW north of Wern-heulog.	The total area of AWI within the route option is 5.99 ha. Route option 1C has ASNW and RAWS which are similar in nature to those within route option 1N. However, AWI within the route option does not cross the entire width of the route option and may be avoided during detailed routeing.	The total area of AWI within the route option is 9.59 ha. Route option 1S is similar in its woodland characteristics to other route options, containing a number of small woodlands. The AWI woodlands within this route option tend to be ASNW with some RAWS which may be avoided during detailed routeing.	**1C** is the preferred route option due to the smaller area of AWI within the route option with the potential to be avoided during the detailed routeing stage.

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
	Commercial Conifer and Other Woodlands as per the National Forest Inventory (NFI)	The total area of other woodlands within the route option is 2.45 ha. Route option 1N includes mainly small broadleaved woodlands not listed as AWI but generally associated with it. A small conifer woodland is also present within this route option. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	The total area of other woodlands within the route option is 2.55 ha. Route option 1C includes small areas of broadleaved woodlands with an area of young trees. Detailed routeing may enable the avoidance of some of these small woodlands.	The total area of other woodlands within the route option is 3.47 ha. Route option 1S includes a number of small broadleaved woodlands and woodland strips. There are also small areas of conifer woodlands present. It may not be possible to avoid all these small woodlands during detailed routeing.	**1C** is the preferred route option due to the relatively small area of other woodlands within it and potential for woodland avoidance at the detailed routeing stage.
	Overall Preference for Forestry	**Overall, 1C is the preferred route option in relation to forestry due to the smaller area of AWI and other woodlands within the route option which offer the best opportunity for avoidance during the detailed routeing stage.**			
Land Use	Infrastructure	There are no existing, consented or proposed[14] wind energy developments (including the turbine tip height plus 10% buffer) located within the route option.	There is one single turbine (including the turbine tip height plus 10% buffer) located within the route option near Tremaen. This wind turbine (and the turbine tip height plus 10% buffer) can be avoided through detailed design.	There are no existing, consented or proposed wind energy developments (including the turbine tip height plus 10% buffer) located within the route option. The route option crosses a 66 kilovolt (kV) overhead line (OHL) to the west of Builth Wells; the OHL runs close to perpendicular across the width of the route option at this location.	**1N** is the slight preference as there are no existing wind energy developments (including turbine tip height plus 10% buffer) located within this route option. 1N also does not cross the existing 66kV OHL.
	Committed Development (Consented and Undetermined Planning Applications)	There are two consented non-residential committed developments and one consented residential committed development located within these route options. The residential development was consented in 2015 and based on aerial photography, there is no evidence that the development has been constructed. It is therefore, assumed that the consent for this committed development has likely expired. All committed developments can, however, be avoided through detailed design.		There is one consented residential committed development located within the route option. This development was consented in 2015 and based on aerial photography, there is no evidence that the development has been constructed. It is therefore, assumed that he consent for this committed development has likely expired. This committed development can, however, be avoided through detailed design.	**1S** is the preferred route option as it contains the fewest committed developments present within this route option. It is also likely that the consent for this committed development has expired. For each route option, however, all committed developments can be avoided through detailed design.
	Local Development Plan (LDP) Allocations	All route options cross an area allocated within the Powys LDP as a Local Search Area for Solar (the relevant policy within the LDP is RE1).			There is no preference.
	Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a)	The route options do not cross any BMV land.		There is 0.69 ha of BMV agricultural land present within this route option. This can be avoided through detailed design.	**1N** and **1C** are of equal preference as there is no BMV agricultural land present with the route options.
	Common Land	There is 5.81 ha of common land present within the route option. In one location, the common land area covers the width of the route option. However, as the width of the common land is approximately 25m at its narrowest point and 45m at its widest point, this area of common land could be spanned by the OHL during the detailed design stage.	There is 1.35 ha of common land present within the route option. This area of common land covers the width of the route option. However, as the width of the common land is approximately 42m at its narrowest point and 110m at its widest point, this area of common land could be spanned by the OHL during the detailed design stage.	There is no common land present within the route option.	**1S** is the preferred route option as there is no common land present within the route option.
	Overall Preference for Land Use	**There is no overall preference in relation to land use, as all considerations could be avoided or spanned during the detailed design stage.**			
Overall Emerging Preference: 1N up to the vicinity of Frank's Bridge, transferring via a short link to 1S for the remainder of the route section.		1C is the shortest route option; however, 1N and 1S are only marginally longer. 1N was the preferred route option in relation to the landscape and visual topic, however, the degree of preference between 1N and 1S was relatively small. It was considered that 1N offered relatively better opportunities for minimising effects on residential properties via detailed routeing; but equally, 1N passes closer to more properties than 1S overall. On landscape and visual grounds, the preference was for 1N and 1S over 1C as 1N runs through a more open upper valley and avoids more frequent changes of direction.			

[14] Existing wind energy developments are those which are operational or under construction schemes. Consented wind energy developments are those which have been granted a planning permission but are not yet under construction. Proposed wind energy developments are those which have a valid planning application which is yet to be determined.

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
		1N was preferred on cultural heritage grounds and also hydrology, hydrogeology and geology, although the degree of preference was small. 1S was the marginal preference in relation to biodiversity, primarily due to this route option only containing one SAC/SSSI which could be avoided or spanned (for all route options). 1N was the only route option containing Ancient Woodland spanning the full width of the route option and was therefore not preferred in relation to the forestry criterion. In balancing the landscape and visual considerations with the protection of Ancient Woodland in particular, the emerging preference was for the preferred route to consist of 1N up to the vicinity of Frank's Bridge, transferring to 1S for the remainder of the route section to avoid passing through the block of ancient woodland spanning the width of the route option.			

Table E.2: Section 2 Route Options Environmental Appraisal

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
Approximate Length of Route Option (kilometres (km))	N/A	15.19	15.52	15.73	**2N** is the slight preference as this is the shortest route option.
Biodiversity	Special Area of Conservation (SAC)	Route options 2N and 2C cross the Afon Gwy (River Wye) SAC at a minimum of four locations. The route options also cross tributaries of the River (which are not part of the SAC designation but are hydrologically and ecologically connected) at two locations. These features can all be avoided through spanning. The primary reasons for the SAC designation are watercourses of plain to montane levels, invertebrate and fish populations and otter *Lutra lutra*. In addition, transition mires and quaking bogs and allis shad *Alosa alosa* are qualifying features but not primary reasons for designation.		Route option 2S crosses the Afon Gwy (River Wye) SAC at six locations and this route option also overlaps with the SAC or lies immediately adjacent to it at an additional six locations. These SAC locations can all be avoided through spanning. The route option also crosses tributaries of the River (which are not part of the SAC designation but are hydrologically and ecologically connected) at two locations. These features can all be avoided through spanning. The primary reasons for the SAC designation are watercourses of plain to montane levels, invertebrate and fish populations and otter *Lutra lutra*. In addition, transition mires and quaking bogs and allis shad *Alosa alosa* are qualifying features but not primary reasons for designation.	**2N** and **2C** are the preferred route options as these have fewer interactions with the SAC than 2S.
	Sites of Special Scientific Interest (SSSI)	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at a minimum of four locations, plus two additional locations for its tributaries. Route option 2N lies approximately 300 metres (m) to the south of the Llanelwedd Rocks SSSI and is separated from it by main roads, which limits ecological connectivity. This SSSI is designated for its natural rock outcrops and old quarry exposures, which support unusual plant communities, with affinities with steppe-heath vegetation.	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at a minimum of four locations, plus two additional locations for its tributaries.	Route option 2S crosses the Afon Gwy SAC and SSSIs at six locations and this route option also overlaps with the SAC and SSSIs or lies immediately adjacent to it at an additional six locations. These features can all be avoided through detailed tower placement/spanning.	**2N** and **2C** are the preferred route options as these would have fewer interactions with the SSSI than 2S.
	Local Wildlife Sites (LWS)/ Sites of Importance for Nature Conservation (SINC)/Designated Road Verges	Pheasantry Wood SINC, lies approximately 240m to the north of route option 2N and is designated for its broadleaved woodland. Route option 1N is the closest route option to a Designated Road Verge, which lies approximately 180m to the south. No LWS/SINCs are located within or have connectivity with the route options.	Pheasantry Wood SINC, lies approximately 240m to the north of route option 2C and is designated for its broadleaved woodland. No LWS/SINCs are located within or have connectivity with the route option.	Route option 2S lies approximately 480m to the north of a Designated Road Verge. No LWS/SINCs are located within or have connectivity with the route option.	There is no preference as no LWS/SINCs are located within or have connectivity with the route options.
	Environment (Wales) Act 2016 Priority Habitats	All route options pass through a number of small parcels of Lowland Mixed Deciduous Woodland, including Ancient Woodland. The number of parcels and potential for effects is similar for all route options. The majority of these parcels can be avoided through detailed design. As noted above, all route options cross the Afon Gwy (River Wye) SAC and SSSIs, at a minimum of four locations, plus two additional locations for its tributaries. Route option 2S crosses the River at six locations and this route option also overlaps with the River or lies immediately adjacent to it at an additional six locations, which is more than the other options. These Rivers and tributaries can all be avoided through spanning. Route option 2N passes through one area of Floodplain Grazing, associated with the river network, which cannot be avoided through routeing or spanning due to its size. Route options 2N and 2S both pass through one parcel of Purple Moor Grass and Rush Pasture, one parcel of Lowland Dry Acid Grassland and two parcels of Wood Pasture. Given their small size and position, it is likely that these parcels can be avoided at the detailed design stage through spanning and or tower siting. Route option 2C also passes through an additional area of Purple Moor Grass and Rush Pasture near the south-west end of the route section; although this extends across the width of the route option, it may be possible to span it.			**2C** is the preferred route option due to its lower number of crossings of the River Wye than 2S and likely greater potential than 2N to avoid other priority habitats.
	Overall Preference for Biodiversity	**2N and 2C are equally preferred over 2S in relation to biodiversity as 2N/2C have fewer interactions with the SAC and SSSI and associated Priority Habitats. The SAC/SSSI can be avoided by detailed tower placement/spanning. 2C has a likely higher potential to avoid other priority habitats than 2N and so 2C is preferred overall.**			

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
Landscape and Visual Amenity	National Parks	All route options are located at distances exceeding 18km from the Brecon Beacons National Park. No effects are anticipated on the special qualities of the National Park.			There is no preference.
	Locally Designated Landscapes	All route options are located at distances exceeding 10km from the nearest Carmarthenshire County Council Special Landscape Area (SLA). No effects are anticipated on the special qualities of the SLA.			There is no preference.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	Most of the length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. However, route option 2N passes through approximately 2km of a visual and sensory aspect area with an 'outstanding' overall evaluation and approximately 2.2km of a visual and sensory aspect area with a 'high' overall evaluation. All route options pass through approximately 15km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-15km of historic landscape aspect areas with a 'high' overall evaluation. Route option 2N passes through approximately 8.2km of a geological landscape aspect area with an 'outstanding' overall evaluation and approximately 0.8km of a geological landscape aspect area with a 'high' overall evaluation. Route option 2N passes through approximately 5.7km of a cultural landscape aspect area with an 'outstanding' overall evaluation.	Most of the length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. However, route option 2C passes through approximately 0.8km of a visual and sensory aspect area with an 'outstanding' overall evaluation and approximately 3.9km of a visual and sensory aspect area with a 'high' overall evaluation. All route options pass through approximately 15km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-15km of historic landscape aspect areas with a 'high' overall evaluation. Route option 2C passes through approximately 7.9km of a geological landscape aspect area with an 'outstanding' overall evaluation. Route option 2C passes through approximately 6.2km of a cultural landscape aspect area with an 'outstanding' overall evaluation.	Most of the length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. However, route option 2S passes through approximately 0.8km of a visual and sensory aspect area with an 'outstanding' overall evaluation and approximately 4.8km of a visual and sensory aspect area with a 'high' overall evaluation. All route options pass through approximately 15km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-15km of historic landscape aspect areas with a 'high' overall evaluation. Route option 2S passes through approximately 12.1km of a geological landscape aspect area with an 'outstanding' overall evaluation. Route option 2S passes through approximately 5.2km of a cultural landscape aspect area with an 'outstanding' overall evaluation and approximately 200m of a cultural landscape aspect area with a 'high' overall evaluation.	There is a slight preference for **2C**, which passes through slightly lesser extents of 'outstanding' aspect areas.
	Landscape Character	All route options cross the River Wye east of Builth Wells and pass within the Spas and Wells of Central Wales National Landscape Character Area 27 (NLCA 27)[1]. The broad valleys and gently undulating landform of the NLCA decrease sensitivity to overhead lines (OHLs). Some blocks of coniferous forestry, areas of mixed woodland and the enclosing valley sides within the NLCA may offer opportunities to backcloth the OHL. The presence of busy main roads, railway line, occasional modern agricultural development and settlement of Builth Wells exert an existing influence of development within the NLCA, also decreasing sensitivity. However, there is a strong sense of rural tranquillity away from main roads and settlements, which increases sensitivity. All route options may result in loss to mature hedgerows and hedgerow trees which are characteristic of NLCA 27. All route options pass through pockets of woodland and strips of riverside trees that are characteristic of the NLCA. There are likely to be impacts on the sheltered and wooded character of the valley landscape. Whilst some areas of woodland can be avoided at the detailed routeing stage, route option 2S cannot avoid passing through an area of mixed woodland near Neuadd-isaf Wood. Route options 2N and 2C cannot avoid passing through areas of woodland to the south of Builth Wells, near Coed Rhosforio and near Coed Clunmelyn (route option 2C avoids this). All route options cut across the rolling terrain of the foothills to the south of Builth Wells, though route options 2C and 2S are routed behind the low hill of Garth. To the west, the three route options follow the grain of the River Irfon Valley, though route option 2S repeatedly crosses the river and would have a greater impact on the riparian landscape. Route options 2N and 2C pass through a non-designated parkland landscape near Garth House. 2N passes through a larger area of the parkland and closer to Garth House itself.			2S crosses fewer/smaller areas of woodland and avoids the parkland landscape at Garth House. However, this route option also has a poorer landscape fit due to multiple crossings of the River Irfon. Overall, there is a slight preference for **2C** which has a better landscape fit, lower effects than 2S on the riparian landscape and lower effects than 2N on the parkland landscape near Garth House.
	Residential Visual Amenity (with 150m 'trigger for consideration zone')	Route option 2N passes through the 150m 'trigger for consideration' zone of 35 residential properties. There are potential pinch points for route option 2N: ■ along the Newry Road to the south of Builth Wells; ■ to the south of Builth Wells, between Neuadd-isaf and a consented property at Road Wood; ■ between Cilmeri and the named residential property of Glanirfon, where the principal views of properties at Cilmeri are focused looking across the valley and towards route option 2N; and ■ near Coed Rhosforio. There is one pinch point where the 150m 'trigger for consideration' zones cannot be avoided through detailed routeing.	Route option 2C passes through the 150m 'trigger for consideration' zone of 36 residential properties. There are potential pinch points for route option 2C: ■ to the south of Builth Wells, between Neuadd-isaf and a consented property at Road Wood; ■ between Cilmeri and the named residential property of Glanirfon, where the principal views of properties at Cilmeri are focused looking across the valley and towards route option 2C; and ■ near Coed Rhosforio. There is one pinch point where the 150m 'trigger for consideration' zones cannot be avoided through detailed routeing.	Route option 2S passes through the 150m 'trigger for consideration' zone of 39 residential properties. There are potential pinch points for route option 2S: ■ along Cnwc-y-llo Road to the south of Builth Wells near Erwhelm (where the route option cannot avoid the 'trigger for consideration' zone of two properties); ■ to the south-west of Builth Wells, near Neuadd-hen; ■ to the south-west of Builth Wells between the named residential properties of Little Hall and Tyn-y-graig (where the route option cannot avoid the 'trigger for consideration' zone of three properties);	There is no clear preference as the 150m 'trigger for consideration zones' cannot be fully avoided on any route option. However, **2C** has the fewest potential pinch points.

[1] Also referred to as The Vales of Irfon and Ithon.

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
				■ between Cilmeri and the named residential property of Glanirfon, where the principal views of properties at Cilmeri are focused looking across the valley and towards route option 2S; ■ between Dolmenyn and Corryn, where the principal views of properties are focused looking towards route option 2S, albeit partially screened by woodland; and ■ to the north of Llwyn-Einon. There are pinch points where the 150m 'trigger for consideration' zones cannot be avoided through detailed routeing.	
	Views from Tourism and Recreation Sites and Routes	All route options cross the Wye Valley Walk to the south of Builth Wells and the Heart of Wales Trail to the south-west of Builth Wells. All route options cross numerous public rights of way. All route options cross National Cycle Network (NCN) Route 43 to the south-west of Builth Wells; however, route option 2S crosses the NCN Route again near Dolmenyn. Route options 2N and 2C pass close to Caer Beris Holiday Lodges to the south-west of Builth Wells, and also pass close to a promoted Woodland Trust walk at Garth Bank north of Garth village,[2]			There is no preference.
	Views from Public Roads, including Tourist Routes, and Railways	All route options cross the A483 twice. All route options run alongside approximately 8km of the road, with route options 2N and 2C passing within closest proximity to the road. All route options cross the A470 east of Builth Wells. All route options cross the Heart of Wales railway line near Cilmeri, and run alongside approximately 5km of the railway line, with route options 2N and 2C passing within closest proximity. Outward views from the railway line are partially screened by woodland.		All route options cross the A483 twice. All route options run alongside approximately 8km of the road. All route options cross the A470 east of Builth Wells. All route options cross the Heart of Wales railway line near Cilmeri, and route option 2S crosses the railway line in two additional locations. All route options run alongside approximately 5km of the railway line, with route options 2N and 2C passing within closest proximity. Outward views from the railway line are partially screened by woodland.	There is a slight preference for **2S**, given the route option passes at greater distance from the Heart of Wales railway line and A483.
	Overall Preference for Landscape and Visual Amenity	**There is no strong overall preference when balancing the landscape and visual considerations. Overall, 2C has the best landscape fit as it avoids the river valley to a greater extent than 2N and 2S and makes use of screening by the low hill of Garth near Builth Wells, while avoiding wooded slopes south-west of Builth Wells. Although likely to be more visible from roads than 2S, 2C is preferred on balance.**			
Cultural Heritage	Scheduled Monuments (SM)	There are 20 SMs located within 3km of the route option. The following location has potential sensitivities related to the presence of SMs: ■ Builth Wells Two SMs, both medieval castles, lie at Builth Wells at either end of the present town. Builth Castle[3] lies in the east, approximately 470m north-west of the route option, and Caer Beris[4] in the west, approximately 380m north-east of the route option. Views from the castles into the landscape, and vice versa, and a sense of the castle lying in a commanding position to oversee the landscape, are likely to be important. The route option is unlikely to undermine any sense of dominance the castles retain or affect appreciation of them. The route option has been routed so as not to be skylined in views toward the castle nor to have towers or other ground infrastructure on key lines of sight from the castles (e.g. to crossing points over the river or local hills).	There are 19 SMs located within 3km of the route option. The following location has potential sensitivities related to the presence of SMs: ■ Builth Wells Potential sensitivities at Builth Wells relate to the same castle SMs discussed under route option 2N. Route option 2C lies approximately 970m south of Builth Castle and approximately 380m south-west of Caer Beris. The route option is similarly routed to address the potential sensitivities with visibility from, or in combination with the castles, as outlined for route option 2N. As such, it is similarly unlikely to undermine any sense of dominance the castles retain or affect appreciation of them.	There are 18 SMs located within 3km of the route option. The following location has potential sensitivities related to the presence of SMs: ■ Builth Wells Potential sensitivities at Builth Wells relate to the same castle SMs discussed under route option 2N. Route option 2S lies approximately 1.3m south of Builth Castle and approximately 950m south-west of Caer Beris. The route option is similarly routed to address the potential sensitivities with visibility from, or in combination with the castles, as outlined for route option 2N. As such, it is similarly unlikely to undermine any sense of dominance the castles retain or affect appreciation of them.	There is a slight preference overall for **2S** as it is furthest away from the SMs at Builth Wells.

[2] https://www.woodlandtrust.org.uk/visiting-woods/woods/garht-bank/
[3] BR031.
[4] BR093

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
	Listed Buildings (Grades I, II*, II) (LB)	There are 105 LBs located within 3km of the route option. The following locations have potential sensitivities related to the presence of LBs: ■ Builth Wells ■ Garth Abercynithon is a 17th century house immediately west of Builth Wells. It is a Grade II LB and was built for a surveyor who was heavily involved in rebuilding the town after damaging fires in the mid-17th century. The route option runs approximately 90m north-east of the house, between it and the town, and based on the change of direction of the route option, it would likely have an angle tower at its closest point. Judging by aerial photography there is a large farm complex of buildings between the LB and the route option which may screen visibility of the tower. It is, however, possible that the OHL and associated towers would be visible on the approach to the house form the south and in the views from it toward Afon Irfon. An 11 kilovolt (kV) OHL already runs south of the house across its approach drive. It is possible that further, and taller, grid infrastructure would be perceived as harmful as it may erode the rural setting of the house. Garth House is a country house of 17th century origin west of the village of Garth. It is a Grade II LB and appears to be sited in a non-designated parkland of 18th to 19th century date. The house is sited on the valley side and its principal (south-east) frontage looks down over the parkland running southward down to the Afon Dulas. The route option runs approximately 50m south of the house through its associated parkland and its alignment indicates the requirement for an angle tower at its closest point. The route option also crosses the main approach drive to the house within the parkland. An 11kV OHL already runs south of the house across its approach drive. It is possible that further, and taller, grid infrastructure would be harmful as it is likely to erode the rural setting of the house and affect the coherence of its related parkland. The presence of an angle tower in such close proximity to the house and on key views between it and its parkland is likely to make this change in setting particularly harmful. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 105 LBs located within 3km of the route option. The following locations have potential sensitivities related to the presence of LBs: ■ Builth Wells ■ Garth The route option takes the same course as route option 2N west of Builth so has the same potential sensitivities and level of harm with the Abercynithon LB as outlined for route option 2N. The route option runs approximately 310m south of Garth House through its associated parkland. Like route option 2N, it too is similarly likely to be harmful for the same reasons (erosion of the rural setting of the house; and affecting the coherence of its related parkland). The harm is likely to be lower than route option 2N as angle towers could be located outside of the parkland. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 104 LBs located within 3km of the route option. The following location has potential sensitivities related to the presence of LBs: ■ Garth Gwarafog House is an 18th century house by the south bank of the Afon Irfon near Garth. It is a Grade II LB and sits in a tree lined garden. The route option lies approximately 50m to its south and an 11kV OHL already runs immediately south of the house. It is possible that route option 2S and associated infrastructure would be seen on the approach to the house but it is unlikely that there would be any significant views of the house's principal elevation in combination with the route option owing to the fact that this appears to face south-southeast (i.e. toward the proposed OHL course). There may be some perception that the rural setting of the house is somewhat eroded by the presence of a further OHL in close proximity to it. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	**2S** is preferred as it avoids the potential sensitivities related to harm to Garth House and its associated non-designated parkland.
	Conservation Areas (CA)	There is one CA, Builth Wells, located within 3km of the route option. The route option runs around the south of the town and, at closest, lies approximately 880m from the CA (eastern end). The route option does not appear to be sited on key views along routes through and toward the CA so is unlikely to affect how it is experienced or perceived.	There is one CA, Builth Wells, located within 3km of the route options. The route options run around the south of the town and, at closest, lie approximately 1km from the CA (southern edge and eastern end). The route options do not appear to be sited on key views along routes through and toward the CA so are unlikely to affect how it is experienced or perceived.		There is no preference as none of the route options appear likely to affect the significance or experience of the CA in proximity to them.

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
	Historic Parks and Gardens (HPG)	There is one HPG, Pencerrig, located within 3km of the route option. Pencerrig lies north of Builth Wells and approximately 2.1km north of the route option. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views are likely to be away from the route option.	There is one HPG, Pencerrig, located within 3km of the route options. Pencerrig lies north of Builth Wells and approximately 2.8km north of the route options. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views are likely to be away from the route option.		There is no preference as none of the route options appear likely to affect the significance or experience of the HPG in proximity to them.
	Non-Designated Historic Assets	There are 18 Historic Environment Record (HER) entries located within the route option. There are 2018 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Builth Wells ■ Garth A Royal Observer Corps Post,[5] an underground monitoring position built in the 1950s and operational into the 1960s, lies on the side of Garth, a hill south-east of Builth Wells. The route option runs adjacent to its north-west side. Grid infrastructure will need to avoid surface features associated with this and also avoid damage to its buried elements. The extent of these are not recorded in the HER entry so further research is recommended to establish how far they extend. A medieval coin hoard was found adjacent to the route option on the east side of the town.[6] The non-designated parkland of Garth House is not recorded on the HER. The route option runs through this parkland and is likely to affect how it is experienced and its relationship to the house at its core, Garth House, is understood. Issues relating to change in its character are discussed under Garth House in the 'Listed Buildings' section. A medieval court site (a high status settlement)[7] is recorded adjacent to the route option at Treflys, approximately 1.4km south-west of Garth. A series of earthworks at this location are thought to be related with this settlement. Grid infrastructure will be sited to avoid the court site.	There are 22 HER entries located within the route option. There are 2062 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Garth The same considerations outlined for the Garth House non-designated parkland in relation to route option 2N apply equally to route option 2C.	There are 22 HER entries located within the route option. There are 2209 HER entries located within 3km of the route option. No locations were identified with HER entries likely to indicate the existence of non-designated historic assets which may constrain the route option.	**2S** is the preferred route option since it has no apparent non-designated assets likely to act as a constraint.
	Overall Preference for Cultural Heritage	**2S is preferred in relation to cultural heritage as it has the fewest likely effects related to recorded historic assets.**			
Hydrology, Hydrogeology and Geology	Main Rivers – Flood Risk	■ River Wye: On the route option east of Builth Wells, a minimum 1,074m span would be required to cross the high risk zone (305740,251460) which would require the placement of multiple towers within the high risk zone. ■ River Irfon: There are crossings of the River Irfon and its tributaries including high risk zones with respect to river flooding. However, all are noted to be smaller than the likely maximum tower span and therefore can be spanned.	■ River Wye: On the shared 2C/2S route options east of Builth Wells a minimum 325m span would be required to cross the high risk zone (306272,251066) which would require placement of a tower within the high risk zone. ■ River Irfon: There are crossings of the River Irfon and its tributaries including high risk zones with respect to river flooding. However, all are noted to be smaller than the likely maximum tower span and therefore can be spanned.	■ River Wye: On the shared 2C/2S route options south of Builth Wells a minimum 325m span would be required to cross the high risk zone (306272,251066) which would require placement of a tower within the high risk zone. ■ River Irfon: Along the route option west of Builth Wells an 806m span would be required to cross the high risk zone (301245,250646), this would require placement of multiple towers within the high risk zone. ■ River Irfon: There are further crossings of the River Irfon and its tributaries including high	Both 2S and 2N have large areas within high risk flood areas and would likely require multiple towers within these zones to span them. The placing of towers in the high risk flood zone may be possible subject to Flood Consequence Assessment, but it is preferable for it to be minimised. 2C has fewer and shorter spans required to avoid high risk flood areas and would

[5] CPAT PRN 152207
[6] CPAT PRN 4270
[7] CPAT PRN 142454

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
				risk zones with respect to river flooding. However, all are noted to be smaller than the likely maximum tower span and therefore can be spanned.	likely require a single tower to span the Wye east of Built Wells. Consequently, **2C** is the preferred route option.
	Ordinary Waterbodies/Watercourses – Flood Risk	The route option crosses numerous small watercourses , each with a narrow (less than minimum tower span) zone of high risk with respect to surface and/ or river flooding. All could be spanned.	There is a discontinuous stretch of high risk with respect to surface water and/ or river flooding approximately 350m long located 1km west-southwest of Cilmeri. Depending on the proposed tower placement in this stretch one or more tower(s) may be located within the high risk zone.	The route option crosses numerous small watercourses, each with a narrow (less than minimum tower span) zone of high risk with respect to surface and/ or river flooding. All could be spanned.	**2N** and **2S** are the slight preference as they avoid potential tower placement within the high risk flood zone.
	Geological Conservation Review Sites (GCRs)	A GCR is located in Llanelwedd Quarry but this is approximately 300m from the route option and therefore is not considered a constraint. A GCR named 'River Irfon' is located in south-west Builth Wells but is noted to be over 300m from the shared 2C/2N route options and therefore is not considered a constraint.	A GCR named 'River Irfon' is located in south-west Builth Wells and is noted to be over 300m from the shared 2C/2N route options therefore is not considered a constraint.	None present.	There is no preference as none of the route options interact with a GCR site.
	Landfill Sites	A Natural Resources Wales (NRW) recorded historical landfill is recorded to the south of Builth Wells (305195.2,251312.1). It falls within 100m of the route option and covers an area of approximately 3,200 square metres (m^2). It is also located at the edge of a high risk flood zone and may increase the span needed to cross this zone. The route option crosses a small pentagon shaped historical landfill approximately halfway between Builth Wells and Cilmeri. The size of the landfill is approximately 1,990m^2 and could be spanned. The joint 2N/2C route options cross a lobe shaped historical landfill with an area of 6,650m^2, located between Cilmeri and Llanfechan. It is approximately 121m wide at its widest point and can be spanned.	The joint 2N/2C route option crosses a small pentagon shaped historical landfill noted approximately halfway between Builth Wells and Cilmeiy. The size of the landfill is approximately 1,990m^2 and can be spanned. The joint 2N/2C route options cross a lobe shaped historical landfill with an area of 6650m^2, located between Cilmeri and Llanfechan. It is approximately 121m wide at its widest point and can be spanned.	None present.	The landfill noted south of Builth Wells may affect the ability to span a high risk flood zone on 2N; therefore, 2C and 2S are preferred to 2N with the overall preference being **2S**.
	Restored Opencast Mining Sites/Mining Spoil Heaps	Llanelwedd Quarry is noted over 300m from the route option; this is not considered a constraint. The lobe shaped historical landfill with an area of approximately 6650m^2 within the joint 2N/2C route options, located between Cilmeri and Llanfechan, may be associated with a ceased mineral extraction. It is approximately 121m wide at its widest point and can be spanned; therefore, it poses limited constraint.	The lobe shaped historical landfill with an area of approximately 6650m^2 within the joint 2N/2C route options, located between Cilmeri and Llanfechan, may be associated with a ceased mineral extraction. It is approximately 121m wide at its widest point and can be spanned; therefore, it poses limited constraint.	None present.	There is a slight preference for **2S**. As it has no interactions with restored opencast mining sites/mining spoil heaps
	Areas of Landslide or Ground Instability	None present.	None present.	The route option encroaches approximately 30m into an area of 'Landslide Deposits' to the south-west of Cilmeri. This could be avoided or spanned and so is not considered likely to pose a constraint.	There is a slight preference for **2N** and **2C** as these route options do not contain any areas of landslide or ground instability.
	Local Authority Mineral Consultation Areas (MCAs) and Mineral Protection Areas (MPAs)	The Local Development Plan (LDP) for Minerals buffer zone for the existing Llanelwedd Quarry slightly lies within the route option to the south-east of Builth Wells. This is not deemed a constraint. To the south of Builth Wells, a large deposit of sand and gravel is noted associated with the River Wye. It is approximately 1,023m in length and would require multiple towers sited within the deposit to span it. No other significant deposits are present along the route option.	On the joint 2C/2S route options south of Builth Wells, a large deposit of sand and gravel is noted associated with the River Wye. It is approximately 370m in length and would require a tower sited within the deposit to span it. No other significant deposits are present along the route option.	On the joint 2C/2S route options south of Builth Wells, a large deposit of sand and gravel is noted associated with the River Wye. It is approximately 370m in length and would require a tower sited within the deposit to span it. A deposit of sand and gravel approximately 597m in length is noted 1km north-west of Maesmynis, A tower is likely to be required within the deposit to span it.	**2C** is the slight preference as it has the least amount of sand and gravel deposits present along the route option.

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
	Overall Preference for Hydrology, Hydrogeology and Geology	**There is a slight preference for 2C in relation to hydrology, hydrogeology and geology, due to the lower degree of likely constraint it faces in relation to certain considerations (e.g. flood risk from main rivers) and the likelihood of other constraints being avoidable by detailed design with the possible exception of tower placement in the high risk flood zone (ordinary watercourses/bodies) west-southwest of Cilmeri.**			
Forestry	Ancient Woodland as per the Ancient Woodland Inventory (AWI)	The total area of AWI within the route option is 18.8 hectares (ha). Route option 2N includes a number of small broadleaved woodlands listed as Restored Ancient Woodland Sites (RAWS), Ancient Semi Natural Woodland (ASNW) sites and Plantation on Ancient Woodland Sites (PAWS). Areas of AWI are present across the width of the route option at Ash Wood, Coed Clunmelyn, Coed Rhosforio and Neudd-isaf and are therefore unavoidable.	The total area of AWI within the route option is 20.39 ha. Route option 2C includes a number of small broadleaved woodlands listed as ASNW, RAWS, PAWS and an Ancient Woodland Site of Unknown Category. Areas of AWI are present across the width of the route option to the east of Neudd-isaf, at Coed Glan-Gwy and at Coed Rhoforio and are therefore unavoidable.	The total area of AWI within the route option is 20.09 ha. Route option 2S includes a number of small broadleaved woodlands listed as ASNW and RAWS as well as a number of PAWS which are conifer and mixed woodlands. Two narrow areas of AWI are present across the width of the route option south-east of Penrheol, at Coed-Glan-Gwy and north-east of Llangammarch Wells and are therefore unavoidable.	All route options contain AWI which cannot be avoided by detailed routeing. Although 2N has a marginally lower area of AWI within the route option, it has the highest number of unavoidable AWI areas, therefore, **2C** and **2S** are preferred.
	Commercial Conifer and Other Woodlands as per the National Forest Inventory (NFI)	The total area of other woodlands within the route option is 10.64 ha. Route option 2N includes of a number of small broadleaved areas with some areas of mixed and predominantly conifer woodlands. Within the route option there are no sizable commercial conifer plantations. Other woodlands are present across the width of the route option to the north of Garth and west of Dulas and are therefore unavoidable. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	The total area of other woodlands within the route option is 10.98 ha. Route option 2C includes of a number of small broadleaved areas with some areas of mixed and predominantly conifer woodlands. Within the route option there are no sizable commercial conifer plantations. Other woodlands are present across the width of the route option at Coed Glan-Gwy and north of Garth and are therefore unavoidable. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	The total area of other woodlands within the route option is 4.39 ha. Route option 2S includes a number of small broadleaved woodlands. Within the route option there are no significant commercial conifer plantations. Other woodlands are present across the width of the route option at Coed-Glan-Gwy and north-east of Llangammarch Wells and are therefore unavoidable. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	In terms of other woodlands, there is a preference for **2S** which has an overall smaller area of woodland within the route option.
	Overall Preference for Forestry	**The overall preference is 2S in relation to forestry due to the higher ability it offers to avoid AWI relative to 2N combined with the lower overall area of other woodland present within it.**			
Land Use	Infrastructure	Where the 2N, 2C and 2S route options converge to the south of Cilmeri, the route options pass the A483 alongside the railway. Both the road and railway are orientated in a north-east to south-west direction, with the separation distance between the two ranging from approximately 350-360m. There is a larger separation distance between the railway and the road in the north of the route option, with the distance narrowing to the south of the route option. Here both the railway and road would need to be spanned in close proximity to each other. The road and rail could potentially be spanned here with careful tower placement.			There is a slight preference for **2C** and **2S** as these route options require crossing fewer existing 66kV OHLs.
		The route option crosses four existing 66 kilovolt (kV) overhead lines (OHLs) to the east of Builth Wells; two of the OHLs enter the route option from the north and the other two OHLs enter the route option from the south. The four OHLs connect into the existing Builth Wells Substation which is located within the centre of the route option. The proposed OHL would require crossing at least two of the existing 66kV OHLs depending on which side of the substation (north or south) the OHL is routed.	The route option crosses one existing 66kV OHL to the east of Builth Wells. The OHL runs within the route options for approximately 450m before exiting the route options to the south-southeast of Builth Wells.		
	Committed Development (Consented and Undetermined Planning Applications)	There is one consented residential committed development located within the route options. This can be avoided through detailed design.		There are no committed developments located within the route option.	**2S** is preferred as there are no committed developments located within the route option.

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
	Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a)	There is 96.63 ha of BMV agricultural land present within the route option. BMV land covers the width of the route option in multiple locations and therefore cannot be avoided through detailed design.	There is 96.93 ha of BMV agricultural land present within the route option. BMV land covers the width of the route option in multiple locations and therefore cannot be avoided through detailed design.	There is 95.02 ha of BMV agricultural land present within this route option. BMV land covers the width of the route option in multiple locations and therefore cannot be avoided through detailed design.	**2S** is the preferred route option as it contains the smallest area of BMV agricultural land.
	Overall Preference for Land Use	**The overall preference is 2S in relation to land use, as this route option contains the smallest area of BMV agricultural land, crosses the fewest 66kV OHLs and there are no committed developments located within the route option.**			
Overall Emerging Preference: 2C		Overall, 2C has the best landscape fit and avoids the river valley to a greater extent than 2N and 2S. It makes use of screening by the low hill of Garth near Builth Wells, while avoiding wooded slopes south-west of Builth Wells. Although likely to be more visible from roads than 2S, 2C is preferred on balance. 2N and 2C are equally preferred in relation to biodiversity. In relation to cultural heritage, 2S was the preference as it has fewest likely effects related to recorded historic assets. On balance 2C was preferred in relation to hydrology, hydrogeology and geology. However, 2C has the greatest amount of BMV land within it which cannot be avoided during detailed routeing (2N and 2S also contain unavoidable BMV land). 2C also contains AWI that cannot be avoided (as do 2N and 2S). Overall, other considerations are not considered on balance to override the preference for 2C on landscape and visual grounds.			

Table E.3: Section 3 Route Options Environmental Appraisal

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
Approximate Length of Route Option (kilometres (km))	N/A	18.87	19.11	19.62	19.60	**3N** is the slight preference as this is the shortest route option.
Biodiversity	Special Area of Conservation (SAC)	All route options cross the Afon Gwy (River Wye) SAC at three locations, though these can be spanned. In addition, route options 3Sa and 3Sb cross four tributaries of the SAC, which are not designated as part of the SAC but are hydrologically and ecologically connected to it. Route option 3N also crosses two more minor tributaries of the SAC and route option 3C crosses one. All of these tributaries could be spanned. The route options run parallel to the SAC for approximately 8km, with route options 3C and 3Sa being the closest in proximity to the SAC (including various overlaps of the SAC into the route option); however, any overlap between the overhead line (OHL) and the SAC can be avoided during the detailed design stage. The primary reasons for the SAC designation are watercourses of plain to montane levels, invertebrate and fish populations and otter *Lutra lutra*. In addition, transition mires and quaking bogs and allis shad *Alosa alosa* are qualifying features but not primary reasons for designation.				**3N** is the preferred route option as it does not run parallel to the SAC in as close proximity than 3C and 3Sa and crosses the SAC and related tributaries fewer times than 3Sa/S3b.
	Sites of Special Scientific Interest (SSSI)	As noted above, all route options cross the Afon Gwy (River Wye) SAC, which is also a SSSI, at three locations. Route options 3N and 3C cross the fewest number of the river's tributaries. All route options overlap with the Rhos Dolau-Bran SSSI for approximately 270 metres (m), though this overlap can be avoided at the detailed design stage. This SSSI is designated for its oxbow lakes, marshy grassland, alder woodland, river and riverbank habitats.				**3C** is the preferred route option. While all route options cross the Afon Gwy SSSI the same number of times, 3C is one of the route options that crosses its tributaries the fewest number of times and has no interaction with other SSSIs.
		Route option 3N also lies immediately to the east of the Rhos Pant-tyle SSSI, which is designated for its marshy grassland, wet heath and flush vegetation. Route option 3N also lies approximately 220m to the south-east of Waen Rydd SSSI, which is designated for its extensive areas of lowland bog and associated wet heath, marshy grassland, mire and flush communities. Stream and juvenile Atlantic salmon *Salmo salar* population.	Route option 3C also lies approximately 110m to the south of the Rhos Pant-tyle SSSI.	Route options 3Sa and 3Sb overlap with the Caeau Ty'n-llwyni SSSI for approximately 380m. This SSSI is designated for its unimproved herb-rich pasture, associated with the River Dulas. Given the location of the Afon Gwy to the north-west, route option 3Sb may be more able to avoid overlap at the detailed design stage. Route option 3Sb also lies within 30m of the Mynydd Epynt SSSI, which is designated for its spring-fed wetland, bryophyte and fungi communities.		
	Local Wildlife Sites (LWS)/ Sites of Importance for Nature Conservation (SINC)/Designated Road Verges	All SINCs are located over 1km from route option 3N and therefore no effects are anticipated.	Route option 3C is located approximately 300m to the west of the Cefn-brith (a and b) SINCs, designated for their marshy grassland. However, given this distance and that 3C is separated from these SINCs by a river, no effects are anticipated.	Route options 3Sa and 3Sb overlap with the Cefn-brith (b) SINC for approximately 330m (approximately 20% of the SINC), though this can likely be avoided through routeing. These route options also lie within 70m of the Cefn-brith (a) SINC.		**3N** is the preferred route option as it is at the greatest distance from LWS/SINCs.
	Environment (Wales) Act 2016 Priority Habitats	As noted above, all route options cross the Afon Gwy (River Wye) at a minimum of three locations. Route options 3N and 3C cross the fewest number of the river's tributaries. All route options also cross the Afon Brân and Afon Crychan at the southern end. All route options pass through or close to parcels of Lowland Mixed Deciduous Woodland for much of their lengths, including the Crychan Forest (though the majority of this is conifer plantation). All route options pass through areas of Floodplain Grazing, associated with the river network, which can likely be avoided through routeing or spanning. 3N passes through the smallest amount of Floodplain Grazing of any of the route options. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their generally small size and position, it is likely that these parcels can generally be avoided during	As noted above, all route options cross the Afon Gwy (River Wye) at a minimum of three locations. Route options 3N and 3C cross the fewest number of the river's tributaries. All route options also cross the Afon Brân and Afon Crychan at the southern end. All route options pass through or close to parcels of Lowland Mixed Deciduous Woodland for much of their lengths, including the Crychan Forest (though the majority of this is conifer plantation). All route options pass through areas of Floodplain Grazing, associated with the river network, which can likely be avoided through routeing or spanning. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their generally small size and/or shape and position, it is likely that these parcels can generally be avoided during the detailed design stage through spanning and/or tower siting. The	As noted above, all route options cross the Afon Gwy (River Wye) at a minimum of three locations. Route options 3N and 3C cross the fewest number of the river's tributaries. All route options also cross the Afon Brân and Afon Crychan at the southern end. All route options pass through or close to parcels of Lowland Mixed Deciduous Woodland for much of their lengths, including the Crychan Forest (though the majority of this is conifer plantation). All route options pass through areas of Floodplain Grazing, associated with the river network, which can likely be avoided through routeing or spanning. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their generally small size and position, it is likely that these parcels can generally be avoided during the detailed design stage through spanning and/or tower siting. The largest parcel of	As noted above, all route options cross the Afon Gwy (River Wye) at a minimum of three locations. Route options 3N and 3C cross the fewest number of the river's tributaries. All route options also cross the Afon Brân and Afon Crychan at the southern end. All route options pass through or close to parcels of Lowland Mixed Deciduous Woodland for much of their lengths, including the Crychan Forest (though the majority of this is conifer plantation). All route options pass through areas of Floodplain Grazing, associated with the river network, which can likely be avoided through routeing or spanning. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their generally small size and position, it is likely that these parcels can generally be avoided during the detailed design stage through spanning and/or tower siting. The	**3N** is the preferred route option as 3N crosses the joint fewest Afon Gwy tributaries and passes through the smallest amount of Floodplain Grazing of any of the route options.

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
		the detailed design stage through spanning and/or tower siting. All route options pass through a small number of parcels of Lowland Fens and Reedbeds; however, these can likely be avoided through spanning and/or tower siting.	largest parcel of Dry Acid Grassland is to the north-east of Rhydins and would be crossed by the shared 3C/3Sa/3Sb route options; however, there is still some potential for this to be avoided by spanning due to its shape. Route option 3C avoids most of the Lowland Mixed Deciduous Woodland.. Route option 3C passes through an area of Lowland Fen/Reedbed, which is a habitat of high ecological value, for approximately 170m, overlapping with approximately 88% of this habitat. This habitat can likely be avoided through spanning. Route option 3C passes through two areas of Blanket Bog/Raised Bog for approximately 550m, overlapping with approximately 18% of this habitat. This is a habitat of high ecological value; however, it is likely that most of this habitat can be avoided during the detailed design stage through routeing.	this Dry Acid Grassland is to the north-east of Rhydins and would be crossed by the shared 3C/3Sa/3Sb route options; however, there is still some potential for this to be avoided by spanning due to its shape. Route option 3Sa passes through an area of Lowland Fen/Reedbed, which is a habitat of high ecological value, for approximately 170m, overlapping with approximately 80% of this habitat. This habitat can likely be avoided through spanning. Route option 3Sa passes through an area of Blanket Bog/Raised Bog for approximately 550m, overlapping with approximately 18% of this habitat. This is a habitat of high ecological value, however, it is likely that most of this habitat can be avoided during the detailed design stage through routeing. 3Sa and 3Sb pass through one small area of Lowland Meadow; however, this can likely be avoided through spanning and/or tower siting.	largest parcel of Dry Acid Grassland is to the north-east of Rhydins and would be crossed by the shared 3C/3Sa/3Sb route options; however, there is still some potential for this to be avoided by spanning due to its shape. Route option 3Sb passes through the most Ancient Woodland, which is considered to be a habitat of higher ecological value than conifer plantation. Given that these Ancient Woodland parcels are small in size and therefore have less capacity to accommodate the route option, the net effect has the potential to be higher than if passing through larger areas of conifer plantation. Route option 3Sb passes through an area of Lowland Fen/Reedbed, which is a habitat of high ecological value, for approximately 170m, overlapping with approximately 80% of this habitat. This habitat can likely be avoided through spanning. Route option 3Sb passes through an area of Blanket Bog/Raised Bog for approximately 550m, overlapping with approximately 18% of this habitat. This is a habitat of high ecological value, however, it is likely that most of this habitat can be avoided during the detailed design stage through routeing. Route option 3Sb lies 420m north of an area recorded as Upland Flush, Fen and/or Swamp, which are habitats of high ecological value, though given this distance, effects are not anticipated. 3Sa and 3Sb pass through one small area of Lowland Meadow; however, this can likely be avoided through spanning and/or tower siting. 3Sb passes through one small area of heathland; however, this can likely also likely be avoided through spanning and/or tower siting.	
	Overall Preference for Biodiversity	**3N is preferred in relation to biodiversity, as this route option has the fewest interactions with the Afon Gwy SAC/SSSI, SINCs and Priority Habitats.**				
Landscape and Visual Amenity	National Park	All route options are located at distances exceeding 2.7km from the Brecon Beacons National Park. The OHL may be seen in distant outward views from the National Park, however no effects are anticipated on the special qualities of the National Park.				There is no preference
	Locally Designated Landscapes	All route options pass through the Bran Valley Special Landscape Area (SLA) for approximately 4km around Cynghordy. OHLs may affect the 'gateway' qualities of the valley, and the views from the key transport routes, that are special qualities of the SLA. Shared route options 3C/3Sa/3Sb are outside the SLA boundary for a slightly longer distance but will be seen from within the SLA over the same area. All route options pass within approximately 2km of the North Eastern Uplands SLA, which lies to the north-west of the Bran Valley. OHLs may be seen in distant glimpsed views from the uplands, although no effects are anticipated on the special qualities of this SLA.				There is no preference.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape	Over half of the total length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. All route options pass through approximately 7-8km of a visual and sensory aspect area with a 'high' overall evaluation.	Over half of the total length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. All route options pass through approximately 7-8km of a visual and sensory aspect area with a 'high' overall evaluation.	Over half of the total length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. All route options pass through approximately 7-8km of a visual and sensory aspect area with a 'high' overall evaluation.	Over half of the total length of all route options pass through visual and sensory aspect areas of 'moderate' overall evaluation. All route options pass through approximately 7-8km of a visual and sensory aspect area with a 'high' overall evaluation.	**3C** is the slight preference as it passes through slightly shorter lengths of LANDMAP aspect areas with a 'high' overall evaluation.

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
	■ Cultural Landscape	All route options pass through <1km of landscape habitat aspect areas with an 'outstanding' overall evaluation. Route option 3N passes through approximately 9.2km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-16km of historic landscape aspect areas with a 'high' overall evaluation. All route options pass through approximately 5-6km of geological landscape aspect areas with a 'high' overall evaluation. Route option 3N passes through approximately 7.5km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through <1km of landscape habitat aspect areas with an 'outstanding' overall evaluation. Route option 3C passes through approximately 7.6km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-16km of historic landscape aspect areas with a 'high' overall evaluation. All route options pass through approximately 5-6km of geological landscape aspect areas with a 'high' overall evaluation. Route option 3C passes through approximately 7.4km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through <1km of landscape habitat aspect areas with an 'outstanding' overall evaluation. Route option 3Sa passes through approximately 8.8km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-16km of historic landscape aspect areas with a 'high' overall evaluation. All route options pass through approximately 5-6km of geological landscape aspect areas with a 'high' overall evaluation. Route option 3Sa passes through approximately 8.5km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through <1km of landscape habitat aspect areas with an 'outstanding' overall evaluation. Route option 3Sb passes through approximately 8.6km of landscape habitat aspect areas with a 'high' overall evaluation. All route options pass through approximately 14-16km of historic landscape aspect areas with a 'high' overall evaluation. All route options pass through approximately 5-6km of geological landscape aspect areas with a 'high' overall evaluation. Route option 3Sb passes through approximately 8.5km of a cultural landscape aspect area with a 'high' overall evaluation.	All route options pass through limited extents of a landscape habitat aspect area with an 'outstanding' overall evaluation, however this could be avoided during the detailed design stage.
	Landscape Character	The north-eastern extents of all route options pass within the Spas and Wells of Central Wales National Landscape Character Area 27 (NLCA 27).[1] The broad upland valley and gently rising landform in the southern edge of the NLCA decrease sensitivity to OHLs. Some blocks of coniferous forestry, areas of mixed woodland and the enclosing valley sides within the NLCA may offer opportunities to backcloth the OHL. There is a strong sense of rural tranquillity away from main roads and settlements, which increases sensitivity. All route options cross the River Irfon Valley within NLCA 27 before passing south-west, following the grain of the smaller Afon Dulas valley which transitions into the more elevated forested uplands of the Crychan Forest within the Epynt Plateau and Valleys (NLCA 28). Areas of relatively simple upland plateau, presence of military infrastructure and large blocks of conifer plantations within this NLCA decrease sensitivity to OHL. However, significant elevated and panoramic views, smaller valleys which incise the plateau and a sense of remoteness/tranquillity increase sensitivity. Route option 3C follows the grain of the small and sheltered Afon Dulas valley. Route option 3N passes through a block of conifer plantation, avoiding parts of this sensitive valley. Parts of route options 3Sa and 3Sb follow the grain of the Afon Dulas Valley before passing at higher elevation along the valley sides and towards the upland plateau, also crossing a smaller side valley south of Tirabad. All route options descend relatively steep slopes to the west of the Crychan Forest towards the Afon Bran valley (within Tywi Valley NLCA 41), which forms a side valley/tributary to the Tywi Valley. The relatively flat landform with a regular field pattern and presence of busy main roads and the railway line decrease sensitivity to OHLs. However, the small scale of the Afon Bran valley, the winding wooded course of the river which adds complexity and contrast to the landscape pattern, and areas of rural tranquillity (away from main roads) increases sensitivity. Wooded valley slopes may offer opportunities to backcloth the OHL. All route options may result in loss of mature hedgerows and hedgerow trees which are characteristic of the rural landscape. All route options pass through pockets of woodland, some of which is ancient in origin, which may impact the sheltered wooded character of the landscape, particularly within the valleys of NLCA 27 and NLCA 41. Coniferous forestry, although noted as a feature of the plateau landscape for NLCA 28, is considered to be less sensitive than areas of broadleaved and ancient woodland. Whilst most areas of woodland can be avoided at the detailed routeing stage, route option 3Sb cannot avoid passing through an area of mixed woodland, including ancient woodland, near Cwm Dwfnant. route option 3Sa cannot avoid passing through a larger section of mainly conifer woodland, with limited ancient woodland, to the north-west of this location. Route option 3N passes through large sections of coniferous plantation within Crychan Forest, and on the valley slope north-east of Cynghordy.				**3N** is the preference as it passes through the shortest length of the smaller scale and sensitive Afon Dulas valley. It passes through conifer woodland and avoids areas of ancient or broadleaf woodland. 3N would require creation of a wayleave through the Crychan Forest. 3N runs on lower ground approaching the Tywi Valley.
	Residential Visual Amenity (with '150m trigger for consideration zone')	Route option 3N passes through the 150m 'trigger for consideration' zone of 46 residential properties. There are potential pinch points for route option 3N: ■ South of Cefn-gorwydd, where the route option cannot avoid the 'trigger for consideration' zone of properties with principal views focused towards route option 3N; and ■ Near Cynghordy, where the route option cannot avoid the 'trigger for consideration' zone of properties with principal views focused towards route option 3N.	Route option 3C passes through the 150m 'trigger for consideration' zone of 54 residential properties. There are potential pinch points for route option 3C: ■ South of Cefn-gorwydd, where the route option cannot avoid the 'trigger for consideration' zone of properties with principal views focused towards route option 3C; ■ North of Tirabad, where the principal views of the westernmost properties in the group are focused looking towards route option 3C; and ■ South of Cynghordy, where the principal views of properties are focused looking towards route option 3C.	Route option 3Sa passes through the 150m 'trigger for consideration' zone of 40 residential properties. There are potential pinch points for route option 3Sa: ■ South of Cynghordy, where the principal views of properties are focused looking towards route option 3Sa.	Route option 3Sb passes through the 150m 'trigger for consideration' zone of 44 residential properties. There are potential pinch points for route option 3Sb: ■ South of Cynghordy, where the principal views of properties are focused looking towards route option 3Sb.	**3Sa** and **3Sb** are the slight preference as these route options have the fewest pinch points. The pinch point at Cynghordy will form a key consideration. 3C/3Sa/3Sb is preferred over 3N at this location, as it skirts the group of properties, unlike 3N where it would not be possible to avoid trigger for consideration zones through detailed routeing.

[1] Also referred to as The Vales of Irfon and Ithon.

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
	Views from Tourism and Recreation Sites and Routes	All route options cross numerous public rights of way. All route options cross National Cycle Network (NCN) Route 43 to the south-east of Llangammarch Wells. All route options cross the Heart of Wales Trail to the north-east of Llangammarch Wells. Route option 3N runs alongside approximately 3.5km of the walking route within the Crychan Forest, although there would be opportunities to retain forestry to provide screening. Route options 3Sa and 3Sb pass alongside approximately 1.9km of the Epynt Way, crossing the walking route twice. All route options pass through Crychan Forest, which has numerous promoted walking trails and visitor amenities including picnic areas. Route options 3Sa, 3Sb and 3C pass within close proximity of the promoted picnic area at Brynffo[2]. All route options pass approximately 200m to the south of the promoted picnic area at Esgair Fwyog[3].				**3N** is the slight preference as it avoids key promoted recreational areas in the Crychan Forest.
	Views from Public Roads, including Tourist Routes, and Railways	All route options cross the Heart of Wales railway line to the west of Llangammarch Wells. Approximately 600m of all route options pass in close proximity of the Heart of Wales railway line south-west of Cynghordy. Route option 3N passes along a further 600m of the railway line. However, outward views from this section of the railway line are screened by intervening woodland. All route options cross the A483 south of Cynghordy and will appear in relatively open outward views from approximately 1km of the road overlooking the Afon Bran valley. Route option 3N will pass alongside approximately 1.5km of the road to the north-east of Cynghordy and may appear prominently on the skyline above steeply sloping landform in views east from the road. Route options 3C, 3Sa/3Sb will be seen from a greater length of the minor road which provides access to Crychan Forest, although all route options broadly follow this road.				**3C, 3Sa** and **3Sb** are the slight preference, as they will be seen from a shorter length of the A483.
	Overall Preference for Landscape and Visual Amenity	**There is a preference for 3N in the central part of the section in relation to landscape and visual amenity, as this passes through less sensitive conifer forest and avoids more sensitive receptors. To the west of Crychan Forest, 3C is preferred as it goes around Cynghordy. In the east, there is no clear preference between 3N and 3C. The overall preference is for a route option that combines 3N or 3C in the east, 3N in the central section, and 3C to the west.**				
Cultural Heritage	Scheduled Monuments (SM)	There are 8 SMs located within 3km of the route option. The following location has potential sensitivities related to the presence of SMs: ■ Abererbwll A Roman fort[4] lies on the crest of a ridge at 258m Above Ordnance Datum (AOD), north-west of Abererbwll. A non-designated section of Roman road[5] is recorded approximately 460m east-southeast of the fort. The course of the road is thought to continue as a forestry track toward the fort. The fort will have been sited to control routes through the landscape, including the adjacent Roman road. The route option runs approximately 60m north-west of the fort and crosses the tip of the known recorded section of road. It also runs between the fort and the postulated course of the road. The route path indicates that an angle tower sits between the fort and the recorded section of road. The route option is mostly through forestry in the fort's vicinity. It is possible, owing to the elevation at which the fort lies relative to the forestry and road, that the route option would be visible from the fort. This would include views from it to the road in which an angle tower would sit on the line of sight between the two. This is likely to be harmful since it would undermine how the interrelated function of the fort and road is understood and appreciated.	There are 7 SMs located within 3km of the route option. The following location has potential sensitivities related to the presence of SMs: ■ Abererbwll The Roman fort at Abererbwll lies approximately 130m north of the route option, an angle tower could be sited at a position approximately 150-400m south-west of the fort. At closest to the fort, the route option runs at an elevation 20m lower than the ridge the fort sits on. The angle tower would be sited at an elevation around 30m lower than the ridge and would not be line of sight form the fort to the non-designated Roman road. Given these relative positions, whilst the route option would be visible from the fort it is not likely to limit views to and from the fort. The route option takes the same course as route option 3N west of Esgair-fwyog so also crosses the tip of the non-designated section of Roman road. The angle tower potentially required for route option 3N would not be required on this option. A similar harmful effect upon the relationship of the fort and road as seen for route option 3N would arise if a tower was placed on the line of sight between the two assets.	There are 7 SMs located within 3km of the route options. The following location has potential sensitivities related to the presence of SMs: ■ Abererbwll The Roman fort at Abererbwll lies 180m north of the route options, an angle tower would be sited at a position approximately 200-400m south-west of the fort. Both the route options and angle tower would sit at an elevation 40m lower than the ridge the fort sits on. As with route option 3C, this is unlikely to be harmful as it is not likely to limit views to and from the fort. The route options take the same course as route option 3C west of Esgair-fwyog. Harm to the fort and road is similarly likely to be avoidable by avoiding tower placement in the line of sight between the two.		**3Sa** or **3Sb** are preferred as they appear to have the fewest sensitivities related to the presence of SMs.

[2] https://naturalresources.wales/days-out/places-to-visit/mid-wales/crychan-forest-brynffo/?lang=en
[3] https://naturalresources.wales/days-out/places-to-visit/mid-wales/crychan-forest-esgair-fwyog/?lang=en
[4] CM373
[5] DAT PRN 34115

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
	Listed Buildings (Grades I, II*, II) (LB)	There are 37 LBs located within 3km of the route option. ■ The following locations have potential sensitivities related to the presence of LBs: Dol-y-gaer ■ Cefn-gorwydd Dol-y-gaer is an 18th century house north-west of Llangammarch Wells. It is a Grade II LB and is now in use as a farmhouse within a farmstead. It lies on the lower slopes of the Cammarch valley, overlooking the Afon Cammarch 100m east of the house. The route option would run approximately 60m south-east of Dol-y-gaer, between the house and the river. An 11 kilovolt (kV) OHL already runs south of the house, including a branch that terminates in its grounds. It is possible that further, and taller, grid infrastructure would be harmful as it is likely to erode the rural setting of the house. Two Grade II LBs – Gosen Chapel and Old Post Office – lie at the eastern end of Cefn-gorwydd and on the northern edge of the route option. These front onto the road into the village and can readily be understood as part of a historic settlement from this road. This despite the presence of an existing 11kV running immediately to their rear which is clearly visible when the buildings are seen from the road. The route option would also be visible in such views but, if no towers are present in these, it is unlikely that the presence of an additional OHL would meaningfully affect how the buildings are perceived and understood as part of the settlement. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 33 LBs located within 3km of the route option. The following location has potential sensitivities related to the presence of LBs: ■ Cefn-gorwydd Route option 3C follows the same alignment at Cefn-gorwydd as route option 3N so the same considerations on LBs as outlined for route option 3N apply. There are other locations where LBs lie close to the route option but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 29 LBs located within 3km of the route option. No locations were identified where potential sensitivities related to the presence of LBs are likely to arise. LBs do lie close to the route option in some places but no meaningful potential sensitivities related to the presence of LBs are anticipated.	There are 29 LBs located within 3km of the route option. No locations were identified where potential sensitivities related to the presence of LBs are likely to arise. LBs do lie close to the route option in some places but no meaningful potential sensitivities related to the presence of LBs are anticipated.	**3Sa** or **3Sb** are preferred as they appear least likely to give rise potential sensitivities related to the presence of LBs. .
	Registered Historic Landscapes (RHL)	The southernmost 700m of the route options run through the edge of the Tywi Valley Landscape of Outstanding Historic Interest (LOHI). This is all entirely within the Cynghordy Historic Landscape Character Area (HLCA). The route options are aligned with the grain of landscape so less likely to significantly alter how this HLCA is perceived or change its role in the Tywi valley LOHI. Further sections of the Tywi Valley LOHI lie within 3km of the route options. The Black Mountain and Mynydd Myddfai LOHI also lies within 3km of the route options. The following HLCAs lie within 3km of the route options: ■ Tywi Valley LOHI: – 213 Maesllydan – 214 Llwynhowell – 215 Cilycwm – 216 Rhandirmwyn – 223 Fforest ■ Black Mountain and Mynydd Myddfai LOHI: – 237 Allt y Ferdre				There is no preference as the route options have the same level of interaction with the RHLs.
	Non-Designated Historic Assets	There are 31 Historic Environment Record (HER) entries located within the route option.	There are 19 HER entries located within the route option.	There are 17 HER entries located within the route option.	There are 13 HER entries located within the route option.	**3Sa** is preferred as it has fewest interactions with the Roman Road

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
		There are 1177 HER entries[6] located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Dol-y-gaer ■ Cefn-gorwydd ■ Esgair-fwyog ■ Cynghordy ■ Crychan Forest Much of the road from the A483 to Llangammarch Wells follows the follows the course of a Roman road. It diverts from the Roman course at Cefn Glancamddwr and crosses the Afon Irfon south of Glancamddwr. The current road from Llangammarch Wells to Cynghordy picks up the Roman road south for much of its course. The exception to this is the section in the Crychan Forest where the Roman course runs through the forestry. The route option crosses this road at Dol-y-gaer, Cefn-gorwydd, Esgair-fwyog and Cynghordy. The route option runs through the site of finds at Cynghordy thought to indicate the presence of a fortified site along the road.[7] A series of features consisting of earthworks and stone rubble walls is recorded within and adjacent to the route option at Cefn Llwydlo in Crychan Forest. Whilst most are undated,[8] two relate to Bronze Age settlement[9] and another has been suggested to be the remains of a post-medieval inn.[10] Ground-based grid infrastructure is to avoid this asset. Further research and potentially fieldwork is likely to be required to establish the extent of these features if this route option is progressed to detailed design.	There are 1120 HER entries[11] located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Cefn Glancamddwr ■ Cefn-gorwydd ■ Penlanlwyd The route option crosses the course of the Roman road discussed under route option 3N south of Cefn Glancamddwr, Cefn-gorwydd, Esgair-fwyog and Cynghordy. A post-medieval sheepfold[12] lies adjacent to the route option at Penlanlwyd which require consideration during the detailed design stage in relation to tower siting.	There are 1087 HER entries[13] located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Esgair-fwyog ■ Cynghordy ■ Penlanwen The route option crosses the course of the Roman road summarised under route option 3N at Esgair-fwyog and south-west of Cynghordy. A post-medieval farmstead[14] is recorded near the route at Penlanwen which require consideration during the detailed design stage in relation to tower siting.	There are 1083 HER entries[15] located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Esgair-fwyog ■ Cynghordy ■ Penlanwen The route option takes the same course relative to the Roman Road as route option 3Sa so has the same interactions with it as that route option. The same considerations outlined for the Roman road on route option 3Sa also apply to route option 3Sb. A post-medieval farmstead[16] is recorded on the route option at Penlanwen which require consideration during the detailed design stage in relation to tower siting.	and other non-designated assets.
	Overall Preference for Cultural Heritage	**All route options have potential for direct physical effects to non-designated assets and for harm related to change in the setting of designated historic assets. 3Sa and 3Sb are preferred as they have the lowest potential for direct physical effects to known non-designated assets and for effects related to setting change.**				
Hydrology, Hydrogeology and Geology	Main Rivers – Flood Risk	■ Afon Brân and its tributaries: On the route option south-west of Cynghordy (280216,239519), there are two spans of approximately 460m and 495m required to cross the Afon Brân and its tributaries. This may require the placement of multiple towers within the high risk zone.	■ Afon Brân: South of Cynghordy (279917,238807), there is an approximately 900m span required which may require the placement of multiple towers within the high risk zone. ■ The route option also crosses the River Irfon and its tributaries including zones of high and medium	■ River Irfon: West of Llangamarch Wells (292501,247118), there is an approximately 330m span required which may require the placement of a tower within the high risk zone. ■ Afon Brân: South of Cynghordy (279917,238807), there is an approximately 900m span required which may require the placement of	■ River Irfon: West of Llangamarch Wells (292501,247118), there is an approximately 330m span required which may require the placement of a tower within the high risk zone. ■ Afon Brân: South of Cynghordy (279917,238807), there is an approximately 900m span required	3C and the joint 3Sa/3Sb route options have two occasions where the placement of multiple towers may be required within the high risk flood zones, at both the River Irfon and the Afon Brân.

[6] The boundary between the two HERs runs through this area: 835 entries are from CPAT HER and 249 from DAT HER.
[7] DAT 6271
[8] CPAT PRN 803, 3038, 15158
[9] CPAT PRN 3045, 3036
[10] CPAT PRN 3044
[11] 883 from CPAT HER and 254 from DAT HER
[12] CPAT PRN 15166
[13] 798 from CPAT HER and 250 from DAT HER
[14] CPAT PRN 15544
[15] 795 from CPAT HER and 250 from DAT HER
[16] CPAT PRN 15544

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
		■ The route option also crosses the River Irfon and its tributaries including zones of high and medium risk with respect to surface water and/ or river flooding. However, all are noted to be smaller than the minimum tower span and can be spanned.	risk with respect to surface water and/ or river flooding. However, all are noted to be smaller than the minimum tower span and can be spanned.	multiple towers within the high risk zone. ■ The route option crosses various smaller tributaries and their associated medium to high risk zones associated with surface and/ or river flooding. All are noted to be smaller than the minimum tower span and can be spanned.	which may require the placement of multiple towers within the high risk zone.	3N has a crossing of the Afon Brân and one of its tributaries; however, there is an area between the mapped flood zones where a tower may be sited to reduce the potential interaction with the high risk flood zones. Whilst the placing of towers in the high risk flood zones may be possible subject to a Flood Consequence Assessment, it is preferable for this to be minimised. Therefore, **3N** is the preference.
	Ordinary Waterbodies/Watercourses – Flood Risk	All route options cross numerous small/ordinary watercourses, each with a narrow (less than minimum tower span) zone of high or medium risk with respect to surface water and/ or river flooding. All could be spanned.				There is no preference as all routes cross watercourses which can be spanned.
	Peat	The route option includes two areas of peat: 1) north Crychan forest (286827,243212) which comprises approximately 2,200 square metres (m^2) of peat; and 2) in the vicinity of Cynghordy (283140,240790) which comprises approximately 1,500m^2 of peat. Both of these could be spanned or avoided during detailed design.	The route option includes two areas of peat, both south of Crychan forest (286506,241141). The larger area (approximately 33,000m^2) is approximately 145m long and could be spanned. The smaller area (approximately 2,380m^2) within the route option may be spanned. Secondly, on the shared 3C/3Sa/3Sb route options there is a discontinuous area of mapped peat 2km north-east of Cynghordy comprising approximately 12,850m^2 which at only 120m wide could be spanned. Other small incursions of this peat body into the route option are not deemed a constraint.	There are two areas of peat within the shared 3Sa/3Sb route options, both south of Crychan forest (286456,240861). The larger area (approximately 14,000m^2) is approximately 40m long and could be spanned. The smaller area (approximately 2,380m^2) within the route options may be spanned. Secondly, on the shared 3C/3Sa/3Sb route options there is a discontinuous area of mapped peat 2km north-east of Cynghordy comprising approximately 12,850m^2 which at only 120m wide could be spanned. Other small incursions of this peat body into the route options are not deemed a constraint.		**3N** is the slight preference as this route option offers better opportunities to avoid peat at the detailed design stage**.**
	Landfill Sites	None present.	The route option crosses a small area (approximately 5,000m^2) of artificial ground approximately 750m north of Tirabad. This is only present on BGS mapping and not the Natural Resources Wales (NRW) historical landfill dataset. It could be spanned and therefore does not pose a constraint.	None present.	None present.	**3C** and **3Sa/3Sb** are preferred as they avoid the landfill site.
	Areas of Landslide or Ground Instability	None present.	The route option crosses a small area (approximately 6,000m^2) of landslide deposit approximately 1.6km west of Tirabad. It could be spanned and therefore does not pose a constraint.	Two landslide deposits are shown bordering the Afon Dulas: 1) an elongated (approximately 250m) lobe with an area of approximately 9,750m^2 lies within the route option (289869,244088). Whilst this may be spanned, caution is advised siting towers in this area due to the possibility for further slope instability activation or re-activation; and 2) an area between approximately 50m and 200m south-west of the route option. Caution is advised siting towers in this area due to possibility for further slope instability activation or re-activation. The route option crosses a very small area (25m wide) immediately south of Tirabad.	The route option crosses a very small area (25m wide) immediately south of Tirabad. It could be spanned and therefore does not pose a constraint.	**3N is** the preference as no areas of landslide or ground instability are present.

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
				It could be spanned and therefore does not pose a constraint.		
	Local Authority Mineral Consultation Areas (MCAs) and Mineral Protection Areas (MPAs)	In Crychan Forest the route option crosses between 2km to 2.5km of a designated Category 1 aggregate resource which may require multiple towers sited within the deposit to span it. North of Cynghordy the route option crosses approximately 1.2km of sand and gravel deposits which is associated with a Category 2 sand and gravel area. Multiple towers would be required to be sited within the deposits to span it. No other significant deposits greater than the maximum tower span are noted.	West of Llangammarch Wells there is a sand and gravel deposit approximately 320m in length which would require a tower to be sited within the deposit to span it. In Crychan Forest the route option crosses between 2km to 2.5km of a designated Category 1 aggregate resource which may require multiple towers sited within the deposit to span it. South of Cynghordy shared route options 3C/3Sa/3Sb cross approximately 1km of sand and gravel deposits associated with a Category 2 sand and gravel. Multiple towers would be required to be sited within the deposits to span it. No other significant deposits greater than the tower maximum span are noted.	West of Llangammarch Wells there is a sand and gravel deposit approximately 460m in length which would require multiple towers sited within the deposit to span it. In Crychan Forest the route option crosses approximately 2km of a designated Category 1 aggregate resource which may require multiple sited within the deposit towers to span it. South of Cynghordy shared route options 3C/3Sa/3Sb cross approximately 1km of sand and gravel deposits associated with a Category 2 sand and gravel which would require multiple towers sited within the deposits to span it.		All route options cross mineral safeguarding areas. The differences in distance of safeguarded areas crossed are not sufficient to determine a clear preference therefore there is no preference. However, where possible, Category 1 deposits should be avoided as they are of national importance.
	Restored Opencast Mining Sites/Mining Spoil Heaps	The route option crosses a ceased extraction site approximately 2.8km east of Llanwrtyd Wells; aerial imagery indicates it to be approximately 150m in length and could therefore be easily spanned.	The route option crosses a ceased extraction site approximately 3.5km south of Llanwrtyd Wells. The size of the extraction is not clear from aerial but an area of disturbed ground is noted to be approximately 150m in length and could therefore be easily spanned.	None present.		**3Sa** and **3Sb** are the slight preference. However, the potential constraints noted in relation to 3N and 3C are small and could be addressed by detailed design.
	Overall Preference for Hydrology, Hydrogeology and Geology	**3N is the overall preference in relation to hydrology, hydrogeology and geology , primarily in relation to peat and flooding.**				
Forestry	Ancient Woodland as per the Ancient Woodland Inventory (AWI)	The total area of AWI within the route option is 14.65 hectares (ha). Route option 3N includes a number of small AWI listed as Ancient Semi Natural Woodlands (ASNW) and Restored Ancient Woodland Sites (RAWS). A single larger felled (2019) Planted Ancient Woodland Site (PAWS) is present across the width of the route option at Allt y Goetre, east of Cynghordy and is therefore unavoidable.	The total area of AWI within the route option is 8.24 ha. Route option 3C includes a number of small AWI listed as ASNW and RAWS. One narrow ASNW area is present across the width of the route option north-east of Penlanlwyd and is therefore unavoidable	The total area of AWI within the route option is 11.03 ha. Route option 3Sa includes a number of small AWI which are mainly ASNW with two RAWS and a small area of PAWS. AWI is present as narrow strips across the width of the route option on the northern and southern edges of Coed Blaengefail and is therefore unavoidable.	The total area of AWI within the route option is 16.15 ha. Route option 3Sb includes a number of small broadleaved woodlands listed as ASNW as well as small areas of RAWS and PAWS. Within Coed Blaengefail, AWI categories ASNW, PAWS and RAWS are all present within the route option and cannot be avoided.	**3C** is preferred as this contains the smallest area of AWI with better opportunities to minimise loss of AWI.
	Commercial Conifer and Other Woodlands as per the National Forest Inventory (NFI)	The total area of other woodlands within the route option is 111.1 ha. As with AWI, there are a number of small mainly broadleaved woodlands within Route option 3N. Areas of broadleaved woodland are present across the width of the route option to the north-east of Cefn Glancamddwr and south of Cefnllan and is therefore unavoidable. The route option also enters the larger Crychan Forest (predominantly conifer plantation) for a length of approximately 10.37km. This will require a corridor of felling and have implications for future forest management. There are areas of “other woodland” associated with AWI within the route	The total area of other woodlands within the route option is 43.37 ha. Route option 3C includes small areas of broadleaved woodland. Areas of broadleaved woodland are present across the width of the route option to the south of Cefnllan and is therefore unavoidable. The route option also includes some larger areas of conifer plantation including some felled (2019); a number of these areas are present across the width of the route option and are therefore unavoidable. This route option avoids the main woodland areas of Crychan Forest. There are areas of “other woodland” associated with AWI within the route	The total area of other woodlands within the route option is 45.45 ha. Route option 3Sa includes small areas of broadleaved woodlands. Areas of broadleaved woodland are present across the width of the route option at Coed Blaengefail, south-east of Tirabad and south of Cefnllan and is therefore unavoidable. Although avoiding the main Crychan Forest area, the route option also includes some larger areas of conifer plantation, some of which are unavoidable. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself,	The total area of other woodlands within the route option is 31.39 ha. Route option 3Sb includes small areas of broadleaved woodland. Areas of broadleaved woodland are present across the width of the route option at Coed Blaengefail, south-east of Tirabad and south of Cefnllan and are therefore unavoidable. The route option also includes areas of conifer plantation, some of which are also unavoidable. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other	**3C, 3Sa** or **3Sb** are preferable as they avoid the main commercial conifer plantations of Crychan Forest.

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
		option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	the AWI/other woodland mix is not avoidable taken together.	woodland mix is not avoidable taken together.	
	Overall Preference for Forestry	**The overall preference in relation to forestry is 3C as this route option contains the smallest area of AWI and avoids the main conifer plantations of Crychan Forest.**				
Land Use	Infrastructure	All route options cross an existing railway to the west of Llangammarch Wells; the railway crosses in a perpendicular orientation to the route option so could be spanned in this location.				There is no preference as all route options cross the railway.
	Committed Development (Consented and Undetermined Planning Applications)	There are no committed developments located within the route option.	There are two non-residential committed developments located within the route option. One of these developments is consented and the other is (at the time of writing) undetermined. All can be avoided through detailed design.	There is one undetermined non-residential committed development located within the route options. This can be avoided through detailed design.		**3N** is preferred as there are no committed developments located within the route option.
	Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a)	There are 4.31 ha of BMV agricultural land present within the route option. This can be avoided through detailed design.		There are 6.50 ha of BMV agricultural land present within these route options. This can be avoided through detailed design.		**3N** is preferred as this contains the smallest area of BMV agricultural land.
	Crossing of the Sennybridge Training Area	These route options do not cross the Sennybridge Training Area.		The route options cross the Sennybridge Training Area which is unavoidable.		**3N** and **3C** are preferred as these route options do not cross the Sennybridge Training Area.
	Overall Preference for Land Use	**The overall preference is 3N in relation to land use as this route option does not cross the Sennybridge Training Area, contains the smallest area of BMV agricultural land and contains no committed developments.**				
Overall Emerging Preference: 3C as far as Bryn-beili; then 3N as far as the vicinity of Esgair-fwyog; then 3C for the remainder of the section.		3N is the shortest route option with 3C the second shortest. In relation to the landscape and visual criterion, there is a preference for 3N in the central part of the section, as this passes through less sensitive conifer forest and avoids more sensitive receptors. To the west of Crychan Forest, 3C is preferred as it routes around Cynghordy. In the east, there is no clear preference between 3N and 3C. The overall preference is for a route that combines 3N or 3C in the east, 3N in the central section, and 3C to the west. 3N was preferred for biodiversity, particularly due to consideration of crossings and proximity to the Afon Gwy SAC/SSSI. However, it is considered likely that the SAC/SSSI can be avoided or spanned for all route options; and there are opportunities for all route options to avoid various other potential constraints by spanning or detailed tower placement also. All route options have AWI within them that could not be avoided, although a combined route as per the landscape and visual preference appears likely to offer the best opportunities for minimising effects on AWI. Of the non-mixed route options, 3C is the preference with respect to woodland as it avoids the Crychan forest plantation and contains the smallest area of AWI, with better options to avoid AWI loss. In relation to cultural heritage, 3Sa/3Sb is the preference. Potential effects on Abererbwll fort (a Scheduled Monument) will require to be considered during detailed design if 3C/3N are progressed due to the potential to undermine the relationship between the fort and associated non-designated Roman assets. Potential effects upon Dol-y-Gaer and Cefn-gorwydd Listed Buildings; will be subject to careful tower placement if 3C/3N combination is progressed. 3N was the preference for hydrology, hydrogeology and geology primarily in relation to peat and flooding. Due to the balance of landscape and visual, cultural heritage and forestry considerations in particular, the preferred route option for this section is 3C as far as Bryn-beili; then 3N as far as the vicinity of Esgair-fwyog; then 3C for the remainder of the section.				

Table E.4: Section 4 Route Options Environmental Appraisal

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
Approximate Length of Route Option (kilometre (km))	N/A	21.54	21.40	22.41	22.98	**4C** is the slight preference as this is the shortest route option.
Biodiversity	Special Area of Conservation (SAC)	Route option 4N does not cross the Afon Tywi (River Tywi) SAC but does pass within approximately 20 metres (m) of it at one location. The primary reasons for the SAC designation are its otter *Lutra lutra,* and fish populations. Route option 4N crosses tributaries of the SAC ten times. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC. These tributaries can be avoided through spanning.	Route option 4C crosses the Afon Tywi (River Tywi) SAC at two locations and these crossings cannot be avoided, though they can be spanned. In addition, the route option also overlaps with the SAC at two other locations for approximately 1.3km. The SAC can be avoided in these locations through detailed routeing and/or spanning. Route option 4C crosses tributaries of the SAC 11 times. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC. These tributaries can be avoided through spanning.	Route option 4Sa crosses the Afon Tywi (River Tywi) SAC at four locations and these crossings cannot be avoided, though they can be spanned. In addition, the route option also overlaps with the SAC at two other locations for approximately 1km. The SAC can be avoided in these locations through detailed routeing and/or spanning. Route option 4Sa crosses tributaries of the SAC 11 times. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC. These tributaries can be avoided through spanning.	Route option 4Sb crosses the Afon Tywi (River Tywi) SAC at two locations and these crossings cannot be avoided, though they can be spanned. In addition, the route option also overlaps with the SAC at two other locations for approximately 1km. The SAC can be avoided in these locations through detailed routeing and/or spanning. Route option 4Sb crosses tributaries of the SAC 14 times. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC. These tributaries can be avoided through spanning.	**4N** is the preferred route option as it does not cross the SAC.
	Sites of Special Scientific Interest (SSSI)	All route options cross tributaries of the Afon Tywi SSSI at least ten times, with route option 4N crossing them the fewest times. All route options are located 130m south-west of Rhos Dolau-Bran SSSI, which is designated for its oxbow lakes, marshy grassland, alder woodland, river and riverbank habitats.	The route option crosses the Afon Tywi (which is designated as a SSSI) a minimum of two times. All route options cross tributaries of the Afon Tywi SSSI at least ten times Route option 4C passes through the Derwen-fach Meadow SSSI, for approximately 260 metres (m) which is designated for its species-rich wet pasture. It may be possible to avoid this SSSI through spanning. All route options are located 130m south-west of Rhos Dolau-Bran SSSI, which is designated for its oxbow lakes, marshy grassland, alder woodland, river and riverbank habitats.	The route option crosses the Afon Tywi (which is designated as a SSSI) a minimum of two times. All route options cross tributaries of the Afon Tywi SSSI at least ten times. All route options are located 130m south-west of Rhos Dolau-Bran SSSI, which is designated for its oxbow lakes, marshy grassland, alder woodland, river and riverbank habitats.	The route option crosses the Afon Tywi (which is designated as a SSSI) a minimum of two times. All route options cross tributaries of the Afon Tywi SSSI at least ten times. All route options are located 130m south-west of Rhos Dolau-Bran SSSI, which is designated for its oxbow lakes, marshy grassland, alder woodland, river and riverbank habitats.	**4N** is the preferred route option as it does not cross the Afon Tywi SSSI and crosses the Afon Tywi SSSI tributaries the fewest times.
	Wildlife Reserves managed by the Carmarthenshire and Radnorshire Wildlife Trusts	Route options 4C, 4Sa and 4Sb are located approximately 390m north of Gallt y Tlodion (Poor Man's Wood) Wildlife Trust Reserve (WTR), which is managed for its broadleaved woodland. Route option 4N is located approximately 800m from the WTR.				**4N** is the slight preference is it is located a greater distance from the WTR; however, with detailed routeing, effects could be avoided for any route option.
	Environment (Wales) Act 2016 Priority Habitats	As noted above, all route options cross the Afon Tywi a minimum of two times, with the exception of route option 4N, which does not cross it. Route option 4Sa crosses the Afon Tywi at least twice as often as the other route options. All route options pass through numerous small parcels of Lowland Mixed Deciduous Woodland, including Ancient Woodland. The number of parcels and extent of overlap is similar for all route options and most of these can be avoided at the detailed design stage.. All route options pass through extensive areas of Floodplain Grazing, associated with the river network, which cannot be avoided through routeing or spanning due to their size. 4N passes through the smallest amount of this habitat. All route options pass through numerous small parcels of Purple Moor Grass and Rush Pasture and Lowland Dry Acid Grassland. Given their small size and position, it is likely that these parcels can be avoided at the detailed design stage through spanning and/or tower siting, with the exception of one parcel which 4N cannot avoid. Route option 4N crosses one parcel of Wood Pasture and Parkland, however, this can be avoided through routeing. The nearest recorded parcel of Lowland Fen and/or Reedbed is located approximately 30m west of route option 4Sa and can therefore be avoided.				**4N** is slightly preferred; it has no crossings of the Afon Tywi, and although it contains one parcel of unavoidable Lowland Dry Acid Grassland it also contains the smallest amount of Floodplain Grazing.
	Overall Preference for Biodiversity	**4N is preferred in relation to biodiversity, as this route option does not cross the Afon Twyi SAC/SSSI, is at the greatest distance from the Gallt y Tlodion WTR and contains the smallest amount of Floodplain Grazing habitat.**				

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
Landscape and Visual Amenity	National Parks	Route option 4N passes within 1.9km of Brecon Beacons National Park at its nearest point. Overhead lines (OHLs) may be seen in distant outward views from the National Park, however no effects are anticipated on the special qualities of the National Park.	Route option 4C passes within 1.4km of Brecon Beacons National Park at its nearest point. OHLs may be seen in distant outward views from the National Park, however no effects are anticipated on the special qualities of the National Park.	Route options 4Sa and 4Sb pass within 700m of Brecon Beacons National Park at its nearest point. OHLs may be seen in distant outward views from the National Park, however no effects are anticipated on the special qualities of the National Park.		No effects are anticipated on the special qualities of the National Park for any of the route options. Although 4N is at the furthest distance from Brecon Beacons National Park, there is no overall preference.
	Locally Designated Landscapes	The whole length of all route options are within the Tywi Valley Special Landscape Area (SLA), with the exception of a short section of route option 4N (1.5km), which passes outside of the SLA to the west of Llangadog. The OHL could affect mature hedgerows, areas of woodland including linear riparian woodland along the river, field trees and the '*unspoilt rural landscape*' that are characteristic of the SLA.				There is no preference. All route options will result in direct effects on the Tywi Valley SLA.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	Most of the total length of all route options pass through visual and sensory aspect areas of 'outstanding' overall evaluation. All route options pass through approximately 3km of visual and sensory aspect areas with a 'high' overall evaluation. Route option 4N passes through approximately 11.8km of landscape habitat aspect areas with a 'high' overall evaluation. Route option 4N passes through approximately 4.5km of historic landscape aspect areas with an 'outstanding' overall evaluation, and approximately 17km of historic landscape aspect areas with a 'high' overall evaluation. Route option 4N passes through approximately 4.6km of geological landscape aspect areas with a 'high' overall evaluation. Route option 4N passes through approximately 11km of cultural landscape aspect areas with an 'outstanding' overall evaluation, and approximately 10.5km of cultural landscape aspect areas with a 'high' overall evaluation.	Most of the total length of all route options pass through visual and sensory aspect areas of 'outstanding' overall evaluation. All route options pass through approximately 3km of visual and sensory aspect areas with a 'high' overall evaluation. Route option 4C passes through approximately 15.5km of landscape habitat aspect areas with a 'high' overall evaluation. Route option 4C passes through approximately 8.8km of historic landscape aspect areas with an 'outstanding' overall evaluation, and approximately 12.6km of historic landscape aspect areas with a 'high' overall evaluation. Route option 4C passes through approximately 6.2km of geological landscape aspect areas with a 'high' overall evaluation. Route option 4C passes through approximately 12.2km of cultural landscape aspect areas with an 'outstanding' overall evaluation, and approximately 9.2km of cultural landscape aspect areas with a 'high' overall evaluation.	Most of the total length of all route options pass through visual and sensory aspect areas of 'outstanding' overall evaluation. All route options pass through approximately 3km of visual and sensory aspect areas with a 'high' overall evaluation. Route option 4Sa passes through approximately 14.7km of landscape habitat aspect areas with a 'high' overall evaluation. Route option 4Sa passes through approximately 11.9km of historic landscape aspect areas with an 'outstanding' overall evaluation, and approximately 10.5km of historic landscape aspect areas with a 'high' overall evaluation. Route option 4Sa passes through approximately 7.0km of geological landscape aspect areas with a 'high' overall evaluation. Route option 4Sa passes through approximately 17.4km of cultural landscape aspect areas with an 'outstanding' overall evaluation, and approximately 5km of cultural landscape aspect areas with a 'high' overall evaluation.	Most of the total length of all route options pass through visual and sensory aspect areas of 'outstanding' overall evaluation. All route options pass through approximately 3km of visual and sensory aspect areas with a 'high' overall evaluation. Route option 4Sb passes through approximately 13.6km of landscape habitat aspect areas with a 'high' overall evaluation. Route option 4Sb passes through approximately 13.4km of historic landscape aspect areas with an 'outstanding' overall evaluation, and approximately 9.6km of historic landscape aspect areas with a 'high' overall evaluation. Route option 4Sb passes through approximately 6.5km of geological landscape aspect areas with a 'high' overall evaluation. Route option 4Sb passes through approximately 14.0km of cultural landscape aspect areas with an 'outstanding' overall evaluation, and approximately 8.9km of cultural landscape aspect areas with a 'high' overall evaluation.	Most of the total length of all route options pass through visual and sensory aspect areas of 'outstanding' overall evaluation. All route options pass through historic landscape and cultural landscape aspect areas with 'outstanding' overall evaluations. Although 4N passes through slightly shorter lengths of LANDMAP aspect areas with an 'outstanding' or 'high' overall evaluation, there is no overall preference.
	Landscape Character	All route options generally follow the grain of the Towy Valley and pass through National Landscape character Area (NLCA) 41 (Tywi Valley). The broad scale of the valley, relatively flat landform, regular field pattern and presence of busy main roads and the railway line decrease sensitivity to OHLs. However, the winding wooded course of the river which adds complexity and contrast to the landscape pattern, high scenic quality of the valley, and areas of rural tranquillity (away from main roads) increases sensitivity. Wooded valley slopes may offer opportunities to backcloth the OHL. Sections of route options 4Sa and 4Sb pass through a smaller and more contained side valley between Llandovery and Llangadog. Short sections of route option 4N pass at higher elevation to the north of the valley, occasionally crossing into a transitional landscape along the southern boundary of NLCA 42 Pembroke and Carmarthen Foothills. These higher sections of route option 4N, such as between Llanwrda and Llandovery, run along skylines and therefore fit less well into the landscape. This route option is likely to require the greatest number of direction changes. All route options may result in loss to the hedgerows and hedgerow trees which are characteristic of the rural landscape of NLCA 41, and areas of woodland which contribute to the high scenic quality of the valley. All route options pass through pockets of woodland, some of which is ancient in origin, which may impact the wooded character of the valley. Whilst some areas of woodland can be avoided at the detailed routeing stage, route option 4C cannot avoid passing through an area of ancient woodland south of Pont Marlais and at Cwn Cae-mawr. Route option 4N cannot avoid an area of Planted Ancient Woodland Site (PAWS) near Nantyrhogfaen and Llwyn-y-brain Wood.				There is a slight preference for **4Sa** and **4Sb**, given the route options avoid passing onto higher ground on the valley sides and avoid areas of ancient woodland, with sections passing through a visually contained side valley.
	Residential Visual Amenity (with 150m 'trigger for consideration zone')	Route option 4N passes through the 150m 'trigger for consideration' zone of 86 residential properties. There are potential pinch points for route option 4N: ■ North-west of Llandovery along Bryn-y-coed, where the route	Route option 4C passes through the 150m 'trigger for consideration' zone of 71 residential properties. There are potential pinch points for route option 4C: ■ North-west of Llandovery along Colycwm Road, where the route	Route option 4Sa passes through the 150m 'trigger for consideration' zone of 146 residential properties. There are potential pinch points for route option 4Sa: ■ North-west of Llandovery along Colycwm Road, where the route	Route option 4Sb passes through the 150m 'trigger for consideration' zone of 106 residential properties. There are potential pinch points for route option 4Sb: ■ North-west of Llandovery along Colycwm Road, where the route	4N has the most pinch points, and it would not be possible to avoid all 'trigger for consideration' zones at detailed routeing. However, 4N does avoid notable pinch points north of Llandovery

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
		option cannot avoid passing through the 'trigger for consideration' zone of two properties; ■ North-east of Llanwrda near the named properties of Cefnucheldre and Alltycloriau, where the route option cannot avoid passing through the 'trigger for consideration' zone of two properties; ■ South of Llanwrda near Pentremeurig; ■ North-east of Llanwrda near Pwllagddu, where the route option cannot avoid passing through the 'trigger for consideration' zone of two properties and the principal view of the northernmost property is focused looking towards the route option; ■ South-west of Llanwrda near Parcnewydd, where the route option cannot avoid passing through the 'trigger for consideration' zone of two properties; ■ Near Yew Tree Farm, where the route option cannot avoid passing through the 'trigger for consideration' zone of three properties and the principal view of the southernmost property is focused looking towards the route option; and ■ Near Gelynen-goch and Pantyffynnon Uchaf.	option cannot avoid passing through the 'trigger for consideration' zone of four properties which have principal views focused towards the route option; ■ South-west of Llanwrda near Island Cottage and Tir-Allen, where the route option cannot avoid passing through the 'trigger for consideration' zone of two properties due to the adjacent SAC to the south of the route option; ■ South of Llanwrda near Pentremeurig; ■ North-east of Ashfield near Rosehill Cottaqe; ■ Near Pantyffynnon Uchaf; and ■ North-east of Cwmifor, where the route option cannot avoid passing through the 'trigger for consideration' zone of four properties and the principal views of the properties are focused looking towards the route option.	option cannot avoid passing through the 'trigger for consideration' zone of four properties which have principal views focused towards the route option; ■ Near Cynyll Farm and Cae Liav; ■ Linear development along the A4069 to the east of Llangadog, where the route option cannot avoid passing through the 'trigger for consideration' zone of four properties; and ■ South-east of Felindre, where the route option cannot avoid passing through the 'trigger for consideration' zone of four properties and principal views from properties are focused looking towards the route option.	option cannot avoid passing through the 'trigger for consideration' zone of four properties which have principal views focused towards the route option; ■ Near linear residential development along the A4069 near Tir Coed and Tynycoed, where the principal views from properties are focused looking across the valley and towards the route option; ■ South-east of Llangadog where linear development extends along the minor road network; and ■ South-east of Felindre, where the route option cannot avoid passing through the 'trigger for consideration' zone of four properties and principal views from properties are focused looking towards the route option.	that affect all other route options. 4Sa passes the most properties and has an unavoidable pinch point at Llangadog. 4Sb avoids this though both routes have an unavoidable pinch point at Felindre. 4C passes fewest properties but has unavoidable pinch points at Llanwrda, Manordeilo, and Cwmifor. **4Sb** is preferred as it has the fewest unavoidable pinch points. The northernmost section of **4N** is preferred over other route options north of Llandovery.
	Views from Tourism and Recreation Sites and Routes	All route options cross numerous public rights of way. All route options cross the Cambrian Way and the Heart of Wales Trail north of Llandovery. A short section of route option 4N (approximately 250m) runs alongside the Heart of Wales Trail. Route options 4Sa and 4Sb cross the Heart of Wales Trail in two more locations, north-east and south-west of Llangadog. Route options 4C, 4Sa and 4Sb pass close to the Llandovery Caravan Park at the edge of the settlement. All route options will be visible from tourist accommodation within the Tywi Valley, though route option 4Sb is likely to be least visible as it avoids the main valley.				The slight preference is for **4C**, which crosses the Heart of Wales Trail in fewer locations than other route options, and **4Sb**, which avoids the main valley.
	Views from Public Roads, including Tourist Routes, and Railways	Route options 4N and 4C generally follow the A483 and A40 and will appear prominently in views from the roads. Both route options cross the A40 twice. All route options run alongside the Heart of Wales railway line to the north-east of Llandovery.	Route options 4N and 4C generally follow the A483 and A40 and will appear prominently in views from the roads. Both route options cross the A40 twice, with route 4C crossing at a prominent location near Abermarlais. All route options run alongside the Heart of Wales railway line to the north-east of Llandovery. Route option 4C also runs alongside the Heart of Wales railway line to the south-west of Llandovery and will appear prominently in views from the railway.	Route options 4Sa and 4Sb follow sections of the A4069 and will appear prominently in views from the road. Route option 4Sb will appear slightly more prominent and will cross the A4069 a greater number of times than route option 4Sa. Both route options cross the A40 to the north-east of Llandeilo. All route options run alongside the Heart of Wales railway line to the north-east of Llandovery. Route options 4Sa and 4Sb cross the Heart of Wales railway line to the north-east of Llandeilo.		**4Sa** or **4Sb** are the slight preference, as they are further from the A40, the principal road and a key tourist route through the area. These route options are likely to be least visible from the Heart of Wales railway line.
	Overall Preference for Landscape and Visual Amenity	**In relation to landscape and visual amenity, 4Sb has fewest unavoidable pinch points with residential properties. It is contained within a side valley away from the main Tywi Valley (though still within the SLA) and is less visible from tourism receptors and key routes.** **To the north of Llandovery, 4N is preferred as it avoids pinch points at the edge of the settlement.** **The overall preference is therefore 4N as far as Llandovery, then 4Sb south of Llandovery.**				

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
Cultural Heritage	Scheduled Monuments (SM)	There are no SMs located within the route options. There are 17 SMs located within 3km of the route option. The following locations have potential sensitivities related to the presence of SMs: ■ Llandovery ■ Llanwrda A section of Roman road lies north of Llandovery and a Roman fort lies within the north of the town. A non-designated section of the road is recorded as continuing south from the scheduled section toward the fort. The route option lies between the fort and the scheduled and non-designated sections of road. The current layout of the route option appears unlikely to cause harm to the SMs or non-designated section of road. A medieval motte (castle) lies east of Llanwrda and a prehistoric defended enclosure lies west of the village. The presence of the route option and associated angle towers are unlikely to meaningfully affect aspects of the assets' setting which contribute to their significance. Similarly, the presence of the OHL and potentially angle towers is unlikely to meaningfully alter how the assets are appreciated.	There are no SMs located within the route options. There are 17 SMs located within 3km of the route option. The following location has sensitivities related to the presence of SMs: ■ Llandovery The route option runs through the projected course of the Roman road from the north[1] into the Roman fort at the edge of Llandovery. It does this at a point approximately 260m north-west of the fort and approximately 770m south-east of the scheduled section of road. The exact route of the road in the vicinity of the route option is unclear. Similarly to route option 4N, this route option appears to have no angle towers sited on lines of sight between the two SMs so harm is unlikely to arise.	There are no SMs located within the route options. There are 20 SMs located within 3km of the route option. ■ The following locations have potential sensitivities related to the presence of SMs: Llandovery ■ Llangadog This route option follows the same course as route option 4C near Llandovery so the same considerations as outlined for the Roman fort and scheduled section of road for that route option also apply. A medieval motte, Castell Meurig,[2] lies south of Llangadog. It sits on the lower slopes of valley, at 60m Above Ordnance Datum (AOD), overlooking the Afon Sawdde and is likely to have been sited to oversee and control movement in the valley system. The route option lies 130m north-west of the castle, between it and the river. The route alignment indicates that an angle tower would likely sit on ground at 50m AOD, directly on the line of sight from the castle to the valley floor and river. Owing to the relative elevation of the castle and floodplain, the tower is likely to be clearly visible from the castle. This is likely to affect views from the castle to the river and valley floor to a small extent (i.e. its visibility would only feature in a very small proportion of the views to the river) but would still be harmful. All other elements of the castle's setting would remain unaffected and how it is perceived would be largely unchanged.	There is one SM located within the route option. The medieval motte, Castell Meurig, south of Llangadog lies partially within the route option. There are 19 SMs located within 3km of the route option. ■ The following location has sensitivities related to the presence of SMs: Llandovery ■ Llangadog This route option follows the same course as route option 4C near Llandovery so the same considerations as outlined for the Roman fort and scheduled section of road for that route option also apply. The route option partially crosses the Castell Meurig SM. No ground-based infrastructure is to be sited within the scheduled area. The considerations relating to setting laid out for this asset under 4Sa apply.	**4N, 4C** and **4Sb** are equally preferred as no harm appears likely to arise to SMs.
	Listed Buildings (Grades I, II*, II) (LB)	There is one LB located within the route option, a milestone (LB ref. 22021; Grade II). There are 325 LBs located within 3km of the route option. The following locations have potential sensitivities related to the presence of LBs: ■ Llandovery ■ Llanwrda Croesffordd is a 19th century estate cottage north-west of Llandovery. It is a Grade II LB and lies 60m north-west of the route option. A change of route direction (requiring an angle tower) occurs at this location. An 11 kilovolt (kV) OHL already exists approximately 40m west-southwest of the cottage. It is possible that further, and taller, grid infrastructure would be harmful as it is likely to erode the rural setting of the cottage.	There is one LB located within the route option, a milestone near Blaenos (LB ref. 82892; Grade II). There are 326 LBs located within 3km of the route option. ■ The following locations have sensitivities related to the presence of LBs: Llandovery ■ Llanwrda A milestone, Grade II LB, lies on the A40 west of Llandovery. The route option crosses the A40 at the milestone. This is unlikely to present an issue as the key element of this LB's setting is its relationship to the road which is unlikely to be affected by the presence of the OHL. The route option runs across the southern end of Llanwrda, south of all the LBs. It runs 80m south of two LBs at Glandulais, both early 19th century in date and related to a farmstead and part of a complex which includes more	There are two LBs located within the route option, both Grade II milestones (Blaenos, LB ref. 82892; Bran Mill, LB ref. 21971). There are 324 LBs located within 3km of the route option. ■ The following location has potential sensitivities related to the presence of LBs: Llangadog Two Grade II LBs lie either side of the southern approach into Llangadog, Glansawdde (late 19th century house) and an adjacent toll house (late 18th early 19th century). The house is set in a wooded garden with a range of associated farm buildings, contemporary to the house and modern, to its rear (N). The garden vegetation prevents visibility of the house until directly adjacent to it on the road. The route option lies approximately 30m south of the toll house and approximately 60m south of Glansawdde. An 11kV OHL runs approximately 150m west of Glansawdde and there is a branch into	There are three LBs located within the route option, all Grade II milestones (Blaenos, LB ref. 82892; Bran Mill, LB ref. 21971; Coedglassallt, LB ref. 22388). There are 314 LBs located within 3km of the Route Option. ■ The following location has sensitivities related to the presence of LBs: Llangadog The route option runs on a similar alignment as it approaches Llangadog as route option 4Sa so is a similar distance from the Glansawdde and the toll house. Changes in route direction indicate the need for two angle towers, one in a location between approximately 20-250m south-west of both LBs and one in a location between approximately 70-300m south-southeast of the tollhouse. It is possible that the route option could erode the rural setting of the LBs to a degree by having two	**4N** or **4C** are preferred as, although these route options interact with more LBs than the 4Sa/4Sb route options, both direct physical harm and harm arising from change in setting is likely avoidable. 4Sb is least preferred as some harm appears likely to arise.

[1] DAT PRN 33985
[2] CM099

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
		Llanwrda is a small historic village near the confluence of the Afon Dulas with the Afon Twyi. It contains one Grade II* LB (Neuadd Fawr) and twelve Grade II LBs, including the Church of Saint Cwrdaf. The route option runs across the south of the village with the three LBs at Glandulais south of the route and the remainder, including the core of the village, to its north. An 11kV OHL already runs through the south-west of the village, adjacent to the of listed former almshouses. The route option would likely avoid angle towers near LBs or on the approaches to and from the village. This means that its presence is unlikely to meaningfully alter the perception and understanding of the LBs as part of a historic rural settlement. There are other locations where LBs lie close to the route option, but no meaningful sensitivities related to the presence of LBs are anticipated.	recent farm buildings and sheds. An 11kV OHL already runs on a similar orientation approximately 140m south of the buildings. The presence of an additional OHL is unlikely to meaningfully alter the perception and understanding of the LBs as part of a historic rural settlement. Towers should be avoided near the LBs so that their rural setting is not eroded. There are other locations where LBs lie close to the route option, but no meaningful sensitivities related to the presence of LBs are anticipated.	the house. The route option would have an angle tower approximately 20m south-west of the LBs. It is unlikely that presence of an additional OHL and towers would affect how the buildings are understood as historic rural buildings. The relationship of Glansawdde to its associated farmland (north of the house) would not be affected by the route option. The understanding of the tollhouse as a structure formerly related to the road would also remain unaffected. As such, the route option is unlikely cause harm to the LBs or how they are perceived and understood. There are other locations where LBs lie close to the route option, but no meaningful sensitivities related to the presence of LBs are anticipated..	towers in close proximity to the buildings. There are other locations where LBs lie close to the route option, but no meaningful sensitivities related to the presence of LBs are anticipated.	
	Conservation Areas (CA)	There are three CAs located within 3km of the route option: ■ Llandovery – approximately 1.2km south of the route option. ■ Llangadog – approximately 2.2km south-east of the route option. ■ Llandeilo – approximately 2km south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the CAs so is unlikely to affect how they are experienced or perceived.	There are three CAs located within 3km of the route option: ■ Llandovery – approximately 1.2km south of the route option. ■ Llangadog – approximately 1.2km south-east of the route option. ■ Llandeilo – approximately 2.1km south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the CAs so is unlikely to affect how they are experienced or perceived.	There are three CAs located within 3km of the route option: ■ Llandovery – approximately 1.2km south of the route option. ■ Llangadog – approximately 300m east and 200m south of the route option. ■ Llandeilo – approximately 1.8km south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the Llandovery and Llandeilo CAs so is unlikely to affect how they are experienced or perceived. The route option runs around the east and south sides of Llangadog CA, crossing the eastern and southern approaches (A4069 and Heol Prendref) to the village. The eastern course around the village is likely to include an angle tower immediately south of Heol Prendref within Llangadog Cemetery, which appears to be 19th century in origin (see 'Non-designated historic assets' below). On the southern approach, an angle tower would be required adjacent to the road. Intervening vegetation appears likely to prevent the CA being experienced from where the route option crosses this road. If this is not the case, some harm to the CA is possible as the angle tower may be considered to erode the rural context of the CA around its southern approach, changing how it is experienced. Presence of an OHL on the eastern approach to the CA *per se* is unlikely to cause harm to the CA or how it is perceived. This is due to the presence of a fringe of modern housing development and recreation facilities on the eastern side of the CA so the experience from where the OHL	There are three CAs located within 3km of the route option: ■ Llandovery – approximately 1.2km south of the route option. ■ Llangadog – approximately 260m south of the route option. ■ Llandeilo – approximately 1.9km south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the Llandeilo CA so is unlikely to affect how it is experienced or perceived. The route option crosses the southern approach to Llangadog at a similar location to 4Sa. As such, some harm is possible if there is change in how the CA is experienced.	**4N** and **4C** are equally preferred as they appear to cause no harm to CAs.

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
				would run across the village approaches is not one of entering a historic village. Presence of grid infrastructure within the non-designated cemetery related to the settlement whose historic core the CA covers may be regarded as causing harm to arise by affecting a related asset.		
	Registered Historic Landscapes (RHL)	The route option runs through 10 Historic Landscape Character Areas (HLCAs) of the Tywi Valley Landscape of Outstanding Historic Interest (LOHI): ■ 191 Nantgaredig – Derwen Fawr ■ 196 Ystrad Tywi: Llandeilo – Llangadog ■ 201 Cwmifor – Manordeilo ■ 208 Ystrad Tywi: Llangadog-Llandovery ■ 209 Abermarlais ■ 210 Llansadwrn – Llanwrda ■ 213 Maesllydan ■ 214 Llwynhowell ■ 227 Cynghordy ■ 257 Llanwrda Parish A further 19 HLCAs lie within 3km of the route option. Two are within the Black Mountain and Mynydd Myddfai LOHI and the remainder are in the Tywi Valley LOHI.	The route option runs through 7 HLCAs of the Tywi Valley LOHI: ■ 191 Nantgaredig – Derwen Fawr ■ 196 Ystrad Tywi: Llandeilo – Llangadog ■ 201 Cwmifor – Manordeilo ■ 208 Ystrad Tywi: Llangadog-Llandovery ■ 209 Abermarlais ■ 213 Maesllydan ■ 214 Llwynhowell A further 22 HLCAs lie within 3km of the route option. Two are within the Black Mountain and Mynydd Myddfai LOHI and the remainder are in the Tywi Valley LOHI.	The route option runs through the following 14 HLCAs of the Tywi Valley LOHI and Black Mountain and Mynydd Myddfai LOHI: ■ Tywi Valley LOHI: – 191 Nantgaredig – Derwen Fawr – 196 Ystrad Tywi: Llandeilo – Llangadog – 201 Cwmifor – Manordeilo – 204 Felindre – 205 Carreg-Sawdde Common – 206 Llangadog – 207 Cefngornoeth – 208 Ystrad Tywi: Llangadog-Llandovery – 213 Maesllydan – 214 Llwynhowell – 225 Bethlehem – 227 Cynghordy ■ Black Mountain and Mynydd Myddfai LOHI – 228 Cilgwyn –Llwynwormwood. – 235 Maes-gwastad A further 22 HLCAs lie within 3km of the route option. Six are within the Black Mountain and Mynydd Myddfai LOHI and the remainder are in the Tywi Valley LOHI.	The route option runs through the following 13 HLCAs of the Tywi Valley LOHI and Black Mountain and Mynydd Myddfai LOHI: ■ Tywi Valley LOHI: – 191 Nantgaredig – Derwen Fawr – 196 Ystrad Tywi: Llandeilo – Llangadog – 201 Cwmifor – Manordeilo – 204 Felindre – 205 Carreg-Sawdde Common – 207 Cefngornoeth – 208 Ystrad Tywi: Llangadog-Llandovery – 213 Maesllydan – 214 Llwynhowell – 225 Bethlehem – 227 Cynghordy ■ Black Mountain and Mynydd Myddfai LOHI – 228 Cilgwyn –Llwynwormwood – 235 Maes-gwastad A further 22 HLCAs lie within 3km of the route option. Seven are within the Black Mountain and Mynydd Myddfai LOHI and the remainder are in the Tywi Valley LOHI.	**4N** and **4C** are equally preferred as they interact with only one RHL (Tywi Valley LOHI).
	Historic Parks and Gardens (HPG)	There are three HPGs located within 3km of the route option: ■ Llwynywormwood – approximately 2.2km south-east of the route option. ■ Taliaris – approximately 1.3km north-west of the route option. ■ Plas Dinefwr – approximately 2.1km south-west of the route option. Information reviewed to date indicates that harm is unlikely to arise to these HPGs as a result of the route option, due to a combination of the distance from the route option and intervening topography and vegetation.	There are three HPGs located within 3km of the route option: ■ Llwynywormwood – approximately 1.6km south-east of the route option. ■ Taliaris – approximately 1.7km north-west of the route option. ■ Plas Dinefwr – approximately 2.1km south-west of the route option. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views from these HPGs are likely to be away from the route option. Combined with the distance from the route option and intervening topography and vegetation no harm is likely to arise to these HPGs from this route option.	There are three HPGs located within 3km of the route option: ■ Llwynywormwood – approximately 1.2km south-east of the route option. ■ Taliaris – approximately 2.7km north-west of the route option. ■ Plas Dinefwr – approximately 2.1km south-west of the route option. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views from these HPGs are likely to be away from the route option. Combined with the distance from the route option and intervening topography and vegetation no harm is likely to arise to these HPGs from this route option.	There are three HPGs located within 3km of the route option: ■ Llwynywormwood – approximately 1.2km south-east of the route option. ■ Taliaris – approximately 2.7km north-west of the route option. ■ Plas Dinefwr – approximately 2.1km south-west of the route option. Information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that designed views from these HPGs are likely to be away from the route option. Combined with the distance from the route option and intervening topography and vegetation no harm is likely to arise to these HPGs from this route option.	There is no preference as none of the route options are predicted to cause harm to HPGs.

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
	Non-Designated Historic Assets	There are 18 Historic Environment Record (HER) entries located within the route option. There are 1863 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Llandovery ■ Llanwrda ■ New Inn The route option crosses the course of three Roman roads at points along the route. It is likely that there are buried archaeological remains relating to the road in these locations and potential for further remains related to Roman period activity. The route option runs through an area near New Inn where evidence of early medieval activity and possible evidence for Late Iron Age to Roman activity has been recorded.	There are 29 HER entries located within the route option. There are 1919 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Llandovery ■ Llanwrda ■ New Inn The route option runs through the projected course of the Roman road from the north and the Sarn Helen Roman Road north-west of the town. It also crosses the Llandovery to Llandeilo Roman road at Blaenos[3] and between Ashfield and Marlais[4] near Llanwrda. A Royal Observer Corps post[5] lies adjacent to the B4344 north of Llandovery. Towers would need to avoid this asset. The route option near to the area of early medieval activity with possible evidence for Late Iron Age to Roman activity south-east of New Inn crossed by route option 4C.	There are 18 HER entries located within the route option. There are 2149 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Llandovery ■ Llangadog The route option takes the same route as route option 4C at Llandovery, diverting from it near Lwynjack. It has the same interactions as that route option with the Roman roads up to and including the section of the Llandovery to Llandeilo Roman road at Blaenos. The route option takes the same course as route option 4C relative to the Royal Observer Corps north of Llandovery so the same considerations apply. Llangadog Church Cemetery lies on Heol Pendref, one of the eastern approaches to the village. It is associated with the parish church in the centre of the village and, though not recorded on the HER, its core appears to be of at least later 19th century date.[6] It also includes Commonwealth War Graves associated with the First and Second World War.[7] As such it is a non-designated historic asset and related to the Llangadog CA. Towers would require to be sited so as to avoid harm to the cemetery as a historic asset as well as to avoid disturbance of graves.	There are 24 HER entries located within the route option. There are 2178 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Llandovery The route option takes the same route as route option 4C at Llandovery, diverting from it near Lwynjack. It has the same interactions as that route option with the Roman roads up to and including the section of the Llandovery to Llandeilo roman road at Blaenos. The route option takes the same course as route option 4C relative to the Royal Observer Corps north of Llandovery so the same considerations apply.	**4Sb** is preferred as it has fewest interactions with non-designated heritage assets.
	Overall Preference for Cultural Heritage	**4N or 4C are preferred in relation to cultural heritage as these are likely to have fewest effects related to designated historic assets and their interaction with known non-designated assets is likely to be able to be mitigated.**				
Hydrology, Hydrogeology and Geology	Main Rivers – Flood Risk	■ Afon Brân: To the north of Abercrychan Mill (279062,237657), areas of high risk are present associated with the river and its tributaries (an approximately 400m length of the route option interacts with this area). Tower placement in this area should target lower (medium) risk areas such that high risk zones may be spanned. ■ River Towy and Afon Dulas: At Llanwrda there is an approximately 1.3km length of the route option which crosses the high risk flood zones associated with these watercourses. Based on the local topography, there are small areas within the route option	■ Afon Brân: To the north of Abercrychan Mill (279062,237657), an approximately 800m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. Due to the local topography, the high risk areas are discontinuous and therefore, with selected tower placement, may allow this area to be spanned. ■ Afon Brân: To the north-east of Llandovery (278371, 236410), an approximately 330m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. The high risk areas are discontinuous with an approximately 20m section in the centre of this area outside of a	■ Afon Brân: To the north of Abercrychan Mill (279062, 237657), an approximately 800m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. Due to the local topography, the high risk areas are discontinuous and therefore, with selected tower placement, may allow this area to be spanned. ■ Afon Brân: To the north-east of Llandovery (278371, 236410), an approximately 330m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. The high risk areas are discontinuous with an approximately 20m section in the centre of this area outside of a flood risk zone and a tower may be placed here to span the medium and high risk areas.	■ Afon Brân: To the north of Abercrychan Mill (279062, 237657), an approximately 800m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. Due to the local topography, the high risk areas are discontinuous and therefore, with selected tower placement, may allow this area to be spanned. ■ Afon Brân: To the north-east of Llandovery (278371, 236410), an approximately 330m length of high risk areas are present along the shared 4C/4Sa/4Sb route options. The high risk areas are discontinuous with an approximately 20m section in the centre of this area outside of a flood risk zone and a tower may be	All route options along this section may require works within high and medium risk zones. 4Sa and 4Sb in the south-west have an approximately 5.5km section almost entirely within these risk zones. 4C also has a large section from Llandovery to Llangadog where the placement of towers within medium and high risk zones is potentially unavoidable. As noted, the placement of towers within flood zones may be possible, subject to Flood Consequence Assessment, but it is preferable for this to be minimised.

[3] DAT PRN 33985
[4] DAT PRN 33973, 33974
[5] DAT PRN 121750 – initially an Early Warning Post but later a standard Underground Monitoring post.
[6] Not in existence on the early 19th century Tithe Map but in existence by the late 19th century 2nd edition Ordnance Survey. Rapid appraisal of Google StreetView shows in situ memorials of at least mid-later 19th century date.
[7] https://www.cwgc.org/visit-us/find-cemeteries-memorials/cemetery-details/75004/llangadog-church-cemetery/

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
		which are at low risk and therefore may allow the placement of towers outside of these zones. However, it remains likely that towers may be required within the high risk zones in this part of the route option. ■ Afon Dulas: In the far south-west section of the route option an approximately 250m span is required to cross the high and medium risk zones.	flood risk zone and a tower may be placed here to span the medium and high risk areas. ■ River Towy: North of Llandovery, along the shared 4C/4Sa/4Sb route options, there is an approximately 290m span required to span high risk zones associated with the River Towy. This may require placing a tower in the medium or high risk zones. ■ River Towy: Due to the orientation of the route option, from immediately west of Llandovery to 800m north of Llangadog it interacts with the medium and high risk flood zones associated with the River Towy. Whilst some discrete areas may be outside of the medium and high risk zones, large sections will require multiple towers within these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design. ■ Afon Dulas: in the far south-west section of the route option an approximately 210m span is required to cross the high and medium risk zones.	■ River Towy: North of Llandovery, along the shared 4C/4Sa/4Sb route options, there is an approximately 290m span required to span high risk zones associated with the River Towy. This may require placing a tower in the medium or high risk zones. ■ River Towy and Afon Brân: Immediately west of and to approximately 1.7km south-west of Llandovery on the shared 4Sa/4Sb route options there is an approximately 1.3km section crossing the medium and high risk flood zones associated with these watercourses. Whilst this is a significant section of the route options, the zones are discontinuous and therefore, opportunities exist to place towers outside of the medium and high risk zones. However, some towers may still be required within these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design. ■ River Towy: Approximately 2.5km south-west of Llandovery there is an approximately 1km section of the route option which crosses medium and high risk flood zones. Due to the local topography, a raised area approximately central to the 1km affected stretch is outside of the medium and high risk flood zones. Therefore, the placement of a tower may be possible here. However, some towers may still be required within these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design. ■ Tributaries of the River Towy to the south and east of Felindre: Multiple crossings, shorter than the likely maximum feasible tower span, are present here. The crossing south of Felindre of the Afon Sawdde requires an approximately 300m span but it is considered that with careful design this area may be spanned. ■ River Towy: Due to the route orientation, north of Bethlehem a 5.5km section of the shared 4Sa/4Sb route options regularly crosses and is within the medium and high risk flood zones. Due to the local topography, some areas are outside of the medium and high risk flood zones. Therefore, the placement of a tower may be possible here. However, some towers may still be required within	placed here to span the medium and high risk areas. ■ River Towy: North of Llandovery, along the shared 4C/4Sa/4Sb route options, there is an approximately 290m span required to span high risk zones associated with the River Towy. This may require placing a tower in the medium or high risk zones. ■ River Towy and Afon Brân: Immediately west of and to approximately 2km south-west of Llandovery on the shared 4Sa/4Sb route options there is an approximately 1.3km section crossing the medium and high risk flood zones associated with these watercourses. Whilst this is a significant section of the route options, the zones are discontinuous and therefore, opportunities exist to place towers outside of the medium and high risk zones. However, some towers may still be required within these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design. ■ River Towy: Due to the route orientation, north of Bethlehem a 5.5km section of the shared 4Sa/4Sb route options regularly crosses and is within the medium and high risk flood zones. Due to the local topography, some areas are outside of the medium and high risk flood zones. Therefore, the placement of a tower may be possible here. However, some towers may still be required within these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design. ■ Tributaries of the River Towy to the south and east of Felindre: Multiple crossings, shorter than the likely maximum feasible tower span, are present here. The crossing south of Felindre of the Afon Sawdde requires an approximately 300m span but it is considered that with careful design this area may be spanned.	4N has the lowest interaction with high and medium risk zones and therefore **4N** is the preference.

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
				these zones. Therefore, whilst these may be acceptable as water compatible infrastructure, a Flood Consequences Assessment will be required to inform the design.		
	Ordinary Waterbodies/ Watercourses – Flood Risk	All route options cross numerous small/ ordinary watercourses, each with a narrow (less than minimum tower span) zone of high or medium risk with respect to surface water and/ or river flooding. All could be spanned.				There is no preference as all watercourses and flood risk zones could be spanned.
	Peat	There is an area of mapped peat 1.8km north-west of Llangadog comprising 29,250 square metres (m^2). The feature is located across the entire width of the route option, however as it is only 180m wide it can be spanned. There is an area of mapped peat 1.7km west-north-west of Llangadog comprising 13,500m^2 . The feature is located across the entire width of the route option, however as it is only 150m wide it can be spanned.	None mapped.	None mapped.	None mapped.	**4C, 4Sa and 4Sb** are the slight preferences based on the absence of mapped peat deposits.
	Landfill Sites	Natural Resources Wales (NRW) historical landfill noted at 278298,236759, 2.7km north-east of Llandovery. It is half moon in shape and within the route option, it covers an area of approximately 4400m^2. It could be spanned and is therefore not considered a constraint.	None present.	The route option crosses a small historical landfill is recorded by NRW 1.5km south-west of Llandovery (278298, 236759). It is an elongated shape therefore it could be spanned and is not considered a constraint.	None present.	There is no preference as whilst 4N and 4Sa contain landfill sites these could both be spanned during detailed routeing.
	Local Authority Mineral Consultation Areas (MCAs) and Mineral Protection Areas (MPAs)	To the north-east of Llandovery, the route option crosses approximately 1.7km of Category 2 sand and gravel deposits. To the north of Llandovery, the route option crosses approximately 1km of Category 1 sand and gravel deposits. Approximately 2.3km east of Llanwrda, the route option crosses approximately 350m of Category 1 sand and gravel deposits. At Llanwrda the route option crosses approximately 1.6km of Category 1 and 2 sand and gravel deposits.	On the shared 4C/4Sa/4Sb route options there is approximately 4.2km of Category 1 and 2 sand and gravel deposits within the route option located to north-east of Llandovery. From Llandovery to Llanwrda there is approximately 8.3km of Category 1 and 2 sand and gravel deposits present within the route option. Near Llandeilo there is approximately 0.6km of Category 1 and 2 sand and gravel deposits present within the route option.	On the shared 4C/4Sa/4Sb route options there is approximately 4.2km of Category 1 and 2 sand and gravel deposits within the route option to the north-east of Llandovery. From Llandovery to Llandeilo there is approximately 16km of Category 1 and 2 sand and gravel and sandstone deposits within the route option.	On the shared 4C/4Sa/4Sb route options there is approximately 4.2km of Category 1 and 2 sand and gravel deposits within the route option to the north-east of Llandovery. From Llandovery to Llandeilo there is approximately 15km of Category 1 and 2 sand and gravel and sandstone deposits within the route option. It is noted that in this section of the route option there are also small areas which are not mapped as containing mineral deposits to the north-east of Llangadog.	Due to the substantial presence of Category 1 and 2 mineral areas along this section, it is considered that the routeing of the overhead line will impact the reserves. However, the substantial volumes and extent mapped indicate that discrete towers are likely to have a limited effect on the overall deposit volume available for potential extraction. Notwithstanding this, 4N has the smallest area of potentially economic mineral reserves within the route option and is the slight preference.
	Active Mineral Sites	None present.	Approximately 1.7km to the south-west of Llandovery (275403,233150), there is an active sand and gravel extraction quarry on the western bank of the River Towy. The operational extent of the extraction is not clear but it spans the width of the route option. It is likely that this constraint can be spanned.	Approximately 2.7km south-west of Llandovery. there is a dormant mineral extraction site for sand and gravel. The exact extent of this site is unknown, but its maximum southern extent appears likely to be constrained by the Towy. On this basis, there is the potential for the route option to interact with the site if it passes to the north of the Towy in this location.	None present.	**4N** and **4Sb** are preferred as these avoid the constraints posed by active and dormant mineral extraction sites along 4C and 4Sa respectively.
	Overall Preference for Hydrology, Hydrogeology and Geology	**4N is the preference in relation to hydrology, hydrogeology and geology as it has the fewest interactions with potential constraints in relation to this topic.**				

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
Forestry	Ancient Woodland as per the Ancient Woodland Inventory (AWI)	The total area of AWI within the route option is 15.89 hectares (ha). Route option 4N includes a number of small AWI listed as Restored Ancient Woodland Sites (RAWS) and Ancient Semi Natural Woodlands (ASNW). It also includes several Planted Ancient Woodland Sites (PAWS) which are currently conifer plantations and some Ancient Woodland sites of Unknown Category. PAWS within Coed Nantyrhogfaen and by Llwyn-y-brain Wood are present across the width of the route option and therefore cannot be avoided.	The total area of AWI within the route option is 9.79 ha. A small number of small AWI, listed as ASNW and RAWS, are present within Route Option 4C. There are also some Ancient Woodland sites of unknown category within the route option. ASNW, RAWS and Ancient Woodland of Unknown Category are present across the width of the route option north of Ashfield and therefore cannot be avoided. An area of ASNW is present across the width of the route option to the north of Cwmifor and therefore also cannot be avoided.	The total area of AWI within the route option is 5.59 ha. Route option 4Sa includes a small number of small AWI listed as ASNW and RAWS which could be avoided via detailed routeing.	The total area of AWI within the route option is 6.88 ha. Route option 4Sb includes a small number of small AWI which are mainly RAWS with some ASNW and a small area of conifer PAWS. None of these span the width of the route option, although an area of RAWS at Coed Caeau-bach nearly does so.	**4Sa** is slightly preferable with respect to containing a lower area of AWI within the route option, and there being potentially a higher prospect of AWI being avoided for 4Sa than for 4Sb.
	Commercial Conifer and Other Woodlands as per the National Forest Inventory (NFI)	The total area of other woodlands located within the route option is 16.50 ha. Route option 4N includes mainly small broadleaved woodlands with some conifer plantations. Small areas of broadleaved woodland extend across the width of the route option at Pont-Issac and cannot be avoided. A small strip of broadleaved woodland almost crosses the width of the route option at Penhill; there is a very small gap between the woodland and the edge of the route option. Other small broadleaved woodlands within the route option would require some felling to facilitate the OHL. There are also areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	The total area of other woodlands located within the route option is 15.47 ha. Route option 4C includes mainly small broadleaved woodlands including felled areas and young trees (2019). Broadleaved woodland areas which cannot be avoided are at Allt y Fron, Rosehill Wood and north of Glien. There is also a small area of broadleaved woodland adjacent to the RAWS at Cwmifor Farm; although there is a small gap between the two, it is unlikely that the OHL will be able to avoid both. There are areas of “other woodland” associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together.	The total area of other woodlands located within the route option is 4.21 ha. Route option 4Sa includes small broadleaved and mixed mainly broadleaved woodlands.	The total area of other woodlands located within the route option is 4.27 ha. Route option 4Sb includes small broadleaved woodlands including young trees.	**4Sa** is slightly preferable with respect to containing a lower area of other woodlands within the route option.
	Overall Preference for Forestry	**4Sa is slightly preferable overall in relation to forestry, as it contains the smallest total area of AWI within the route option as well as the smallest total area of other woodlands , with relatively better opportunities to minimise loss of AWI and other woodland.**				
Land Use	Infrastructure	The route option crosses an existing 33kV overhead line (OHL) north of Nantyrhogfaen, west of Llandovery, before the OHL connects into the Llandovery 33kV substation; the OHL is crossed close to perpendicular to the route in this location. The route option crosses another existing 33kV OHL to the east of Llanwrda which cannot be avoided.	These route options cross an existing 33kV OHL before the OHL connects into the Llandovery 33kV substation located immediately east of the route options which cannot be avoided. The route option also crosses another 33kV OHL connecting into the Llandovery 33kV substation, south-west of the substation which cannot be avoided; the route option crosses close to perpendicular to the OHL in this location. The route option interacts with the 33kV OHL again to the east of Pantllwyfen where the 33kV OHL runs within the route option in a north-east to south-west direction for approximately 2.8km until the south of Pont Allt-y-cloriau. This could potentially be avoided by routeing the proposed OHL south of the existing 33kV OHL in this location, although this would bring the	The route options also cross another 33kV OHL connecting into the Llandovery 33kV substation, immediately south-west of the substation which cannot be avoided; the route options cross close to perpendicular to the OHL in this location. The route option interacts with the same 33kV OHL once more towards the end of the section, north-east of Llandeilo. In this location the OHL can potentially be avoided by detailed routeing, but it would then have to be crossed in the next route section (section 5) unless the route continued on southern options within route section 5 also. The route option crosses another 33kV OHL crosses to the south of Cwmifor which cannot be avoided; the route options cross the OHL close to perpendicular in this location.		**4N** is preferred in this location as it would likely require the least disturbance to existing OHL with existing 33kV OHLs crossing the route option twice. 4N also has the fewest interactions with existing gas infrastructure, existing road and rail infrastructure. Where it does cross existing infrastructure, this could be spanned. 4N would also avoid the pinch point to the west of Llandovery substation where there are existing OHLs connecting into the substation as well as the

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
			two OHLs closer to each other than if the existing line were to be crossed by the proposed OHL to the south of Pantllwyfen and again to the south-east of Pont Allt-y-cloriau. The route option interacts with the same 33kV OHL again south of Llandwrda where the OHL runs for approximately 2.5km within the route option until the north-west of Llanadog and cannot be avoided. The route option interacts with the same 33kV OHL once more, east of Cwmifor, which runs within the southern extent of the route option for approximately 1km until the north-east of Rhosmaen House. This can be avoided through detailed routeing.			Heart of Wales railway line, A40 and River Towy in close proximity to each other.
		The route option briefly interacts with the Felindre to Three Cocks gas pipeline to the south-east of Felindre. This can be avoided through detailed routeing. The route option briefly interacts with the same gas pipeline again to the north of Cwmifor which can also be avoided. To the east of Cwmifor, the route option interacts with the pipeline again which runs for approximately 800m in an east-west direction within the route option until the south of Brynwgan which cannot be avoided. The route option crosses the pipeline once more to the south of Brynwgan which cannot be avoided.	The route option crosses the Felindre to Three Cocks gas pipeline to the south-west of Llanwrda which cannot be avoided. To the south of Felindre, the route option interacts with the pipeline again which then runs within the route option for approximately 500km and cannot be avoided. The route option interacts with the pipeline again to the south-west of Ashfield which then runs within the route option for approximately 500km; at this location the pipeline could be avoided through detailed routeing. To the north of Cwmifor, the route option crosses the pipeline again which cannot be avoided. To the east of Cwmifor, the route option interacts with the pipeline again which then runs within the route option for approximately 1.1km until the east of Brynwgan; at this location the pipeline could be avoided through detailed routeing. To the south of Brynwgan, the route option crosses the pipeline once more which cannot be avoided.	The route option crosses the Felindre to Three Cocks gas pipeline to the north of Gwaun-gyd which then runs in a north-east to south-west direction within the route option for approximately 630m until the east of Tyddyn. This cannot be avoided.	The route option crosses the Felindre to Three Cocks gas pipeline to the north of Tynycoed which then runs within the route option for approximately 2.4km until the north-east of Gwaun-gyd. This cannot be avoided.	

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
		There are no constraints within the route option as a result of existing road infrastructure.	The route option crosses the A40 to the west of Llandovery which cannot be avoided. Approximately 300m to the south of this road crossing, the route option also crosses the River Towy which cannot be avoided. Approximately 130m south of the River, the route option crosses the Heart of Wales Railway which also cannot be avoided. All three of these features have the same alignment and would therefore, be required to be spanned together. The road, river and railway are all within 550m of each other and would therefore require careful consideration with respect to spanning. Where the route option crosses with the river and railway at this location, an existing 33kV OHL also crosses the river and railway before connecting into the Llandovery substation located immediately east-southeast of the route option.	The route options cross the A40 to the west of Llandovery which cannot be avoided. Approximately 300m to the south of this road crossing, the route options also cross the River Towy which cannot be avoided. Approximately 130m south of the River, the route options cross the Heart of Wales Railway line which cannot be avoided. All three of these features have the same alignment and would therefore, be required to be spanned together. The road, river and railway are all within 550m of each other and would therefore require careful consideration with respect to spanning. Where the route option crosses with the river and railway at this location, an existing 33kV OHL also crosses the river and railway before connecting into the Llandovery substation located immediately east-southeast of the route option.	The route options cross the A40 to the west of Llandovery which cannot be avoided. Approximately 300m to the south of this road crossing, the route options also cross the River Towy which cannot be avoided. Approximately 130m south of the River, the route options cross the Heart of Wales Railway line which cannot be avoided. All three of these features have the same alignment and would therefore, be required to be spanned together. The road, river and railway are all within 550m of each other and would therefore require careful consideration with respect to spanning. Where the route option crosses with the river and railway at this location, an existing 33kV OHL also crosses the river and railway before connecting into the Llandovery substation located immediately east-southeast of the route option. The route option also crosses the A4069 to the south of Llandovery which then runs within the route option for approximately 900m until the south of Glan-Towy; this cannot be avoided. The route option interacts with the A4069 again to the south-east of Llanwrda where the road runs within the route option for approximately 2.2km until the west of Wernfrena. The OHL would need to run parallel to the road for a large portion of this length, however, crossing the road at this location could be avoided through detailed routeing. Where 4Sa and 4Sb route options re-join to the south of Llangadog, the route option crosses the A4069 once more; here the route option crosses perpendicular to the road which cannot be avoided. Approximately 110m south-west of the A4069, the route option crosses the Afon Sawdde, a tributary of the River Towy, in a similar alignment to the road. Both the road and tributary would need to be spanned at this location.	
		The route option interacts with the Heart of Wales railway line from the start of the section at Allt Parc-bach for approximately 2km until the north-west of Pen-y-bont; this stretch of railway cannot be avoided and will therefore need to be spanned.	The route option briefly interacts with the Heart of Wales railway line at the start of the section near Allt Parc-bach; the railway could be avoided through detailed design at this location. The route option crosses close to perpendicular to the railway to the north of Llandovery which cannot be avoided.			
			To the south-west of Llandovery, near the location of the Llandovery 33kV substation and directly south of the River Towy, the route option interacts with the railway again which then runs within the route option for approximately 690m. The railway cannot be avoided in this location and would therefore need to be spanned. The route option interacts with the railway once more to the south-west of Llandovery which runs in parallel within the route option for approximately 4.2km until the north of Llanwrda. The	To the south-west of Llandovery, near the location of the Llandovery 33kV substation and directly south of the River Towy, the route options cross the railway which cannot be avoided. To the south-west of Cwmifor, the route options interact with the railway line once more which then runs in a north-east to south-west direction within the route options for approximately 500m until the east of Pont Dulais; the railway cannot be avoided in the location and would therefore need to be spanned.	

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
			proposed OHL could run alongside the railway during this stretch and could span the railway where the route option crosses it.			
	Committed Development (Consented and Undetermined Planning Applications)	There are two non-residential committed developments located within the route option. Both can, however, be avoided through detailed design.	There is one consented non-residential committed development located within the route option. This can, however, be avoided through detailed design.	There are two consented non-residential committed developments located within the route option (three were identified within the relevant data but one appears to have already been constructed). Both can, however, be avoided through detailed design.	There are no committed developments located within the route option.	**4Sb** is preferred as there are no committed developments located within this route option.
	Local Development Plan (LDP) Allocations	There are no Carmarthenshire LDP allocations present within the route option.	The route option crosses a minor area of the Carmarthenshire Adopted LDP Cwmifor Development Limit. This can be avoided through detailed design.	There are no Carmarthenshire LDP allocations present within the route option.		On balance, there is no preference.
	Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a)	There is 90.09 ha of BMV agricultural land present within this route option. This cannot be avoided through detailed design.	There is 200.28 ha of BMV agricultural land present within this route option. This cannot be avoided through detailed design.	There is 236.79 ha of BMV agricultural land present within this route option. This cannot be avoided through detailed design.	There is 220.24 ha of BMV agricultural land present within this route option. This cannot be avoided through detailed design.	**4N** is preferred as this contains the smallest area of BMV agricultural land.
	Common Land	There is no common land present within these route options.		There is 5.1 ha of common land present within the route options to the east of Felindre. The width of the common land at this location is approximately 220m at its narrowest point and could be spanned.		**4N** and **4C** are of equal preference as there is no common land present within the Route Options.
	Overall Preference for Land Use	**On balance, 4N is preferred in relation to land use as it has the fewest interactions with existing infrastructure, does not contain any common land and contains the smallest area of BMV agricultural land. The two non-residential committed developments within 4N could be avoided through detailed design.**				
Overall Emerging Preference: 4N north-west of Llandovery and 4Sb southwards from Llandovery.	4N is preferred in relation to biodiversity, as this route option does not cross the Afon Twyi SAC/SSSI, is at the greatest distance from the Gallt y Tlodion WTR and contains the smallest amount of Floodplain Grazing habitat. In relation to the landscape and visual criterion, the preference is for 4N as far as the north-west of Llandovery as it avoids pinch points at the edge of the settlement and then 4Sb for the remainder of the route. 4Sb is contained within a side valley away from the main Tywi Valley and is less visible from tourism receptors and key route and contains fewest unavoidable pinch-points with residential properties. 4N is preferred jointly with 4C in relation to cultural heritage. Effects on the setting of Listed Buildings will require careful consideration at the detailed design stage if 4Sb is progressed. The interaction with both RHLs will require careful consideration during detailed design for 4Sb. Although all route options contain AWI, and 4Sa was slightly preferred to other route options with respect to potential effects on AWI, the 'mixed' option preferred on landscape and visual grounds provides reasonable opportunities for AWI avoidance with the possible exception of Restored Ancient Woodland (RAWS) at Coed Caeau-bach, where a residential property may constrain the ability of the OHL to avoid the RAWS. 4N is the preference in relation to hydrology, hydrogeology and geology as this has the fewest interactions with potential constraints. Detailed routeing within 4Sb will require consideration of tower placement within the floodplain (as with all route options). 4N is preferred in relation to land use as it has the fewest interactions with existing infrastructure, does not contain any common land and contains the smallest area of BMV agricultural land. The two non-residential committed developments within 4N could be avoided through detailed design. Detailed design will be required to take into consideration BMV land and the Felindre to Three Cocks gas pipeline particularly within 4Sb. For this section, the preferred route option is therefore 4N up to the north-west of Llandovery and then 4Sb southwards primarily due to the preference on landscape and visual grounds.					

Table E.5: Section 5 Route Options Environmental Appraisal

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
Approximate Length of Route Option (kilometre (km))	N/A	26.28	26.11	25.90	25.86	26.09	**5Sa** is the slight preference as this is the shortest route option.
Biodiversity	Special Area of Conservation (SAC)	All route options cross the Afon Tywi (River Tywi) SAC at one location, though this can be avoided through spanning. The primary reasons for the SAC designation are its otter and fish populations. In addition, route options 5Na and 5Nb crosses the Afon Tywi (River Tywi) SAC's tributaries at five locations. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC, though they can be avoided through spanning. The Afon Tywi (River Tywi) SAC flows into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SAC, and therefore, route options 5Na and 5Nb are hydrologically and ecologically connected to this SAC via its tributaries. However, the SAC is located a considerable distance away and the tributaries can be avoided through spanning. This SAC is designated for its sandbanks, estuaries, mudflats, sandflats, large shallow inlets and bays, Atlantic salt meadows, plant communities, otter *Lutra lutra,* and fish populations. Unlike the other route options, 5Na and 5Nb do not cross the Gwendraeth Fach and its tributaries, which also flow into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SAC.		All route options cross the Afon Tywi (River Tywi) SAC at one location, though this can be avoided through spanning. The primary reasons for the SAC designation are its otter and fish populations. In addition, route option 5C crosses the Afon Tywi (River Tywi) SAC's tributaries at seven locations. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC, though they can be avoided through spanning. In addition, route option 5C crosses tributaries of the Gwendraeth Fach, which flows into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SAC at one location. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC, though they can be avoided through spanning. This SAC is designated for its sandbanks, estuaries, mudflats, sandflats, large shallow inlets and bays, Atlantic salt meadows, plant communities, otter *Lutra lutra,* and fish populations.	All route options cross the Afon Tywi (River Tywi) SAC at one location, though this can be avoided through spanning. Route options 5Sa and 5Sb cross the SAC at the point of a meander, resulting in a greater overlap, along approximately 800 meters (m) of the SAC's length, though this can likely be avoided through detailed routeing. The primary reasons for the SAC designation are its otter and fish populations. In addition, route options 5Sa and 5Sb cross the Afon Tywi (River Tywi) SAC's tributaries at eight locations. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC, though they can be avoided through spanning. In addition, route options 5Sa and 5Sb cross tributaries of the Gwendraeth Fach, which flows into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SAC, at three locations. Though these tributaries are not designated themselves, they are hydrologically and ecologically connected to the SAC, though they can be avoided through spanning. This SAC is designated for its sandbanks, estuaries, mudflats, sandflats, large shallow inlets and bays, Atlantic salt meadows, plant communities, otter *Lutra lutra,* and fish populations.	**5Na** and **5Nb** are preferred as they cross the Afon Tywi SAC/SSSI and its tributaries the least number of times and do not cross the tributaries of the Gwendraeth Fach.

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
	Sites of Special Scientific Interest (SSSI)	As noted above, all route options cross the Afon Twyi SAC, which is also designated as a SSSI, and the route options also cross tributaries of this SSSI and the Bae Caerfyrddin ac Aberoedd SAC/SSSI. Unlike the other route options, 5Na and 5Nb do not cross the Gwendraeth Fach and its tributaries, which also flow into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SSSI/SAC.		As noted above, all route options cross the Afon Twyi SAC, which is also designated as a SSSI, and the route options also cross tributaries of this SSSI and the Caerfyrddin ac Aberoedd SAC/SSSI. Route option 5C also crosses the Gwendraeth Fach and its tributaries, which also flow into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SSSI/SAC. In addition, route option 5C is also located approximately 130 metres (m) north of the Gweunydd a Choed Pen-Ty (Pen-Ty Pastures & Wood) SSSI, which is designated for its unimproved herb-rich grassland and wet woodland. Route option 5C is also located approximately 860m north of the Dinefwr Estate SSSI, which is designated for its floodplain habitats, wood pasture, parkland, veteran trees, lichen and invertebrate assemblages.	As noted above, all route options cross the Afon Twyi SAC, which is also designated as a SSSI, and the route options also cross tributaries of this SSSI and the Caerfyrddin ac Aberoedd SAC/SSSI. Route option 5Sa also crosses the Gwendraeth Fach and its tributaries, which also flow into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SSSI/SAC. In addition, route options 5Sa and 5Sb pass through the Gweunydd a Choed Pen-Ty (Pen-Ty Pastures & Wood) SSSI for approximately 150m, though this can be avoided through detailed routeing and/or spanning. This SSSI is designated for its botanical (grassland and wet woodland) and entomological interest. Route option 5Sa passes approximately 280m north of Dinefwr Estate SSSI. This SSSI is designated for its lichen and invertebrate assemblages, pasture woodland, plant assemblages and geology. Route options 5Sa and 5Sb are also located approximately 430m north of the Allt y Wern SSSI, designated for its oak woodland which is managed as coppice-with-standards. Route options 5Sa and 5Sb are also located 610m north of the Allt y Gaer SSSI, which is designated for its heronry, associated with a conifer plantation.	As noted above, all route options cross the Afon Twyi SAC, which is also designated as a SSSI, and the route options also cross tributaries of this SSSI and the Caerfyrddin ac Aberoedd SAC/SSSI. Route option 5Sb also crosses the Gwendraeth Fach and its tributaries, which also flow into the Bae Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SSSI/SAC. In addition, route options 5Sa and 5Sb pass through the Gweunydd a Choed Pen-Ty (Pen-Ty Pastures & Wood) SSSI for approximately 150m, although though this can be avoided through detailed routeing and/or spanning. Route option 5Sb also passes adjacent to the Dinefwr Estate SSSI for approximately 500m. Route options 5Sa and 5Sb are also located approximately 430m north of the Allt y Wern SSSI, and 610m north of the Allt y Gaer SSSI.	**5Na** and **5Nb** are preferred, as they cross the Afon Tywi the least number of times, do not cross tributaries of the Gwendraeth Fach and are at a greater distance than other options from other SSSIs.
	National Nature Reserve (NNR)	Route options 5Na and 5Nb are located over 1km from the NNRs and therefore no effects are anticipated.		Route option 5C is located approximately 290m north of the Waun Las NNR and 870m north of Dinefwr Estate NNR.	Route options 5Sa and 5Sb pass through the Waun Las NNR for approximately 600m. However, this overlap can be avoided through detailed routeing.		**5Na** and **5Nb** are preferred, as they are the greatest distance from NNRs.
					Route option 5Sa is also located approximately 280m north of the Dinefwr Estate NNR.	Route option 5Sb passes adjacent to the Dinefwr Estate NNR for approximately 500m.	
	Wildlife Reserves managed by the Carmarthenshire and Radnorshire Wildlife Trusts	Route options 5Na and 5Nb are located over 1km from all Reserves and therefore no effects are anticipated.		Route option 5C is located approximately 870m away from the Dinefwr/Dynefor Castle Woods Wildlife Reserve, which is designated for its Ancient Woodland.	Route option 5Sa is located approximately 280m north of the Dinefwr/Dynefor Castle Woods Wildlife Reserve.	Route option 5Sb passes adjacent to the Dinefwr/Dynefor Castle Woods Wildlife Reserve for approximately 500m.	**5Na** and **5Nb** are preferred as they are the greatest distance from all Reserves.
	Environment (Wales) Act 2016 Priority Habitats	All route options pass through numerous small parcels of Lowland Mixed Deciduous Woodland (including Ancient Woodland) and Purple Moor Grass and Rush Pasture. The number of parcels and potential for effects is similar for all route options. As noted above, all route options cross the Afon Twyi and the route options also cross tributaries of this river and the Caerfyrddin ac Aberoedd. Route options 5Na and 5Nb cross the rivers and/or their tributaries the least number of times. All route options pass through one large area of Floodplain Grazing, associated with the river network, which cannot be avoided through routeing or spanning due to its size.						There is no strong preference as effects on priority habitats could be minimised through spanning the habitat or avoiding through detailed routeing.

<table>
<tr><th>Topic</th><th>Consideration</th><th>Route Option 5Na</th><th>Route Option 5Nb</th><th>Route Option 5C</th><th>Route Option 5Sa</th><th>Route Option 5Sb</th><th>Preference</th></tr>
<tr><td rowspan="2"></td><td></td><td colspan="2">Route options 5Na and 5Nb pass through one small parcel of Lowland Fen/Reedbed, overlapping 100% of the habitat, though this can be avoided through spanning.

Route options 5Na and 5Nb pass through one parcel of Raised Bog for approximately 380m, overlapping with approximately 26% of this habitat. However, it is likely that this overlap can be avoided through routeing.</td><td>Route option 5C passes within approximately 300m of several small parcels of Lowland Fen/Reedbed; effects to these habitats can be avoided through suitable mitigation, and also potentially through spanning.

Route option 5C passes through one parcel of Raised Bog for approximately 190m, overlapping with approximately 28% of this habitat. However, it is likely that this overlap can be avoided through routeing.</td><td colspan="2">Route options 5Sa and 5Sb pass through one parcel of Raised Bog for approximately 200m, overlapping with approximately 24% of this habitat. However, it is likely that this overlap can be avoided through routeing.

Route option 5Sa passes within approximately 300m of several small parcels of Lowland Fen/Reedbed; effects to these habitats can be avoided through suitable mitigation, and also potentially through spanning.</td><td>Route option 5Sb passes within 300m of several small parcels of Lowland Fen/Reedbed, however effects to these habitats can be avoided through suitable mitigation, though this can be avoided through spanning.

Route option 5Sb passes through one parcel of Wood Pasture and Parkland, however, this can be avoided through routeing.</td><td></td></tr>
<tr><td>Overall Preference for Biodiversity</td><td colspan="6">5Na and 5Nb are preferred in relation to the biodiversity criterion. 5Na and 5Nb cross the Afon Tywi SAC/SSSI and its tributaries the least number of times. 5Na and 5Nb do not cross the Gwendraeth Fach and its tributaries, which flow into the Caerfyrddin ac Aberoedd (Carmarthen Bay and Estuaries) SSSI/SAC. 5Na and 5Nb do not cross any other SSSIs, NNRs or Wildlife Trust Reserves.</td></tr>
<tr><td rowspan="4">Landscape and Visual Amenity</td><td>National Parks</td><td colspan="6">All route options are located at distances exceeding approximately 1.2km from the Brecon Beacons National Park. Overhead Lines (OHLs) may be seen in distant outward views from the National Park however no effects are anticipated on the special qualities of the National Park.</td><td>There is no preference as no effects are anticipated on the special qualities of the National Park.</td></tr>
<tr><td>Locally Designated Landscapes</td><td colspan="6">All route options are within the Tywi Valley Special Landscape Area (SLA) for approximately 15km between Llandeilo and Llanarthne. The OHL could affect mature hedgerows, areas of woodland including linear riparian woodland along the river, field trees and the ‘unspoilt rural landscape’ that are characteristic of the SLA.</td><td>There is no preference as all route options are located within the SLA.</td></tr>
<tr><td>LANDMAP
■ Visual and Sensory
■ Landscape Habitats
■ Historic Landscape
■ Geological Landscape
■ Cultural Landscape</td><td colspan="2">Approximately half of the length of all route options pass through visual and sensory landscape aspect areas with an ‘outstanding’ overall evaluation. Route options 5Na and 5Nb pass through approximately 12km of ‘outstanding’ visual and sensory landscape aspect areas.

Route options 5Na, 5Nb and 5C pass through approximately 11-12km of landscape habitat aspect areas with a ‘high’ overall evaluation.

Route options 5Na and 5Nb pass through approximately 3.8km of historic landscape aspect areas with an ‘outstanding’ overall evaluation, and 22km of historic landscape aspect areas with a ‘high’ overall evaluation.

Route options 5Na and 5Nb pass through approximately 6.8km of geological landscape aspect areas with an ‘outstanding’ overall evaluation, and 3.3km of geological landscape aspect areas with a ‘high’ overall evaluation.

Route options 5Na, 5Nb and 5C pass through approximately 4-5km of cultural landscape aspect areas with an ‘outstanding’ overall evaluation, and 20-22km of cultural landscape aspect areas with a ‘high’ overall evaluation.</td><td>Approximately half of the length of all route options pass through visual and sensory landscape aspect areas with an ‘outstanding’ overall evaluation. Route option 5C passes through approximately 13km of ‘outstanding’ visual and sensory landscape aspect areas.

Route options 5Na, 5Nb and 5C pass through approximately 11-12km of landscape habitat aspect areas with a ‘high’ overall evaluation.

Route option 5C passes through approximately 5.2km of historic landscape aspect areas with an ‘outstanding’ overall evaluation, and 20.6km of historic landscape aspect areas with a ‘high’ overall evaluation.

Route option 5C passes through approximately 8.3km of geological landscape aspect areas with an ‘outstanding’ overall evaluation, and 0.8km of geological landscape aspect areas with a ‘high’ overall evaluation.

Route options 5Na, 5Nb and 5C pass through approximately 4-5km of cultural landscape aspect areas with an ‘outstanding’ overall evaluation, and 20-22km of cultural landscape aspect areas with a ‘high’ overall evaluation.</td><td colspan="2">Approximately half of the length of all route options pass through visual and sensory landscape aspect areas with an ‘outstanding’ overall evaluation. Route options 5Sa and 5Sb pass through the greatest length of ‘outstanding’ aspect areas (approximately 14km).

Route options 5Sa and 5Sb pass through 4km of landscape habitat aspect areas with an ‘outstanding’ overall evaluation, and 9km of landscape habitat aspect areas with a ‘high’ overall evaluation.

Route options 5Sa and 5Sb pass through approximately 14km of historic landscape aspect areas with an ‘outstanding’ overall evaluation, and 11.7km of historic landscape aspect areas with a ‘high’ overall evaluation.

Route options 5Sa and 5Sb pass through approximately 5-6km of geological landscape aspect areas with an ‘outstanding’ overall evaluation, and 5km of geological landscape aspect areas with a ‘high’ overall evaluation.

Route options 5Sa and 5Sb pass through approximately 8-9km of cultural landscape aspect areas with an ‘outstanding’ overall evaluation, and 17-18km of cultural landscape aspect areas with a ‘high’ overall evaluation.</td><td>There is a slight preference for 5Na and 5Nb, which pass through a shorter length of LANDMAP aspect areas with an ‘outstanding’ overall evaluation.

Half of the total length of all route options pass through visual and sensory aspect areas with an ‘outstanding’ overall evaluation. All route options pass through historic landscape, geological landscape and cultural landscape aspect areas with ‘outstanding’ overall evaluations.</td></tr>
<tr><td>Landscape Character</td><td colspan="6">The north-eastern extents of all route options pass through the Tywi Valley National Landscape Character Area 41 (NLCA 41). The broad scale of the valley, relatively flat landform, regular field pattern and presence of busy main roads and the railway line decrease sensitivity to OHLs. However, the winding wooded course of the river which adds complexity and contrast to the landscape pattern, high scenic quality of the valley, and areas of rural tranquillity (away from main roads) increases sensitivity. Wooded valley slopes may offer</td><td>There is a slight preference for 5Na, 5Nb and 5C, which avoid areas of complex</td></tr>
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Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
		opportunities to backcloth the OHL. All route options generally follow the grain of the Tywi Valley (NLCA 41) before crossing the valley to the north of Llanarthne, where the route options ascend the southern side of the valley. Route options 5Sa and 5Sb have less landscape fit due to running across higher ground and slopes. All route options then pass into the Gwendraeth Vales (NLCA 33), crossing an area of rolling mixed farmland. The complex landscape pattern of small fields bound by hedgerows and woodland, rolling landform with some small valleys and sense of rural tranquillity increase sensitivity to OHLs. The absence of distinctive skyline features, and the presence of settlement and busy main roads including the A48 slightly decrease sensitivity to OHLs. Route options 5Sa and 5Sb cross some areas of more complex topography in the minor valleys which feed into the broad valley of Gwendraeth Fawr to the south. Route option 5C also crosses this complex area south-west of Llanarthne. All route options pass into a simpler landscape south of the A48. All route options may result in loss to the hedgerows and hedgerow trees which are characteristic of the rural landscape of NLCA 41 and NLCA 33, and areas of woodland which contribute to the high scenic quality of the Tywi valley. All route options pass through pockets of woodland, some of which is ancient in origin, which may impact the wooded character of the landscape. Whilst some areas of woodland can be avoided at the detailed routeing stage, route options 5Na and 5Nb cannot avoid crossing through small areas of woodland near Broad Oak, and route option 5Na cannot avoid crossing through mixed woodland at Pont ar Ffinnant. Route option 5C cannot avoid crossing through small pockets of woodland near Langwm Farm and Glascoed-Isaf. Route options 5Sa and 5Sb cannot avoid crossing through areas of ancient woodland near Pen Heol Dawr, Pont Felin-gat, along the Afon y Bantwen and a smaller area of ancient woodland near Bwlch-y-gwynt. Route option 5Sb also cannot avoid crossing through an area of ancient woodland near Pen-y-banc Farm.				topography within NLCA 33 and pass through fewer areas of characteristic woodland. 5Sa and 5Sb fit less well into the landscape, and affect the most woodland, particularly south of Llanarthne, and are least preferred.
	Residential Visual Amenity (with 150m 'trigger for consideration zone')	Route option 5Na passes through the 150m 'trigger for consideration' zone of 92 residential properties. There are potential pinch points for route option 5Na: ■ Near Llwydcoed-uchaf (north of Llandeilo); ■ North of Pen-y-banc; ■ Near Cwrt-Henri, where the linear pattern of settlement extends along the minor roads to the south and west of the settlement; ■ Between the named residential properties of Cwm du and Glyn-hendy; ■ Between the named residential properties Abbey Farm and Llettyrfran, where the principal views from Abbey Farm are focused looking towards route option 5Na; ■ Near Brynglas Farm and Bryngors Uchaf, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; and ■ North of Bancycapel, where linear development extends along the B4309.	Route option 5Nb passes through the 150m 'trigger for consideration' zone of 97 residential properties. There are potential pinch points for route option 5Nb: ■ Near Llwydcoed-uchaf (north of Llandeilo); ■ North of Pen-y-banc; ■ Between the named residential properties of Cwm du and Glyn-hendy, where the principal views of Glyn-hendy are focused looking towards route option 5Nb; ■ South of Hendre-wenyn; ■ Near Brynglas Farm and Bryngors Uchaf, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; and ■ North of Bancycapel, where linear development extends along the B4309.	Route option 5C passes through the 150m 'trigger for consideration' zone of 168 residential properties. There are potential pinch points for route option 5C: ■ Near Bryn-hyfryd (north of Llandeilo), where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ South of Pen-y-banc, where the route option cannot avoid crossing into the 'trigger for consideration' zones of three properties; ■ Near Wern-fawr, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties with principal views focused looking towards route option 5C; ■ North of Broad Oak, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ South of Cwrt-Henri, where the route option cannot avoid crossing into the 'trigger for consideration' zones of five properties with principal views focused looking towards route option 5C; ■ Near Glandulas Fawr, where the route option cannot avoid crossing into the 'trigger for consideration' zones of four properties; ■ Multiple sections of the route option to the west and south-west of Llanarthne; ■ Near Pen-yr-heol and Pantawel Cottage, where linear development extends along the B4310; ■ Near Garthowen, where the principal views of the	Route option 5Sa passes through the 150m 'trigger for consideration' zone of 140 residential properties. There are potential pinch points for route option 5Sa: ■ Near Bryn-hyfryd (north of Llandeilo), where linear development extends along the B4302 and the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ South of Pen-y-banc, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ South of Glan Myddyfi, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ North of Ffoswen, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties and the principal view of the northernmost property is focused looking towards route option 5Sa; ■ North of Felindre, where the route option cannot avoid crossing into the 'trigger for consideration' zones of three properties, one of which has principal views focused looking towards route option 5Sa; ■ South of Llanarthne, where linear development extends to the south of the village; ■ Near Pont Felin-gat, where the route option cannot avoid crossing into the 'trigger for consideration' zones of three properties; ■ Near Bron y Berllan, where the route option cannot avoid crossing into the	Route option 5Sb passes through the 150m 'trigger for consideration' zone of 132 residential properties. There are potential pinch points for route option 5Sb: ■ Near Bryn-hyfryd (north of Llandeilo), where linear development extends along the B4302 and the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties; ■ North of Ffoswen, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties and the principal view of the northernmost property is focused looking towards route option 5Sb; ■ North of Felindre, where the route option cannot avoid crossing into the 'trigger for consideration' zones of three properties, one of which has principal views focused looking towards route option 5Sb; ■ South of Llanarthne, where linear development extends to the south of the village; ■ Near Pont Felin-gat, where the route option cannot avoid crossing into the 'trigger for consideration' zones of three properties; ■ Near Bron y Berllan, where the route option cannot avoid crossing into the 'trigger for consideration' zones of two properties with principal views focused looking towards route option 5Sb; ■ North-west of Llanddarog, where linear development extends along the B4310 and where the principal vies of the eastern property is focused looking towards route option 5Sb; and	There is a slight preference for **5Na** and **5Nb**, which pass through the fewest pinch points and 'trigger for consideration' zones for residential properties. The pinch points north of Llandeilo will form a key consideration for all route options. **5Na and 5Nb** offer greater potential to avoid 'trigger for consideration' zones through this area.

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
				property are focused looking towards route option 5C; and ■ South of Bancycapel, where linear development extends along the B4309.	'trigger for consideration' zones of two properties with principal views focused looking towards route option 5Sa; ■ North-west of Llanddarog, where linear development extends along the B4310 and where the principal vies of the eastern property is focused looking towards route option 5Sa; and ■ South of Bancycapel, where linear development extends along the B4309.	■ South of Bancycapel, where linear development extends along the B4309.	
	Views from Tourism and Recreation Sites and Routes	All route options cross the Celtic Way to the north-east of Llanarthne. Route option 5Sb also passes alongside approximately 0.8km of the walking route. All route options cross National Cycle Network (NCN) Route 47 near Llanarthne. Route options 5Sa and 5Sb run alongside approximately 2.4km of the cycle route. All route options cross numerous public rights of way. Route options 5Sa and 5Sb pass within close proximity of the National Botanic Garden of Wales, from which outward views across the wider landscape are afforded. Route options 5Sa and 5Sb pass approximately 0.6km to the north-west of Paxton's Tower, a popular promoted location with views across the Tywi Valley. While other route options may be visible, they will be set further back from the viewpoint. Route options 5C, 5Sa and 5Sb pass approximately 0.9km to the north-west and north of Dryslwyn Castle, a popular promoted location with views across the Tywi Valley and a picnic area. While other route options may be visible, they will be set further back from the viewpoint.					There is a slight preference for **5Na** and **5Nb**, given the route options pass at greatest intervening distance from locations promoted for tourist and recreational activity to the south of the Tywi Valley (National Botanic Garden, Paxton's Tower and Dryslwyn Castle).
	Views from Public Roads, including Tourist Routes, and Railways	All route options cross and/or run alongside the A40 for approximately 5km between Llandeilo and Llanegwad. Route options may appear prominently in views from the road, particularly route options 5Sa and 5Sb which run alongside the road on higher ground near Broad Oak. All route options cross the A48 west of Llanddarog and will appear prominently in views from a short section of the road. 5Na and 5Nb pass at the greatest intervening distance from the A40 and only cross the road once.					There is a slight preference for **5Na** and **5Nb**, given the route options pass at the greatest intervening distance from the A40 and only cross the road once.
	Overall Preference for Landscape and Visual Amenity	**Overall, in relation to the landscape and visual amenity criterion there is a preference for 5Na/5Nb, as these route options perform best in terms of landscape fit, and avoiding sensitive receptors. 5Na and 5Nb only diverge south of Ffinnant. 5Na avoids scattered residential properties but would have greater impact on woodland and may be more prominent in views from the valley to the north. Therefore, 5Nb is slightly preferred.**					
Cultural Heritage	Scheduled Monuments (SM)	There are 13 SMs within 3km of the route options. No locations were identified where issues related to setting change are likely to cause harm to SMs.		There are 12 SMs within 3km of the route option. No locations were identified where issues related to setting change are likely to cause harm to SMs.	There are 16 SMs within 3km of the route options. The following location has potential issues related to setting: ■ Dryslwyn Two SMs lie near Dryslwyn; Dryslwyn Castle[1] and Grongaer.[2] Dryslwyn Castle is a medieval castle built on the site of an Iron Age hillfort. It occupies a low hill, the end of a minor watershed ridge, between the current settlement of Dryslwyn and the Afon Tywi, a historic crossing point of the river. Grongaer is a prehistoric hillfort approximately 2km north-east of Dryslwyn Castle. It occupies the crest of a hill which is part of the same ridge on which Dryslwyn Castle sits and overlooks the valley of Nant Lash to the north as well as the Tywi Valley. A non-designated prehistoric defended enclosure lies approximately 400m north-north-west of Grongaer on a terrace between Grongaer and Nant Lash. Views out into the landscape are likely to have been a key consideration in the siting and use of the hillforts at Dryslwyn and Grongaer and it is likely that this included intervisibility between the two. Visibility of the hillforts from the surrounding landscape is also likely to have been important, to underscore control of the local landscape. The castle is likely to have been sited to oversee and control movement in the valley and across the river. The route options run approximately 770m north-west of the castle, crossing the valley floor, and approximately 210m north of the hillfort. They do not run in between the two hillforts nor sit between the castle and	**5Na/5Nb** or **5C** are preferred. 5Sa and 5Sb have some potential for harm to arise to SMs at Dryslwyn.

[1] CM030
[2] CM082

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
					crossing point on the river. Owing to the positioning of the route options (i.e. at a lower elevation than the assets, including when the height of towers is taken into account), it does not limit views of the surrounding landscape from the hillforts nor affect how they can be appreciated, either from the valley or from each other. As such no harm is considered likely to arise from the route options alignment. Towers are to be sited outwith views of the valley floor from the castle to avoid disruption of any visibility of the valley from the castle.		
	Listed Buildings (Grades I, II*, II) (LB)	There is one LB located within the route option, a Grade II bridge at Cwrt-Henri (Pont Court Henry, LB ref. 80855). There are 218 LBs located within 3km of the route option. The following locations have potential issues related to setting: ■ Llandeilo ■ Llangathen ■ Llanarthne A late 18th century farmhouse exists at Llwyncelyn Farm, north-west of Llandeilo. It is a Grade II LB and 11 kilovolt (kV) OHLs already run approximately 50m to the north and 120m south of the building. The route option runs approximately 50m north of the LB. It is possible that further, and taller, grid infrastructure would be harmful as it is likely to erode the rural setting of the cottage. Issues at Llangathen and Llanarthne relate to how the route option would appear in views from LBs at the core HPGs and are discussed in the HPG section below.	There is one LB located within the route option, a Grade II bridge at Cwrt-Henri (Pont Court Henry, LB ref. 80855). There are 218 LBs located within 3km of the route option. The following locations have potential issues related to setting: ■ Llandeilo ■ Llangathen ■ Llanarthne The route option runs across the LB at Llwyncelyn Farm, north-west of Llandeilo. It is possible that further, and taller, grid infrastructure would be harmful as it is likely to erode the rural setting of the cottage. Issues at Llangathen and Llanarthne relate to how the route option would appear in views from LBs at the core HPGs and are discussed in the HPG section below.	There are two LBs located within the route option, Llwyncelyn Farm, a Grade II farmhouse north-west of Llandeilo (LB ref. 80853),and a Grade II milestone near Wernbongam (LB ref. 21765). There are 216 LBs located within 3km of the route option. The following locations have potential issues related to setting: ■ Llangathen ■ Llanarthne Issues at Llangathen and Llanarthne relate to how the route option would appear in views from the LBs at the core HPGs and are discussed in the HPG section below.	There is one LB located within the route option, a Grade II bridge at Llanarthne (Pont Felin-gât, LB ref. 21758). There are 222 LBs located within 3km of the route option. The following locations have potential issues related to setting: ■ Llangathen ■ Llanarthne Issues at Llangathen and Llanarthne relate to how the route option would appear in views from the LBs at the core of HPGs and are discussed in the HPG section below.	There is one LB located within the route option. 227 LBs lie within 3km of the route option. The following locations have potential issues related to setting: ■ Llangathen ■ Llanarthne Issues at Llangathen and Llanarthne relate to how the route option would appear in views from LBs at the core of HPGs and are discussed in the HPG section below.	**5C** is preferred. 5Na and 5Nb have more issues but these are likely to be addressable with detailed routeing (e.g. by ensuring placement of towers does not 'backdrop' the LB at Llwyncelyn Farm), unlike the issues with LBs on 5Sa and 5Sb which also interrelate with HPGs (discussed further below).
	Conservation Areas (CA)	There are three CAs located within 3km of the route options: ■ Llandeilo – 1.3km south of the route option. ■ Llangathen – 1km south of the route option. ■ Llanddarog – 1.9km south-east of the route option. The route options do not appear to be sited on key views along routes through and toward the CAs so is unlikely to affect how they are experienced or perceived.		There are three CAs located within 3km of the route option: ■ Llandeilo – 1.3km south of the route option. ■ Llangathen – 740m south of the route option. ■ Llanddarog – 1.3km south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the CAs so is unlikely to affect how they are experienced or perceived.	There are three CAs located within 3km of the route option: ■ Llandeilo – 200m south of the route option. ■ Llangathen – 270m south of the route option. ■ Llanddarog – 330m south-east of the route option. The route option does not appear to be sited on key views along routes through and toward the CA so is unlikely to affect how they are experienced or perceived.	There are three CAs located within 3km of the route option: ■ Llandeilo – CA is immediately south of the route option. ■ Llangathen – 270m south of the route option. ■ Llanddarog – 330m south-east of the route option. The route option runs along the northern edge of the Llandeilo CA for approximately 370m at the Plas Dinefwr HPG. A 11kV line runs perpendicularly across the CA edge at this point, running from the core of the HPG to connect to lines at the A40. The presence of an additional OHL is likely to alter how this section of the CA is experienced so is likely to be harmful. The route option takes the same course relative to the other CAs as route option 5Sa so the same considerations as outlined for that route option apply.	**5N, 5C** and **5Sa** are preferred as they appear to avoid harm to CAs.

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
	Registered Historic Landscapes (RHL)	The route options run through 4 HLCAs of the Tywi Valley Landscape of Outstanding Historic Interest (LOHI): ■ 182 Ystrad Tywi: Carmarthen-Llandeilo ■ 185 Llangunnor - Llanarthne Parishes ■ 189 Llanarthne ■ 191 Nantgaredig - Derwen Fawr A further 17 HLCAs, all within the Tywi Valley LOHI, lie within 3km of the route options.		The route option runs through 4 HLCAs of the Tywi Valley LOHI: ■ 182 Ystrad Tywi: Carmarthen-Llandeilo ■ 185 Llangunnor - Llanarthne Parishes ■ 189 Llanarthne ■ 191 Nantgaredig - Derwen Fawr A further 16 HLCAs, all within the Tywi Valley LOHI, lie within 3km of the route option.	The route options run through 7 HLCAs of the Tywi Valley LOHI: ■ 182 Ystrad Tywi: Carmarthen-Llandeilo ■ 185 Llangunnor - Llanarthne Parishes ■ 188 The National Botanic Garden of Wales ■ 189 Llanarthne ■ 191 Nantgaredig - Derwen Fawr ■ 192 Llangathen ■ 195 Dinefwr Park A further 12 HLCAs, all within the Tywi Valley LOHI, lie within 3km of the route options.		**5Na/5Nb** and **5C** are preferred as they interact with the fewest HLCAs.
	Historic Parks and Gardens (HPG)	There are seven HPGs within 3km of the route option: ■ Taliaris – 2.3km north of the route option. ■ Plas Dinefwr – 580m north of the route option. ■ Aberglasney – 1.1km south of the route option. ■ Golden Grove – 2.4km south of the route option. ■ Pantglas – 2.6km north of the route option. ■ Paxton's Tower – 1.9km south-east of the route option. ■ Middleton Hall (National Botanic Garden of Wales) – 1.1km south of the route option. The route option lies approximately 440 m north-west of Plas Dinefwr. The HPG occupies land on the south side of the valley and the route option would run on the north side. Several 11kV OHLs already run along the north side of the valley near the HPG and an 11kV line runs through the HPG to the listed buildings lying at its core. Review of the landcover within the HPG, topography and the Cadw layer for significant views from HPGs indicates that presence of an additional OHL is unlikely to feature in key views out from the park or meaningfully affect how it is experienced. Aberglasney lies approximately 1.1km south of the route option. Information reviewed indicates that there are key views from the HPG and listed buildings at its core, including the main house (Grade II*), toward the route option. It is possible that the change in how the landscape is appears from the park as a result of the route option would be harmful to the HPG and	There are seven HPGs within 3km of the route option: ■ Taliaris – 2.5km north of the route option. ■ Plas Dinefwr – 300m north of the route option. ■ Aberglasney – 1.1km south of the route option. ■ Golden Grove – 2.1km south of the route option. ■ Pantglas – 2.6km north of the route option. ■ Paxton's Tower – 1.9km south-west of the route option. ■ Middleton Hall (National Botanic Garden of Wales) – 1.1km south of the route option. The route option takes the same course as route option 5Na relative to Plas Dinefwr. The same considerations as outlined for that route option apply to this route option and it is similarly unlikely to feature in key views out from the park or meaningfully affect how it is experienced. The route option takes the same course as route option 5Na relative to the Aberglasney HPG and associated LBs. The same considerations as outlined for that route apply to this route option and harm to these assets is possible. The route option takes a similar course as route option. 5Na relative to the Middleton Hall and Paxton's Tower HPGs and associated LBs. The same considerations as outlined for that route option apply to this route option and harm to these assets is considered unlikely.	There are six HPGs within 3km of the route option: ■ Taliaris – 2.5km north of the route option. ■ Plas Dinefwr – 300m north of the route option. ■ Aberglasney – 750m south of the route option. ■ Golden Grove – 2.1km south of theroute option. ■ Paxton's Tower – . km south-west of the route option. ■ Middleton Hall (National Botanic Garden of Wales) – 150m south of the route option. The route option lies approximately 250m north of Plas Dinefwr and takes a similar course on the opposite side of the valley as the route option 5N. The same considerations as outlined for those routes apply to this route option and it is similarly unlikely to feature in key views out from the park or meaningfully affect how it is experienced. Aberglasney lies approximately 750m south of the route option. Information reviewed indicates that there are key views from the HPG and listed buildings at its core, including the main house (Grade II*), toward the route option. It is possible that the change in how the landscape is appears from the park as a result of the route option would be harmful to the HPG and associated core listed buildings. Towers should be avoided on this alignment to avoid or lower the level of harm. Golden Grove lies south-east of the route option. There are key views in the direction of the route option from the LBs at the HPG's core including the Grade II*	Two HPGs are crossed by the route option: ■ Plas Dinefwr ■ Middleton Hall (National Botanic Garden of Wales) There are four HPGs within 3km of the route option: ■ Taliaris – 2.6km north of the route option. ■ Aberglasney – 300m south of the route option.. ■ Golden Grove – 1.9km south of the route option. ■ Paxton's Tower – 500m south-west of the route option. The route option runs through the north of Plas Dinefwr for approximately 360m. An 11kV line runs perpendicularly across the HPG this point, connecting to the listed buildings at the core of the HPG. The presence of an additional OHL, particularly one running counter to an existing OHL, is likely to alter the character of this section of the HPG and how it is experienced. This is likely to be harmful. Aberglasney lies approximately 270m south of the route option. Information reviewed indicates that there are key views from the HPG and listed buildings at its core, including the main house (Grade II*), toward the route option. It is likely, owing to the closer proximity of this route option, that the change in how the landscape is appears from the park as a result of the route option would be harmful to the HPG and associated core listed buildings. Towers should be avoided on this alignment to avoid or lower the level of harm. The route option crosses through the north-west tip of the Middleton	Two HPGs are crossed by the route option: ■ Plas Dinefwr ■ Middleton Hall (National Botanic Garden of Wales) There are four HPGs within 3km of the route option: ■ Taliaris – 2.6km north of the route option. ■ Aberglasney – 300m south of the route option. ■ Golden Grove – 1.7km south-west of the route option. ■ Paxton's Tower – 500m south-west of the route option. The route option runs through the north of Plas Dinefwr for approximately 560m. An 11kV line runs perpendicularly across the HPG this point, connecting to the listed buildings at the core of the HPG. The presence of an additional OHL, particularly one running counter to an existing OHL, is likely to alter the character of this section of the HPG and how it is experienced. This is likely to be harmful. The route option takes the same course as route option 5Sa relative to the Aberglasney HPG and associated LBs. The same considerations as outlined for that route apply to this route option and harm to these assets is likely. Golden Grove lies south-east of the route option. There are key views in the direction of the route option from the LBs at the HPG's core including the Grade II* mansion. Harm is, however, considered unlikely to arise as this would be at a distance of approximately 3.2km so the OHL would be likely blend into the landscape. Towers should be avoided on this alignment to assist it blending into the landscape. The route option takes the same course as 5Sa relative to the	**5Na** and **5Nb** are preferred as they have the fewest potential issues with HPGs. 5Sb is least preferred due to its likely harmful interactions with Plas Dinefwr and Middleton Hall.

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
		associated core listed buildings. Towers should be avoided on this alignment to avoid or lower the level of harm. Golden Grove lies south-east of the route option. There are key views in the direction of the route option from the LBs at the HPG's core including the Grade II* mansion. Harm is, however, considered unlikely to arise as this would be at a distance of approximately 3.9km so the OHL would be likely blend into the landscape. Towers should be avoided on this alignment to assist it blending into the landscape. The Middleton Hall and Paxton's Tower HPGs lie south of Llanarthne. They were built for the same family with the latter functioning as a satellite to the former and housing a tower commemorating Nelson (Grade II* LB). The house which lay at the core of Middleton Hall HPG is no longer extant but key views remain across the HPG to Paxton's Tower to the north-east and vice vera. Paxton's Tower is sited on a hill overlooking the Tywi Valley and has commanding views in all directions and is readily visible from the adjacent valley. The route option lies at some distance from the HPGs and not on the line of sight between the two. As such, no harm is likely to arise. For the remaining HPGs, information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that no harm is likely to arise to them as a result of this route option.	For the remaining HPGs, information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that no harm is likely to arise to them as a result of this route option.	mansion. Harm is, however, considered unlikely to arise as this would be at a distance of approximately 3.4km so the OHL would be likely blend into the landscape. Towers should be avoided on this alignment to assist it blending into the landscape. The route option lies approximately 90m north-west of the Middleton Hall HPG and approximately 1.4km north-west of Paxton's Tower HPG. It would not be on the line of sight between the two so this characteristic of both HPGs would be unaffected. It is possible that the presence of the route option in close proximity to the northern side of Middleton Hall HPG would alter how HPG is experienced and understood. It is possible that this may be harmful. For the remaining HPGs, information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that no harm is likely to arise to them as a result of this route option.	Hall HPG and runs approximately 470m north-west of the Paxton's Tower HPG. It would not be on the line of sight between the two so this characteristic of both HPGs would be unaffected. The presence of the route option in the Middleton Hall HPG would alter the character of the HPG and how this is experienced. It is likely that that this would be harmful. For the remaining HPGs, information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that no harm is likely to arise to them as a result of this route option.	Middleton Hall and Paxton's Tower HPGs and associated LBs. The same considerations as outlined for that route option apply to this route option. Harm to Middleton Hall is likely but is unlikely to arise for Paxton's Tower. For the remaining HPGs, information reviewed to date, including the Cadw layer for significant views from HPGs, indicate that no harm is likely to arise to them as a result of this route option.	
	Non-Designated Historic Assets	There are 34 Historic Environment Record (HER) entries located within the route option. There are 2606 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Llangathen ■ Llanarthne ■ Cloigyn The route option crosses through what is thought to be the site of	There are 34 HER entries located within the route option. There are 2601 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Llangathen ■ Cloigyn The route option takes the same course as route option 5NA relative to the medieval battle site north of Llangathen and the Roman road at Cloigyn	There are 44 HER entries located within the route option. There are 2579 HER entries located within 3km of the route option. The following locations have potential constraints associated with the presence of non-designated historic assets: ■ Pen-y-banc ■ Llangathen The route option crosses Pen-y-banc Cemetery west of the village. Physical change to this asset is to be avoided and towers are to be sited in a way which does not disrupt how the cemetery can be	There are 47 HER entries located within the route option. There are 2797 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Llangathen The route option crosses through what is thought to be the site of the Battle of Coed Llathen (1257).[8] The route option crosses through a defended enclosure of probable Iron Age date lies west of	There are 52 HER entries located within the route option. There are 2820 HER entries located within 3km of the route option. The following location has potential constraints associated with the presence of non-designated historic assets: ■ Llangathen The route option takes the same course as route option 5Sa relative to the medieval battle site north of Llangathen so the same considerations apply as outlined for that route option.	**5Sb** is preferred as it has fewest issues related to non-designated historic assets.

[8] DAT HER 99920

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
		the Battle of Coed Llathen (1257) north of Llangathen.[3] The route option runs across an Iron Age promontory fort west of Llanarthne.[4] Physical change to this asset is to be avoided and towers are to be sited in a way which does not disrupt how the two enclosures can be understood to relate to one another and the surrounding landscape. The route option crosses the Roman road Carmarthen to Loughor[5] west of Cloigyn.	so the same considerations apply as outlined for that route option apply.	appreciated as a relatively isolated rural cemetery. The route option crosses a group of burnt mounds – indicators of Bronze Age settlement activity – by Nant Stephanau north-east of Llangathen.[6] The route option crosses through what is thought to be the site of the Battle of Coed Llathen (1257).[7]	Llangathen at Lanlash.[9] This lies on a terrace above the Nant Lash. A scheduled prehistoric enclosure, Grongaer,[10] lies approximately 400 m south-south-east of the non-designated enclosure. Physical change to this asset is to be avoided and towers are to be sited in a way which does not disrupt how the two enclosures can be understood to relate to one another and the surrounding landscape.		
	Overall Preference for Cultural Heritage	**5Na, 5Nb or 5C are preferred in relation to the cultural heritage criterion, notwithstanding the preference for 5Sb with respect to non-designated historic assets, as these route options are likely to have the least potential for direct physical effects and effects related to setting change compared to 5Sa and 5Sb.**					
Hydrology, Hydrogeology and Geology	Main Rivers – Flood Risk	River Towy: Approximately 1km north of Llanarthne there is an approximately 1.2km section of route options 5Na and 5Nb crossing the medium and high risk flood zones. Based on the local topography, there are small areas within the route options which are at low risk and therefore may allow the placement of towers outside of these zones. However, it is likely multiple towers will be required within flood risk zones in this area.		River Towy: Approximately 2.3km north-east of Llanarthne and another section approximately 600m north of Llanarthne there are two approximately 1.1km sections of the route option crossing the medium and high risk flood zones. Based on the local topography, there are small areas within the route option which are at low risk and therefore may allow the placement of towers outside of these zones. However, it is likely multiple towers will be required within flood risk zones in this area.	River Towy: An approximately 2km stretch of route options 5Sa and 5Sb (running from approximately 2.1km north-east of Llanarthne to approximately 490m east of Llanarthne) crosses the medium and high risk flood zones. Based on the local topography, there are small areas within the route option which are at low risk and therefore may allow the placement of towers outside of these zones. However, it is likely multiple towers will be required within flood risk zones in this area.		**5Na and 5Nb** have the best opportunity for minimising the siting of towers within high and medium risk zones, and therefore are the preference**.** Placing of towers in the medium and high risk flood zones may be possible subject to Flood Consequence Assessment, but it is preferable for it to be minimised.
	Ordinary Waterbodies/ Watercourses – Flood Risk	All route options cross numerous small/ ordinary watercourses, each with a narrow (less than minimum tower span) zone of high or medium risk with respect to surface water and/ or river flooding. All could be spanned.					There is no preference as all route option cross numerous smaller watercourses.
	Peat	Immediately east of Allt Y Rhos Woodland there is a mapped area of peat (36,254 square metres (m^2)) which lies within the entire route option. However, the deposit is only 184m so therefore can be spanned and does not pose a constraint.	Where the Afon Ffinnant crosses the B4310 there is an area of mapped peat (38,000m^2) which lies within the route option, the span to cross the mapped peat deposits plus the adjacent B4310 is approximately 250m therefore should be feasible.	North-west of the National Botanical Garden of Wales there is a small oval section of peat (6,450m^2), although this is in the middle of the route option it is easily spannable and not considered a constraint. In the vicinity of the Nant-Y-Caws Landfill there are five of discrete mapped peat deposits (from east	South-east of Carmarthen along the shared 5Sa/5Sb route options (245828, 215955) there is a mapped area of peat (approximately 8,649m^2) which the route options slightly encroach into but can easily be spanned and therefore is not considered a constraint.		**5Sa and 5Sb** are the preference, however all route options are feasible with some spanning or consideration of tower siting within the route option.

[3] DAT HER 99924,99925
[4] DAT HER 644
[5] DAT HER 7459
[6] DAT HER 14133
[7] DAT HER 4759, 99916, 99917, 99921 & 99923
[9] DAT HER 108986
[10] CM082

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
		Between Allt Y Rhos Woodland and the A48 on the shared 5Na/5Nb route options there are four discrete peat areas (37,030m^2, 27,850m^2, 11,450 m^2 and 30,220 m^2). Based on their relative size within the route options, all may be spanned and therefore they are not considered to pose constraints. Immediately north of Nant-Y-Caws landfill there is a small 7,400m^2 area of peat which the route options slightly encroaches into but is spanned and therefore does not pose a constraint.		to west 14,000m^2, 5,000m^2, 4,120m^2, 31,230m^2 and 3,170m^2 respectively). These deposits are typically below the minimum tower span distance. However special consideration would need to be given to the 31,230m^2 peat area immediately south of the landfill, as other constraints have been noted in the vicinity, namely the landfill itself and high flood risk which may affect the ability to span this deposit.			
	SSSI (with Geodiversity Features)	None present.				As noted above, the Dinefwr estate SSSI (a mixed SSSI) passes adjacent to the route option, with all the geodiversity features of this SSSI being located outside of the route option.	There is no preference as no route options directly interact with the SSSI.
	Landfill Sites	Nant-Y-Caws landfill lies to the east of Nant-Y-Caws and south of the route option. Whilst the active landfill red line boundary recorded by Natural Resources Wales (NRW) is located approximately 229m from the route option, aerial imagery indicates previous works may have occurred closer to the route option (<40m). However, as this remains outside of the route option, it is not expected to pose a constraint.		Nant Y Caws landfill to the east of Nant-Y-Caws covers an area of approximately 20,000m^2 within the route option. Although spanning this feature may be possible it is unlikely that this will be permissible whilst it remains an active waste facility.	None present.		Due to the presence of Nant-Y-Caws landfill within route option 5C, **5Na, 5Nb, 5Sa and 5Sb** are preferred as these route options are unlikely to conflict with landfill sites.
	Local Authority Mineral Consultation Areas (MCAs) and Mineral Protection Areas (MPAs)	North-west of Llanarthne, there is an approximately 620m stretch of the shared 5Na/5Nb route options which crosses Category 1 and 2 sand and gravel deposits which would require multiple towers sited within the deposits to span it. No other deposits of note greater than the maximum tower span width have been identified along the route options.		North-east of Llanarthne there is an approximately 2.95km stretch of the route option which crosses Category 1 and 2 sand and gravel deposits which would require multiple towers sited within the deposits to span it. No other deposits of note greater than the maximum tower span width have been identified along the route option.	North-east of Llanarthne there is an approximately 2.3km stretch of the route options which crosses Category 1 and 2 sand and gravel deposits which would require multiple towers sited within the deposits to span it. At Llangathen there is an approximately 760m area of Category 2 sandstone deposits which would require multiple towers sited within the deposits to span it. No other deposits of note greater than the maximum tower span width have been identified along the route options.		Due to the limited interaction with mineral deposits, the preference is **5Na and 5Nb.**
	Restored Opencast Mining Sites/Mining Spoil Heaps	None present.			Approximately 1.7m north-west of Llandeilo there is a ceased extraction site; the nature of the mineral is not known but aerial imagery indicates an elongated feature with which the route option partially overlaps. This feature can be spanned and is not considered a constraint. Approximately 1.7m north-west of Llandeilo there is a ceased mineral extraction site marked within the route option. It is not clear what the nature of the extraction was here but historical quarries are present to the south-west of this point which may indicate a restored opencast quarry is present in the vicinity. Notwithstanding this, the feature can be spanned. Along the shared 5Sa/5Sb route options, approximately 2.1km west of Llandarog, there is a ceased mineral extraction site; the nature of the extraction is not known but	Along the shared 5Sa/5Sb route options, approximately 2.1km west of Llandarog, there is a ceased mineral extraction site; the nature of the extraction is not known but a distinct feature approximately 45m wide is noted and may be a restored quarry. This feature can be spanned.	**5Na, 5Nb** and **5C** are preferred due to the lack of interactions with mining/mineral extraction sites.

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
					a distinct feature approximately 45m wide is noted and may be a restored quarry. This feature can be spanned.		
	Overall Preference for Hydrology, Hydrogeology and Geology	**5Na and 5Nb are the preferred route options in relation to the hydrology, hydrogeology and geology criterion as they have the fewest interactions with potential constraints; the exception is peat, which is likely avoidable by 5Na and 5Nb via spanning or detailed tower siting.**					
Forestry	Ancient Woodland as per the Ancient Woodland Inventory (AWI)	The total area of AWI within the route option is 12.12 hectares (ha). Route options 5Na and 5Nb include a number of small AWI listed as Ancient Semi Natural Woodlands (ASNW) and Restored Ancient Woodland Sites (RAWS), with some minor elements of mainly mixed conifer Planted Ancient Woodland Sites (PAWS). ASNW and RAWS cross the width of route option 5Na south of Penybanc Uchaf and cannot be avoided.	The total area of AWI within this route option is 9.80 ha. Route options 5Na and 5Nb include a number of small ASNW and RAWS woodland, with some minor elements of mainly mixed conifer PAWS.	The total area of AWI within this route option is 6.29 ha. Route option 5C includes a small number of AWI small broadleaved woodlands which are mainly ASNW with some RAWS. RAWS are present across the full width of the route option north of Rhosmaen which cannot be avoided. ASNW is unavoidable within the route option at Langwm Farm, south of Glascoed-Fach and east of Fforest-isaf.	The total area of AWI within this route option is 13.04 ha. Route options 5Sa and 5Sb include many small AWI, mainly ASNW with some RAWS, and an area of PAWS. There is a small broadleaved ASNW which spans the majority of the route option 5Sa south of Glan Myddyfi and may be unavoidable.	The total area of AWI within this route option is 14.62 ha. Route options 5Sa and 5Sb include many small AWI, mainly ASNW with some RAWS, and an area of PAWS. An area of RAWS and ASNW north-east of Pen-y-banc farm is unavoidable within route option 5Sb.	AWI is present within all the route options. **5Nb** is preferred; although 5C has a lower overall amount of AWI within it, 5Nb is likely to have the greatest potential of avoiding AWI through detailed routeing.
		ASNW at Cwmysgyfarnog spans almost the entirety of the route options with the exception of a small gap at its southern edge. ASNW and RAWS at Cefnllwydcoed may be avoidable during detailed routeing, although these span the majority of the route options.			Areas of ASNW and RAWS at Pont Felin-gât and Pantycwarre cross the full width of the route options and will not be avoidable. ASNW also crosses the width of the route options to the north-west of Pen-y-maes. ASNW south of Iscwm spans the majority of the route options with the possible exception of a gap near the route's centre. ASNW may be avoidable during detailed design at Pen Heol Fawr, but only by routeing through an area of PAWS to the south.		
	Commercial Conifer and Other Woodlands as per the National Forest Inventory (NFI)	The total area of other woodland within the route option is 23.29 ha. Route option 5Na includes typically small broadleaved woodlands with some minor conifer plantations. Other broadleaved woodlands are present across the full width of the route option to the south of Penybanc Uchaf, at Abbey Farm and north of Gelli-uchaf. These areas of broadleaved woodland cannot be avoided. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together. Examples of such areas are Wern-fawr Dingle, north-east of Pen y banc and at Cwmysgyfarnog.	The total area of other woodland within the route option is 14.75 ha. Route option 5Nb includes typically small broadleaved woodlands with some minor conifer plantations. Other broadleaved woodlands are present across the full width of the route option to the north of Gelli-uchaf. These areas of broadleaved woodland cannot be avoided. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together. Examples of such areas are Wern fawr Dingle, north-east of Pen y banc and at Cwmysgyfarnog.	The total area of other woodland within the route option is 28.10 ha. Route option 5C includes many small broadleaved woodlands. Several broadleaved woodlands extend across the full width of the route option and cannot be avoided; these are located to the west of Broad Oak, east of Wern, at Gelli-dywylli, north-west of Penrhiw, south of Blaenisfael and near Iscwm. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together. Examples of such areas include Llwyncelyn Farm.	The total area of other woodland within the route option is 14.14 ha. Route option 5Sa includes a number of small broadleaved woodlands and a small area of mainly mixed conifer. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together. Examples of such areas include south of Glan Myddyfi, at Pont Felin-gât, Pantycwarre, Iscwm and at Pen-y-maes.	The total area of other woodland within the route option is 13.54 ha. Route option 5Sb includes a number of small broadleaved woodlands. There are areas of "other woodland" associated with AWI within the route option; for some of these areas, although the other woodland is avoidable in itself, the AWI/other woodland mix is not avoidable taken together. Examples of such areas include north-east of Pen y banc Farm, at Pont Felin-gât, Pantycwarre, Iscwm and at Pen-y-maes.	All route options contain broadleaved woodland that cannot be avoided. **5Sa** and **5Sb** are preferred with respect to containing a lower overall amount of other woodlands.
	Overall Preference for Forestry	**Overall there is a preference for 5Nb in relation to the forestry criterion due to the potential for AWI to be avoided by detailed routeing.**					
Land Use	Infrastructure	There is one single wind turbine (including the turbine tip height plus 10% buffer) located within each of the route options. These turbines (plus the turbine tip height plus 10% buffer) can be avoided in each case through detailed design.					There is no preference. 5Na and 5Nb interact (crossing

<table>
<tr><th>Topic</th><th>Consideration</th><th colspan="2">Route Option 5Na</th><th>Route Option 5Nb</th><th>Route Option 5C</th><th colspan="2">Route Option 5Sa</th><th>Route Option 5Sb</th><th>Preference</th></tr>
<tr><td rowspan="4"></td><td rowspan="4"></td><td colspan="3" rowspan="2">The route options require crossing existing 33kV OHL infrastructure on one occasion and existing 132kV OHL infrastructure on one occasion.

The route options cross an existing 33kV OHL to the north-west of Llanarthne. The OHL then runs within the route options for approximately 730m in a north-east to south-west direction until Dan-yr-allt and is unavoidable.

At Llwynfilltir, the route options cross the existing 132kV Brechfa OHL which then runs within the route options for approximately 3km to the proposed substation siting area. Where the route options enter the proposed substation siting area, the Brechfa OHL would need to be crossed.</td><td rowspan="2">The route option requires crossing existing 33kV OHL infrastructure on one occasion.

The route option interacts with an existing 33kV OHL to the north-east of Rhosmaen which then runs within the route option for approximately 1.6km in east-west direction until the south-west of Pen-y-banc. The OHL could be avoided at this location through detailed routeing.

The route option crosses the same OHL again to the east of Felindre; the OHL then runs within the route option for approximately 1.7km in a north-east to south-west direction until the north of Llanarthne and is unavoidable.</td><td colspan="2">The route options require crossing existing 33kV OHL infrastructure on three occasions.

The route options interact with an existing 33kV OHL at the start of section 5, north-east of Llandeilo. The OHL runs within the route options for approximately 750m before connecting into the Llandeilo Substation which is also present within the route options. The route options interact with an additional 33kV OHL to the north-east of Llandeilo which then runs within the route options for approximately 230m before also connecting into the Llandeilo Substation. The route options will be unable to avoid both of these OHLs and will require crossing at least one of them at this location.

The route options interact with a further 33kV OHL which also connects into the Llandeilo Substation which runs within the route option in an east-west direction from the Llandeilo Substation for approximately 600m until the north of Llandeilo. This OHL could be avoided through detailed routeing.</td><td rowspan="4">and proximity) with the Brechfa OHL whereas 5C, 5Sa and 5Sb interact (crossing and proximity) with the Felindre to Three Cocks gas pipeline.

5Sa and 5Sb have more OHL crossings overall, however, they are lower voltage and could be undergrounded.</td></tr>
<tr><td>Route option 5Sa interacts with the same OHL which runs in an east-west direction from the Llandeilo substation to the north-west of Llangathen. The OHL then runs within the route option for approximately 1.2km until the north of Llangathen and is unavoidable.</td><td>Route option 5Sb interacts with the same OHL which runs in an east-west direction from the Llandeilo substation to the north-east of Llangathen. The OHL then runs within the route option for approximately 500m until the north of Llangathen and is unavoidable.</td></tr>
<tr><td colspan="3">The route options do not cross any existing gas infrastructure.</td><td>The route option interacts with the Felindre to Three Cocks gas pipeline at the start of section 5, north-east of Llandeilo. The pipeline runs within the route option in a north-east to south-west direction for approximately 430m until the north-east of the Llandeilo substation and is unavoidable.

The route option interacts with the pipeline again to the north of Llandeilo which then runs within the southern extent of the route option in an east-west direction for approximately 400m until the east of Pontbren. The pipeline could be avoided through detailed routeing at this location.

The route option interacts with the pipeline again south of Pontbren, which then runs within the southern extent of the route option in an east-west direction for approximately 500m until the south-west of Pen-y-banc. The pipeline could also be avoided through detailed routeing at this location.</td><td colspan="2">The route options interact with the Felindre to Three Cocks gas pipeline at the start of section 5, north-east of Llandeilo. The pipeline runs within the route option in a north-east to south-west direction for approximately 370m until the Nant Harri. The pipeline could be avoided through detailed routeing at this location.

The route options interact with the pipeline again to the north-east of Llandeilo substation where the pipeline then runs within the route options for approximately 1.2km and is unavoidable. The route options will need to cross the pipeline twice at this location.

The route options briefly interact with the pipeline again to the east of Pontbren which then runs within the northern extent of the route option in an east-west direction for approximately 300m until the south of Pontbren. The pipeline could be avoided through detailed routeing at this location.

To the east-north-east of Llangathen, the route options cross the pipeline once more which is unavoidable. The route options cross close to perpendicular to the pipeline at this location.</td></tr>
<tr><td colspan="3">The route options cross close to perpendicular to the A40 to the east of Llanegwad. In this location, the route options also cross the River Towy which is approximately 350m south of the road. The route options will therefore, require to span both the road and watercourse</td><td>The route option crosses the A40 to the north of Felindre. Approximately 200m to the south-west of the A40, route option also crosses the River Dulas. The route option will therefore, require to</td><td colspan="2">There are no constraints within the route options as a result of existing road infrastructure.</td></tr>
</table>

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
		at this location, and so detailed tower siting would need to be considered.		span both the road and watercourse at this location, and so detailed tower siting would need to be considered.			
	Committed Development (Consented and Undetermined Planning Applications)	There are two consented non-residential committed developments located within the route options (four were identified within the relevant data but two appear to have already been constructed). One of the non-residential developments is for the provision of an anaerobic digestion (AD) plant at the Nantycaws landfill site. The application for the AD plant was consented in 2015 and based on aerial photography, there is no evidence that the development has been constructed. The Carmarthenshire online planning portal also does not appear to contain any documents related to the discharge of pre-commencement conditions. It is therefore, assumed that the consent for this committed development may have expired. There are also two residential committed developments located within the route options. One of these is currently undetermined; the other is consented. All committed development can be avoided through detailed design.		There is one consented non-residential committed development present within the route option. This can be avoided through detailed design.	There are two consented non-residential committed developments located within the route option (three were identified within the relevant data but one appears to have already been constructed). Both can be avoided through detailed design.	There is one consented residential committed development located within the route option. There are also three consented non-residential committed developments located within the route option (five were identified within the relevant data but two appear to have already been constructed). All committed development can be avoided through detailed design.	**5C** is preferred as the fewest number of committed developments are present within this route option.
	Local Development Plan (LDP) Allocations	There are no Carmarthenshire LDP allocations present within the route options.		The route option crosses into a minor area of the Carmarthenshire Adopted LDP Penybanc Development Limit.	The route options cross into a minor area of the Carmarthenshire Adopted LDP Rhosmaen Development Limit.		**5Na** and **5Nb** are of equal preference as there are no LDP allocations present within the route option.
	Best and Most Versatile (BMV) Agricultural Land (Grades 1, 2 and 3a)	There is 53.78 ha of BMV agricultural land present within these route options. This cannot be avoided through detailed design.		There is 100.18 ha of BMV agricultural land present within the route option. This cannot be avoided through detailed design.	There is 94.51 ha of BMV agricultural land present within the route option. This cannot be avoided through detailed design.		**5Na** and **5Nb** are of equal preference as these contain the smallest area of BMV agricultural land.
	Overall Preference for Land Use	**Overall, 5Na and 5Nb are of equal preference in relation to the land use criterion. There are no Carmarthenshire LDP allocations present within these route options and they contain the least BMV agricultural land.**					
Overall Emerging Preference: 5C as far as Llanfawr, before transferring to 5Nb north-east of Pen-y-banc via a short new link.		5Na and 5Nb are preferred in relation to biodiversity as these options cross the Afon Tywi SAC/SSSI and the Gwendraeth Fach and their tributaries the fewest times. These route options do not cross any other SSSIs, NNRs or Wildlife Trust Reserves. 5Na and 5Nb are generally preferred in relation to landscape and visual effects, and 5Nb is preferred to 5Na, due to its potential to minimise potential effects upon woodland than 5Na. Consistent with this, 5Nb is also the preference with respect to forestry. The exception to the preference for 5Na and 5Nb on landscape and visual grounds is the first (approximately) 3km of 5Na/5Nb where consented glamping pods north of Letty-maeliog, potentially in combination with consented holiday accommodation at Lletty-maeliog and consented additional accommodation at Brynteg, would create a constrained pinch point with notable changes of line direction being needed, requiring large angle towers close to properties. The overall landscape and visual preference is therefore to follow 5C as far as Llanfawr, before returning to 5Na/5Nb north-east of Pen-y-banc. This section of 5C is routed on lower ground than 5Na/5Nb. In relation to cultural heritage, 5Na/5Nb or 5C route options are preferred overall. If 5Na/5Nb is chosen, potential effects on Listed Buildings, including the listed LLwyncelyn Farm, will require to be addressed during the detailed design stage, such as by siting of the OHL and towers within the route option to maximise clearance of this property. In relation to hydrology, hydrogeology and geology, 5Na and 5Nb are preferred. In relation to land use, 5Na and 5Nb are of equal preference. There are no Carmarthenshire LDP allocations present within the route options and they contain the least BMV agricultural land. Other criteria and sub-criteria are not considered to justify departing from the landscape and visual-led preference for the ‘mixed’ option of 5Nb for the majority of the route with the exception of the initial section, where following 5C allows avoidance of visual effects on glamping pods and other accommodation near Letty-maeliog.					

Appendix F – Route Options Appraisal Technical Review – Method and Scope

Green GEN Towy Usk

Route Options Appraisal Technical Review – Method and Scope

Design and Construction Considerations

A technical review of the route options has been undertaken and is summarised at **Appendix G**.

The technical review has taken account of the following considerations:

Changes in Direction – Use of Angle Towers

Changes in route direction would require an angle tower to create the turn. Angle towers have a greater visual impact, they are larger, heavier, require larger foundations, need a greater work area, include more components and require more maintenance than a line tower.

Angle towers are more expensive in terms of materials and the time required to build and install the components.

Good route design and compliance with the “Holford Rules” should seek to reduce the number of angle towers, although one approximately every 3.5 kilometres (km) would help to avoid mid span joints which reduces the risk of additional maintenance.

Access

A haul road could be required for the length of the route to allow plant, equipment and materials to be deployed in an efficient and economic manner. The potential for this will be considered as the project develops through to the detailed design stage.

Access from the highway to the haul route, i.e. the site access points, is important to avoid excessive haul road trafficking and this access should be fairly frequent, (approximately every 4km in general).

Highway routes to the site access points should be capable of carrying large transport units and a large weight of material.

Terrain

The terrain has been reviewed to determine any issues that may affect constructability such as steep slopes or boggy ground.

Wind Turbines

A separation distance between overhead lines and turbines of three times the turbine’s rotor diameter is desirable to avoid damage to the conductor from wind turbulence.

In the absence of consideration of wind turbulence, a separation distance of turbine tip height plus 10% would be recommended to manage risks related to the possibility of a turbine falling.

Woodland

For certain sections of the overhead line route it would be necessary to remove woodland to accommodate the access routes, tower foundations and to provide electrical clearance underneath the overhead line.

The clearance of woodland for this purpose would involve removing the trees above ground level.

For access routes and clearance, grinding the stump/roots to just below ground level would suffice. However this can lead to issues in the future as the remaining timber rots which leaves an uneven surface or could create a void which may cause injury to people or animals using the land.

For areas where tower foundations are to be constructed it would be necessary to remove the tree roots as far as possible.

The activities in connection with the above would result in additional cost.

Third Party Services

A detailed survey of the proposed routes is required to determine the presence of third party utility services which may need to be diverted or protected during the construction of the overhead line.

On the basis of currently available information and the key potential interactions between the OHL and other services, the present technical review has taken into account a high pressure gas pipeline, a 66 kilovolt (kV) overhead line and a 132kV overhead line only.

Appendix G – Route Options Appraisal Technical Review Tables

Table G.1: Section 1 Route Options Technical Appraisal

Topic	Consideration	Route Option 1N	Route Option 1C	Route Option 1S	Preference
Design, Construction and Technical considerations	**Route Length**	Route option 1C is the shortest and therefore likely to be the lowest cost but not significantly.			Although there is no clear preference in terms of cost and route length, 1C is the shortest route.
	Changes in Direction Use of Angle Towers	This route option could result in approximately nine changes of direction.	This route option could result in approximately 14 changes of direction.	This route option could result in approximately 14 changes of direction.	There is a preference for **1N** which could have the fewest changes in direction.
	Access Access to the site roads from the public highway.	Route option 1N is well served by the A44 and A481 which has adequate capacity for heavy goods vehicles (HGVs).	Route option 1C is well served by the A44 and A481 which has adequate capacity for HGVs.	Route option 1S is well served by the A44 and A481 which has adequate capacity for HGVs.	There is no preference in terms of access.
	Terrain	No significant issues.	No significant issues.	No significant issues.	There is no preference in terms of terrain.
	Obstacles	The following obstacles have been identified through reference to the route options environmental appraisal: ■ Flood Risk, Camnant Brook: An approximately 95 metres (m) span would be required to avoid the high risk zone at Bryntwppa (308694,254384). ■ Flood Risk, River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506). These spans could be accommodated using standard tower design.	The following obstacles have been identified through reference to the route options environmental appraisal: ■ Flood Risk, River Edw: An approximately 145m span would be required to avoid the high risk zone south of Blaen Edw (314797,259016). This span could be accommodated using standard tower design. ■ Flood Risk, River Edw: An approximately 240m span would be required to avoid the high risk zone south of Blaen Edw (314360,258412). This span could be accommodated by using standard towers with body extensions. ■ Flood Risk, Camnant Brook: An approximately 360m to 620m span would be required to avoid the high risk zone north of Matts Common (309141,254036). This is wider than the likely maximum span distance and would therefore, likely require placing towers within a high risk zone. These spans would require special high towers and conductor. Alternatively, standard towers could be built in the floodplain using foundations designed to marine standards. ■ Flood Risk, River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506). This span could be accommodated using standard tower design.	The following obstacles have been identified through reference to the route options environmental appraisal: ■ Flood Risk, River Edw: An approximately 145m span would be required to avoid the high risk zone south of Blaen Edw (314797,259016). This span could be accommodated using standard tower design. ■ Flood Risk, River Edw: An approximately 240m span would be required to avoid the high risk zone south of Blaen Edw (314360,258412). This span could be accommodated by using standard towers with body extensions. ■ Flood Risk, River Edw: An approximately 120m span would be required to avoid the high risk zone south of Frank's Bridge (311652,255506). This span could be accommodated using standard tower design. ■ Mineral deposit, The area of sand and gravel deposits near Mithil Brook (314952,259031). This is approximately 250m at widest. This span could be accommodated by using standard towers with body extensions.	The preference is for **1N** to avoid extended towers, special towers or special foundations.
	Wind Turbines Proximity to Wind Turbines	No current issue.	There is a single wind turbine within this route option near Tremaen. It is avoidable within the route option.	No current issue.	There is a slight preference for **1N** and **1S** as these do not contain wind turbines
	Woodland	No significant issues.	No significant issues.	No significant issues.	There is no preference in terms of woodland.

	Third Party Services	Nothing known of any significance.	Nothing known of any significance.	Nothing known of any significance. It would be necessary to cross the 66kV OHL network at the junction of route sections 1 and 2. This and other related 66kV route crossings are discussed in relation to section 2.	There is no preference in terms of third party services.
	Design and Construction Preference	**Based on potentially fewer changes in direction and fewer requirements related to spanning flood risk areas there is a technical preference for 1N.** **If 1N was used to Franks Bridge and 1S to the south of Franks Bridge, there could potentially be up to twelve angle towers required.**			

Table G.2: Section 2 Route Options Technical Appraisal

Topic	Consideration	Route Option 2N	Route Option 2C	Route Option 2S	Preference
Design, Construction and Technical considerations	**Route Length**	The differences in route length across all of the route options is 0.54 kilometres (km) which could result in route option 2N being the lowest cost.			**2N** is the preferred route option as it could be the lowest cost.
	Changes in Direction Use of Angle Towers	This route option could result in approximately 12 changes of direction.	This route option could result in approximately 16 changes of direction.	This route option could result in approximately 14 changes of direction.	There is a preference for **2N** which could have the fewest changes in direction.
	Access Access to the site roads from the public highway.	The route option is well served by the A483 which has an adequate capacity for heavy goods vehicles (HGVs).	The route option is well served by the A483 which has an adequate capacity for HGVs.	The route option is well served by the A483 which has an adequate capacity for HGVs.	There is no preference in terms of access.
	Terrain	No significant issues.	No significant issues.	No significant issues.	There is no preference in terms of terrain.
	Obstacles	The following obstacle has been identified through reference to the route options environmental appraisal: ■ Flood Risk, River Wye: On the route option east of Builth Wells, a minimum 1,074 metres (m) span would be required to cross the high risk zone (305740,251460) which would require the placement of multiple towers within the high risk zone. A span of 1,074m would require special high towers and conductor. Alternatively standard towers could be built in the floodplain using foundations designed to marine standards.	The following obstacle has been identified through reference to the route options environmental appraisal: ■ Flood Risk, River Wye: On the shared 2C and 2S route options east of Builth Wells a minimum 325m span would be required to cross the high risk zone (306272,251066) which would require placement of a tower within the high risk zone. A span of 325m could be accommodated using standard towers with body extensions.	The following obstacles have been identified through reference to the route options environmental appraisal: ■ Flood Risk, River Wye: On the shared 2C and 2S route options south of Builth Wells a minimum 325m span would be required to cross the high risk zone (306272,251066) which would require placement of a tower within the high risk zone. A span of 325m could be accommodated using standard towers with body extensions. ■ Flood Risk, River Irfon: Along the route option west of Builth Wells an 806m span would be required to cross the high risk zone (301245,250646), this would require placement of multiple towers within the high risk zone. A span of 806m would require special high towers and conductor. Alternatively standard towers could be built in the floodplain using foundations designed to marine standards	There would be a preference for **2C** in this case to avoid long spans requiring higher than usual towers or marine foundations.
	Wind Turbines Proximity to Wind Turbines	No current issue.	No current issue.	No current issue.	Not applicable.
	Woodland	It will be necessary to remove woodland in the area of Hendre and a number of other areas across the three route options, which will increase the scope of civil engineering work for access and foundations.	It will be necessary to remove woodland in the area of Hendre and a number of other areas across the three route options, which will increase the scope of civil engineering work for access and foundations.	It will be necessary to remove woodland in the area of Hendre, and a number of other areas across the three route options, which will increase the scope of civil engineering work for access and foundations.	Differences in the likely amount or location of required woodland removal are not sufficient to result in a strong preference in technical terms.
	Third Party Services	It will be necessary to cross the 66 kilovolt (kV) OHL network close to the substation at Builth Wells. The crossing could be accommodated using extended height towers or undergrounding the 66kV OHL. Nothing else of significance is known.	It will be necessary to cross the 66kV OHLnetwork close to the substation at Builth Wells. The crossing could be accommodated using extended height towers or undergrounding the 66kV OHL. Nothing else of significance is known.	It will be necessary to cross the 66kV OHL network close to the substation at Builth Wells. The crossing could be accommodated using extended height towers or undergrounding the 66kV OHL. Nothing else of significance is known.	There is no preference in terms of third party services.
	Design and Construction Preference	**Based on the reduced number of direction changes and its length 2N is favourable, however the flood risk issues east of Builth Wells could require significant engineering to avoid damage to the tower foundations.** **2C would avoid the flood risk but has several direction changes.** **From a technical perspective, the preference would be for the consideration of a route using 2C from the east to south of Builth Wells, then joining 2N.**			

Table G.3: Section 3 Route Options Technical Appraisal

Topic	Consideration	Route Option 3N	Route Option 3C	Route Option 3Sa	Route Option 3Sb	Preference
Design, Construction and Technical considerations	**Route Length**	The differences in route length across all of the route options is 0.75 kilometres (km) which could make route option 3N the lowest cost.				**3N** is the shortest route option and is therefore the preference in terms of length and cost.
	Changes in Direction Use of Angle Towers	This route option could result in approximately 16 changes of direction.	This route option could result in approximately 22 changes of direction.	This route option could result in approximately 19 changes of direction.	This route option could result in approximately 20 changes of direction.	There is a preference for **3N** which could have fewer changes of direction.
	Access Access to the site roads from the public highway.	The route option is served by the A483 at both ends from Garth to Cynghordy with adequate capacity for heavy goods vehicles (HGVs); however, parallel to the route option there is only a minor road between those two points. The minor road supports traffic for agriculture and forestry which must present a nuisance factor but that is possibly considered acceptable by the local population. Site access points will be required along this section because building approximately 19km of route from a haul road will lead to issues. It could be possible to provide a series of access points from the highway in such a manner that construction traffic avoids Tirabad.	The route option is served by the A483 at both ends from Garth to Cynghordy with adequate capacity for HGVs; however, parallel to the route option there is only a minor road between those two points. The minor road supports traffic for agriculture and forestry which must present a nuisance factor but that is possibly considered acceptable by the local population. Site access points will be required along this section because building approximately 19km of route from a haul road will lead to issues. It could be possible to provide a series of access points from the highway in such a manner that construction traffic avoids Tirabad.	The route option is served by the A483 at both ends from Garth to Cynghordy with adequate capacity for HGVs; however, parallel to the route option there is only a minor road between those two points. The minor road supports traffic for agriculture and forestry which must present a nuisance factor but that is possibly considered acceptable by the local population. Site access points will be required along this section because building approximately 19km of route from a haul road will lead to issues. It could be possible to provide a series of access points from the highway in such a manner that construction traffic avoids Tirabad.	The route option is served by the A483 at both ends from Garth to Cynghordy with adequate capacity for HGVs; however, parallel to the route there is only a minor road between those two points. The minor road supports traffic for agriculture and forestry which must present a nuisance factor but that is possibly considered acceptable by the local population. Site access points will be required along this section because building approximately 19km of route from a haul road will lead to issues. It could be possible to provide a series of access points from the highway in such a manner that construction traffic avoids Tirabad.	Access to the site access points is an issue in Section 3 and this is common to all four options.
	Terrain	No significant issues.	No significant issues.	No significant issues.	No significant issues.	There is no preference in terms of terrain.
	Obstacles	The following obstacle has been identified through reference to the route options environmental appraisal: - Flood Risk, Afon Brân and its tributaries: On the route option south-west of Cynghordy (280216,239519) there are two spans of approximately 460 metres (m) and 495m required to cross the Afon Brân and its tributaries. This may require the placement of multiple towers within the high risk zone. A span of approximately 500m would require special towers and conductor. An alternative would be to use standard towers in the floodplain with marine design foundations.	The following obstacle has been identified through reference to the route options environmental appraisal: - Flood Risk, Afon Brân: South of Cynghordy (279917,238807) there is an approximately 900m span required which may require the placement of multiple towers within the high risk zone. A span of 900m would require special towers and conductor. An alternative would be to use standard towers in the floodplain with marine design foundations.	The following obstacles have been identified through reference to the route options environmental appraisal: - Flood Risk, River Irfon: West of Llangamarch Wells (292501,247118) there is an approximately 330m span required which may require the placement of a tower within the high risk zone. - Flood Risk, Afon Brân: South of Cynghordy (279917,238807) there is an approximately 900m span required which may require the placement of multiple towers within the high risk zone. A span of 330m could be accommodated using a standard tower with tower body extensions. A span of 900m would require special towers and conductor. An alternative would be to use standard towers in the floodplain with marine design foundations.	The following obstacles have been identified through reference to the route options environmental appraisal: - Flood Risk, River Irfon: West of Llangamarch Wells (292501,247118) there is an approximately 330m span which may require the placement of a tower within the high risk zone. - Flood Risk, Afon Brân: South of Cynghordy (279917,238807) there is an approximately 900m span required which may require the placement of multiple towers within the high risk zone. Spans of 330m or 900m would require special towers and conductor. An alternative would be to use standard towers in the floodplain with marine design foundations.	The preference would be **3N** as it has the least flood risk issue. In terms of visual impact, a foundation solution would be preferable to a high tower solution.

	Wind Turbines Proximity to Wind Turbines.	No current issue.	No current issue.	No current issue.	No current issue.	Not applicable.
	Woodland	Approximately 5km of woodland would require removal which will add to the cost of access and foundation works.	Approximately 3km of woodland would require removal which will add to the cost of access and foundation works.	Approximately 2km of woodland would require removal which will add to the cost of access and foundation works.	Approximately 2km of woodland would require removal which will add to the cost of access and foundation works.	The preference would be **3Sa** and **3Sb** based on reduced woodland removal.
	Third Party Services	Nothing of significance is known.	Nothing of significance is known.	Nothing of significance is known.	Nothing of significance is known.	There is no preference in terms of third party services.
	Design and Construction Preference	**In terms of the route length, the fewest number of direction changes and the shortest flood risk aspect, 3N is preferable from a technical perspective.** **A potential issue with 3N is the amount of woodland clearance required, and in this respect 3C is preferable. However, the additional 400m of flood risk engineering for 3C would outweigh the additional 2km of woodland clearance for 3N.** **Therefore, 3N is the overall preference from a technical perspective.**				

Table G.4: Section 4 Route Options Technical Appraisal

Topic	Consideration	Route Option 4N	Route Option 4C	Route Option 4Sa	Route Option 4Sb	Preference
Design, Construction and Technical considerations	**Route Length**	The differences in route length across all of the route options is 1.58 kilometres (km) which could result in route option 4C having the lowest cost.				**4C** is the shortest route option and is therefore the preference in terms of length and cost.
	Changes in Direction Use of Angle Towers	This route option could result in approximately 16 changes of direction.	This route option could result in approximately 19 changes of direction.	This route option could result in approximately 24 changes of direction.	This route option could result in approximately 23 changes of direction.	There is a preference for **4C** which could have the fewest direction changes.
	Access Access to the site roads from the public highway.	The route option is served by the A483 and A40 which have adequate capacity for heavy goods vehicles (HGVs).	The route option is served by the A483 and A40 which have adequate capacity for HGVs.	The route option is served by the A483 and A40 which have adequate capacity for HGVs.	The route option is served by the A483 and A40 which have adequate capacity for HGVs.	There is no preference in terms of access.
	Terrain	No significant issues.	No significant issues.	No significant issues.	No significant issues.	There is no preference in terms of terrain.
	Obstacles	The following obstacles have been identified through reference to the route options environmental appraisal: ■ Flood Risk, Afon Dulas: In the far south-west section of the route option an approximately 250 metres (m) span is required to cross the high and medium risk zones.	The following obstacles have been identified through reference to the route options environmental appraisal : ■ Biodiversity, Derwen-fach Meadow Site of Special Scientific Interest (SSSI), for approximately 260m which is designated for its species-rich wet pasture. It may be possible to avoid this SSSI through spanning. A span of 260m could be accommodated with standard towers using body extensions. ■ It has been identified that, to the west of Llandovery, the A40, the river Towy and the railway run close together within a combined width of approximately 550m. A span of approximately 550m would require special towers and conductor. ■ Flood Risk, River Towy: North of Llandovery, along the shared 4C/4Sa/4Sb route options, there is an approximately 290m span required to span high risk zones associated with the River Towy. This may require placing a tower in the medium or high risk zones. A span of 290m could be accommodated with standard towers using body extensions.	The following obstacles have been identified through reference to the route options environmental appraisal: ■ It has been identified that, to the west of Llandovery, the A40, the river Towy and the railway run close together within a combined width of approximately 550m. A span of approximately 550m would require special towers and conductor. ■ Flood Risk, Tributaries of the River Towy to the south and east of Felindre: Multiple crossings, shorter than the likely maximum feasible tower span, are present here. The crossing south of Felindre of the Afon Sawdde requires an approximately 300m span but it is considered that with careful design this area may be spanned. A span of 300m could be accommodated with standard towers using body extensions.	The following obstacles have been identified through reference to the route options environmental appraisal: ■ It has been identified that, to the west of Llandovery, the A40, the river Towy and the railway run close together within a combined width of approximately 550m. A span of approximately 550m would require special towers and conductor. ■ Flood Risk, Tributaries of the River Towy to the south and east of Felindre: Multiple crossings, shorter than the likely maximum feasible tower span, are present here. The crossing south of Felindre of the Afon Sawdde requires an approximately 300m span but it is considered that with careful design this area may be spanned. A span of 300m could be accommodated with standard towers using body extensions.	There is a preference for **4N** which would avoid a long span requirement.
	Wind Turbines Proximity to Wind Turbines	No current issue.	No current issue.	No current issue.	No current issue.	Not applicable.
	Woodland	Nothing of significance.	Nothing of significance.	Nothing of significance.	Nothing of significance.	
	Third Party Services	The Felindre to Three Cocks high pressure gas pipeline crosses the route option three times. The temporary and permanent works could be managed around this issue.	The Felindre to Three Cocks high pressure gas pipeline crosses the route option five times and runs within the route option for approximately 2km at the southern end of the section. The temporary and permanent works could be managed where the gas pipeline	The Felindre to Three Cocks high pressure gas pipeline crosses the route option once. The temporary and permanent works could be managed around this issue.	The Felindre to Three Cocks high pressure gas pipeline runs within the route option for approximately 2km; its location within the route option is not consistent. The asset operator will have certain requirements to limit and manage risks concerning the interaction of the gas pipeline and the OHL, relating for example to proximity of	The preference is for **4N** or **4Sa** to reduce interaction with the high pressure gas pipeline.

			crosses the route option but in the cases where the gas pipeline and overhead line (OHL) run in parallel it would be advisable to maintain separation between the two.		the two (temporary and permanent works). On this basis, route options 4N and 4Sa are preferred.	
	Design and Construction Preference	**Based on potentially fewer direction changes, reduced spanning requirements and the reduced potential for interactions with the high pressure gas pipeline, from a technical perspective the preferred route option is 4N**				

Table G.5: Section 5 Route Options Technical Appraisal

Topic	Consideration	Route Option 5Na	Route Option 5Nb	Route Option 5C	Route Option 5Sa	Route Option 5Sb	Preference
Design, Construction and Technical considerations	**Route Length**	The differences in route length across all the route options is 0.42 kilometres (km) which could result in route option 5Sa having the lowest cost.					In terms of route length, **5Sa** would be the preference in terms of length and cost.
	Changes in Direction Use of angle towers	This route option could result in approximately 17 changes of direction.	This route option could result in approximately 17 changes of direction.	This route option could result in approximately 18 changes of direction.	This route option could result in approximately 18 changes of direction.	This route option could result in approximately 17 changes of direction.	No clear preference.
	Access Access to the site roads from the public highway	All five route options are fairly close and all are served by the A40, A484, B4300 and B4310 which have adequate capacity for heavy goods vehicles (HGVs).					No clear preference.
	Terrain	All five route options are fairly close and there are no significant issues.					No clear preference.
	Obstacles	An issue has been raised in the environmental appraisal with regard to high risk flood zones around the River Towy which are unavoidable. It is likely that towers will be constructed using foundations designed to marine standards.					No clear preference.
	Wind Turbines Proximity to wind turbines	There is one single wind turbine located within each of the route options. All are avoidable within the route option, although avoiding the turbine within route options 5Na and 5Nb would take the overhead line (OHL) closer to Brechfa 132 kilovolt (kV) line (please see below).					No clear preference.
	Woodland	All five route options are fairly close and there are no significant issues.					No clear preference.
	Third Party Services	The 132kV Brechfa Line runs within the route option for approximately 3km. To avoid issues regarding access and damage it would be prudent to avoid building the OHL close to this asset.		The Felindre to Three Cocks high pressure gas pipeline is adjacent to the route option where it crosses to the north of Llandeilo. The temporary and permanent works could be managed but it would be advisable to maintain separation between the OHL and pipeline.	The Felindre to Three Cocks high pressure gas pipeline crosses the route option perpendicularly which is manageable. However, the pipeline runs within the joint route options of 5Sa and 5Sb for approximately 2.5km, to the north of Llandeielo. The asset operator will have certain requirements to limit and manage risks concerning the interaction of the gas pipeline and the OHL, relating for example, to proximity of the two (temporary and permanent works). Route options 5Na, 5Nb and 5C are therefore preferred to 5Sa and 5Sb with respect to potential interactions with gas services.		**5C** is preferable as it has the lowest interaction with third party services.
	Design and Construction Preference	**5C is preferred from a technical perspective as it has the lowest combined interaction with the high pressure gas pipeline and the existing Brechfa Line.**					

Appendix H – Substation Appraisal

Bute Energy Networks Ltd

South Substation Site Selection

Final Report
Prepared by LUC
July 2022

Contents

Chapter 1
Introduction

1.1 LUC was commissioned by Bute Energy Networks Ltd (BENL) to undertake a site selection exercise to determine the optimal location for a substation linking a number of potential wind farm grid connections into the existing National Grid 400kV OHL.

1.2 The overarching technical parameters for the proposed substation to be considered were:

- Substation site up to 300m by 300m in area which could accommodate a control building, up to four 400/132kV transformers, associated switchgear bays and any required reactive compensation equipment;
- Located within 500m of the existing 400kV OHL; and
- Space for 3-4 incoming OHL grid connections assuming at least two of which would be carried on double circuit structures.

1.3 The study area comprised the land between the River Towi in the west and the M4 at Pont Abraham in the east.

1.4 This note presents the methodology and findings for the site selection study.

Chapter 2
The Approach and Process

2.1 The following stages were undertaken to inform the site selection:

1. Establish a substation site search area, up to 500m from the 400kV OHL between the River Towi and the M4, and an outer study area up to 5km from the 400kV OHL (to inform the consideration of the 3-4 x OHL entries);
2. Map all technical and environmental constraints in GIS across the study area;
3. Undertake preliminary examination of potential routeing of up to four grid connection OHLs through the outer study area, to narrow down the substation search area to locations where this number of connections can potentially be accommodated in proximity to the 400kV OHL;
4. Within the refined substation search area, identify unconstrained areas that are of suitable size to accommodate the substation to form a list of up to five potential sites for appraisal;
5. Undertake an appraisal of each site against environmental criteria;
6. Undertake an appraisal of technical criteria for each site, such as access (to accommodate transformers) and other existing infrastructure (e.g. OHLs, gas pipelines, wind turbines etc);
7. Identification of the best performing sites against the above environmental and technical criteria; and
8. Discussion workshop with Bute Energy to identify any issues with the sites and agree a preferred location.

2.2 Further detail on each stage in the process is outlined below.

Stages 1 and 2

2.3 The search area for the substation site (500m either side of the 400kV OHL), and the 5km wider study area (on the north side of the 400kV only to reflect the likely incoming OHL routes), was plotted in GIS. Constraint data was mapped, and buffers applied as required to avoid siting substations close to sensitive features e.g. residential properties. The table below sets out the preliminary list of constraints that informed the identification of potential substation sites.

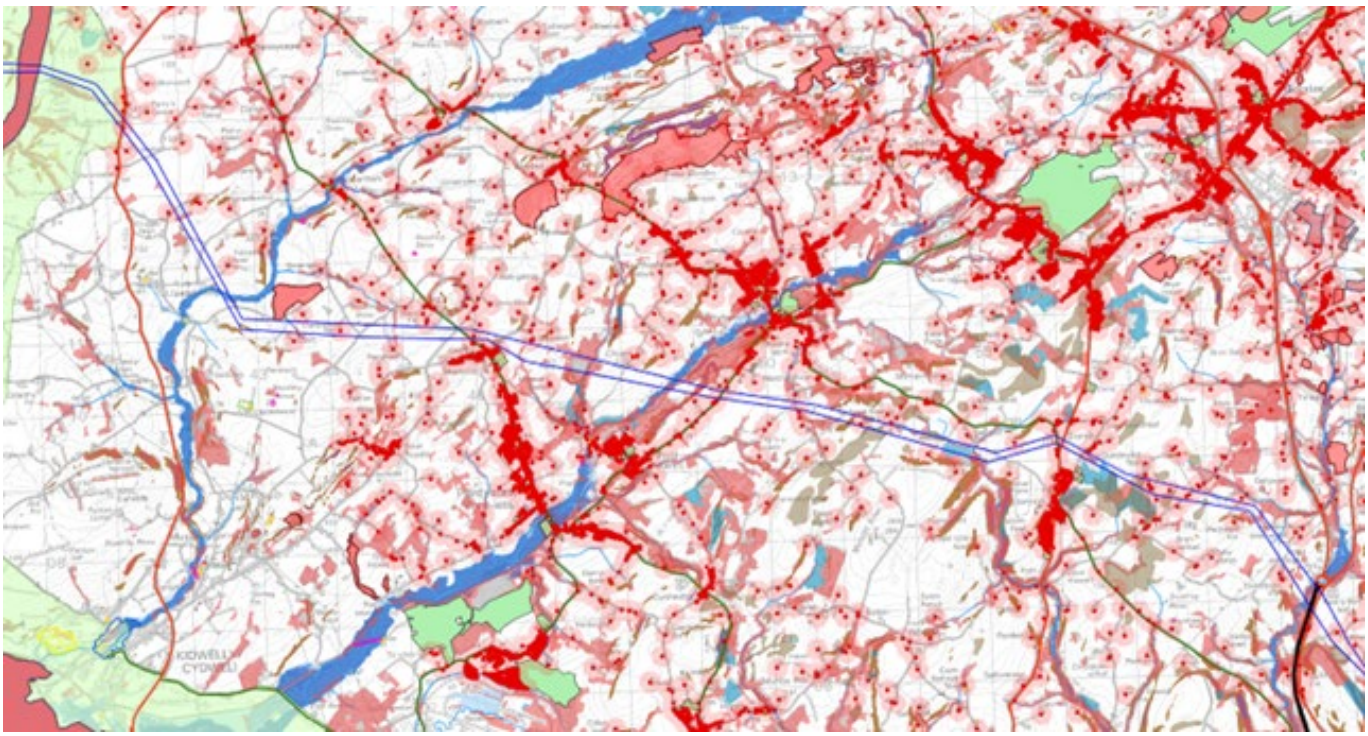
Table 2.1: Constraints

Constraints Mapped for Identification of Potential Sites
Nature conservation designations (e.g. SSSI)
Residential property and 150m buffer
Non-residential buildings
Scheduled Monuments and 50m buffer
Woodland on the Ancient Woodland Inventory
NRW FRAW – Flood Risk from Rivers

Stage 3

2.4 At this point, a review of the grid routeing constraints across the 5km study area (mapped as part of a separate OHL routeing study) was undertaken to inform the potential for routeing up to four OHLs to the new substation site near the 400kV OHL. The purpose of this stage was to refine the substation search area by eliminating locations where it would not be possible to connect the required number of OHLs. This was undertaken at a high level by reviewing mapped constraints. Individual OHL routes were not mapped. An example of the constraints within the initial approx. 20km long substation study area is shown below for context.

Figure 2.1: Density of OHL routeing constraints mapped along the 400kV OHL between the River Towi (upper left) and the M4 (lower right)



Stage 4

2.5 At this stage the refined substation search area was reviewed to identify sites that were of sufficient size to accommodate the proposed new substation. The presence of the constraints listed in the table above excluded land from consideration as a potential site. Each potential site was required to be large enough for the substation as well as any temporary works. At this stage 9 potential sites were identified. A workshop was held with BENL to discuss the potential sites and some sites were 'discarded' due primarily to the presence of technical constraints (e.g. high pressure gas pipeline, limited access and/or site size). Five sites were progressed to the appraisal stage (sites 1, 2, 3a, 3b and 8). Site locations are provided in **Appendix A**.

2.6 Site 4 was not progressed to appraisal due to potential access issues via Llandyfaelog and the presence of a high pressure gas pipeline and watercourses.

2.7 Site 5 was not progressed to appraisal due to potential access issues, presence of a watercourse, relatively steep undulating gradient in part and it being located south of the 400kV overhead lines.

2.8 Site 6 was not progressed to appraisal due to the presence of a number of watercourses and marshy grassland and potential access from the fast-flowing main road. The presence of more densely populated residential properties is also likely to make routeing and OHL to this site relatively more challenging.

2.9 Site 7 was not progressed to appraisal due to its proximity to Llannon Primary school (which was not marked on the OS map). The presence of more densely populated residential properties is also likely to make routeing and OHL to this site relatively more challenging.

Stage 5 and 6

2.10 An appraisal was undertaken of each of the five sites against the following environmental criteria (the sub-criteria are set out in the appraisal table in **Appendix B** below):

- Biodiversity and geological conservation;
- Landscape and visual amenity;
- Cultural heritage;
- Land use;
- Forestry and woodland; and
- Watercourses and flood risk.

2.11 At the same time, the following practical/technical criteria was also considered:

- Proximity to main roads (for access);
- Proximity of other technical constraints (e.g. OHLs, gas pipelines, wind turbines); and
- Potential impacts of incoming grid connection OHLs.

2.12 The practical criteria were considered on a factual basis without further technical study. For example, the relative proximity to main roads did not consider the suitability of those main roads as access routes.

Stage 7

2.13 Based on the appraisal, and the practical criteria, overarching preferences from the five sites were presented to Bute for discussion. The appraisal findings are set-out below.

Stage 8

2.14 A workshop was held with BENL representatives to review and consider the appraisal findings for each of the potential substation sites.

2.15 Reflecting the findings of the appraisal and taking cognisance of the LUC Overarching Preference summary in **Appendix B** and the workshop discussion, BENLs summary comprises:

- Substation site 3b performed best in landscape and visual impact terms as it has relatively few residential properties within close proximity. This was seen as a positive for routeing the OHL connections into the site.
- Substation site 2 has a watercourse located within it which may limit the available size for development.
- Substation site 8 would require the incoming OHL connections to cross both the 400kV and 132kV OHLs present within the study area and was therefore not considered preferable to site 2 or 3b.
- Substation site 3a performed reasonably well across the board in environmental terms but would require around 0.48ha of broadleaved woodland to be felled and compensated for to accommodate the proposed substation.

Chapter 3
Conclusions and Next Steps

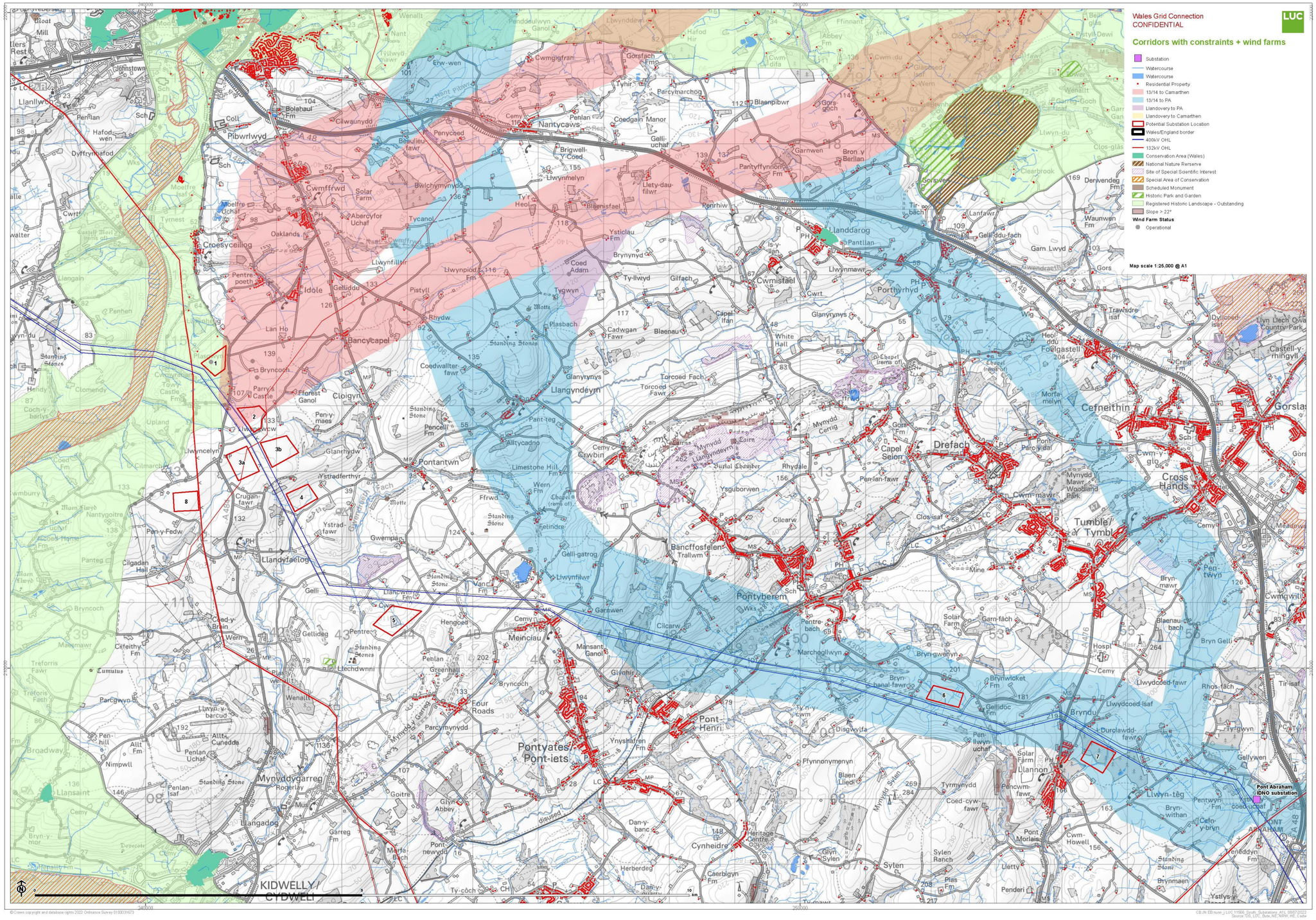
3.1 BENL confirmed that at this stage, pending further technical input, substation sites 2 and 3b were considered the preferred sites for the proposed substation.

3.2 Next steps comprise the LUC identification of overhead line routes to substation sites 2 and 3b whilst concurrently BENL have instructed an indicative concept design layout which can be used to inform the overhead line routeing and subsequent selection of a preferred site to be presented at public consultation events to take place in Q4 2022.

Appendix A

Environmental Constraints, Substation Locations and Potential OHL Routes

Figure A.1: Map identifying environmental constraints, substation locations and potential OHL routes



Appendix B

Appraisal for Carmarthen Substation Siting Options

Table B.1: Appraisal table for Carmarthen Substation siting options

Criterion	Sub-criteria	Substation Siting Area 1	Substation Siting Area 2	Substation Siting Area 3a	Substation Siting Area 3b	Substation Siting Area 8	Preference
Biodiversity and Geological Conservation	BGS Detailed Geology	Located entirely on superficial deposits.	The majority of this substation siting area is located on bedrock, with the exception of a small area in the north-west where superficial deposits are found.	Superficial deposits are located across the centre of this substation siting area, whilst bedrock is limited to the southern and northern extents of this option.	Located entirely on bedrock.	The majority of this substation siting area is located on superficial deposits, with the exception of the western and southern edge where bedrock is found.	No preference – ground investigations required once preferred site selected.
Landscape and Visual Amenity	Locally Designated Landscapes (Carmarthenshire Special Landscape Areas)	Located within (but close to the eastern edge of) the Lower Towy Valley SLA. The substation could affect mature hedgerow and fields trees that are a characteristic of the SLA, however effects would be limited to localised extents of the SLA.	Located approx. 180m east of the Lower Towy Valley SLA at its nearest point. Effects on key characteristics of the SLA unlikely.	Located over 500m east of the Lower Towy SLA. Effects on key characteristics of the SLA unlikely.	Located over 500m east of the Lower Towy SLA. Effects on key characteristics of the SLA unlikely.	Located approx. 380m east of the Lower Towy Valley SLA at its nearest point. Effects on key characteristics of the SLA unlikely.	Substation Siting Areas 3a and 3b are located at the furthest distance from the Lower Towy SLA and are therefore the preferred options.
	LANDMAP ■ Visual and Sensory ■ Landscape Habitats ■ Historic Landscape ■ Geological Landscape ■ Cultural Landscape	Located within: ■ CRMRTVS936 LLansaint Coastal Hills Visual & Sensory aspect area (‘high’ overall evaluation) ■ CRMRTLH042 Llansaint North Landscape Habitats aspect area (‘moderate’ overall evaluation) ■ CRMRTHL40219 Croesyceilog-Cwmffrwd Historic Landscape aspect area (‘high’ overall evaluation) ■ CRMRTGL201 Llanddarog – Banycoed Geological Landscape aspect area (‘moderate’ overall evaluation) ■ CRMRTCL010 Tywi Valley RHL Cultural Landscape aspect area (‘outstanding’ overall evaluation)	Located within: ■ CRMRTVS936 Llansaint Coastal Hills Visual & Sensory aspect area (‘high’ overall evaluation) and CRMRTVS400 Gwendraeth Fach Visual & Sensory aspect area (‘moderate’ overall evaluation) ■ CRMRTLH042 Llansaint North Landscape Habitats aspect area (‘moderate’ overall evaluation) ■ CRMRTHL39492 Llandyfaelog, Llangyndeyrn Historic Landscape aspect area (‘outstanding’ overall evaluation) ■ CRMRTGL201 Llanddarog – Banycoed Geological Landscape aspect area (‘moderate’ overall evaluation) ■ CRMRTCL061 Rural Carmarthenshire Cultural Landscape aspect area (‘high’ overall evaluation)	Located within: ■ CRMRTVS936 Llansaint Coastal Hills Visual & Sensory aspect area (‘high’ overall evaluation) ■ CRMRTLH042 Llansaint North Landscape Habitats aspect area (‘moderate’ overall evaluation) ■ CRMRTHL39492 Llandyfaelog, Llangyndeyrn Historic Landscape aspect area (‘outstanding’ overall evaluation) ■ CRMRTGL201 Llanddarog – Banycoed Geological Landscape aspect area (‘moderate’ overall evaluation) ■ CRMRTCL061 Rural Carmarthenshire Cultural Landscape aspect area (‘high’ overall evaluation)	Located within: ■ CRMRTVS400 Gwendraeth Fach Visual & Sensory aspect area (‘moderate’ overall evaluation) ■ CRMRTLH042 Llansaint North Landscape Habitats aspect area (‘moderate’ overall evaluation) ■ CRMRTHL39492 Llandyfaelog, Llangyndeyrn Historic Landscape aspect area (‘outstanding’ overall evaluation) ■ CRMRTGL201 Llanddarog – Banycoed Geological Landscape aspect area (‘moderate’ overall evaluation) ■ CRMRTCL061 Rural Carmarthenshire Cultural Landscape aspect area (‘high’ overall evaluation)	Located within: ■ CRMRTVS936 Llansaint Coastal Hills Visual & Sensory aspect area (‘high’ overall evaluation) ■ CRMRTLH042 Llansaint North Landscape Habitats aspect area (‘moderate’ overall evaluation) ■ CRMRTHL40219 Croesyceilog-Cwmffrwd Historic Landscape aspect area (‘high’ overall evaluation) ■ CRMRTGL201 Llanddarog – Banycoed Geological Landscape aspect area (‘moderate’ overall evaluation) ■ CRMRTCL061 Rural Carmarthenshire Cultural Landscape aspect area (‘high’ overall evaluation)	All substation siting areas are located within a number of aspect areas of ‘high’ and ‘outstanding’ overall evaluation, with the exception of Substation Siting Area 8, which is only located in aspect areas of ‘high’ overall evaluation. Substation Siting Area 8 is therefore slightly preferred.
	Landscape Character	Located within NLCA 45 Taf, Tywi and Gwendraeth Estuaries. The substation siting area is located on a gently sloping promontory (110m-120m AOD), which sits above much steeper slopes to	Located within NLCA 45 Taf, Tywi and Gwendraeth Estuaries. The substation siting area comprises a gently sloping area (115m-130m AOD) of relatively small	Located within NLCA 33 Gwendraeth Vales. The substation siting area comprises a relatively flat area of small pasture fields with mature and densely wooded	Located within NLCA 33 Gwendraeth Vales. The substation siting area comprises a relatively flat area of pasture fields with mature hedgerows. Hedgerows in the north of the siting area have a	Mostly located within NLCA 45 Taf, Tywi and Gwendraeth Estuaries, with the southern edges located within NLCA 33 Gwendraeth Vales. The substation siting area comprises a relatively flat area	Substation Siting Areas 3b and 8 comprise relatively flat areas of fields with comparatively less woodland than other siting areas, and

Criterion	Sub-criteria	Substation Siting Area 1	Substation Siting Area 2	Substation Siting Area 3a	Substation Siting Area 3b	Substation Siting Area 8	Preference
		the west. Land cover comprises arable fields and pasture with mature hedgerows and some hedgerow trees.	pasture fields with mature and densely wooded hedgerows.	hedgerows and some small areas of woodland.	high proportion of hedgerow trees, though less dense than on other sites.	of arable fields and pasture with mature hedgerows. Hedgerows in the west of the siting area are particularly dense with a high proportion of hedgerow trees.	are therefore the preferred options.
	Residential Visual Amenity with '150m trigger for consideration zone'	Residential properties nearest the siting area are relatively dispersed, with the settlement pattern becoming more dense and linear along the A484 to the south. Whilst no residential properties are located within 150m of the substation siting area, there are residential properties located within 200m to the north and south.	The pattern of residential properties nearest the siting area is relatively dense and linear along the A484 to the west, with a high number of dispersed properties located along the minor roads to the north and east. Whilst no residential properties are located within 150m of the substation siting area, there are residential properties located within 200m to the north, east and west.	The pattern of residential properties nearest the siting area is relatively dense and linear along the A484 to the west, with some dispersed properties located along the minor roads to the south and north-east. Whilst no residential properties are located within 150m of the substation siting area, there is one residential property located within 200m to the north-west.	The pattern of residential properties nearest the siting area is relatively dense and linear along the A484 to the west, with some dispersed properties located along the minor roads to the south and north-east. Whilst no residential properties are located within 150m of the substation siting area, there is one residential property located within 200m to the north.	The pattern of residential properties nearest the siting area is relatively dense and linear along the A484 to the north-east and the minor road to the north, with some dispersed properties located along the minor road to the south. Whilst no residential properties are located within 150m of the substation siting area, there are three residential properties located within 200m to the north, south and west.	No substation siting areas are located within 150m of residential properties. Substation Siting Areas 3a and 3b are located near the fewest residential properties and are therefore the preferred options.
	Tourism and Recreation (visual amenity – promoted viewpoints, cycle routes, PRoW, long distance trails, tourist attractions and recreational areas)	Located approximately 40m west of NCN Route 4; however, mature hedgerows partially screen views south-west from the route. Located approximately 500m to the east of the Wales Coastal Path; however, woodland and intervening landform partially screen views east from sections of the route nearest the substation siting area. This site would be more visible from the section of the Wales Coast Path west of the Towy.	Located approximately 160m east of NCN Route 4 and may be seen in partially screened direct views when travelling east on the route toward the meeting of the A484. Located approximately 770m to the east of the Wales Coastal Path; however, woodland partially screens views east from sections of the route nearest the substation siting area.	Located 280m north-west of a local footpath; however outward views from the route are partially screened by mature hedgerows. Located approximately 800m to the east of the Wales Coastal Path; however, woodland partially screens views east from sections of the route nearest the substation siting area.	Located 30m north-west of a local footpath; however outward views from the route are partially screened by mature hedgerows. Located approximately 1.2km to the east of the Wales Coastal Path. Woodland partially screens views east from sections of the route nearest the substation siting area.	Located approximately 150m south of NCN Route 4 and may be seen in partially screened direct views when travelling south and oblique views when travelling south-west/north-east on the route. Located approximately 860m to the south-east of the Wales Coastal Path at its closest point; however, woodland and intervening landform partially screen views east from sections of the route nearest the substation siting area.	Substation Siting Area 3a is located near the fewest recreational routes and at a greater intervening distance from the nearest local footpath, and is therefore the preferred option.
	Public roads, including tourist routes, railways	All routes are located within approximately 500-700m of the A484, and access to the substations during construction and operation will likely be from this road. Substation Siting Areas 3b and 8 are located at the furthest distance from the road, with greatest potential for screening of some infrastructure at ground level. Substation Siting Area 1 is located within closest proximity to the road. The West Wales and Marches railway lines pass 0.7-1.2km to the west of the Siting Areas 1 and 8, however outward views east from the railway are relatively well screened by woodland and intervening landform.					Substation Siting Area 3b is likely to be least visible from these routes and is therefore the preferred option.
	Capacity for routeing OHL into the substation	Constrained to the north by residential properties but scope for routeing several OHL from the east.	Constrained by presence of residential properties to the north, west and east, though with some gaps and open areas beyond 500m. The Brechfa OHL occupies some of this capacity for this site.	Slightly constrained by some residential properties to the north-west and south-east. OHL would have to stop short of the 400kV OHL and cable in. The Brechfa OHL occupies some of this capacity for this site.	Slightly constrained by residential properties to the north and north-east, and woodland to the north-east. The Brechfa OHL occupies some of this capacity for this site.	Furthest south-west and would require longer routes, passing under both the 400kV OHLs and the 132kV OHL. Constrained by properties to the north and north-east.	Substation Siting Area 1 is the most open to OHL routes, followed by 2 and 3b. 3a and 8 are least preferred.
Cultural Heritage	Listed Buildings (I, II*, II)	There are 5 listed buildings within 3km of the substation siting option. The closest are	There are 7 listed buildings within 3km of the substation siting option. The closest are	There are 6 listed buildings within 3km of the substation siting option. The closest are	There are 6 listed buildings within 3km of the substation siting option. The closest is a	There are 5 listed buildings within 3km of the substation siting option. The closest is the	There is no strong preference for any of the substation siting options on the basis of listed

Criterion	Sub-criteria	Substation Siting Area 1	Substation Siting Area 2	Substation Siting Area 3a	Substation Siting Area 3b	Substation Siting Area 8	Preference
		at Upland (2 Grade II listed buildings), 1.1km south-west of the option. No major setting issues are anticipated since the listed buildings are well-separated from the option and likely to be screened[1] by intervening topography and/or vegetation. It is likely that any issues can be designed out through infrastructure layout and/or landscape mitigation planting.	at Upland (2 Grade II listed buildings), 1.1km west of the option. No major setting issues are anticipated since the listed buildings are well-separated from the option and likely to be screened[1] by intervening topography and/or vegetation. It is likely that any issues can be designed out through infrastructure layout and/or landscape mitigation planting.	at Upland (2 Grade II listed buildings), 990m west of the option, and Llandyfaelog, 980 m south of the option. No major setting issues are anticipated since the listed buildings are well-separated from the option and likely to be screened[1] by intervening topography and/or vegetation. It is likely that any issues can be designed out through infrastructure layout and/or landscape mitigation planting.	grade II listed building at Glanrhydw, 1km east of the option. No major setting issues are anticipated since the listed buildings are well-separated from the option and likely to be screened[1] by intervening topography and/or vegetation. It is likely that any issues can be designed out through infrastructure layout and/or landscape mitigation planting.	grade II Church of St Maelog, Llandyfaelog, 850m south-east of the option. No major setting issues are anticipated since the listed buildings are well-separated from the option and likely to be screened[1] by intervening topography and/or vegetation. It is likely that any issues can be designed out through infrastructure layout and/or landscape mitigation planting.	buildings. No option has listed buildings either within proximity or in a position relative to the option where presence of a substation appears likely to meaningfully alter the setting of an asset in a way that could not be mitigated.
	Scheduled Monuments	There are 2 scheduled monuments within 3km of the substation site option, both are standing stones. The nearest is the Standing Stone NNW of Clomendy (SM Ref CM184) 2.1km west of the option. No major setting issues are anticipated since the option is well separated from the scheduled monuments and does not appear be intervisible with them or likely to be seen in combination with them.	There are 3 scheduled monuments within 3km of the substation site option, two standing stones and the remains of a medieval motte (castle). The nearest is the Pen Celli Standing Stone (SM Ref CM122), 2.1km east of the option. No major setting issues are anticipated since the option is well separated from the scheduled monuments and does not appear be intervisible with them or likely to be seen in combination with them.	There are 3 scheduled monuments within 3km of the substation site option. The nearest is Castell y Domen (SM Ref CM240), a medieval motte (castle) 2km east-south-east of the option. The motte lies near the base of a small valley and it is likely that the option, since it lies on a ridge west of this valley, may be visible from the asset. Views from the asset into the landscape, and vice versa, are likely to be important. Presence of a substation in views from the motte is likely to be viewed negatively by consultees (i.e. seen as a source of harm to the asset). It is possible that existing vegetation may screen this, meaning there would no harm or that infrastructure siting and/or landscape mitigation planting could be deployed to avoid this harm.	There are 2 scheduled monuments within 3km of the substation site option. The nearest is the Castell y Domen motte (SM Ref CM240), 1.5km east-south-east of the option. The motte lies near the base of a small valley and it is likely that the option, since it lies on a ridge west of this valley, may be visible from the asset. Views from the asset into the landscape, and vice versa, are likely to be important. Presence of a substation in views from the motte is likely to be viewed negatively by consultees (i.e. seen as a source of harm to the asset). It is possible that existing vegetation may screen this, meaning there would no harm or that infrastructure siting and/or landscape mitigation planting could be deployed to avoid this harm.	There are 2 scheduled monuments within 3km of the substation site option. The nearest is the Standing Stone NNW of Clomendy (SM Ref CM184) 2.7km north-west of the option. The Castell y Domen motte (SM Ref CM240), is 2.8km east of the option. The motte lies near the base of a small valley and it is likely that the option, since it lies on a ridge west of this valley, may be visible from the asset. Views from the asset into the landscape, and vice versa, are likely to be important. Presence of a substation in views from the motte is likely to be viewed negatively by consultees (i.e. seen as a source of harm to the asset). It is possible that existing vegetation may screen this, meaning there would no harm or that infrastructure siting and/or landscape mitigation planting could be deployed to avoid this harm.	Substation Siting Areas 1 or 2 are preferred as they do not appear to have issues related to changing the setting of scheduled monuments in a way likely to be harmful. The remaining options have a potential issue related to the Castell y Domen motte but it is possible that further work[2] would resolve whether a consenting risk is likely associated with change in setting of this asset.
	Registered Historic Landscapes (RHL)	Substation Siting Area 1 is located entirely within the Tywi Valley Landscape of Outstanding Historic Interest (LOHI).	These substation siting areas do not lie either wholly or partially within a registered historic landscape. However, whilst site 2 is within 180m, 3a within 410m, 3b within 610m and site 8 within 440m of the LOHI, this designation aims to control large-scale change within the asset so change in setting is not likely to present a significant consenting risk.				Substation Siting Areas 2 to 8 are equally preferred as, whilst all lie in relatively close proximity to the Tywi Valley LOHI, they are not sited within the RHL.

[1] i.e. not appear in from views from the asset or in combination with the asset.
[2] e.g. in terms of understanding the actual nature of the asset's setting and/or on substation siting and landscape mitigation.

Criterion	Sub-criteria	Substation Siting Area 1	Substation Siting Area 2	Substation Siting Area 3a	Substation Siting Area 3b	Substation Siting Area 8	Preference
Land Use	Agricultural land	Substation Siting Area 1 contains approximately 0.21ha of BMV agricultural land, which is Grade 3a. However, this is restricted to the southern edge of the site.	Substation Siting Area 2 does not contain an area of BMV agricultural land.	Substation Siting Area 3a contains a very small area of BMV agricultural land (0.005ha), which is Grade 3a. However, this is restricted to the southern edge of the site.	Substation Siting Area 3b contains a very small area of BMV agricultural land (0.26ha), which is Grade 3a. However, this is restricted to the southern edge of the site.	Substation Siting Area 8 contains a small area of BMV agricultural land (0.15ha), which is Grade 3a. However, this is restricted to the south-eastern edge.	Substation Siting Area 2 is preferred as it does not contain any areas of BMV agricultural land.
Forestry and Woodland	National Forest Inventory (NFI)	There is no NFI woodland located within these substation siting areas.		There is approximately 0.48ha of broadleaved woodland within the site option.	There is no NFI woodland located within these substation siting areas.		Only Substation Siting Area 3a has any woodland, therefore this is least preferred.
Watercourses and Flood Risk	Watercourses Flood Risk (High risk)	There are no watercourses or High risk flood zone areas within this substation siting area.	There is one minor watercourse located in the north-west that intersects with this substation siting area. No High risk flood zone areas are present.	There is one minor watercourse located in the south-west that intersects with this substation siting area. No High risk flood zone areas are present.	There are no watercourses or High risk flood zone areas within these substation siting areas.		Substation Siting Areas 1, 3b and 8 are preferred.
Technical Considerations	Access (motorway, A and B roads) Other technical constraints (overhead lines, gas pipline, wind turbines etc.)	Substation Siting Area 1 can be accessed directly from the A484 (<100m). One small, unmarked turbine, approximately 25m to tip, is present on site. There is a Western Power Distribution (WPD) low voltage OHL that crosses through the centre of this substation siting area.	Substation Siting Area 2 could potentially be accessed directly from the A484 (via a new access track (<250m) or via the minor road which will need widening/upgrading.	Substation Siting Area 3a can potentially be accessed directly from the A484 (via a new access track <250m) or via the minor road which will need widening/upgrading. There is a National Grid gas pipeline that intersects the edge of the substation siting area from the south and follows close to the western edge before exiting in the north-west. The 132kV Brechfa OHL and WPD low voltage OHLs cross through this substation siting area.	Substation Siting Area 3b cannot be accessed directly from the A484. It is around 600m from the A484, and accessible via a minor road which will need widening/upgrading.	Substation Siting Area 8 cannot be accessed directly from the A484. It is around 500m from the A484, and accessible via a minor road.	Substation Siting Area 2 appears least technically constrained, with potentially good access and no other infrastructure. Sites 3b and 8 are potentially least accessible, whilst 3a is most constrained by infrastructure.
Overarching Preference	Substation Siting Area 3b is the preferred option regarding landscape and visual considerations, given the landscape character of relatively flat fields with comparatively less woodland than other siting areas, the location of the area at the furthest distance from the Lower Towy SLA, has relatively few residential properties within close proximity, limited visibility from recreational routes, and good options for routeing OHLs into the site. Substation Siting Area 2 is preferred (marginally) in relation to cultural heritage as this is located outwith the Registered Historic Landscape and has best potential to avoid effects on the setting of the Scheduled Monument (motte). Substation Siting Area 2 has no woodland or BMV agricultural land however there is a watercourse located within it. Substation 2, 3b and 8 are preferred on technical grounds, however 8 will require crossing the 400kV and 132kV OHLs.						