



Route Alignment Options Report

Brechfa Forest Connection Project

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Document Details

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Glossary of Terms

Term	Description
Alternatives	Different design, layout and technological possibilities considered during project development that have potential to fulfil the project objectives.
Ancient Woodland	Woodland that has existed continuously since at least AD 1600.
Annex I Project	See 'Schedule 1 Project'.
Annex II Project	See 'Schedule 2 Project'.
AOD	Above Ordnance Datum
Appropriate Assessment	The process whereby projects, either alone or in combination, are considered to see if it can be ascertained that they will not adversely affect the integrity of a European Site.
Assessment	A process by which information about effects of a proposed plan, project or intervention is collected, assessed and used to inform decision-making.
Baseline Conditions	The environment as it appears (or would appear) immediately prior to the implementation of the project together with any known or foreseeable future changes that will take place before completion of the project.
Baseline Studies	Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed.
Biodiversity	The variety of life forms, the different plants, animals and microorganisms, the genes they contain and the eco-systems they form.
Catchment	A drainage/basin area within which precipitation drains into a river system and eventually into the sea.
Committed Development	Development projects that are either under construction or which have valid planning permissions/consents.
Competent Authority	The authority which determines the application for a consent, permission, licence or other authorisation to proceed with a development.
Construction Phase	The period during which the building or assembling of infrastructure is undertaken.
Controlled Waters	Surface waters, ground waters and coastal waters to which UK pollution legislation applies.
Culvert	A pipe or box-type conduit through which water is carried under a structure.
Cumulative Impact	Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. A cumulative impact may arise as the result of: a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project

	on a single receptor/ resource; and b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource.
Decommissioning	The period during which a development and its associated processes are removed from active operation.
Design Event	An event such as a rainstorm or flood of given magnitude and probability (usually derived from previous records).
Discharge Consent	Statutory document issued by the Environment Agency setting limits and conditions on the discharge of an effluent into controlled waters.
Do-Minimum Scenario	Also known as the 'Do-Nothing' Scenario. The conditions that would persist in the absence of the implementation of a development.
Effect	Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact to the importance (or sensitivity) of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the ecological resource.
EIA Directive	Used to refer to EC Directive 85/337/EEC as amended by EC Directive 97/11/EC and the Public Participation Directive 2003/35/EC.
EIA Regulations	A collective term for the various statutory instruments through which the EC Directives on Environmental Assessment have been implemented in the UK.
Emission Standard	The maximum amount or concentration of a pollutant allowed to be emitted from a particular source.
Enhancement	A measure that is over and above what is required to mitigate the adverse effects of a project.
Environmental Assessment	A method and a process by which information about environmental effects is collected, assessed and used to inform decision-making. Assessment processes include Strategic Environmental Assessment, Assessment of Implications on European Sites, and Environmental Impact Assessment.
Environmental Impact Assessment	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. Involves the collection and consideration of environmental information, which fulfils the assessment requirements of Directive 85/337/EEC (as amended), including the publication of an Environmental Statement.
Environmental Information	The information that must be taken into account by the decision maker (the Competent Authority) before granting any kind of authorisation in any case where the EIA process applies. It includes the environmental statement, including any further information, any representations made by any body required by

	the Regulations to be invited to make representations, and any representations duly made by any other person about the environmental effects of the development.
Environmental Management Plan	A structured plan that outlines the mitigation, monitoring and management requirements arising from an Environmental Impact Assessment.
Environmental Statement	A document produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
Estuary	Downstream part of a river where it widens to enter the sea.
European Site	Sites which make up the European ecological network (also known as Natura 2000 sites). These include: Sites of Community Importance (SCIs); Special Protection Areas (SPAs) and potential SPAs (pSPAs); Special Areas of Conservation (SACs) and candidate or possible SACs (cSACs or pSACs); and Ramsar sites.
Evaluation	The determination of the significance of effects. Evaluation involves making judgements as to the value of the receptor/resource that is being affected and the consequences of the effect on the receptor/resource based on the magnitude of the impact.
Existing Environment	See 'Baseline Conditions'.
Habitats Regulations	EC Council Directive 92/43/EEC, known as the Habitats Directive, was transposed in the UK by the Habitats Regulations 1994 (as amended). The Habitats Regulations apply to UK land and territorial waters and act to ensure biodiversity of natural habitats and of wild flora and fauna through a range of measures including designation of SAC'S.
Habitats Regulations Assessment	The assessment of the impacts of implementing a plan or policy on a European Site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the site.
Hydrodynamics	The mechanical properties of fluids.
Impact	Change that is caused by an action; for example, land clearing (action) during construction which results in habitat loss (impact).
Invertebrates	Animals without backbones.
Local Planning Authority	A local authority or council that is empowered by law to exercise planning functions for a particular area of the United Kingdom (often the local Borough or District Council).
Mitigation	Measures intended to avoid, reduce and compensate adverse environmental effects.
Monitoring	A continuing assessment of the performance of the project, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.

Nationally Significant Infrastructure Project	Large projects that support the economy and vital public services, including railways, large wind farms, power stations, reservoirs, harbours, airports and sewage treatment works, as defined in the Planning Act 2008.
Non-Statutory Consultee	Organisations and bodies who are consulted on relevant planning applications but are not prescribed under legislation.
Non-Technical Summary	Information for the non-specialist reader to enable them to understand the main predicted environmental effects of the proposal without reference to the main Environmental Statement.
Operation Pasture	The functioning of a project on completion of construction. Grassland maintained primarily for and by grazing, and on which grazing stock is kept for a large part of the year.
Phase 1 Habitat Survey	Recognised methodology used for collating information on the habitat structure of a particular site.
Photomontage	The superimposing of an image onto a photograph for the purpose of creating a realistic representation of proposed or potential changes to a view.
Pollution	Any increase of matter or energy to a level that is harmful to living organisms of their environment (when it becomes a pollutant).
Preferred Option	The chosen design option that most successfully achieves the project objectives and becomes subject to further design and assessment.
Programme	A series of steps that have been identified by the applicant, or series of projects that are linked by dependency.
Project	One, or more, aspect of a programme or plan that has been identified by the applicant and which usually involves a direct physical intervention.
Project Objectives	The objectives of the project, set by the applicant.
Proposed Scheme	Also known as 'Proposed Development' - a plan or project which the applicant or promoter seeks to implement.
Ramsar	Areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance).
Receptor	A defined individual environmental feature usually associated with population, fauna and flora with the potential to be affected by a project.
Resource	A defined but generally collective environmental feature usually associated with soil, water, air, climatic factors, landscape, material assets, including the architectural and archaeological heritage, that has potential to be affected by a project.
Roosting Site (birds)	A place a bird will settle or rest, especially for the night.
Roosting Site (bats)	A place where bats live (e.g. built structures and trees).
Runoff	Precipitation that flows as surface water from a site, catchment or region to the sea.
Schedule 1 Project	Plans or projects which are listed in Annex I of the Directive, as revised, and Schedule 1 of the Regulations, as revised.

Schedule 2 Project	Plans or projects which are listed in Annex II of the Directive, as revised, and Schedule 2 of the Regulations, as revised.
Scoping	The process of identifying the issues to be addressed by the environmental impact assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered to be not significant.
Scoping Opinion	An opinion provided by a competent authority that indicates the issues an Environmental Impact Assessment of a proposed development should consider.
Screening	The formal process undertaken to determine whether it is necessary to carry out a statutory Environmental Impact Assessment and publish an Environmental Statement in accordance with the EIA Regulations.
Semi-Natural	A habitat, ecosystem, community, vegetation type or landscape which has been modified by human activity but which consists largely of native species and appears to have similar structure and functioning to a natural type.
Significance	See Significance of Effect.
Significance of Effect	A measure of the importance or gravity of the environmental effect, defined by either generic significance criteria, or criteria specific to the environmental topic.
Significant Environmental Effect	An effect which is considered material to the decision-making process.
Sites of Special Scientific Interest	The main national conservation site protection measure in Britain designated under the Wildlife and Countryside Act 1981.
Special Area of Conservation	International designation implemented under the Habitats Regulations for the protection of habitats and (non bird) species.
Special Protection Area	Sites designated under EU Directive (79/409/EEC) for the conservation of wild birds.
Spring Tide	Spring tides happen just after every full and new moon, when the sun, moon and earth are in line.
Stakeholder	An organisation or individual with a particular interest in the project.
Statutory Consultee	Organisations that the competent authority is required to consult by virtue of the EIA Regulations.
Study Area	The spatial area within which environmental effects are assessed (i.e. extending a distance from the project footprint in which significant environmental effects are anticipated to occur). This may vary between the topic areas.
Threshold	A specified level in grading effects (e.g. the order of significance).
Visual Amenity	The value of a particular view or area in terms of what is seen.
Wildlife Corridor	Linear habitats/landscape features such as hedgerows that may increase connectivity by acting as routes between habitat patches.
Worst Case	A principle that is applied where environmental effects may vary (e.g. due to seasonal variations) to ensure the most severe effect is assessed.

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1 Introduction

1.1.1 This report presents the findings of studies undertaken in Stage 3a: Identification of Route Alignment Options, for the Brechfa Forest Connection Project. The work builds upon previous studies including identification of broad corridor options (Stage 2a; June 2013) and the selection of the preferred corridor shown on Figure 2 (Stage 2b; December 2013).

1.2 Background

1.2.1 The approach to the identification and selection of a Route Corridor has been described in chapters 3 to 6 of the Brechfa Forest Connection Project: Route Corridor Selection Report and Preliminary Environmental Information, dated December 2013 (which reported the work completed in Stages 1 and 2 of this project).

1.2.2 Starting with the objective of connecting, using an overhead line (OHL), the three wind farms¹ at Brechfa Forest, Carmarthenshire to a suitable grid connection point near Llandyfaelog, south of Carmarthen (defining the start and end points of the proposed connection scheme), this process included the following:

- a review of constraints within the defined study area;
- identification of suitable route corridor options; and
- selection of a preferred route corridor(s).

1.2.3 Where the new 132kV OHL would connect to the existing tower line (the EE route) near Llandyfaelog there will be a requirement to use a custom-built wood pole structure. It may also necessary to strengthen the existing towers or use backstays. This will be included as part of the engineering detail in the

¹ Brechfa Forest West (consented), Bryn Llywelyn (proposed) and Brechfa Forest East (consented).

Stage 3 Consultation.

1.3 Aims and objectives of Stage 3a

- 1.3.1 During Stage 3a, the design development work has been progressed to identify potential route alignments within the preferred route corridors that will meet the overall project objective of providing an efficient and economic grid connection which on balance results where possible in the least disturbance to the receiving natural and built environment and those who live and work within it.
- 1.3.2 The objective of Stage 3a is to identify feasible route alignment options (each approximately 300m wide) within which an acceptable alignment can be found for the installation of the necessary 132kV OHL within the preferred route corridors. The appropriateness of undergrounding sections of the route will be considered after the Stage 2 Consultation which will be undertaken from mid-February to mid-April 2014.
- 1.3.3 This report sets out the approach taken in identifying, testing and refining the route alignment options. The feasible route alignment options identified in this stage (Stage 3a) will then be subject to a comparative appraisal/ evaluation informed by further environmental and technical work and by the results of the public consultation. The selection of the preferred route alignment will occur in Stage 3b. The preferred route alignment will be subject to further testing and refinement where necessary during the EIA process before confirmation of the final alignment and final Stage 3 Consultation process.
- 1.3.4 The stages of corridor selection are different to the consultation stages. Figure 1 shows how these two set of stages relate to one another.

1.4 Approach

- 1.4.1 The approach taken in Stage 3a was a combination of desk-based work, using tools such as GIS and Google Earth; based on information gathered during earlier stages of the study (including information gathered during Stage 1 Consultation), and field work to check and refine the options. Design workshops involving engineering and environmental specialists were held to discuss and refine various options based on potential lines of ‘least resistance’.
- 1.4.2 The main assumptions in our approach to the identification of feasible route alignment options were as follows:
- The preferred route corridors from Stage 2b would be taken as the starting point;
 - The basic principles (such as the Holford Rules) that were applied to the identification of route corridors, would also apply to the identification of route alignment options within the preferred corridor;
 - Modifications or additions to the preferred corridor² would be permissible if substantiated with sound reasons – for instance, flexibility would be allowed for an alignment to deviate outside a previously identified corridor if that would offer a better overall solution than an alignment wholly within a previously identified corridor; and
 - Route alignment options were identified that were based on feasible options for an OHL. However, should certain options be chosen as the preferred option then potential mitigation (such as undergrounding of a section of OHL) may be required in order to develop an acceptable final alignment. The details of any specific mitigation will be confirmed after Stage 2 Consultation, when the final route alignment is chosen.

² Two minor modifications to the corridor boundary were made in E1 and E2 as it was recognised they may provide a better overall solution.

- 1.4.3 The approach to the identification of feasible route alignment options at Stage 3a was based on the following:
- Map based searches;
 - Site visits to check information and actual site conditions ;
 - Technical evaluation and design workshops involving specialists on the project team; and
 - Consultation with certain statutory bodies on various options, predominantly with the forestry division of NRW..
- 1.4.4 During the Stage 3a work, various route alignment options were identified. Informed by the avoidance of known environmental constraints the preliminary options considered engineering issues related to ease and practicality of construction. These preliminary options were appraised qualitatively by the project team specialists applying their professional judgement.
- 1.4.5 The initial preliminary route alignments options were then reviewed, tested and refined against environmental information gathered during site visits and a further interrogation of baseline information. In this way, the identification of route alignment options considered several factors including:
- Physical factors (e.g. geology, landform/ land use type, flood risk);
 - Landscape and visual aspects;
 - Ecological aspects including habitat information and protected species records;
 - Cultural Heritage aspects such as impact on the setting of key resources;
 - Flood risk and hydrology;
 - Areas of peat deposits and historic and active landfills; and
 - Local Planning Allocations and recent planning applications.

- 1.4.6 These factors will be re-analysed and form the evaluation in Stage 3b to select a preferred alignment.
- 1.4.7 As noted above, Stage 3a sought to identify routes alignment options based on OHL, recognising government advice contained within Paragraph 2.8.2 of National Planning Statement for Electricity Networks Infrastructure (EN-5) which states that “Government does not believe that development of overhead lines is generally incompatible in principle with developers’ statutory duty under section 9 [sic] of the Electricity Act to have regard to amenity and to mitigate impacts.” Furthermore Paragraph 1.7.5 explains that Government decided against a presumption for undergrounding because of environmental and security of supply issues that may result and instead, Government states that decisions on undergrounding should be made via the guidance contained within EN-5 on a case by case evaluation.
- 1.4.8 WPD is conscious of the guidance contained within EN-5 which goes on to say that although Government expects that overhead lines will often be appropriate and their effects can often be mitigated, where there are serious concerns about the potential adverse landscape and visual effects of a proposed overhead line mitigation may be appropriate. Furthermore WPD is aware of its duty (Schedule 9 of the Electricity Act 1989) which places a duty, when formulating proposals, to have regard to the environment (EN-5 Paragraph 2.26).
- 1.4.9 When deciding on the appropriateness of a connection therefore WPD and ultimately PINs “have to balance these (the effects of overhead lines) against other relevant factors, including the need for the proposed infrastructure, the availability and cost of alternative sites and routes and methods of installation (including undergrounding)”.
- 1.4.10 The feasible route alignment options identified in Stage 3a consist of options that would be adequate and sufficient for installation of an OHL along the entire alignment; and they allow for the consideration of undergrounding some

route sections where technical, economic or environmental issues suggest that this may be justified.

- 1.4.11 The requirement for the preferred alignment option to include undergrounded sections will be considered after Stage 2 Consultation in circumstances where an OHL would have otherwise made that option unacceptable.

1.5 Corridor E options

- 1.5.1 Rather than a single preferred corridor, Stage 2b concluded that the connection between Brechfa West and Brechfa West wind farms should continue to the route alignment stage with two preferred corridors. The preferred corridors from Stage 2b included both route corridor E1 (connecting the Brechfa East and Brechfa West Substations via Gwernogle) and the alternative route corridor E2 to the south of Brechfa and the Cothi Valley.
- 1.5.2 There are different challenges posed by corridors E1 and E2 but they both provide viable route alignments that are consistent guidance contained with the national policy statement for electricity networks set out in the EN-5. These challenges are environmental and engineering based but apply to different parts of the route alignment. They are not so material as to preclude the respective route alignment options (and therefore do not require re-analysis of previously discounted corridors) but equally there is no clear preference between them. It is therefore appropriate given the material nature of these issues that they are consulted on at this stage of the project and before the preferred route alignment is chosen.

2 Identification of Options

2.1 Introduction

- 2.1.1 At Stage 3a preliminary route alignment options were identified by WPD. The options were first derived by an engineering-led response to environmental constraint mapping for feasible OHL alignments using the Stage 2b preferred route corridor(s) as a basis. As a priority known or potential constraints were avoided. The route options including the final route alignment options are shown in relation to the constraints on Figures 3a-h.
- 2.1.2 The preliminary route alignment options were therefore drawn up using constraint mapping and engineering principles including the following;
- Statutory designations (where possible);
 - Alignments that would achieve where practicable the most direct route (i.e. the shortest route length);
 - Reducing the design and construction complexity, for instance:
 - minimising the need for different pole types
 - minimising the height of the poles (and associated materials) needed
 - minimising route deviations (especially where angle structures/ stays, etc. may be required)
 - meeting accepted engineering tolerance such as achievable span lengths;
 - Consideration of topography (e.g. slope steepness, change in gradients);
 - Minimising the number of crossings (e.g. rivers, transport links, pipelines, other electrical infrastructure);
 - Retaining suitable set-back or buffer distances from built-up areas and

avoiding conflicts with other infrastructure (e.g. other OHLs, wind turbines, landfills, airports/ flight paths, etc.); and

- Consideration of construction phase issues such as ease of access to the route, amount of site preparation required (e.g. minimal tree felling), anticipated ground conditions/ foundation requirements; and associated costs or possibility of time delay.

2.1.3 Where practicable, WPD visited critical parts of each possible alignment to confirm the existence or absence of potential constraints and to ensure that the resulting OHL preliminary alignment options would all be possible to construct. The main construction and access issues identified for the route alignment options are as follows:

- The cutting width required where routing through areas of woodland for any parts of the route alignment is approximately 60m;
- With respect to a possible alignment through preferred corridor option E1, it should be highlighted that the initial engineering work indicates that construction would be challenging. Should an alignment option be taken forward in preferred corridor option E1 then its construction may entail substantial tree felling and the possibility of bespoke metal gantry designs or other strengthened structures, for the 400-450m span lengths required to cross steep sided valleys. Removal of tree stumps for construction would be problematic due to the presence of steep slopes with poor access. The on-going maintenance would also be very difficult through this preferred corridor option.
- The E2, E3 and E4 alignment routes all pass through the River Cothi Special Landscape Area which would require careful routing and consideration of span lengths and steep valley slopes.

2.1.4 Essentially, whilst construction of an alignment through preferred corridor E1 would appear to be feasible, it will entail significant engineering challenges. The alternative through preferred corridor E2 may have other constraints,

particularly in terms of the landscape setting. Further assessment of preferred E1 is underway and the results of the assessment together with information gathered in the Stage 2 Consultation will assist in determining the feasibility of constructing, maintaining and operating an OHL through it.

2.2 Preliminary route alignment options

- 2.2.1 The preliminary route alignment options initially identified by WPD are shown on Figures 4 and 5 (shaded in grey). The preliminary route alignment options were based on a notional centreline alignment within a 300m wide alignment corridor. This was in order to retain the flexibility to adjust the alignment slightly should detailed design later identify a need or benefit.

2.3 Refinement of options

- 2.3.1 The preliminary route alignment options were subjected to review and sequential appraisal by the various environmental specialists following site visits to check the alignment options. As a result of this appraisal, some modification to parts of each alignment option was identified; these adjustments are described in more detail below.
- 2.3.2 Where it was not possible to avoid known or potential constraints, then options were reviewed to seek opportunities to either (a) reduce the effect of (or if possible and practical, to overcome) a constraint so as to make an otherwise unfeasible route section feasible, or (b) address a potential issue to improve an already feasible option.
- 2.3.3 The main potential environmental issues influencing the refinement of preliminary route alignment options at this stage were land use and ground conditions, landscape and visual aspects, ecology, effect on the setting of cultural heritage resources, flood risk and hydrology and planning allocations/applications. The main approach to these topics is described below.

Geology and Ground Conditions

- 2.3.4 Existing information and constraints identified in previous stages, together with investigation of aerial images (e.g. Google Earth) were used in the interrogation of the preliminary route alignment options. The following features were identified and reviewed as part of the route refinement:
- Areas of peat;
 - Historic and authorised landfills.
- 2.3.5 Areas of peat appear to be present beneath the preliminary 300m wide route alignment at the following locations according to the 1:50,000 or 1:63,360 published geological map:
- South east of Carmarthen, where relatively dispersed pockets of peat are noted to occur overlying Till;
 - North of Rhydargaeau, where peat deposits are also associated with areas of 'blanket bog' and are relatively extensive across the corridor. Again they are associated with Till and other glacial deposits in the valley bottom;
 - East of Brechfa, where peat appears to be present over higher ground (these deposits are also associated with areas of 'blanket bog' and 'wet modified bog') as described within RSK's Phase 1 Habitat Survey;
 - A small area of peat occurs north of Abergorlech.
- 2.3.6 The Environment Agency website was consulted for data on the location and extent of the landfills, the following landfills were identified.
- 2.3.7 The authorised landfills Penycoed Landfill, at Penycoed Farm, Nantycaws, Carmarthen (status closed, previously used to take non-biodegradable wastes) lies adjacent to but outside the preliminary 300m corridor and is therefore unlikely to be significantly affected by a potential OHL.

2.3.8 Three Historic Landfills are located at:

- Land adjacent to riverside, Llangunnor (status not known, used to take industrial and household wastes);
- Llanelli Dock, Llanelly (status not known, used to take industrial and household wastes); and
- Llwynrod Quarry, Peniel (status not known, used to take inert, industrial and household wastes).

2.3.9 The landfills at Llangunnor and Llanelly noted above, lie to the west of the preliminary corridor and should not be directly affected by the development. However, they are noted to be 'adjacent to riverside' and so it should be confirmed that they do not fall within the corridor at this point.

2.3.10 The landfill at Llwynrod Quarry lies within the proposed preliminary route alignment option to the west of the central alignment, and appears to be used currently for storage. Should the preliminary route alignment option be taken forward it may be possible to adjust the route of the OHL to avoid this feature.

2.3.11 The route options have been refined such that the these areas would be avoided so far as possible, in particular for landfills where the installations could create additional pathways for contaminants migrating to groundwater and surface water resources; and restrict future access for remedial work if required. In addition, the likely variability of the landfill material could give rise to instability for the proposed structures.

2.3.12 Within the refined route options areas of peat have been avoided where possible. However, it may not be possible to avoid locating the proposed OHL outside of all peat deposits. It is considered that given the small footprint of the proposed infrastructure and the ability to vary span lengths and micro-site pole locations that direct effects upon some of these peat areas could be avoided. Should these not be possible then construction best practice would ensure that any effects upon the areas of peat are minimised.

- 2.3.13 The presence of peaty deposits is therefore considered not to be an absolute constraint requiring the realignment of the preliminary route option.

Landscape and Visual

- 2.3.14 Map based review included checking the 300m wide preliminary alignment options against OS mapping, the constraints mapped at the earlier stages of the project and, where helpful, inspection of aerial photography to further understand the location and aspect of residential properties and the extent of existing tree cover. The map based review was supplemented by field checks. The field checking process provided a visual check of the 300m wide preliminary route alignment options for all sections that were reasonably easily accessible (principally undertaken from vantage points on the public highway) with a particular focus on any areas identified during map work as uncertain or potentially challenging.
- 2.3.15 Qualitative professional judgements were made regarding the preliminary route alignment options based on the overarching criteria and constraints outlined in earlier reports. In particular the site visits identified locations where the preliminary alignment options might be improved to:
- Minimise the elevation of the routes to ensure that any visually prominent local hilltops were avoided and that ridgelines were crossed at appropriate saddle locations;
 - Further avoid areas of sloping ground where these were identified to be particularly visible from surrounding areas;
 - Identify less prominent ways in which visible slopes could be climbed;
 - Confirmation of the presence and principal aspects of residential properties to wherever possible avoid principal views from main frontages; and
 - Further detailed consideration of the landscape sensitivity of key locations (particularly within special landscape areas) including identification of any

locations where the construction of an OHL was likely to be considered unacceptable.

2.3.16 The following locations were subject to particular scrutiny:

- The proposed alignment of the OHL within the Towy Valley to the east of Carmarthen – this was checked from a number of surrounding and sometimes elevated vantage points in the surrounding area to ensure that the alignment would minimise any impact on the integrity of the valley landscape and special landscape area;
- Alignment option to the west of Pontarsais to minimise visibility at sloping ground to the north;
- The final link to the Bryn Llywelyn Substation to avoid impacts on the open moorland to the east or valley landscape to the west;
- Identification of OHL alignments in the vicinity of Brechfa village that would minimise visual effects on the settlement; and
- Careful consideration of any options along or crossing the route of the River Cothi.

Ecology

2.3.17 The preliminary alignment options were reviewed to understand their possible ecological effect. The process involved collation of desktop data and site visits to map potential ecological sensitivities and constraints.

2.3.18 Desktop data were compiled from a variety of sources, summarised in the table below. Statutory designated sites (internationally and nationally important sites for ecology) were mapped within 5 km of the preliminary route alignment options and non-statutory designated sites (those that are important in a local context) were mapped within 1 km. Records for protected and noteworthy species were mapped within 2 km of the preliminary route alignment options.

Table 2.1 - Data obtained

Information obtained	Available From
Protected and noteworthy species records	West Wales Biodiversity Information Centre
Designated site locations and citations	West Wales Biodiversity Information Centre
Designated site locations and citations (including Ancient Semi-natural Woodland)	Countryside Council for Wales / Natural Resources Wales
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) website
Details of species and habitats listed on the Carmarthenshire LBAP	Local BAP website
Information on Broad and Priority Habitats and Species Action Plans for the UK	<i>UK Biodiversity Action Plan</i> (UKBAP) website
RSPB bird data	National Biodiversity Network (NBN) website
Satellite imagery	Google Map

2.3.19 Reference materials relating to the ecology of the Brechfa Forest area was also reviewed. This included a review of the UK Biodiversity Action Plan (UKBAP; UK Biodiversity Steering Group 1998a-f, Biodiversity Reporting and Information Group 2007) and Carmarthenshire's Local Biodiversity Action Plan (LBAP) with reference to the area. Additional sources on the internet, such as the Joint Nature Conservation Committee (JNCC), the Countryside Council for Wales (CCW) and Google Map were also used. The environmental information submitted as part of the Brechfa West Wind Farm, Bryn Llywelyn Wind Farm and Brechfa East Wind Farm planning applications was also reviewed.

2.3.20 Information was also received from Carmarthenshire County Council and Natural Resources Wales during Stage 1 Consultation on the project, which provided useful data not available in the above sources, such as known

locations for breeding Curlew (*Numenius arquata*).

- 2.3.21 Habitat data was collated from the CCW (now NRW) Phase 1 Habitat Survey of Wales, and this was supplemented by targeted field checks and Phase 1 Habitat mapping from Public Rights of Way and publicly accessible land. Data from the ongoing winter bird surveys (begun in October 2013) have also been reviewed and fed into the route alignment selection process.
- 2.3.22 Given that the nature of the project will require clearance of trees under the power lines, the effects on woodland and its associated species are likely to be greater than the effects where the route passes through grasslands (where only the footprint of the wooden poles could cause a direct long-term effect on habitats). One of the key priorities in selecting the preliminary route alignment options was therefore to avoid woodland wherever possible, in particular avoiding ancient semi-natural woodland (ASNW). The preliminary route alignment options were reviewed against the following guiding principles:
- avoiding ancient semi-natural woodland;
 - avoiding peatland habitats;
 - avoiding semi-improved grasslands; and
 - avoiding linear habitats.
- 2.3.23 Wherever any of these sensitive habitats occurred at pinch-points in the preliminary route alignment options (e.g. where the route is constrained between settlements or other infrastructure) advice was provided to minimise the amount of sensitive habitat that would be crossed.
- 2.3.24 Following site visits in January 2014, several refinements were made to the preliminary route alignment options to avoid or minimise potential effects on sensitive habitats. The most significant of these was a refinement of the route through the Cothi Valley. The original route had only one option across the valley, which was located across slopes with ancient semi-natural

woodland. The new route provides two options that would allow a route avoiding ancient semi-natural woodland. The most northern of the options takes a route down the eastern slope through fields and then follows the road north. The southernmost option takes the route outside of the most densely wooded part of the valley. Preliminary results from the winter bird surveys were also reviewed when selecting potential crossing points on the River Towy.

Cultural Heritage

2.3.25 The preliminary route alignment options were reviewed based on existing knowledge of constraints in the study area, together with examination of plans and where necessary, aerial photography.

2.3.26 The main issues taken into account in refinement of the primary route alignment options at this stage were to avoid any physical effects on designated receptors, or any effects resulting from changes within their settings. The designated receptors considered include Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, and Registered Landscapes of Historic Interest. To remove or reduce potential adverse effects, consideration was given to:

- Avoiding crossing or oversailing receptors;
- Maximising setback distance from receptors;
- Taking advantage of screening by terrain and filtering from existing vegetation;
- Avoidance of prominent/dominant positioning in the landscape (eg. breaking the skyline, on high ground, etc.); and
- Respecting the existing boundaries between historic landscape zones.

2.3.27 The preliminary alignment options have been developed with consideration for the above constraints and in particular the following potential cultural heritage issues were considered in the review of preliminary route alignment options:

- East of Gwernogle, the preliminary route alignment option passes two Listed Buildings (one a church) on the road at Nant-y-Waun. Consideration should be given to maximising the distance of the final alignment from these buildings;
- The preliminary route alignment option in corridor E2 passes a Listed Building on the B4310 west of Abergorlech but topography and vegetation in this area should be sufficient to screen an OHL alignment;
- The preliminary route alignment option has been adjusted southwards where it passes a Listed Building at Forest. Keeping the final alignment to the south would reduce the potential for adverse effects on that receptor;
- A preliminary route alignment option south of Brechfa was dropped in favour of a more southerly option avoiding a pair of Listed Buildings on the B4310 (Brechfa House and its stables);
- The final alignment will be adjusted to avoid crossing directly over a scheduled cairn north of Caeglas and Cwrt Farm;
- The preliminary western preliminary route alignment option around Alltwalis was adjusted to allow greater setback from the western fringes of the historic settlement;
- Close to Rhydargaeau, the preliminary route alignment option was adjusted to the west to provide sufficient width to enable a better final alignment at this point;
- In the section approaching the north of Carmarthen (Peniel to the River Towy), the preliminary route alignment option was shifted slightly further from the Listed Building at NGR 242821 222784;
- Sufficient setback has been allowed for the final route alignment option near the A485 Dolgwili roundabout to reduce potential adverse effects on a Listed Building at this location;
- East of Carmarthen the preliminary route alignment passes by a Listed

Building near Llangunnor but topography and vegetation in this area should be sufficient to screen an OHL alignment; and

- The preliminary route alignment option to the southern connection point has allowed for sufficient setback from the church at Llandyfaelog.

Flood Risk and Hydrology

- 2.3.28 Avoidance of flood plains and watercourses (main rivers as well as minor watercourses and drainage ditches) is preferable, however it is acknowledged that in many cases they are not possible to avoid. The preferred route option has considered the location of the flood zones and will aim to ensure there is no impact on the existing hydrology and function of the floodplains.
- 2.3.29 It is preferable that pole positions are located outside of the 8m easement zone associated with Main Rivers. Any associated constructions compounds, works and excavated material should be stored out of the flood zone, where possible.
- 2.3.30 The flood storage cells along the River Towy are located to the east of the A485 and are avoided by the alignment route however construction work should ensure that the effectiveness of this zone is not compromised. If appropriate, any works will demonstrate they would not reduce the flood storage or operation of these areas.
- 2.3.31 Use of sustainable drainage systems (SuDS) within compounds or along access routes can be considered to attenuate surface water runoff and improve water quality of surface water discharges. SuDS measures can include infiltration trenches, soakaways, attenuation ponds, swales, permeable / porous tarmac or other permeable surfaces. The nature of SuDS will often depend on the permeability of underlying soils.
- 2.3.32 Appropriate culvert arrangements would have to be considered where watercourses or significant surface water flow paths cross haul routes or are impacted by compounds. Culverts used when crossing watercourses will be

sized according to the width and depth of the crossed watercourse in line with culvert sizing specifications subject to appropriate consent from the relevant authority.

- 2.3.33 The route would predominantly pass through arable farmland where there are agricultural drainage systems. Any existing drains that have to be crossed as part of the construction works should be avoided where possible and would be restored on completion of the route alignment.
- 2.3.34 Where works in the flood plain are unavoidable a Flood Plan would be established as part of the CEMP to inform the workforce what actions must take place in a flood event. This plan would also consider a safe egress route away from the source of flooding, and would include signing up to the latest flood warning system.

Planning

- 2.3.35 A desk-based planning review has been undertaken in order to identify existing and proposed (emerging draft) land use allocations, and existing planning applications and permissions that have potential to influence the location of the preliminary route alignment options. The focus of the exercise was on areas of proposed development, although land uses such as recreation areas and conservation areas were also noted.
- 2.3.36 The assessment commenced with a review of the proposals maps of the Carmarthenshire Unitary Development Plan (UDP) (adopted 19th July 2006). This was undertaken in conjunction with a review of emerging Growth Areas and other proposed land use allocations identified in the emerging Carmarthenshire Local Development Plan (LDP) (Deposit June 2011). The LDP, which will replace the UDP, has reached an advanced stage, having been submitted for Public Examination in accordance with The Town and Country Planning (Local Development Plan) (Wales) Regulations 2005 (Regulation 22) on 12th June 2013.

- 2.3.37 In order to consider the proposed land use allocations in their broader policy context, the Deposit LDP sites were considered in the context of the Council's updated growth strategy as identified by the Composite Plan (October 2013).
- 2.3.38 A desk-based planning application search was undertaken of the preliminary route alignment options, utilising Carmarthenshire County Council's online mapping facility that identifies planning applications from 2007 onwards. This process has, therefore, taken into consideration planning applications (and other forms of application; for example, Prior Notification) that are currently pending consideration or that have been previously approved and remain capable of implementation.
- 2.3.39 Existing settlements were presumed to have the potential to accommodate some future growth irrespective of the requirements and status of the UDP and LDP. The initial focus of the planning search was therefore on planning applications/ permissions outside the urban areas. A more targeted search was nevertheless undertaken in early January 2014 to confirm the findings of the initial search and to ensure that any extant permissions within the preliminary route alignment options could be avoided through future micro-siting of the proposed lines, if appropriate.
- 2.3.40 As a result of the above considerations no additional refinements were made to the preliminary route alignment options

2.4 Final refinements to alignments

- 2.4.1 The environmental specialists proposed a series of amendments to the preliminary route alignment options which were considered in a series of design workshops (attended by WPDs team of environmental and engineering specialists) to determine whether additional or alternative route alignment options could be identified, and/or whether the identified alignments could be refined so as to arrive at an appropriate alignment option.
- 2.4.2 It should be noted that many of the refinements suggested require relatively

minor modifications to the 300m wide route preliminary route alignment options and so would not be identified as separate alignment options. Rather, these refinements suggest that there is more than one solution within each 300m wide route alignment option and these findings and conclusions can be used to inform the selection of a final alignment, should the relevant alignment option be taken forward after Stage 2 Consultation. In addition, where some constraints were identified, it was confirmed that these were avoidable within the 300m preliminary route alignment option.

2.4.3 Once the preliminary route alignment options had been refined to respond to environmental constraints, a series of iterations were refined further both by engineering and environmental specialists to arrive at the final alignment corridors which were considered to be a ‘best fit’ considering all the engineering and environmental inputs.

2.4.4 The alignment options selected at this Stage (Stage 3a) are summarised on Figures 6 to 23. Areas where the alignments were significantly adjusted from the preliminary stage as a result of the environmental evaluation, are indicated on the Figure 4 and 5 and are summarised in Table 2.2.

Table 2.2–Modifications to the preliminary route alignments

Reference	Location	Proposed adjustment
1	Bancycapel	An alignment south east of Bancycapel that would have followed a lower lying route in a valley to avoid the more elevated plateau areas to the north west of this settlement was rejected due to likely effects on woodland and ecological interests in the valley.
2	A48	Alignment discounted in favour of a route to the east, considered to have less impact on residential properties.
3	Towy Crossing	Alignment adjusted to the west
4	Peniel	On-site checks suggested that a route slightly further west of Peniel would have less impact on the valley landscape in this area.
5	Pontarsais	Alignment option to the west of Pontarsais was rejected due to potential visibility of sloping ground and prominent hill landform to the north.

6	Bryn Llywelyn link	The final link to the Bryn Llywelyn Substation was realigned to avoid impacts on the open moorland to the east or valley landscape to the west.
7&8	Brechfa	Identification of other OHL alignments in the vicinity of Brechfa village that would minimise visual effects on the settlement and follow a less elevated route.
9	Cothi Valley	Route across the Cothi Valley was rejected due to impact on sensitive, narrow 'v' shaped section of the valley in the SLA and due to potential visibility on elevated sloping ground to the south east in sensitive scenic views from just east of Brechfa village. The new route provides two options that would allow a route avoiding ancient semi-natural woodland.

3 Final Alignment Route Options

3.1 Description of alignment route options

- 3.1.1 The alignment route Options have been named in accordance with the previous consultation (Options A-E) and assigned a number per section to allow identification. The final alignment route options as described below are shown on Figure 4 and 5 (outlined in green) and in more detail on Figures 6 to 23.

Section A1

- 3.1.2 The route option begins at the 'EE' line at tower EE42 and then is routed through an area of woodland (avoiding ASNW to the north, although some of the woodland is designated as Restored Ancient Woodland). This is unavoidable without significant deviation as the woodland is located in an east-west orientation. The route option then proceeds in a north-easterly direction to cross the A484 to join with the west route. The Dyfed Archaeological Trust (DAT) Historic Landscape Area is just within the route option at the A484 crossing. The beginning and end part of this section is within a LANDMAP Visual and Sensory area, classified as 'High'. The route avoids Llandyfaelog and this section of the route option ends north of this settlement.

Section A3

- 3.1.3 The beginning of the route option continues north before passing to the north of Bancycapel and continuing northeast towards the A48. The route option would pass a wind turbine (micro-turbine scale) associated with a farm, but while this is within the route option, the route corridor is of sufficient width to permit an alignment to avoid it. The route option passes to the east of the Beaulieu Plantation. While the main woodland block has been avoided, some

smaller pockets of woodland are within the route option. The route option then is directed northwest towards the west route option. Some areas of peat have been identified in this area as well as a disused landfill to the east of the route option which has been avoided. The route option includes a small section of a Plantation of Ancient Woodland site (PAWS) which is also a SSSI but it is considered that the width of the alignment route option is sufficient to provide opportunities to route away from these potentially sensitive features. After crossing the A48 and another road north of Brynmeusydd, the route option splits east and west of Tyllwyd-mawr and at this point it enters the Dyfed Archaeological Trust (DAT) Historic Landscape Area. The Police headquarters are located to the west.

Section A2

- 3.1.4 The route option begins at the 'EE' line at tower EE46 and at this point and for a short section, this existing tower is located within the Special Landscape Area and LANDMAP Visual and Sensory area classified as 'High'. The corridor at this point lies entirely within the Dyfed Archaeological Trust (DAT) Historic Landscape Area and the beginning of the corridor is within the Registered Landscape of either special or historical importance in Wales. The corridor crosses a National Cycle Trail (4) but this is unavoidable at this location. It is routed in an easterly direction through arable fields and areas of marshy grassland north of Llandyfaelog to meet the east route. This section of the route option crosses the National Grid 400kV OHL and continues north avoiding significant vegetation before terminating south of Idole.

Section A4

- 3.1.5 The route option begins southwest of Idole. Bryncoch is within the alignment route at this point, where it is noted that planning permission has been granted (7th November 2013) for a wind turbine (ref: W/28593); however, it is considered the width of the alignment route option is sufficient to provide opportunities to route away from this site. This part of the route is within the

LANDMAP Visual and Sensory 'High' area. The route re-enters the registered area of historic interest before crossing the A484 with Idole to the east, and here the route splits briefly to navigate around a woodland block west of Pentre-poeth, to the west of Bryn-Gwanws. The alignment route option continues north, relatively unconstrained. The alignment route option is then directed north of Cwmffrwd before crossing the A48. To the north of the A48 the alignment is routed eastwards along the north of the A48 before meeting the east (2) alignment. After crossing another road (north of Brynmeusydd) with a long distance footpath located along it and across the option, the alignment splits, east and west of Tyllwyd-mawr and here it enters the Registered Landscape of either special or historical importance in Wales associated with the Towy Valley. The Police headquarters are located to the west. At this point the route is located within the existing and proposed Special Landscape Area.

Section B1 - (River Towy Crossing)

- 3.1.6 Section B crosses the River Towy to the east of Carmarthen (east of Llangunnor). The alignment route option crosses the B4300 and the River Towy (designated as an SAC and SSSI) before following the Gwili River and A485 north. The alignment route option runs to the west of the Abergwili, past Abergwili Bridge and the sewage works. The route option is entirely within the proposed Special Landscape Area (the existing Special Landscape Area only extends as far as Abergwili with the northern section free of SLA designation). This section of the route is within the LANDMAP Visual and Sensory 'Outstanding' category and until just north of the A40, the Registered Landscape of either special or historical importance in Wales associated with the Towy Valley. The Historical Landscape Area is within the southern section of the route. The route is located to the west of The Bishop's Palace at Abergwili (Registered Park and Garden) with its essential setting to the east. There are two Listed Buildings just within the route option, one at east of Llangunnor and one at Glangwili Bridge.

Section C1

- 3.1.7 This route option is directed to the East of Peniel and the A485 from the North of Abergwili, ending just as it crosses the A485. There are a couple of small pockets of ASNW and woodland which could be avoided as part of the final routing. This section is not associated with any landscape designations but is still within the DAT Historic Landscape Area.

Section C3

- 3.1.8 Beginning southwest of Pontarsais, this route alignment option includes a cluster of ponds and associated vegetation however it avoids the Plantation of Ancient Woodland site and ASNW. There are some areas of marshy and semi-improved neutral grassland along the route. The DAT Historic Landscape Area is just within the corridor on the south-eastern edge. The LANDMAP Visual and Sensory area is designated as 'High' throughout this section.

Section C2

- 3.1.9 This route option begins northwest of Abergwili, west of Peniel and the A485, finishing north of Rhydargaeau. There is a cluster of trees with Tree Preservation Orders north of Gwangwili Bridge and as the route crosses the A485 there are two small sections of Restored Ancient Woodland Site which could be avoided by the final alignment, should this option be chosen. On the western side of the A485, part of the route is within the LANDMAP, Visual and Sensory 'High' area, but the remainder of this route is free of any landscape designation. The majority of the route option (apart from an area north-west of Peniel) is within the DAT Historic Landscape Area. There are some small areas of woodland west of Peniel. There is an area of peat, marshy grassland and modified bog habitat north of Llwynreos. At the end of this section, the route re-enters a LANDMAP visual and sensory 'High' area.

Section C4

- 3.1.10 Beginning southwest of Pontarsais, this route option includes limited areas of

trees and is outside any historic landscape areas or designations. The majority of this route is within the LANDMAP visual and sensory 'High' area.

Section D3

3.1.11 This route option navigates northeast of Alltwalis where there is a block of woodland including a small pocket of ASNW north of Alltwalis Farm with marshy grassland at the northern extent. The route option is not within or in proximity to any historic landscapes or designations but the majority is within the LANDMAP visual and sensory 'High' area. There are a number of local footpaths within the route.

Section D4

3.1.12 This route option connects from an area north of Alltwalis towards the substation. There are two strands of PAWS within the route, one of which crosses the whole of the route option in this location and is therefore unavoidable. There are two Scheduled Monuments east of the route within the forested area. The route is partially within the LANDMAP visual and sensory 'High' area with some local footpaths present near to the substation location.

Section D2

3.1.13 This route option navigates to the west and north around Alltwalis. The first part of this route includes two pockets of ASNW but avoids the main area of ASNW (Allt Garedig) to the east. The route option is not within or in proximity to any historic landscapes or designations and only the northern and southern extents are within the LANDMAP visual and sensory 'High' area. There are a number of local footpaths within the route option.

Section D5

3.1.14 This route option ends at the Bryn Llewlyn Substation and is directed south of Gwyddgrug from an area north of Alltwalis. It avoids all ASNW, although a small section of PAWS encroaches into the route south of Gwyddgrug. There

are areas of marshy grassland within the route option. The route option does not include any historic landscapes or designations. The route is within the LANDMAP visual and sensory 'High' area except for the area southeast of Gwyddgrug. The very northern extent of the route option includes a section of Common Land.

Section D1

- 3.1.15 The route option connects into the Brechfa West Wind Farm from the area south of Alltwalis. It passes through an area of marshy grassland and some tree lines exist within the route option. As it heads east towards the proposed substation, it enters the Brechfa Forest plantation. The route option does not include any historic landscapes or designations. The route option is entirely within the LANDMAP visual and sensory 'High' area.

Section E1

- 3.1.16 This route option connects the proposed Brechfa West Substation to the proposed Brechfa East Substation, through the forested area, navigating south of Gwernogle. The route is entirely within the LANDMAP visual and sensory 'High' area. There are two Listed Buildings south of this route (Pant-y-Bettws and Church of St. Michael). The route option has been carefully navigated to avoid as far as possible ASNW, however there are in two locations unavoidable strands of this designation as well as a large proportion of forestry throughout the route.

Section E2

- 3.1.17 The central route option connects the proposed Brechfa West Substation to the proposed Brechfa East Substation along the B3410, north of Brechfa. The centre of Abergorlech is designated as a Conservation area with associated Listed Buildings; the route option avoids this and is positioned west of the designation. The Listed Building Maes-y-Bidiau is located on the northern edge of the route with other Listed Buildings outside the route within Brechfa.

There are pockets of woodland, including ASNW, as well as marshy grassland along the route. The existing and proposed SLA extends from north of Abergorlech along the route ending to the north-west of Brechfa. The proposed SLA extends further to the west of Gilfach Goch. The entire route option is LANDMAP visual and sensory 'High' area. There are a number of recreational routes around Abergorlech within the route.

Section E3

3.1.18 This route option extends from the south of Abergorlech, directed south around a large area of woodland and routes north to connect back into the Central route option, east of Brechfa. There are two Scheduled Monuments, one south of the forested area (y Garn Ring Cairn) just within the route option and one outside the route option within the forest (Carreg Castell-y-Gwynt Burial Chamber). The route option avoids the Listed Buildings within Brechfa to the west. The beginning and end sections of the route option are within the existing and proposed SLA areas. The area south of the forested area is not within either but the entire route is within the LANDMAP Visual and Sensory 'High' area. Two areas south of the forest are Registered Common land. There are sections of woodland including ASNW north of the forest and at the end of the route as it navigates north along and across the River Cothi, which are avoidable if the final alignment were to be routed carefully. There are areas of peat, wet modified bog and blanket bog habitats located south of the forest area.

Section E4

3.1.19 This route option connects the area south of Brechfa to the southwest of the forested area. The southern extent just includes the outskirts of the DAT Historic Landscape Area. The route option is directed south of Brechfa avoiding the Listed Buildings located north of the route. The entire route option is within the LANDMAP Visual and Sensory 'High' area and is almost all within both the proposed and existing SLA designation. There are pockets of

woodland along the route option including ASNW, which is avoidable. The route option also crosses the River Cothi.

4 Next Steps

- 4.1.1 An appraisal of all of the route alignment options identified within the preferred route corridors will be undertaken in due course. Following appraisal and detailed consultation, WPD will select a preferred route alignment from the options considered. The appraisal of the route alignment options will be undertaken using the appraisal criteria used at Stage 2b³, supplemented by additional considerations where relevant and necessary. These appraisals will provide a clear justification for the preferred route alignment chosen.
- 4.1.2 The preferred route alignment will then be subjected to formal EIA procedures, in order to avoid, wherever possible, adverse effects on physical, biological and human sensitivities within the receiving environment. The scope and coverage of the EIA will be agreed in advance with PINS, relevant statutory consultees and other key stakeholders.
- 4.1.3 The final scheme design will be subject to formal consultation in accordance with Sections 42, 47 and 48 of the Planning Act 2008. WPD expects the submission of the DCO will not be made until late 2014; this will provide sufficient time to undertake all necessary activities associated with design development, EIA and pre-application consultation.

³ The appraisal adopts a system of 'preference ratings' from 'very high' to 'very low' for each topic considered (with a single overall combined rating for the list of 'other' environmental topics considered in outline) and also allow for opportunities to be highlighted. The appraisal focuses on landscape, visual, ecological and cultural heritage issues (identified earlier in the process as the main determinative factors for corridor selection) but also include outline consideration of a range of 'other' environmental factors that will become increasingly relevant as the route selection process approaches the consideration of more specific route alignment options.

Appendix 2 WPD's Schedule 9 statement

**WESTERN POWER DISTRIBUTION
(South West) plc and (South Wales) plc**

SCHEDULE 9 STATEMENT

This statement is provided under Schedule 9 of the Electricity Act 1989 as amended by the Utilities Act 2000

South Wales and the South West of England is renowned for its countryside, dramatic coastline and rugged terrain. Western Power Distribution (WPD) recognises that such an environment needs care and consideration and WPD aims to achieve this through its environmental policy.

Duties:- WPD is licenced to distribute electricity through its electricity systems in South West England and South Wales where the Company is the Distribution Licence holder. It is obliged, under its Licence, to offer least cost, compliant connections to persons seeking connections to the Distribution system within the Licence areas.

Under Schedule 9 of the Electricity Act, as amended, WPD must “have regard to the desirability” of preserving natural beauty and “seek to do what it reasonably can to mitigate” the effect of its activities on the countryside, geological and physiographical features, flora, fauna, and protect sites, buildings or structures or objects of historic or archaeological interest when WPD:-

- Plans to install electricity lines (overhead and underground) to supply an individual or community
- Carries out other works in connection with the operation and maintenance of the distribution system

WPD aims to: -

- Minimise the impact of its activities on communities and the historic and natural environment
- Site overhead lines with care and consider both the visual impact and the impact on nature conservation as far as possible
- Continue to work with partners to selectively underground lines in appropriate sensitive locations to improve the appearance of countryside, towns or villages, whilst taking account of sites of particular archaeological or nature conservation interest.

To do this, WPD :-

- Only seeks to build lines along new routes, or substations in new locations where the existing distribution system infrastructure cannot be economically upgraded to meet Distribution security standards, or where we foresee an increase in demand for electricity which will not be satisfied by other means, or where connections to customers are required.
- Will seek to avoid, where reasonably practicable, the installation of new infrastructure in areas which are nationally or internationally designated for their landscape, wildlife, historic or cultural significance: National Parks; Areas of Outstanding Natural Beauty; Sites of Special Scientific Interest including Special Protection Areas, Special Areas of Conservation and Ramsar sites; National Nature Reserves; Heritage Coasts; World Heritage Sites; scheduled ancient monuments and designated sites of historic interest ("listed sites") . If installation on such listed sites is necessary, WPD will seek to avoid significant impacts on regional and local sites, protected species and to biodiversity and geological interests within the wider environment, and take measures to safeguard historic sites. Where reasonably practicable, opportunities to enhance biodiversity and geological features of such sites will be exploited.
- Will maintain a geographic record of the locations of the above "listed sites"
- Will seek specialist advice if it is necessary to undertake work on sites of archaeological, historical, biodiversity or geological interest, working closely with suitably qualified and experienced specialists.
- Will consult with District Councils for all new overhead lines. Where these involve voltages at 33kV and above we will voluntarily consult with Parish Councils. For 132kV overhead lines, we will, in addition to consulting with Parish Councils consult with County Councils as well.
- Will consult with Local Authorities on the need to undertake an environmental impact assessment when it is proposed to build more than 1km of new overhead line of 33kV and above
- Will review and offer comment on Local Authority long term plans to draw early attention to the needs for plans to consider strategic WPD infrastructure
- Will consult with statutory bodies, local authorities and relevant landowners where planned new construction would have a high amenity impact, to help us identify, assess and carry out measures to mitigate the impact so far as is reasonably practicable. This may include the provision of resources to screen and landscape selected substations and other locations as needs change.
- Will, on completion of any work ensure the site is reinstated, as far as possible, to its original state

- Will promote environmental awareness and requirement to comply with WPD policies to its staff and contractors. Where WPD staff are undertaking noise testing, we will ensure those staff are trained by recognised external bodies. We will voluntarily liaise with Local Authority Environmental Health Officers to discuss noise complaints and share test results with them.
- Will expect similar environmental standards from our suppliers and contractors. Where works are being undertaken by third parties for later adoption by WPD under the Ofgem Competition in Connections regime, we have sought through Ofgem that appropriate requirements are in place.
- Pursues waste minimisation, and recycling. WPD recycle office materials like glass, paper, card and toners, as well as metal materials, oils, wood and electrical equipment. Where possible we donate computers, office furniture and telephones that are no longer required by WPD to charitable organisations.
- Undertakes research, invests in and reviews new technology relevant to the business and takes into consideration its impact on the environment. Seeks to use technology to reduce the amount and size of equipment needed on site
- Take special care and appropriate safety measures in the handling and disposal of potentially hazardous materials
- Use external consultants where “in-house” expertise is not available