

UNDERGROUNDING POWER LINES

ABSTRACT

A guide to the background, identification, selection, and undergrounding of low voltage power lines in AONBS and National Parks in the south west of England.

SW Steering Group

January 2020

south west
protected
landscapes

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BACKGROUND

As part of the Ofgem approved voluntary initiative, following stakeholder engagement and feedback, Western Power Distribution (WPD) approved business plan for the regulatory period 2015-2023 (known as RIIO-ED1) includes a total sum of £7.7m for undergrounding of overhead lines in National Parks (NPs) and Areas of Outstanding Natural Beauty (AONBs).

The £7.7m is the total for WPD's four licence areas for 8 years and is split approximately

- o West Midlands: £2.3m
- o East Midlands: £0.9m
- o South West: £3.0m
- o South Wales: £1.4m

PRINCIPLES OF THE SCHEME

- The principle of any undergrounding scheme in AONB/NPs is one of **partnership**.
- Landowners and tenants, protected landscape staff/ reps, and other parties engaged in schemes are expected to input their time and backing on a principle of '**in kind**' support.
- Where appropriate, real costs will be met through the programme for agreed tariffs including legal, agent, easement, wayleave, damage and compensation.

SCHEME SELECTION & ENGAGEMENT / CONSULTATION

Schemes should be selected by the stakeholders / interest groups in National Parks/AONBs.

WPD will rely on its principal stakeholders / interest groups to carry out their own engagement and consultation on schemes **before** putting these forwards. The degree and type of engagement will vary and it is up to these organisations to determine what is appropriate and proportionate.

Importantly, a protected landscape lead officer/representative will be responsible for coordinating a scheme with WPD and for ensuring the scheme process is **clearly understood** all parties, particularly the landowners/tenants in respect of wayleave, easement and other costs.

Schemes can be selected at any of our operating voltages but typically the higher the voltage the higher the cost of undergrounding. Stakeholders should consider that depending on the location and terrain, the time to implement a scheme could vary greatly. For example, village schemes with 'low voltage' lines or sites with many habitats or archaeological constraints will normally take longer.

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Costs per linear metre typically range between £100 - £200 and schemes will be considered based on their merits within this range. Schemes costing in excess of £200 per linear metre will be considered only under exceptional circumstances.

DECISION MAKING – THE SOUTH WEST STEERING GROUP

The membership of the South West Steering Group was determined through consultation with the Principal Stakeholders (see Appendix 3).

Through the Steering Group, WPD's stakeholders will consider the best use of the funds available when selecting schemes and experience from DPCR5 shows that this often, but not always, means targeting '**iconic**' sites. Members of the Steering Group will act independently to their organisations when discussing the merits of schemes and voting, based on the application form for schemes and value for money.

Through the Steering Group, WPD will implement these schemes within the rules set by Ofgem and taking into account any technical or other constraints (such as consents or environmental / planning restrictions) and other matters.

South West Steering Group Membership as at January 2020

Chris Woodruff (East Devon AONB - Chair)

Pamela Morris (Exmoor National Park – representing NPs)

Dave Edgcombe (North Devon AONB)

Adam Davison (South Devon AONB)

John Mills (Cotswolds AONB)

Mike Madgwick (National Trust)

Lynda Tossell (WPD)

Andrew Hubbard (WPD)

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THE PROCESS FOR DEVELOPING, APPROVING AND DELIVERING SCHEMES IS OUTLINED OVERLEAF
STAGES/PROCESS

	Protected Landscape
	Western Power Distribution
	Steering Group

Prelim site selection	Protected Landscape (PL) lead to consult local amenity groups, landowners and Env. Agencies/staff (if necessary) covering PL on options for identifying possible sites for underground power lines - confirm local support in principal pending process of confirmation through WPD/ Steering Group
PL Assessment	Sites identified and prioritised/collated. PL lead to coordinate and liaise over possible sites to progress – emphasis on iconic. PL to complete using ASSESSMENT FORM to include all environmental constraints and provide accompanying maps and photos. WPD to carry out detailed tech assessment in support of scheme proposals.
WPD Assessment	
PL confirm locally	Present options to PL Partnership/Board to confirm approach to progress with Steering Group. Record PL agreement and use as basis for supporting letter from PL alongside report on/record of consultation
PL Prep for SG	PL acts as lead to work up scheme and present Steering Group for consideration
Present to SG - Stg. 1	Steering Group decision on scheme – PL to develop with WPD if approved
PL develops scheme	PL to liaise with WPD and undertake detailed discussions with landowners to assess scheme and costs. PL lead to draw up METHOD STATEMENT in conjunction with WPD/landowners and local agencies/specialists covering designation issues etc. - to include community engagement.
WPD Tech scheme develop't	WPD to make assessment of EIA requirements/screening.
Present to SG - Stg. 2	Costed scheme to be presented back to Steering Group for approval with completed assessment form and full details. Progression if approved
WPD Schedule & Deliver	WPD complete EIA screening. Subject to outcome, move to final cost, schedule and implementation of scheme. Any significant variations to original estimates to return to Steering Group for approval before commencing.
PR	Follow up press and PR only AFTER completed and in agreement with WPD

STAGE 1

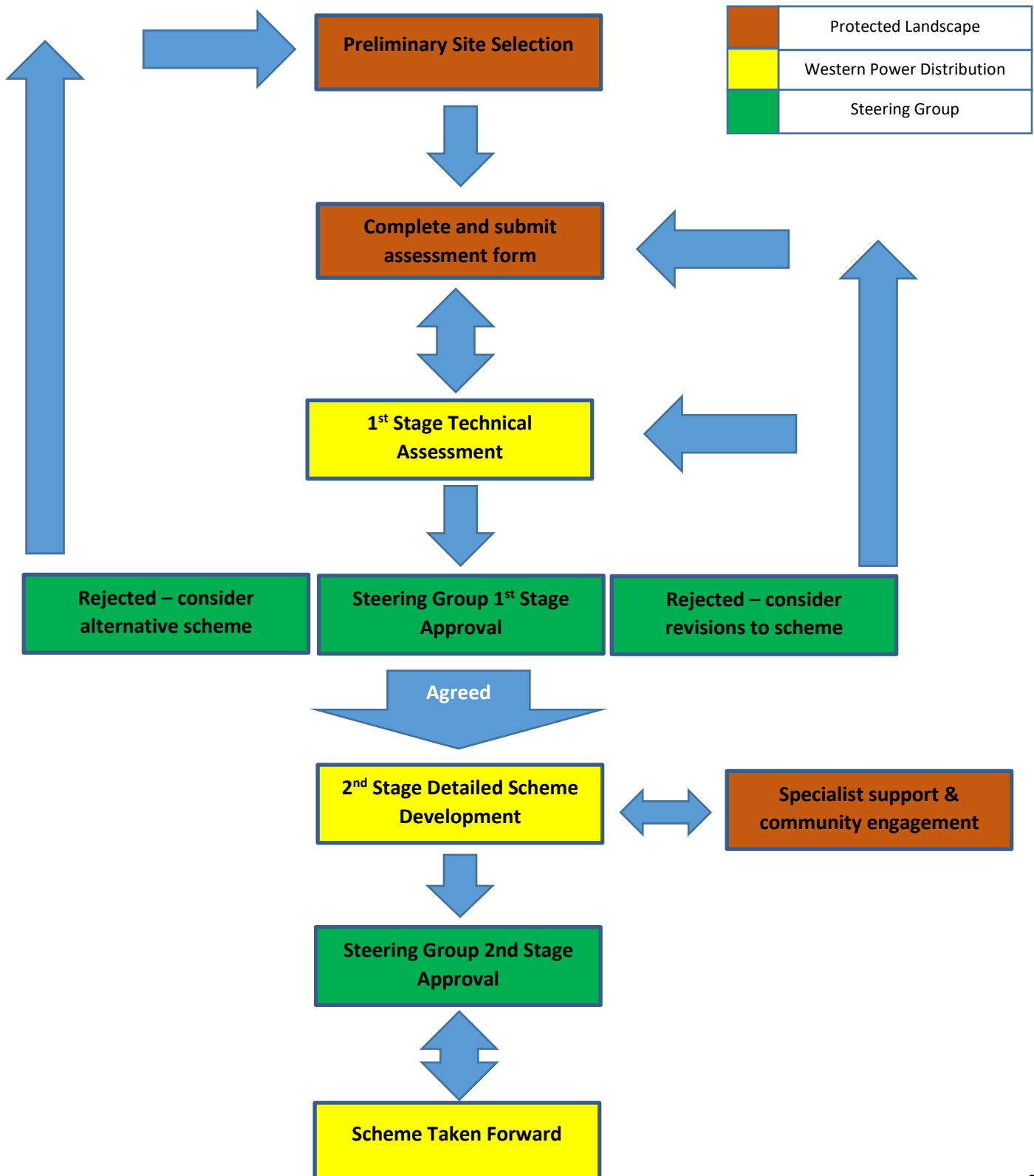
WPD will carry out initial budget costing and feasibility work on schemes put forward by the stakeholder. These will then normally be discussed by the Steering Group.

STAGE 2

Schemes selected by the Steering Group will then be worked into detailed schemes (including costing and consents).

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Once a scheme is ready to be constructed, if the costs vary significantly compared to the budget cost, it will be presented again to the Steering Group for approval.



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THE ASSESSMENT FORM

The purpose of the Assessment Form is to evaluate the suitability of an identified length of overhead line to be undergrounded under the OFGEM allowance for protected landscapes. The scheme applies to low voltage, 11kV, 33kV and 132kV lines only (see Appendix 2 and 4).

The information contained on the form will allow a comparison to be made with other schemes in order to prioritise those that are forwarded to the next stage. Proposers of high priority schemes will be asked to make a detailed presentation to the Steering Group to justify their assessment. The Steering group will vote to decide which schemes are taken forward to implementation.

PROPOSER

Although proposals can originate from parish councils, community groups or private individuals **ALL** schemes to be submitted must be “Proposed” and endorsed by the relevant National Park or AONB representative and an AONB/NP lead officer must act as the overall lead on projects in their areas.

LINE IDENTIFICATION

The section of line to be considered should fall mainly within the National Park or AONB boundary. The section of line needs to be continuous and identifiable between landscape and/or network features.

- Maps – maps should identify the line in relation to the NP/AONB boundary and provide detail of the existing overhead route (at least 1:25000) **and include all appropriate environmental constraints/access.**
- Network voltage – see “Spotters Guide” line identification pack.
- WPD Technical Description – information to be obtained from WPD staff

PART A - THE LINE AND ITS IMPACT ON THE AREA

BACKGROUND

The LI/IEMA Guidance states that “... landscape impacts and visual impacts are separate, but related. Landscape impacts are changes in the fabric, character and quality of the landscape. Visual impacts relate solely to changes in available views of the landscape, and the effects of those changes on people. Landscape and visual impacts do not necessarily coincide.”

A1 IMPACT OF LINE ON LANDSCAPE CHARACTER

This section requires the proposer to make a judgement on the magnitude of the line’s impact on the visual and sensory perception of the landscape character and justify it with a description and photographic evidence.

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If Landscape Character Assessment data is available, this can be used to describe the line's impact on Landscape Description Units/Landscape Parcels.

Factors to consider can include:

- Extent of impact – widespread or local
- How is the line contained – landform or landcover
- The impact on the historic character
- The effect on the sense of enclosure and/or wildness
 - The impact of other discordant features in the area

The definitions below are a guide to the ranking the magnitude of the impact on landscape character.

Dominant	Has an obvious impact on a dominant landscape component over an extensive area.
Highly Significant	Has an obvious impact on landscape components and character over an extensive area.
Significant	Has an obvious impact on landscape components and character.

The definition of extensive will not be fixed and should be judged in relation to the scale of the landscape as a whole.

A2 IMPACT OF LINE ON VISUAL AMENITY

The proposer needs to make a judgement on the magnitude of the impact on visual amenity, justify it and provide evidence (photos and description). The definitions below are a guide to ranking the magnitude of the impact.

Dominant	Dominant visual impact for many viewers with either <ul style="list-style-type: none">i) a proprietary interest and prolonged viewing opportunities (e.g. residents/businesses), orii) a substantial interest in their environment e.g. users of recreational facilities (RoW, recreation sites, attractions, waterways etc.).
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Highly Significant	Dominant visual impact for many viewers with a momentary interest e.g. motorists/rail passengers or an obvious visual impact for many viewers with a proprietary or substantial interest (see above).
Significant	Obvious visual impact for many viewers with a passing visual interest or some viewers with a proprietary or substantial interest.

A3 IMPACT OF POTENTIAL UNDERGROUNDING ON OTHER FEATURES WITHIN THE LANDSCAPE

This element of the form is asking the proposer to predict possible benefits to biodiversity and/or historic features if the wires being assessed are placed underground. As guidance please refer to the list in B7 for an indication of the features that can be considered. The proposer needs to back up claims with photographs, maps and referenced evidence that should include correspondence with relevant organisations and experts (EH, EN, County Archaeologists/Ecologists etc.).

PART B - IMPLEMENTATION

B1 – B2 ESTIMATED PROJECT COST, START / FINISH DATES

Scheme proposers must liaise closely with WPD to estimate the costs and timescale of the project.

It is important to get detailed information from landowners to ascertain best time of year, clashes with future works programme etc. to avoid delays and to be very clear about costs and fees and expectations of the scheme.

Please note the following information – it is important to ensure landowners/tenants are aware of these

- **Overall costs** - costs per linear metre should be between £100-200 total
- **Professional legal fees** – may be eligible up to £1500 per scheme including all parties
- **Agent fees** – See Appendix 1 for further details
- **Easement, land rights, wayleaves** – The amount paid will be subject to the operations and impact. The preferred option is to secure an easement and to retain freehold or long-term lease on new sub-stations
- **Damage/compensation** - reinstatement will be to the highest standard on all schemes. Compensation therefore will be assessed on a scheme by scheme basis and on the principle of equivalence
- **Other** - (eg BT, EIA screening, watching briefs etc) will operate to nationally agreed levels/competitive quotes and will be subject to the agreement of the Steering Group
- **In Kind** – contributions from landowners/others can form a part of the overall costings for a scheme and it is important to report this where it takes place in order to demonstrate wider support. Costings will be estimated based on the current accepted rates used by the Heritage Lottery Fund.

B3 ESTIMATED OVERHEAD LINE ASSETS TO BE REMOVED

Use the attached “Spotters Guide” at the rear of this document to identify the relevant structures proposed.

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B4 PREFERRED ROUTE FOR UNDERGROUNDING

The route identified on a map should indicate the undergrounding route identified after initial discussions with WPD and any landowners that would be affected. It should also show the existing overhead route.

B5 NEW ASSETS / ADDITIONAL STRUCTURES REQUIRED

When undergrounding it may be necessary to install new overground assets, such as transformers. An estimate of the numbers and type of additional assets should be obtained from WPD. Their potential impact on the landscape and statutory designations should be investigated and details outlined with map(s) and photographs.

B6 PROJECT COMPLEXITY

Any potential complications to the project should be identified here.

B7 DESIGNATIONS/RECORDS

A map of the existing line and potential undergrounding route(s) with all relevant designations/records (see below – include all designations close to routes) clearly marked needs to be attached to the form. When considering a proposal that could impact on (within or close to) one of the examples listed below it is important to make early contact with the relevant authority (EN, EH, County Archaeologist/Ecologist etc.). This is needed in order to determine the possible restrictions/implications to the scheme. Documentary evidence of this contact and the implications to the scheme will be required.

Examples of relevant designations and their significance.

Heritage

International - World Heritage Site

National - Scheduled Ancient Monument, Listed Building, Register of Parks and Gardens, Features in renowned painting, Register of Battlefields

Local - Local landscape designation, Conservation Area, Recorded on Sites and Monuments Record, Historic Environment Record, Portable Antiquities Database, sites awaiting designation (contact County Archaeological service)

Biodiversity

International - RAMSAR, SPA, SAC

National - NNR, SSSI, national BAP species/habitat

Local - County Wildlife Site, Wildlife Trust reserve, local BAP species/habitat

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B8 DOCUMENTED SUPPORT

In order for the undergrounding project to be successful it must have support from local people and organisations. Evidence of this support needs to be attached to the form.

It is important that at least an initial reaction form the Local Planning Authority and any statutory organisation that might need to be approached for consent is recorded.

B9 VALUE FOR MONEY

WPD should be able to provide an initial estimate of the cost of the scheme.

The cost per linear metre should be calculated by dividing the total cost of the undergrounding scheme by the length of existing overhead cable to be removed.

In arriving at a decision, Steering Group will consider the cost per linear metre, any additional funding or in kind support and/or contributions made by supporting parties.

Please email the completed application form and attached documentation to:

Linda Tossell : ltossell@westernpower.co.uk

Your application will be considered and you will be informed if/when you will be required to make a detailed presentation to the Steering Group.

POTENTIAL COST CONSTRAINTS

Note of Caution: It does not necessarily mean a scheme would be uneconomic just because some of these constraints are present but the more there are, the greater the chances.

- Trenching in rock
- Cable route much longer than Overhead route due to Topography, natural obstacles (eg forest)
- Trenching large sections in Highway
- Crossing Railways (this also adds time delays)
- Wide River crossings (streams should not be an issue but EA consent required)
- Canal crossings
- BT attached cables
- Street lighting sharing poles
- Low Voltage village lines with individual property 'services'

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- Pole Mounted Transformers – the number of them and spacing apart in a section to be undergrounded could be a factor (eg if several ground mounted substations were needed to replace and/or low voltage cables needed to be installed).
- Overhead switchgear/switches that cannot be re-sited overhead. This can only really be determined after consulting with WPD.

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APPENDIX 1 – WPD APPROACH TO THE PAYMENT OF FEES

(Reference in this guide to landowners also includes occupiers)

This document provides guidance on three fee arrangements used in the calculation of agents fees: fixed fees, scale fees and hourly rates. The following are relevant in terms of guiding principles:

FIXED FEES AND SCALE FEES

- We propose the use of our fixed fees and scale fees to facilitate expedient settlement of discussions about agents fees.
- Our fixed and scale fee tables have been designed to reflect a reasonable level of remuneration for agents and they continue to be widely accepted on this basis. Fixed fees and scale fees are therefore considered appropriate for the majority of instances.
- Our fixed and scale fees are shown in Appendix 1.
- The fixed fee rates relate to the settlement of claims arising from works to install new equipment on private land. Other than in exceptional circumstances we do not pay agents' fees for setting up new agreements for our existing equipment on agricultural land. This is a service, using our standard agreements and standard payment rates, which we already provide direct to landowners.
- In cases where a fixed fee has been paid relating to the completion of a new wayleave and, thereafter, a scale fee arises in connection with a subsequent damage claim, the scale fee for the damages claim will be calculated by deducting the fixed fee already paid.

HOURLY RATES

- In cases where we accept that an hourly rate basis of fee assessment is appropriate, to assist in the assessment of the fee claim, we expect the agent to provide us with detailed diary sheets of their reasonable time incurred.
- Other than in exceptional instances and to be agreed in advance, only one agent should work on an individual case.
- Hourly rates are inclusive of general office expenses e.g. stationery, postage, telephone calls and photocopying.
- Travelling reasonably and necessarily incurred in connection with the preparation and settlement of the claim (providing it is in the surveyor's / valuer's region) may be payable at HMRC-guided rates. We do not routinely pay for an agents' travelling time.
- Any discrepancies between what we might regard as reasonable and what an agent charges a landowner is a matter for the agent to reconcile with the landowner.
- Fees calculated on an hourly basis should reflect market rates which are appropriate to the seniority/expertise of the person in question. In this respect, we also expect the firm to delegate matters to fee earners of appropriate seniority/expertise for the case in question.
- In order to avoid problems or misunderstandings, we regard it as good practice for agents to notify / agree the following details with us in advance:

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- An initial fee ceiling.
- That we expect fee claims to be supported by accurate diary sheets and we reserve the right to cap fees calculated on this basis.
- The rate per hour for the person concerned.

VAT ON FEES

We only pay VAT on agent's fees if a landowner is not VAT registered. The following are relevant in this respect:

If a landowner is registered for VAT:

- The payment of VAT will be offset against the landowner's overall VAT return and so a loss will not be incurred. Therefore, we will not pay VAT on the fee.

If a landowner is not registered for VAT: The payment of VAT on the agent's fee will result in an unrecoverable loss. Therefore, we will pay VAT on the fee.

- All fee related invoices are to be in the landowner's and not WPD's name.

ACCOMMODATION WORKS

Other than in exceptional circumstances, we do not make adjustments to the fee payable on a routine basis in respect of the value of additional works or other variations of the original works in which the agent may be involved.

AGENT ACTING ON BEHALF OF TWO OR MORE LANDOWNERS

- In relation to scale fee payments, we will aggregate the total of the compensation for both parties for the purpose of assessing the fee.
- In relation to time-based fees we consider it reasonable for the economies which result from meetings at which both/all parties' interests are considered to be taken into account. For example, the time associated with a meeting with us to negotiate a claim on behalf of both/all parties will only be counted once. It is not appropriate for a single meeting to attract a separate fee in respect of each party concerned as that would be double counting. Where there is evidence that separate meetings were justified (for example if an agent has had to take instructions / report back to clients living at separate addresses), we may be willing to make an allowance for a fee in respect of that activity.
- Economies of scale may also be appropriate in instances where separate claims are discussed at the same meeting with us. In these instances, we will only count the meeting time once. We will not make multiple fee payments for the same meeting in respect of each claim.

INTERIM FEES

Other than in very exceptional circumstances, we do not make interim/advanced fee payments.

DUTY TO MITIGATE

- We consider it appropriate for landowners to mitigate their losses in connection with any claim for compensation as a result of our activities on private land. Therefore it follows that in cases involving hourly-based fees, where it is appropriate, it is reasonable for us to expect written correspondence or telephone calls to be used for day to day agent: client communications.

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- On a similar theme, we consider it appropriate for landowners to expect a firm to delegate the conduct of a matter to a person of appropriate seniority/expertise for the case in question and for that to be reflected in the hourly rate.
- We do not regard the use of an agent based in a location which is a significant distance from the subject land as being consistent with a landowner's duty to mitigate.

FIXED FEES

Fixed Fees Activity		Fixed Fee
Arranging for completion of a new wayleave consent (Simple)		£160
Arranging for completion of a new wayleave consent (Complex)		£270
Supplements as appropriate	Agreeing routes for works on site	£110
	Completion pre-entry record of condition	£160

SCALE FEES

Settlement total	Scale fee
£0-100	215
£101-299	430
£300 - 499	560
£500 - 749	715
£750 - 999	810
£1000 - 1499	850
£1500 - 1999	910
£2000 - 2499	950
£2500 - 2999	995
£3000 - 3499	1050
£3500 - 3999	1090
£4000 - 4499	1145
£4500 - 5000	1190
£5001-7500	1190+4.4%
£7501 - 25000	" "

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Next £10,000	" "
Next £45,000	" "
Next £250,000	" "
Remainder	2.50%

APPENDIX 2 - GUIDE TO THE DIFFERENT TYPES OF OVERHEAD LINES

Low Voltage (Open Wire)

Wires in vertical plane (mostly)

3, 4, or 5 wires



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Low Voltage (ABC – Aerial Bundled Conductor)

Black bundle of 2, 3 or 4 plastic covered cables



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BRITISH TELECOM (TYPICAL)

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11,000 Volts (11kV)

Wires on horizontal plane – 2 or 3 wires

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Typically one or two insulators on 'section' poles

On wooden poles (occasionally concrete structures)



33,000 Volts (33kV)

Wires on horizontal plane – 3 wires

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Typically three or four insulators on 'section' poles

Mainly on wooden poles (occasionally on towers)



132,000 Volts (132kV)

On Towers

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Multiple no of insulators



Section Pole with Stay Wire

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Intermediate Pole (upright pin type insulators) – 33kV shown here

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Pole Mounted Transformer (PMT) – 11kV

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Small



Pole Mounted Transformer (PMT) – 11kV

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Medium



Pole Mounted Transformer (PMT) – 11kV

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Large supported by 2 Poles (H Pole)



Overhead Switch (ABI) on 11,000 Volt Line (can also be mounted on top of pole)

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Fuses on 11,000 Volt Line (also showing cable termination)

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Circuit Breaker (mounted on pole)

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Typical as many types



APPENDIX 3 – PRINCIPLE STAKEHOLDERS

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CAMPAIGN TO PROTECT RURAL ENGLAND
NATIONAL TRUST
NATURAL ENGLAND
HISTORIC ENGLAND
FORESTRY COMMISSION
CAMPAIGN FOR NATIONAL PARKS
THE OPEN SPACES SOCIETY
COTSWOLDS AONB
DARTMOOR NATIONAL PARK
EXMOOR NATIONAL PARK
EAST DEVON AONB
CORNWALL AONB
NORTH DEVON AONB
BLACKDOWN HILLS AONB
TAMAR VALLEY AONB
DORSET AONB
SOUTH DEVON AONB
MENDIP HILLS AONB
QUANTOCK HILLS AONB
ISLES OF SCILLY AONB

APPENDIX 4 - ASSESSMENT FORM

PROTECTED LANDSCAPE OVERHEAD POWERLINE ASSESSMENT FORM

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Application form valid from June 2018				
Steering Group reference (for office use)				
Proposal date				
Proposer				
WPD contact officer(s)				
Line Identification (See Guidance Notes for assistance)				
Identify a homogenous section of overhead line, between identifiable landscape or network features.				
Name of AONB/National Park				
Nearest settlement				
County				
Map(s) of a suitable scale attached included to cover site designations, constraints, access and opportunities				
Between 6 figure Grid References				
Brief description of route				
Network voltage		LV	11kV	33kV
WPD - technical route description				

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Approximate length of section		metres
PART A - THE LINE AND ITS IMPACT ON THE AREA		
A1 - Impact of line on landscape character (photographic evidence required)		
Magnitude of impact		
Dominant Impact		
Highly Significant Impact		
Significant Impact		
Describe the impact of the line on the local landscape character of the area.		
A2 - Impact on Visual Amenity (photographic evidence required)		
Magnitude of impact		
Dominant Impact		
Highly Significant Impact		
Significant Impact		
Describe the impact of the line on the visual amenity of the area.		

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A3 - Impact of potential undergrounding on other features within the landscape

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Undergrounding improves the setting of a heritage/historic feature	
Undergrounding will benefit biodiversity	
Undergrounding will enhance the built environment/local distinctiveness	
Please give details below:	
COMMENTS BOX	
Include any supplementary information.	
Please also give any additional description of the wirescape that you consider to be important.	

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PART B – IMPLEMENTATION (Sections B1-6 WPD - Sections B7/8 by proposer)	
B1 - Estimated Project Cost	
B2 - Estimated Earliest start and finish (MM/YY) <div style="text-align: right; margin-right: 50px;">Start</div> <div style="text-align: right; margin-right: 50px;">Finish</div>	
B2 – EIA Screening details	
B3 - Estimated overhead line assets removed	

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circuit length (metres) (double circuit line = 2 x route length)	
Poles (double pole = 2 x single pole)	
towers	
pole-mounted transformers	
pole-mounted switches	
overhead services to buildings	
B4 - Preferred route for undergrounding identified (attach a map)	
Length of preferred route (metres)	
B5 - New Assets / Additional structures required for undergrounding	
Description below:	
B6 - Project Complexity and/or Constraints	
Select any applicable statements:	
Includes highway/rail crossing	
Includes work within a built up area.	
BT attached cables	
Low Voltage village lines with individual property 'services'	
Pole Mounted Transformers	
Overhead switchgear/switches (WPD).	
Poles shared with street lighting	
Other utilities known to be undergrounded on the route	

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Trenching in rock	
Undergrounding route would be longer - topography etc	
Other issues	
Description below (Attach extra sheets if required)	
B7 - Designations/records along the route	Description
Heritage/Historical	
PROW	
Geological	
Ecological	
Floodplain	
Watercourse	
Agri Environment Agreement	
Common or village green	
National Character Area/Landscape Character Area	
Description below (attach maps):	

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Landscape Character Information - please provide reference	
B8 - Documented support for project (attach relevant information)	
Support from AONB/NP Board	
Support from landowner(s)	
Support from Parish Council(s)	
Support from other organisations (provide list)	
Community Consultation completed	
Local Planning Authority	
NE / HE consent if required	
B9 - Value for money	
Net project cost	
Cost per linear metre of overhead line removed	
DECISION (FOR COMPLETION BY THE STEERING COMMITTEE)	

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Consideration of the potential beneficial impact and the factors concerned with implementation has led the Steering Group to decide:	See Steering Group Minutes/Notes
Submit survey form to: ltossell@westernpower.co.uk	