2015-2023

RIIO-ED1 **BUSINESS PLAN**

SA-06 Supplementary Annex – Uncertainty

June 2013 (Updated April 2014)

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

SA-06 Uncertainty
Contents

1 Introduction

1.1 This document is a supplementary annex to the Western Power Distribution (WPD) Business Plan for the eight year period from 1st April 2015 to 31st March 2023.

1.2 It sets out the main uncertainties that exist during the period and the mechanisms that are required to protect WPD and customers from outcomes that are materially different to forecast. The uncertainty mechanisms apply equally to the four WPD distribution licences of West Midlands, East Midlands, South Wales and South West.

1.3 The eight year period aligns with the next regulatory price control review period, known as RIIO-ED1; the first for electricity distribution to be determined using Ofgem's Revenue = Incentives, Innovation and Outputs framework. The Business Plan, supplementary annexes, detailed cost tables and financial models form the submission under RIIO-ED1 to the regulator Ofgem (Office for Gas and Electricity Markets), who will use the information to determine allowed revenues.

Structure of this document

1.4 We appreciate that the readers of the WPD Business Plan suite of documents will range from regulatory experts and well informed stakeholders through to new customers who may have had little previous knowledge of WPD.

1.5 This document is aimed at readers who require a more detailed understanding of the uncertainties faced by WPD. A less detailed description of the uncertainties can be found in the main Business Plan Overview document.

1.6 This document is subdivided into the following sections:

Chapter	Title	Content
2	**Overview of uncertainty**	A brief description of what type of uncertainty can lead to the need for an uncertainty mechanism.
3	**Regulatory framework**	An overview of the uncertainty mechanisms being proposed for RIIO-ED1 by Ofgem.
4-16	**Descriptions of each proposed uncertainty mechanism**	Individual descriptions of the type of uncertainty, the specific mechanism being proposed by Ofgem and WPD's position.
17	**Other uncertainties where WPD will manage the risk**	Description of the areas of uncertainty which could have an impact on WPD but where no mechanism is required because WPD will bear the risk.
Appendix A1	**Potential uncertainty mechanisms defined in the Ofgem RIIO Handbook**	An extract from the RIIO handbook on the different types of mechanism that can be applied.

2 Overview of uncertainty

2.1 The price control review process sets the allowances that an efficient DNO requires to deliver its outputs for a full price control period. These allowances are based upon best knowledge at the time of submitting plans to Ofgem, which are two years before the start of that price control. For RIIO-ED1 this means that DNOs are forecasting ten years into the future.

2.2 Whilst the majority of forecasts are based upon well-established models and a good understanding of costs, there are some elements that are either beyond the control of DNOs (e.g. the rate of inflation) or there is uncertainty about what a future outcome will be (e.g. the scale of the uptake of low carbon technology (LCT)).

2.3 The circumstances beyond the control of DNOs may lead to a requirement for adjustments to a particular allowance. It is an uncertainty mechanism that structures what triggers a change, how that change is implemented and the amount of change allowed during the price control period.

2.4 This document identifies the areas where there is a requirement for uncertainty mechanisms.

2.5 We do not propose any alternative mechanisms to those proposed by Ofgem, but we do describe why the mechanisms are appropriate to apply to WPD.

Assessing the need for an uncertainty mechanism

2.6 The proposals in this Business Plan have been derived by using the most up-to-date information that is available and therefore represents WPD's best view. Whilst we are best placed to manage the risk of delivery of our plan, there are some areas of uncertainty which need additional mechanisms due to the external nature of the uncertainty and its potential impact.

2.7 In assessing the need for uncertainty mechanisms we consider:

- the reason for introducing each one;
- the appropriate mechanism;
- the value and impact on customers and other stakeholders;
- whether the proposed mechanism works with other aspects of the plan.

2.8 We also consider whether there are any drawbacks in terms of :

- undermining efficient delivery;
- creating pricing volatility;
- other unintended consequences;
- overall complexity;
- the cost to actually implement the mechanism (both ours and Ofgem's).

3 Regulatory framework

3.1 Ofgem has identified a range of uncertainty mechanisms that will apply during RIIO-ED1. Some uncertainty mechanisms are 'Mechanistic' and adjust allowances each year in response to external measures or as a result of externally defined costs. Others are 'Assessed' mechanisms that provide DNOs the opportunity to submit evidence that justifies the need for adjustments to their revenue. These assessments are carried out at predefined points in time, known as re-opener windows.

3.2 The different types of uncertainty mechanism that are possible under the RIIO framework are described in the Appendix A1 - 'Potential uncertainty mechanisms'.

3.3 The following table is extracted from Ofgem's 'Uncertainty mechanism' supplementary annex to the 'Strategy decision' document published in March 2013. It shows which mechanisms are to be used for different areas of uncertainty.

Type	Area covered	Frequency
Mechanistic		
Indexation	RPI Indexation of allowed revenues Cost of debt	Annual
Pass through	Business rates Ofgem licence fees DCC fixed costs Transmission connection point charges	Annual
Volume driver	Smart meter rollout costs	Annual (above a defined threshold)
Assessed		
Reopener	Street works Enhanced physical site security High-value projects	2019
	Load related expenditure	2017, 2020
	Innovation rollout mechanism	2017, 2019
	Pension deficit repair mechanism	2016, 2019, 2022
Trigger	Tax	At any time

3.4 We discuss each mechanism in the following chapters.

3.5 In addition, within the load related expenditure section we describe the range of potential outcomes that could arise as a consequence of different low carbon technology scenarios.

4 Load related expenditure

Uncertainty

4.1 The external drivers of investment due to changes in the demand on our network are:

- General economic conditions which has a significant influence on new connections;
- Customer behaviour in terms of energy efficiency and their usage in response to overall prices and tariffs introduced by suppliers;
- The rate of adoption of LCTs;
- The connection of Distributed Generation (DG) which is heavily influenced by support mechanisms (incentives) and planning policy.

4.2 The UK targets for reducing carbon dioxide emissions require a reduction of 80% by 2050. This target will be met through the decarbonisation of heating and transport, improvements in energy efficiency and producing electricity from renewable sources. A number of low carbon technologies such as electric vehicles, solar panels, wind farms and heat pumps place new requirements on the network.

4.3 There is considerable uncertainty about the level and shape of future electricity demand as the UK moves towards a low carbon economy. Whilst we do not know exactly how and when these changes will affect us, the use of scenarios gives us realistic ranges that we need to plan to be able to deliver. A flexible and rapid response to change is essential whilst continuing to provide market leading performance in the day to day management of our network.

4.4 The Government has set out its approach to energy and climate change in its document "The Carbon Plan: Delivering our low carbon future", published in December 2011. This sets out potential pathways (scenarios) to put the UK on track to halve greenhouse gas emissions, on 1990 levels, by the mid-2020s and a path towards an 80% reduction by 2050.

4.5 The Government Department of Energy and Climate Change (DECC) has, via the Smart Grid Forum (work stream 1) created scenarios for heat pumps, electric vehicles and photo-voltaic (PV) generation that are consistent with The Carbon Plan and include assumptions about the take up of demand side response (DSR) and the impact of energy efficiency improvements. A further group of the Smart Grid Forum (work stream 3) has taken these DECC scenarios and added further data to produce a report and model (called Transform) to show the impact of these energy scenarios on the GB distribution network.

4.6 DECC has set out four illustrative scenarios all of which would meet the Government's carbon targets. These national scenarios, all of which require a significant adoption of LCTs, have been summarised by DECC as follows:

Scenario 1	High emissions abatement in low carbon heat
• Medium levels of fuel efficiency • High levels of low carbon heat • High levels of solid wall insulation	High level of emissions reductions from uptake of low carbon heat in buildings and industry (8 million installations) with significant emission reductions from transport (60g CO_2/km) and significant thermal insulation of buildings (5 million solid wall insulation).
Scenario 2	**High emissions abatement in transport**
• High levels of fuel efficiency • Medium levels of low carbon heat • High levels of solid wall insulation	High level of emissions reductions from transport (50g CO_2/km), with comparatively lower reductions from low carbon heat (7 million installations) and significant thermal insulation of buildings (5 million solid wall insulation).
Scenario 3	**High electrification of heat and transport**
• High levels of fuel efficiency • High levels of low carbon heat • Low levels of solid wall insulation	This reflects a future where there is high electrification in heat and transport, with significant uptake of Electric Vehicles (EVs) and heat pumps (as in scenario 1 and scenario 2) and lower comparative levels of insulation (2.5 million).
Scenario 4	**Credit purchase**
• Low levels of fuel efficiency • Low levels of low carbon heat • Medium levels of solid wall insulation	Reflects a future where more than one key technology under-delivers and carbon credits are purchased. It assumes 1.6 million low carbon heat installations, medium levels of insulation (4.5 million) and fuel efficiency of 70g CO_2/km.

4.7 Whilst DECC has produced a number of scenarios for meeting the emissions target, there is considerable uncertainty about the uptake of low carbon technology, how installations will cluster (be installed within the same geographical area) and the resultant impact on the network.

4.8 The rate of growth will be dependent on many factors such as the development of these technologies by manufacturers, the rate of production and sales prices, the relative cost of different fuels, the availability of subsidies, changes to building regulations and the general attitude of consumers.

4.9 Our expenditure forecasts are based upon pragmatic assumptions informed by data provided by the Centre for Sustainable Energy (CSE). We have proposed to use information from more advanced monitoring of the network and data from smart meters to identify where LCT hotspots are emerging so that reinforcement work can be targeted at the parts of the network where it is required. Tracking expenditure against forecasts will determine whether there is significant variance.

4.10 The Transform model has been used to assess the impact of both our 'Best View' and the four DECC Carbon Plan scenarios. The model produces forecasts of expenditure on the basis of using smart incremental techniques (e.g. active network management, demand side response) and continuing to reinforce the network using conventional techniques (e.g. more/larger transformers, cables). Decisions on reinforcement during the RIIO-ED1 period need to consider the potential investment needs during the RIIO-ED2 and RIIO-ED3 periods.

4.11 Since there is uncertainty about the LCT uptake, analysis of the DECC scenarios gives plausible ranges of the reinforcement that may be required in the future. There is also uncertainty about the viability, benefits and costs of smart solutions, which means that conventional reinforcement may also be required.

4.12 The following tables compare the costs of the different scenarios; the first showing WPD's Best View and the range of costs using smart incremental solutions and the second comparing WPD's Best View to the range of costs using conventional techniques. Ofgem has requested data on a reference case as part of the Business Plan Data Templates. This is the DECC scenario 1 smart incremental case in the following tables.

LV & HV LCT related reinforcement expenditure 2015/16 to 2022/23 – Comparison of WPD Best View and DECC scenarios using smart incremental techniques (£m)					
	WPD 'Best View' forecast	**Scenario 1 – high emissions abatement in heat provision**	**Scenario 2 – high emission abatement in transport**	**Scenario 3 – high electrification of heat and transport provision**	**Scenario 4 – International Carbon Credit purchases needed to meet targets**
West Midlands	55.1	68.7	63.1	75.1	4.7
East Midlands	87.7	186.2	113.3	140.3	5.8
South Wales	11.3	91.2	92.5	90.0	13.5
South West	44.9	34.0	40.3	44.4	2.0
Total	199.0	380.0	309.1	349.8	26.0

(Note: the DECC forecasts are based on the clustering pattern currently seen from the uptake of small scale PV whereas the WPD Best View is based on a more clustered approach following the work undertaken by CSE. If the DECC forecast were to use the higher CSE clustering then the investment levels would be much higher)

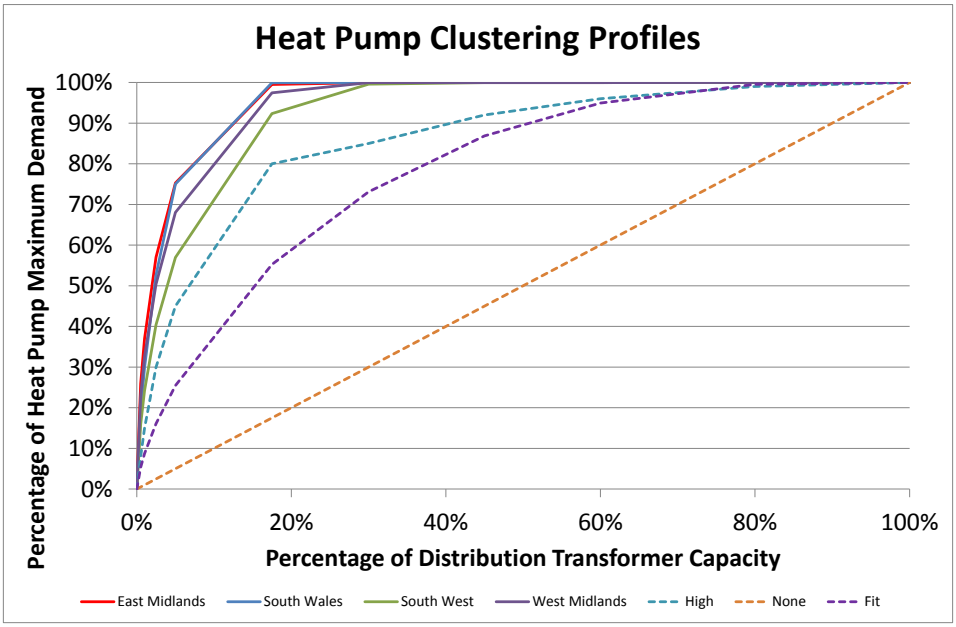
LV & HV LCT related reinforcement expenditure 2015/16 to 2022/23 – Comparison of WPD Best View and DECC scenarios using conventional techniques (£m)					
	WPD 'Best View' forecast	**Scenario 1 – high emissions abatement in heat provision**	**Scenario 2 – high emission abatement in transport**	**Scenario 3 – high electrification of heat and transport provision**	**Scenario 4 – International Carbon Credit purchases needed to meet targets**
West Midlands	55.1	105.4	125.4	124.1	9.8
East Midlands	87.7	240.2	185.6	241.8	9.2
South Wales	11.3	132.2	151.1	165.9	26.6
South West	44.9	49.9	83.0	92.7	6.3
Total	199.0	527.7	545.1	624.5	52.0

(Note: the DECC forecasts are based on the clustering pattern currently seen from the uptake of small scale PV whereas the WPD Best View is based on a more clustered approach following the work undertaken by CSE. If the DECC forecast were to use the higher CSE clustering then the investment levels would be much higher)

4.13 A further factor of uncertainty in the potential reinforcement required as a result of LCTs is in the degree of clustering of the uptake of the technologies. The Transform model has a default clustering assumption (called FIT clustering) that assumes that all technologies will cluster in a similar way to that seen with small scale PV to date based on the uptake of feed in tariffs.

4.14 The Transform model has two standard clustering assumptions built into it, a FIT clustering and a high clustering case. Comparison of these assumptions and the results from the detailed analysis by the CSE is shown in the graph below:

4.15 The outputs from the Transform model are very sensitive to the clustering assumption used and this resulted in us undertaking work with the Centre for Sustainable Energy (CSE) to gain a better understanding of clustering by assessing how property size and type may affect the uptake of heat pumps and PV generation and how socio-demographic groupings will affect the uptake of electric vehicles. This research indicated that clustering maybe even higher than both the Transform assumptions. CSE researched impacts in WPD licence areas is shown in the graph below.



4.16 The sensitivity of the reinforcement forecasts to the varying clustering assumptions are shown in the resulting investment needs in the following table. Raw output from the Transform model has been used to demonstrate the effect of clustering in this table. Our 'Best View' is derived from the CSE research. Our 'best view' figures that are actually utilised for our Business Plan cost forecasts are lower than the CSE clustering based figures because other factors are taken into account, which are detailed in the Supplementary Annex (SA-05) on Expenditure.

LV & HV LCT related reinforcement expenditure 2015/16 to 2022/23 (£m) Comparison of forecast using differing clustering assumptions			
	Using CSE data	**Using 'FIT' clustering**	**Using 'High' Clustering**
West Midlands	93.1	11.7	45.7
East Midlands	149.4	7.6	50.9
South Wales	19.7	.4	6.8
South West	77.3	17.2	57.6
TOTAL	**339.6**	**36.9**	**160.9**

4.17 The need for network reinforcement, in addition to that needed for the growth in LCTs, is dependent on widespread changes in demand driven by general economic conditions and the specific location of the development of new load or generation connections.

4.18 Assumptions about the amount of load growth are used to forecast which parts of the network will require reinforcement, but actual load growth can differ.

4.19 There is also uncertainty about the level of large scale generation that will seek connection to the network. Whilst this has an impact on the resources needed, a significant part of the cost associated with these connections is recovered directly from the Generators. Details of the forecast costs for large scale generation are in connections sections of the Supplementary Annex (SA-05) on Expenditure.

Regulatory framework

4.20 Ofgem recognises that there is significant uncertainty over the investment required to accommodate new and changing patterns of energy use.

4.21 The load-related reopener mechanism introduced for DPCR5 will continue into RIIO-ED1, but with an expanded scope that also includes fault level reinforcement and secondary network connections.

4.22 The re-opener will operate around a 20% dead band, where efficient costs incurred above the dead band can be funded through additional allowances. DNOs will fund a proportion of the expenditure that is below the dead band threshold but above allowances. The proportion will be derived from their efficiency incentive rate (70% for companies that are fast tracked).

4.23 There will be two windows in 2017 and 2020 where DNOs have the opportunity to demonstrate that incurred efficient costs are more than 20% higher than the combined allowances for load related work. At the end of RIIO-ED1 there will not be an opportunity to recover additional costs, even if they exceed the threshold at that point. DNOs will make use of the reopener windows if costs are forecast to exceed the reopener thresholds.

WPD position

4.24 There will be many factors that will determine the overall costs of load related reinforcement. This will include general reinforcement of the network, reinforcement associated with specific connections, LCT influenced reinforcement and fault level reinforcement.

4.25 DNOs are best placed to manage the variety of requirements to develop the network for new loads and ensure that loading risk outputs are met.

4.26 The reopener dead-band drives DNOs to seek innovative low cost solutions to minimise the financial impact of additional reinforcement. This is because additional costs up to the reopener threshold have to be funded by the DNOs (subject to the efficiency incentive).

4.27 The ability to recover costs above the threshold provides a safety net for companies where load growth is significantly higher than forecast.

4.28 The elements of the reopener balance protection for DNOs with drivers for efficiency. WPD does not require any additional mechanisms.

Resource requirements

4.29 Whilst the above can address the financial effects of uncertainty, there is still the need to be able to resource the activity. Resource availability is addressed in the Operational Training section of Supplementary Annex on Expenditure but there is a time lag between identifying the need for additional resources and them being available. For this reason, the following indicators will be monitored to act as triggers for the provision of extra resources associated with the move towards a low carbon economy:

- number of heat pumps connected – notification processes are currently being established via the Electricity Networks Association (ENA);
- number of notifications of PV connections –Numbers installed can be obtained from the Ofgem FIT register which has data available at post code level;
- number of notifications of EV charging points – notification processes are currently being established via the ENA;
- new or changed subsidies – both changes to the values of subsidies and to conditions that apply e.g. insulation standards that are a precondition of a subsidy;
- legislative or standards changes that impact on equipment used e.g. changes to building regulations;
- payback periods on LCTs;
- changes in relative cost of gas (mains and LPG), heating oil and electricity.

5 High-value projects

5.1 Projects with costs exceeding £25m are classed as high-value projects. Unforeseen load growth patterns or new connection activity can lead to problems on the network that can only be resolved by carrying out extensive work.

5.2 The move to an eight year price control period increases the chances of unidentified high-value projects arising once allowances have been determined.

5.3 Whilst it is right for DNOs to manage the risks associated with variations in small projects, some protection is required from the financial impact of high-value projects.

Regulatory framework

5.4 Ofgem recognises that DNOs may not be aware of some projects at the start of RIIO-ED1, but state that DNOs should become aware of them through effective stakeholder engagement.

5.5 One reopener window will be available in 2019. DNOs will need to clearly define the outputs that will be delivered to enable Ofgem to carry out a project by project assessment. Any additional costs, above ex-ante allowances, will need to exceed a materiality threshold.

WPD position

5.6 We do not expect to have many projects falling within this category and the availability of a reopener adequately covers any future requirements that may arise.

6 Transmission connection point charges

6.1 The WPD network is connected to the National Grid at Transmission Connection Points (also referred to as Transmission Exit Points). National Grid provides infrastructure at these exit points to allow power to flow between the transmission system and distribution network.

6.2 National Grid recovers the cost of providing these exit points through annual charges. The charges cover the costs for new assets when additional capacity is requested by WPD and the costs of replacing existing assets determined by National Grid's replacement programme. In most cases the costs of work are recovered by charges over a forty year period.

6.3 Even though National Grid provides a quotation for the proposed work, the eventual charges are determined by the actual costs of the work. This means that if additional costs are incurred they are included in the charges levied on WPD. There is little opportunity to influence the costs once projects are under way.

6.4 This means that whilst forecasts for future costs can be made the actual costs vary depending upon the work programme and costs incurred by National Grid.

Regulatory framework

6.5 Ofgem proposes to treat part of transmission connection charges as pass through costs.

6.6 This will apply to assets installed prior to 2015 and any new work resulting from National Grid's assets replacement programme.

6.7 It will not cover the costs of additional or upgraded connection points requested by WPD.

6.8 An ex-ante allowance will be provided to cover the costs of work requested by WPD since the scope and overall requirements are under the control of WPD.

WPD position

6.9 Since the National Grid work programme is beyond the control of DNOs there is a need for a pass through mechanism for transmission connection points.

6.10 The proposed regulatory framework provides a balanced approach to managing cost uncertainty and, by excluding DNO instigated work, places a responsibility on DNOs to identify the most efficient mechanism for providing the additional capacity required at transmission connection points. WPD does not require any additional mechanisms.

7 Street works

7.1 Legislation requires WPD to inform Highways Authorities about work that will affect public roads. Most Highways Authorities currently operate a Notice process which does not incur fees, but the Department for Transport is encouraging them to implement Permit schemes for traffic sensitive strategic roads that will introduce new charges. In addition Highways Authorities have the option of implementing Lane Rental schemes where utilities pay a daily charge for working in the road.

7.2 Current costs are relatively low, but these could increase significantly, especially where Lane Rental schemes are introduced.

7.3 There are no mandated timescales and each Highway Authority is free to choose which approach it prefers.

7.4 We have assumed that Highway Authorities will adopt Permits schemes, but only apply these to traffic sensitive roads. This will introduce an additional cost of £1m per annum across WPD. This approach balances the additional costs where Highways Authorities choose to apply Permit fees to all roads against situations where Notice schemes remain in place.

7.5 The main uncertainty relates to the adoption of Lane Rental schemes, which could introduce substantial additional costs.

Lane Rental

7.6 The New Roads and Street Works Act (NRSWA) as amended by the Transport Act 2000 and the Traffic Management Act 2004 contains provision for Highway Authorities to operate Lane Rental schemes that involve charging Works Promoters for the time their works occupy the highway.

7.7 Lane Rental schemes can only be implemented by a Highways Authority that has operated a Permit Scheme for 2 years. It is unlikely that all Permit Scheme operators will seek to implement full Lane Rental schemes applicable to all roads. It is more likely that Highways Authorities will apply Lane Rental to traffic sensitive routes only.

7.8 At the point of developing this Business Plan no Highway Authorities in any of the WPD licence areas have indicated they are planning to operate Lane Rental in the near future. But, it is conceivable that during RIIO-ED1, many Lane Rental schemes could be introduced, leading to high additional costs for works in the highway.

7.9 An indication of the costs if all authorities introduce Lane Rental on traffic sensitive routes only is shown in the table below. This is derived by considering:

- different notice types of work - Major, Standard, Minor and Immediate - since the number of notices and average duration of works varies for each type;
- the current annual number of notices;
- the average duration of works;
- daily rates to be charged.

West Midlands – Estimated annual Lane Rental charges for all work on traffic sensitive routes					
Parameter	**Major**	**Standard**	**Minor**	**Immediate**	**Total**
Volume of notices (number per annum)	75	402	100	423	
Average duration of works (days)	35.3	6.7	2.3	6.4	
Daily Permit Fee (£)	2,500	2,500	2,500	2,500	
Total Annual Cost (£m)	6.6	6.7	0.6	6.8	20.7

East Midlands – Estimated annual Lane Rental charges for all work on traffic sensitive routes					
Parameter	**Major**	**Standard**	**Minor**	**Immediate**	**Total**
Volume of notices (number per annum)	70	458	196	527	
Average duration of works (days)	35.3	6.7	2.3	6.4	
Daily Permit Fee (£)	2,500	2,500	2,500	2,500	
Total Annual Cost (£m)	6.2	7.7	1.1	8.4	23.4

South Wales – Estimated annual Lane Rental charges for all work on traffic sensitive routes					
Parameter	**Major**	**Standard**	**Minor**	**Immediate**	**Total**
Volume of notices (number per annum)	13	136	63	78	
Average duration of works (days)	9.3	6.5	2.4	5.9	
Daily Permit Fee (£)	2,500	2,500	2,500	2,500	
Total Annual Cost (£m)	0.3	2.2	0.4	1.2	4.1

South West – Estimated annual Lane Rental charges for all work on traffic sensitive routes					
Parameter	**Major**	**Standard**	**Minor**	**Immediate**	**Total**
Volume of notices (number per annum)	12	175	177	165	
Average duration of works (days)	7.6	6.5	1.4	6.9	
Daily Permit Fee (£)	2,500	2,500	2,500	2,500	
Total Annual Cost (£m)	0.2	2.8	0.6	2.8	6.4

7.10 The potential annual cost for Lane Rentals on sensitive roads is approximately £55m.

7.11 Since local authorities are not planning any such schemes in the short term, no Lane Rental costs have been included in the Business Plan.

Regulatory framework

7.12 Ofgem proposes to have one reopener window in 2019 where additional costs for the full period will be considered. It will cover additional costs associated with Permit Schemes and Lane Rentals, including system set up costs, but these will need to exceed a materiality threshold for the reopener to apply.

WPD position

7.13 WPD actively engages with over 60 local authorities to keep informed of changes to requirements across the company. Since local authorities apply to the Department for Transport to introduce schemes, there is sufficient time to understand the impact of changes. This means that one reopener at the mid-point of RIIO-ED1 will be adequate.

8 Smart meter rollout and DCC fixed costs

Smart meter rollout

8.1 The rollout of smart meters to domestic customers has cost uncertainty as a result of three main factors:

- the volume of remedial work required at the metering position;
- the charges to be made by the Data and Communications Company (DCC) for the provision of data from smart meters;
- the development of in-house systems for the receipt and storage of data, proactive load management and transfer of the Change of Supplier Registration Service to the DCC.

8.2 The volume and costs of the remedial work included within the Business Plan assumes that 2% of installations will require action to allow the meter operator to install a smart meter. The National Skills Academy has provided forecasts that suggest 4% of installations will require a visit to enable a smart meter to be connected and therefore costs could double. Due to the uncertainty of the actual volumes of remedial work it is proposed that a volume driver is required to adjust allowances once the work is completed.

8.3 We have identified that an additional 60 staff will be required to deal with the service position defects. There is sufficient scope for expansion of training facilities should more staff need to be trained to deal with higher volumes of defects. This is covered in more detail in the Operational Training section of the Expenditure Supplementary Annex.

8.4 Provisional charges for DCC services, published by DECC in January 2013, suggested that costs for WPD would be approximately £100m over the RIIO-ED1 period. These charges have been reviewed by DECC and figures shared in April 2013 suggest that the costs will be reduced to around £29m. These costs may change again once DECC completes the procurement process to establish the DCC provider.

8.5 The in-house data systems for communication with the DCC and for the storage of smart meter data are planned to be completed by the end of 2015, however the design requirements for these systems is yet to be defined. In addition, systems may also be required to enable the DCC to carry out the Change of Supplier Registration Service which is a process currently carried out within DNO systems.

8.6 Once the rollout of smart meters nears completion, there will be a need for the IT systems to be able to instigate load management (e.g. reducing demand at peak times). The exact nature of these systems and the interaction with suppliers and customers is undefined and therefore there is uncertainty about the costs.

Regulatory framework

8.7 The proposed regulatory framework has two mechanisms; a volume driver for the volume of remedial work required and a pass through for the DCC and system costs.

8.8 Ofgem will provide an allowance for remedial action based on 2% of the installations visited requiring work. There will be an annual adjustment for actual volumes undertaken and there will not be a dead band. The volume driver will adjust allowances, up or down, to align with the actual volume of activity. Ofgem will also apply a tapering mechanism should the proportion of properties requiring remedial action exceed 10%. This tapering mechanism will reduce the allowance per installation as the proportion increases.

8.9 DCC fixed costs and the costs for the development of DNO IT systems will be treated as pass through costs up until the end of the March 2020. Beyond this Ofgem expects the costs to be covered by the benefits being derived from the use of data from smart meters. Variable data costs will not be included and there will not be any allowances to cover the costs of smart meter data.

WPD position

8.10 Suppliers will be installing smart meters at around four times the rate of routine meter changes. This will identify higher volumes than normal for remedial actions required at service positions. The exact impact is uncertain and the use of a volume driver to adjust allowances is appropriate.

8.11 DECC has determined that full fixed costs for the DNOs will be levied from the start of the smart meter rollout. Costs will be incurred at a time when there will be insufficient coverage to gain benefits. During the rollout programme, allowances are required for these costs and the use of a pass through approach is appropriate.

8.12 Since the specification of the IT and communication systems that DNOs will require to make use of the data are not fully defined the costs are uncertain. Since the specifications will be determined by DECC and the DCC the requirement is outside of the control of DNOs and a pass through mechanism for the costs is appropriate.

8.13 At present Ofgem has determined the cut-off point for pass through costs at being March 2020. This point was based on the previous DECC timescales for the completion of the smart meter rollout. Since Ofgem's Strategy Document, DECC has delayed the rollout by a year resulting in a mismatch of the dates. The cut-off point for allowing pass through costs needs to reflect the timescales specified by DECC and should also be adjusted for any future changes to the rollout programme.

9 Enhanced physical site security

9.1 The Department of Energy and Climate Change (DECC) are responsible for assessing the items of our network which are a part of the Critical National Infrastructure (CNI). The assessment undertaken considers the number of customers connected to a specific site, its criticality to the network in general or its role in supporting key installations or customers. When a site is defined as being part of this list, additional security works are undertaken to increase the protection of the site.

9.2 The Centre for the Protection of National Infrastructure (CPNI) works with the industry to identify where additional security measures are required. These depend on Government intelligence of future security risks and therefore the locations and scale are uncertain. DECC and CPNI will evaluate and approve our proposals before any works commence and require a completion report to ensure the works are effectively deployed.

Regulatory framework

9.3 Ofgem proposes that additional costs can be recovered where DNOs have delivered projects efficiently, can produce a technical report that shows the proposed works meet security requirements and have an audit that confirms the work has been completed to the right standard.

9.4 Where additional costs exceed a materiality threshold, DNOs can apply for a reopener in 2019. Costs below the threshold can be logged up and Ofgem will consider them as part of RIIO-ED2 allowances.

WPD position

9.5 The uncertainty about what security enhancements will be required requires a mechanism that allows DNOs to recover costs. The mechanism should only be applicable to security enhancements proposed by the CNPI as other security measures are within the control of DNOs.

9.6 The proposals made by Ofgem provide recovery of all efficiently incurred costs. WPD does not require any additional mechanisms.

10 Innovation rollout

10.1 WPD is carrying out the highest number of Low Carbon Network Fund projects of all DNOs. We expect to develop a number of solutions that can be applied to the network that will lead to lower costs or more effective management of the network in facilitating a move to a low carbon economy.

10.2 The implementation of some of these solutions may set the foundations for future benefits. However, this may require investment ahead of the benefits being delivered. Without additional funding these projects may not be economic over the price control period.

Regulatory framework

10.3 Ofgem has proposed an innovation rollout mechanism that can be used for costs associated with the implementation of proven low carbon or environmental innovations.

10.4 It cannot be used if the rollout will lead to commercial benefits being obtained during RIIO-ED1.

10.5 Where the benefits will materialise in the long term, an application can be made for additional funding should the cost of the rollout exceed a materiality threshold. Costs below the threshold will not be funded, but will be subject to the efficiency incentive.

10.6 There will be two windows, in 2017 and 2019, where DNOs can apply for additional funding and application can be made ahead of expenditure being incurred.

WPD position

10.7 There is a need to provide DNOs with an opportunity to obtain additional funding for the rollout of innovative techniques that will provide longer term benefits valued by stakeholders.

10.8 The proposals made by Ofgem provide two opportunities to request additional funding. WPD does not require any additional mechanisms.

11 RPI indexation

11.1 Costs forecasts in this Business Plan are presented in 2012/13 prices. The allowances that Ofgem provide will also be presented in 2012/13 prices.

11.2 Real costs during the price control will change and therefore the allowances need to be indexed to take account of inflation or, if it occurs, deflation.

Regulatory framework

11.3 Ofgem proposes to use the Retail Prices Index (RPI) to adjust allowances for economy-wide inflation/deflation.

11.4 This principle is established within regulatory mechanisms and is acceptable to WPD.

12 Cost of debt

12.1 Prior to using the RIIO framework for price controls, the cost of debt was determined at the start of a price control and fixed for the whole period. The move to longer price control periods, under RIIO, has led Ofgem to implement a methodology that varies the costs of debt in line with a published index.

Regulatory framework

12.2 Ofgem proposes to set the real cost of debt using the a 10 year simple trailing average of the iBoxx GBP Non-Financials indices of 10+ years maturity, with credit ratings of broad A and broad BBB, less the implied 10 year gilt inflation break evens published by the Bank of England. The costs of debt will be updated each year.

WPD position

12.3 The proposals made by Ofgem provide a good mechanism for calculating a real cost of debt. WPD does not require any additional mechanisms.

13 Business rates

13.1 Business rates are periodically revalued and the next revaluation is due in 2017. It is anticipated that they will increase significantly, but the actual amounts will be determined by the Valuation Office, an executive agency of the Inland Revenue.

13.2 When revaluations take place, WPD engages with the Valuation Office to ensure that rate charges are minimised.

Regulatory framework

13.3 Ofgem proposes to allow business rates to be pass through provided that DNOs can demonstrate they have made efforts to minimise the valuations.

WPD position

13.4 WPD will seek to minimise the degree of any increases through negotiation with appropriate valuation officials.

13.5 Charges are mostly outside of the influence of WPD and it is appropriate for them to be treated as pass through costs.

14 Corporation tax

14.1 The Government sets corporation tax in response to economic conditions and other financial objectives. The changes are outside of the control of WPD and can occur at any time.

Regulatory framework

14.2 Ofgem proposes to have annual adjustment mechanism where revenues are adjusted if the impact of a tax change exceeds a materiality threshold. This introduces a dead band where revenues are not altered if the impact of the tax change does not breach the threshold. Within the dead band DNOs benefit from tax reduction and incur additional costs when taxes increase. Adjustments can increase or decrease revenues and the use of the dead-band shares the impact of tax changes between DNOs and customers.

WPD position

14.3 Changes to tax legislation are clearly outside the control of DNOs. There is a need to adjust tax allowances to cater for change and since this can happen at any point in time an annual window is required. Adjustments are required to provide benefits to customers where tax obligations reduce (by lowering revenues) and protect DNOs where taxes increase.

14.4 Ofgem's proposals cater for any changes. WPD does not require any additional mechanisms.

15 Established pension deficit repair

15.1 Final salary pension schemes need to be funded on the basis of estimates of the value of investments held by the scheme (the assets) and the projected pension costs (the liabilities). Both the assets and liabilities vary over time and full valuations are carried out every three years. If the assets are worth more than the estimate of the liabilities, there is a surplus. If the assets are worth less than the liabilities, there is a deficit.

15.2 When there is a deficit, companies have a legal obligation to pay in enough money over time to ensure that the deficit is eliminated.

15.3 In their restated pension principles, Ofgem have undertaken to give companies an allowance to pay the regulated 'Distribution' portion of the deficits at 31 March 2010. No specific allowance is available for any deficit that is created after 31 March 2010 although the costs of any such incremental deficit relating to regulated activities will be allowed as part of overall employment costs.

15.4 The deficits at 31 March 2010 are known as established pension deficits. When these are revalued the scale of deficit changes. Pension allowances need to reflect the revised deficits in order to ensure that the costs are fairly spread across current and future customers.

Regulatory framework

15.5 Ofgem proposes to have three re-opener windows (in 2016, 2019 and 2022) that coincide with triennial actuarial revaluations. These will be used to assess costs and adjust allowances to reflect economic and efficiently incurred deficit.

WPD position

15.6 The three reopener windows provide opportunity for the revision of allowances to cater for changes in pension deficit. WPD does not require any additional mechanisms.

16 Ofgem licence fees

16.1 Ofgem funds its activities by charging licence fees. These charges are dependent upon the costs incurred by Ofgem and are outside the control of DNOs. Whilst there is significant development and change in energy provision, there is uncertainty about the scale of Ofgem's activities and it is difficult to determine an appropriate ex-ante allowance.

Regulatory framework

16.2 Ofgem proposes to allow Ofgem licence fees to be treated as pass through.

WPD position

16.3 It is appropriate that Ofgem licence fees to be treated as pass through.

17 Risk managed by WPD

17.1 The development of expenditure forecasts for an eight-year price control requires the use of currently available information to predict future requirements. Changes to legislation, the impact of a catastrophic incident and Government decisions on the development of national infrastructure can result in different requirements to those that were used within forecasting assumptions.

17.2 Where DNOs have an element of control over the costs of such changes, uncertainty mechanisms ensure that the financial risk is shared between customers and DNOs.

17.3 There are a number of uncertainties where there is no need for an uncertainty mechanism because the scale of the impact is small or the risks can be limited through actions by WPD.

17.4 New obligations may arise at any time and could introduce costs that cannot be avoided. During RIIO-ED1, Ofgem will be carrying out a mid-period review to assess whether new outputs are required as a consequence of changes to Government policy. As part of this process WPD will identify where outputs will need to be adjusted.

Risk being managed by WPD for uncertainty mechanisms proposed by Ofgem.

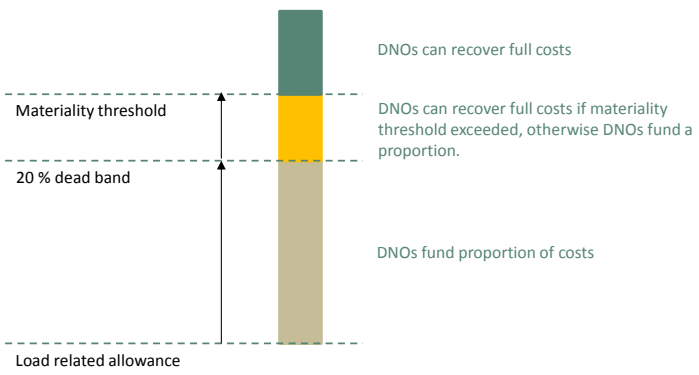
17.5 The efficiency incentive rate ensures that any additional expenditure incurred by a DNO exposes the DNO to a proportion of the costs. This proportion is 70% for fast tracked companies.

17.6 The majority of the re-opener uncertainty mechanisms can only be triggered when materiality thresholds are exceeded. Any additional expenditure incurred by DNOs below the thresholds is subject to the efficiency incentive rate.

17.7 The most significant area of risk for WPD under these mechanisms is the approach used for load related expenditure. This uses a 20% dead band around the total costs of load related work (including customer specific reinforcement, load reinforcement and fault level reinforcement).

17.8 Any additional costs within the dead band are subject to the efficiency incentive rate. Costs above the dead band can only be recovered if the excess above the dead band exceeds a further materiality threshold. This means that costs for load related expenditure need to exceed both the 20% dead band plus the materiality threshold to trigger the re-opener that only allows costs above the dead band to be fully recovered. This is illustrated in the diagram below.

Load related dead band and materiality threshold



17.9 The value of load related expenditure is relatively high and therefore the 20% dead band equates to a significant value of expenditure that is subject to the efficiency incentive rate. This is illustrated in the table below which uses load expenditure from WPD's best view case.

Load related re-opener dead band (£m)				
	West Midlands	**East Midlands**	**South Wales**	**South West**
Total load related expenditure	205.5	271.4	49.3	85.3
Dead band	41.1	54.3	9.9	17.1
Amount funded by WPD (at 70%)	28.8	38.0	6.9	11.9

Note this illustration does not include the additional costs of the materiality threshold

17.10 This financial risk will drive the development of lower cost solutions for load related work and the resultant efficiencies will provide benefits for customers into the future.

17.11 WPD is in a strong position to manage the risks. Our innovation programme has a wide range of projects developing new techniques that will lead to smarter lower cost investments.

Other known risks that will be managed by WPD

Railway electrification

17.12 Network Rail is proposing electrification of a number of railway lines. Firm plans are already being developed for 'announced routes', such as the Paddington to Swansea railway line and Midland Mainline. The electrification work requires a number of overhead lines and cables to be diverted.

17.13 WPD and Network Rail have a Master Wayleave Agreement (MWA) covering rights for WPD overhead lines and cables to be situated on railway property. This agreement dates from 1961 and is in effect a terminable licence (like any other wayleave).

17.14 Network Rail has informed WPD that it requires that these diversions be at WPD's cost. The diversion costs for these known schemes have been included in the Business Plan.

17.15 There are a large number of further options in England and Wales that are being considered including routes between Birmingham, Bristol and Plymouth. At this stage there is no clear indication from Network Rail when such additional schemes will go ahead, but some will arise during RIIO-ED1. The Business Plan therefore includes an estimate for an additional line based upon the forecast costs of the known schemes.

17.16 WPD will manage the risk that further railway lines will be electrified prior to 2023. The risk is relatively low as the mobilisation of such works can take several years, which means that future requirements for diversions for electrification of railways is likely to rollover into RIIO-ED2.

High Speed 2 (HS2)

17.17 In January 2012 the Secretary of State for Transport announced the decision to go ahead with the development of a high speed rail network between London, Birmingham, Leeds and Manchester stating that HS2 is the largest transport infrastructure investment in the UK for a generation.

17.18 HS2 will be built in two phases with the first stage, the link between London and Birmingham, being planned for completion by 2026. The construction of this first phase will cut through the WPD area passing through large parts of Warwickshire, into the North Eastern parts of Birmingham and extending into Staffordshire and consequently there will be the requirement to divert existing overhead line and cables to enable the new railway to be built.

17.19 Analysis of the proposed route has identified that there will over 300 diversion schemes in both the West and East Midlands across all voltages.

17.20 Unlike the railway electrification of existing lines, the costs for diverting electricity distribution assets will be funded by HS2 which means that the work will be treated as an excluded service (i.e. not funded through DUoS).

17.21 There remains uncertainty that HS2 will actually proceed; there is concern about the business case and a change of government could reverse the decision made in January 2012. For our Business Plan we have assumed that HS2 does proceed.

17.22 There is limited financial risk because expenditure will be funded by HS2.

Changes to EU legislation

Biocidal Products Directive

17.23 The Biocidal Products Directive is leading to a review of the use of creosote as a wood preserver and whilst the electricity industry is currently allowed to use creosote impregnated poles up to 2018, their use could be banned during the RIIO-ED1 period. An alternative could be a hybrid pole being developed in Sweden made from a fibreglass inner and UV protective polyethylene outer layer, but this is still under development and not ready for the UK market.

17.24 The alternative poles are more expensive than wooden poles with the hybrid pole estimated to be two to three times the cost of wooden pole and concrete poles being five times the cost.

17.25 The scale and timing of the changes are uncertain. Whilst there is a risk of higher costs, these will not impact until later in RIIO-ED1 and there should be a much clearer position for the mid period review of outputs. No additional costs have been included in the Business Plan and WPD will bear the risk of these costs arising.

Ecodesign of electrical equipment

17.26 The EU is considering a regulation to implement Directive 2009/125/EC regarding the ecodesign of electrical equipment and if introduced this would lead to a requirement to use more efficient transformers. The additional cost of these units is considerable and, at larger distribution substation level, can lead to a doubling of the cost of a transformer.

17.27 Whilst this may become a requirement of EU law as soon as 2014, there is uncertainty about when the regulations would come into force and any run down period allowed for manufacturers to move to the new designs.

17.28 No additional costs have been included in the Business Plan and WPD will bear the risk of these costs arising.

18 Appendix A1 – Potential uncertainty mechanisms

18.1 The price control review process sets the allowances that an efficient DNO requires to deliver its outputs for a full price control period. Circumstances beyond the control of DNOs may lead to a requirement for different allowances. Uncertainty mechanisms allow changes to the revenue allowances during the period and the mechanisms vary depending on the outputs companies are expected to deliver.

18.2 The Ofgem handbook for implementing the RIIO model describes the potential uncertainty mechanisms to address the financial issues as:

Category of uncertainty mechanism	Description of types of uncertainty mechanism tool	Summary of provision in price control licence
Mechanisms fully calibrated at price control review	Indexation	Provision that adjusts the revenue the company is allowed to collect from customers according to changes in a specified price index (e.g. the RPI or a published input price index).
	Volume driver calibrated at price control review	Provision allowing revenue to vary as a function of a volume measure (e.g. number of new connections).
	Revenue trigger calibrated at price control review	Provision allowing revenue to increase/decrease by a specified amount (or in a specified way) if and when certain trigger events occur during the price control period.
	Use it or lose it mechanism	If revenue set aside for a specified activity or purpose is not used as intended, revenue can be adjusted to remove this allowance.
Forward looking revenue adjustment determined during price control	Revenue adjustment based on updated cost assessment if trigger event occurs (e.g. specific re-opener)	Provision allowing for a specific part of the company's revenue allowance to be reviewed and potentially adjusted by Ofgem during the price control period, on a forward-looking basis, if and when specified conditions are met (e.g. if a measure of customer demand exceeds specified thresholds).
Revenue allowance determined after company incurs relevant expenditure	Pass-through items	Provides that the company will be fully or partially compensated for costs incurred in specified areas or on specified items (e.g. Ofgem licence fees).
	Logging up of actual expenditure subject to ex post efficiency review	Provides that a company will be fully compensated for actual expenditure on a certain activity, through the revenue allowance set at the next price control review, at least insofar as Ofgem determines the relevant expenditure was efficiently incurred.
	Backward-looking revenue adjustment based on benchmarking analysis of outturn costs	A company will receive an amount of revenue, in respect of a particular activity or output, which Ofgem will determine based on benchmarking analysis of other companies' actual expenditure on that activity or output. This mechanism may be considered where the activity or output is new and there is no historical expenditure data to use for benchmarking at the time the price control is set.