

# Investing in the electricity network

Bodmin 2017/18



**WESTERN POWER**  
**DISTRIBUTION**

*Serving the Midlands, South West and Wales*

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# Meet your local team



I'm Mike Rogers, the Distribution Manager for Bodmin. We cover an area from Boscastle down the north coast to Newquay and crossing the south coast from Rame Head down to Gorran Haven which includes the towns of Liskeard, Bodmin, St Austell and Newquay, to mention but a few. The Bodmin network is a variety of rural and urban, comprising over 4,100 km of overhead line, 1,700 km of underground cables and 6,983 substations, which we aim to keep working efficiently in order to keep the lights on for our 133,000 customers.

I lead a team of 126 staff, which includes craftspeople, planners, technicians, wayleaves officers, specialists, managers and a new intake of apprentices every year. We are located in Lostwithiel Road, Bodmin, PL31 1DE. If you wish to discuss our investment with me, or my team, please get in touch using the details opposite.

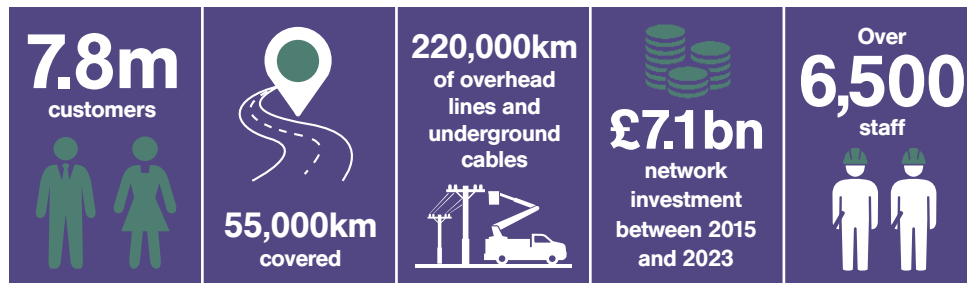
## Why I am writing to you

Western Power Distribution (WPD) is investing £7.1 billion in the electricity distribution network between 2015 and 2023. This investment will go into reinforcing the existing network, improving network reliability, providing additional capacity and upgrading equipment.

We want to make sure that all of our stakeholders are aware of the changes and improvements being made, particularly in their local area.

This brochure details the investment in the Bodmin electricity network that WPD is making and specifically some of the local projects that are being undertaken or have been completed by my team this year.

## Western Power Distribution has:



# Who we are and what we do

Western Power Distribution (WPD) is a Distribution Network Operator (DNO). This means we are responsible for the network of underground cables, overhead lines and substations that distribute electricity to customers' homes and businesses every day.

## Our key responsibilities

- Operate the distribution network assets effectively to keep the lights on.
- Maintain our assets to ensure they remain in a reliable condition.
- Fix our assets if they get damaged or are faulty.
- Upgrade the existing networks or build new ones to provide additional electricity supplies and capacity for our customers.
- We are not an electricity supplier (the company who looks after your meter and sends bills).



## Where we operate

WPD covers the East and West Midlands, South West England and South Wales. In the South West, we have depots in Bodmin, Bristol, Devon, Plymouth, Redruth, Sowton, Taunton and Weston-Super-Mare.





## WPD investment

Our network covers densely populated residential areas and widely dispersed rural communities, from the Wash in Lincolnshire down through South Wales and to Land's End and the Isles of Scilly in Cornwall. The diversity of our network can cause a variety of issues across the distribution area. This, combined with the age of the network (a large proportion of our assets were built in the 1960s) and recent environmental challenges, means we will need to invest more than ever to keep our network efficient and reliable in order to keep the lights on.

Our Business Plan outlines our investment commitments until 2023 and was submitted to our regulator, the Office of Gas and Electricity Markets (Ofgem), in 2015. WPD was the only

DNO out of six in the UK to have its Business Plan 'fast-tracked'. This allowed us to maximise and secure our investment funding early. In 2015-2023 we have committed to investing £7.1 billion in our network while reducing charges to customers by an average of 13%. This results in a total investment of £1.71 billion in the South West network.

In 2018, WPD is investing  
approximately

# £12 million

in Bodmin

# Project types

Due to the diversity of our network, various issues arise which must all be dealt with. This requires a range of engineering solutions to keep our network running. These solutions can be categorised as follows:



## Asset replacement

Directly changing our network assets, usually due to condition or age.



## Reinforcement

Upgrading our network to deal with increased demand.



## Cable undergrounding

Replacing an overhead line with an underground cable for either safety or environmental reasons.



## Worst served customers

Improving the network for those with the most outages (over 12 outages in three years).



## Resilience

Mitigating against the effects of adverse weather; building flood defences, tree trimming, etc.



## Cable diversions

Moving the cable in the ground due to new building works.



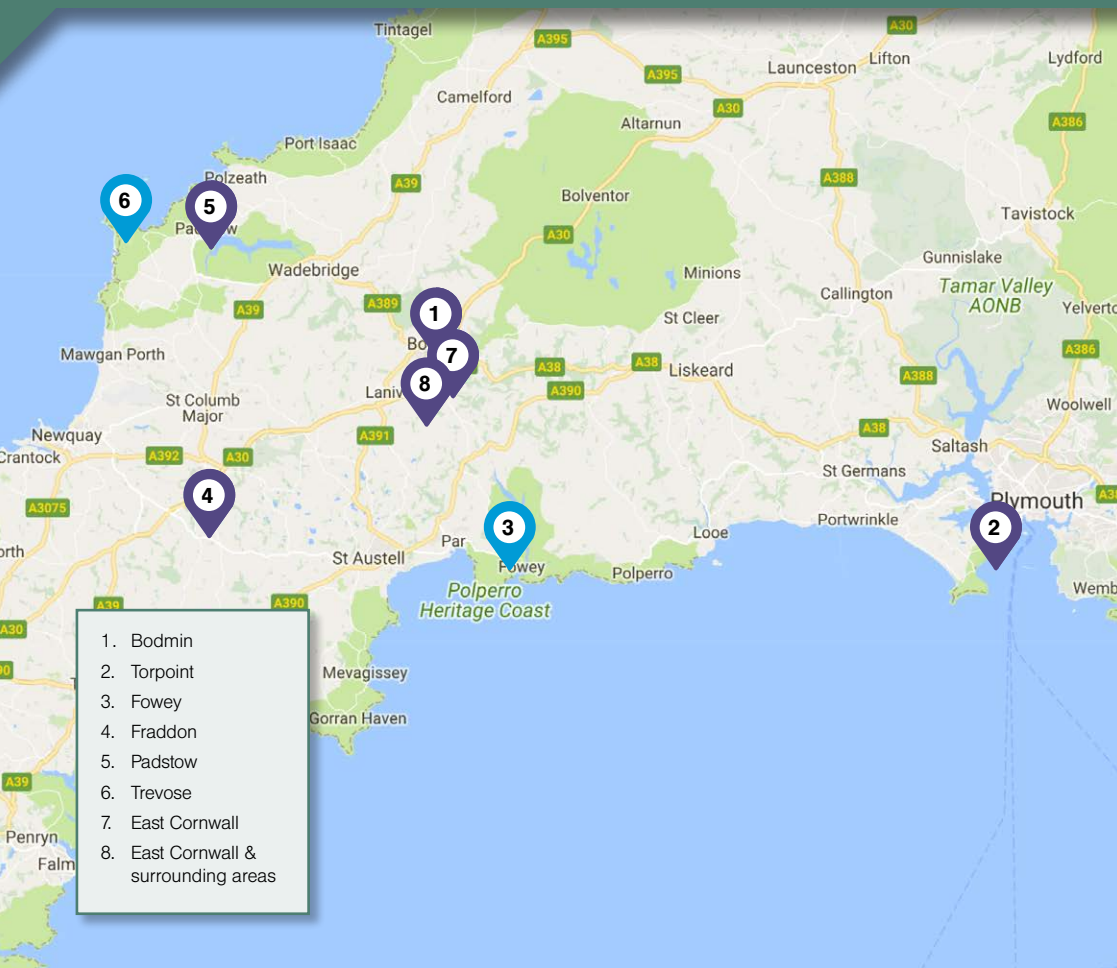


# Project locations

WPD is constantly carrying out works to maintain and improve the network, yet the large one-off projects that we commission by looking at the entire network tend to get reported more often. However, we believe that the smaller, local projects are just as important and therefore could be reported to the customers affected in the local area.

This brochure will detail a selection of the projects that are planned and being completed in 2017 and 2018 in the Bodmin area. The map below shows the locations of those projects.

For information on works in the rest of the WPD area, please contact us or visit our website.



# Projects in Bodmin

## Bodmin

### Bodmin



**Total spend:** £55,000

**Customers affected:** 202

**Start quarter:** Q1 2018

**End quarter:** Q1 2018

**Duration:** 1 week

**Details:** Replacement of the local 11kV distribution substation at Pool Street, Bodmin.

**Customer benefits:** Local substation replaced due to age and condition to ensure the future security and reliability of the electricity supplies in the area.

## Liskeard

### Torpoint



**Total spend:** £43,000

**Customers affected:** 105

**Start quarter:** Q2 2018

**End quarter:** Q2 2018

**Duration:** 1 week

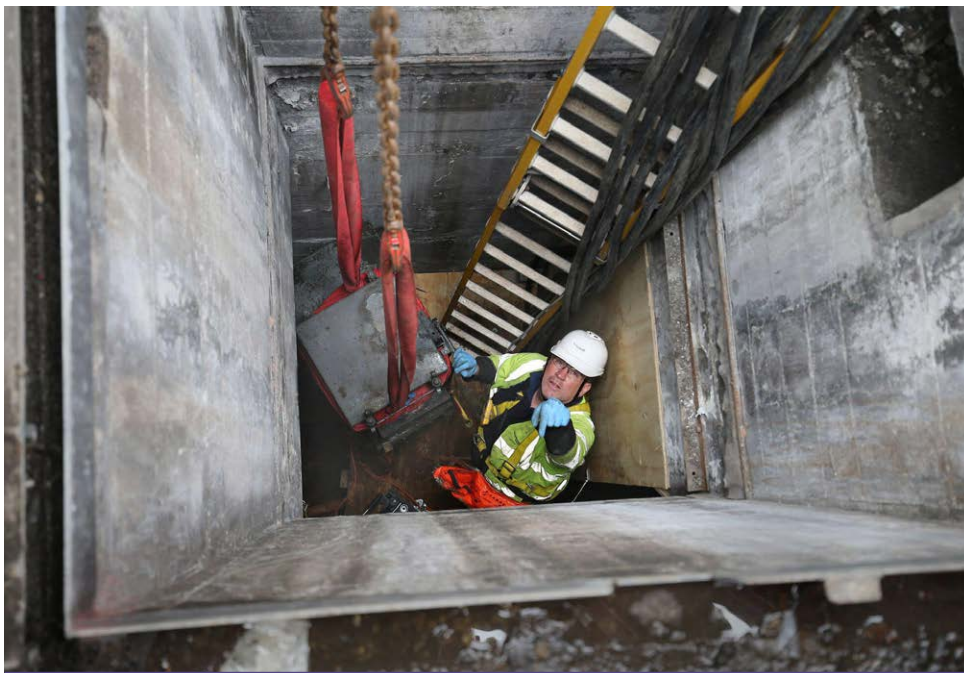
**Details:** Replacement of the local 11kV distribution substation at Picklecombe Fort, Maker, Torpoint.

**Customer benefits:** Replacing local substation will ensure that electricity supplies in the area remain secure and reliable in future.





# Projects in Bodmin



## St Austell

### Fowey



**Total spend:** £83,000  
**Customers affected:** 256  
**Start quarter:** Q4 2017  
**End quarter:** Q1 2018

**Duration:** 20 weeks

**Details:** Following an 11kV cable fault and challenges due to the location of the cable that was installed in 1937, the cable is being diverted into the existing highway.

**Customer benefits:** The cable diversion includes the installation of 1,000m of new 185mm EPR cable, which replaces the old cable to provide improved network reliability and security.

# Projects in Bodmin

## Newquay

### Fraddon



**Total spend:** £400,000

**Customers affected:** 2,401

**Start quarter:** Q2 2018

**End quarter:** Q2 2018

**Duration:** 4 weeks

**Details:** This project involves the replacement of 76 wood poles and approx. 6km of aluminium overhead conductors and associated insulators and fittings and is funded by WPD.  
**Customer benefits:** Completion of this project will provide improvements and ensure the continuing network performance and reliability of the 33kV network.

replacement of the old substation switchgear and transformer at the same time to avoid any future disruption to traffic.

**Customer benefits:** WPD is replacing a large number of assets on the network due to condition or age, including 11kV distribution substations, to ensure that network reliability and security is maintained.

### Trevose



**Total spend:** £132,000

**Customers affected:** 29

**Start quarter:** Q3 2018

**End quarter:** Q4 2018

**Duration:** 4 weeks

**Details:** Removal of approx. 1km of overhead line, and pole-mounted substations to be replaced with underground cable and ground-mounted transformers at Trevose Head, Padstow in consultation with the National Trust.

**Customer benefits:** This location is in an Area of Outstanding Natural Beauty (AONB) and has been identified as a location for the removal of overhead lines by the AONB steering group.

### Padstow



**Total spend:** £44,000

**Customers affected:** 160

**Start quarter:** Q1 2018

**End quarter:** Q1 2018

**Duration:** 1 week

**Details:** A hotel requested a supply upgrade that would involve work within the substation. Due to the age of the assets, WPD funded the



# Projects in Bodmin



# Projects in Bodmin

## Whole area

### East Cornwall



**Total spend:** £2,092,000

**Customers affected:** 5,320

**Start quarter:** Q2 2018

**End quarter:** Q2 2019

**Duration:** 1 year

**Details:** 1,085 wooden pole replacements over the 33kV, 11kV and LV networks in the next year.

**Customer benefits:** WPD is replacing a large number of wooden poles on the network due to condition or age in order to maintain network reliability and security.

### East Cornwall & surrounding areas



**Total spend:** £412,000

**Customers affected:** 1,600

**Start quarter:** Q2 2018

**End quarter:** Q2 2019

**Duration:** 1 year

**Details:** 14 x 11kV distribution substations to be replaced in the next year.

**Customer benefits:** WPD is replacing several substations (switchgear, transformers and LV cabinets) on the network due to condition or age; this will ensure that network reliability and security is maintained.



# Major Projects in the South West

## *Bridgwater to Seabank*



**Total spend:** £1.4m

**Customers affected:** 72,199

**Start quarter:** Q2 2016

**End quarter:** Q2 2017

**Duration:** 1 year

**Details:** Upgrade to Churchill 132kV substation, refurbishment of 132kV overhead lines and protection changes at various substations.

**Customer benefits:** Agreed as a target project with Ofgem, the scheme delivered further opportunities for generation to be connected in Devon and Cornwall.

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## *Falmouth, Bickland Hill*



**Total spend:** £1m

**Customers affected:** 12,469

**Start quarter:** Q3 2017

**End quarter:** Q4 2017

**Duration:** 6 months

**Details:** Due to the age and condition of the equipment, the two 33/11kV transformers and the 11kV switchgear have been replaced.

**Customer benefits:** New, more modern equipment will provide a more reliable supply to the local area for many years to come.

## *Fraddon*



**Total spend:** £6.5m

**Customers affected:** 47,276

**Start quarter:** Q1 2016

**End quarter:** Q2 2018

**Duration:** 2 years

**Details:** Reinforcement of the grid transformers and associated 132kV circuits was required. The final result will see two new grid transformers and some 132kV cable sections. We also replaced the aged outdoor EHV substation.

**Customer benefits:** The scheme will deliver further opportunities for generation to be connected in Cornwall and a more reliable network for many years to come.

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## *Ilfracombe*



**Total spend:** £600,000

**Customers affected:** 9,306

**Start quarter:** Q1 2017

**End quarter:** Q4 2017

**Duration:** 9 months

**Details:** Due to the age and condition of the equipment on site, the two 33/11kV transformers were replaced in turn.

**Customer benefits:** This will deliver a more reliable and long-lasting network better able to cope with any rising customer demand.



# Major Projects in the South West

## Old Green Windfarm



**Total spend:** £800,000

**Customers affected:** 1

**Start quarter:** Q2 2017

**End quarter:** Q4 2017

**Duration:** 9 months

**Details:** Connecting a new 7MW wind farm to the north of Bristol, the customer installed a new 132kV substation and WPD redirected an existing 132kV tower line.

**Customer benefits:** Supporting the move towards further renewable generation with the connection of a wind power generation site.

## Sherford



**Total spend:** £112,000

**Customers affected:** 5,500

**Start quarter:** Q1 2017

**End quarter:** Q4 2017

**Duration:** 9 months

**Details:** WPD successfully connected a new EHV substation to the east of Plymouth. This will take the load required by the new Sherford development.

**Customer benefits:** Connecting supplies to a new community development with the potential to build 5,500 homes and the associated infrastructure.

## Budleigh Salterton



**Total spend:** £320,000

**Customers affected:** 2,375

**Start quarter:** Q2 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** Due to the age and condition of the equipment, the 33/11kV transformers, 33kV switch and 11kV switchgear were replaced.

**Customer benefits:** New, more modern equipment aided by being moved indoors will provide a more reliable supply to the local area.

## Taunton



**Total spend:** £1.2m

**Customers affected:** 10,658

**Start quarter:** Q2 2015

**End quarter:** Q3 2018

**Duration:** 3 years

**Details:** Assets on site were ageing. EHV switchgear and transformers were replaced with two new units able to transform more load. The replacement of the HV switchgear will follow.

**Customer benefits:** Out of an abandoned old power station site comes the sleek lines of a modern indoor substation. Extra planned load increase has been taken into account to benefit the local customers.





# Innovation Projects in the South West

## Electric Nation



Electric Nation is the world's biggest electric vehicle project, running throughout the WPD area. The main aim is to investigate the use of Electric Vehicles (EVs) and their impact on the electricity network. It will

trial an innovative managed charging system allowing control over charging at peak times.

**As the EV market increases in the UK, WPD is looking to:**

- understand the effects on the network of charging various vehicle and battery types
- understand how vehicle usage affects charging behaviour
- evaluate the reliability and acceptability to owners of EVs of demand control services and the influence these have on charging behaviour.

Participating EV owners will be trialling a smart charging system that will control the demand from electric vehicles in the event of their load on the local electricity network being too high.

The project began in April 2016 and will run until October 2019. For more details please visit the website: [www.electricnation.org.uk](http://www.electricnation.org.uk)

## Equilibrium



The focus of Network Equilibrium is to balance voltages and power flows across the distribution

system to better configure the network. The project uses three methods:

### ● Enhanced Voltage Assessment (EVA)

This develops a new network modelling tool for 33kV and 11kV networks. It allows better visibility of time series power flows and voltage profiles at 33kV and 11kV.

### ● System Voltage Optimisation (SVO)

SVO will dynamically adjust 33kV and 11kV voltage profiles within the trial area. It will overcome the issue of fixed voltage points at key substations by using telecommunications and centralised network management software.

### ● Flexible Power Links (FPL)

The project will trial the use of novel power electronics to optimise the power flows between two different 33kV networks. Flexible Power Links will be used for the first time by a GB Distribution Network Operator and will transfer both real and reactive power flows, on a dynamic basis, between previously unconnected networks.

The project is developing solutions that will be demonstrated across Somerset and Devon and is running from March 2015 until June 2019.

More information is available at [www.westernpower.co.uk/NEquilibrium](http://www.westernpower.co.uk/NEquilibrium)



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