

Investing in the electricity network

Nottingham 2017/18



WESTERN POWER 
DISTRIBUTION

Serving the Midlands, South West and Wales

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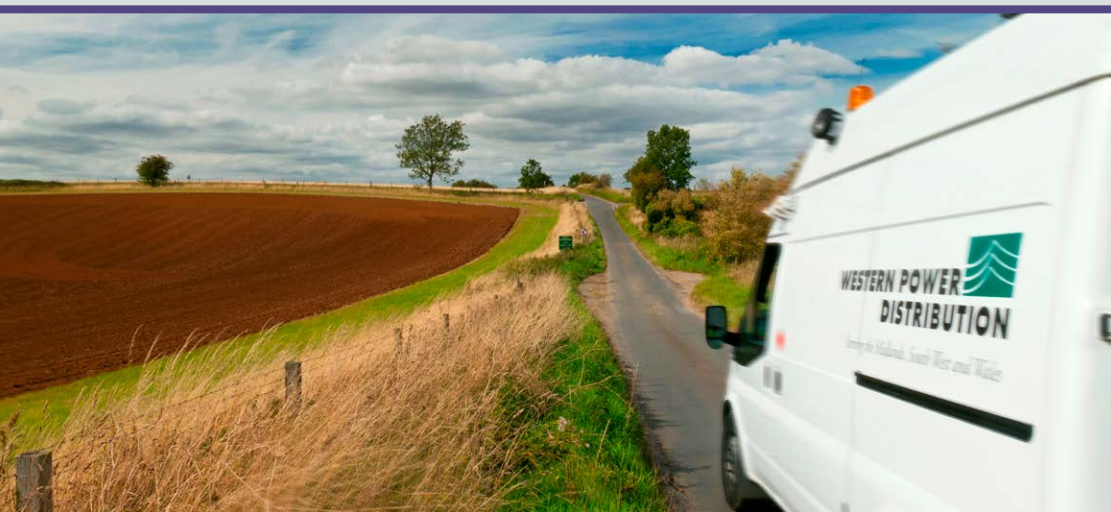
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Meet your local team



I'm David Hewitt, the Distribution Manager for Nottingham. My area covers the southern part of Nottinghamshire including Nottingham City centre and includes the towns of Hucknall in the North, East Leake in the South, Stapleford in the West and Bingham in the East.

The Nottingham network is a mixture of urban and rural areas, which we aim to keep working efficiently in order to keep the lights on for our 300,000 customers. I am in charge of a team of 135 staff which includes craftspeople, planners, wayleaves officers, engineers and apprentices.

We are located at Harrimans Lane, Lenton Lane Industrial Estate, Nottingham, NG7 2SD. If you wish to discuss our investment with me, or my team, please get in touch using the details opposite.

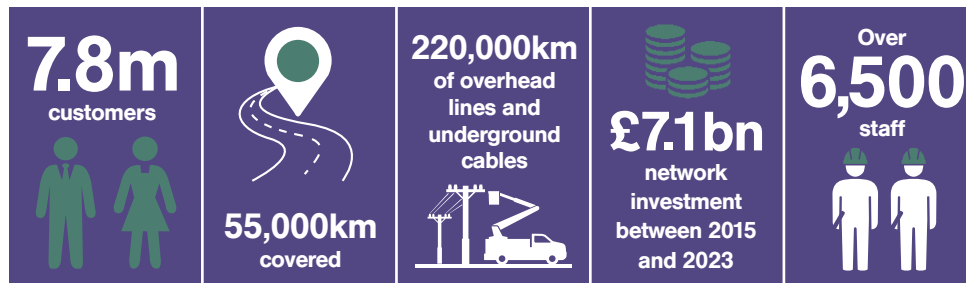
Why I am writing to you

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 to the Nottingham electricity network that WPD is making and specifically some of the local projects that are being undertaken 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 East Midlands, we have depots in Alfreton, Derby, Nottingham, Lincoln, Grantham, Leicester, Kettering and Northampton.





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, mean 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 Energy 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 £2.13 billion in the East Midlands network.

In 2018, WPD is investing
approximately

£14 million

in Nottingham

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 of 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.

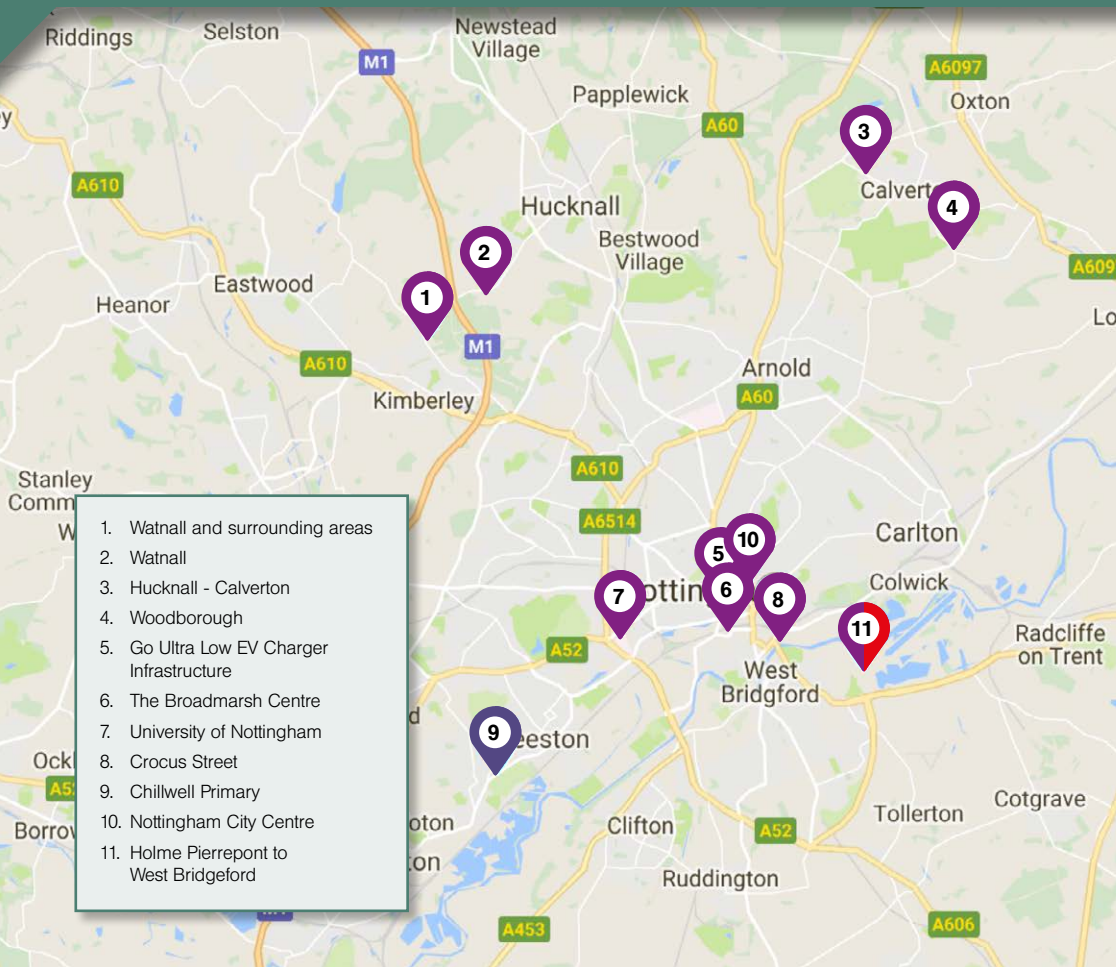


Project locations

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 Nottingham area. The map below shows the locations of those projects.

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



Projects in Nottingham

Nottingham West

Watnall and surrounding areas



Total spend: £5,000,000

Customers affected: 10,000

Start quarter: Q1 2015

End quarter: Q4 2017

Duration: 3 years

Details: New 33kV primary substation and eight 11kV feeders installed to reinforce the HV network, approx 9km of 11kV cable has been laid and two new substations installed.

Customer benefits: Greater security of supply to customers in the area, and further capacity in the network to allow for load growth in the surrounding areas.

Chilwell



Total spend: £18,489

Customers affected: 9,037

Start quarter: Q2 2017

End quarter: Q4 2017

Duration: 6 months

Details: Installation of a new dual overcurrent scheme and tap changer for facilitation of reverse power flow.

Customer benefits: Increased reverse power flow capacity at Chilwell Primary Substation to facilitate the connection of low carbon technology.



Watnall to Hucknall Feeder Overlay



Total spend: £234,555

Customers affected: 1,500+

Start quarter: Q2 2018

End quarter: Q2 2019

Duration: 12 months

Details: Domestic development with cost apportioned reinforcement works. 1200m of 11kV cable overlay in public highway from Watnall to Hucknall.

Customer benefits: Increased secure backfeeding capacity for the new development and surrounding area.



Projects in Nottingham

Nottingham East

Hucknall - Calverton



Total spend: £325,000

Customers affected: 23,000

Start quarter: Q2 2018

End quarter: Q3 2018

Duration: 3 months

Details: Approximately 6km of 33kV overhead line rebuild between Hucknall and Calverton primary substations.

Customer benefits: Greater security of supply to customers, and reduction in supply interruptions.

Woodborough



Total spend: £75,000

Customers affected: 3,200

Start quarter: Q1 2018

End quarter: Q2 2018

Duration: 2 months

Details: 1,250m high voltage interconnection through third party land.

Customer benefits: Greater security of supply to customers in the area, and reduction in supply interruptions. Of particular benefit to rural areas.



Projects in Nottingham

Nottingham City

The Broadmarsh Centre



Total spend: £177,548

Customers affected: 1,327

Start quarter: Q4 2017

End quarter: Q3 2020

Duration: 3 years

Details: Combination of cost apportioned and fully funded reinforcement works to accommodate redevelopment and expansion of the Broadmarsh Shopping Centre. Multiple 11kV and LV cable overlay and network reconfigurations in the City Centre.

Customer benefits: Increased secure backfeeding capacity for the new development and surrounding area at 11kV and LV.

Crocus Street



Total spend: £327,771

Customers affected: 2,888

Start quarter: Q2 2018

End quarter: Q4 2019

Duration: 18 months

Details: Domestic development with cost apportioned reinforcement works. Multiple 11kV cable overlays, with a total of 1,800m of cable to be replaced, in the Sneinton and Queens Drive areas of Nottingham.

Customer benefits: Increased secure backfeeding capacity for the new development and surrounding area.



Projects in Nottingham



Nottingham City

Go Ultra Low Electric Vehicle (EV) Charger Infrastructure

INNOVATION
PROJECT

Total spend: n/a

Start quarter: Q1 2017

Duration: Ongoing

Details: Feasibility study conducted by WPD to assess the viability of a number of EV charger connections across Nottingham City.

Customer Benefits: Development of EV charging on the network throughout the city of Nottingham to assist with facilitating low carbon vehicles.

University of Nottingham



Total spend: £184,000

Customers affected: 1,563

Start quarter: Q2 2018

End quarter: Q4 2018

Duration: 6 months

Details: Replacement of 11kV switchgear adjacent to Lenton Primary Substation with a low fault level rating.

Customer Benefits: Removal of fault level restrictions applied to Lenton Primary Substation to facilitate the connection of low carbon technology.



Projects in Nottingham

Automation Schemes

Automated systems are a series of switches that are set to open and close under certain conditions without the need for manual operation. Remote controlled components allow the network to be switched from a central location at our control centre. Both of these systems help WPD to quickly and efficiently restore customer supply in the event of a fault. The location and implementation of these systems must be carefully considered to ensure best value for money for our customers as well as allowing us to meet our operational targets. The projects featured below are a small selection of the automation schemes being implemented across the WPD network.

Nottingham City Centre



Total spend: £100k

Customers affected: 700

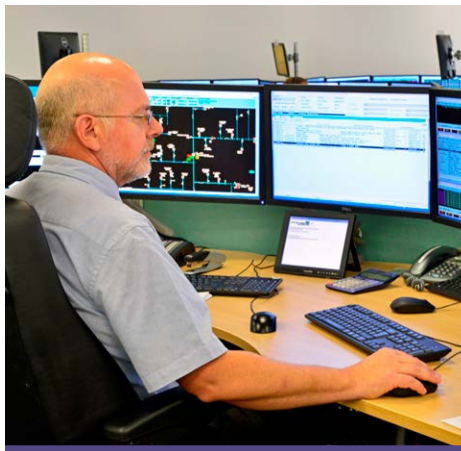
Start Quarter: Q2 2018

End Quarter: Q4 2018

Duration: 6 months

Details: Replacement of the switchgear in the Council House Substation in Nottingham City centre to include automated units.

Benefits to customers: This will help reduce the number and length of interruptions to shops and customers around the Old Market Square.



Holme Pierrepont to West Bridgeford



Total spend: £35k

Customers affected: 1,800

Start Quarter: Q1 2017

End Quarter: Q2 2017

Duration: 3 months

Details: Installation of new automated switching station with remote control and replacement of a 500m section of 11kV cable.

Benefits to customers: The replacement of the cable is due to age and condition and will reduce the number of interruptions customers were seeing and the new switching station will enable customers to be restored quicker if there are further faults on the 11kV network.



Major Projects in the East Midlands

Oakham, Lincolnshire



Total spend: £400,000

Customers affected: 800

Start quarter: Q1 2017

End quarter: Q3 2017

Duration: 5 months

Details: In February 2017, an investment of more than £400,000 was made to improve power supplies in Rutland. The scheme reinforced and renewed electricity cables in Oakham town centre. Around 2km of cables were replaced and a new substation installed at the Castle.

Customer benefits: This project improved the reliability of supply to nearly 800 customers.

Sibthorpe



Total spend: £650,000

Customers affected: 1,518

Start quarter: Q2 2018

End quarter: Q4 2018

Duration: 6 months

Details: Install a new 33kV switchboard and reconfigure the network.

Customer benefits: Improved network performance.

Long Eaton



Total spend: £800,000

Customers affected: 17,993

Start quarter: Q2 2018

End quarter: Q4 2018

Duration: 6 months

Details: Replace both primary transformers.

Customer benefits: Improved reliability of the network.

Tamworth



Total spend: £2,348,000

Customers affected: 39,281

Start quarter: Q2 2017

End quarter: Q3 2018

Duration: 20 months

Details: Replace the 132kV Switchgear and 132/33kV transformers due to increased load in the area.

Customer benefits: Maintaining network within limits and allow future capacity in the network.



Major Projects in the East Midlands

Horncastle, Bicker Fen



Total Spend: £3,456,000

Customers affected: 5,891

Start quarter: Q2 2017

End quarter: Q4 2017

Duration: 7 months

Details: Increased loading had caused the firm capacity of the two transformer site to be exceeded. Both transformers will be replaced, the substation reconfigured and the switching and protection schemes upgraded.

Customer benefits: Increased reliability of the network and increased potential for further connections.

Corby



Total Spend: £3,600,000

Customers affected: 34,093

Start quarter: Q1 2018

End quarter: Q4 2019

Duration: 23 months

Details: Replace the existing equipment due to increased load and generation.

Customer benefits: Generation will be able to connect to the network.

Checkerhouse



Total Spend: £4,000,000

Customers affected: 26,280

Start quarter: Q1 2017

End quarter: Q2 2018

Duration: 1 year

Details: Connection of new generation causes issues with reverse power flow through the 132/33kV transformers at the substation. This requires the replacement of the two transformers, and the existing 33kV switchboard will also be replaced with a modern gas-insulated one.

Customer benefits: Future expansion of up to two further grid transformers and a new switchboard will enable the current fault level restriction to be lifted and allow accepted generation schemes to connect.

Towcester



Total Spend: £1,400,000

Customers affected: 6,704

Start quarter: Q4 2017

End quarter: Q2 2019

Duration: 14 months

Details: Install an additional primary transformer and half an 11kV board.

Customer benefits: Maintaining network within limits and allow future capacity in the network.



Innovation Projects in the East Midlands

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

ENTIRE/Flexible Power



Project ENTIRE focuses around the use of Demand Side Response (DSR) to

help manage the network more efficiently. DSR involves customers adjusting their usage to help the network. Where cost effective, DSR can help defer or avoid reinforcement, reducing costs for customers.

ENTIRE aims to address the conflicts between DNO requirements and those of other parties such as National Grid. To achieve this, WPD will develop new systems and contracts with commercial customers to provide benefit to the network under its Flexible Power brand. Customers will also be encouraged to seek alternative revenue sources when not required by WPD, either independently or through WPD's managed service. This focus on stacking revenues should increase the value for participants whilst reducing the cost to the wider customer.

The project will run in the East Midlands along the M1- M40 corridor with an aimed completion of 2020. More details can be found at www.flexiblepower.co.uk



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