

# Investing in the electricity network

North Lincolnshire 2017/18



**WESTERN POWER**   
**DISTRIBUTION**

*Serving the Midlands, South West and Wales*

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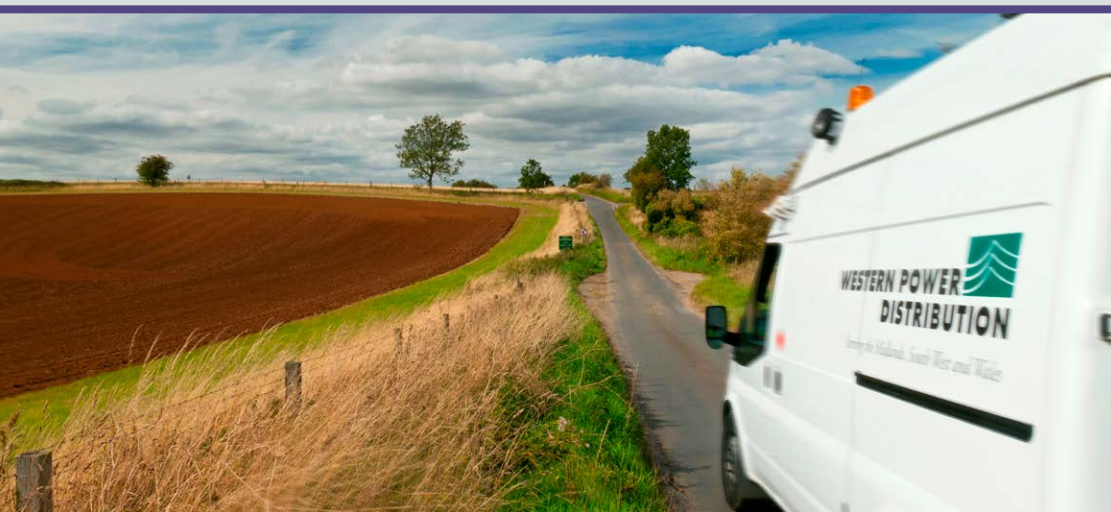
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# Meet your local team



I'm Mark Hutchinson the Distribution Manager for North Lincolnshire. We cover an area from the west of Newark across to the coast which includes the city of Lincoln, Boston, Newark and Skegness. The North Lincolnshire network is a variety of urban and rural comprising over 2,700 km of overhead line and 3,600 km of underground cables which we aim to keep working efficiently in order to keep the lights on for our 200,000 customers. I lead a team of 165 staff which includes craftspeople, planners, wayleaves officers, engineers and a new intake of apprentices every year.

We are located in Units B-E Deacon Road Industrial Estate, Lincoln, LN2 4JB. If you wish to discuss our investment with me, or my team, please get in touch using the details opposite.

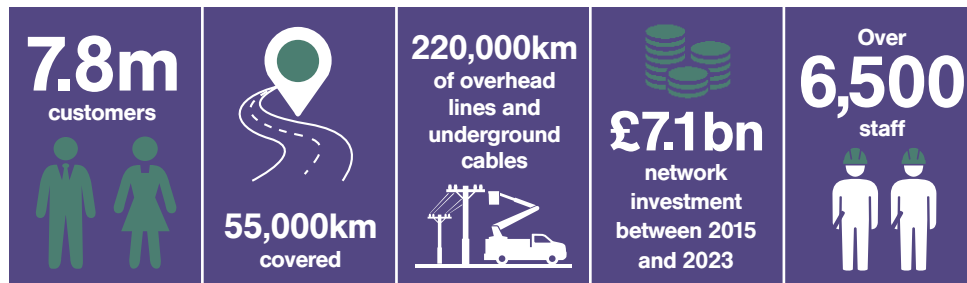
## Why I am writing to you

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 North Lincolnshire 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 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

# £18 million

in North Lincolnshire

# 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 North Lincolnshire 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 North Lincolnshire

## Alford

### *Belchford, Flint Hill Farm*



**Total spend:** £8,000

**Customers affected:** 2

**Start quarter:** Q2 2017

**End quarter:** Q4 2017

**Duration:** 15 months

**Details:** Approximately 100 metres of overhead line and four poles are being replaced with underground cables due to vertical clearance issues.

**Customer benefits:** This will alleviate the safety issues surrounding the clearances and remove the overhead line from sight.

### *Horncastle*



**Total spend:** £1,550,000

**Customers affected:** 663

**Start quarter:** Q1 2017

**End quarter:** Q2 2018

**Duration:** 15 months

**Details:** This project involves a large amount of 33kV reinforcement with the majority funded by WPD. Reinforcement in this case is driven by the increased load in the area which stresses our assets.

**Customer benefits:** Completion of this project, due Q2 2018, will increase the capacity and reliability of the 11kV and low voltage network.



### *Bratoft Burgh Le Marsh*



**Total spend:** £115,500

**Customers affected:** 180

**Start quarter:** Q2 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** Replacing two pole mounted transformers, switchgear, 10 poles, 0.8km underground LV cable and 1.2 km overhead line due to the condition of the assets. 1km of 11kV overhead line will also be dismantled and rebuilt at Bratoft, Burgh Le Marsh. In addition we will install a new 11kV interconnector to improve network security.

**Customer benefits:** This project will improve the quality of supply in the area with increased capability and reduced restoration times.





# Projects in North Lincolnshire

## Boston

### Gipsey Bridge



**Total spend:** £36,000

**Customers affected:** 6

**Start quarter:** Q2 2017

**End quarter:** Q2 2017

**Duration:** 3 months

**Details:** Several potential safety issues have been identified with a section of LV overhead line which runs from the Post Office, through the school

playground and into Canister Lane. A faulty section of cable has also been temporarily bypassed as access is not possible into the garden where it lies. WPD will lay approximately 325m of mains cables, six new underground domestic services, a new single phase supply to the Post Office and a new 3-phase supply to the school. The overhead line will then be dismantled. Works will take place during the school holidays due to the proximity of work to the school.

**Customer benefits:** This project will alleviate any safety issues caused by the overhead line as well update supplies to vital community buildings.

### Great Hale/Grove Street Leas Rd



**Total spend:** £52,500

**Customers affected:** 249

**Start quarter:** Q2 2017

**End quarter:** Q2 2017

**Duration:** 3 months

**Details:** Both network and clearance issues with roads and mature trees are driving the requirement to enhance the LV network in this area. A new pole mounted transformer and LV cable will be installed to reduce long feeding distances and give further alternative feeding to Great Hale Central substation.

**Customer benefits:** Completion of this project will provide improvements to reliability of the low



voltage network and help to alleviate the safety clearances of lines.



# Projects in North Lincolnshire

## Lincoln City

### Church Hill, Washingborough



**Total Spend:** £60,000

**Customers affected:** 46

**Start quarter:** Q4 2017

**End quarter:** Q1 2018

**Duration:** 4 months

**Details:** Undergrounding of LV network and upgrade circuit capability.

**Customer benefits:** Improved supply reliability and voltage stability.

### Station Road, Harby



**Total spend:** £41,000

**Customers affected:** 28

**Start quarter:** Q3 2017

**End quarter:** Q3 2017

**Duration:** 1 month

**Details:** Due to the termination of the wayleave that allows WPD to keep our equipment on private land, a pole transformer will be removed. This will be replaced with a new substation locally.

**Customer benefits:** Improved accessibility to the new substation, reducing both time taken to access the site and physical impact of future work.

### St Giles, Lincoln



**Total spend:** £20,000

**Customers affected:** 302

**Start quarter:** Q1 2017

**End quarter:** Q3 2018

**Duration:** Multiple schemes approx 1 week each

**Details:** The project involves the replacement of multiple linkboxes which enable us to provide an alternative supply for customers during planned and unplanned outages.



Replacement of these assets ensures the network is running safely and efficiently.

**Customer benefits:** Minimises outage time during maintenance and faults by providing an alternative supply.



# Projects in North Lincolnshire

## Lincoln East

### Woodhall Spa, King Edward Road



**Total spend:** £9,500

**Customers affected:** 2

**Start quarter:** Q2 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** This project requires an overhead service line to two properties to be undergrounded. Two separate services will be laid due to a large tree in front of the properties. WPD will complete all works required including the dismantling of the existing line and pole.

**Customer benefits:** Completing the undergrounding alleviates clearance issues with the trees, improving safety and reducing the likelihood of faults on the service lines.

### Wickenby West



**Total spend:** £3,500

**Customers affected:** 4

**Start quarter:** Q3 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** Due to the voltage issues in the area, a pole transformer will be replaced and the associated low voltage overhead line will be restrung.



### Asterby, Witch Hole Cottage



**Total spend:** £5,500

**Customers affected:** 3

**Start quarter:** Q3 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** Due to the increase in load locally, a pole transformer will be upgraded to increase network capacity.

**Customer benefits:** This will allow the asset to perform more reliably and safely.

**Customer benefits:** This replacement will improve the reliability and quality of supply in the area as well as increase the network capability.



# Projects in North Lincolnshire

## Lincoln West

### *Snarford to Hackthorn*



**Total spend:** £170,000

**Customers affected:** 9

**Start quarter:** Q2 2018

**End quarter:** Q3 2018

**Duration:** 4 months

**Details:** The project involves a complete rebuild of around 3km of HV overhead lines including the replacement of all associated poles. This is the second phase of a wider rebuild across the local area to replace the aging overhead lines and will introduce wider cross arms which will reduce the likelihood of transient faults.

**Customer benefits:** This work has been triggered by the current condition of the assets which have come to the end of their useful life but also features increased conductor sizes which allows for future growth of the network.

with the design requirements to ensure the security of supply, 2.1km of 11kV circuit will be installed to allow more interconnectivity between sections of the network.

**Customer benefits:** This will reduce customer interruptions during maintenance and help to restore supply more quickly in the event of a fault.

### *St Marks, Newark*



**Total spend:** £80,000

**Customers affected:** 115

**Start quarter:** Q2 2018

**End quarter:** Q3 2018

**Duration:** 4 months

**Details:** The project involves complete renewal of both transformers and associated Low Voltage Boards and LV Cables terminations.

**Customer benefits:** This work has been triggered by the current condition of the assets which have come to the end of their useful life but also features increased LV Cable terminations which allows for future growth of the network

### *Lowfields Bassingham to Navenby*



**Total spend:** £125,500

**Customers affected:** 4

**Start quarter:** Q2 2017

**End quarter:** Q3 2017

**Duration:** 3 months

**Details:** To ensure that the network is compliant



# 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](http://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](http://www.flexiblepower.co.uk)



To report a power cut, call us on:

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**Email: [info@westernpower.co.uk](mailto:info@westernpower.co.uk)**



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