

Central London Plan Update 2021

Towards a net
zero energy future



Welcome to the Central London Plan Update 2021

One of the 77 commitments in our RIIO-ED1 business plan was to publish an annual update on the progress of the plans we made for improving the Central London Network. This report is the result of that commitment and it details what we have achieved over the past year.

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Our vision:

To be consistently the best performing Distribution Network Operator in the UK within an agreed set of values: Integrity – Respect – Continuous improvement – Responsibility – Unity – Diversity and inclusiveness.

We will do this by delivering both our business targets and, where appropriate, setting targets which go beyond our sector for the three aspects of our vision

An employer of choice

- The safest – with an exemplary safety record
- An organisation that employees are proud to work for
- Embracing diversity
- An appropriately skilled workforce for both today and the long term

A respected and trusted corporate citizen

- The most reliable networks
- The most satisfied customers
- The most innovative
- The most socially and environmentally responsible
- Ensure we meet the needs of our customers in vulnerable circumstances, both now and in the future
- Enable the net zero transition for all
- The leading UK Distribution System Operator

Sustainably cost-efficient

- Be the lowest cost electricity distributor for our customers
- Deliver on our commitments in a collaborative way

Chief Executive's introduction

I am pleased to present the fifth annual update on the progress of our Central London Plan. I am proud to say that 2020 was another outstanding year, and once again our best-ever year for performance.

London maintained its position as the most reliable network in the country. We have seen a 51% reduction in the number of customers interrupted in Central London over the last six years and a 69% reduction in their duration. We have achieved this improvement while continuing to deliver great service to our customers across the board. Our customers in Central London awarded us an average score of 93% for customer satisfaction, an improvement of 14% compared to 2014.

It is a long-term objective of ours to increase capacity in the Central London Area and, despite the restrictions and difficulties that arose as a result of the COVID-19 pandemic, we made good progress towards delivering the projects designed to achieve that objective. To support future growth in the capital, we set ourselves the task of building four new large substations in areas where forecast demand is expected to increase. We have completed one of these, at Grafton Way, and it is already providing greater capacity to the Kings Cross area. The progress on the remaining three schemes is detailed in this report.

UK Power Networks has a key role to play in facilitating the transition to a net-zero carbon economy and helping to support the Mayor of London's environment and transport strategies for the city.

The expected proliferation of electric vehicles across the capital will put a significant burden on its power infrastructure. It is with this in mind that we continue to invest in our network, to ensure its resilience. We also continue to focus on improving our operational response to the escalating demands that a net-zero carbon economy will make on our network. Details of the measures we take to ensure our network is resilient, reliable and able to respond to future challenges are also detailed in this report.

This report focuses solely on the specific commitments we made for the Central London Area in our business plan. We are, however, carrying out a number of additional projects in London beyond those commitments, and further information on these can be found in our [Annual Review](#).

I hope you will find this update informative and useful. We welcome feedback on the work we are doing and this report.



Basil Scarsella
Chief Executive Officer



93%

average customer satisfaction score for the Central London Area



10.1

Customer Minutes Lost for the Central London Area in 2020

Background to the Central London Plan

The Central London Area is the global financial hub of the United Kingdom. It contains some of the world's most important political and commercial centres, and is home to world-leading cultural, entertainment and tourist destinations. We recognise what a great responsibility it is to deliver power to customers in the Central London Area. That is why our plan focuses on delivering the infrastructure that will improve the network.

The Central London Area serves approximately

185,000

customers as well as the numerous people visiting and working in the area

As we developed our business plan for RIIO-ED1, we engaged with our key stakeholders to find out what was important to them. Our Central London Plan reflects the three priorities that emerged from these discussions.

- Increase capacity to support growth
- Improve operational response
- Invest in network resilience

This report provides an update on our progress in these three areas. The maps show the geographic areas in the Central London Area, by postcode and by borough, and the locations of the new substations that will increase our network's capacity.

Markers show where the new substations to increase capacity will be located.

Overview of the Central London Area by Postcode



Overview of the Central London Area by Borough



As London continues to develop and grow, so does the need for an increase in network capacity.

As part of our plan to increase capacity to meet the future growth expected in Central London, we will deliver four new substations located where demand is expected to rise over the coming years. One of these, at Grafton Way, has already been completed. These new substations will not only provide a combined additional 300MVA of capacity, but will also ensure that we have the electrical infrastructure needed to support growth in Central London.

Increasing capacity to support growth



- 1 Grafton Way
- 2 Stewart's Road
- 3 Wood Lane
- 4 West End



300MVA

is what is required to power
150,000 average homes.

Increasing capacity to support growth

 Capacity proposals




 Forecast completion date

 Forecast cost*

* In line with regulatory reporting guidelines, the forecast costs here are only the direct costs of delivering the project

Grafton Way



 86 MVA
 Completed
 £13.2m

Background




Grafton Way is a part of our City Road/City of London Regional Development Plan. We have built a new substation in the Kings Cross area that provides an increase in capacity of 86 MVA. This extra capacity allows load to be transferred from the nearby Back Hill substation.

Progress update

We completed the project in December 2018 and the new substation is now fully operational, with customers in the area connected to the new supply.

Stewart's Road



 86 MVA
 Q4 2021
 £40.7m

Background

We are building a new substation to facilitate the development of new planning proposals in the Vauxhall/Nine Elms/Battersea area on the south bank of the Thames.

This substation will facilitate:

- Power to 16,000 new homes;
- Power to an extension to the London Underground Northern Line; and
- Regeneration of Battersea Power Station

Progress update

We have successfully energised one of the two new transformers and this is now providing increased capacity to the area. The remaining transformer will now be energised in August 2021, in order to allow for the coordination and construction of a new cable route, which will deliver network resilience to South London. We have commenced work on the 11kV transfer and reinforcement scheme, which once completed in Q4 2022 will increase the network capacity at adjacent major substation sites.

Increasing capacity to support growth



Capacity proposals



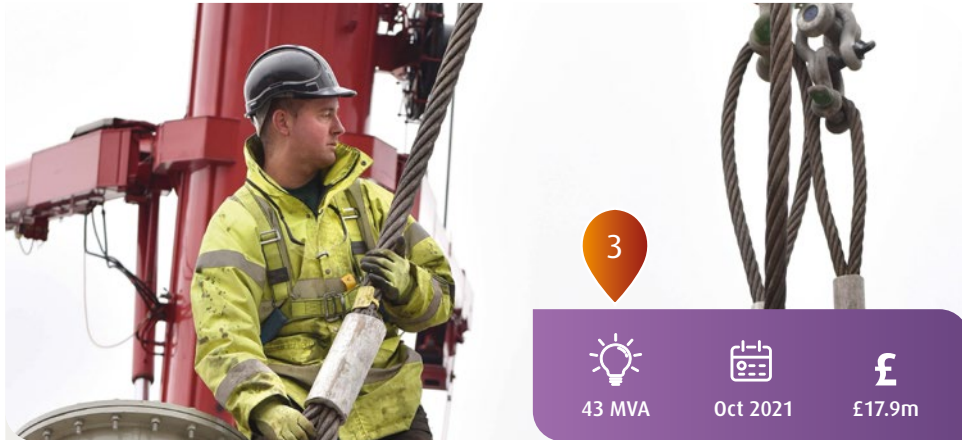
Forecast completion date



Forecast cost*

* In line with regulatory reporting guidelines, the forecast costs here are only the direct costs of delivering the project

Wood Lane



3



43 MVA



Oct 2021



£17.9m

Background

The London Borough of Hammersmith and Fulham and the Greater London Authority are working together on a new White City Development, with mixed office, residential and community use. The site is close to the BBC Television Centre and Westfield shopping centre. A new substation in the White City area will support the new development.

Progress update

The cable route for the new substation is now complete. Two new circuit breakers are required for this project, one of which has been successfully installed and the other will be completed in February 2021. We have completed the site acceptance testing. The electrical fit out and subsequent commission have extended into 2021. A six month commissioning programme commenced in April 21, taking the expected completion date of the project to October 21.

West End



4



86 MVA



Not fixed



£36.5m

Background

London's West End is one of the most economically important areas of London. It encompasses the entertainment districts of Leicester Square and Covent Garden, as well as shopping districts on Oxford Street, Regent Street and Bond Street. As part of our ED1 plans we identified a need to develop a new substation to provide additional forecast capacity for the area.

Progress update

Following a detailed land search, tunnel feasibility study and advanced discussions with landowners, we have identified a viable site for the new substation in the West End area. We are in discussions to secure access to this land to develop the new substation in the future.

In parallel, we have also explored other innovative and smart solutions that would enable the capacity to be met in the interim, lowering costs to customers over the next five to ten years. To that end, we have secured flexibility resources in the area and completed projects on adjacent sites to ensure their resilience; you can read more about how we are investing in network resilience on page 9. We are also currently delivering projects at Leicester Square and Carnaby Street that will provide additional medium-term capacity. Based on this and the latest forecasts of growth from our Distributed Forecast Energy Scenarios we currently believe that we will not need to build a new West End substation until after 2028.



Improving operational response

A reliable power supply is vital for an area that is as sensitive and economically significant as Central London.

To take account of this, our RII0-ED1 business plan proposed establishing an operational depot specifically for the Central London Area, with teams available to respond to problems on the network 24 hours a day, seven days a week. The depot has been fully operational since 2014 and continues to be a great success in helping significantly reduce response times.



9.2

Customer Interruptions,
which is a 51%
improvement since 2014

Improving operational performance

Shorts Gardens

Over 100 members of staff work from our Central London office and thanks to their central location near Covent Garden, they are ready and able to respond to any high or low voltage faults. You can see below how performance has improved since we established the depot.

Reducing time to arrive on site:

The office is staffed 24 hours a day, seven days a week, so there is always a qualified member of staff available to respond to a fault. Before we opened this depot, we would have to call engineers out from their home, which could be some distance from Central London.

The time taken to arrive on site in 2020 was an average of only 37 minutes. This is a **64% reduction since 2014**, when it took an average of 102 minutes to arrive at site.

Reducing the number and duration of power cuts in Central London:

We have dedicated teams, working in shifts, that are responsible for maintaining the LV interconnected network. In addition, the introduction of Ultra-High-Speed fuses onto the network means that teams can work safely on the network without having to turn off the supply to customers. This reduces both the number and duration of power cuts.

The number of customers interrupted has **reduced by 51%** in Central London compared to 2014 and the duration of power cuts is down **by 69%** since then.

Shortening the longer power cuts:

Mobile stores delivering to the site of the fault mean that our engineers can start work more quickly, instead of needing to travel to depots to collect parts and materials. This means that we are more likely to be able to ensure that our customers are not without power for an extended period of time.

Our performance in this area continues to be outstanding, with only **1 customer** off supply for longer than 12 hours in 2020, compared to 384 in 2014.

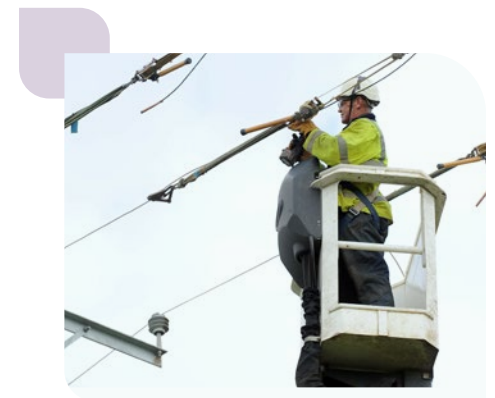
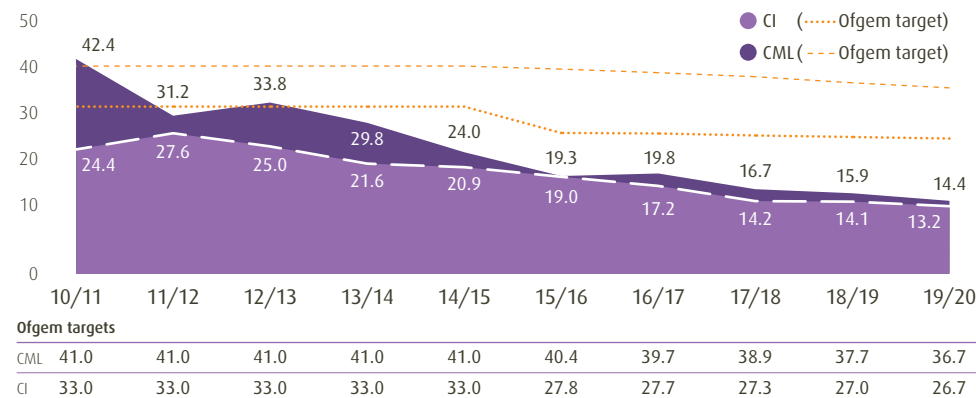
Improvement in customer satisfaction:

All of the measures that we have put in place to improve network reliability in the Central London Area have been reflected in our customer satisfaction scores. In addition, the teams ensure that information relating to power cuts is provided to customers as soon as possible.

Customer satisfaction scores are currently at 93% for our response when customers experience a power cut, compared to 82% in 2014.

LPN overall network

The Customer Interruption (CI) and Customer Minutes Lost (CML) targets set by Ofgem for the whole London network were set more tightly to reflect the performance improvements expected as a result of establishing our Central London depot. From around the time the Central London depot was opened in 2014, CIs in London have improved by 37% and CMLs by 40% since 2014/15.



Investing in network resilience

High Impact Low Probability (HILP) scheme

As part of our work to improve the resilience of the network in surrounding areas near the West End, we have completed the High Impact Low Probability (HILP) scheme at Hyde Park that will improve the cooling of transformers.

Overheating of transformers can dramatically shorten the life of the transformer and can sometimes cause it to fail without warning, potentially leading to replacement and long outages. Our network protection is set up so that power from one transformer is set to be automatically rerouted to another transformer if the temperature is above a certain value. In addition, our Network Controls teams will reroute the power supply manually if they anticipate overheating.

At Hyde Park our inspections and maintenance identified two transformers that were overheating; this means there is a risk of interruptions to customer supply if multiple transformers have to be switched out. To improve the cooling of these transformers, we cleaned out the existing coolers and fitted replacement fans. This had a substantial impact on helping to bring down the transformer temperature. In the future, we also intend to use new transducers that will turn the cooling system on sooner. This will prevent the transformer temperature increasing over the threshold.

The measures we have undertaken have greatly improved the transformer cooling and so increased the resilience of these assets, ensuring we can continue to provide great network reliability to our customers.



Investing in network resilience

Increasing resilience of interconnected groups

The Central London Network is unique in the UK in that it operates Low Voltage interconnected networks; this means we can supply power to customers from multiple High Voltage supply points. The advantage of this design is that it helps us support high levels of concentrated electricity demand, and we can continue to provide power to customers even when there is a fault on the High Voltage network. The design of these networks has evolved over time to improve safety. In order to continue to develop the design of these networks, we have created a new concept using unit protection switchgear.

This new design aims to reduce the complexity of operating the Low Voltage network while ensuring that no supply is lost in the event of a High Voltage circuit fault. This will improve safety and avoid customer interruptions.

Update on new equipment testing:

- We have completed the training of operational staff in Central London to familiarise them with use of the new switchgear;
- We are due to purchase 60 substation sets of Compact Switchgear in 2021;
- We have now undertaken 3D scanning of 25 transformer chambers in the West End, liaising with our operational team to establish equipment sizes needed for the new switchgear. This will ensure that the new equipment fits in the transformer chamber alongside other equipment;
- There has been a temporary delay to the progress of the trial of the equipment and we still need to identify two substations at which we will conduct the trial, and we hope to have done so by the end of 2021;
- Once the trial in two sites has been successfully completed, we will start a full conversion trial in the West End area.

Linkbox and substation inspections

Linkboxes provide links between multiple electrical cables and that allows us to reconfigure the Low Voltage network. The linkboxes are installed under covers in the pavement and are operated by inserting or removing either solid links or fuses. We inspect all linkboxes in Central London once a year, to check for defects. We have installed a protection blanket in every linkbox in Central London (where access allows). The protection blanket acts as a buffer between the bell cover and the footway cover. This reduces the risk of the footway cover lifting in the event of a fault. We also check our substations annually in order to spot and fix defects, to prevent them developing further. These checks contribute to the improvement of the network's availability and reliability.

100

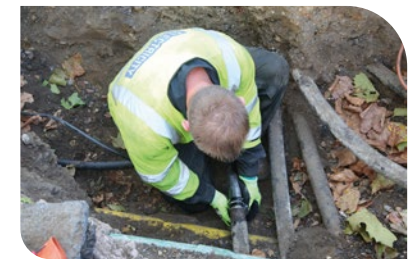
linkboxes have been replaced in 2020

3,669

linkboxes have been inspected in 2020

3,512

substation inspections have been carried out in 2020



Key contacts

General enquiries

0800 029 4285

Emergencies or power cuts (24 hours a day)

Free power cut helpline 3-digit number:

105 or **0800 31 63 105**

Please note this number is free to call from mobile phones

Text message updates during a power cut

To keep updated if you have a power cut in your area text **'Power'** followed by your postcode, e.g. Power IP3 6QX to 80876

Text Relay

We offer a 24-hour Text Relay service for customers who are deaf, hard of hearing or have any other communication difficulties. For more information, visit:
www.ukpowernetworks.co.uk

Connection services

0800 029 4280

Media enquiries

0330 159 1712



A full list of our contact details can be found at:
www.ukpowernetworks.co.uk

