As part of a community energy project that could be the shape of things to come, WPD has carried out a new connection to Europe's largest community battery.

STELLA HAYWARD REPORTS.

CELL OF THE CENTURY

There's a riverside revolution under way in Nottingham. A part of the 250-acre Waterside Regeneration scheme is the groundbreaking Trent Basin, a residential development where low-energy homes will feed into a community energy battery.

The homes – which will eventually total around 500 – have solar photovoltaics (PV) installed that are connected to a 500kW (2.1MWh) Tesla battery system which will store excess electricity to be used on site or sold back to the national grid.

Currently there are around 700 solar panel units on the ground at the site's dedicated solar farm which produces around 190kW and there are plans to install a further 900 panels on the new houses as they are built.

A 440kW PV generator has also been connected to WPD's network. This will primarily be used to heat homes on the development but can also be used to support the distribution network in times of high demand, which is known as Firm Frequency Response. The system can provide 2.1MWH of electricity back to the local primary substation at Sneinton.

As the first project of its kind in the region, early involvement with WPD's innovation team helped the developer to gain a better understanding of the commercial arrangements which made its application easier. It also provided numerous benefits for WPD too, as Network Strategy Team Manager Ben Godfrey explained.

"At the moment, such installations are relatively rare due to the high technology costs but in the future, connecting energy storage to our network will be commonplace," he said. "These early projects have helped us develop online connection guidance leaflets, application forms and videos and these will help more devices get connected quicker. As customers become more active in how they generate and consume energy, it will offer us a wider range of options to help keep the lights on."

The £6million energy project is being delivered by a range of partners through two programmes – the Energy Research Accelerator (ERA) and Project SCENe (Sustainable Community Energy Networks).

WPD's Nottingham City team was approached for a connection in early 2017. It has since installed 90 metres of new 11kV underground cable from the site to the existing 11kV feeder from the primary substation and a new metered ring main unit at the customer's site. A generator constraint panel has also been fitted that can be controlled remotely by a Surf Telecoms generator communications unit when needed if abnormal network running conditions occur.

11kV Planner Lee Barnett, who has managed the connection request, said: "This type of project has an important role to play in the development of our future energy networks. The way energy is generated and consumed is changing and locally we're starting to see a hub of innovative projects take off in Nottingham.

"Other customers are learning from projects like these and combining low carbon technologies to create community focused energy distribution. This has had a really positive impact on the people involved and led to connection applications for a further five similar smaller scale projects in our region."

"As well as providing sustainably sourced low cost energy through commercial electricity billing arrangements and low carbon technology district heating, potentially the learning from the project could benefit millions of customers worldwide by changing the way energy is produced and consumed within communities," added Lee.

Panel display – 11kV Planner Lee Barnett at the Trent Basin Urban Solar Farm, and facing page top left: Lee with Technician Graham Stewart by one of the Nissan Leaf EVs the Tesla Battery System powers.

Left: We've got the power – (from left) Fitter Tom Taylor, Technician Graham Stewart, Surf Telecoms Communications Engineer Brian Charlton and Fitter Andy Armiger in front of the 2.1MWh / 500kW Tesla Battery System at the Trent Basin Development.

Below: Graham Stewart (left) and Brian Charlton behind the generator constraint panel on the metered ring main unit.

FUN FACT

The X-factor...

The batteries used on the Tesla system are the same as those found in the record breaking Tesla Model X sports utility vehicle, the world's fastest accelerating production SUV with a 0-60 time of 2.9s.

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BEN GODFREY

60 Second Interview

Lee Barnett

11kV Planner (pictured left)

What's your career background? I started in 2008 as a cable jointing apprentice with E.ON, moving to WPD in 2011. Shortly after, I became a planner at Lincoln and returned to college to complete an HNC in Electrical Engineering. In 2015 I became an 11kV Planner at Nottingham.

What does your role entail? It mainly involves planning and designing capital works or customer connection schemes on the 11kV network, but also extends into other areas, like supporting customer and stakeholder engagement events, and other planners.

What's the biggest challenge? The area. Nottingham is densely populated with many geographical and electrical challenges. From underground substations in national heritage buildings to tramlines abutting ancient tunnels used as utility channels, any job can present an unanticipated obstacle. Fortunately, with teams of experienced, competent people, we can overcome any challenge it throws at us.

What do you enjoy most about the job? Being able to make a positive difference for customers, the environment or the network. The number of innovative projects we get involved with presents the opportunity to cover all these points. And working with a team of truly good people helps make the job enjoyable.

What do you like to do outside of work? I like to spend my free time with my family, cycling with friends, or enjoying a relaxing holiday experiencing a different culture.

TESLA X 90D - WIKIMEDIA/JAKOB HAERTER