



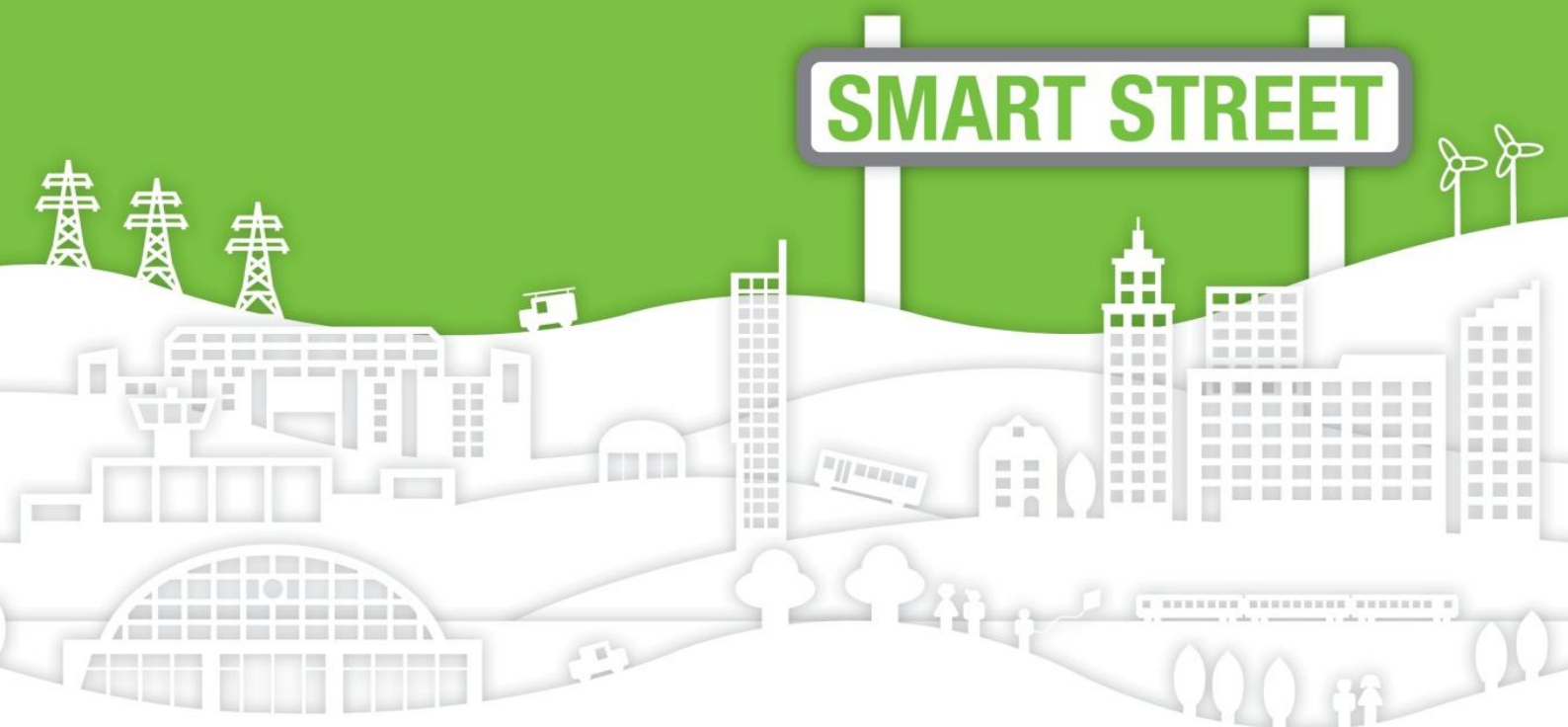
Smart Street

Project Progress Report (PPR)

Version 1.0

17 June 2016

SMART STREET




VERSION HISTORY

Version	Date	Author	Status	Comments
V0.1	04/05/2016	Kevin Hoban	First draft	
V0.2	08/06/2016	Kevin Hoban	Draft	Updated from 1 st internal review
V0.3	14/06/2016	Kevin Hoban	Draft	Updated from 2 nd review
V1.0	17/06/2016	Kevin Hoban	Final	Updated with bank statement

REVIEW

Name	Role	Date
Andrew Howard	Innovation programme manager	17 June 2016
Paul Turner	Innovation delivery manager	17 June 2016

APPROVAL

Name	Role	Signature & date
Steve Cox	Head of network engineering	
Matthew Sweeney	Finance business partner	 17/06/2016

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GLOSSARY OF TERMS

Abbreviation	Term
C ₂ C	Capacity to Customers (Electricity North West second tier LCN Fund project)
CEP	Customer engagement plan
CLASS	Customer Load Active System Services (Electricity North West second tier LCN Fund project)
CVR	Conservation voltage reduction
DINIS	Distribution network information system
DNO	Distribution network operator
DPS	Data protection statement
ECP	Engaged customer panel
FAT	Factory acceptance test
GM	Ground mounted
HV	High voltage
ICCP	Inter control communication protocol
IFI	Innovation Funding Incentive
ITT	Invitation to tender
LCT	Low carbon technology
LV	Low voltage
NMS	Network management system
O/H	Overhead
SAT	Site acceptance test
QUB	Queen's University Belfast
SDRC	Successful delivery reward criteria
SDRC output	Discrete evidence of attainment or part attainment of an SDRC as defined in the project direction
SP5	Spectrum Power 5
U/G	Underground
UoM	University of Manchester
U3A	University of the third age
VT	Voltage transformer

1 EXECUTIVE SUMMARY

Funded by Ofgem's Low Carbon Networks Second Tier funding mechanism, the Smart Street project was authorised to commence in December 2013 and is now due to complete in April 2018. The project is being undertaken by Electricity North West and key partners.

Utilising the most advanced technology developed for LV network management, Smart Street challenges current operational practices and demonstrates how to optimise HV and LV networks in real time.

The Smart Street method combines the concepts of interconnection of networks, developed within the C₂C project, and elements of the voltage control technologies developed by Electricity North West under the First Tier of the LCN Fund. The project utilises advanced real time optimisation software to simultaneously manage HV and LV network assets to respond to customers' changing demands in the most efficient end-to-end manner. The three key incremental steps in the Smart Street method are the application of:

- Co-ordinated voltage control, using transformers fitted with on-load tap changers and capacitors, across HV and LV networks
- Interconnecting traditionally radial HV and LV circuits and assuming control of these networks within the Electricity North West control room
- Real time co-ordinated configuration and voltage optimisation of HV and LV networks.

Enhancing existing networks in this way enables accelerated connection of clusters of low carbon technologies (LCTs) that contribute to emission reduction targets. Smart Street is a low risk, transferable, non-intrusive method which is an alternative first intervention to traditional network reinforcement. It is envisaged that the Smart Street method will release capacity up to four times faster and 40% cheaper than traditional reinforcement techniques for LCT clusters. Smart Street's optimisation software is expected to deliver conservation voltage reduction to improve the energy efficiency of customers' electrical appliances, reducing energy up to 3.5% per annum, and lowering network losses by up to 2% per annum across HV and LV networks. This will deliver recurring financial savings for customers, without degradation to the quality of customers' supplies.

During the Smart Street project, communications from customers in the trial areas will be monitored to collect quantitative customer information. The project team will also hold a series of customer focus groups, with individuals recruited from within the trial areas, to collect qualitative customer information. In addition, the team will utilise outputs from the CLASS survey, which was designed to establish the customer experience of a change in supplied voltage. These findings support Smart Street customer research.

Progress to date

The project was granted a four-month extension including a variance to project management costs on 9 March 2016. The project costs to date are £6,909k with completion costs estimated to be £8,873k of the £9,550k budget including contingencies.

This report is the fifth project progress report and covers the period December 2015 to June 2016 inclusive. The key highlights to date are:

Installation plan

The installation programme was completed in January 2016 in line with the four-month project extension. A small number of equipment issues have arisen on the trial networks which have been resolved within the project budget with no impact to the project timescales. These are detailed in Section 6 of this document.

Spectrum Power 5

The Spectrum Power 5 has been installed onto Electricity North West's IT network and has successfully passed full SAT.

Trials and research

The trial and research workstream has continued (detail in Section 2.3) with end-to-end testing now carried out on the installed equipment across all trial areas. The optimisation software has been run in closed loop mode and has operated to optimise the networks involved in the project. System data has been extracted and passed to the project's academic partners for analysis, copies of which are available on the [website](#).

Customer engagement

- The customer workstream has continued to work closely with the customer contact centre (CCC) to ensure customer enquiries associated with any aspect of this project are captured and appropriately managed (detail in Section 2.4).
- The customer workstream has continued to work closely with the technology workstream to ensure that technological challenges have been overcome without any detrimental impact on customers.

Learning and dissemination

In addition to continued dissemination, knowledge sharing with stakeholders, regular updates on the project website and social media, learning and dissemination activities this reporting period include:

- Fourth Smart Street six-monthly progress report published on the Smart Street website
- Interim customer survey report published on the Smart Street website
- Start of the live trials publicised on the Smart Street website in January 2016
- Trial and test regimes design report published on the Smart Street website
- Presented the project at the 2016 Utility Week Live exhibition in Birmingham in May 2016
- Presented the project to local U3A (science branch) groups in the trial areas in February and May 2016
- A project newsletter was issued electronically to all key stakeholders in January 2016
- Presented to a number of internal audiences in preparation of commencement of trials
- The third Smart Street advertorial was published in Engineering and Technology magazine in February 2016
- An internal, company-wide project update was published in Electricity North West's Connect bulletin in February 2016
- Raw monitoring data was made available on the Smart Street website in April 2016.

During the reporting period the project has delivered eight SDRC outputs detailed in Section 5.

Figure 1.1: SDRCs delivered during the reporting period

Milestone	Workstream	Completion date
Project progress reports published on Smart Street website December 2015	Project management	December 15
Confirmation received from University of Manchester and Queen's University Belfast confirming successful receipt of/completion of data transfer process by January 2016	Research/trials	January 16
Publish network equipment specifications and installation reports by January 2016	Technical	January 16
Publish NMS, interface and optimisation configuration and commissioning reports by January 2016	Technical	January 16

Milestone	Workstream	Completion date
Publicise commencement of live trials on Smart Street website by January 2016	Dissemination	January 16
Publish trials and test regimes design report on Smart Street website	Research/trials	February 16
Publish advertorials	Customer	February 16
Raw monitoring data available via Smart Street website by April 2016	Research/trials	April 16

During the next reporting period the project will deliver two SDRC outputs in line with the approved four-month extension period.

Figure 1.2: SDRCs delivered during the next reporting period

Milestone	Workstream	Completion date
Project progress reports published on Smart Street website June 2016	Research/trials	June 16
Active participation at four annual LCNI conferences - 2016	Project management	October 16

Summary of key risks

Project risks are monitored on a continuous basis, including the potential risks that were documented in the full submission. The status of these is described in Section 4.

Summary of key learning outcomes delivered in the period

A detailed description of the project's learning outcomes can be found in Section 6; the areas where learning has emerged are summarised below:

- Proactive customer engagement and sensitive positioning of new street furniture housing enabling technologies is cost-effective and benefits the DNO in the long term
- The design of new street furniture should not only satisfy its technical requirement but mitigate against the generation or exacerbation of existing social problems in the neighbourhood in which it will be sited
- Support activities required from non-project partners

The project expenditure has been realigned due to the phased rollout of the construction phase.

Figure 1.3: Third party dissemination activities

Event	Contribution	Date
Project progress report published on Smart Street website December 2015	Media	December 15
Presented the project to local U3A (science branch) groups in the trial areas	Presented	Feb/May 16
Active participation and presentation of Smart Street at 2016 Utility Week Live exhibition, Birmingham	Presented	May 16

2 PROJECT MANAGER'S REPORT

2.1 General project management

The most significant project management activities undertaken during the reporting period are listed below:

- Project monitoring and control
- Continued stakeholder engagement and management
- Dissemination of the Smart Street project at industry events
- Dealing with suppliers in relation to on-site equipment issues.

During the reporting period, project emphasis has focused on four key areas:

- Completion of the construction phase for the trial networks
- Enhancement of Spectrum 5 software for voltage optimisation
- Stakeholder engagement and briefings
- Direct customer engagement with customers situated on the trial circuits.

During the reporting period the project emphasis has focused on completing the construction programme and commencing the trial phase. From this the project team has closely monitored the implementation of the construction plan which was designed to fit around the staged delivery timescales from the project suppliers. The plan was adapted and modified as required to react to supply and technical issues as and when they arose. The customer workstream has continued to monitor enquiries relating to the on-site build and has resolved all enquiries received to date, to the satisfaction of the customer. Spectrum 5 was successfully SAT tested in December 2015.

During the next reporting period the most significant project management activities will be:

- Managing and dealing with network issues as and when they arise
- Project monitoring and control
- Continued stakeholder engagement and management
- Active participation at the 2016 LCNI conference hosted by Electricity North West in Manchester
- Oversee monitoring of the Smart Street network in the six trial areas which include maintaining good levels of communication with business as usual colleagues
- Monitoring the on-site trials and data recovery for analysis by the universities.

Apart from those identified in the variation request, there are no other project management risks or issues associated with delivery of a project SDRC or maintaining consistency with the full submission.

2.2 Technology workstream

The most significant technology workstream activities during the reporting period are listed below:

- Briefing of new policy Code of Practice 621 Smart Street Network Management & Operation to Electricity North West colleagues
- Firmware upgrade rolled out on LV capacitors to correct multibank switching operation
- New firmware upgrade rolled out on Weezaps
- Redesign of LYNX bell house and sealing of antenna cable
- Replacement voltage transformers for OH capacitor
- Site acceptance test completed on Spectrum Power 5

- Trials go live
- Equipment specification and installation report published
- NMS, interface and optimisation configuration and commissioning report published.

During the current reporting period a significant amount of system integration testing and configuration of the SP5 system has been carried out:

- Spectrum Power 5 has now been SAT tested and gone live
- A four-day training course was held with Siemens in the Electricity North West control centre on completion of SAT
- Spectrum Power 5 has been installed onto Electricity North West's IT network.

During the next reporting period, the technology workstream's significant activities will be:

- Continued monitoring of system performance and equipment
- Schedule any network changes in response to data analysis eg change off load taps if data collected indicates scope for this.

All SDRCs associated with the above activities are complete or on track to the revised plan.

2.3 Trials and research workstream

The most significant trials and research workstream activities during the reporting period are listed below:

- Commencement of the live trials
- Publication of the trial data on the Smart Street website
- Analysis of initial data gathered from the trial areas
- Review of the initial academic reports regarding the project trials.

All SDRCs associated with the above activities are complete or on track. During the next reporting period, the trials and research workstream's significant activities will be:

- Continuation of live trials and publication of the generated data on the Smart Street website
- Transference of the trial data to the academic partners to allow analysis of the benefits
- Review of the findings detailed so far by the academic partners to determine areas of particular interest to the project and to refine the optimisation parameters to better deliver the observed benefits
- Modification of the trial parameters based on the findings of the initial academic review of the data
- Preparation of the series of interim reports due as SDRCs for February 2017.

There are currently no trials and research risks or issues associated with delivery of a project SDRC or maintaining consistency with the full submission.

2.4 Customer workstream

The most significant customer workstream activities completed during this reporting period are listed below:

- During the technology installation phase of the project, there was some initial resistance from customers to the appearance of new street furniture housing the enabling technologies. Customers were generally accepting of new street furniture once the project's objectives had been explained. It was also anticipated that once customers had become accustomed to the new street furniture and were satisfied that it had not led to problems associated with the congregation of youths or antisocial behaviour, (as had been the concern of some), they were inclined to accept the

cabinets as a part of routine operational infrastructure. Only one cabinet out of a total of 134 resulted in a nuisance problem, with youths using the apparatus to scale a customer's boundary wall. The cabinet was modified with a bespoke retrofit lid during the last reporting period and has prevented a recurrence of this problem, with the customer reporting no further incidents. Two other retrofit lids were fitted to cabinets as a precautionary measure after customers expressed concern that the equipment might cause the recurrence of previous antisocial behaviour problems. These preventative measures also appear to have been effective in averting anticipated problems. The customer workstream has continued to work closely with the customer contact centre (CCC) to ensure customer enquiries associated with any aspect of this project are captured and appropriately managed.

- The customer workstream continues to work closely with the technology workstream to ensure that technological challenges are overcome without any detrimental impact to customers.

During the next reporting period the customer and commercial workstream's significant activities are as follows:

- To develop customer engagement materials required for the customer focus groups which will be conducted to assess customers' perception of the effects of Smart Street.

2.5 Learning and dissemination workstream

The key activities undertaken by the learning and dissemination workstream during the period are summarised below:

- A project newsletter was issued electronically to all key stakeholders in January 2016
- The start of the live trials was publicised on the Smart Street website in January 2016
- The third Smart Street advertorial was published in Engineering and Technology magazine in February 2016
- An internal, company-wide project update was published in Electricity North West's Connect bulletin in February 2016
- Raw monitoring data was made available on the Smart Street website in April 2016.

Additional internal dissemination activities included:

- Operational briefings held at depots to disseminate CP621
- Operational briefings held in control room to disseminate CP621 to control engineers
- Smart Street has been briefed to internal control teams to allow them to understand the aims of the project and how their contribution was an important element to the successful delivery of Smart Street
- Smart Street was briefed to field operational teams in the remaining four trial areas to allow them to understand the aims of the project and how it would impact on their day-to-day roles. This understanding is essential for the successful delivery of Smart Street.
- Smart Street was briefed to connections colleagues and non-operational parts of the business to further spread companywide knowledge and understanding of the project
- Further briefings to internal fault reporting centre teams to give them an understanding of the aims of the project and to allow them to deal with customer enquiries efficiently.

Regular updates to the Smart Street website: Throughout the reporting period, the project website has been updated regularly with project outputs at: www.enwl.co.uk/smartstreet.

Social media forums exploited: To ensure that the key messages from Smart Street are disseminated as widely as possible, the project team is using a range of social media outlets to communicate Smart Street-related information, specifically:



<http://www.facebook.com/ElectricityNorthWest>



<https://twitter.com/ElectricityNW>



<http://www.linkedin.com/company/Electricity-North-West>



<http://www.youtube.com/ElectricityNorthWest>

Internal Electricity North West social media: To improve information sharing within the business, regular use is made of the internal social media application “Yammer”.

In the next reporting period, the learning and dissemination workstream will undertake the following activities:

- Publish interim customer survey report
- Publish sixth six-monthly project progress report.

There are currently no customer risks or issues associated with delivery of a project SDRC or maintaining consistency with the full submission.

3 CONSISTENCY WITH FULL SUBMISSION

At the end of this reporting period, it can be confirmed that the Smart Street project is being undertaken in accordance with the full submission.

4 RISK MANAGEMENT

Definition of risk status

Open: Accepted risk that needs visibility until such time that it is no longer a risk to the project. No further preventative actions identified or implemented.

Controlled: Risk with mitigating actions put in place to alleviate the possibility of an occurrence. Preventative actions identified or implemented to help manage the risk.

Closed: Potential of the risk occurring has passed or changes have been made to the project so that there is no longer a risk.

4.1 Risks and issues experienced during reporting period

There are currently no uncontrolled risks that could impede the achievement of any of the SDRCs outlined in the project direction, or which could cause the project to deviate from the full submission.

Risk 20 – Risk that all HV ground-mounted capacitors not delivered on time. Status: Closed

These were delivered in line with the project extension timescales and subsequently installed on site.

Risk 21 – Risk of signal strength issue with LYNX devices. Status: Controlled

Variable signal strength was experienced at some LYNX locations. Kelvatek have supplied a quantity of alternative high gain aerials and aerial pillars for such locations.

Ongoing monitoring of individual signal strength performance will be conducted during the trial period.

Risk 26 – Risk that all LYNX devices are not installed by trial go live. *Status: Controlled*

After rollout of LYNX devices and during the testing phase, six out of the 42 units installed failed due to water ingress. All units were recovered for investigation and it was established there was a design issue that affected the bell housing of some of the units. This has been resolved by an improved bell housing design and a sealed antenna cable. A routine inspection of link boxes is being conducted during the trial period to confirm that this issue is resolved.

Risk 29 – Land access issues for O/H capacitor installations. *Status: Closed*

There was a risk that land access issues would delay installation work.

Due to the severe weather and subsequent land saturation, access to land was prohibited by the land owners. Work was delayed until the land became fit for access. Access has subsequently been granted and the work carried out.

Risk 23 – Risk of VT failure associated with O/H capacitors. *Status: Closed*

An operational restriction is now in place on Mid Central Electric VTs due to disruptive failures occurring. This restriction came into force a few days before the installation of the HV O/H capacitors, which are fitted with this type of VT. Initially the restriction only prevented live operation which still allowed installation. Subsequently an outright restriction was imposed, resulting in alternative manufacturers being sourced.

Alternative VTs were identified, approved and installed.

Risks are monitored on a continuous basis, including the potential risks that were documented in the full submission.

4.2 Risks that existed at time of documenting the project full submission

The narrative below refers to risks that existed at the time of submission and were detailed in Appendix E of the full submission.

Recruitment risks

Risk 1 – Risk that Electricity North West and/or partners are not able to mobilise their resources in time. *Status: Closed*

Electricity North West has mobilised the Smart Street team; weekly and monthly project governance meetings have been established and implemented. These include monthly updates to the sponsoring director. A comprehensive project plan with clearly defined timescales and milestones was agreed with project partners, the internal delivery team and other stakeholders. Framework agreements with clear terms and conditions were agreed and put in place with all partners.

Risk 12 – Risk that there may be some confusion among customers due to other ongoing government initiatives, eg The Green Deal and smart metering rollout programme. This could lead to customer engagement being adversely affected. *Status: Closed*

The Smart Street customer engagement plan is non-intrusive and simple, thus minimising the potential for confusion with other government initiatives. In addition, the project intends to conduct engaged customer panel workshops with a representative sample of customers to obtain feedback on how best to inform customers of the project and how it may affect them.

Procurement risks

Risk 4 – Risk that a lack of suitable equipment vendors may result in a poor response to invitations for tenders. *Status: Closed*

The project's request for information during the development of Smart Street showed that products are available from a number of vendors, but some products require further development. The initial response to the tender process was good and no problems were envisaged. An expression of interest was issued through Achilles (utilities vendor database) for the procurement of LV capacitors, HV pole-mounted capacitors and HV ground-mounted capacitors with four vendors responding positively. The ITT documents were issued. All equipment orders were placed in good time and an agreed schedule of delivery dates with all suppliers was put in place. After delivery issues with suppliers, notably ABB, all equipment has now been delivered.

Risk 5 – Risk that actual product delivery lead times may be greater than planned. *Status: Closed*

Clearly defined timescales were included in all vendor agreements to ensure that project timescales were met. In addition, the evaluation criteria for procurement activities include weighting for delivery timescales. This was to ensure that a suitable product could be procured within the required timescales of the project. The construction build plan was designed in such a way that the equipment with the longest lead times would be installed at the later stages of the build to minimise the risk of delays.

Installation risks

Risk 2 – Risk that following preliminary design, planning issues where equipment is proposed to be located could lead to extended consultation requirements. *Status: Closed*

Electricity North West engaged early in the project to inform customers of local work, thus minimising the risk of objections. Furthermore, any installation of equipment was planned to minimise intrusion and disturbance, while maximising the benefits. Physical size of equipment and location were considered to prevent issues further into the installation programme.

Due to the larger than originally anticipated physical size of the HV ground-mounted capacitors, an issue arose whereby these units needed to be sited outside of the associated substations. This was identified at an early stage and the project team entered into discussions with the relevant land owners. All sites have now been secured.

Risk 6 – Risk that the vendor does not achieve delivery and installation of the optimisation software or that there are potential constraints with Electricity North West's NMS configuration and commissioning. *Status: Closed*

Early contact was made with Siemens for discussion and agreement to deliver the software according to the project plan. Through this, an understanding of the data requirements and connectivity between the optimisation software and Electricity North West's NMS system was agreed at an advanced stage. In addition, since project go live, significant effort has been invested in finalising functional requirements prior to signing contracts with Siemens. This de-risked project delivery.

Weekly meetings are held with Siemens to address any actions and issues and have resulted in good progress on what is a complex element of the project. Siemens carried out SAT testing in mid-December 2015.

Risk 7 – Risk that new technologies or software installed do not perform as expected in the commissioning stage leading to delays to commencing the trial and potentially affecting the quality of Smart Street outputs. *Status: Closed*

Smart Street equipment technologies have been trialled and proven under previous IFI and First Tier LCN Fund projects, or proven in business as usual scenarios. In addition, early commissioning dates allowed for contingency time.

Some issues have arisen during commissioning as Smart Street is the first instance of these technologies being used together as a complete system. These issues have been fully investigated and an individual plan was put in place to resolve each one to a satisfactory outcome within the new project timescales.

Other risks

Risk 3 – Risk that the trial areas selected will not include areas with CLASS or C₂C leading to a lost opportunity to gain further value from utilising existing assets. *Status: Closed*

The selection criteria outlined in Appendix B of the full submission has been applied to the selected circuits with priority applied to CLASS and C₂C assets. The circuit selection criteria were designed to utilise existing trial networks where practicable. Alternate circuits are only included where there are other factors that prevent overlap with CLASS or C₂C. Of the 11 HV circuits selected three overlap with CLASS and eight overlap with C₂C.

Risk 8 – Risk that customers in the trial areas perceive a change to their electricity supply leading to hypothesis failure and potential adverse publicity for Smart Street. *Status: Open*

As part of proving the hypothesis that no change will be perceived by customers, the project team will carry out ongoing monitoring via the customer contact centre. Following any notification of a perceived change, extra monitoring equipment will be installed to validate the claim and ensure that the perceived change is not due to the customer being sensitised to the trial. In addition, the customer surveys designed for CLASS include control groups that can be used to benchmark any survey responses that are obtained from the trials. To further qualify the customer experience, focus groups will be held in the latter part of the second year of the trial period with customers from each of the Smart Street trial locations.

Risk 9 – Risk that the survey group does not form a representative sample of either the Electricity North West or GB customer base. *Status: Closed*

The project team will leverage previous Second Tier surveys that will establish customer perception of changes in the power quality. Customers recruited for the Second Tier surveys and Smart Street trial surveys will be representative of the wider population at Electricity North West and GB level and be matched by ACORN classification.

Risk 10 – Risk that some industrial customers have transformer winding ratios of 11000/400 leading to out of limit voltages on their networks. *Status: Closed*

A search for potential HV customers in trial areas will be conducted. If any are found they will be informed of the Smart Street trials to ensure appropriate actions are taken to avoid out of limit voltages on their premises.

Risk 11 – Risk that external factors, not directly influenced by the trials or related to Smart Street, could cause customers to become negative towards Electricity North West or LCN Fund projects. *Status: Open*

The Smart Street project team are working closely with the Electricity North West press office to identify any potential issues and formulate targeted communications to proactively minimise any adverse impacts to Smart Street.

Risk 13 – Risk that the University of Manchester or Queen’s University, Belfast undergo personnel changes during the project, leading to loss of specific skills which could impact the quality of deliverables. *Status: Controlled*

Work packages agreed with the universities have defined the tasks for which each university is responsible. All research activities are being undertaken in a collaborative manner, with the involvement of multiple individuals across both academic institutions to minimise the risks associated with the movement of research teams.

Risk 14 – Risk that the high volume of LCN Fund events will dilute the effectiveness of dissemination activities leading to lower than expected value derived from Smart Street being achieved. *Status: Controlled*

Strong project branding has been developed along with key messages and high quality dissemination materials to ensure that Smart Street is clearly differentiated and reaches the right audience. Choice of dissemination media is being optimised to achieve maximum reach and coverage. Throughout the project the learning and dissemination approach will be tailored to meet the needs of each stakeholder group. In addition to the publication of learning materials through social media and online, industry wide and bespoke knowledge sharing events will take place.

Risk 15 – Risk that the varied interests of the stakeholders prevents knowledge from being disseminated effectively leading to the learning outcomes from Smart Street not being maximised. *Status: Controlled*

During the Smart Street mobilisation, multiple communication channels and a range of stakeholders have been identified to maximise Smart Street dissemination outcomes. A Smart Street project partner event has been held to open communication channels between all parties and this will be followed by quarterly steering group meetings. Dissemination of knowledge forms a key part of each project steering group to ensure all internal stakeholders are aware of the outcomes of the project.

5 SUCCESSFUL DELIVERY REWARD CRITERIA

During the reporting period, eight planned SDRCs were delivered. This is detailed in Figure 5.1 below. Completion dates have been updated in line with the requested variation.

Figure 5.1: SDRC delivered in reporting period

Milestone	Workstream	Completion date
Project progress reports published on Smart Street website December 2015	Project management	December 15
Confirmation received from University of Manchester and Queen’s University Belfast confirming successful receipt of/completion of data transfer process by January 2016	Research/ trials	January 16
Publish network equipment specifications and installation reports by January 2016	Technical	January 16
Publish NMS, interface and optimisation configuration and commissioning reports by January 2016	Technical	January 16
Publicise commencement of live trials on Smart Street website by January 2016	Dissemination	January 16
Publish trials and test regimes design report on Smart Street website	Research/ trials	February 16

Milestone	Workstream	Completion date
Publish advertorial	Customer	February 16
Raw monitoring data available via Smart Street website by December 2015	Research/ trials	April 16

The SDRC planned for the next reporting period can be seen in Figure 5.2 below.

Figure 5.2: SDRC look ahead

Milestone	Workstream	Completion date
Project progress reports published on Smart Street website	Research/ trials	June 16
Active participation at four annual LCNI conferences - 2016	Project management	October 16

During the next reporting period none of the SDRCs are forecast to be delivered at variance to the dates contained within the project plan appended to the full submission.

6 LEARNING OUTCOMES

A project website has been established as a repository for sharing project learning to interested stakeholders. The learning outcomes during the period are described below.

Lesson 1: Proactive customer engagement and sensitive positioning of new street furniture, housing enabling technologies is cost-effective and benefits the DNO in the long term.

Background: During the technology installation phase of the project, there was some initial resistance from customers to the appearance of new street furniture, but there was less opposition than anticipated because potential customer sensitivity was factored into the technical design. This ensured apparatus was installed in the least obtrusive position.

Lessons learned: A sensitive technical design, combined with proactive customer engagement, prior to the installation of new technologies is cost-effective. This approach provides an opportunity for modification of the design at least cost before installation, thus mitigating retrospective expensive and reputationally damaging appeasement measures. A customer-accepted design has long-term benefits to the DNO, as customers who are most directly impacted are more inclined to accept the asset and, once accustomed to it, are less likely to request its removal or repositioning at a future date.

Lesson 2: The design of new street furniture should not only satisfy its technical requirement but mitigate against the generation or exacerbation of existing social problems in the neighbourhood in which it will be sited.

Background: To remedy a nuisance problem caused by youths using a technology housing cabinet to scale a wall, and to prevent two other cabinets forming a potential congregation point; retrofit modifications to three cabinets were successfully deployed.

Lessons learned: Future projects involving the installation of street furniture should anticipate this problem and ensure the design discourages sitting, climbing or congregation around the equipment.

Lesson 3: Support activities required from non-project partners

Background: Project partners have a shared responsibility to deliver the project successfully; some additional support activities are covered commercially. However, non-project partners do not have the same commitments. Additional costs may be incurred for product development required for system integration, for example firmware upgrades.

Lesson learned: Electricity North West has developed a good working relationship with its non-project partner ABB, who are supportive of the project, and are upgrading their equipment's firmware to integrate with the Smart Street system on an ongoing basis.

7 BUSINESS CASE UPDATE

Electricity North West is not aware of any developments that have taken place since the issue of the project direction that affect the business case for the project.

8 PROGRESS AGAINST BUDGET

The original project budget as defined in the project direction is shown in Appendix A.

Project expenditure compared to baseline forecast is summarised below at the cost category level and in Appendix B at project activity level. The report includes expenditure up to and including 31 May 2016.

Figure 8.1: Project expenditure

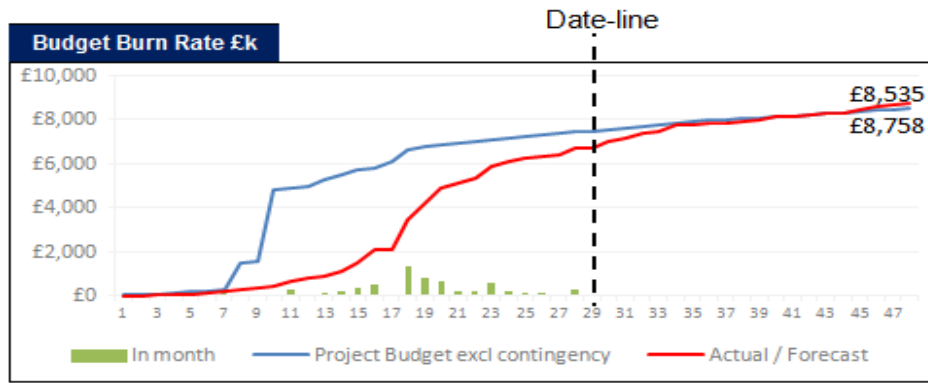
£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project			
	Actual	Plan	Variance	Forecast	Plan	Variance	%
Labour	1,334	1,399	66	1,983	1,888	-95	-5%
Equipment	3,008	3,152	144	3,350	3,235	-115	-4%
Contractors	1,406	1,685	280	2,008	1,960	-48	-2%
IT	1,045	1,090	45	1,164	1,090	-74	-7%
Contingency	0	1,006	1,006	0	1,015	1,015	100%
Decommissioning	0	0	0	39	39	0	0%
Other	116	176	60	329	323	-5	-2%
Total	6,909	8,509	1,599	8,873	9,550	677	7%

The actual spend to date is £6,909k and the estimate at completion cost is now £8,873k.

The phased mobilisation of the project and subsequent invoicing from suppliers has resulted in a realignment of the expenditure during the construction phase of the project. This has resulted in a £1,599k variance spend to date including contingency to the original project budget. It is forecast that spend variance will continue to decrease over the next reporting period in relation to the project budget. This is evidenced by the reduction in underspend since the previous six-monthly report.

The £144k equipment variance is due to the staged delivery of the equipment and final invoicing. All equipment has now been delivered and Electricity North West are awaiting final invoicing from suppliers. Payments for HV capacitors have been delayed due to the required modifications.

The £280k contractor costs underspend to date against the project cost baseline is primarily due to the academic studies being realigned to match with the new trials and tests regime dates agreed as part of the four-month project extension.



The estimated at completion forecast is currently expected to remain within the original budget of £9,550k including contingency. The project bank statement is shown in Appendix C. The statement contains all receipts and payments associated with the project up to the end of May 2016.

9 INTELLECTUAL property rights (IPR)

Electricity North West is following the default IPR arrangements. The company's IPR approach has been considered in line with current period project deliverables and it has been concluded that the default IPR arrangements apply.

10 OTHER

There is no other information at this time that would be relevant to Ofgem in understanding the progress of the project and performance against the SDRCs.

11 ACCURACY ASSURANCE STATEMENT

The project team and select members of the Smart Street project steering group, including the lead member of the bid development team, have reviewed this report to ensure its accuracy.

The financial information has been produced by the Smart Street project manager and the project's finance representative who review all financial postings to the project each month. This ensures that postings have been correctly allocated to the appropriate project activity. The financial information has also been peer-reviewed by the Electricity North West distribution finance business partner. Issue of the document has been approved by the innovation delivery manager.

APPENDIX A – PROJECT DIRECTION PROJECT BUDGET

£000's	
Excluding Partner Funding	
Ofgem Cost Category	
Labour	1,888
HV & LV Network Management & Interconnection - Labour	305
Network Configuration & Voltage Optimisation - Labour	431
Project Management, Planning, Policy and Training - Labour	1,152
Equipment	3,235
Data Preparation - Equipment	285
HV & LV Network Management & Interconnection - Equipment	2,229
HV & LV Voltage Control - Equipment	721
Contractors	1,960
Customer Engagement & Survey - Contractors	110
HV & LV Voltage Control - Contractors	350
LV Network Management & Interconnection - Contractors	161
Network Configuration & Voltage Optimisation - Contractors	381
Peer reviews, support & customer research - Contractors	142
Research -Technical - Contractors	626
Research - CBA & CIA - Contractors	189
IT	1,090
Network Configuration & Voltage Optimisation - IT	1,090
Contingency	1,015
HV & LV Network Management & Interconnection - Contingency	272
HV Voltage Control - Contingency	426
Dissemination, Policy, Training & Trials - Contingency	82
Network Configuration & Voltage Optimisation - Contingency	235
Decommissioning	39
Decommissioning	39
Other	323
Technology build and Trials data - Other	87
Learning & Dissemination - Other	133
Accommodation - Other	103
Total	9,550


Source: Ofgem Schedule to Project Direct - December 2013

APPENDIX B – DETAILED PROJECTED PROJECT EXPENDITURE

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project			
	Actual	Plan	Variance	Forecast	Plan	Variance	Variance %
Labour	1,334	1,399	66	1,983	1,888	(95)	-5%
HV & LV Network Management & Interconnection - Labour	319	305	(14)	319	305	(14)	-5%
Network Configuration & Voltage Optimisation - Labour	382	385	3	448	431	(17)	-4%
Project Management, Planning, Policy and Training - Labour	632	709	77	1,216	1,152	(64)	-6%
Equipment	3,008	3,152	144	3,350	3,235	(115)	-4%
Data Preparation - Equipment	14	205	191	278	285	7	2%
HV & LV Network Management & Interconnection - Equipment	2,184	2,226	42	2,263	2,229	(33)	-1%
HV & LV Voltage Control - Equipment	810	721	(90)	809	721	(88)	-12%
Contractors	1,406	1,685	280	2,008	1,960	(48)	-2%
Customer Engagement & Survey - Contractors	64	64	(0)	114	110	(3)	-3%
HV & LV Voltage Control - Contractors	364	350	(13)	366	350	(16)	-5%
LV Network Management & Interconnection - Contractors	162	161	(2)	162	161	(2)	-1%
Network Configuration & Voltage Optimisation - Contractors	422	374	(48)	422	381	(41)	-11%
Peer reviews, support & customer research - Contractors	32	84	52	132	142	10	7%
Research -Technical - Contractors	334	463	129	623	626	3	0%
Research - CBA & CIA - Contractors	28	189	162	189	189	1	0%
IT	1,045	1,090	45	1,164	1,090	(74)	-7%
Network Configuration & Voltage Optimisation - IT	1,045	1,090	45	1,164	1,090	(74)	-7%
Contingency	0	1,006	1,006	0	1,015	1,015	100%
HV & LV Network Management & Interconnection - Contingency	0	267	267	0	272	272	100%
HV Voltage Control - Contingency	0	426	426	0	426	426	100%
Dissemination, Policy, Training & Trials - Contingency	0	78	78	0	82	82	100%
Network Configuration & Voltage Optimisation - Contingency	0	235	235	0	235	235	100%
Decommissioning	0	0	0	39	39	0	0%
Decommissioning	0	0	0	39	39	0	0%
Other	116	176	60	329	323	(5)	-2%
Technology build and Trials data - Other	0	50	50	87	87	1	1%
Learning & Dissemination - Other	60	65	5	139	133	(6)	-4%
Accommodation - Other	56	61	5	103	103	(0)	0%
Total	6,909	8,509	1,599	8,873	9,550	677	7%

APPENDIX C – PROJECT BANK ACCOUNT

The bank statement below details all transactions relevant to the project up to 31 May 2016. This includes all receipts and payments associated with the project up to the 31 May 2016 month-end reporting period.

 Lloyds Bank		P&S - ALL ACCOUNTS v2			391353	
Statements and Balances						
300002-01676933						
ELECTRICITY NWL NO.13 LCNF (SMART) (GBP)						
Date	Type	Narrative	Value Date	Payments	Receipts	Balance
01DEC15		Opening Ledger Balance				5,238,252.45 Cr
09DEC15	CR	INTEREST (GROSS)			2,152.71	5,240,405.16 Cr
11JAN16	CR	INTEREST (GROSS)			2,368.95	5,242,774.11 Cr
09FEB16	CR	INTEREST (GROSS)			2,082.75	5,244,856.86 Cr
17FEB16	DR	TO A/C TFR 02749020 300002		202,085.39		5,042,771.47 Cr
17FEB16	DR	TO A/C TFR 02749020 300002		227,772.92		4,814,998.55 Cr
17FEB16	DR	TO A/C TFR 02749020 300002		549,564.61		4,265,433.94 Cr
17FEB16	DR	TO A/C TFR 02749020 300002		237,879.20		4,027,554.74 Cr
17FEB16	DR	TO A/C TFR 02749020 300002		109,618.79		3,917,935.95 Cr
09MAR16	CR	INTEREST (GROSS)			1,683.68	3,919,619.63 Cr
11APR16	CR	INTEREST (GROSS)			1,771.88	3,921,391.51 Cr
09MAY16	CR	INTEREST (GROSS)			1,504.10	3,922,895.61 Cr
31MAY16		Value of Credits (6)			11,564.07	
31MAY16		Value of Debits (5)		1,326,920.91		
31MAY16		Closing Ledger Balance				3,922,895.61 Cr
31MAY16		Closing Cleared Balance				3,922,895.61 Cr