

The logo for Electricity North West, featuring the word "electricity" in blue and "north west" in green, with a stylized green leaf-like shape above the "i" in "electricity".

electricity
north west

Bringing energy to your door

Respond Project Progress Report

Version 1.0
19 June 2017

The logo for RESPOND, with "RESPOND" in blue and a green lightning bolt shape integrated into the letter "O".

RESPOND

VERSION HISTORY

Version	Date	Author	Status	Comments
V0.1	10/06/2017	Paul Marshall Project manager	First draft	
V1.0	10/06/2017	Paul Marshall Project manager	For approval	Incorporates comments from V0.1 review

REVIEW

Name	Role	Date
Andrew Howard	Innovation programme manager	13 June 2017
Paul Turner	Innovation delivery manager	14 June 2017

APPROVAL

Name	Role	Signature & date
Steve Cox	Engineering and Technical Director	
Matthew Sweeney	Finance business partner	

CONTENTS

1	EXECUTIVE SUMMARY	6
	1.1The Respond project	6
	1.2Progress to date	6
	1.3Risks	8
2	PROJECT MANAGER'S REPORT	9
	2.1General	9
	2.2Technology workstream	9
	2.3Trials & analysis workstream	10
	2.4Customer engagement workstream	13
3	CONSISTENCY WITH FULL SUBMISSION	14
4	RISK MANAGEMENT	14
5	SUCCESSFUL DELIVERY REWARD CRITERIA (SDRC)	16
6	LEARNING OUTCOMES	17
7	BUSINESS CASE UPDATE	17
8	PROGRESS AGAINST BUDGET	17
9	BANK ACCOUNT	18
10	INTELLECTUAL PROPERTY RIGHTS	18
11	ACCURACY ASSURANCE STATEMENT	18

GLOSSARY OF TERMS

Abbreviation	Term
Adaptive Protection	The use of adjustable protection settings that can be changed in real time
Association of Decentralised Energy (ADE)	Leading industry advocate of an integrated approach to delivering energy services using combined heat and power and district heating. Previously known as the Combined Heat and Power Association (CHPA)
CAT	Customer acceptance testing
Circuit breaker	Device that interrupts the flow of current in an electric circuit
CEP	Customer engagement plan
Combined heat and power (CHP)	Simultaneous generation of usable heat and power (usually electricity) in a single process
Demand side response (DSR)	Actions undertaken by distribution network operators to influence customers to change their electricity use, in terms of quantity and/or time of use
Distribution network operator (DNO)	The owner and/or operator of an electricity distribution system and associated assets
Engaged customer panel (ECP)	A panel of industrial and commercial customers used to help shape the customer survey approach and survey materials.
FAT	Factory acceptance testing
Fault Level Assessment Tool (FLAT)	Intelligent software which assesses near real time fault current peaks on the network and decides to enable or disable the mitigation technologies
Fault current	Actual current which flows during a fault
Fault Current Limiting service (FCL service)	A distributed generation and/or industrial and commercial customer-provided response to reduce overall fault current on the distribution network
Fault current mitigation technology	Device that responds to the flow of fault current in an electricity network and ensures that the fault current remains within network switchgear and circuit ratings
Fault level	Prospective maximum current which will flow during a fault
FlexDGrid	Second Tier LCN Fund fault level mitigation project run by Western Power Distribution
I_s-limiter	A fault current mitigation technology
LCN Fund	Low Carbon Networks Fund
Near real time	A measure of the frequency of the calculation by the Fault Level Assessment Tool. For Respond this will be every five minutes
NMS	Network management system

PPR	Project progress report
Primary substation	A point on the network where the voltage changes from 33kV to 11kV or 6.6kV
Protection relays	Device that analyses power system voltages and currents to detect faults and sends signals to circuit breakers to open
Successful delivery reward criteria (SDRC)	Key milestones to be delivered throughout the project
Substation	A point on the network where voltage transformation occurs
Switchgear	Device for opening and closing electrical circuits (including circuit breakers)

1 EXECUTIVE SUMMARY

1.1 The Respond project

This is the fifth six-monthly project progress report (PPR) for the Respond project. This project was approved under the name Fault Level Active Response (FLARE). This report covers the period from December 2016 to the end of May 2017.

Respond is demonstrating that a network's fault level can be estimated in near real time, and in responding to that estimation, a series of innovative technical and commercial techniques can be initiated to reduce the fault level without the need for expensive and time-consuming asset replacement. As this approach could maximise the use of existing assets and minimise the need for capital investment, Respond has the potential to realise significant cost savings to customers and improve the connection of generation to the network. There are four key elements to Respond:

- **Fault Level Assessment Tool:** This intelligent software has been deployed alongside the network management system (NMS) and uses data from it to predict the network's fault level in near real time. When it estimates that the fault level is increasing beyond a set threshold it will initiate one of three mitigation techniques:
- **Adaptive Protection:** This technique re-sequences the operation of circuit breakers (CBs) and is retro-fitted into existing substation equipment
- **Fault Current Limiting (FCL) service:** This will identify customers who operate equipment that contributes to fault current (eg large motors and generators) and are willing to help develop and ultimately enter into a managed commercial service backed by new technical interfaces with their equipment
- **I_S-limiters:** These devices are widely used across the world to limit fault current, but are not used on GB DNO networks due to compliance issues with GB regulations. Two devices have been installed, along with a further five I_S-sensing installations of monitoring-only equipment.

1.2 Progress to date

The project is on track and all of the SDRCs have been delivered as planned. The project went live in May 2016 and has consequently entered the second half of the two-year trials and analysis phase of the project to collect data and analyse the effectiveness of the installed techniques.

All documentation relating to the progress of the project and the achievement of SDRCs are available on the [project website](#).

The key project highlights during the reporting period are outlined below according to the four project workstreams.

1.2.1 Technical workstream

Fault Level Assessment Tool

The Fault Level Assessment Tool now integrated into the NMS, calculating close to real time fault levels and taking the appropriate action following comparisons with plant ratings and enabling/disabling the techniques.

Adaptive Protection

Since the trial period began five network faults have occurred to which the Adaptive Protection solution has responded correctly to all of them.

I_S-limiter and I_S-sensing units

Since the trial period began we have had one fault where the I_S-limiter has responded correctly and no faults have occurred to cause any of the I_S-sensing sites to operate.

1.2.2 Trials & analysis workstream

Post-fault monitoring and analysis procedure

Every fault that occurs within the Respond network must be validated to ensure that the correct action has taken place. The Post Fault Analysis Methodology (published on the project website) details the process and data requirements to confirm: fault level, operation of each of the respective fault level mitigation techniques and Fault Level Assessment Tool action.

Six successful post-fault operations have occurred during the year of the trial. The data has been collected, monitored and analysed of which three of the results have been published on the website to date.

Asset health study

An asset condition monitoring site selection and equipment rotation programme has been agreed with EA Technology. The equipment has been installed at a number of selected sites and will be rotated across the Respond sites during the trial period.

Fault level monitors

Outram fault level monitors are installed at 11 Respond sites. These monitors have been installed for the purpose of network model validation of both the Electricity North West IPSA+ network model and the Schneider Fault Level Assessment Tool. The first three reports detailing the predicted fault level at nine sites can be viewed on the website.

1.2.3 Customer workstream

FCL service

The project team has continued to engage with United Utilities about the FCL service and terms have now been agreed to commence trials to the test interface technologies at two sites. One site with combined heat and power (CHP) has been identified. A number of other locations will be surveyed with the aim of identifying a second suitable site with a large motor. We have engaged with 12 customers who have expressed a willingness to participate in the FCL service trial, with only one progressing to technical review. Some sites have been discounted but investigations continue to identify up to three existing or newly connected demand and/or generation customers.

FCL service contract

The FCL service standard contract has been completed and negotiations have now been finalised with United Utilities to commence trials, subject to the modification of specific terms and clauses. The contract template is available on the project website.

FCL service tested in the marketplace

The commercial workstream have found it difficult to engage with customers willing to participate in the FCLS due to a number of barriers identified. Active discussion have taken place at 11 organisations who have shown a willingness to participate with only one moving into the final stage of technical and commercial discussions.

Evaluation of FCL service provision report published

A report has been published on the project website documenting the learning from development of the commercial framework to purchase the FCL service; the motives and barriers identified when taking the solution to market; along with the technical and commercial issues that must be addressed/overcome before the terms of a managed agreement are acceptable to both a DNO and a providing customer.

1.2.4 Learning and dissemination

The Respond project team have been utilising a range of tools in this reporting period to disseminate and share knowledge about the project with stakeholders. These include an advertorial, an industry newsletter, internal updates and regular updates on the project website and via social media. The Respond project was due to be presented at Electricity North West's Innovation dissemination event on 24 May 2017 at the Marriot Victoria & Albert Hotel in Manchester; however, this was cancelled on 23 May following the tragic events at the Manchester Arena on the evening of 22 May. This decision was made both as a mark of respect for the victims and their families and for logistical reasons, as streets around the venue were inaccessible and all modes of transportation into the city were severely disrupted. Ofgem has noted this and the event has been rearranged, at the same venue, on 5 July 2017. The Respond project will be presented then as originally planned.

All successful delivery reward criteria (SDRC) due in the reporting period have been achieved, and those due in the next period are on track.

The four SDRC due in the reporting period were successfully delivered. The most significant of these are shown in Figure 1.1 below, and all are discussed in Section 5.

Figure 1.1: Most significant SDRCs delivered in this reporting period

SDRC (evidence)	Planned date	Completion date
Issue fourth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	December 2016	December 2016
Publish customer survey report and information for customer evaluation of FCL service provision on Respond website	May 2017	May 2017
Publish fifth newsletter	May 2017	May 2017
Second knowledge sharing event	May 2017	July 2017

Project expenditure as at the end of May 2017 was £3,385,422 compared to a cost baseline of £4,010,038. The estimated project completion costs are exceeding budget, excluding contingency, due to the project design and installation being more complex and time consuming than expected.

1.3 Risks

Risks identified in the Respond project bid are regularly reviewed by the delivery team. A significant proportion of them have been mitigated during the delivery phase and are therefore no longer active and closed. No new risks have been identified since the last report.

The principal risk continues to be the ability to secure an FCL service participant if they decide not to participate in the trial. The project team are working with United Utilities to agree final terms for managed agreements at identified sites. The team are also continuing to work closely with ADE and EnerG to publicise the project and attract participants, as well as re-exploring Electricity North West's existing customer data base, again to attract willing participants. The project team is also seeking to engage suitable newly connected customers who may be interested.

Risks are monitored on a continuous basis, including the potential risks that were documented in the full submission. The revised status of each of these risks is described in Appendix A.

2 PROJECT MANAGER'S REPORT

2.1 General

During this reporting period we have been pursuing the Fault Current Limiting service by engaging with external customers and United Utilities and we have also been monitoring and analysing the fault level mitigation techniques.

The key project management activities undertaken during the reporting period are summarised below:

- **Project monitoring and control:** Processes for the monitoring and control of the delivery of the Respond project are well established. These processes build on those developed during earlier LCN Fund projects to ensure that this project progresses in a controlled manner and that the outputs are of the highest quality.
- **Regular engagement with project partners:** The Electricity North West Respond project team has engaged and continues to hold regular meetings with the project partners. In particular with Parsons Brinkerhoff in validation of the Fault Level Assessment Tool and working closely with ADE and EnerG to publicise the project and attract participants. During the trials period the project steering group meeting frequency has been adjusted to reflect project development.
- **Engagement with Ofgem project team:** Monthly communication with the Ofgem project team has continued throughout the project.

2.2 Technology workstream

The key activities undertaken by the technology workstream during the reporting period are summarised below:

Adaptive Protection

The five Adaptive Protection sites have been waiting for multi-phase faults to occur on the network they supply. To date there have been five successful operations, three at Atherton Town centre, one at Blackbull and one at Littleborough, three of which has been analysed and posted on the Respond website.

The Adaptive Protection design was adjusted to provide fault current information at the sites selected in order to validate the operation of the Respond technology. This resulted in the use of two sets of three-phase interposing current transformers (CT) being fitted into the T11 and T12 11/6.6kV over-current protection systems. The revised design allows more accurate monitoring and recording during the project but a business as usual Adaptive Protection solution could be made simpler. This caused the design and installation process to be more complex than originally planned and there were some snagging issues that incurred additional expenditure.

I_S-limiters and I_S-sensing units

The two I_S-limiters have been waiting for a multi-phase fault to occur on the networks they supply, we have had one successful operation at Bamber Bridge and we are in the process of collecting and analysing the data which will be posted on the website within three months of the operation.

The five I_S-sensing units are also waiting to detect multi-phase faults on the networks they monitor. To date no such faults have occurred on the I_S-sensing networks. The I_S-sensing sites are passive in that no actual fault level mitigation is carried out. These devices are

designed to sense rather than switch when a fault occurs. If a fault occurs, and the fault conditions are met, an alarm will be sent to the NMS.

Fault Level Assessment Tool

The project team are working closely with the network management system replacement programme to ensure that the programme has minimal impact on the Respond trials.

In this reporting period, the technology workstream will undertake the following activities:

- Analyse and solve any on-site issues as they arise.

2.3 Trials & analysis workstream

Respond faults

Since going live there have been six HV faults where the magnitude of the fault has been sufficiently high enough to initiate a response in the trial area. The table below lists all faults to date in the trial area which have caused operation of the respective fault level mitigation technique along with a web link, where available, to the post fault report.

Respond Fault Ref	Substation Name	Date	FLM Technique	Web Link
001	Atherton Town Centre	29/07/2016	Adaptive protection	What we have learned - trials
002	Atherton Town Centre	28/08/2016	Adaptive protection	What we have learned - trials
003	Atherton Town Centre	16/09/2016	Adaptive protection	What we have learned - trials
004	Blackbull	03/04/2017	Adaptive protection	Due July 2017
005	Littleborough	08/05/2017	Adaptive protection	Due August 2017
006	Bamber Bridge	22/05/2017	Is Limiter	Due August 2017

Analysis of Respond faults have been carried out by WSP (Parsons Brinkerhoff).

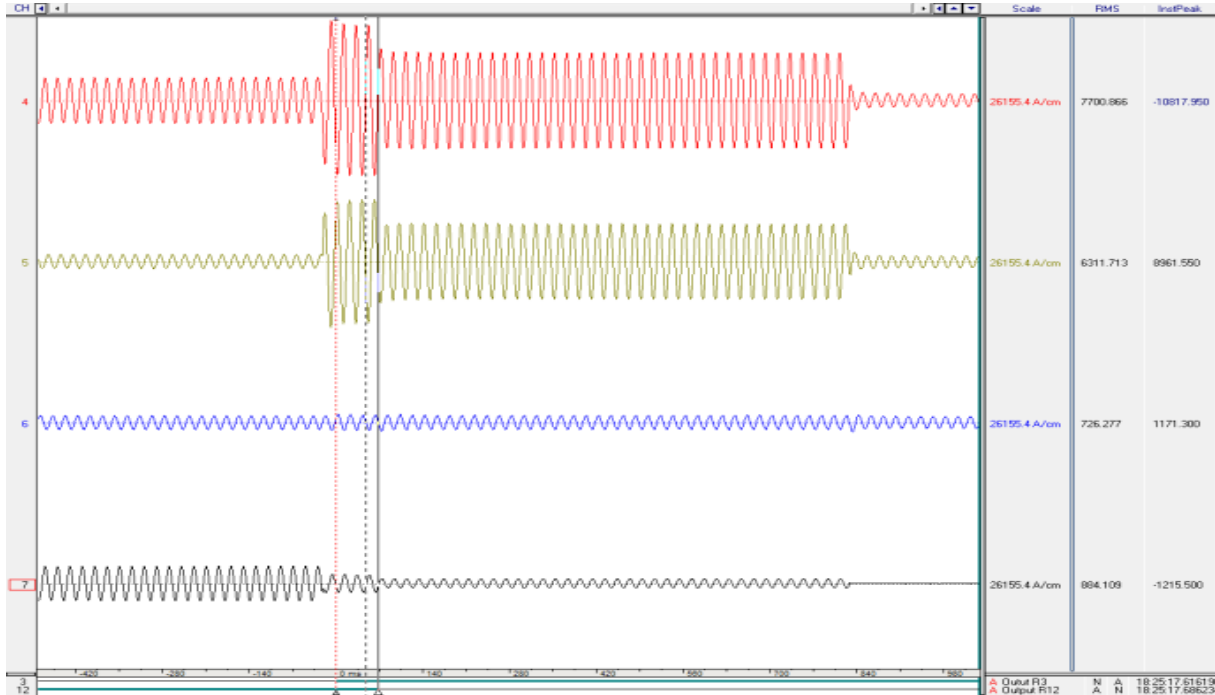
As an example of the fault at Atherton Town Centre on the York Street 11kV circuit on 29th September 2016 at 18.25. The disturbance records show that prior to the phase to phase to earth fault which the Adaptive Protection responded to, there was a red phase to earth fault present. The magnitude of the earth fault current was 1712.7.3 A with a corresponding red phase fault current of 2306.6 A (inclusive of load current).

The phase to phase to earth fault with 7652.5 A and 6262.7 A in the red and yellow phases respectively and with a 918.7 A residual fault current, occurred 22.5 ms prior to being detected by the Adaptive Protection relay. The 11 kV bus section circuit breaker tripped 70.9 ms after the trip signal from the Adaptive Protection relay was sent. The total duration of the phase to phase to earth fault which the Adaptive Protection responded to, up to the tripping of the 11 kV bus section circuit breaker was 93.4 ms.

After the 11 kV bus section circuit breaker tripped, the phase to phase to earth fault current reduced to 4979.4 A and 3923.2 A in the red and yellow phases respectively and the residual fault current reduced to 463.4 A. These fault currents continued for a further 758.9 ms, until the feeder protection operated ie the fault was eventually cleared 829.8 ms after the Adaptive Protection detected the initial phase to phase to earth fault.

The residual current is seen to reduce from 918.7 A to 463.4 A (a reduction of approximately 50%). This reduction in residual current reflects the dominant effect of the earthing resistors at Atherton Town Centre substation and the expected doubling of the earth resistance as the bus section is opened and the earthing resistors on each bus section are no longer in parallel.

Figure 2.4: Instantaneous Adaptive Protection Relay Recordings (IA=red, IB=yellow, IC=blue and IN(residual)=black)



Overall, the analysis has confirmed that the Adaptive Protection operated as expected and reduced the fault current to be interrupted by the feeder circuit breaker.

Reports for the first three faults have been completed and published on the website as per SDRC 9.3.3. For full details of each fault follow the link in the table above

Asset health study

The asset condition monitoring is on-going, using the site selection and equipment rotation programme previously agreed with EA Technology during the trial period.

In the next reporting period, the trials and analysis workstream will undertake the following activities:

- Publish on the Respond website a summary of each fault event three months after each event

FCL service

During this reporting period the project team has continued to engage with United Utilities about the FCL service. One partner owned site, with CHP, has been identified and a number of other locations will be surveyed with the aim of securing a second suitable site with a large motor. The outline of a technical solution has been provisionally agreed with regards to the FCL service, via the reduction in 90ms break fault level in-feed from a CHP scheme to the network. Other potential trial participants were identified from the customer survey and a sustained strategy of speculative communication, highlighting and broadening the reach of the project has highlighted a number of other customers who may be willing and able to engage. These customers have been consulted directly, details of which are outlined below.

FCL service contract

The FCL service standard contract has been drafted and published on the project website. Negotiations have now been finalised with project partner, United Utilities, to commence trials subject to the modification of specific terms and clauses agreed by commercial and legal representatives of both parties. The technical workstream is now working with United Utilities to identify a second site and agree the technical arrangements to actively trial the interface technologies.

Refinements to the commercial template provide a means of testing adaptive protection on a partner's equipment, under carefully managed and controlled trial conditions. Nevertheless, this has imposed certain limitations on the delivery team and restricts the trial period available to test the enabling technologies.

FCL service tested in the marketplace

The commercial workstream has found it extremely difficult to re-engage survey participants, who responded positively to the survey and expressed an interest in taking part in the trial. However, all practicable opportunities were sought to open discussions about active trial participation with 11 organisations, confirmed by their survey responses to: be interested, likely to fulfil the technical criteria and critically, have the ability to provide a fault level response, without any significant impact on their equipment or operations.

This process involved consulting decision makers from each organisation directly. This strategy resulted in face-to-face meetings with four organisations, to discuss FCL service provision in greater detail. Of these, only one was suitable and keen to participate. Nonetheless, it was extremely challenging to secure further subsequent follow up meetings and engage in more meaningful dialogue. For this reason the project team has been unable to gain any further traction with the customer, referenced in the fourth project progress report, dated December 2016, who is currently installing a 4MW CHP, due to be commissioning in August 2017. The extent of the challenge involved in recruiting participants to trial the FCL service in the marketplace was considerably underestimated because the delivery team did not anticipate the degree to which this market sector was resistant to the technique generally, the value organisations place on continuous operation and control of critical assets, and the financial expectations from providing an elective commercial service to the DNO.

The ability to engage with organisations, identified from sources other than the survey, has only been possible because of a sustained strategy of speculative communication, to highlight and broaden the reach of the project, in collaboration with internal stakeholders and trusted partners.

In addition to securing terms to commence trials at two partner sites, the project team is currently close to finalising a managed agreement with a customer identified post completion of the survey. This organisation operates a 3.3MW CHP plant in the South Manchester region. The break fault level contribution from this customer at the 11kV primary substation busbar is ~1.1kA.

This customer is keen to participate, technical site visits have been conducted and all parties are working closely to agree terms; however, the customer's participation is subject to the strict condition that the managed agreement will not extend into the TRIAD period. The payment negotiated for a limited trial period significantly exceeds Electricity North West's estimate of the cost that it would be prepared to consider to secure fault mitigation services under 'business as usual' (BAU) conditions, for a generator contribution to fault level of this magnitude.

The commercial workstream is also involved in early, but promising negotiations with a new connection customer, identified from ongoing collaboration with colleagues in Electricity North West's Energy Solutions business.

A number of stated and implied barriers have been influential in customers' decisions to decline the offer of further discussion about potential trial participation

The delivery team continues to work closely with project partners ADE and Ener-G to publicise the project to attract the requisite number of trial participants. They have publicised the trial in their respective newsletters, sent direct emails to their members/customers and highlighted the trial and benefits on their social media platforms. Partners have also consulted selected customers, members and other associates directly and have extended an offer of supporting these organisations during provisional meetings with the project team.

However, at this stage of the project, it is unlikely that the necessary commercial and technical arrangements, to secure a managed agreement with a newly engaged customer, will be finalised in sufficient time to facilitate the robust trial of adaptive protection, on a customer's equipment, at a price and terms agreeable to both parties.

Customer drivers and barriers identified

Direct customer consultation has identified that financial benefits are the only motivating factor in an organisations decision to consider the provision of a fault current response, and their assessment of reward versus risk is one of the primary barriers in transitioning these organisations from theoretical interest in the service, through to meaningful commercial discussions.

The qualitative customer engagement phase of research referenced in this document has established a number of recurrent concerns, which present insurmountable barriers for organisations that meet the technical criteria, from providing a FCL service for a limited trial period.

The loss of critical plant has a major impact on the decision making process that a customer must consider before agreeing to provide a fault level response. Perception of risk and resilience to equipment, processes and wider business operations were cited as the greatest barriers to either commencing or continuing dialogue about specific commercial terms and conditions. Other associated considerations that deterred customer engagement include: the additional costs arising from the loss of production, downtime and overtime to recover lost productivity; the sourcing of additional alternative energy to keep processes operating and the costs of re-energising the plant.

Enabling technologies have not yet been connected at any of the sites referenced above and as such, it is not currently possible to evaluate industry confidence in the technique generally or the interface technologies, specifically.

Evaluation of FCL service provision report published

A report has been published on the project website documenting the learning from development of the commercial framework to purchase the FCL service; the motives and barriers identified when taking the solution to market; along with the technical and commercial issues that must be addressed/overcome before the terms of a managed agreement are acceptable to both a DNO and a providing customer.

2.4 Customer engagement workstream

The project team attends relevant industry events to present developments in the project

The fifth Respond industry newsletter was circulated in May 2017 to approximately 700 industry stakeholders, details of whom are held in an internal database, developed as a result of interest/engagement in previous LCN Fund projects.

Equipment specifications and installation reports for the Adaptive Protection and the Is-limiter were published on the Respond website in September 2016. Validation of the Fault Level Assessment Tool was also published in September 2016. Post fault analysis summary

reports for Adaptive Protection at Atherton Town Centre were published in October and November 2016 and the reconvened engaged customer panel report was also published.

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

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

- Issue the fifth project progress report (this report) in accordance with Ofgem's June and December production cycle and publish on Respond website
- Hold deferred knowledge sharing event in compliance with terms of derogation
- Publicise Respond within Electricity North West on Volt (intranet) and/or Newswire (quarterly employee magazine)
- Publish fourth advertorial
- Hold third webinar
- Publish sixth industry newsletter
- Actively participate at third of four annual LCN Innovation conferences held within project timescale
- Submit sixth project progress report to Ofgem.

3 CONSISTENCY WITH FULL SUBMISSION

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

4 RISK MANAGEMENT

The project risks identified in the project bid document have been migrated into the Respond delivery risk register, reviewed and updated.

Risks identified in the project bid are regularly reviewed by the delivery team and a significant proportion of them have been mitigated and are therefore no longer active or are a low level risk:

- There was a delay against plan in obtaining the signature of a number of partner contracts. All contracts have now been signed and are working well.
- There was a risk that project partners were not able to mobilise their resources in time because of other commitments leading to a delay in achieving potential milestones which could have project, reputational and financial repercussions. The project partners have achieved all milestones and deliverables for 'go live'.
- There was a risk that the Fault Level Assessment Tool delivery would be affected by the major project of replacing Electricity North West's NMS. To mitigate the risk the Respond team and the network management delivery team have been working closely

and co-ordinating delivery plans. Through this co-ordination the team has been able to identify the Respond network and associated attributes which were prioritised within the data cleanse and network build programme in the NMS in order to meet the Respond delivery timescales.

- There was a risk that the new Fault Level Assessment Tool would not perform as expected during testing and commissioning, leading to a delay in the start of live trials. The Fault Level Assessment Tool passed the FAT and SAT testing and went live in May 2016.
- There was a risk that the six-month lead time for delivery of the I_S limiters may have led to a delay in the installation of this technology. Both I_S limiters were designed, installed and commissioned on schedule.
- There was a risk that appropriately skilled resource might not be available to perform the retrofit installation of technologies leading to a delay in the installation programme. Both Electricity North West employees and contractors worked effectively together to achieve all commissioning deadlines even when encountering a number of challenges during installation. This was helped by a number of these resources bringing experience from working on previous second tier projects. However there were a number of unforeseen problems which incurred a lot more time and cost to achieve the deadlines. These issues included hand digging around numerous abandoned cables that were found when installation took place, unexpected asbestos and network faults delaying completion and further works when the network was restored to normal.
- There was a risk that the data protection strategy would be complicated by accessing customer survey participants from outside the company's geographical licence area leading to legal and reputational issues. This was mitigated by close working with project partners to ensure adherence of strict compliance with data protection regulations and market research protocol, to ensure that the minimum required number of completed surveys was exceeded.
- There was a risk that customers with relevant demand or generation equipment would not engage in the customer survey leading to a lack of robust data for Hypothesis 5. Impact Research has had experience of this issue in a Second Tier project delivery environment and the survey contact list was designed to identify key decision makers within organisations.
- There was a risk that there would be a low level of surveys returned from the participants in the customer surveys. The Respond team worked with project partners, Impact Research, EnerG and the Association of Decentralised Energy (ADE) to ensure the minimum number of surveys was completed. Indeed, the minimum requirement of 75 surveys was exceeded to achieve a total return of 103 completed surveys.
- There is a risk that the project is unable to secure an FCL service participant if they decide not to participate in the trial. Securing terms to conduct trials at one demand and one generation 'partner owned' site negates this risk; however, the delivery team will continue to collaborate with ADE, Ener-G and other internal and external stakeholders to publicise the project and attract existing Electricity North West customers along with new customers connecting to the DNO's network, to attain up to five willing participants.

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

Project risks are described in detail in Appendix A.

5 SUCCESSFUL DELIVERY REWARD CRITERIA (SDRC)

Four SDRC were successfully delivered in this reporting period. These are shown in Figure 5.1 below.

Figure 5.1: Respond project SDRC delivered in the reporting period

SDRC (evidence)	Planned date	Completion date
Issue fourth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Dec 2016	Dec 2016
Publish customer survey report and information for customer evaluation of FCL service provision on Respond website	May 2017	May 2017
Publish fifth newsletter	May 2017	May 2017
Second knowledge sharing event	May 2017	July 2017

The second knowledge event was planned for 24 May 2017 at the Marriot Victoria & Albert Hotel in Manchester but due to the tragic bombing event at the Manchester Arena late on the evening of 22 May 2017, Electricity North West took the decision to postpone the dissemination event. This decision was made both as a mark of respect to those that have been directly affected by this shocking event and for logistical reasons. The streets around the venue were not accessible and travel into the city was severely disrupted, with all modes of transport affected. Ofgem were informed of the postponement and have taken note of this change. The second knowledge sharing event is planned for 5 July 2017 at the Marriot Victoria & Albert Hotel in Manchester.

The SDRC due in the next reporting period are shown below.

Figure 5.2: Respond SDRC due in the next reporting period

SDRC (Evidence)	Planned date	Status
Issue fifth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	June 2017	On Track
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire	July 2017	On Track
Publish fourth advertorial	July 2017	On Track
Third webinar	Sept 2017	On Track
Publish sixth newsletter	Nov 2017	On Track
Actively participate at four annual LCNI conferences. Third conference 2017.	Dec 2017	On Track

To improve overall learning and dissemination of the Respond project some of these communication dates may be improved upon to coincide with other major Electricity North West learning and dissemination events to try and maximise the use of events. The current status of the evidence for all Respond SDRC is shown in Appendix B. Progress against the

SDRC and the project plan will continue to be monitored, and if the current forecast for SDRC delivery changes, future project progress reports will be updated accordingly.

6 LEARNING OUTCOMES

A project website has been established as a repository for sharing project learning to interested stakeholders. A number of lessons were learnt and learning outcomes achieved during the reporting period. The key learning outcomes are summarised below:

Lesson 1: The DNO community must develop greater commercial understanding

- **Background:** The introduction of DG, renewable energy sources and the emerging energy storage market presents DNOs with enormous challenges. The traditional DNO model is moving toward that of distribution system operation, which will have significant consequences for the operation and maintenance of networks; the customers they serve; and the commercial services that will become necessary to provide choice and flexibility in the management of these networks. DNOs have visibility of the capacity requirements and generation profiles of I&C customers but traditionally have had little need to understand the needs of the organisations they serve, or their commercial drivers.
- **Lesson learned:** The challenges of transitioning customers from an expression of interest, to active participation in the FCL service trial have highlighted that DNOs must develop a greater commercial awareness of businesses' in their target market when introducing new services, in an established and rapidly changing energy market. The loss of critical plant, even for a short duration, can have a significant impact on a business. An assessment of risk verses the incentives and saving available will be fundamental in an organisation's decision making process when considering any elective commercial service. Potential conflicts with other commercial arrangements and industry players in the commercial services market have been identified as a significant barrier to participation in the FCL service trial. This highlights that greater commercial acumen is required in the DNO community, to better understand the acceptability of this type of scheme among customers that are already well positioned to offer other lucrative commercial services, to third parties, in an expanding and competitive marketplace. While it appears that there are potential conflicts, equally there could be possible synergies which warrant further investigation.

7 BUSINESS CASE UPDATE

The project team are not aware of any developments that have taken place since the issue of the Respond (FLARE) project direction that affects the business case for the project.

8 PROGRESS AGAINST BUDGET

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

Actual spend to date compared to project budget is summarised in Figure 8.1 below. The report includes expenditure up to and including 31 May 2017.

Actual spend to date is reported as below the planned expenditure to date (exc contingencies) yet for the total project an overspend (exc contingencies) is anticipated.

During the installation phase a variety of issues arose during detail design and site installation with each of the technologies that were unforeseen and unbudgeted. This has resulted in an increase in forecast costs across labour, equipment and contractors as shown for the total project.

Project spend to date is £3,385,422 compared to plan £4,010,038.

Forecast at completion is £4,730,319 against a plan of £5,024,000 including contingencies.

Figure 8.1: Summary of project expenditure

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project		
	Actual	Plan	Variance	Forecast	Plan	Variance
Labour	1,038	995	(42)	1,415	1,305	(110)
Equipment	974	1,010	36	1,101	1,058	(43)
Contractors	741	838	97	1,176	1,140	(36)
IT	521	573	52	573	573	(0)
IPR Costs	0	0	0	0	0	0
Travel & Expenses	0	0	0	0	0	0
Payments to Users	7	44	37	61	61	0
Contingency	0	385	385	0	484	484
Decommissioning	0	0	0	54	54	0
Other	104	165	60	349	349	(0)
Total	3,385	4,010	625	4,730	5,024	294

Detailed expenditure is shown at Appendix D at project activity level.

Note: Respond is budgeted at £5.544 million including £519,460 of partner contributions. For reporting these partner contributions have been removed from both the relevant budget and actual financial statements, resulting in the restated project budget of £5.024 million.

9 BANK ACCOUNT

The Respond project bank statement is shown in Appendix E. The statement contains all receipts and payments associated with the project up to the end of May 2017.

10 INTELLECTUAL PROPERTY RIGHTS

Electricity North West is following the default IPR arrangements. No IPR have been generated or registered during the reporting period.

The IPR implications of forthcoming project deliverables are currently being considered, and will be reported in the next project progress report.

11 ACCURACY ASSURANCE STATEMENT

This document has been reviewed by a number of key business stakeholders. The project team and select members of the Respond project steering group, including the lead member of the bid development team, have reviewed the report to ensure its accuracy.

The financial information has been produced by the Respond project manager and the project's finance representative who review all financial postings to the project each month in order to ensure postings are correctly allocated to the appropriate project activity. The issue of the document has been approved by the Engineering and Technical Director.

APPENDIX A: STATUS OF RISKS FROM THE FULL SUBMISSION

Project Phase / Workstream	Description (Delivery Risk Category)	Probability Score	Impact Score	Mitigating Action/ Contingency Action	Revised Probability	Revised Impact Score	Status
Mobilisation	Closed on 31st May 2016 as project mobilisation delivered and project live. There is a risk that project partners are not able to mobilise their resources in time because of other commitments leading to a delay in achieving potential milestones which could have a project, reputational, and financial repercussion. (Other)	2	4	<ul style="list-style-type: none"> Suitable partnership agreements that ensure collaborative working, value for customers' money and achievement of learning objectives in a timely manner have been identified for all partners. A project initiation document will be issued to the project partners to ensure that all parties are ready. <p><i>Contingency: Electricity North West will seek new partners should existing partners fail to mobilise.</i></p>	1	1	Closed
Technology	Closed on 31st May 2016 as project delivered and project live. There is a risk that installation of the new Fault Level Assessment Tool or configuration of the network management system will overrun leading to delayed start of live trials. (Installation)	3	5	<ul style="list-style-type: none"> Robust T&Cs for the Fault Level Assessment Tool provision will be agreed to ensure partner focus on achieving the FLARE project timescales. Resources and mobilisation plan will be defined to achieve the project milestones and will be developed in conjunction with the selected software partner. <p><i>Contingency: Regular progress meetings/reports to track progress against the plan. Electricity North West will commit additional operational resource should any delays occur to the installation, testing and commissioning programme.</i></p>	1	1	Closed
Technology	Closed on 31st May 2016 as project FLAT tool commissioned and project live. There is a risk that the new Fault Level Assessment Tool will not perform as expected during testing and commissioning, leading to delayed start of live trials. (Installation)	3	4	<ul style="list-style-type: none"> Guidance on the use of a fault level monitor to validate the Tool's calculations has been sought from WPD using their learning from FlexDGrid. Validation of the Fault Level Assessment Tool will occur prior to live trials and periodically, and at different points on the trial networks during the live trial period. <p><i>Contingency: n/a</i></p>	1	1	Closed
Technology	Closed on 31st May 2016 as project delivered and project live. There is a risk that the six month lead time for delivery of I _S -limiters may lead to a delay in the installation of this technology. (Procurement)	4	3	<ul style="list-style-type: none"> Project plan specifies that a purchase order will be raised to procure I_S-limiters at the beginning of March 2015. ABB will expedite the order. <p><i>Contingency: Flexibility is built into the installation programme so that installation of this technology can occur in spring 2016.</i></p>	1	1	Closed

Project Phase /Workstream	Description (Delivery Risk Category)	Probability Score	Impact Score	Mitigating Action/ Contingency Action	Revised Probability	Revised Impact Score	Status
Technology	Closed on 31 May 2016 as project delivered and project live. There is a risk that retrofit of Adaptive Protection (for distribution system and electrical machines) may be more complex than anticipated leading to a delay in the installation programme. (Installation)	3	3	<ul style="list-style-type: none"> The installation programme will be considered alongside known operational and maintenance activity peaks to allow for extra resource to be secured and deployed. Electricity North West has scoped Respond with the input from a generator manufacturer and a customer with motors. Protection requirements for generators are explored in ENER-G's test cell. The Project cost includes for external contractor retrofit of the Adaptive Protection for electrical machines. <p><i>Contingency: Alternative substations may be selected to ensure Respond trials are not delayed. Learning from every installation/ attempted installation will be published through knowledge dissemination activities.</i></p>	1	1	Closed
Technology	Closed on 31 May 2016 as project delivered and project live. There is a risk that appropriately skilled resource may not be available to perform the retrofit installation of technologies leading to a delay in the installation programme. (Installation)	3	4	<ul style="list-style-type: none"> Guidance on the specific skills requirements has been sought and FLARE's installation programme will be designed in consideration of known operational and maintenance activity peaks. <p><i>Contingency: Contractors may be brought in to cover business as usual activities to allow internal resource to cover installation requirements of this project.</i></p>	1	1	Closed
Technology	There is a risk that Respond technologies do not perform as anticipated leading to trial circuits exceeding their fault level limits. (Other)	3	5	<ul style="list-style-type: none"> Forerunner projects explored techniques with academic and technical colleagues. Fault level mitigation techniques will be installed at substations with no fault level constraints. Standard protection capability will not be exceeded. <p><i>Contingency: n/a</i></p>	2	5	Open
Customer	Closed on 31 May no issues accessing customers. There is a risk that the data protection strategy will be complicated by accessing customer survey participants from outside the company's area leading to legal and reputational issues. (Recruitment)	3	5	<ul style="list-style-type: none"> The CHPA/ ENER-G has members/ customers across the UK and will promote involvement in the survey. Impact Research will work with the CHPA/ ENER-G to design and undertake the customer survey work and ensure complete compliance with data privacy requirements. Impact Research and Electricity North West will undertake a pilot communication trial, with a range of stakeholders to ensure that they are able to effectively communicate and engage with the project's stakeholders. <p><i>Contingency: n/a</i></p>	1	1	Closed

Project Phase /Workstream	Description (Delivery Risk Category)	Probability Score	Impact Score	Mitigating Action/ Contingency Action	Revised Probability	Revised Impact Score	Status
Customer	There is a risk that customers with relevant demand or generation equipment do not engage in the customer survey leading to a lack of robust data for Hypothesis 5. (Recruitment)	3	4	<ul style="list-style-type: none"> Impact Research has experience of this issue in a Second Tier project delivery environment. The survey contact list will be designed to identify key decision makers within organisations. Incentive payments are being offered for participation. <p><i>Contingency: More customers are being approached and incentivised to participate.</i></p>	3	4	Open
Trials & Analysis	There is a risk that the selected networks do not experience a fault during the period of the trials leading to the techniques and devices being untested. (Other)	3	5	<ul style="list-style-type: none"> Up-to-date fault statistics will be used in the site selection phase to ensure that networks with higher than average faults are selected for Respond demonstration. No risk as all techniques have operated. <p><i>Contingency: None as all techniques have operated during the trial phase</i></p>	1	1	Open
Trials & Analysis	There is a risk that a FCL service participant decides they no longer wish to participate in the trial. (Recruitment)	2	3	<ul style="list-style-type: none"> The Respond team will work with the customer to understand why customer perception has changed and to capture learning from the trial. <p><i>Contingency: n/a</i></p>	2	2	Open
Technology	Closed on 31st May 2016 as project delivered and project live . There is a risk that the Respond project is delayed due to the replacements of Electricity North West's network management system taking priority. (Installation)	2	4	<ul style="list-style-type: none"> The project team will work closely with the network management team to ensure goals are aligned and the Respond network and attributes are prioritised for data cleanse, network build and attribute population <i>Contingency: Build the Respond network and attributes on an islanded server with an ICCP link to the NMS system for live data and topology changes</i> 	1	1	Closed
Customer	Closed on 31st May 2016 as project delivered and project live There is a risk that the customer survey participants will not complete the minimum number of surveys required for the project (Recruitment)	2	2	<ul style="list-style-type: none"> The Respond team will work with project partners, Impact Research, Ener-G and the Association of Decentralised Energy (ADE) to ensure the surveys are completed and aim to identify more participants. 251 who have shown an interest to participate have been identified <i>Contingency: Increase the financial incentive to existing participants and recruit more new participants</i> 	1	1	Closed

As the project progresses, the project team will gain a better view of the likelihood of these risks and will also identify more evidence-based ones.

APPENDIX B: SUMMARY OF PROJECT SDRC

SDRC (evidence)	Due date	Status
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire (quarterly employee magazine) by January 2015	Jan-15	Delivered
Publish first newsletter by May 2015	May-15	Delivered
Send customer engagement plan and data privacy statement to Ofgem by June 2015	Jun-15	Delivered
Issue first project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Jun-15	Delivered
Deliver live Respond website and social media forums by July 2015	Jul-15	Delivered
Publish first advertorial by July 2015	Jul-15	Delivered
Deliver engaged customer panel workshop by September 2015	Sep-15	Delivered
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire (quarterly employee magazine) by September 2015	Sep-15	Delivered
First webinar held by September 2015	Sep-15	Delivered
Deliver lessons learned from testing customer survey materials incorporated into survey and all survey materials published on the Respond website by October 2015	Oct-15	Delivered
Publish second newsletter by November 2015	Nov-15	Delivered
Actively participate at 2015 annual LCNI conference	Nov-15	Delivered
Issue second project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Dec-15	Delivered
Brief and train Electricity North West operational teams, including planning engineers, on fault level mitigation management protocols by April 2016	Apr-16	Delivered
Publish second advertorial by April 2016	Apr-16	Delivered
Publish monitoring and analysis procedures for trials on Respond website by May 2016	May-16	Delivered
Publicise commencement of live trials on Respond website by May 2016	May-16	Delivered
Publish third newsletter by May 2016	May-16	Delivered

SDRC (evidence)	Due date	Status
Hold first knowledge sharing event by May 2016	May-16	Delivered
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire (quarterly employee magazine) by June 2016	Jun-16	Delivered
Issue third project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Jun-16	Delivered
Publish third advertorial by July 2016	Jul-16	Delivered
Publish equipment specifications and installation reports for the Adaptive Protection and the I ₃ -limiter by September 2016	Sep-16	Delivered
Publish NMS interface and configuration specifications and commissioning reports by September 2016	Sep-16	Delivered
Second webinar held by September 2016	Sep-16	Delivered
Publish report on validation of the Fault Level Assessment Tool by November 2016	Nov-16	Delivered
Publish fourth newsletter by November 2016	Nov-16	Delivered
Actively participate at 2016 annual LCNI conference	Nov-16	Delivered
Issue fourth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Dec-16	Delivered
Publish customer survey report and information for customer evaluation of FCL service provision on Respond website by May 2017	May-17	Delivered
Publish fifth newsletter by May 2017	May-17	Delivered
Hold second knowledge sharing event by May 2017	May-17	July-17 Postponed Ofgem noted.
Issue fifth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Jun-17	On track
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire (quarterly employee magazine) by July 2017	Jul-17	On track
Publish fourth advertorial by July 2017	Jul-17	On track
Hold third webinar by September 2017	Sep-17	On track
Publish sixth newsletter by November 2017	Nov-17	On track

SDRC (evidence)	Due date	Status
Actively participate at 2017 annual LCNI conference	Nov-17	On track
Issue sixth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Dec-17	On track
Publish equipment specifications and installation reports for the FCL service by April 2018	Apr-18	On track
Publish on Respond website a summary of each fault event three months after each event, with the expectation that a minimum of 18 faults will be reported on	May-18	On track
Purchase a Fault Current Limiting service from at least one Electricity North West demand customer and one Electricity North West generation customer	May-18	On track
Publish contract templates for FCL service with new and existing customers and commercial arrangements learning by May 2018	May-18	On track
Publish seventh and final newsletter by May 2018	May-18	On track
Publish updated fault level management, planning, design, protection settings and operation and maintenance policies by June 2018	Jun-18	On track
Issue seventh project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Jun-18	On track
Publish on Respond website the cost benefit analysis study report and the buy order of Respond/ FlexDGrid/ traditional reinforcement fault level mitigation solutions by July 2018	Jul-18	On track
Publish on Respond website the carbon impact assessment report by July 2018	Jul-18	On track
Publish asset health study on Respond website by July 2018	Jul-18	On track
Submit a DCUSA change proposal for amending application approach to Fault Level Cost Apportionment Factor in Common Connection Charging Methodology by August 2018	Aug-18	On track
Publish peer reviewed safety cases on the Respond project website by September 2018	Sep-18	On track
Hold third knowledge sharing event September 2018	Sep-18	On track
Hold fourth webinar	Oct -18	On track
Publicise Respond within Electricity North West in monthly team brief pack and/ or Volt (intranet) and/ or Newswire (quarterly employee magazine)	Oct-18	On track
Publish fifth advertorial by October 2018	Oct-18	On track

SDRC (evidence)	Due date	Status
Issue Respond project closedown report to Ofgem and publish on Respond website by October 2018	Oct-18	On track
Publish Electricity North West's approach to managing fault level reinforcement on Respond website by October 2018	Oct-18	On track
Actively participate at 2018 annual LCNI conference	Nov-18	On track
Issue eighth project progress report in accordance with Ofgem's June and December production cycle and publish on Respond website	Dec-18	On track

APPENDIX C: PROJECT DIRECTION BUDGET

£000's	
Excluding Partner Funding	
Ofgem Cost Category	
Labour	1,305
Project Management - Labour	866
Install/Commissioning - Labour	396
General Labour - Labour	43
Equipment	1,058
Materials - Equipment	4
General Equipment - Equipment	22
Monitoring Equipment - Equipment	163
IS Limiter - Equipment	685
Adaptive Protection - Equipment	184
Contractors	1,140
Project Management - Contractor	20
Install/Commissioning - Contractor	554
Research - Contractor	295
Customer Survey - Contractor	59
Customer Engagement - Contractor	169
Dissemination - Contractor	43
IT	573
IT Hardware - IT	0
IT Software - IT	564
IT Licences - IT	9
IPR Costs	0
IPR Costs	0
Travel & Expenses	0
Travel & Expenses	0
Payments to Users	61
Payments to Users	36
Fault Current Limiting Service	0
Customer Payments	26
Contingency	484
Contingency	484
Decommissioning	54
Decommissioning	54
Other	349
Rent - Other	60
Telecoms - Other	0
Dissemination - Other	289
Customer Survey - Other	0
Conference Reg. Fees - Other	0
Other	0
Total	5,024


Note: Value restated to £5,024,000

APPENDIX D: DETAILED PROJECT EXPENDITURE

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project			Comments
	Actual	Plan	Variance	Forecast	Plan	Variance	
Labour	1,038	995	(42)	1,415	1,305	(110)	
Project Management - Labour	519	559	40	866	866	(0)	
Install/Commissioning - Labour	498	394	(104)	506	396	(110)	Multiple design & installation issues.
General Labour - Labour	21	43	22	43	43	(0)	
Equipment	974	1,010	36	1,101	1,058	(43)	
Materials - Equipment	3	3	(1)	4	4	(0)	
General Equipment - Equipment	7	11	4	22	22	(0)	
Monitoring Equipment - Equipment	152	163	11	163	163	0	
IS Limiter - Equipment	723	675	(49)	761	685	(76)	Part of equipment cost budgetted as contractor
Adaptive Protection - Equipment	89	159	70	150	184	33	Savings identified in settings design & application
Contractors	741	838	97	1,176	1,140	(36)	
Project Management - Contractor	7	20	13	14	20	6	Savings identified in Project Management
Install/Commissioning - Contractor	560	525	(35)	602	554	(48)	£131k £76k budget allocation & £45k installation cost
Research - Contractor	4	82	78	295	295	(0)	
Customer Survey - Contractor	36	53	16	53	59	6	
Customer Engagement - Contractor	133	147	14	169	169	(0)	
Dissemination - Contractor	0	10	10	43	43	(0)	
IT	521	573	52	573	573	(0)	
IT Hardware - IT	0	0	0	0	0	0	
IT Software - IT	521	564	43	564	564	(0)	
IT Licences - IT	0	9	9	9	9	0	
IPR Costs	0	0	0	0	0	0	
IPR Costs	0	0	0	0	0	0	
Travel & Expenses	0	0	0	0	0	0	
Travel & Expenses	0	0	0	0	0	0	
Payments to Users	7	44	37	61	61	0	
Payments to Users	0	18	18	36	36	0	
Fault Current Limiting Service	0	0	0	0	0	0	
Customer Payments	7	26	19	25	26	0	
Contingency	0	385	385	0	484	484	
Contingency	0	385	385	0	484	484	
Decommissioning	0	0	0	54	54	0	
Decommissioning	0	0	0	54	54	0	
Other	104	165	60	349	349	(0)	
Rent - Other	26	30	4	61	60	(0)	
Telecoms - Other	0	0	(0)	0	0	(0)	
Dissemination - Other	78	135	56	289	289	0	
Customer Survey - Other	0	0	(0)	0	0	(0)	
Conference Reg. Fees - Other	0	0	0	0	0	0	
Other	0	0	0	0	0	0	
Total	3,385	4,010	625	4,730	5,024	294	

APPENDIX E: PROJECT BANK ACCOUNT

The bank statement below details all transactions relevant to the project. This includes all receipts and payments associated with the project since the previous report up to the May 2017 month end reporting period.

 Lloyds Bank		Yesterday's Statement			N397926	
Statements and Balances						
308012-11782760						
ELECTRICITY NWL NO.14 LCNF (FLARE) (GBP)						
Date	Type	Narrative	Value Date	Payments	Receipts	Balance
03JAN17		Opening Ledger Balance				1,731,168.50 Cr
09JAN17	CR	INTEREST (GROSS)			367.58	1,731,536.08 Cr
16JAN17	DR	TO A/C TFR 02749020 300002		56,162.69		1,675,373.39 Cr
09FEB17	CR	INTEREST (GROSS)			358.04	1,675,731.43 Cr
28FEB17	DR	TO A/C TFR 02749020 300002		32,669.40		1,643,062.03 Cr
09MAR17	CR	INTEREST (GROSS)			319.14	1,643,381.17 Cr
15MAR17	DR	TO A/C TFR 02749020 300002		48,794.67		1,594,586.50 Cr
10APR17	CR	INTEREST (GROSS)			351.17	1,594,937.67 Cr
20APR17	DR	TO A/C TFR 02749020 300002		42,044.45		1,552,893.22 Cr
09MAY17	CR	INTEREST (GROSS)			311.04	1,553,204.26 Cr
25MAY17	DR	TO A/C TFR 02749020 300002		6,039.56		1,547,164.70 Cr
09JUN17	CR	INTEREST (GROSS)			328.93	1,547,493.63 Cr
09JUN17	DR	TO A/C TFR 02749020 300002		28,848.44		1,518,645.19 Cr
09JUN17		Value of Credits (6)			2,035.90	
09JUN17		Value of Debits (6)		214,559.21		
09JUN17		Closing Ledger Balance				1,518,645.19 Cr
09JUN17		Closing Cleared Balance				1,518,645.19 Cr
*** End of Report ***						