

**OPENING UP
THE SMART GRID**

**PROJECT PROGRESS REPORT
REPORTING PERIOD:
DECEMBER 2016 – JUNE 2017**



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Glossary

| Term | Definition |
|-------------------------------------|--|
| Background IPR | Intellectual Property Rights owned by or licensed to a Project Participant at the start of a Project. |
| Customer Engagement Plan | The plan that the Network Licensee must submit to Ofgem setting out how it or any of its Project Partners, will engage with, or impact upon, Relevant Customers as part of the Project. |
| Distribution Network Operator (DNO) | Any Electricity Distributor in whose Electricity Distribution Licence the requirements of Section B of the standard conditions of that licence have effect (whether in whole or in part). |
| Expert Panel | A panel of independent experts who together provide knowledge and expertise under the following headings: energy network industries, environmental policy, technical and engineering, economics and financial and consumer interests. The panel is appointed by Ofgem to advise the Authority's decision making process on the selection of Projects for funding. |
| Foreground IPR | All Intellectual Property Rights created by or on behalf of any of the Project Participants, their sub-Licensees, agents and sub-contractors as part of, or pursuant to, the Project, including all that subsisting in the outputs of the Project. |
| Full Submission Pro-forma | A pro-forma which Network Licensees must complete and submit to Ofgem in order to apply for funding under the NIC. |
| Funding Licensee | The Network Licensee named in the Full Submission as the Funding Licensee, which receives the Approved Amount and is responsible for ensuring the Project complies with this Governance Document and the terms of the Project Direction. |
| Intellectual Property Rights (IPR) | All industrial and intellectual property rights including patents, utility models, rights in inventions, registered designs, rights in design, trademarks, copyrights and neighbouring rights, database rights, moral rights, trade secrets and rights in confidential information and know-how (all whether registered or unregistered and including any renewals and extensions thereof) and all rights or forms of protection having equivalent or similar effect to any of these which may subsist anywhere in the world and the right to apply for registrations of any of the foregoing. |
| ITT | Invitation to Tender |
| LV | Low Voltage |
| LV-CAP™ | Low Voltage Common Application Platform. |
| NIC | Network Innovation Competition. |

| | |
|--|--|
| Project | The Development or Demonstration being proposed or undertaken. |
| Project Bank Account | A separate bank account opened and used solely for the purpose of all financial transactions associated with a NIC Project. |
| Project Direction | A direction issued by the Authority pursuant to the NIC Governance Document setting out the terms to be followed in relation to the Eligible NIC Project as a condition of its being funded pursuant to NIC Funding Mechanism. |
| Project Participant | A party who is involved in a Project. A participant will be one of the following: Network Licensee, Project Partner, External Funder, Project Supplier or Project Supporter. |
| Project Partners | Any Network Licensee or any other Non-Network Licensee that makes a contractual commitment to contribute equity to the Project (eg in the form of funding, personnel, equipment etc.) the return on which is related to the success of the Network Licensee's Project. |
| Project Supplier | A party that makes a contractual commitment to supply a product or service to the Project according to standard commercial terms that are not related to the success of the Project. |
| Relevant Background IPR | Any Background IPR that is required in order to undertake the Project. |
| Relevant Foreground IPR | Any Foreground IPR that is required in order to undertake the Project. |
| Successful Delivery Reward Criteria (SDRC) | The Project specific criteria set out in the Project Direction against which the Project will be judged for the Successful Delivery Reward. |
| WPD | Western Power Distribution |

1 Executive Summary

The OpenLV Project “the Project” is funded through Ofgem’s Network Innovation Competition (NIC) funding mechanism. The Project commenced in December 2016 and is scheduled to complete in April 2020.

The Project has three phases: 1) Mobilise & Procure, 2) Design & Build and 3) Trial, Consolidate & Share. This Report details the progress of the Project, predominantly from the first phase “Mobilise & Procure”. This is the first Project Progress Report (PPR) for the Project and details progress on the last six months, December 2016 to May 2017.

1.1 Overall Project Progress

During this reporting period, the Project was in the Mobilise & Procure phase. The key achievements in the reporting period are as follows:

- Full mobilisation of the Project team;
- The Principal Contract and supporting Management & Delivery document, that define the working relationship between EA Technology and WPD were agreed on 6th February 2017;
- Sub-Contracts have been put in place with the named Supplier’s in the Full Submission Pro-forma (FSP), Nortech & Lucy [Ref. 1];
- A competitive tender process has been held for all 5 of the Supplier roles as identified in the FSP. Commercial agreements have been put in place with 4 of the 5 Supplier’s;
- The OpenLV Customer Engagement Plan has been written and was submitted to Ofgem on 24th March 2017;
- The OpenLV Data Protection Strategy has been written and was submitted to Ofgem on 24th March 2017; and
- Planning for the next phase of the Project is well underway.

1.2 Business Case

At the time of writing, there have been no changes to the anticipated benefits to be gained by the Project.

1.3 Project Learning and Dissemination

The key learning outcomes recorded in the Mobilise & Procure phase are listed below:

- **Mobilisation:** The approach of taking key members of staff from FSP development into the Project Team, from both WPD and EA Technology, has enabled the overall Project team to be mobilised quickly and efficiently;
- **Commercial:** Utilising the commercial learning from previous Low Carbon Network (LCN) Fund project(s), specifically templates from the My Electric Avenue Project, enabled the Principal Contract and Management & Delivery documents to be agreed by WPD and EA Technology 6 weeks after the publication of the Project Direction;

- **Commercial:** Utilising the Sub-Contract and Task Order templates from previous Low Carbon Network (LCN) Fund project(s), specifically templates from the My Electric Avenue Project, have enabled the swift development of contractual documents for all Project Suppliers;
- **Technical:** Timely provision of LV Network data from WPD utilising existing data sources either BaU systems and/or from previous LCN Fund projects has enabled EA Technology to start work earlier than scheduled on identifying network locations for Method 1. This maximises the investment put into existing data sources; and
- **Method 3, OpenLV Extensibility:** Logging interest from companies, following publication of the FSP and ITT's, has provided a list of over 20 interested parties in Method 3. This indicates good interest in the Project from the wider industry.

At this early stage in the Project limited learning has been generated and therefore limited dissemination has been completed. The following dissemination points are relevant:

- A Press Release providing information about the OpenLV Project was published on the WPD website on 30th November 2016;
- The OpenLV Project has been added to the list of innovation projects on WPD's website;
- The OpenLV Project has been added to the list of innovation projects on EA Technology's website. This was also shared on LinkedIn;
- A Press Release providing information about the OpenLV Project was published on the Lucy Electric website post award. This was also shared on LinkedIn;
- Following the publication of the FSP and the ITT's over 20 organisations have shown interest in Method 3;
- An overview of the OpenLV Project was provided to a representative of Scottish Power Energy Networks (SPEN) Innovation Team, by EA Technology, on 28th April; and
- WPD are planning on presenting on the OpenLV Project at the National Infrastructure Forum on 13th June in London.

1.4 Risks

The OpenLV risk register is a live document and is updated regularly. A total of 21 risks have been raised in the reporting period, 9 of which have been closed, leaving a total of 12 live risks. Mitigation action plans are identified when raising a risk and the appropriate steps then taken to ensure risks do not become issues wherever possible.

Of the 12 live risks none are ranked as severe, 1 is ranked as major, 9 are ranked as moderate and 2 are ranked as minor.

2 Project Manager’s Report

2.1 Project Background

The OpenLV Project “the Project” is funded through Ofgem’s Network Innovation Competition (NIC) funding mechanism. The Project commenced in December 2016 and is scheduled to complete in April 2020.

The Project Partners are as follows: 1) Western Power Distribution (WPD): The Lead/Funding DNO (licensee); and 2) EA Technology: The 3rd Party Lead Supplier who is responsible for the overall delivery of the Project.

The Project has three phases and four work packages as shown in Figure 1. This Report details the progress of the Project, focussing on the last six months, December 2016 to May 2017. The reporting period is depicted on Figure 1 by the grey shaded box.

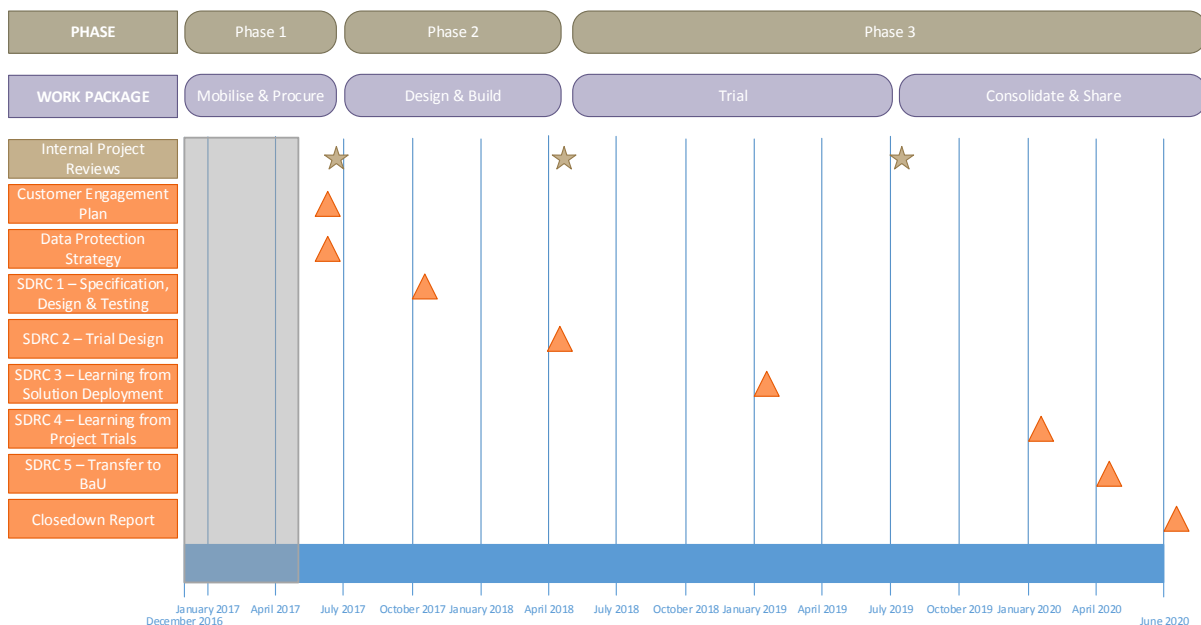


Figure 1: OpenLV Timeline

2.2 Project Progress

2.2.1 Overall Progress

During this reporting period, the Project was in the Mobilise & Procure phase. The key achievements in the reporting period are as follows:

- Full mobilisation of the Project team;
- The Principal Contract and supporting Management & Delivery document, that define the working relationship between EA Technology and WPD were agreed on 6th February 2017;
- Sub-Contracts have been put in place with the named Supplier’s in the FSP, Nortech & Lucy [Ref. 1];

- A competitive tender process has been held for all 5 of the Supplier roles as identified in the FSP. Commercial agreements have been put in place with 4 of the 5 Supplier's;
- The OpenLV Customer Engagement Plan has been written and was submitted to Ofgem on 24th March 2017;
- The OpenLV Data Protection Strategy has been written and was submitted to Ofgem on 24th March 2017; and
- Planning for the next phase of the Project is well underway.

2.2.2 Procurement

The Principal Contract and supporting Management & Delivery document define both the contractual and working relationship between EA Technology and WPD. These documents were agreed on 6th February 2017. EA Technology confirms that the condition precedent as defined in the Project Direction [Ref. 2] has been met. The condition precedent is as follows:

3. CONDITION PRECEDENT

The Funding Licensee will not access any funds from the Project Bank Account until it has signed contracts with the Project Partner named in Table 1.

Table 1. Project Partner

| |
|-------------------|
| EA Technology Ltd |
|-------------------|

The FSP [Ref. 1] identified the following 2 named Suppliers: 1) Nortech and 2) Lucy Electric GridKey. It is confirmed that Sub-Contracts and Task Orders that define, the contractual relationship and scope of works, were agreed with these named Suppliers on 10th April 2017 and 2nd June 2017 respectively.

The FSP outlines that 5 Supplier roles would be competitively tendered. It is confirmed that the competitive tender process for identified roles has been completed and that Sub-Contracts and Task Orders have been agreed with all 4 of the 5 Supplier's. The following summarises the key points regarding the selection of Suppliers:

- **Community Engagement Specialist:** It is confirmed that the Centre for Sustainable Energy (CSE) has been awarded this role. The Sub-Contract and supporting Task Order were agreed with CSE on 23rd May 2017;
- **Hardware Provision:** It is confirmed that Impulse Corporation Limited has been awarded this role. The contractual agreement was agreed with Impulse on 7th March 2017;
- **Cyber Security:** It is confirmed that NCC Group has been awarded this role. The Sub-Contract and supporting Task Order will be agreed with NCC Group in the next reporting period;
- **Marketing, PR & Dissemination:** It is confirmed that Promote Design & Marketing Limited has been awarded this role. The Sub-Contract and supporting Task Order were agreed with Promote Design & Marketing Limited on 17th March 2017; and

- **Economic Assessment and Extrapolation of Community Learning:** It is confirmed that Regen has been awarded this role. The Sub-Contract and supporting Task Order were agreed with Regen on 24th May 2017.

2.2.3 Design and Build

This phase of the Project includes setting up the overall OpenLV Solution as defined in the FSP [Ref. 1] and underpins the ability of the Project to test each of the proposed Methods. This phase will provide the overall OpenLV Solution to be trialled for each of the three Project Methods: 1) Network Capacity Uplift, 2) Community Engagement and 3) OpenLV Extensibility.

It is confirmed that the following progress, under the Design & Build phase has been made within the reporting period:

- Procured and assembled Project server for data storage and analysis;
- WPD has provided initial LV network data from previous projects and Business as Usual (BaU) systems, this data is currently being analysed for trial site selection purposes for Method 1;
- The hardware provider has been appointed and trial hardware for the test rig has been provided;
- Lucy Electric GridKey has delivered initial test units that will enable the monitoring capability of the overall solution;
- The test rig is mid-way through assembly;
- A meeting was held with WPD's Technical Policy Manager on 9th May 2015 to provide an overview of the proposed hardware to be installed in LV substations and to discuss and review the proposed approach to trial design for Method 1; and
- The iHost Server has been ordered from Nortech Management Ltd.

2.2.4 Key Issues

The following key issues were encountered and managed within the reporting period:

- **Commercial:** As part of the ITT process a complaint was received from a potential Supplier regarding a perceived error in process in the assessment of tenders. EA Technology sought legal advice and responded accordingly. No further communication has been received from the potential Supplier following the response;
- **Commercial:** Project Supplier budgets were estimated at FSP the stage. Following the award of the Project; the scope of works for each individual Supplier has been reviewed and agreed. In some cases, the overall budget is higher than estimated at the FSP stage, whilst in other cases the budget is lower than estimated at the FSP stage. However, there has been no overall change in the overall Contractor costs on the Project; and
- **Hardware Component Delivery:** A 6 week delay was encountered in receiving the first 2 ruggedised PCs. This delay has not had a direct impact on overall deliverables as the equipment order was placed earlier than originally scheduled.

2.2.5 Deliverables

The following key deliverables were completed in this reporting period:

- The Principal Contract and supporting Management & Delivery document, that define the working relationship between EA Technology and WPD, were agreed on 6th February 2017;
- The OpenLV Customer Engagement Plan has been written and was submitted to Ofgem on 24th March 2017; and
- The OpenLV Data Protection Strategy has been written and was submitted to Ofgem on 24th March 2017.

Whilst no formal approval is required, from Ofgem, for the Customer Engagement Plan and Data Protection Strategy; Customer Engagement can only commence in June 2017.

2.3 Outlook to the Next Reporting Period

During the next reporting period the Project will transition from the Mobilise & Procure phase to the Design & Build phase. The project team will be focussed on the following activities:

- Finalising the contractual agreement with NCC Group to complete the Mobilise & Procure stage;
- Complete the assessment of LV-Cap™ from InnovateUK;
- Start work on identifying potential LV substation locations for Method 1;
- Finalising and agreeing the installation documentation for the LV substation hardware with WPD;
- Building, testing and deploying the overall OpenLV Solution;
- Delivering SDRC1, “Specification, Design and Factory Testing of the overall OpenLV solution”;
- Finalising the marketing strategy for the Project (Methods 2 & 3);
- Designing and implementing the Project website;
- Completing the initial market potential assessment for Methods 2 & 3;
- Completing preparatory work to meet the requirements of SDRC 2, “Community Engagement Plan & Interim Results of Assessing Market Potential (Methods 2 & 3)”; and
- Delivering the next Project Progress Report.

3 Business Case Update

At the time of writing, there have been no changes to the anticipated benefits to be gained by the Project.

4 Progress Against Plan

4.1 This Reporting Period

Table 1 summarises the progress in this reporting period against the project plan. Key issues encountered during the reporting period are provided in Section 2.2.4.

Table 1: Progress Against Plan

| Item | Milestone Description | Status | Original Due Date | Actual Completion Date | Revised Due Date |
|------|---|-------------|-------------------|------------------------|------------------|
| 1 | Agreement of Project Direction | Complete | Dec-16 | 16/12/16 | N/A |
| 2 | Agreement of Principal Contract | Complete | 16/02/17 | 31/01/17 | N/A |
| 3 | Agreement of Management & Delivery Document | Complete | 02/02/17 | 31/01/17 | N/A |
| 4 | Formal licencing agreement with the University of Manchester for WeatherSense™ Transformer RTTR (DTR App) | In Progress | 02/03/17 | N/A | 30/06/17 |
| 5 | Agree Contract & Task Order with Nortech | Complete | 06/03/17 | 10/04/17 | N/A |
| 6 | Agree Contract & Task Order with Lucy Electric GridKey | Complete | 06/03/17 | 02/06/17 | N/A |
| 7 | Agree Contract & Task Order with Hardware Provider | Complete | 24/03/17 | 02/03/17 | N/A |
| 8 | Agree Contract & Task Order with Cyber Security Specialist | In Progress | 25/05/17 | N/A | 30/06/17 |
| 9 | Agree Contract & Task Order with Community Engagement Specialist | Complete | 27/04/17 | 23/05/17 | N/A |
| 10 | Agree Contract & Task Order with Marketing/PR/Dissemination Company | Complete | 27/04/17 | 17/03/17 | N/A |
| 11 | Agree Contract & Task Order with Community Learning Supplier | Complete | 25/05/17 | 24/05/17 | N/A |

| | | | | | |
|----|--|----------|----------|----------|-----|
| 12 | Submit Data Protection Strategy | Complete | 25/05/17 | 24/03/17 | N/A |
| 13 | Submit Customer Engagement Plan | Complete | 25/05/17 | 24/03/17 | N/A |
| 14 | Submit project Progress Report (this document) | Complete | 12/06/17 | 12/06/17 | N/A |

There are two items that were scheduled to be completed within this reporting period that have not been completed:

- Formal licencing agreement with the University of Manchester for WeatherSense™ Transformer RTTR (DTR App): This is in progress, the University of Manchester has registered the IP generated from the InnovateUK project in relation to the WeatherSense™ App. As a result, discussions regarding the licencing of the App as part of the Project can now progress; and
- Agree Contract & Task Order with Cyber Security Specialist: The contract and Task Order for NCC Group have been drafted and are currently being finalised.

At the current time, the later than planned completion, of these tasks has no impact on the key SDRC milestone delivery dates.

4.2 Next Reporting Period

Table 2 summarises the key planned activities for the next reporting period. Description(s) of key planned activities for the next reporting period are provided in Section 2.3. Items 1 to 3 were scheduled to be completed within this reporting time period but have been re-scheduled. It is confirmed that re-scheduling these items has had no impact on key deliverables.

Table 2: Progress Against Plan

| Item | Milestone Description | Status | Original Due Date | Revised Due Date |
|------|---|-------------|-------------------|------------------|
| 1 | Formal licencing agreement with the University of Manchester for WeatherSense™ Transformer RTTR (DTR App) | In Progress | 02/03/17 | 30/06/17 |
| 2 | Develop & agree installation documentation with Western Power Distribution | In Progress | 07/04/17 | 31/07/17 |
| 3 | Method 1 Initial report issued - detailing LV network requirements | In Progress | 12/04/17 | 30/06/17 |
| 4 | Report - Following assessment of status of LV-Cap™ from InnovateUK | In Progress | 03/05/17 | 30/06/17 |

| | | | | |
|---|--|-------------|----------|----------|
| 5 | Agree Contract & Task Order with Cyber Security Specialist | In Progress | 25/05/17 | 30/06/17 |
| 6 | Factory Acceptance Testing (FAT) of the overall OpenLV Solution | Not Started | 06/07/17 | 31/07/17 |
| 7 | Design & Implement Project Website | Not Started | 13/09/17 | N/A |
| 8 | Site Acceptance Testing (SAT) of the overall OpenLV Solution | Not Started | 20/09/17 | N/A |
| 9 | SDRC 1: Specification, Design & Testing of the Overall OpenLV Solution | Not Started | 27/10/17 | N/A |

5 Progress Against Budget

Table 3 shows the baseline budget as outlined in the FSP.

Table 3: Progress Against Budget

| Cost Category | Total Budget £k | Expected Spend to Date May 2017 | Actual Spend to date | Variance £ | Variance % |
|-------------------|--------------------|---------------------------------|----------------------|---------------|---------------|
| Labour | 267.3 | 38.4 | 17.5 | 20.8 | 54% |
| Equipment | 853.6 | 194.3 | 225.6 | -31.4 | -16% |
| Contractors | 3775.1 | 767.2 | 547.5 | 219.7 | 29% |
| IT | 2.5 | 0 | 1.2 | -1.1 | -2283% |
| IPR Costs | 0 | 0 | 0 | 0 | 0 |
| Travel & Expenses | 29.7 | 4.3 | 1.9 | 2.4 | 55% |
| Payments to Users | 0 | 0 | 0 | 0 | 0 |
| Contingency | 451.5 | 451.5 | 0 | 451.5 | 100% |
| Decommissioning | 66.0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 5445.7 | 1455.6 | 793.7 | 661.9 | 45% |

In terms of the variances shown two line items are in excess of the 5% threshold and require explanation. The explanations are as follows:

- **Equipment:** Orders for equipment have been placed earlier than scheduled in order to reduce the risk of late delivery of individual components and to progress work on the Design& Build phase as soon as possible; and
- **IT:** The FSP spread the IT costs across 3 financial years: 1) 2017/218 included a £290 budget, 2) 2018/2019 included a £1,760 budget and 3) 2019/2020 included a £440 budget. Following award these costs have been re-distributed as the Project server that will be used to collate trial information and analyse trial data is required to host and analyse network data to aid the selection of sites for Method 1. This Server has been procured during the reporting period and work has started on site selection for Method 1.

6 Bank Account

The bank account statement for the project, for the reporting period is provided in a separate confidential Appendix.

7 Successful Delivery Reward Criteria (SDRC)

Table 4 details the status of each SDRC outlined in the Project Direction [Ref. 2]. No SDRC's were scheduled for delivery within the reporting period.

Please note that all SDRCs that are currently flagged as 'Not Started' were not planned on being underway at this point in the Project and so should be considered as on-schedule.

Table 4: SDRCs to be completed

| SDRC | Description | Due Date | Status |
|-------------|--|-----------------|---------------|
| SDRC 1 | Specification, Design and Factory Testing of the overall OpenLV Solution | 27/10/17 | Not Started |
| SDRC 2.1 | Community Engagement Plan & Interim Results of Assessing Market Potential (Methods 2 & 3) | 31/12/17 | Not Started |
| SDRC 2.2 | Identification of Target Networks (Method 1), Update of Assessing the Market Potential (Methods 2 & 3) and Detailed Trial Design for all Methods | 30/05/18 | Not Started |
| SDRC 3 | Learning from Deployment of the Overall OpenLV Solution & Standard Guidelines for Application Development | 01/02/19 | Not Started |
| SDRC 4 | Learning Generated from the OpenLV Project Trials for All Methods | 31/01/20 | Not Started |
| SDRC 5 | Knowledge Capture, Dissemination & Transferring the OpenLV Solution to Business as Usual | 30/04/20 | Not Started |

8 Learning Outcomes

8.1 Learning Outcomes

The high-level learning outcomes recorded in the Mobilise & Procure phase are as follows:

- **Mobilisation:** The approach of taking key members of staff from FSP development into the Project Team, from both WPD and EA Technology, has enabled the overall Project team to be mobilised quickly and efficiently;
- **Commercial:** Utilising the commercial learning from previous Low Carbon Network (LCN) Fund project(s), specifically templates from the My Electric Avenue Project, enabled the Principal Contract and Management & Delivery documents to be agreed by WPD and EA Technology 6 weeks after the publication of the Project Direction;
- **Commercial:** Utilising the Sub-Contract and Task Order templates from previous Low Carbon Network (LCN) Fund project(s), specifically templates from the My Electric Avenue Project, have enabled the swift development of contractual documents for all Project Suppliers;
- **Commercial:** Sub-Contracts and Task Orders that are used to flow down contractual requirements, based on NIC Governance, are not necessarily required for all Project Suppliers, for example, the Supplier for the ruggedised PCs that will be installed in Low Voltage substations. Providing 'simplified' commercial agreements, where applicable, enabled early order of hardware reducing technical and other risks, for example, with late delivery;
- **Commercial:** Stringent and professional approach to the Invitation To Tender process, for Project Supplier roles, guards against risk of accusation of undue process from unsuccessful respondents;
- **Commercial:** Tendering timescales were set in the Project Plan, however for some roles, contractual negotiations have taken longer than planned. This has not had any impact on the overall delivery schedule to date;
- **Commercial:** The Community Learning ITT was published, retracted and re-published. It is recommended that either one or both Project manager(s) from the DNO and/or Lead Supplier attend Expert Panel meetings at FSP stage. This will ensure that all the feedback received directly and in-directly is reflected in Supplier(s) scope of works;
- **Technical:** Timely provision of LV Network data from WPD utilising existing data sources either BaU systems and/or from previous LCN Fund projects has enabled EA Technology to start work earlier than scheduled on identifying network locations for Method 1. This maximises the investment put into existing data sources; and
- **Method 3, OpenLV Extensibility:** Logging interest from companies, following publication of the FSP and ITT's, has provided a list of over 20 interested parties in Method 3. This indicates good interest in the Project from the wider industry.

8.2 Learning Dissemination

At this early stage in the Project limited learning has been generated and therefore limited dissemination has been completed. The following dissemination points are relevant:

- A Press Release providing information about the OpenLV Project was published on the WPD website on 30th November 2016;
- The OpenLV Project has been added to the list of innovation projects on WPD's website;
- The OpenLV Project has been added to the list of innovation projects on EA Technology's website. This was also shared on LinkedIn;
- A Press Release providing information about the OpenLV Project was published on the Lucy Electric website post award. This was also shared on LinkedIn;
- Following the publication of the FSP and the ITT's over 20 organisations have shown interest in Method 3;
- An overview of the OpenLV Project was provided to a representative of Scottish Power Energy Networks (SPEN) Innovation Team, by EA Technology, on 28th April;
- A presentation on OpenLV was delivered to 33 stakeholders as part of a Community Energy workshop in Birmingham on 1st June; and
- WPD are planning on presenting on the OpenLV Project at the National Infrastructure Forum on 13th June in London.

In addition, looking toward the next reporting period. The OpenLV Project will be covered in:

- WPD and EA Technology board meetings;
- WPD customer panel meetings;
- WPD innovation meetings; and
- WPD community energy workshops.

9 Intellectual Property Rights

9.1 Overall IP Statement

Table 5 outlines the details of the Background IP that will be brought to the Project and the Foreground IP that either will or could be generated on the Project.

Table 5: IP Summary

| IP No. | Description | Detail of IP | IP Type | IP Created By | IP Assignment |
|--------|--|--|------------|-------------------------|----------------------------|
| IP001 | Core LV-CAP™ system | Comprising the operating system image including Internal API, 3rd Party Developer API (v1.0) and the following containers: MQTT, Data Storage, Sensor Reads, Container Manager | Background | EA Technology & Nortech | EA Technology ¹ |
| IP002 | LV-CAP™ Comms. Container (Method 1) | Comprising of the Nortech iHost comms. container | Background | Nortech | Nortech |
| IP003 | iHost (Application Deployment Server Method 1) | Pre-Existing iHost platform | Background | Nortech | Nortech |
| IP004 | Container Management from iHost (Method 1) | Development of iHost capability to manage & deploy container | Background | Nortech | Nortech |
| IP005 | Cloud Based Hosted Platform (Method 2 and 3) | Existing Lucy Electric GridKey platform | Background | Lucy Electric GridKey | Lucy Electric GridKey |
| IP006 | LV-CAP™ Comms. Container (Methods 2 and 3) | Comprising of the Lucy Electric GridKey communication container | Background | Lucy Electric GridKey | Lucy Electric GridKey |

¹ Pre-existing commercial agreement in place between EA Technology and Nortech for this purpose

| | | | | | |
|-------|---|---|------------------------|--|------------------------------|
| IP007 | WeatherSense™ Transformer RTTR (DTR App) | EA Technology implementation of University of Manchester algorithm | Background | EA Technology & University of Manchester | TBC |
| IP008 | LoadSense the LV Control App for Method 1 (Network Meshing App) | Application developed on the Project to enable automation of LV network meshing | Foreground | Western Power Distribution (via EA Technology) | GB DNOs |
| IP009 | 3rd Party App Containers (Methods 2 and 3) | To be defined on the Project | To Be Confirmed | Dependent upon funding mechanism | App developer / funder |
| IP010 | LV-CAP™ API v2.0 | A second iteration of the API to allow third party Apps to be created on the LV- CAP™ platform following learning from Methods 2 and 3 | Foreground | Western Power Distribution (via EA Technology) | GB DNOs |
| IP011 | Method 1 Communication Container | Development of the iHost communications container and iHost server to enable the wide scale deployment of LV- CAP™ for the OpenLV project. | Relevant Foreground | Nortech | Nortech |
| IP012 | GridKey LV Monitoring Equipment | Use of the Lucy Electric GridKey "substation monitoring equipment" as part of the overall OpenLV solution | Relevant Foreground | Lucy Electric GridKey | Lucy Electric GridKey |

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|-------|--------------------------------------|--|---------------------|-----------------------|-----------------------|
| IP013 | Method 2 & 3 Communication Container | Development of the Application container to enable communication between the LV-CAP™ platform and the Lucy Electric GridKey platform (allowing extraction of data through network monitoring and system updates) | Relevant Foreground | Lucy Electric GridKey | Lucy Electric GridKey |
| IP014 | Alvin Hardware | Use of the EA Technology Alvin platform as part of the overall OpenLV solution | Relevant Background | EA Technology | EA Technology |
| IP015 | Alvin Communication Protocols | Development of the Alvin communication protocols into the LV-CAP™ solution to enable communication links between Alvin devices. | Relevant Foreground | EA Technology | EA Technology |

9.2 Current Reporting Period

There is no IPR generated or registered during this reporting period.

9.3 Overall IP Statement

It is not expected that we will register any IPR in the next reporting period.

10 Risk Management

Our risk management objectives are to:

- Ensure that risk management is clearly and consistently integrated into the project management activities and evidenced through the project documentation;
- Comply with WPDs and EA Technology’s risk management processes and any governance requirements as specified by Ofgem; and
- Anticipate and respond to changing project requirements.

These objectives will be achieved by:

- ✓ Defining the roles, responsibilities and reporting lines within the team for risk management;
- ✓ Including risk management issues when writing reports and considering decisions;
- ✓ Maintaining a risk register;
- ✓ Communicating risks and ensuring suitable training and supervision is provided;
- ✓ Preparing mitigation action plans;
- ✓ Preparing contingency action plans; and
- ✓ Regular monitoring and updating of risks and the risk controls.

10.1 Current Risks

The OpenLV risk register is a live document and is updated regularly. A total of 21 risks have been raised in the reporting period, 9 of which have been closed, leaving a total of 12 live risks. Mitigation action plans are identified when raising a risk and the appropriate steps then taken to ensure risks do not become issues wherever possible.

Of the 12 live risks none are ranked as severe, 1 is ranked as major, 9 are ranked as moderate and 2 are ranked as minor. Table 6 details the top five current risks. For each of these, a mitigation action plan has been identified and the progress of these are tracked and reported.

Table 6: Top five current risks (by rating)

| Details of the Risk | Risk Rating | Mitigation Action Plan | Progress |
|--|-------------|--|-------------|
| There is a risk that the integration of LV-CAP with generic hardware and the use of Alvin switching devices is more complex than expected and delays the OpenLV programme. | Major | Written and signed agreement of the OpenLV solution requirement by all departments within EA Technology. | In Progress |

| | | | |
|---|----------|--|-------------|
| Supplier(s) challenge the ITT process causing a delay in awarding packages of works to potential Suppliers. | Moderate | EA Technology will take legal advice and provide a formal written response to any Supplier that challenges the ITT process. | In Progress |
| There is a risk that the development of LV-CAP from the InnovateUK project is delayed. | Moderate | Regular contact with the InnovateUk project team, agreement of timescales for OpenLV implementation and building in tolerance to enable some slippage in dates if the risk is realised. | In Progress |
| There is a risk that the development of LV-CAP from the InnovateUK project does not provide the OpenLV project with the functionality that is required. | Moderate | Written agreement of the OpenLV requirements that are agreed by the InnovateUk project team, agreement of timescales for OpenLV implementation and building in tolerance to enable some slippage in dates if the risk is realised. | In Progress |
| There is a risk that the development of WeatherSense from the InnovateUK project does not provide the OpenLV project with the functionality that is required. | Moderate | Written agreement of the OpenLV requirements that are agreed by the InnovateUk project team, agreement of timescales for OpenLV implementation and building in tolerance to enable some slippage in dates if the risk is realised. | In Progress |

11 Accuracy Assurance Statement

This report has been prepared by: 1) the WPD Project Manager (Mark Dale) and 2) the EA Technology Project Manager (Richard Potter), recommended by: 1) the WPD Future Networks Manager (Roger Hey) and 2) the EA Technology Delivery Manager (Dan Hollingworth) and approved by: 1) the WPD Regulatory and Government Affairs Manager (Alison Sleightholm) and 2) the EA Technology Smart Interventions Director (Dave A Roberts). Both WPD and EA Technology confirm that this report has been produced, reviewed and approved following our quality assurance process for external documents and reports.

12 References

1. OpenLV Full Submission Pro-forma:
https://www.westernpowerinnovation.co.uk/Document-library/2016/OpenLV/NON-CONFIDENTIAL-OpenLV-NIC-Bid-2016-WPD_EN_NIC_02.aspx
2. OpenLV Project Direction:
<https://www.westernpowerinnovation.co.uk/Document-library/2016/OpenLV/Open-LV-Formal-project-Direction.aspx>

