INDEPENDENT REVIEW OF THE MY ELECTRIC AVENUE (I²EV) PROJECT

SDRC 9.4 – VOLUME 3
JULY 2013 – DECEMBER 2015

AUTHORED BY
### DOCUMENT ID | DOCUMENT TITLE | T  | C |  
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Summary report</strong></td>
<td>An 18 page report summarising the outputs of the My Electric Avenue Project.</td>
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<tr>
<td><strong>High level summary report</strong></td>
<td>A four page, high level summary of the My Electric Avenue Project outputs.</td>
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<tr>
<td><strong>SDRC 9.1.1</strong></td>
<td>A report outlining key areas of learning and associated recommendations arising from the experience of a third party leading a Tier 2 bid.</td>
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<tr>
<td><strong>SDRC 9.2.1</strong></td>
<td>The Management &amp; Delivery Document created as part of the Novel Commercial Arrangement, published in support of SDRC 9.2.1.</td>
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<tr>
<td><strong>SDRC 9.2.1</strong></td>
<td>This Principal Contract Template download remains available for reference purposes only, having been superseded by SDRC 9.2.3, an updated contract template incorporating the learning identified throughout Project Delivery.</td>
<td></td>
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</tr>
<tr>
<td><strong>SDRC 9.2.1</strong></td>
<td>The Partner / Supplier Task Order Template (PDF), created as part of the Novel Commercial Arrangement, published in support of SDRC 9.2.1 period.</td>
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<td><strong>SDRC 9.2.1</strong></td>
<td>The Partner / Supplier Task Order Template (MS Word) created as part of the Novel Commercial Arrangement, published in support of SDRC 9.2.1 period.</td>
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<tr>
<td><strong>SDRC 9.2 &amp; 9.3</strong></td>
<td>An SDRC report combining the planned relating to the contractual arrangements implemented to enable management of the Project by EA Technology on behalf of SEPD, and an assessment of how effective those arrangements were.</td>
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<tr>
<td><strong>SDRC 9.2.3</strong></td>
<td>The updated 'Principal Contract Template' incorporating the learning from the Project following use of the initially developed commercial agreement.</td>
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<tr>
<td><strong>SDRC 9.4</strong></td>
<td>Independent Project Reviews undertaken by Ricardo at Months 6 &amp; 12, and the Project Team’s responses.</td>
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<td><strong>SDRC 9.4</strong></td>
<td>Independent Project Reviews undertaken by Ricardo at Months 18 &amp; 24, and the Project Team’s responses.</td>
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<tr>
<td><strong>SDRC 9.4</strong></td>
<td>Independent Project Reviews undertaken by Ricardo at Months 30 &amp; 36, and the Project Team’s responses.</td>
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<tr>
<td><strong>SDRC 9.5</strong></td>
<td>Volume 1 Confirmation of successfully achieving the SDRC target to recruit 3 Cluster Groups to Participate in the My Electric Avenue Project. In reality, 4 clusters were recruited by this point.</td>
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<tr>
<td><strong>SDRC 9.5</strong></td>
<td>Volume 2 Confirmation of successfully achieving the SDRC target to recruit 5 Cluster Groups to Participate in the My Electric Avenue Project.</td>
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</tr>
<tr>
<td><strong>SDRC 9.5</strong></td>
<td>Volume 3 Confirmation of successful recruitment of participants for all Technical Trial Clusters.</td>
<td></td>
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<tr>
<td><strong>SDRC 9.5</strong></td>
<td>Volume 4 Confirmation that all funding required for the establishment of Project Technical Clusters had been allocated.</td>
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<tr>
<td><strong>SDRC 9.5</strong></td>
<td>Volume 5 Confirmation of successful recruitment of the necessary number of participants to the Project Social Trials.</td>
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<tr>
<td><strong>SDRC 9.6</strong></td>
<td>A report assessing the public acceptance to Demand Side Response of EVs using the Esprit Type Technology.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SDRC 9.7</strong></td>
<td>An assessment of Esprit integration; Voltage Variance: The impact of EVs; Impact of Esprit on heat pumps; Impact of Esprit on cable thermal ratings.</td>
<td></td>
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</tr>
<tr>
<td><strong>SDRC 9.8</strong></td>
<td>Volume 1 An assessment of how much headroom this sort of technical solution would yield, considering different network topologies and load types.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SDRC 9.8</strong></td>
<td>Volume 2 This report sets out the My Electric Avenue project’s learning on the use of Powerline Carrier (PLC) communication for Low Voltage (LV) network.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SDRC 9.8</strong></td>
<td>Volume 3 Work Activity 1 - Evaluation of the Initial Trial. Report for University of Manchester Deliverables 1.1, 1.2 and 1.3. Low Voltage Networks. Report for University of Manchester Deliverables 2.1, 2.2 and 2.3. Work Activity 3 - Model Validation and Data Analysis. Report for University of Manchester Deliverables 3.1, 3.2, 3.3 and 3.4.</td>
<td></td>
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</tr>
<tr>
<td><strong>Technology White Paper</strong></td>
<td>This White Paper sets out EA Technology’s vision for Esprit, based on the key findings from My Electric Avenue.</td>
<td></td>
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<tr>
<td><strong>Project Progress Reports</strong></td>
<td>The suite of Project Progress Reports, published at six monthly intervals through the duration of the My Electric Avenue Project.</td>
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</tbody>
</table>
INTRODUCTION

THE PROJECT ‘INNOVATION-SQUARED: MANAGING UNCONSTRAINED EV CONNECTIONS’ (I²EV), ALSO KNOWN AS ‘MY ELECTRIC AVENUE’, TRIALLED A NEW TECHNOLOGY FOR MANAGING THE SUPPLY OF ELECTRICITY TO ELECTRIC VEHICLES CONNECTED TO A LOCAL DISTRIBUTION NETWORK.

The project is funded by Ofgem’s Low Carbon Networks Fund (LCN Fund) with Southern Electric Power Distribution, part of Scottish and Southern Electricity Networks (SSEN)*, as the host Distribution Network Operator (DNO). Unusually for a LCN Fund project, the project is being coordinated by a Third Part Lead Supplier, EA Technology. The other project partners are Northern Powergrid (DNO partner), Nissan (EV supplier), Fleetdrive Electric (EV rental programme management) and Zero Carbon Futures (charging point network developer).

Further support to the project is provided via subcontractors, which include the University of Manchester (network modelling and analysis), De Montfort University (socio-economic data gathering and analysis), Ricardo UK Ltd (independent review at 6 month intervals), Automotive Comms (media relations), Creative Concern (website and publicity material), and ANDtr (technology support).

The purpose of the I²EV (‘My Electric Avenue’) project is twofold:

Innovation 1 (commercial): Novel commercial arrangement

The project is delivered by a third party innovation technology provider (EA Technology), with the DNO (SSEN) ensuring the requirements of the LCN Fund and other obligations are met.

Innovation 2 (technical): New Technology trials

A trial of EA Technology’s Esprit technology for monitoring and controlling the supply of electricity to EVs connected to distribution networks.

This three-year project started in January 2013 and was completed in December 2015. Further information on the project can be found in the Full Submission Pro-forma, Ofgem’s letter on the Project Direction and the Management and Delivery document2.

Ricardo’s role in this project is to act as the Independent Reviewer, conducting periodic 6-monthly reviews of the project and the technology. The reviews includes recommendations on specific improvements and adaptations to working practices to be incorporated by the project team. The review reports form part of the project’s Successful Delivery Reward Criteria 9.4.1.

This document combines the reports produced by Ricardo UK Ltd for the My Electric Avenue Project Month 6 and Month 12 reviews. Each review was based upon key documents delivered to Ricardo prior to or for the purpose of the review; these were augmented with formal and informal discussions during project meetings and conference calls.

Ricardo has used RAG indicators (Red/Amber/Green) in this review report to provide a quick, visual key of the reviewers’ subjective opinion on the project and technology. A brief explanation of these indicators is provided in Table 1.

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*Scottish and Southern Electric Power Distribution (SSEPD) now operates under the trading name, Scottish and Southern Electricity Networks (SSEN), as of 6th September 2016.

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1. Information on the Low Carbon Networks Fund is available on Ofgem’s website: http://www.ofgem.gov.uk/Networks/ElecDist/ LCNFund/Pages/LCN Fund.aspx [Accessed 17 July 2013]

2. All of these documents are available to download from the My Electric Avenue website: http://myelectricavenue.info/ project-library [Accessed 17 July 2013]

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**TABLE 1: EXPLANATION OF RAG INDICATORS**

<table>
<thead>
<tr>
<th>RAG INDICATOR</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>The project is delivering to plan (time, quality, budget)</td>
</tr>
<tr>
<td></td>
<td>There are no major issues</td>
</tr>
<tr>
<td></td>
<td>All the objectives have been met</td>
</tr>
<tr>
<td></td>
<td>The deliverables are of high quality</td>
</tr>
<tr>
<td>Amber</td>
<td>The project is at risk of not delivering to plan (time, quality, budget)</td>
</tr>
<tr>
<td></td>
<td>There are issues / risks that will impact the project if not fixed</td>
</tr>
<tr>
<td></td>
<td>All the objectives have been met</td>
</tr>
<tr>
<td></td>
<td>The deliverables are of adequate quality</td>
</tr>
<tr>
<td>Red</td>
<td>The project is not delivering to plan (time, quality, budget)</td>
</tr>
<tr>
<td></td>
<td>There are issues / risks that are impacting the project right now</td>
</tr>
<tr>
<td></td>
<td>The objectives have not been met</td>
</tr>
<tr>
<td></td>
<td>The deliverables are of poor quality</td>
</tr>
</tbody>
</table>
1.0 MONTH 30 INDEPENDENT REVIEW

1.1 INDEPENDENT REVIEW

1.1.1 EXECUTIVE SUMMARY

The My Electric Avenue project is trialling a new technology, called Esprit, for managing the supply of electricity to electric vehicles connected to a local distribution network. This project, funded by Ofgem’s Tier 2 Low Carbon Networks (LCN) Fund, is led by EA Technology (Third Party Lead Supplier), with project partners Scottish and Southern Electricity Networks Limited (SSEN) (the host Distribution Network Operator), Northern Powergrid, Nissan, Fleetdrive Electric and Zero Carbon Futures. Further support is provided via subcontractors, which include the University of Manchester, De Montfort University, Ricardo UK Ltd, Automotive Comms, and Creative Concern.

This report is the fifth of the periodic six monthly Independent Reviews. It covers the Reviewer’s overall assessment of the project so far, and provides recommendations on specific improvements and adaptations to working practices to be incorporated by the project team.

The reporting period is 1 January 2015 to 30 June 2015, principally involving:

**Technical Trial**
- Installation of the Esprit Monitor Controller at Lyndhurst; continuation of data collection, analysis and visualisation; seeking to resolve further issues with the Esprit technology; further questionnaires, interviews and focus groups with the Technical Trial participants; delivery of SDRC 9.7.1 on an assessment of Esprit integration; and further network modelling analysis.

**Social Trial**
- Continuation of data collection from Nissan CARWINGS system; and continuation of issuing and collecting questionnaires from Social Trial participants.

**Project Management**
- Ongoing effective project management and coordination of project partner activities; continuing to respond to requests for further information from Ofgem regarding the Change Request.

The review is based upon key documents delivered to Ricardo prior to or for the purpose of the review, and has been augmented with formal and informal discussions during project meetings and conference calls with EA Technology.

During this reporting period the roll-out of the Esprit technology for the Technical Trial was completed with the final installation of a pole-mounted Esprit Monitor Controller at Lyndhurst. Esprit “curtailment mode” has been observed in all Technical Trial clusters. The data gathered shows when this curtailment has impacted on EV charging.

Some Technical Trial participants have contacted the MEA team when charging curtailment has impacted their lives negatively. Participants in the Your Homes Newcastle cluster have been particularly vocal. Such interaction with the Technical Trial participants has prompted further investigation, experimentation and analysis, providing more learning about the Esprit technology.

Data collection, transfer, storage and checking has been improved during this reporting period. Weekly automated data checks and data visualisation tools have helped the team quickly identify issues with data collection or the Esprit technology. This has enabled the team to respond promptly to issues, such as installing DIN Rail monitoring for phase current data or upgrading the Esprit software.

**OVERALL ASSESSMENT OF PROJECT SO FAR**

What is the reviewers’ overall assessment of the project so far?

<table>
<thead>
<tr>
<th>Question</th>
<th>Assessment</th>
</tr>
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<tbody>
<tr>
<td>Have the key objectives for the period been achieved?</td>
<td>GOOD</td>
</tr>
<tr>
<td>Has the project made satisfactory progress towards meeting the overall project objectives?</td>
<td>YES</td>
</tr>
<tr>
<td>Has each Task made satisfactory progress against the Plan of Works?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the project management been performed as required?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the collaboration between project partners and sub-contractors been effective?</td>
<td>YES</td>
</tr>
<tr>
<td>Is there evidence of underperforming project partners or sub-contracts, lack of commitment or change in interest?</td>
<td>NO</td>
</tr>
<tr>
<td>Have the project partners adequately publicised the project to raise awareness of the project with the general public?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the project partners adequately disseminated results and learning from the project?</td>
<td>YES</td>
</tr>
</tbody>
</table>

**HIGHLIGHTED STRENGTHS**

Good teamwork and management of customer relationships continue to be key strengths of the My Electric Avenue team. Preparation for decommissioning is at an advanced stage. The plans show the project team is applying learning from the previous customer engagement activities.

Dissemination of project learning continues to be strong. Two more documents have been added to the “Top 10 Tips” series published on the project website, covering tips for data monitoring and tips for database management. Webinars are a good method for disseminating results to targeted audiences.

**RECOMMENDATIONS**

The Reviewers recommend the following areas for improvement in the next reporting period:

- Ensure appropriate peer review processes are followed in all activities related to handling and analysing the data from the Technical and Social Trials.
- Prepare a contingency plan for the decommissioning process.
- Ofgem must make a decision regarding the Change Request to the Project Direction by 31 August 2015 to ensure the MEA team has sufficient time remaining in the project to utilise the remaining project funds.
- The Reviewers also made recommendations that are relevant to the next phase of development of the Esprit technology, or to future technology trial projects:
  - Review and revise the Esprit logic, incorporating learning from the project.
  - Maintain a “Technology Watch” on the development of plug-in vehicles and EV charging points.

In future technology trial projects, include a “requirements capture” activity for data analysis, data collection and data storage, and define the Quality Plan for the project’s data software tools.

Two webinars have been held so far, with two more planned in the next reporting period. A recording of the webinar by the University of Manchester is available on the project website.

Automated weekly data checks of the raw data collected from the Technical and Social Trials has enabled the MEA project team to identify gaps in the collected data and highlighted issues to be resolved. For example, a new issue regarding obtaining data from Nissan CARWINGS system has been identified during this reporting period.

If the vehicle does not have a mobile phone signal at the time of uploading the data, the data is lost as it is not transferred to Nissan’s central server. This could have implications for Nissan and for future technology demonstration projects reliant on data from the vehicle.
1.1.2 SCOPE OF THIS INDEPENDENT REVIEW

The scope of this Independent Review concerns project activities conducted during M25 – M30. Due to timing constraints for completing SDRC 9.4.1.53, the M30 Independent Review has been conducted in June 2015 rather than in early July 2015. As a consequence, some project activities from M30 have not been included.

During this reporting period the project focused upon:

**Technical Trial**
- Completing SDRC 9.7.1 – An Assessment of ‘Esprit’ Integration.
- Installing the Monitor Controller at Lyndhurst.
- Continuing data collection from the Monitor Controllers via iRost for ten Technical Trial clusters.
- Continuing data collection from Nissan CARWINGS.
- Continuing development of a bespoke database for collating, processing and storing the various data sets from the Technical Trial and Social Trial, and associated tools for accessing, checking and processing this raw data.
- Continuing data checking and data analysis from Technical and Social Trials.
- Responding to further issues associated with maintaining communication between the MC and ICBS within the PLC network, and developing solutions to remedy the problems.
- Continuing data collection for Task 6 via questionnaires, interviews and focus groups with the Technical Trial participants (De Montfort University, Task 6).
- Delivery of Task 7 Deliverables 4.1 and 4.2 from the University of Manchester’s system modelling (Task 7).
- Continuing to manage the relationships with the Technical Trial participants.
- Preparing for the decommissioning of Esprit technology.

**Social Trial**
- Continuing data collection for Task 6 via questionnaires with the Social Trial participants (De Montfort University, Task 6).
- Continuing data collection from Nissan CARWINGS.

**Project Management**
- Ongoing effective project management and coordination of project partner activities.
- Continuing to respond to Ofgem’s requests for further information and clarification with regard to the Change Request.

**Novel Commercial Arrangement**
- Beginning to prepare the next deliverables associated with the Novel Commercial Arrangement, which are scheduled for October 2015 (SDRC 9.2.2, SDRC 9.3.1, SDRC 9.3.2 and SDRC 9.3.3) and December 2015 (SDRC 9.2.3).

A summary of the participation of the project partners and subcontractors during the fifth six-month period is provided in Table 4 below. A description of the Tasks is provided in Appendix 1.

The scope of the M30 Independent Review also considers how the MEA project team has responded to recommendations made by the Reviewers in the previous reporting. For example, in the M24 Review the Reviewers made the following recommendations:
- Prepare and communicate the contingency plan to be implemented if there are further issues with Esprit that disrupt the Technology Trial.
- Review the MEA database requirements, ensuring all requirements captured have been suitably recorded and shared with the project partners and subcontractors.
- Identify the risks associated with data collection, analysis and the visualisation tools, and ensure appropriate mitigation controls are instigated. This applies to activities within Task 5 and Task 6.
- Consider modifying the Esprit system functionality to allow threshold settings to be changed remotely.
- Continue to improve document control, ensuring the previous recommendations are appropriately applied by all project partners and subcontractors.
- Use an appropriate file sharing system to share project documents among the project consortium.
- Consider carefully which documents to submit to the independent reviewers “for review” and “for information”.

In the M24 Independent Review the Reviewers specifically requested these items to be included in the M30 Independent Review:
- First draft of “SDRC 9.2.2 – Review of the contract put in place between SSEN and EA Technology”.
- Skeleton outline for “SDRC 9.3 – An assessment, based on direct experience, of how a third party can effectively manage delivery on innovative projects with a DNO, and whether this allows DNOs to take on more innovation projects”.
- Learning Log.
- A project team organisation chart with defined roles and responsibility for each team member.

The Independent Review is based on documentation submitted by EA Technology, information obtained from participation in the monthly project partner audio meetings and face-to-face project partner review meetings, additional documentation published on the project website, and the M30 Independent Review meeting.

EA Technology has submitted 31 documents for the Month 30 Independent Review, which are listed in Table 2 below. The first document, a copy of the 9th Project Six Monthly Progress Report as sent to SSEN for review, was sent to Ricardo by email on 27 May 2015. Twenty-one documents were sent to Ricardo via Dropbox on 28 May 2015. Five documents, including the updated and approved 5th Project Six Monthly Progress Report, were sent to Ricardo via email on 17 June 2015. Four documents relating to SDRC 9.1.1 were sent to Ricardo via email on 26 June 2015, in anticipation of the discussions to be held during the M30 Review Meeting.

In addition to the documents submitted directly by EA Technology, Ricardo downloaded three documents from the project website, and has included these documents in the M30 Independent Review. These documents are listed in Table 3.

The Meeting Minutes from the monthly project partner audio meetings held during this reporting period have also been considered in the M30 Independent Review.

A review meeting with EA Technology was held on Wednesday 1 July 2015 at EA Technology, Capenhurst. The meeting attendees were Julian Dunn and Jane Patterson from Ricardo, and Tim Butler, Becky Lees and James Cross from EA Technology.

During the M30 Review Meeting, EA Technology shared the project’s Learning Log and demonstrated the MEA data visualisation tools, such as the dashboard.

**TABLE 2: DOCUMENTS SUPPLIED BY EA TECHNOLOGY TO RICARDO FOR THE M30 INDEPENDENT REVIEW**

| DOCUMENT NUMBER | DOCUMENT TITLE | VERSION | DELIVERABLE | LEAD AUTHOR | INTERACTION | ISSUE DATE | PUBLIC ACCESS?
<table>
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<tr>
<td>Task 0: Novel Commercial Arrangement</td>
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<tr>
<td>#1</td>
<td>IFEV (My Electric Avenue) Principal Contract Review</td>
<td>SDRC 9.2.2</td>
<td>EA Technology</td>
<td>Draft</td>
<td>14 May 2015</td>
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<tr>
<td>#2</td>
<td>MEMO – Task 0 – SDRC 9.3.1 Planning Summary</td>
<td>SDRC 9.3.1</td>
<td>EA Technology</td>
<td>Internal Memo</td>
<td>7 May 2015</td>
<td>NO</td>
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</table>

| Task 3: Integration of Technology with Charging Points |
| #1 | Successful Delivery Reward Criteria 9.7.1 – An Assessment of ‘Esprit’ Integration | SDRC 9.7.1 | EA Technology | Issue 1 | 13 May 2015 | NO |
| #2 | MEMO – Summary of Esprit Modifications | – | EA Technology | Internal Memo | 27 May 2015 | NO |
| #3 | Successful Delivery Reward Criteria 9.7.1 – An Assessment of ‘Esprit’ Integration | SDRC 9.7.1 | EA Technology | Issue 2 | 15 June 2015 | NO |

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3. 30 Month Independent Review
4. A review of the Esprit technology and its performance against competition has not been included in this Independent Review.
### Task 4: Cluster Establishment / Installation of Equipment

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Document Title</th>
<th>Version</th>
<th>Issue Date</th>
<th>Public Domain</th>
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<tr>
<td>#5</td>
<td>Voltage Variance: the Impact of Electric Vehicles</td>
<td>Issue 4</td>
<td>26 June 2015</td>
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<td>#6</td>
<td>Impact of Esprit on Cable Thermal Ratings</td>
<td>Issue 3</td>
<td>12 June 2015</td>
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### Task 5: Monitoring of the trials

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<th>Version</th>
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<th>Public Domain</th>
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<tbody>
<tr>
<td>#1</td>
<td>Task 5 – Summary of network data and data from re-installed ICBs – January 2015</td>
<td>1.3</td>
<td>20 January 2015</td>
<td>NO</td>
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<tr>
<td>#2</td>
<td>MEMO – Network monitoring monthly update February 2015</td>
<td>Internal Memo</td>
<td>16 February 2015</td>
<td>NO</td>
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<tr>
<td>#3</td>
<td>MEMO – Network monitoring monthly update March 2015</td>
<td>Internal Memo</td>
<td>11 March 2015</td>
<td>NO</td>
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<tr>
<td>#4</td>
<td>MEMO – Network monitoring monthly update April 2015</td>
<td>Internal Memo</td>
<td>9 April 2015</td>
<td>NO</td>
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<tr>
<td>#5</td>
<td>MEMO – Network monitoring monthly update April 2015</td>
<td>Internal Memo</td>
<td>15 May 2015</td>
<td>NO</td>
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<td>#6</td>
<td>MEMO – Automatic Database Error Checking</td>
<td>Internal Memo</td>
<td>13 April 2015</td>
<td>NO</td>
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<td>#7</td>
<td>MEMO – Summary of MEA Database Tools</td>
<td>Internal Memo</td>
<td>27 May 2015</td>
<td>NO</td>
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<td>#8</td>
<td>86002_5 - My Electric Avenue – Stage 3 Specification</td>
<td>Work-in-Progress</td>
<td>October 2014 / 16 February 2015</td>
<td>NO</td>
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<td>#9</td>
<td>MEA database (SQL) for monitored data – Guide</td>
<td>0.4</td>
<td>16 June 2015</td>
<td>NO</td>
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<tr>
<td>#10</td>
<td>My Electric Avenue Dashboard Documentation</td>
<td>6</td>
<td>1 June 2015</td>
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### Task 6: Trial Participant Interviews

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Document Title</th>
<th>Version</th>
<th>Issue Date</th>
<th>Public Domain</th>
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<tbody>
<tr>
<td>#1</td>
<td>De Montfort University SDRC Report Schedule</td>
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<td>?</td>
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<td>#2</td>
<td>Social Research</td>
<td>De Montfort University</td>
<td>Internal</td>
<td>?</td>
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Note:
No documents were provided for review or for information regarding these tasks:

**Task 1**
- Initial background – evaluation of initial trial (task superseded).

**Task 2**
- Customer Engagement (task completed in previous reporting periods).

SDRC 9.7.1 (Task 3) contains results from Task 8 – Consultation with EV manufacturers.

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6. The title provided for this document is incorrect, since it presents the network monitoring update for May 2015, not April 2015

7. Note: This document was included in the M24 Independent Review
### Task 9: Project & Regulatory Recommendations

**#1 SDRC 9.4.1 – 24 Month Independent Review**
- **Author Organization:** EA Technology
- **Version:** 1.1
- **Issue Date:** January 2015
- **Public Domain:** Yes

### Task 10 - Dissemination

**#1 Top 10 tips for data monitoring**
- **Author:** EA Technology
- **Version:** v0.1
- **Issue Date:** April 2015
- **Public Domain:** Yes

**#2 Top 10 tips for database management**
- **Author:** EA Technology
- **Version:** v0.2
- **Issue Date:** April 2015
- **Public Domain:** Yes

### Task 11: Project Management

**#6 Minutes - My Electric Avenue (lEV) – Partner Update Meeting – 11 February 2015**
- **Author:** EA Technology
- **Public Domain:** No

**#7 Minutes - My Electric Avenue (lEV) – Partner Update Meeting – 11 March 2015**
- **Author:** EA Technology
- **Public Domain:** No

**#8 Minutes - My Electric Avenue (lEV) – Partner Update Meeting – 8 April 2015**
- **Author:** EA Technology
- **Public Domain:** No

**#9 Minutes - My Electric Avenue (lEV) – Partner Update Meeting – 10 June 2015**
- **Author:** EA Technology
- **Public Domain:** No

### TABLE 3: ADDITIONAL DOCUMENTS CONSIDERED BY RICARDO DURING THE M30 INDEPENDENT REVIEW

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Document Title</th>
<th>Deliverable Reference</th>
<th>Author Organization</th>
<th>Version</th>
<th>Issue Date</th>
<th>Public Domain?</th>
</tr>
</thead>
</table>
| Task 9: Project & Regulatory Recommendations
#1 SDRC 9.4.1 – 24 Month Independent Review | SDRC 9.4.1 | EA Technology | 1.1 | January 2015 | YES |
| Task 10 - Dissemination
#1 Top 10 tips for data monitoring | – | EA Technology | v0.1 | April 2015 | YES |
| #2 Top 10 tips for database management | – | EA Technology | v0.2 | April 2015 | YES |

### TABLE 4: PARTICIPATION OF PROJECT PARTNERS AND SUBCONTRACTORS DURING THIS REPORTING PERIOD

<table>
<thead>
<tr>
<th>Project Partners / Subcontractors</th>
<th>Tasks</th>
<th>Comments on Key Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 SCOTTISH AND SOUTHERN ELECTRICITY NETWORKS PLC</td>
<td>✓ – ✓ – ✓ ✓ – – ✓ ✓ ✓</td>
<td>Responding to requests for further information from Ofgem regarding Change Request</td>
</tr>
<tr>
<td>2 EA TECHNOLOGY LIMITED</td>
<td>✓ – ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Programme management and consortium coordination</td>
</tr>
<tr>
<td>3a NISSAN MOTOR LIMITED GB</td>
<td>– – – – ✓ – – – – – –</td>
<td>Provision of Nissan LEAFs for trial participants</td>
</tr>
<tr>
<td>3b NISSAN INTERNATIONAL SA</td>
<td>– – – – – ✓ – – – – – –</td>
<td>Providing access to the Nissan LEAF Advanced Processing Interface (API) for data recording</td>
</tr>
<tr>
<td>4 NORTHERN POWERGRID HOLDINGS</td>
<td>– – – – ✓ – – – – – –</td>
<td>Continued support regarding Technical Trial clusters in Northern Powergrid region</td>
</tr>
<tr>
<td>5 ZERO CARBON FUTURES</td>
<td>– – ✓ – ✓ ✓ ✓ – – ✓</td>
<td>Managing relationships with the trial participants, and responding to issues with the Esprit technology and EVs</td>
</tr>
<tr>
<td>6 FLEETDRIVE MANAGEMENT LTD</td>
<td>– – ✓ – ✓ ✓ ✓ – – ✓</td>
<td>Participating in project press events</td>
</tr>
<tr>
<td>7 PROMOTE DESIGN &amp; MARKETING LIMITED / AUTOMOTIVE COMMS</td>
<td>– – – – – ✓ – – – –</td>
<td>Arrangement and coordination of press releases and media events</td>
</tr>
<tr>
<td>8 DE MONTFORT UNIVERSITY</td>
<td>– – – – – – ✓ – – –</td>
<td>Issuing questionnaires to trial participants for both Technical and Social Trials</td>
</tr>
</tbody>
</table>

**Notes:**
- **I²EV:** Intelligent Integrated Systems and Services for Electric Vehicles
- **LEAF:** Light Electric Automotive Fuel
- **API:** Advanced Processing Interface
### Project Partners / Subcontractors

<table>
<thead>
<tr>
<th>Tasks</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tr>
</tbody>
</table>

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### Comments on Key Activities

1. Task 1 has effectively been superseded by other project activities.
2. According to the original project plan, Task 2 should have finished once recruitment for the Technical and Social Trials was completed. However, the project team have found that customer engagement has continued throughout the project for two reasons. First, the project is still receiving some “registrations of interest” from people who would like to take part in the project. This was unexpected, given the clear messages on the project website that applications for participants is closed. Secondly, the project team has continued to engage with the Technical and Social Trial participants to maintain good relationships during the trials. Current activities include decommissioning and planning the “Plugged In” Street Party in September 2015.

Note concerning appointment of installation subcontractors:

The Esprit system is supplied to the My Electric Avenue project by EA Technology Development, a separate division of EA Technology. EA Technology Development source components and hardware for the Esprit system from Esprit. The development of the Esprit system is not part of the My Electric Avenue project.

EA Technology is responsible for the installation of the Monitor Controllers at the cluster substations, working in close collaboration with SSE and Northern Powergrid. For the clusters located in SSE areas, installation was subcontracted to SSE Contracting, with the exception of overhead line work, which has different training requirements (i.e. Lyndhurst the Northern Powergrid area, this activity was subcontracted to IDEC).

Zero Carbon Futures is the project partner responsible for the installation and servicing of the charging points for all clusters in the Technical Trial. This includes installation of the Esprit Intelligent Control Box (ICB) connected to the charging point. Zero Carbon Futures has subcontracted this activity to SSE Consulting, following a formal tender process.

### 1.1.3 Overall Assessment

**What is the reviewers’ overall assessment of the project so far?**

The roll-out of the Esprit technology for the Technical Trial was completed in January 2015, with the installation of the pole-mounted Monitor Controller at Lyndhurst. The learning from this variation in MC installation has been included in SDRC 9.7.1.

The project has submitted a key deliverable related to the Technical and Social Trial clusters during this reporting period. The data gathered shows that the curve is that EV charging has impacted their lives negatively. Participants in the Your Home Newcastle cluster have been particularly vocal.

The learning from this variation in MC installation has been included in SDRC 9.7.1. The roll-out of the Esprit technology for the Technical Trial was completed in January 2015, with the installation of the pole-mounted Monitor Controller at Lyndhurst. The learning from this variation in MC installation has been included in SDRC 9.7.1.

The Technical and Social Trials are nearly complete. The lease periods for the Nissan LEAFs are due to finish during the next reporting period. The MEA team are preparing for decommissioning the Esprit system at each Technical Trial cluster. Several communications have already been sent to the Technical and Social Trial participants to remind them that the MEA Trials will be finishing over the next few months.

### 1716
— Request and justification of the variation of expenditure between project tasks and categories within the project.
— Request changes to the specific legal entity names with the Project Direction to match that named on the sub-contracts in the project.

Throughout the duration of the project, Ofgem have requested further information, clarification and changes to the Change Request. The MEA project team has responded to these requests in a timely manner. As a consequence of Ofgem’s indecision the MEA project team are unable to fully access all of the funds allocated to the project. This is impacting on the project plan for the final reporting period, and increasing the level of financial risk. Responding to Ofgem’s numerous requests for further information and clarification, has increased the administrative burden for the core project team. Such behaviour by the LCN funding body is considered by the Independent Reviewers to be unacceptable.

A decision by Ofgem is required by 31 August 2015 to ensure the MEA project has sufficient time remaining in the project to suitably utilise the remaining, allocated project funds.

1.1.4 PROGRESS TOWARDS OBJECTIVES

The overall project objectives, as stated in the Management & Delivery document, are divided into two categories – commercial and technical.

The commercial objectives of the I²EV project are to:
— Demonstrate delivery of a LCN Fund project by a non-DNO on behalf of a DNO.
— Develop a novel commercial arrangement.
— Enable all procurement related to the project activity to be managed by a non-DNO.
— Evaluate the extent to which third party delivery accelerates deployment of LCN Fund projects.

The technical objectives of the I²EV project are to:
— Demonstrate delivery of an EV charging point by a non-DNO on behalf of a DNO.
— Develop and trial the equipment to ascertain its ease of installation.
— Develop and trial the equipment to ascertain its ease of installation.
— Develop and trial the equipment to ascertain its ease of installation.
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The technical objectives of the I²EV project are to:
— Learn customer driving and charging habits and the implications for control via the Technology.
— Develop and trial the equipment to ascertain its ease of installation.
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Project Management
— Continue the regular project meetings and reviews, as outlined in the Management and Delivery Document.

There were no Commercial objectives for this six-month reporting period.

Note:
According to the original project plan, this reporting period should have included project deliverables from Task 6. However the delivery schedule for Task 6 was changed following delays in the Technical Trial resulting from the various issues with the Esprit technology. The revised delivery schedule for Task 6 is provided in the review documentation submitted for the M30 Independent Review.

HAVE THE KEY OBJECTIVES FOR THE PERIOD BEEN ACHIEVED?

YES

HAS THE PROJECT MADE SATISFACTORY PROGRESS TOWARDS MEETING THE OVERALL PROJECT OBJECTIVES?

The main deliverables for this reporting period, SDRC 9.7.1 and internal project deliverable Task 7 D4.1 and D4.2, have been completed to schedule. The project has continued to collect data from the Technical and Social Trials. The data is checked weekly to identify missing data or anomalies. Evidence has been provided of plans for decommissioning.

Since this is the penultimate reporting period, the focus is on progress towards meeting the overall objectives. During this reporting period, the My Electric Avenue project team has continued to demonstrate progress towards meeting the overall commercial objectives of the I²EV project:
— The My Electric Avenue project continues to demonstrate the delivery of a LCN Fund project by a non-DNO on behalf of a DNO. EA Technology, their project partners and subcontractors have demonstrated flexibility and agility in responding to the various challenges that the project has encountered. SSEN are expected to provide further commentary on the benefits of third party project delivery in the SDRC 9.3 deliverables.
— The MEA project team have begun their review of the novel commercial arrangement and related deliverables, which will be delivered in October and December 2015 (SDRC 9.2.2, SDRC 9.2.3, SDRC 9.3.1, SDRC 9.3.2, and SDRC 9.3.3).
— Procurement and installation activities for the Technical and Social Trials are now complete. EA Technology have begun preparations for decommissioning the trials, in line with the project plan, and in collaboration with Zero Carbon Futures and Fleetdrive Electric.

Commentary on the extent to which third party delivery accelerates deployment of LCN Fund projects will be provided in the final Independent Review.

Regarding the overall technical objectives, the MEA project has made the following progress:
— Continuation of data collection on customer driving and charging habits via iHost, CARWINGS, questionnaires, interviews and focus groups. The data collection from both the Technical Trial and Social Trial is nearly complete. Data analysis and processing has begun, and the results from this are expected to be delivered during the next reporting period. Some of the implications for the Esprit technology have already been discussed in SDRC 9.7.1.
— The run-out of the Esprit technology was completed at the beginning of this reporting period. Its ease of installation is discussed, in part, in SDRC 9.7.1. There may be further learning to be obtained from the decommissioning phase planned for the next reporting period.
— Integration of Esprit into EV charging points is discussed in SDRC 9.7.1. The next phase of development of the technology is likely to require further consideration of how Esprit can utilise existing and future attributes in charging points. However, this is outside of the scope of the current technology demonstration project.
— Some evidence has already been provided in SDRC 9.7.1 and in the 5th Project Six Month Progress Report regarding the suitability of different networks for the successful operation of Esprit. It appears that the EV charging curtailment may better be most appropriate for domestic networks, than for commercial networks with a flatter load profile. For such commercial networks, it may be better to integrate EV charging curtailment into a wider building energy management system. More evidence and discussion on the success of EV charging curtailment is expected to be provided in the final Independent Review.
— The MEA project team have begun to evaluate the swap off routines from the Technical Trial data. The results of the data analysis are expected to be made available for the next Independent Review.

SDRC 9.7.1 contains recommendations on the most appropriate length of time to switch off charging and how to cycle switches with references for battery management and customer preference and habits. The data and results presented meet the requirements of this project. However, the Reviewers recommend that EA Technology continue to discuss EV charging requirements with charging point OEMs, vehicle OEMs, battery suppliers and battery charger suppliers prior to developing the next generation of Esprit technology.
— Results on thermal capacity gain are expected to be delivered during the next reporting period.
1.5 Progress against work plan

Has each task made satisfactory progress against the plan of works?

**Task 0: Novel commercial arrangement**

YES

Begun preparation of next SDRCs from Task 0.

**Task 1: Initial background**

N/A

Superseded by other project tasks.

**Task 2: Customer engagement**

YES

Although the deliverables from Task 2 have been completed in previous reporting periods, Customer Engagement activities have continued during this reporting period. The MEA team has continued to manage the relationships with the Technical and Social Trial participants through regular newsletters, and contacting participants regarding missing CARWINGS data. The project has also been in contact with Technical Trial participants regarding decommissioning, which will occur during the next reporting period.

**Task 3: Integration of the technology with charging points**

YES

SDRC 9.7.1 from Task 3 completed.

**Task 4: Establishment of customer / cluster trials**

YES

MC installed in Lyndhurst cluster, thus completing the Esprit technology out for all Technical Trial clusters. Made good progress in preparing for decommissioning in August 2015.

**Task 5: Monitoring first trials**

YES

Continuation of data collection, data monitoring and developing tools for data processing.

**Task 6: Trial participant interviews**

YES

De Montfort University has made good progress collecting data from Technical and Social Trial participants. De Montfort University appears to be on-track for completing SDRC 9.6 by October 2015.

**Task 7: Modelling**

YES

The University of Manchester has completed the next internal project deliverables from Task 7 (D4.1 and D4.2).

**Task 8: Consultation with EU manufacturers: cycle times**

YES

Activities and results from Task 8 are provided in SDRC 9.7.1.

**Task 9: Project and regulatory recommendations and implementation**

NO COMMENT

This task concerns the periodic 6-monthly Independent Reviews, which is the subject of this report.

**Task 10: Dissemination**

YES

Dissemination activities continue, with MEA results presented at various events, seminars and conferences during this reporting period.

The My Electric Avenue project has organised two webinars during this reporting period, as a means of disseminating project results to targeted audiences. The next webinar is planned for July 2015.

**Task 11: Project management**

YES

EA Technology continue to hold regular project progress meetings with SSEN, project partners and subcontractors, as outlined in the Management and Delivery Documents. Ofgem have still not made a decision regarding the Change Request to Project Direction v1.10. EA Technology and SSEN have continued to respond to the various requests for further information in a timely manner.

**Task 12: Consultation with cycle times**

YES

Review the MEA database requirements, ensuring all requirements captured have been suitably recorded and shared with the project partners and subcontractors.

Identify the risks associated with data collection, analysis and the visualisation tools, and ensure appropriate mitigation controls are instigated. This applies to activities within Task 5 and Task 6.

Continue to improve document control, ensuring the previous recommendations are appropriately applied by all project partners and subcontractors.

Consider carefully which documents to submit to the independent reviewers “for review” and “for information”.

EA Technology also confirmed they would be unable to implement these recommendations within this reporting period:

- Consider modifying the Esprit system functionality to allow threshold settings to be changed remotely.
- It was not possible to modify the Esprit system functionality within the remaining duration of the trial. However, EA Technology will consider implementing this functionality into future generations of the technology.
- Use an appropriate file sharing system to share project documents among the project consortium.
- It would not be possible to implement a comprehensive file sharing system within the duration of the My Electric Avenue project.
- However, subsequent to submitting “SDRC 9.4.1 – 24 Month Independent Review”, the MEA project team decided to buy a licence for Microsoft SharePoint. All remaining project reports are now being prepared via SharePoint, which is managing document versions.

**Task 13: Project and implementation regulatory recommendations**

HAS THE PROJECT IMPLEMENTED THE RECOMMENDATIONS FROM THE PREVIOUS INDEPENDENT REVIEW?

YES

EA Technology’s response to the recommendations made during the M24 Independent Review are documented in “SDRC 9.4.1 – 24 Month Independent Review”. In this report, EA Technology confirmed their intention to implement these recommendations:

- Prepare and communicate the contingency plan to be implemented if there are further issues with Esprit that disrupt the Technology Trial.

Task 5 document “86002_5 – My Electric Avenue – Stage 3 Specification” provides evidence that EA Technology did revisit the requirements for the MEA database.

However, it is a cause of concern that the next stage in developing the MEA database (Stage 3) has proceeded from a draft specification document. Also, it is unclear if all aspects of the database functionality were considered during the requirements review.

Discussions with EA Technology confirmed that a review of requirements for data storage, processing and analysis was held internally. However the output from this requirements review was not shared with project partners.

EA Technology have identified nine Work Packages for data analysis to maximise learning from the Technical Trial. The scope for these Work Packages is either already defined or work-in-progress. EA Technology have submitted several requests to SSEN to release contingency funding for this additional experimentation and data analysis.

The updated Risk Register (Task 11 document #3) clearly shows that additional risks have been identified during this reporting period. The majority of the new risks registered relate to data collection and analysis, which is good to observe that several of the new risks have already been closed due to the completion of various project activities, such as importing a back catalogue of data into the MEA database.

**Document quality control** has improved over the duration of the My Electric Avenue project, especially with regard to MEA official documents and released reports. However, the Independent Reviewers continue to observe minor discrepancies in the document control information of the documents submitted for the M30 Independent Review. For example, inconsistencies between the date on the title page and the date in the version history table. However, this could be because the documents were early versions that have not yet been completed and formally released. If this is the case, there should be a suitable label added to such documents to alert the reader that the document is not yet in its final state.

The Independent Review process has evolved during the My Electric Avenue project. Identifying what should be included or excluded from the Independent Review continues to be an issue. The M24 Independent Review report produced by Ricardo (RD15-000001-4) included a list of what was expected to be included in the next review. In this report, a new chapter has been added for this list of topics for the next review (see Chapter 12).
1.1.10 HIGHLIGHTED STRENGTHS

Areas of strength observed in this reporting period include:

- Teamwork continues to be strong across the project consortium.
- Continued good management of customer relationships by EA Technology, Zero Carbon Futures and FleetDrive Electric, as evident from the response to complaints about excessive EV charging curtailment at Your Homes Newcastle.
- Dissemination and raising public awareness continues to be a strength for the My Electric Avenue project team, as evident from the increased number of media “hits”.
- “Top 10 Tips” series for disseminating project learning has continued to grow, with the addition of “Top 10 tips for data monitoring” and “Top 10 tips for database management” to the publications to download from the website.
- Use of webinars to disseminate focused project learning to targeted interest groups.
- The next report from the University of Manchester (Task 7 Deliverables 4.1 and 4.2) has demonstrated the same professional approach, logical structure and clear wording observed in the previous three reports. The results of the analysis conducted by UoM will have implications for the future development of Esprit and similar Demand-Side Response technologies.
- Preparation for decommissioning is at an advanced stage. The plans show the project team is applying learning from previous customer engagement activities, and their intention to continue to have good relationships with the participants of the Technical and Social Trials.
- Data collection, collation and checking has matured during this reporting period. Weekly data checks, aided by data visualisation tools, has allowed the team to identify gaps or missing data. This missing data has then been investigated to find the root cause. For example, identifying a new issue with obtaining data from Nissan CARWINGS system. If the vehicle does not have a mobile phone signal at the time of uploading the data, the data may be lost. This could have implications for Nissan and future technology demonstration projects reliant on data from the vehicle.

1.1.9 DISSEMINATION OF PROJECT LEARNING

<table>
<thead>
<tr>
<th>HAVE THE PROJECT PARTNERS ADEQUATELY PUBLICISED THE PROJECT TO RAISE AWARENESS OF THE PROJECT WITH THE GENERAL PUBLIC?</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAVE THE PROJECT PARTNERS ADEQUATELY DISSEMINATED RESULTS AND LEARNING FROM THE PROJECT?</td>
<td>YES</td>
</tr>
</tbody>
</table>

A summary of dissemination activities in this reporting period, along with planned activities for the next reporting period is provided in Sections 5.3, 5.4 and 5.5 of the 5th Project Six Monthly Progress Report. Additional information on project dissemination activities is available on the project website.

External dissemination activities for this reporting period have included:

- 26 January 2015: MEA Newsletter Issue 6
- 26 January 2015: MEA Press Release on Technical Trial results over winter
- 26 January 2015: MEA Press Release on project results from University of Manchester
- 24 February 2015: MEA webinar – EA Technology, with input from De Montfort University and University of Manchester
- 9 March 2015: Attendance at LowCVP Parliamentary Reception, London
- 12 March 2015: MEA presentation at SMMT EV Group meeting
- 15 April 2015: MEA Press Release about Nissan video of South Shields clusters, and other recent dissemination activities
- 15 April 2015: MEA Newsletter Issue 7
- 15 April 2015: MEA Press Release on upcoming MEA papers at CIRED on 15-18 June 2015, in Lyon, France
- 15 April 2015: MEA Press Release on experience at Your Homes Newcastle
- 15 April 2015: MEA Press Release to advertise the publication of the next two documents in the “Top 10 Tips” series

The MEA team would like to arrange more dissemination activities during the final six months of the project, such as a final project event. However, the MEA team are unable to proceed with planning these dissemination activities until Ofgem have made a decision regarding the Change Request to Project Direction. There is a high risk that the opportunity for further dissemination will be lost, unless Ofgem make a decision regarding the Change Request by 31 August 2015. External dissemination activities planned for the next reporting period include:

- 6-7 May 2015: MEA presentation at All Energy, Glasgow, Scotland
- 19 May 2015: MEA presentation at IMechE event
- 27 May 2015: MEA webinar – University of Manchester
- 29 May 2015: SSEN presentation on LCN Fund projects to techUK members in London
- 12 June 2015: MEA presentation at Cholmondeley Pageant of Power
- 17 June 2015: MEA poster presentation at CIRED 23rd International Conference and Exhibition
- 24 June 2015: Panel discussion at LowCVP Annual Conference

1.1.8 IMPLEMENTATION OF THE PROJECT

<table>
<thead>
<tr>
<th>HAS THE PROJECT MANAGEMENT BEEN PERFORMED AS REQUIRED?</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAS THE COLLABORATION BETWEEN PROJECT PARTNERS AND SUB-CONTRACTORS BEEN EFFECTIVE?</td>
<td>YES</td>
</tr>
</tbody>
</table>

The working relationships between the main project partners and subcontractors continues to be good.

IS THERE EVIDENCE OF UNDERPERFORMING PROJECT PARTNERS OR SUB-CONTRACTORS, LACK OF COMMITMENT OR CHANGE IN INTEREST?

There is no evidence of underperforming project partners in the documentation supplied for this review.

SDRC 9.1.4A - MONTH 24 INDEPENDENT REVIEW REPORT

No comment.

SDRC 9.1.4B - REPORT IN RESPONSE TO MONTH 24 INDEPENDENT REVIEW

No comment.

SDRC 9.7.1 - TECHNOLOGY INTEGRATION ASSESSMENT REPORT

SDRC 9.7.1 has been completed to schedule. The learning captured in this report is highly relevant to the future development and commercial role out of Esprit or similar system. This makes it a key deliverable from the project.

Learning about the Esprit through the Technical Trial has been extensive. All aspects of the technology have been considered, from its design and installation to in-situ operation and functionality, with the exception of decommissioning. The project team has also thought through the various business models that could be applied for the commercial roll out of the technology.

1.1.7 INDEPENDENT REVIEW OF THE SUCCESSFUL DELIVERY REWARD CRITERIA AND OTHER DELIVERABLES

A full list of the project’s Successful Delivery Reward Criteria (SDRC) is provided in Appendix 2. Listed below are the SDRCs completed in this reporting period (January – June 2015), along with reviewer “traffic light” ranking.

SDRC 9.4.1.4A - MONTH 24

No comment.

SDRC 9.4.1.4B - REPORT IN RESPONSE TO MONTH 24 INDEPENDENT REVIEW

No comment.

SDRC 9.7.1 - TECHNOLOGY INTEGRATION ASSESSMENT REPORT

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Areas of strength observed in this reporting period include:

- Teamwork continues to be strong across the project consortium.
- Continued good management of customer relationships by EA Technology, Zero Carbon Futures and FleetDrive Electric, as evident from the response to complaints about excessive EV charging curtailment at Your Homes Newcastle.
- Dissemination and raising public awareness continues to be a strength for the My Electric Avenue project team, as evident from the increased number of media “hits”.
- “Top 10 Tips” series for disseminating project learning has continued to grow, with the addition of “Top 10 tips for data monitoring” and “Top 10 tips for database management” to the publications to download from the website.
- Use of webinars to disseminate focused project learning to targeted interest groups.
- The next report from the University of Manchester (Task 7 Deliverables 4.1 and 4.2) has demonstrated the same professional approach, logical structure and clear wording observed in the previous three reports. The results of the analysis conducted by UoM will have implications for the future development of Esprit and similar Demand-Side Response technologies.
- Preparation for decommissioning is at an advanced stage. The plans show the project team is applying learning from previous customer engagement activities, and their intention to continue to have good relationships with the participants of the Technical and Social Trials.
- Data collection, collation and checking has matured during this reporting period. Weekly data checks, aided by data visualisation tools, has allowed the team to identify gaps or missing data. This missing data has then been investigated to find the root cause. For example, identifying a new issue with obtaining data from Nissan CARWINGS system. If the vehicle does not have a mobile phone signal at the time of uploading the data, the data may be lost. This could have implications for Nissan and future technology demonstration projects reliant on data from the vehicle.

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- The next report from the University of Manchester (Task 7 Deliverables 4.1 and 4.2) has demonstrated the same professional approach, logical structure and clear wording observed in the previous three reports. The results of the analysis conducted by UoM will have implications for the future development of Esprit and similar Demand-Side Response technologies.
- Preparation for decommissioning is at an advanced stage. The plans show the project team is applying learning from previous customer engagement activities, and their intention to continue to have good relationships with the participants of the Technical and Social Trials.
- Data collection, collation and checking has matured during this reporting period. Weekly data checks, aided by data visualisation tools, has allowed the team to identify gaps or missing data. This missing data has then been investigated to find the root cause. For example, identifying a new issue with obtaining data from Nissan CARWINGS system. If the vehicle does not have a mobile phone signal at the time of uploading the data, the data may be lost. This could have implications for Nissan and future technology demonstration projects reliant on data from the vehicle.
1. **RECOMMENDATIONS FOR IMPROVEMENTS AND ADAPTIONS TO THE WORKING PRACTICES**

The main areas of risk for the next reporting period are:

- Errors in data analysis lead to incorrect results and conclusions.
- Some Technical Trial participants fail to respond to correspondence from the MEA team regarding decommissioning of Esprit technology.
- Ofgem continue to delay decision regarding Change Request to Project Direction, preventing the MEA project team from utilising all the project funds.

Therefore, the key recommendations for the next six months are:

1. Ensure appropriate peer review processes are followed in all activities related to handling and analysing the data from the Technical and Social Trials

   Poor quality data analysis, or poor presentation of the results, will undermine the excellent work done by the My Electric Avenue project team. Peer review will help to identify potential issues with the data analysis and results prior to publication.

2. Prepare a contingency plan for the decommissioning process

   Consider what issues may be encountered during the decommissioning processing. For example, consider the consequences if a Technical Trial participant refuses to contact the MEA team regarding removal of an ICB.

   Ensure these risks are recorded in the Risk Register. Develop and implement suitable mitigation measures to limit the impact and liability exposure of the project team.

3. Ofgem must make a decision regarding the Change Request to the Project Direction by 31 August 2015

   Ofgem’s process for approving Change Requests is restrictive to collaborative research projects, such as My Electric Avenue. Ofgem’s process has excessively burdened the project with high levels of administration and reduced the effectiveness of some tasks. The lack of decision and timeline for resolution makes it difficult for the project team to plan effectively, again impacting on the efficiency and effectiveness of the project. Dissemination activity has been impacted, reducing the ability of the project team to share the learning generated.

   A decision by Ofgem is required by 31 August 2015 to ensure that the My Electric Avenue project can fully utilise the funds that have already been allocated to this project. A decision received after 31 August 2015 is effectively “no”, since there will not be sufficient time remaining in the project for the MEA team to use the remaining funding.

   Other recommendations relevant for the next six months include:

4. Ensure all published reports include appropriate context information about the My Electric Avenue project

   It is important to remember that a published report may be read by someone who is unfamiliar with the My Electric Avenue project and its objectives. Suitable information should be included in the Executive Summary and Introduction of each published report to ensure the reader understands the context of the report within the wider objectives of the My Electric Avenue project.

5. Ensure all results drawn from project data are appropriately referenced and labelled

   The My Electric Avenue project has collected data from numerous sources – Esprit data from iHost, EV data from Nissan CARWINGS, participant feedback collected by De Montfort University, plus simulation results from the University of Manchester. Someone unfamiliar with the project could misinterpret what is presented if suitable explanations are not included in the project reports.

6. Ask a colleague to peer review a report prior to approval

   The My Electric Avenue has adopted many phrases and abbreviations that may be unfamiliar to someone outside of the project team. This can limit the readability of project reports and their usefulness for disseminating project learning.

   Asking a colleague not involved in the My Electric Avenue project to review a report will help to identify any sections that are unclear. These sections can then be improved prior to publication.

7. Ensure the data, database and associated data tools have been suitably documented prior to archiving

   During the project close-out phase, the MEA team should review the documentation associated with the MEA data, database, data visualisation and data analysis tools. The documentation should be sufficient to enable someone in six months’ time to easily access the data, use the tools and interpret the results.

   The documentation could include comments or annotations attached to the data sets stored in the database, as well as guides to the project’s data tools.

8. Consider how project dissemination activities can also be used to gather information

   For example, most web-conference tools include “polling” functionality. These are frequently used to engage participants during a webinar. The MEA team could use this functionality to gather further opinion on the Esprit technology from the webinar audience.

   Recommendations relevant for the next stage of Esprit technology development, or to future technology trials are:

9. Review the Esprit Business Plan

   Using the results and outcomes from the My Electric Avenue project, EA Technology should carefully review the Technology Business Plan for Esprit.

10. Review and revise the Esprit logic, incorporating learning from the project

    The logic applied in the Esprit system for the MEA Trial was sufficient to demonstrate that EV charging could be curtailed in each Technical Trial cluster. However, the logic is too simple for a wider rollout of the Esprit technology.

11. Consider what data should be logged by the Esprit system for diagnostic purposes

    Logging of appropriate data will help to identify and resolve future issues with the technology.

12. Consider the human machine interface for the Esprit system.

    A “charging curtailed” feature would help users know that they EV charging point is not broken.

13. Maintain a “Technology Watch” on the development of plug-in vehicles and EV charging points

    The technology development of plug-in vehicles and EV charging points will impact on the requirements and opportunity Esprit. Therefore, it is important to maintain an awareness of how these markets are changing and adapting while Esprit continues to be developed.

14. In future technology trial projects, include a “requirements capture” activity data analysis, data collection and data storage

    This “requirements capture” activity should occur at the beginning of the project. All relevant project partners should be included. The purpose is to fully understand what data and data analysis will be required to meet the project objectives, and the consequences for data collection and storage.

15. Defined the Quality Plan for the data collection, storage and analysis software tools

    Once the data and data analysis requirements have been captured, the project team should consider what data storage and data processing tools will be needed. If bespoke tools will be created by the project, a software Quality Plan should be agreed to confirm the level of software QA to be applied.
1.1.12 TOPICS FOR THE NEXT INDEPENDENT REVIEW

Based on information provided in this review and on the project plan, the independent Reviewers expect the following to be made available during the M36 Review:

- SDRC 9.2.2 – Review of the contract put in place between SSE and EA Technology.
- Draft SDRC 9.2.3 – Updated Principal Contract Template.
- SDRC 9.3.1 – Project Processes Report, including templates, meeting records and evaluation of collaboration between SSE and Northern Powergrid with a third party interface.
- SDRC 9.3.2 – Framework for updating policies and procedures at SSE, using suggestions identified during the project.
- SDRC 9.3.3 – Assessment of DNO Project Management Effort compared to previous innovation projects.
- SDRC 9.6.1 – Findings from socio-economic analysis on public reaction to the Esprit technology.
- SDRC 9.8.1 – Modelling to assess additional thermal and voltage headroom.
- SDRC 9.8.2 – Potential cost and carbon emission savings.
- Evidence of successful completion of decommissioning from the Technical Trial (Task 4).
- Internal Project Deliverable Task 7 D5.1 - Combined Report on scenario-based deterministic impact studies on validated and representative LV networks concerning the technology, and on the economic and environmental benefits from adopting the technology.
- Estimate of the typical and maximum thermal capacity gain from using the Espirit system to control demand.

Other items to be included in the M36 Review are:

- Learning Log.
- Comments on the extent to which third party delivery accelerates deployment of LCN Fund projects will be provided in the final Independent Review.
- Dissemination activities.
- Contingency plans related to decommissioning, should a Technical Trial participant not respond to the MEA team’s communication about removing the ICBs and charging points.
- Evidence of peer review of project results.

1.2 MONTH 30 PROJECT TEAM RESPONSE

1.2.1 RESPONSE FROM EA TECHNOLOGY

EA Technology is pleased that the independent review undertaken by Ricardo 30 months into the PEV (My Electric Avenue) project has highlighted the continued strong project management and teamwork amongst the project partners and suppliers. The team is also delighted that the review commented on the depth of learning provided in the SDRC 9.7.1 deliverable and the continued success in dissemination.

Improvements and further work on data handling and verification have also been highlighted in the latest review. The team acknowledges that further improvements could still be made in this area, and agrees with the recommendation that activities on Task 5 should have started earlier in the project. However deployment of technology (notably Intelligent Control Boxes) incurred significant delays to planned activities, including those in Task 5.

The list below outlines the responses and actions EA Technology will take following the recommendations made by Ricardo.

1. Ensure appropriate peer review processes are followed in all activities related to handling and analysing the data from the Technical and Social Trials.

The MEA team will ensure project deliverables undergo peer reviews from EA Technology staff outside of the MEA team prior to publication.

2. Prepare a contingency plan for the decommissioning process.

The MEA team have begun drafting documentation to support a contingency plan. This work will continue and is expected to be completed in time for decommissioning.

3. Ofgem must make a decision regarding the Change Request to the Project Direction by 31 August 2015 to ensure the MEA team has sufficient time remaining in the project to utilise the remaining project funds.

The MEA team will continue to request updates from SSE on progress with regards to the Change Request.

The Reviewers also made recommendations that are relevant to the next phase of development of the Esprit technology, or to future technology trial projects.

The team agree with the recommendations, our response to each is listed below.

1. Review and revise the Espirit logic, incorporating learning from the project.

The team agree with the recommendations. All project learning will be collated at the end of the project to support internal decisions regarding future development of Espirit. This recommendation will be implemented if Espirit is determined to be commercially viable based on outputs from the project.


The team agree with the recommendation and intend to monitor development in these areas to inform and support internal decisions regarding the future development of Espirit. However, this is out of scope for the project.

3. In future technology trial projects, include a “requirements capture” activity for data analysis, data collection and data storage, and define the Quality Plan for the project’s data software tools.

The MEA team agree with the recommendation and will implement in future trial projects.

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8. The M36 Independent Review is planned for November 2015 to allow sufficient time for SSE’s review prior to the end of the project. SDRC 9.8.1 and SDRC 9.8.2 are due for submission on 30 November 2015. Therefore, it is likely that draft versions of SDRC 9.8.1 and SDRC 9.8.2 will be reviewed rather than the completed, approved and submitted versions.
2.0 MONTH 36 (FINAL) INDEPENDENT REVIEW

1.2.2 RESPONSE FROM SSEN

Scottish and Southern Electricity Networks (SSEN) has reviewed the fifth independent review by Ricardo and is pleased that the successful delivery of the project to date has been recognised in their overall assessment. It has been encouraging to see the continued effective management of customers, partners/subcontractors and project activities as the project has continued to collect data whilst moving into the crucial analysis phase. It has also been reassuring to see Esprit curtailing EV charging in all clusters, providing invaluable data and evidence for the analysis to support the upcoming SDRCs.

As the project draws to a close we agree with the risks identified for the final reporting period and are confident in EA Technology’s ability to adopt the recommendations to mitigate these risks.

It should be noted that on 8th July 2015 Ofgem finally approved the Change Request, which removes the final key risk Ricardo have identified and will have a significant positive impact on the project’s depth of analysis in the coming months. This will be reported on formally in the next reporting period’s reports and review. The additional recommendations for the next phase of the technology’s development/future technology trial projects are seen as prudent steps to facilitate the successful development and adoption of Esprit, and the importance of the robust planning for future data capture and analysis.

2.1 INDEPENDENT REVIEW

2.1.1 EXECUTIVE SUMMARY

The My Electric Avenue project has trialled a new technology, called Esprit, for managing the supply of electricity to electric vehicles connected to a local distribution network. This project, funded by Ofgem’s Tier 2 Low Carbon Networks (LCN) Fund, has also trialled a novel commercial arrangement.

Unusually for a LCN Fund project, the project has been led by EA Technology as the Third Party Lead Supplier, with Scottish and Southern Electricity Networks Limited (SSEN) as the host Distribution Network Operator. The other project partners are Northern Powergrid, Nissan, Fleetdrive Electric and Zero Carbon Futures. Further support has been provided via subcontractors, which include the University of Manchester, De Montfort University, Ricardo UK Ltd, Automotive Comms, and Creative Concern.

This report is the sixth and final periodic 6-monthly Independent Review. It covers the Reviewers overall assessment of the project.

The reporting period is 1 July 2015 to 30 November 2015, principally involving:

**Commercial**
- Completing SDRC 9.2 & 9.3 on the learning from the novel commercial arrangement, and recommendations for improving the processes.

**Technical Trial**
- Completing the Technical Trial and decommissioning Esprit technology; completing data collection and analysis; completing SDRC 9.6 and SDRC 9.8 reporting the results from the Technical and Social Trials.

**Social Trial**
- Completing the Social Trial, and reporting the results in SDRC 9.6 and SDRC 9.8.

**Project Management**
- Ongoing effective project management and coordination of project partner activities; planning final dissemination activities; ensuring all reporting is completed on time, and managing the document review processes.

The review is based upon key documents delivered to Ricardo for the purpose of the review, and has been augmented with formal and informal discussions during project meetings and conference calls with EA Technology.

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OVERALL ASSESSMENT OF PROJECT SO FAR

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the reviewers’ overall assessment of the project so far?</td>
<td>EXCELLENT</td>
</tr>
<tr>
<td>Have the key objectives for the period been achieved?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the project made satisfactory progress towards meeting the overall project objectives?</td>
<td>YES</td>
</tr>
<tr>
<td>Has each Task made satisfactory progress against the Plan of Works?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the project management been performed as required?</td>
<td>YES</td>
</tr>
<tr>
<td>Has the collaboration between project partners and sub-contractors been effective?</td>
<td>YES</td>
</tr>
<tr>
<td>Is there evidence of underperforming project partners or sub-contracts, lack of commitment or change in interest?</td>
<td>NO</td>
</tr>
<tr>
<td>Have the project partners adequately publicised the project to raise awareness of the project with the general public?</td>
<td>YES</td>
</tr>
<tr>
<td>Have the project partners adequately disseminated results and learning from the project?</td>
<td>YES</td>
</tr>
</tbody>
</table>
The My Electric Avenue project has been very successful. Both the commercial and technical innovations have been demonstrated and shown to add value. The project has been delivered using a novel commercial arrangement, with SSEN as the lead DNO and EA Technology as the Third Party Lead Supplier. The Esprit technology has proven the concept of demand side response (DSR) control of EV charging to protect LV networks.

EA Technology have continued to work professionally and diligently in their role as project coordinator, successfully managing a complex arrangement of project partners and subcontractors. Teamwork within the project consortium has been excellent, with enthusiasm and morale remaining high throughout the project.

The My Electric Avenue team responded well to the various challenges encountered during the project. The changes imposed by Ofgem led to innovations in the recruitment approach, which yielded very high levels of public interest in the project. The agility and flexibility of the focused project team enabled them to respond quickly to the various issues encountered with the Esprit technology.

The My Electric Avenue project has collected a wealth of technical and social data regarding EV charging and user behaviour. This unique data set includes technical data from the electric vehicles, technical data from the monitoring of the low voltage systems and Esprit technology, and the social data concerning the experience of the Technical and Social Trial participants. Much learning has already been gleaned from this data, which has been reported in the Successful Delivery Reward Criteria reports.

The project has also delivered additional learning, such as the report on PLC communication and the Top 10 Tips series. Learning from My Electric Avenue will help to inform future projects seeking to develop demand side response (DSR) tools. It is likely that the MEA project will lead to more learning, and rich data set for future research projects.

HIGHLIGHTED STRENGTHS

- Strong leadership by the Third Party Leader Supplier, EA Technology.
- Teamwork, dedication and long term commitment of the project partners and subcontractors.
- Recruitment of participants for the Technical and Social Trials.
- Good management of customer relationships by EA Technology, Fleetdrive Electric, Zero Carbon Futures and De Montfort University throughout the Technical and Social Trials.
- Timely and effective public engagement through press releases, newsletters, social media, press days, and the project website.
- Good understanding of the data collected, and rich data set for future research projects.
- Dissemination of project learning through website publications (e.g. Top 10 Tips series), conference presentations, webinars and technical journal papers.

Recommendations:

For the successful uptake of similar novel commercial arrangements in future LNC Fund projects, Ofgem must recognise the Third Party Lead Supplier in their role as project coordinator.

Scope of this Independent Review

The scope of this Independent Review concerns project activities conducted during M31 – M35. The timing of the M36 Independent Review was changed from December 2015 to November 2015 to allow time for EA Technology and SSEN to prepare their response to the M36 Independent Review (SDRC 9.4.1.6) prior to completing the project on 31 December 2015.

During this reporting period from July 2015 to November 2015 the project focused upon:

**Technical Trial**

- Completing the Esprit Technical Trial.
- Continuing to manage the relationships with the Technical Trial participants.
- Decommissioning the Esprit system.
- Return of EVs at end of lease.
- Conducting final questionnaires and interviews to complete Task 6 by De Montfort University.
- Completion of internal deliverable Work Activity 5 from Task 7 (“ESPRIT-Enabled Deterministic Impact Studies” – Report for Deliverables 5.1 and 5.2) by University of Manchester.
- Analysis of data collected from Esprit Technical Trial, and compilation of various reports to support SDRC 9.8.
- Preparing draft report for SDRC 9.8: An assessment of how much headroom an Esprit type solution would yield.

**Social Trial**

- Completing the Social Trial.
- Return of EVs at end of lease.

**Project Management**

- Ongoing effective project management and coordination of project partner activities.
- Finally receiving approval from Ofgem for the Change Request to Project Direction.

**Novel Commercial Arrangement**

- Completing SDRC 9.2 & 9.3.
- Updating the Principal Contract Template (SDRC 9.2.3).

The Plugged-In Party planned for September 2015 in South Shields was cancelled due to lack of response to attend.

A summary of the participation of the project partners and subcontractors during the sixth six-month period is provided in Table 4 below. A description of the Tasks is provided in Appendix 1.

The scope of the M36 Independent Review also considers how the MEA project team has responded to recommendations made by the Reviewers in the previous reporting. For example, in the M30 Review the Reviewers made the following recommendations:

- Ensure appropriate peer review processes are followed in all activities related to handling and analysing the data from the Technical and Social Trials.
- Prepare a contingency plan for the decommissioning process.
- Ofgem must make a decision regarding the Change Request to the Project Direction by 31 August 2015.
- Ensure all published reports include appropriate context information about the My Electric Avenue project.
- Ensure all results drawn from project data are appropriately referenced and labelled.
- Ask a colleague to peer review a report prior to approval.
- Ensure the data, database and associated data tools have been suitably documented prior to archiving.
- Consider how project dissemination activities can also be used to gather information.

10 A review of the Esprit technology and its performance against competition has not been included in this Independent Review.
In the M36 Independent Review the Reviewers specifically requested these items to be included in the M36 Independent Review:

SDRC 9.2.2
Review of the contract put in place between SSEN and EA Technology.

Draft SDRC 9.2.3
Updated Principal Contract Template.

SDRC 9.3.1
Project Processes Report, including templates, meeting records and evaluation of collaboration between SSEN and Northern Powergrid with a third party interface.

SDRC 9.3.2
Framework for updating policies and procedures at SSEN, and Northern Powergrid with a third party interface.

SDRC 9.3.3
Assessment of DNO Project Management Effort compared using suggestions identified during the project.

SDRC 9.6.1
Findings from socio-economic analysis on public reaction to the Esprit technology.

SDRC 9.8.1
Modelling to assess additional thermal and voltage headroom.

SDRC 9.8.2
Potential cost and carbon emission savings11. Evidence of successful completion of decommissioning from the Technical Trial (Task 4).

Internal Project Deliverable Task 7 D5.1 - Combined Report on scenario-based deterministic impact studies on validated and representative LV networks considering the technology, and on the economic and environmental benefits from adopting the technology.

Estimate of the typical and maximum thermal capacity gain from using the Esprit system to control demand.

Other items requested for inclusion in the M36 Review are:

— Learning Log.
— Comments on the extent to which third party delivery accelerates deployment of LCN Fund projects will be provided in the final Independent Review.
— Dissemination activities.
— Contingency plans related to decommissioning, should a Technical Trial participant not respond to the MEA team’s communication about removing the ICBs and charging points.
— Evidence of peer review of project results.

The Independent Review is based on documentation submitted by EA Technology, information obtained from participation in the monthly project partner audio meetings and face-to-face project partner review meetings, additional documentation published on the project website, and the M36 Independent Review meeting.

EA Technology have submitted 25 documents for the Month 36 Independent Review, which are listed in Table 2 below.

In addition to the documents submitted directly by EA Technology, Ricardo downloaded two documents from the project website, and has included these documents in the M36 Independent Review (see Table 3). The Meeting Minutes from the monthly project partner audio meetings held during this reporting period have also been considered in the M36 Independent Review.

A review meeting with EA Technology was held on Wednesday 25 November 2015 at Ricardo Midlands Technical Centre near Leamington Spa. The meeting attendees were be Julian Dunn and Jane Patterson from Ricardo, and Tim Butler and James Cross from EA Technology.

At the time of this Independent Review, EA Technology were still preparing the Esprit White Paper and My Electric Avenue Closedown report. Therefore, these documents have not been included in this Independent Review.

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### TABLE 2: DOCUMENTS SUPPLIED BY EA TECHNOLOGY TO RICARDO FOR THE M36 INDEPENDENT REVIEW

<table>
<thead>
<tr>
<th>DOC NO.</th>
<th>DOCUMENT TITLE</th>
<th>DOCUMENT FILENAME</th>
<th>DELIVERABLE REFERENCE</th>
<th>LEAD AUTHOR ORGANISATION</th>
<th>VERSION</th>
<th>ISSUE DATE</th>
<th>PURPOSE</th>
<th>PUBLIC DOMAIN?</th>
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</thead>
<tbody>
<tr>
<td>#1</td>
<td>MEMO – Summary of project outputs for the Month 36 Independent Review</td>
<td>MEA 36 Month Independent Review Memo.docx</td>
<td>–</td>
<td>EA Technology</td>
<td>–</td>
<td>5 November 2015</td>
<td>For Review</td>
<td>NO</td>
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<tr>
<td>#2</td>
<td>An assessment of third part delivery of a low carbon innovation project</td>
<td>86003_R SDRC 9.2.93 Issue v2.3 EATL Final.pdf</td>
<td>SDRC 9.2 &amp; 9.3</td>
<td>EA Technology</td>
<td>2.3</td>
<td>October 2015</td>
<td>For Review</td>
<td>NO</td>
</tr>
<tr>
<td>#3</td>
<td>Principal Control Template (Revised)</td>
<td>86003_R SDRC 9.2.3 - Principal Contract Template - Issue 2.1.pdf</td>
<td>SDRC 9.2.3</td>
<td>EA Technology</td>
<td>2.1</td>
<td>21 October 2015</td>
<td>For Review</td>
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<tr>
<td>#4</td>
<td>SDRC 9.6: An assessment of the public acceptance of Demand Side Response of EV charging using Esprit</td>
<td>My Electric Avenue (E3V) SDRC 9.6 Issue 2.2.pdf</td>
<td>SDRC 9.6</td>
<td>De Montfort University</td>
<td>2</td>
<td>20 October 2015</td>
<td>For Review</td>
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<tr>
<td>#5</td>
<td>An assessment of how much headroom an Esprit type solution would yield</td>
<td>86002_7_R SDRC 9.8 Draft 10.pdf</td>
<td>SDRC 9.8</td>
<td>EA Technology</td>
<td>Draft 1.0</td>
<td>6 November 2015</td>
<td>For Review</td>
<td>NO</td>
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<tr>
<td>#6</td>
<td>Work Activity 1 “Evaluation of the initial trial” – Report for Deliverables 1.1, 1.2, and 1.3</td>
<td>UoM-EA-Technology MEA Deliverable1-1.3v01.pdf</td>
<td>Internal</td>
<td>University of Manchester</td>
<td>1</td>
<td>28 June 2014</td>
<td>For Info</td>
<td>NO</td>
</tr>
<tr>
<td>#7</td>
<td>Work Activity 2 “Low Voltage Networks” – Report for Deliverables 2.1, 2.2, and 2.3</td>
<td>UoM-EA-Technology MEA Deliverable2-1.2v03.pdf</td>
<td>Internal</td>
<td>University of Manchester</td>
<td>2</td>
<td>25 August 2014</td>
<td>For Info</td>
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</tr>
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</table>

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11 SDRC 9.8.1 and SDRC 9.9.2 are due for submission on 30 November 2015. Therefore, a draft version of SDRC 9.8 has been reviewed rather than the completed, approved and submitted version.
<table>
<thead>
<tr>
<th>DOC NO.</th>
<th>DOCUMENT TITLE</th>
<th>DELIVERABLE REFERENCE</th>
<th>(LEAD) AUTHOR ORGANISATION</th>
<th>VERSION</th>
<th>ISSUE DATE</th>
<th>PURPOSE</th>
<th>PUBLIC DOMAIN?</th>
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### TABLE 4: PARTICIPATION OF PROJECT PARTNERS AND SUBCONTRACTORS DURING THIS REPORTING PERIOD

<table>
<thead>
<tr>
<th>PROJECT PARTNERS / SUBCONTRACTORS</th>
<th>TASKS</th>
<th>COMMENTS ON KEY ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 1 2 3 4 5 6 7 8 9 10 11</td>
<td></td>
</tr>
<tr>
<td>1 SCOTTISH AND SOUTHERN ELECTRICITY NETWORKS PLC</td>
<td>✓ – ✓ – ✓ ✓ – – – ✓ ✓ ✓</td>
<td>Supporting EA Technology with end-of-project activities. Completion of SDRC 9.2 &amp; 9.3. Supporting decommissioning of Esprit technology.</td>
</tr>
<tr>
<td>3a NISSAN MOTOR LIMITED GB</td>
<td>– – – – – – – – – – – –</td>
<td>Providing access to the Nissan LEAF Advanced Processing Interface (API) for data recording.</td>
</tr>
<tr>
<td>3b NISSAN INTERNATIONAL SA</td>
<td>– – – – – – – – – – – –</td>
<td></td>
</tr>
<tr>
<td>4 NORTHERN POWERGRID HOLDINGS</td>
<td>– – – – ✓ – – – – – – ✓</td>
<td>Continued support regarding Technical Trial clusters in Northern Powergrid region. Supporting decommissioning of Esprit technology.</td>
</tr>
<tr>
<td>5 ZERO CARBON FUTURES</td>
<td>– – ✓ – – – – – – – – ✓</td>
<td>Managing relationships with the trial participants, and responding to issues with the Esprit technology and EVs. Overseeing decommissioning of Esprit technology from participant properties. Continuing participant liaison activities.</td>
</tr>
<tr>
<td>6 FLEETDRIVE MANAGEMENT LTD</td>
<td>– – ✓ – ✓ – – – – – ✓</td>
<td>Managing “end of lease” arrangements for Technical and Social Trial participants. Continuing participant liaison activities.</td>
</tr>
<tr>
<td>7 PROMOTE DESIGN &amp; MARKETING LIMITED / AUTOMOTIVE COMMS</td>
<td>– – – – – – – – – – ✓ ✓</td>
<td>Arrangement and coordination of press releases and media events.</td>
</tr>
</tbody>
</table>

Notes:

- Task 1 has effectively been superseded by other project activities. However, during the M36 Review meeting EA Technology shared the report from the Bramley Trial, which was not included in previous reviews.

- According to the original project plan, Task 2 should have finished once recruitment for the Technical and Social Trials was completed. However, the project team have found that customer engagement has continued throughout the project to ensure that the good relationships with the trial participants are maintained.

- The Esprit system was supplied to the My Electric Avenue project by EA Technology Development, a separate division of EA Technology. EA Technology Development sourced components and hardware for the Esprit system from ANDtr. The development of the Esprit system is not part of the My Electric Avenue project.
Document quality control has improved during the project. The project team has continued to deliver high quality professional reports, many of which are available to download from the project website.

The My Electric Avenue project has collected a wealth of technical and social data regarding EV charging and user behaviour. This unique data set includes technical data from the electric vehicles, technical data from the monitoring of the low voltage systems and Esprit technology, and the social data concerning the experience of the Technical and Social Trial participants. It is highly likely that this data set will be valuable input for many future academic and research projects in the UK and beyond.

The MEA team has maximised the learning from the project, as evident from the additional report prepared on PLC communication and the Top 10 Tips series. Learning from My Electric Avenue will help to inform future projects seeking to develop demand side response tools.

The My Electric Avenue project has successfully proven the concept of the Esprit technology. A demand side response (DSR) tool can be used to curtail EV charging on LV networks, thus protecting these networks for thermal and voltage overload. However, the Esprit product requires further development to make it suitable for a wider commercial roll-out. It is expected that learning from My Electric Avenue will be incorporated into the next generation of Esprit or similar DSR tools.

One significant area of concern which must be addressed for future innovation projects with a novel commercial arrangement, is the high level of risk imposed on EA Technology by Ofgem via the restrictions outlined in the Project Direction. As discussed in the M12 Independent Review, this risk was initially financial. Following the early recruitment success of trial participants, EA Technology wisely decided to accelerate the establishment of the initial clusters for the Technical Trial, and to begin the roll-out of electric vehicles to Technical and Social Trial participants. This ensured the continued participation of customers who successfully met the trial criteria. Whilst this demonstrated the commitment of the Third Party Lead Supplier to the success of the project, it placed EA Technology at severe financial risk, especially considering their company size and annual turnover. This was exacerbated by the debate regarding interpretation of cluster establishment. Such an approach by Ofgem is likely to deter other SMEs from pursuing the role of Third Party Lead Supplier to the success of the project, and provides recommendations on how much headroom an Esprit type solution would yield.

— Learn customer driving and charging habits and the implications for control via the Technology.
— Develop and trial the equipment to ascertain its ease of installation.
— Develop the integration of the Technology into the EV charging points including how existing intelligence and attributes in charging points can be harnessed to reduce the cost and improve the performance.
— Evaluate the range of networks where it can operate successfully and identify any type of networks that are inappropriate.
— Evaluate how often switch off routines are likely to be initiated from real life trials and extrapolation via modelling using the results.
— Enable all procurement related to the project activity to be managed by a non-DNO.
— Evaluate the extent to which third party delivery accelerates deployment of LCN Fund projects.
— Develop the integration of the Technology into the LV networks, thus protecting these networks for thermal and voltage overload.

— From the results and extrapolation via modelling, estimate the typical and maximum thermal capacity gained.

The objectives for this reporting period (July 2015 to November 2015) were to:

**Technical**

**Deliver:**
- SDRC 9.1.5 – M30 Independent Review.
- SDRC 9.6 – An assessment of the public acceptance of Demand Side Response of EV charging using Esprit.
- Internal project deliverables Task 7 D5.1 and D5.2 (University of Manchester).
- Begin to prepare SDRC 9.8 – An assessment of how much headroom an Esprit type solution would yield.
- Continue to deliver data collection reports to ensure data has been recorded and retrieved from CARWINGS and IHost, and to report data analysis.
- Decommission of Esprit from the Technical Trial clusters.
- Complete collection of social data from the Technical Trial participants via questionnaires, interviews and focus groups (Task 6, De Montfort University).

**Commercial**

- Deliver SDRC 9.2 & 9.3.
- Project Management
  - Continue the regular project meetings and reviews, as outlined in the Management and Delivery Document.

**HAS THE PROJECT MADE SATISFACTORY PROGRESS TOWARDS MEETING THE OVERALL PROJECT OBJECTIVES?**

The My Electric Avenue project has successfully demonstrated delivery of a LCN Fund project by a non-DNO on behalf of a DNO. SDRC 9.2 & 9.3 report documents the learning from this novel commercial arrangement, and provides recommendations on how such a commercial arrangement could be improved for future innovation projects.

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[Accessed on 1 December 2015]
Ofgem, DNOs and potential third party lead suppliers should carefully read SDRC 9.2 & 9.3 prior to committing to a future project. Ofgem should consider how SSEN and EA Technology’s recommendations could be implemented in future projects.

The My Electric Avenue project has successfully demonstrated Demand Side Response (DSR) control of EV charging using the prototype Esprit technology. The reports for SDRC 9.6 and SDRC 9.8 capture social and technical learning from the Technical and Social Trials, and the implications for future generations of the technology.

It is disappointing that the duration of the Esprit technology trial was less than planned due to various issues encountered with the technology at the beginning of the Technical Trial. Future innovation projects using prototype technology should be designed with suitable mitigating measures to control the technology risk. For example, rolling out the technology in phases rather than at the same time, as proposed in the original I²EV bid submission.

However, the My Electric Avenue team have endeavoured to maximise the learning from the Esprit technology trial and wider project activities, as demonstrated in the excellent reports submitted for this Independent Review.

2.1.4 PROGRESS AGAINST WORK PLAN

HAS EACH TASK MADE SATISFACTORY PROGRESS AGAINST THE PLAN OF WORKS?

**TASK 0: NOVEL COMMERCIAL ARRANGEMENT**

Completion of SDRC 9.2 & 9.3. [YES]

**TASK 1: INITIAL BACKGROUND**

It was thought that Task 1 has been superseded by other project tasks. However, during the M36 Review Meeting, EA Technology shared a report from the previous Bramley trial. The report is effectively the output from Task 1, although it was never submitted for review in an Independent Review.

**TASK 2: CUSTOMER ENGAGEMENT**

Decommissioning is nearly complete. [YES]

**TASK 3: INTEGRATION OF THE TECHNOLOGY WITH CHARGING POINTS**

This task was completed in the previous reporting period. [COMPLETED]

**TASK 4: ESTABLISHMENT OF CUSTOMER / CLUSTER TRIALS**

The Technical and Social Trials were completed during this reporting period. Esprit decommissioning is nearly completed. Nissan LEAFs have been returned as the end of the lease period. [YES]

**TASK 5: MONITORING FIRST TRIALS**

The project team continued to collect technical data from the Technical and Social Trials via Nissan CARWINGS and the iHost until the end of the Technical and Social Trials. Results from analysing this data are presented in SDRC 9.8. [YES]

**TASK 6: TRIAL PARTICIPANT INTERVIEWS**

Final questionnaires completed. SDRC 9.6 completed. [YES]

**TASK 7: MODELLLING**

Task 7 Deliverables 5.1 and 5.2 completed. A draft version of SDRC 9.8 has been completed. [YES]

**TASK 8: CONSULTATION WITH EU MANUFACTURERS: CYCLE TIMES**

This task was completed in previous reporting periods. [COMPLETED]

**TASK 9: PROJECT AND REGULATORY RECOMMENDATIONS AND IMPLEMENTATION**

This task concerns the periodic 6-monthly Independent Reviews, which is the subject of this report. [NO COMMENT]

**TASK 10: DISSEMINATION**

Ofgem’s approval of the Change Request to the Project Direction in July 2015 has enabled the team to plan a series of dissemination events to mark the end of the trial and the project, such as:

- Final Event scheduled for 3 December 2015 in London.
- Preparing newsletter and video for trial participants.
- More information on dissemination activities is provided in Chapter 9. [YES]

**TASK 11: PROJECT MANAGEMENT**

EA Technology have continued to hold regular project progress meetings with SSEN, project partners and subcontractors, as outlined in the Management and Delivery Documents. [YES]

**HAVE PLANNED SDRCs BEEN ACHIEVED FOR THIS REPORTING PERIOD?**

**HAVE THE OTHER PLANNED PROJECT MILESTONES AND DELIVERABLES BEEN ACHIEVED FOR THIS REPORTING PERIOD?**

The SDRCs and internal deliverables planned for this period have been delivered (see Chapter 7). The remaining SDRCs are expected to be completed on time.

Decommissioning has progressed well, and is expected to finish soon.

2.1.5 RESPONSE TO PREVIOUS RECOMMENDATIONS

**HAS THE PROJECT IMPLEMENTED THE RECOMMENDATIONS FROM THE PREVIOUS INDEPENDENT REVIEW?**

EA Technology’s response to the recommendations made during the M30 Independent Review are documented in “30 Month Independent Review Response”. In this report, EA Technology confirmed their intention to implement these recommendations within this reporting period:

16. Ensure appropriate peer review processes are followed in all activities related to handling and analysing the data from the Technical and Social Trials. The MEA team will ensure project deliverables undergo peer reviews from EA Technology staff outside of the MEA team prior to publication.

17. Prepare a contingency plan for the decommissioning process. The MEA team have begun drafting documentation to support a contingency plan. This work will continue and is expected to be completed in time for decommissioning.

18. Ofgem must make a decision regarding the Change Request to the Project Direction by 31 August 2015 to ensure the MEA team has sufficient time remaining in the project to utilise the remaining project funds. The MEA team will continue to request updates from SSEN on progress with regards to the Change Request.

The peer review was described in the memo “Summary of project outputs for the Month 36 Independent Review” (Document #1). The document history in each SDRC records several of the peer review steps. During the M36 Review Meeting, EA Technology showed the SharePoint version history for SDRC 9.8. This version history shows that several EA Technology employees have worked on the document, include one who incorporated feedback from another colleague who was not part of the My Electric Avenue project.

The memo “Summary of project outputs for the Month 36 Independent Review” (Document #1) implies a contingency plan for decommissioning was prepared. During the M36 Review Meeting EA Technology shared a project memo prepared by ZCF, which documented the agreed decommissioning process. This process included several contingency steps to follow should the decommissioning not progress as planned. It is clear from the discussions with EA Technology that the decommissioning process was carefully considered by EA Technology and ZCF, with several meetings held to discuss and plan for the activity. Lois Warne and her team at ZCF have previous experience of decommissioning technology at the end of a technology trial, which was valuable for preparing the decommissioning process for Esprit. Although the MEA team did consider contingency measures, it appears that a contingency plan for the decommissioning process was not formally documented.

As noted by SSEN in the Response Report, Ofgem approved the Change Request in early July 2015 (see Document #24). Therefore, this action is closed.

Other recommendations made by Ricardo during the M30 Independent Review include:

- Ensure all published reports include appropriate context information about the My Electric Avenue project.
- Ensure all results drawn from project data are appropriately referenced and labelled.
- Ask a colleague to peer review a report prior to approval.
- Ensure the data, database and associated data tools have been suitably documented prior to archiving.
- Consider how project dissemination activities can also be used to gather information.

The SDRC’s scheduled for this reporting period, SDRC 9.2 & 9.3, SDRC 9.6 and SDRC 9.8 do contain background information about the My Electric Avenue project, and do reference other reports published by the project. The document version histories record various phases of internal review.
No information was provided for this review about the data collected, database and associated data tools. During the M36 Review Meeting EA Technology confirmed that archiving of the data, database and data analysis tools is planned for December 2015. Data collection from some remaining Nissan LEAFs is still ongoing.

The Independent Reviewers are unable to comment on whether the data and data tools will suitably documented prior to archiving.

A Finale Event is scheduled for 3 December 2015 in London. This should be an excellent opportunity for disseminating project learning, and for gaining feedback from a wider audience.

2.1.6 INDEPENDENT REVIEW OF THE SUCCESSFUL DELIVERY REWARD CRITERIA AND OTHER DELIVERABLES

A full list of the project’s Successful Delivery Reward Criteria (SDRC) is provided in Appendix 2. Listed below are the SDRCs completed in this reporting period (January – June 2015), along with reviewer “traffic light” ranking.

SDRC 9.4.1.5A - MONTH 30 INDEPENDENT REVIEW REPORT

No comment.

SDRC 9.4.1.5B - REPORT IN RESPONSE TO MONTH 30 INDEPENDENT REVIEW

No comment.

SDRC 9.2.6 9.3 - AN ASSESSMENT OF THIRD PARTY DELIVERY OF A LOW CARBON INNOVATION PROJECT

A high quality, professional document capturing the learning from the novel commercial arrangement. This will be a useful, insightful and valuable document for Ofgem, DNOs and potential 3rd Party Lead Suppliers.

SDRC 9.2.3 - PRINCIPAL CONTRACT TEMPLATE (REVISED)

It is good that a template for the Principal Contract has been included as one of the project deliverables. This template would benefit from another round of editing focused on making the document more consistent and user friendly. This, in turn, would make the template easier to adapt for future projects.

SDRC 9.6 - AN ASSESSMENT OF THE PUBLIC ACCEPTANCE OF DEMAND SIDE RESPONSE OF EV CHARGING USING ESPRIT

A professional, well-written scientific report on the social aspects of the MEA trails, prepared by De Montfort University with support from EA Technology.

The “Summary of Findings” boxes are usefully for quickly understanding the key results from the participant questionnaires and interviews.

SDRC 9.8 (DRAFT) - AN ASSESSMENT OF HOW MUCHHEADROOM AN ESPRIT TYPE SOLUTION WOULD YIELD

A complete draft of this report was provided for the M36 Independent Review. This has the potential to be an excellent report. However, the Independent Reviewers identified a couple of errors in the Well-to-Wheels Carbon Savings analysis reported in Section 8. This should be corrected for the final version.

Also, Section 6 is difficult to comprehend, which may prevent some readers from reading the complete report.

2.1.7 IMPLEMENTATION OF THE PROJECT

HAS THE PROJECT MANAGEMENT BEEN PERFORMED AS REQUIRED?

YES

EA Technology continue to manage the project well, with good participation from all project partners and subcontractors.

HAS THE COLLABORATION BETWEEN PROJECT PARTNERS AND SUB-CONTRACTORS BEEN EFFECTIVE?

YES

The working relationships between the main project partners and subcontractors continues to be good.

IS THERE EVIDENCE OF UNDERPERFORMING PROJECT PARTNERS OR SUB-CONTRACTORS, LACK OF COMMITMENT OR CHANGE IN INTEREST?

NO

There is no evidence of underperforming project partners in the documentation supplied for this review.

2.1.8 DISSEMINATION OF PROJECT LEARNING

HAVE THE PROJECT PARTNERS ADEQUATELY PUBLICISED THE PROJECT TO RAISE AWARENESS OF THE PROJECT WITH THE GENERAL PUBLIC?

YES

HAVE THE PROJECT PARTNERS ADEQUATELY DISSEMINATED RESULTS AND LEARNING FROM THE PROJECT?

GOOD

Gill Nowell of EA Technology provided a list of dissemination activities for the period July to December 2015 by email. The dissemination activities for this reporting period are listed in the table on the following page.

TABLE 5: LIST OF DISSEMINATION ACTIVITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TITLE</th>
<th>LOCATION</th>
<th>DATE (2015)</th>
<th>MEA ACTIVITY</th>
<th>AUDIENCE</th>
<th>MEA MESSAGE</th>
<th>COVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Cenex LCV2015</td>
<td>Millbrook Proving Ground</td>
<td>9-10 Sep 2015</td>
<td>Presentation</td>
<td>Low carbon vehicle sector</td>
<td>Latest results reveal impact of EVs on some networks</td>
<td>Interviewed by Robert Llewellyn</td>
</tr>
<tr>
<td>Event</td>
<td>IET</td>
<td>Inglewood Manor</td>
<td>9 Sep 2015</td>
<td>Presentation</td>
<td>IET members</td>
<td>Latest results reveal impact of EVs on some networks</td>
<td>c. 20</td>
</tr>
<tr>
<td>Event</td>
<td>ENA EV</td>
<td>London</td>
<td>19 Oct 2015</td>
<td>Presentation</td>
<td>EV sector / supply chain / OLEV / BEAMA, DNOs</td>
<td>Latest results reveal impact of EVs on some networks</td>
<td>20 stakeholders</td>
</tr>
<tr>
<td>Event</td>
<td>LCN LCM</td>
<td>Liverpool</td>
<td>24-26 Nov 2015</td>
<td>Workshop presentation</td>
<td>DNOs</td>
<td>Final results - commercial and technical</td>
<td>c. 3,000 footfall</td>
</tr>
<tr>
<td>Event</td>
<td>MEA Turning the Corner</td>
<td>IMechE, London</td>
<td>3 Dec 2015</td>
<td>Presentation of commercial and technical learning</td>
<td>130 delegates spanning utilities, automotive, Government, trial participants, Ofgem</td>
<td>Final dissemination of learning</td>
<td>Press release</td>
</tr>
<tr>
<td>SDRC 9.6</td>
<td>Assessment of public acceptance of DSR using Espirit</td>
<td>–</td>
<td>End Nov</td>
<td>Dissemination of learning</td>
<td>Utilities, energy sector, Government, automotive</td>
<td>DSR of EVs generally accepted (remote control charging)</td>
<td>500 MEA contacts – email</td>
</tr>
<tr>
<td>SDRC 9.7</td>
<td>Assessment of Espirit Integration</td>
<td>–</td>
<td>End Nov</td>
<td>Dissemination of learning</td>
<td>Utilities, energy sector, Government, automotive</td>
<td>Assessment of integration into charging points and suitable cycle times</td>
<td>500 MEA contacts – email</td>
</tr>
</tbody>
</table>

The dissemination activities for the period July to December 2015 by email. The dissemination activities are as follows:

- Event LCNI – End Nov Dissemination
- Event MEA finale event – email
- Event ENA EV – email
- Event IET – email
## 2.1.9 HIGHLIGHTED STRENGTHS

EA Technology, as Third Party Leader Supplier for the My Electric Avenue project, has consistently shown strong leadership and good project management. Although an innovation project of this size would be considered small by a DNO, it was significant to EA Technology, who were able to give it the high priority it required to succeed. This is one of the benefits of the novel commercial arrangement trialled during this project.

The My Electric Avenue project could not have been delivered by SSEN and EA Technology alone. EA Technology assembled a good team of project partners and subcontractors with the diverse range of skills and experience required to deliver the technology trial. Northern Powergrid provided insight from another DNO, and helped install the technology. Nissan provided the electric vehicles, access to vehicle data and information on EV charging. Fleetdrive Electric managed the EV rental programme. Zero Carbon Futures provided experience of charging point network, and greatly assisted installation and decommissioning the technology, along with managing customer relationships. De Montfort University provided expertise in socio-economic data gathering and analysis. The University of Manchester provided excellent network modelling and analysis. Automotive Comms ensured good media relations, and Creative Concern provided a professional website and publicity material. These project partners and subcontractors demonstrated excellent teamwork throughout the 3-year project.

Unusually, two DNOs have contributed to this project. The participation of both SSEN and NPG has greatly enhanced the project experience, range of technical trial clusters, and learning outcomes from the project. It is unlikely that this would have occurred without the novel commercial arrangement.

All project partners and subcontractors have shown their dedication and commitment to the success of the project, frequently going beyond what was expected. Such as, EA Technology taking on board increased financial risk by ordering and accepting delivery of some Nissan LEAFs in advance of the funding release by Ofgem to ensure that the early establishment of clusters for the Technical Trial was retained.

The project partners, especially the smaller organisations, have been flexible and agile when responding to various issues encountered during the project. Such as, De Montfort University revising their schedule of Task 6 activities to minimise the impact the Esprit technology, whilst ensuring EA Technology were kept aware of the risks to project learning.

A key strength of ‘My Electric Avenue’ has been the project team’s approach to recruitment of participants for the Technical and Social Trials. The combination of strong project branding, website and strategic media attention with a ‘bottom-up’ grass-roots movement via cluster champions led to a phenomenal response from customers. This successful approach to the recruitment of potential trial participants should be noted by Ofgem, and the project learning applied to other LCN Fund projects as appropriate.

Throughout the project, the project team had demonstrated good management of customer relationships, as evident from the feedback received by DMU’s interviews and focus groups (see SDRC 9.6 report). In particular, the Independent Reviewers wish to highlight the efforts made by EA Technology, Zero Carbon Futures and Fleetdrive Electric.

Public engagement has been timely and effective, through the organisation of press releases, newsletters, social media, press days, and the project website. General awareness of the project is high. Dissemination has been strong, with a wide range of methods used to communicate project results and learning to relevant audiences. The website is a key portal for sharing project reports. Webinars have allowed the project team to target specific groups, such as the power networks and automotive sectors. MEA presentations have been given at highly relevant conferences and events. The Top 10 Tips series is an excellent idea for disseminating project learning in a “bite size” format. Project reports have been professional, completed to a high level of quality, and maintaining the strong project brand.

EA Technology have demonstrated good understanding of the data collected, which is evident when discussing project results with the MEA team.

The data collected will be of great value to researchers and technology developers, when it is released in anonymised form. It is unusual to have a data set that includes EV use and charging behaviour (from Nissan CARWINGS), monitoring of low voltage networks and signals to operate the technology (from Nortech’s iHost Platform), and the response from trial participants (DMU questionnaires, interviews and focus groups).
2.1.10 RECOMMENDATIONS FOR IMPROVEMENTS AND ADAPTIONS TO THE WORKING PRACTICES

The My Electric Avenue project has successfully demonstrated the delivery of a LCN Fund project by a lead DNO with Third Party Lead Supplier. Many of the benefits of this approach are discussed in SDRC 9.2 & 9.3. In particular, and actioned by Ofgem (see the Executive Summary), the novel commercial arrangement should be noted and adopted by other projects to accelerate innovation.

The recommendations made by SSEN and EA Technology on how to improve the processes around the novel commercial arrangement should be noted and actioned by Ofgem (see the Executive Summary of SDRC 9.2 & 9.3). In particular, the novel commercial arrangement must be acknowledged by Ofgem. It is important for Ofgem to be able to communicate directly with the Third Party Lead Supplier in their role as project coordinator.

If Ofgem decide to alter the project scope via the Project Direction, the project team should be allowed time to evaluate the impact of these changes, before beginning the project. Changing scope of work may impact on the commercial, financial and technical risks of the project, and may require a revision of project budgets and resource allocations. Some project partners may wish to withdraw, if the increased financial risk is considered to be too high.

The Reviewers recommend a thorough review of the LCN Fund reporting process by the DNO, Third Party Lead Supplier and Ofgem. Project Progress Reports are required by Ofgem on a monthly basis. Due to the various stages of review and approval required, SSEN and EA Technology have recommended a two month window for preparing these Progress Reports (see SDRC 9.2 & 9.3, Section 7.4.3). This is too long. The progress reporting process needs to be streamlined, with the objective of minimising the steps so that the six-monthly progress reporting can be achieved within 2-3 weeks of the end of the reporting period.

The purpose of trialling a new technology is to identify and resolve issues. Even the best planned technology project will encounter something unexpected or surprising. Therefore, the scope of work for a technology trial should incorporate elements from the technology development risk mitigation plan, such as the phased roll-out of the technology. The project scope should also include sufficient flexibility, to allow the project team to quickly respond to unforeseen issues.

Data collection and analysis must be planned from the beginning. The requirements for data capture, storage and processing should be considered when preparing the scope of work. These requirements, along with the planned data collection and analysis activities should be reviewed, adapted and updated as the project progresses to ensure maximum learning is achieved.

Unusually, the My Electric Avenue project has included an Independent Review activity, to provide an independent opinion on the commercial and technical aspects of the project. The feedback and recommendations from the Independent Reviews has been valued by both EA Technology and SSEN, as evident from their responses provided in the SDRC 9.4 reports. It may be useful for future LCN Fund projects to include Independent Review activities. However, if so, the timing of these Independent Reviews should be linked to the periodic progress reporting, so that the periodic reports can be included within the review pack.

The My Electric Avenue project has collected a unique data set of technical and social data related to the impact of EV charging and EV charging curtailment. Future work should include further analysis of this data to extract more learning from the trial. When the anonymised data is made available to the public, it should have a suitable licence to ensure that academics and researchers who use the data can include data from the My Electric Avenue project.

It would be good to publish copies of the questionnaires used in the Technical and Social Trials.

The My Electric Avenue project has proved the concept for the Esprit technology. However, prior to committing to further R&D, EA Technology should consider conducting a thorough review of the business case for Esprit. This review should incorporate learning from the MEA project, and understanding of the requirements of the energy and automotive sectors. Pathways for achieving a suitable return on investment may also require revision.

The pace of change in the automotive sector is quicker than the pace of change in the distribution networks sector. Legislation around improving energy efficiency, reducing CO2 emissions and improving air quality is driving vehicle manufacturers to develop alternative powertrain vehicles, such as plug-in hybrids and electric vehicles. Such plug-in vehicles will impact on our low voltage networks.

Significant change has already occurred over the duration of the My Electric Avenue project. In 2012 there were only 1,262 new registrations of pure electric vehicles in the UK, and the choice was mostly limited to the Nissan LEAF. By 2015, for the year-to-date (January to October 2015) 7,637 new EVs have already been registered, along with 15,183 plug-in hybrids. Several vehicle OEMs offer at least one plug-in vehicle model, providing a wider choice for customers. According to SMMT, there are currently over 42,000 plug-in passenger cars in use in the UK. These plug-in vehicles can be charged at higher power levels than the Nissan LEAFs used during the MEA trial.

Ricardo expect that over the next few years more vehicle OEMs will launch plug-in vehicle models, as part of their CO2 reduction strategy. Local policy and incentives in cities such as London could encourage the uptake of such vehicles in regional clusters. Other new technologies, such as autonomous systems and intelligent communications, could disrupt current vehicle usage and business models. Several vehicle OEMs have already changed their brand position to “mobility solution providers.” These developments will have an impact on the learning from MEA.

Given the changing nature of the automotive technology landscape, the energy networks sector should build on the engagement with the automotive sector begun during My Electric Avenue and similar projects. Both sectors need to understand the wider consequences of these technology changes in transport and mobility. It would also be wise for the energy networks sector to maintain a technology watch on the automotive technology sector, to keep up-to-date with the predicted introduction of evolutionary and revolutionary technologies.
2.2 MONTH 36 (FINAL) PROJECT
TEAM RESPONSE

2.2.1 RESPONSE FROM EA TECHNOLOGY

EA Technology is gratified that the independent review undertaken by Ricardo in the closing stage of the I²EV (My Electric Avenue) project has stated that its overall assessment of the Project is ‘Excellent.’ It is particularly pleasing that the excellent team work between the Project’s delivery partners and Project Management capabilities has been recognised.

EA Technology is also pleased that Ricardo agrees with the assessment that the Esprit technology has successfully demonstrated the concept of demand side response (DSR) for electric vehicle charging for the protection of low voltage networks. Additionally, the confirmation that Ricardo believes that the Project has been very successful, demonstrating clear added value from both the Commercial and Technical Innovation areas, validates the investment in the Project.

Ricardo’s recognition of the additional learning generated by the Project, beyond that necessary to meet the Project’s Successful Delivery Reward Criteria, and the potential for more to be generated once the data is made publically available is also valued.

Acknowledgement of the wide range of dissemination methods utilised throughout the Project to maximise the distribution of Project Learning to the Energy and Automotive Industries is appreciated.

The recommendations made by Ricardo are rightly intended to benefit future Projects undertaken by, or on behalf of Ofgem; for EA Technology; and for Project Partners who continue to make use of the data after Project completion. The recommendations applicable to EA Technology’s future Projects and Product Development will be implemented where applicable. Recommendations relevant to other organisations such as Ofgem will be passed to them for consideration.

At the end of the Project, EA Technology believes that My Electric Avenue has pushed boundaries, challenged the ‘standard approaches’ and delivered value to the Energy Sector and wider Industry, most notably the automotive sector.

Finally, EA Technology would like to thank Ricardo for its valued contributions to the My Electric Avenue Project. Its involvement in the Project has provided benefit through unbiased input and recommendations to improve both My Electric Avenue and future Ofgem funded innovation projects for the benefit of UK plc.

2.2.2 RESPONSE FROM SSEN

Scottish and Southern Electricity Networks (SSEN) is pleased to see that the positive view of this reporting period held by ourselves and EA Technology has been echoed by the independent review, and that the overall review of the Project is also recognised as being of a high quality.

It has been a busy and productive period, with the trials drawing to a close and the commercial, technical and social findings being analysed and reported on. As EA Technology have stated, it is pleasing that Ricardo also acknowledge the wealth of learning already generated from the Project’s trials and commercial reviews, and that it will be valuable for other work moving forwards.

It has been excellent to see the Project gather such insights and take the first steps toward proving a solution can be deployed to help enable not only customers, but also the electricity and automotive industries transition to a low carbon future.

We would like to thank EA Technology and all Project Partners for their outstanding contributions and delivery of the Project, and we hope that Ofgem also acknowledge the value of outputs generated and utilise some of the key findings in governing future innovation projects to benefit the excellent innovation they’ve helped create.

Finally, EA Technology would like to thank Ricardo for its valued contributions to the My Electric Avenue Project. Its involvement in the Project has provided benefit through unbiased input and recommendations to improve both My Electric Avenue and future Ofgem funded innovation projects for the benefit of UK plc.

APPENDIX 1: PROJECT TASK STRUCTURE

<table>
<thead>
<tr>
<th>TASK ID</th>
<th>TASK TITLE</th>
<th>TASK DESCRIPTION</th>
<th>START</th>
<th>END</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 0</td>
<td>Novel commercial arrangement</td>
<td>Draft and agree the contract for a non-DNO to manage a LCN Fund Tier 2 project</td>
<td>02-Jan-13</td>
<td>31-Dec-15</td>
</tr>
<tr>
<td>Task 1</td>
<td>Initial background – evaluation of initial trial</td>
<td>Evaluation of the initial trial of the Esprit Technology (December 2012) to improve the Technology and the plans of trials to occur as part of the FEV Project</td>
<td>02-Jan-13</td>
<td>28-Jun-13</td>
</tr>
<tr>
<td>1.1</td>
<td>Evaluation of initial on-site trial</td>
<td>Literature survey of the estimates regarding additional load to be introduced from EVs and the potential for load shifting</td>
<td>02-Jan-13</td>
<td>28-Jun-13</td>
</tr>
<tr>
<td>1.2</td>
<td>Literature survey - additional load</td>
<td>Literature survey of the existing knowledge of customer behaviour with respect the use of EVs and the acceptance of direct control appliances</td>
<td>02-Jan-13</td>
<td>28-Jun-13</td>
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<tr>
<td>1.3</td>
<td>Literature survey - customer behaviour</td>
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<td>02-Jan-13</td>
<td>28-Jun-13</td>
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<tr>
<td>Task 2</td>
<td>Customer engagement</td>
<td>Develop customer engagement plan for the I²EV Project</td>
<td>02-Jan-13</td>
<td>11-Dec-14</td>
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<tr>
<td>2.1</td>
<td>Customer engagement plan</td>
<td>Engagement with Nissan, Charge Your Car North Ltd and Fleetdrive to approach EV owners throughout the UK with the intention of monitoring and recording location, driving and charging habits in statistically significant numbers</td>
<td>02-Jan-13</td>
<td>11-Dec-14</td>
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<td>2.2</td>
<td>Social trials</td>
<td>Establishment of statistically significant clusters, relative to the individual network, to trial the Technology on multiple network types and across multiple demographics</td>
<td>02-Jan-13</td>
<td>11-Dec-14</td>
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<tr>
<td>2.3</td>
<td>Technical trials</td>
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<td>Task 3</td>
<td>Integration of the Technology with charging points</td>
<td></td>
<td>17-Jun-13</td>
<td>30-Jun-15</td>
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<td>3.1</td>
<td>Technology development of Esprit</td>
<td>Development of the Esprit Technology, integrating learning from the Project (not to be funded under LCN Fund)</td>
<td>17-Jun-13</td>
<td>30-Jun-15</td>
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<tr>
<td>3.2</td>
<td>Ongoing development of Esprit during project</td>
<td>Liaise with charging point manufacturers to discuss the Technology and the impact on their equipment</td>
<td>17-Jun-13</td>
<td>30-Jun-15</td>
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<tr>
<td>3.3</td>
<td>Engage with charging point manufacturers</td>
<td>Work on integration of the Technology (Logic and Communication Systems) into Charging Points</td>
<td>17-Jun-13</td>
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<td>3.4</td>
<td>Integrate technology with charging points</td>
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<td>17-Jun-13</td>
<td>30-Jun-15</td>
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<td>Task 4</td>
<td>Establishment of customer / cluster trial</td>
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<td>30-Sep-13</td>
<td>18-Dec-15</td>
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<td>4.1</td>
<td>Managing subsidised rental programme for fleet users</td>
<td>Management of the vehicles and participants in the Fleet Trials</td>
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<td>4.2</td>
<td>Managing collection and delivery of cars</td>
<td>Delivering and managing the Fleet Trial Participants</td>
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<tr>
<td>4.3</td>
<td>Finding trial (fleet) participants and providing funding / risk of funding</td>
<td>Identification, discussion and engagement with Fleet Trial Participants</td>
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<td>4.4</td>
<td>EV leasing costs (Fleet)</td>
<td>EV leasing costs (fleet)</td>
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<td>4.5</td>
<td>Engage with local network cluster(s)</td>
<td>Identification, discussion and engagement with local network clusters</td>
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<td>4.6</td>
<td>Assess network(s)</td>
<td>Assessment of the local networks around potential cluster locations to validate the suitability of the site for participation in the trial</td>
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<td>4.7</td>
<td>Install technology and charging points</td>
<td>Install technology and charging points</td>
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<td>4.8</td>
<td>Removal of charging points at end of trial</td>
<td>Removal of charging points at end of trial</td>
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<td>Task 5</td>
<td>Monitoring first trial</td>
<td>Data to be collected on a monthly basis during each trial</td>
<td>31-Mar-14</td>
<td>30-Nov-15</td>
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<tr>
<td>5.1</td>
<td>Monitor and download data</td>
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<td>5.2</td>
<td>Report on data (6 monthly)</td>
<td>Report summarising high level analysis of gathered data</td>
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<td>5.3</td>
<td>Uninstall monitoring at end of trial</td>
<td>Removal of any charging points as required</td>
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<tr>
<td>Task 6</td>
<td>Trial participant interviews</td>
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<td>02-Jan-13</td>
<td>30-Oct-15</td>
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<tr>
<td>6.1</td>
<td>Develop interview pack</td>
<td>Develop interview pack for social and technical trial participants</td>
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<td>6.2</td>
<td>Pre-trial interviews</td>
<td>Undertake pre-trial interviews</td>
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<td>6.3</td>
<td>During trial interviews</td>
<td>Undertake during-trial interviews</td>
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<td>6.4</td>
<td>Post-trial interviews</td>
<td>Undertake post-trial interviews</td>
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<td>6.5</td>
<td>Socio-economic modelling</td>
<td>Modelling and analysis of the data gathered as part of the social trials</td>
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<tr>
<td>6.6</td>
<td>Make recommendations and report</td>
<td>Recommendations as to the anticipated acceptance of the Technology</td>
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<tr>
<td>Task 7</td>
<td>Modelling</td>
<td></td>
<td>07-Apr-14</td>
<td>30-Nov-15</td>
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<td>7.1</td>
<td>Network modelling and analysis contract</td>
<td>Develop a test network based on the information gathered from the trials</td>
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<td>7.2</td>
<td>Model the test network</td>
<td>Undertake simulation and modelling of the test network</td>
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<td>7.3</td>
<td>Extrapolate to different network types and locations</td>
<td>Extrapolate to different network types and locations</td>
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<tr>
<th>TASK ID</th>
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<tr>
<td>Task 8</td>
<td>Consultation with EV manufacturers</td>
<td>Compare the results with existing work identified in literature survey</td>
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<tr>
<td>8.1</td>
<td>Agree the cycle times for the Technology with OEMs</td>
<td>Discussion with EV manufacturers to prevent premature ageing of EV batteries as a result of charging cycles</td>
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<tr>
<td>Task 9</td>
<td>Project and regulatory recommendations with implementation</td>
<td>Make recommendations as to the ideal uptake of the Technology/solution by DNOs</td>
<td>01-May-13</td>
<td>31-Dec-15</td>
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<tr>
<td>9.1</td>
<td>Independent evaluation (Project and Solution)</td>
<td>Monitoring and evaluation of the project by an independent party</td>
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<td>9.2</td>
<td>How might the solutions be used by DNO planners as part of BAU</td>
<td>Make recommendations as to the ideal uptake of the Technology/solution by DNOs</td>
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<tr>
<td>9.3</td>
<td>Technical framework recommendations</td>
<td>Identify any elements of the Project Framework that changed would improve the Technical development of the Project</td>
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<td>9.4</td>
<td>Commercial framework recommendations</td>
<td>Identify any elements of the Project Framework that changed would improve the Commercial development of the Project</td>
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<tr>
<td>Task 10</td>
<td>Dissemination</td>
<td>Develop the plans for Project Learning Dissemination and Communication with Stakeholders</td>
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<td>10.1</td>
<td>Develop dissemination / comms plan</td>
<td>Develop the plans for Project Learning Dissemination and Communication with Stakeholders</td>
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<td>10.2</td>
<td>Implement communications plan</td>
<td>Implement the Communication Plan</td>
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<td>10.3</td>
<td>Reporting of SDRC outputs</td>
<td>Reporting of SDRC outputs</td>
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<td>Task 11</td>
<td>Project Management</td>
<td>Programme management to deliver the project</td>
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<td>11.1</td>
<td>Programme management to deliver the project</td>
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<td>11.2</td>
<td>Project governance and support</td>
<td>Project governance and support</td>
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<td>11.3</td>
<td>DNO project review and results</td>
<td>DNO project review and results</td>
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### APPENDIX 2: SUCCESSFUL DELIVERY REWARD CRITERIA

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<tr>
<th>SDRC</th>
<th>DOCUMENT TITLE</th>
<th>PLANNED DELIVERY DATE</th>
<th>ACTUAL DELIVERY DATE</th>
<th>CURRENT VERSION</th>
<th>AUTHOR ORGANISATION</th>
<th>STATUS</th>
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<tbody>
<tr>
<td>9.1</td>
<td>Learning from third party delivery of a Tier 1 LNCF project – bid submission process</td>
<td>28-Feb-13</td>
<td>28-Feb-13</td>
<td>v1</td>
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<td>9.2</td>
<td>Supporting Guidance for the FEV (My Electric Avenue) Novel Commercial Arrangement</td>
<td>30-Apr-13</td>
<td>30-Apr-13</td>
<td>v1</td>
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<td>9.2.1</td>
<td>Management &amp; Delivery Document</td>
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<td>9.2.2</td>
<td>Principal Contract Template</td>
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<td>9.2.3</td>
<td>Updated Principal Contract Template</td>
<td>31-Dec-15</td>
<td>21-Oct-15</td>
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<td>EA Technology</td>
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<td>9.3</td>
<td>Project Processes Report, including templates, meeting records and evaluation of collaboration between SSEN and Northern Powergrid with third party interface</td>
<td>30-Oct-15</td>
<td>21-Oct-15</td>
<td>v2.3</td>
<td>SSEN</td>
<td>Complete</td>
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<td>9.3.1</td>
<td>Framework for updating policies and procedures at SSEN, using suggestions identified during the project</td>
<td>30-Oct-15</td>
<td>21-Oct-15</td>
<td>v2.3</td>
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<td>9.3.2</td>
<td>Assessment of DNO Project Management Effort compared to previous innovation projects</td>
<td>30-Oct-15</td>
<td>21-Oct-15</td>
<td>v2.3</td>
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<td>9.4.2</td>
<td>Month 12 Independent Review Report</td>
<td>31-Jan-14</td>
<td>21-Jan-14</td>
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<td>Ricardo</td>
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<td>9.4.3</td>
<td>Report in response to Month 12 Independent Review Report</td>
<td>31-Jan-14</td>
<td>31-Jan-14</td>
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<td>9.4.4</td>
<td>Month 18 Independent Review Report</td>
<td>31-Jul-14</td>
<td>23-Jul-14</td>
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<td>9.4.5</td>
<td>Report in response to Month 18 Independent Review Report</td>
<td>31-Jul-14</td>
<td>31-Jul-14</td>
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<td>9.4.6</td>
<td>Month 24 Independent Review Report</td>
<td>31-Jan-15</td>
<td>30-Jan-15</td>
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<td>Customer Engagement Plan for Relevant Customers</td>
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<td>29-Jan-13</td>
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<td>Data Protection Strategy (DPS)</td>
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<td>29-Jan-13</td>
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<td>9.5.2</td>
<td>Social Trials: Sign up minimum of 100 EV drivers</td>
<td>31-Aug-14</td>
<td>05-Mar-14</td>
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<td>9.5.3</td>
<td>Allocation of Cluster Funding</td>
<td>31-Aug-14</td>
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<td>9.6</td>
<td>Findings from socio-economic analysis on public reaction to the Esprit technology</td>
<td>30-Oct-15</td>
<td>20-Oct-15</td>
<td>Issue 2</td>
<td>De Montfort University</td>
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<td>9.7</td>
<td>Technology Integration Assessment Report containing: a) Views of the OEM community on the impact of charge cycling on EVs b) Recommendations of suitable cycle times for EVs for demand-side response c) Evidence on whether the Esprit solution is feasible</td>
<td>30-Jun-15</td>
<td>22 May 2015 (approval date)</td>
<td>Issue 1</td>
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<td>9.8</td>
<td>Modelling to assess additional thermal and voltage headroom</td>
<td>30-Nov-15</td>
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<td>9.8.1</td>
<td>Potential cost and carbon emission savings</td>
<td>30-Nov-15</td>
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<td>EA Technology / University of Manchester</td>
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</table>

APPENDIX 2: SUCCESSFUL DELIVERY REWARD CRITERIA
Project Leads

Project Partners

My Electric Avenue has received support from Ofgem through the Low Carbon Networks (LCN) Fund.