LCNF Project Number: SSET205
Project Acronym: I²EV
Project Title: Innovation-squared: managing unconstrained EV connections
Alternative Project Title: My Electric Avenue
Funding Scheme: Second Tier Ofgem Low Carbon Networks (LCN) Fund
Funding DNO: Scottish and Southern Electric Power Distribution (SSEPD)
Third Party Lead Supplier: EA Technology Ltd
Other Project Partners: Fleetdrive Electric
Nissan
Northern PowerGrid
Zero Carbon Futures
Subcontractors: University of Manchester
De Montfort University
Automotive Comms
Ricardo
ANDtr
Creative Concern
Project Start Date: 7 January 2013
Project End Date: 31 December 2015
Project Website: http://myelectricavenue.info/
Type of Review: Periodic 6-monthly independent review
Period covered by review: 1 July 2014 to 31 December 2014
Names of Reviewers: Stuart Bower (SB28) Tel: +44 (0)1926 477748
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Other contributors to this review: n/a

Version History

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1 The “My Electric Avenue” project is the public identity for the Low Carbon Network (LCN) Fund Tier 2 project “I²EV”. The formal title “I²EV” is used for contractual and Ofgem reporting purpose.
EXECUTIVE SUMMARY

The My Electric Avenue project is trialling a new technology for managing the supply of electricity to electric vehicles connected to a local distribution network. This project was submitted to Ofgem’s Tier 2 Low Carbon Network (LCN) Fund as ‘i²EV’ but was rebranded as ‘My Electric Avenue’ in early 2013 to improve public acceptance. The project is led by EA Technology (Third Party Lead Supplier), with project partners Scottish and Southern Energy Power Distribution Limited (SSEPD) (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 fourth of the periodic 6-monthly Independent Reviews. It covers the Reviewers 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 July 2014 to 31 December 2014, principally involving:

- **Technical Trial** – Completion of customer recruitment for the Technical Trials, as per SDRC milestones; re-installation of the redesigned Intelligent Control Boxes (ICBs) for the Esprit system; data collection, analysis and visualisation; resolving various issues with the Esprit system functionality
- **Social Trial** – Completion of customer recruitment for the Social Trial; issuing and collecting pre-trial questionnaires; delivery of remaining Nissan LEAF EVs to some Social Trial participants
- **Project Management** – Ongoing effective project management and coordination of project partner activities; submitting revised Change Request to Ofgem and responding to more requests for further information

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.

Overall assessment of project so far

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

Have the key objectives for the period been achieved? **Partially**

Has the project made satisfactory progress towards meeting the overall project objectives? **Partially**

Has each Task made satisfactory progress against the Plan of Works? ** Mostly**

Has the project management been performed as required? **Yes**

Has the collaboration between project partners and sub-contractors been effective? **Yes**

Is there evidence of underperforming project partners or sub-contracts, lack of commitment or change in interest? **No**

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?

Yes

The My Electric Avenue project has successfully recruited over 100 people in 10 clusters to take part in the Technical Trial of the Esprit system for managing the charging of electric vehicles connected to a local distribution network. MEA has also successfully recruited over 100 participants for the Social Trial. Nearly all participants have received their Nissan LEAF EV, with the remaining vehicles expected to be delivered in early 2015. The Esprit installation is completed, with the exception of one Monitoring Controller (MC) that is to be installed on the pole-mounted transformer in the Lyndhurst cluster.

Following the re-installation and commissioning of the Mark 2 design ICBs, charging curtailment events were observed in some clusters with a few ICBs. However, communication between the MCs and ICBs deteriorated with time in most clusters. This prevented the Esprit system for being fully functional across every cluster. A software fix was rolled out in December, and according to EA Technology it appears to be working but has introduced another, new issue.

It appears that the Esprit system has been deployed at a Technology Readiness Level lower than that expected for a trial as large as My Electric Avenue. This is of concern, since the development of the Esprit system is outside of the control of the MEA project team. Responsibility for Esprit development resides within another team at EA Technology, with the hardware and software sub-contracted to an independent technology provider.

Key risks for the next reporting period include:

- Further delay and disruption to the Technical Trial caused by more issues with the Esprit system
- Failure or issues with the various processes for data collection, verification and analysis leading to a reduced data set and jeopardising project learning

The delivery schedule for the socio-economic modelling (Task 6) has already been affected by the issues with Esprit. Further disruption would put this task at risk of not delivering the full project learning.

**Highlighted Strengths**

Throughout the customer recruitment and technology installation processes, the MEA team has demonstrated excellent abilities in managing the relationships with Technical and Social Trial participants.

There continues to be strong team coherence across the project consortium, with good project partner and sub-contractor engagement in project activities. This is contributing to good project deliverables, such as the first three reports from the University of Manchester, which demonstrate a professional approach following a logical structure with clear wording and good learning/conclusions drawn.
Recommendations

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

- 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"

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

- Continue to improve the documentation associated with the Esprit technology and its design
- Improve the technology development processes used to deliver the Esprit system. For example, consider adopting a more systems engineering approach
- Include “Requirements Capture” and “Specification Setting” tasks at the beginning of the technology demonstration project
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My Electric Avenue

MONTH 12 INDEPENDENT REVIEW REPORT

1 INTRODUCTION

The project ‘Innovation-squared: managing unconstrained EV connections’ (I²EV), also known as ‘My Electric Avenue’, is seeking to trial 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 (LCNF) with Southern Electric Power Distribution, part of Scottish and Southern Energy Power Distribution (SSEPD), as the host Distribution Network Operator (DNO). Unusually for a LCNF 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 (SSEPD) ensuring the requirements of the LCNF 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 is due to complete 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 document. A summary of the Task Structure is provided in Appendix 1, and an overview of the project deliverables is provided in Appendix 2.

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 review includes recommendations on specific improvements and adaptations to working practices to be incorporated by the project team. The review covers the following separate and distinct elements:

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

3 All of these documents are available to download from the My Electric Avenue website: [http://myelectricavenue.info/project-library](http://myelectricavenue.info/project-library) [Accessed 17 July 2013]
• **Commercial/Business**
  - Review the project as it progresses, evaluating the effectiveness of the commercial and operational structure within the project team, including interactions between project partners;
  - Provide recommendations (if required) on improving processes and methodology to increase effectiveness and efficiencies, maximising value for money and ensuring an unbiased outcome.

• **Technical**
  - Monitor the trials underway, evaluating the:
    - Effectiveness of the methodology to undertake the trials;
    - Quality of the data being generated;
    - Validity of the analysis methods being utilised.
  - Provide recommendations (if required) of improvements to processes and methodology to increase effectiveness and efficiencies to maximise value for money and ensure an unbiased outcome.

The review reports form part of the project’s Successful Delivery Reward Criteria 9.4.1.

This report is the fourth periodic 6-monthly Independent Review Report covering the fourth six-month period of the project from July to December 2014 (inclusive). 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.

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. A further explanation of the RAG indicators is provided in Appendix 3.

### Table 1: Explanation of RAG indicators

<table>
<thead>
<tr>
<th>RAG Indicator</th>
<th>Explanation</th>
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| **Green**     |  - The project is delivering to plan (time, quality, budget)  
- There are no major issues  
- All the objectives have been met  
- The deliverables are of high quality |
| **Amber**     |  - The project is at risk of not delivering to plan (time, quality, budget)  
- There are issues / risks that will impact the project if not fixed  
- All the objectives have been met  
- The deliverables are of adequate quality |
| **Red**       |  - The project is not delivering to plan (time, quality, budget)  
- There are issues / risks that are impacting the project right now  
- All the objectives have been met  
- The deliverables are of poor quality |
2 SCOPE OF THIS INDEPENDENT REVIEW

The scope of this Independent Review concerns project activities conducted during M19 – M24. During this period the project focused upon:

- **Technical Trial**
  - Completing SDRC 9.5.2 – Confirmation of allocation of cluster funding
  - Completing delivery of Nissan LEAF EVs to all Technical Trial participants
  - Continuing data collection from the Monitor Controllers via iHost for nine of the Technical Trial clusters
  - Re-deployment of the ICBs (Mark 2), following the ICB recall in April 2014
  - Development of a bespoke database for collating, processing and storing the various data sets from the Technical Trial and Social Trial
  - Initial data analysis and data checking from Technical and Social Trials
  - Observation of Esprit system switching charging points off and on (curtailment)
  - Responding to emerging issues associated with maintaining communication between the MC and ICBs within the PLC network, and developing the software update to remedy the problem
  - Arranging next set of questionnaires for Technical Trial participants (De Montfort, Task 6)
  - Delivery of initial deliverables from the University of Manchester’s system modelling (Task 7)
  - Continuing to manage the relationships with the Technical Trial participants

- **Social Trial**
  - Completion of SDRC 9.5.3 – minimum of 100 EV drivers signed up for the Social Trial
  - Continued recruitment of participants for the Social Trial
  - Continuing to deliver Nissan LEAF EVs to Social Trial participants
  - Continuing first questionnaires and interviews with Social Trial participants
  - Continuing to set up Nissan CARWINGS link to retrieve data from the electric vehicles
  - Initial analysis of data from Nissan CARWINGS system

- **Project Management**
  - Ongoing effective project management and coordination of project partner activities
  - Preparation of a revised Change Request to Ofgem and responding to Ofgem’s requests for further information and clarification

Since the Principal and Subcontracts with associated Task Orders were completed within the previous reporting period, the *Novel Commercial Arrangement* has not

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4 Once again, a review of the Esprit technology and its performance against competition has not been included in this Independent Review. It is hoped that a review the Esprit technology will be included in subsequent 6-monthly reviews.

5 The Monitor Controller for Lyndhurst has not yet been installed because of the challenges associated with installing and modifying the MC attached to a pole-mounted transformer.
been an area of focus for this reporting period. The next deliverables associated with the Novel Commercial Arrangement are scheduled for October 2015 (SDRC 9.2.2) and December 2015 (SDRC 9.2.3).

The scope of the M24 Review also considers the recommendations made in previous reporting periods, and specific items requested in the M18 Review for inclusion in this review. In the M18 Review the Reviewers made the following recommendations:

- Improve documentation associated with the Esprit technology and its design, including installation and commissioning method statements
- Continue to improve document control
- Consider carefully which documents to submit to the independent reviewers “for review” and “for information”

In the M18 Review the Reviewers requested these items to be included in the M24 Review:

- The Learning Log
- Deliverables from Task 1
- A revised delivery schedule for Task 6 to align with the revised scope of work and in accordance with the ICB redeployment plan
- Feedback from the project partners and subcontractors regarding the monthly reporting and cost claim tools and processes
- Better explanation and evidence of the data analysis requirements and associated strategy (Task 5)
- Evidence of improved clarity in the tracker for the re-installation of the ICBs (Task 4)
- Latest version of the project Dissemination Plan

EA Technology submitted eight Task Memorandums and nine documents “for review” in this Month 24 Independent Review. These documents are listed in Table 2. Commentary on these documents is provided in Appendix 6. An additional 103 documents were submitted “for information”, as listed in Table 3. Commentary on these documents is provided in Appendix 7.

These documents were transferred to Ricardo using DropBox. The documents were uploaded on 22 December 2014 by Tim Butler at EA Technology, and downloaded by Jane Patterson at Ricardo on 5 January 2015. Further documents were added to DropBox on 6 January and 7 January 2015 – the Risk & Contingency Register (Risk & Contingency Register v4.27.xlsx), the Project Plan (I2EV Project Plan v3.1 - December 2014.mpp), the Progress Report (I2EV Project Progress Report December 2014.pdf), and an updated version of the Task Memo for Task 11 (MEA Task 11 24 Month Independent Review Memorandum Issue 1.0.docx).

A review meeting with EA Technology was held on Thursday 15 January 2015 at Ricardo UK, Midlands Technical Centre, located near Leamington Spa. The meeting attendees were Stuart Bower and Jane Patterson from Ricardo, and Tim Butler from EA Technology.
Following the M24 Review Meeting, Tim Butler sent a copy of the updated Project Plan for Task 6. This has been added to the list of documents submitted “for information”.

A summary of the participation of the project partners and subcontractors during the third six-month period is provided in Table 4 below. A description of the Tasks is provided in Appendix 1.
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### Task 10 - Dissemination

- **MEA Task 10 24 Month Independent Review Memorandum Issue 1.0.docx**
  - Organisation: EA Technology
  - Version: n/a
  - Issue Date: 9 December 2014

### Task 11 - Project Management

- **MEA Task 11 24 Month Independent Review Memorandum Issue 1.0.docx**
  - Organisation: EA Technology
  - Version: v1.0
  - Issue Date: 9 December 2014

- **#1 Letter to EATL Nov 14.pdf**
  - Organisation: EA Technology
  - Version: n/a
  - Issue Date: 13 November 2014

- **#2 86002_11_M_EATL Covering Letter 13th Nov_v0.1.pdf**
  - Organisation: EA Technology
  - Version: n/a
  - Issue Date: 26 November 2014

- **#3 86002_11_M_Response to letter dated 13th Nov_v0.2.pdf**
  - Organisation: EA Technology
  - Version: v0.2
  - Issue Date: 26 November 2014

- **#28 I2EV Project Progress Report December 2014.pdf**
  - Organisation: EA Technology
  - Version: v1.2
  - Issue Date: 12 December 2014
Table 3: Additional documents provided for information and considered by Ricardo during the M24 Independent Review

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**Task 7 - Network Modelling**

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| #4              | 86002_7_UoM IEEE PES 2015.pdf | UoM | ? | ? | No |
| #5              | 86002_7_UoM ISGT-NM- 2015.pdf | UoM | ? | ? | No |
| #7              | UoM-EA-Technology_MEA_Deliverables3.1-3.4v03.pdf | Task 7 | D3.1, 3.2, 3.3 & 3.4 | UoM | v03 | 15 December 2014 | No |

**Task 10 - Dissemination**

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| #2              | CIRED final paper planning.docx | ? | ? | ? | No |
| #3              | MEA top 10 tips for customer recruitment.pdf | EA Technology | v0.1 | 8 October 2014 | Yes |
| #4              | MEA top 10 tips for customer engagement.pdf | EA Technology | v0.4 | 8 October 2014 | Yes |</p>
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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 3 – Integration of the Technology with charging points
- Task 8 – Consultation with EV manufacturers
- Task 9 – Independent Review
### Table 4: Participation of Project Partners and Subcontractors during this Reporting Period

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<td>Re-installation of ICBs for clusters in SSE area&lt;br&gt;Preparation of a revised Change Request to Ofgem&lt;br&gt;Presentations on MEA at various events</td>
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<td>Programme management and consortium coordination&lt;br&gt;Re-installation of ICBs (Mark 2)&lt;br&gt;Continuing Customer Engagement activities to recruit participants for the Social Trial&lt;br&gt;Procuring Esprit components&lt;br&gt;Overseeing installation of Esprit components in the Technical Trial clusters&lt;br&gt;Responding to issues with the Esprit technology&lt;br&gt;Monitoring and analysing initial data from Technical Trial clusters&lt;br&gt;Project marketing and dissemination</td>
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<td><strong>3a NISSAN MOTOR LIMITED GB</strong></td>
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<td><strong>3b NISSAN INTERNATIONAL SA</strong></td>
<td>- - - - - - ✓ - ✓ - ✓ -</td>
<td>Providing access to the Nissan LEAF Advanced Processing Interface (API) for data recording</td>
</tr>
<tr>
<td><strong>4 NORTHERN POWERGRID HOLDINGS</strong></td>
<td>- - ✓ - ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td>Involved in the project’s Customer Engagement activities in the Northern Powergrid region&lt;br&gt;Supporting installation of Esprit components for clusters in NPG area, including re-installation of ICBs (Mark 2)</td>
</tr>
<tr>
<td>Project Partners / Subcontractors</td>
<td>Tasks</td>
<td>Comments on key activities</td>
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</tr>
<tr>
<td>5 ZERO CARBON FUTURES</td>
<td>0</td>
<td>Overseeing installation of EV charging points in participants’ properties or places of work</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Supporting installation of Esprit components, especially re-installation of ICBs (Mark 2)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Managing relationships with the trial participants, and responding to issues with the Esprit technology and EVs</td>
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<tr>
<td>6 FLEETDRIVE MANAGEMENT LTD</td>
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<td></td>
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<td>Credit checks of potential trial participants</td>
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<td>Delivering Nissan LEAFs to Technical and Social Trial participants</td>
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<td>Setting up Nissan CARWINGS accounts for trial participants</td>
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<td>Participating in project press events</td>
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<td>7 PROMOTE DESIGN &amp; MARKETING LIMITED / AUTOMOTIVE COMMS</td>
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<td>Issuing questionnaires to trial participants for both Technical and Social Trials</td>
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<td>Ensuring questionnaires have been returned</td>
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<td>Initial face-to-face interviews with Technical Trial participants in Chineham cluster</td>
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<td>Planning next set of questionnaires for Social Trial</td>
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<td>10 RICARDO UK LIMITED</td>
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<td>M18 Independent Review</td>
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### Project Partners / Subcontractors

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</table>

**Comments on key activities**

- Supplied Esprit hardware
- Supporting installation of Esprit components
- Reinstallation of ICBs (Mark 2)
- Developing software fixes for communication issues between MC and ICBs
- Project marketing, including website, flyers and other promotional material

### Notes:

- No information has been supplied regarding activities in Task 1, Task 3 or Task 8. However, during the M24 Review Meeting EA Technology confirmed they had been working on activities in Task 3 and Task 8 during this Reporting Period.

**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 ANDtr. The development of the Esprit system is not part of the My Electric Avenue project.

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 system (Monitoring Controller) and associated Intelligent Control Box (ICB) connected to the charging point. ZCF have subcontracted this activity to SSEC, following a formal tender process.

SSEPD is responsible for installing the Esprit system connected to the substation for the clusters located in a SSE area. SSEPD have subcontracted this activity to SSE Contracting.

Northern Powergrid is responsible for installing the substation Esprit system in the clusters located in the NPG area. NPG have subcontracted this activity to IDEC.
OVERALL ASSESSMENT

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

Adequate

The My Electric Avenue project has made excellent progress on recruiting participants for the Technical and Social Trials. The delivery of SDRC 9.5.2 in August 2014 confirmed the allocation of cluster funding for the Technical Trial. SDRC 9.5.3 was also delivered in August, confirming over 100 participants recruited for the Social Trial. Customer recruitment activities have been stopped, and the project has moved into a data collection and analysis phase.

Project management by EA Technology, as the Third Party Lead Supplier, continues to be strong. They have evidently tracked and monitored progress regarding the establishment of the Technical Trials and roll-out of the Esprit technology. They have quickly responded to the various issues encountered with the Esprit system, many of which were identified from checking the initial data. However, developing, implementing and deploying the necessary fixes has taken time. This has impacted on the timing of other project activities, especially Task 6 (DMU), and has shortened the duration of trial window for the Esprit system.

Teamwork with the project consortium continues to be excellent. EA Technology organise monthly project partner progress meetings, as well as regular update meetings with the teams on Task 4, Task 6 (DMU) and Task 7 (UoM). This helps to ensure that all project partners and subcontractors are fully engaged in the project.

Dissemination activities continue to be numerous. The project team have employed a range of media options for raising public awareness about the project, such as good use of the project website, press releases, email newsletters, social media, flyers for conferences and several presentations. Abstracts have been submitted to upcoming conferences and a couple of technical papers already written.

The first three internal project deliverables from the University of Manchester are excellent reports. Each report has a clear, logical structure and content. Good learning and conclusions have been demonstrated from the initial analysis and network modelling.

For example, based on analysis of the results from the Bramley trial of Esprit, UoM have made helpful recommendations on how to improve the Esprit technology. It is a shame that the changes to the Project Direction imposed by Ofgem meant this work could not be completed earlier. If this task had been completed at the beginning of the My Electric Avenue project as originally planned, some of these recommendations could have been incorporated into the Esprit system for the MEA trial.

The MEA project team have implemented several of the recommendations made in previous Independent Reviews. Document quality control has been improving, however there are still a few lapses. Further consideration is required regarding which documents to submit “for review” or “for information”. The Reviewers have provided advice on review documents in Chapter 10.
Some improvements were made to the documentation associated with the Esprit technology. However the Reviewers still found many weaknesses in the documents submitted for this review (see commentary in Appendix 6B and Appendix 7B).

Based on the evidence supplied in this review, it is the opinion of the Independent Reviewers that the Mark 2 design of the Intelligent Control Boxes is poor. The layout is still far from optimal, and the unit still needs to be opened to install it on site. The Reviewers have raised concerns with EA Technology regarding some aspects of the build quality (see Appendix 6B).

The Esprit system appears to be at a Technology Readiness Level lower than that expected for the size of the MEA trial. Based on the limited documentation that has been made available so far, the Reviewers assess Esprit to currently be at TRL 4 or 5. Although TRL 5 is sufficient for the scope of the various pre-trials, it is insufficient for the more extensive roll-out of the MEA Technical Trial. The Esprit system, especially the ICBs, will require further redesign and development work after the MEA trial is complete if the technology is to be successfully commercialised.

During this reporting period the MEA team have been able to observe the Esprit system successfully switching EV charging off and on. However communication issues between the MC and ICBs over the power line carrier have meant that for many clusters the Monitoring Controllers lost communication with most of the ICBs. This has significantly reduced how much data could be collected and the number of off/on events. Although these communication issues were first raised in August, it took several months for EA Technology’s technology partner ANDtr to confirm the root cause of the problem (signals between the MC and ICBs related to the off/on commands were overloading the PLC network). An initial software fix was rolled out December 2014, which appears to have corrected the MC to ICB communication issue, but has introduced a new problem related to collecting and logging the data from Esprit.

It is of great concern that this series of problems and issues with the Esprit system has significantly reduced the Technical Trial duration. This was originally scheduled as 12 months, but will now be a maximum of 6 months, assuming no further disruptions. This Esprit issues have impacted on the data collection tasks, especially the scheduling of questionnaires, interviews and focus groups by DMU in Task 6.

Resolution of the issues with Esprit has been largely outside of the control of the MEA project team. Responsibility for the development of Esprit resides within another team at EA Technology, with the hardware and software subcontracted to ANDtr. The good work conducted by the MEA project team has been compromised by internal management issues between EA Technology and their technology provider ANDtr.

Another point of concern is the delay by Ofgem in making a decision regarding the Change Request to Project Direction, which was originally submitted in August 2013. The Change Request has three elements:

- Correction to transcription errors inherent within the Project Submission documentation
- 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
During this reporting period, MEA submitted another version of the Change Request document to Ofgem, and received yet another request for further information and clarification. It is beyond the comprehension of the reviewers as to why Ofgem have been unable to make a decision regarding this Change Request. Ofgem’s continued indecision, hidden in requests for further information and clarification, is unnecessarily increasing the administrative burden for the core project team. Such behaviour by the LCN funding body is considered by the Independent Reviewers to be unacceptable.
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:

- 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
- Evaluate 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
- From the results and extrapolation via modelling, estimate the typical and maximum thermal capacity gained

The objectives for this six-month reporting period were to:

- Technical
  - Deliver:
    - SDRC 9.4.1.3 – M18 Independent Review
    - SDRC 9.5.2 – Allocation of Cluster Funding
    - SDRC 9.5.3 – Social Trial: Sign up minimum of 100 EV drivers
  - Complete the re-design of the ICBs and re-install these ICBs (Mark 2) for all Technical Trial participants
  - Deliver report confirming charging points, Esprit technology and monitoring installed (Task 4)
  - Deliver report documenting likely number and length of switch-offs under different scenarios, including impact of higher capacity charging (Task 4)
Deliver the first data collection reports to ensure data has been recorded and retrieved from CARWINGS and iHost, and to report initial data analysis (Task 5)

Deliver Task 7 Deliverable 1 report covering creating of computer-based models to mimic the Technical Trial clusters, findings from the Bramley trial, and data requirements for LV networking modelling (Task 7)

Deliver Task 7 Deliverable 2 report covering translation of network data from SEPD and other DNOs into OpenDSS, creation of computer-based models of the monitored LV networks, and review of available data to model EV loads (Task 7)

Deliver Task 7 Deliverable 3 report covering validation of LV network models and creation of aggregated profiles with and without EV loads

**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, such as a report on the results from the 6-week questionnaires and 3-month questionnaires. These deliverables are to be rescheduled due to the delays in the Technical Trial resulting from the various issues with the Esprit technology.

**Have the key objectives for the period been achieved?**

**Partially**

**Has the project made satisfactory progress towards meeting the overall project objectives?**

**Partially**

The project team have delivered SDRC 9.5.2 (Confirmation of allocation of cluster funding by 31 August 2014) and SDRC 9.5.3 (Social Trials: Sign up minimum of 100 EV drivers by 31 August 2014) (Appendix 2). The reports for SDRC 9.5.2 and SDRC 9.5.3 have been provided “for review” in the document pack for Task 2 (Table 2, Appendix 6A). SDRC 9.5.2 includes Slough Borough Council in the list of Technical Trial clusters. However in other documentation submitted “for information” it is evident that Slough Borough Council has been withdrawn from the full Technical Trial has is being considered as a “virtual cluster” within the Social Trial. There is still a sufficient number of clusters remaining to fulfil the objective of 10 Technical Trial cluster groups (SDRC 9.5.1.3).

The ICBs have been redesigned and the Mark 2 ICBs installed at the properties the Technical Trial participants (Appendix 6B).

A specific report to confirm that the charging points, Esprit technology and monitoring equipment has been installed was not submitted for the M24 Review. This Task 4 internal project deliverable was expected to be delivered in October 2014. In the Task 4 "for information" document pack, EA Technology did include copies of their tracker spreadsheets for ICB re-installation and Esprit commissioning. During the M24 Review Meeting EA Technology confirmed that all equipment required for the Esprit
system has been deployed, as documented in the Monthly Assurance Reports and Meetings with SSEPD, and as documented in the Six Monthly Progress Report (Task 11 documents supplied “for information” in this review). These documents should be considered to be the evidence for deliverable Task 4i in lieu of a specific report.

A report on “Trial Equipment Set-up Cluster Threshold Settings” was submitted “for information”. EA Technology have confirmed that this report is Internal Project Deliverable Task 4ii documenting the likely number and length of switch-offs under different scenarios, including impact of higher capacity charging. However the Reviewers have expressed serious concerns regarding the quality and accuracy of this analysis (see comments in Appendix 7A). During the M24 Review Meeting EA Technology agreed that the analysis methodology is not correct. However, there are no plans to repeat this analysis or to update this report. Data collected during the Technical Trial will be used to review and update the assumptions regarding probability of EV charging occurring, and the impact on LV lines of multiple EVs recharging on the same LV feeder (Task 5).

The MEA team have begun collecting and analysing the trial data (Task 5). The data is gathered from various sources, including CARWINGS and iHost (Appendix 4). It is good to observe that the project team have implemented the advice of the Independent Reviewers and are producing monthly data collection reports rather than 6-monthly data collection reports. During the M24 Review Meeting EA Technology confirmed that they are currently viewing the data daily to check its quality and quantity is as expected (i.e. data “health check”).

The University of Manchester have delivered their first three reports, which are internal project deliverables in Task 7 (Appendix 6C, Appendix 7E).

Although the Mark 2 ICBs have been installed, more issues with the operation of the Esprit technology have been experienced during this report period. Curtailment of charging has been observed in some of the clusters during this reporting period, which confirms the underlining concept of the Esprit system. However a deterioration in the communication between the Monitoring Controllers and ICBs has limited the time during which the Esprit technology has been fully operational.

EA Technology and ANDtr have prepared a software fix to improve communication reliability between the MC and ICBs, which was implemented in four clusters before Christmas. During the M24 Review Meeting EA Technology confirmed that this software fix appears to have resolved the issues with ICB communication dropping out. However it has introduced a new problem. Phase current data from the ICBs is not being passed on to the Envoy data logging system. ANDtr are working on another software fix.

These various issues with the Esprit system have further delayed progress regarding trialling the technology, and have impacted on the timing plan for Task 6. As a consequence, the duration of the fully functioning Esprit system will be less than 12 months, unless the project duration and lease period for the Nissan LEAFs can be extended.

A copy of the Learning Log was shown during the M24 Review Meeting. The Reviewers were able to confirm that the Learning Log is regularly updated by the EA Technology team and that appropriate version control is in place to track the changes.
A copy of the Dissemination Plan was also shown during the M24 Review Meeting. This plan shows that the MEA project are planning a suitable number of dissemination activities over the next 12 months for sharing project results with the public. Dissemination activities include the project newsletter, a webinar, press releases, conferences and exhibitions.
5 PROGRESS AGAINST WORK PLAN

Has each Task made satisfactory progress against the Plan of Works?

Task 0: Novel Commercial Arrangement
Yes
No further activity planned for Task 0 until the final reporting period.

Task 1: Initial Background
Partially
No information about Task 1 has been received for the M24 Review. However, the first deliverable from the University of Manchester has been included under Task 7, and it believed to be linked to one of the Task 1 project deliverables.6

Task 2: Customer Engagement
Yes
Funding has been allocated to the Technical Trial clusters (SDRC 9.5.2).
Over 100 participants have been recruited for the Social Trial (SDRC 9.5.3).
The MEA project team have continued to consider wisely how they communicate and engage with the Technical and Social Trial participants, treating them as customers.

Task 3: Integration of the Technology with charging points
n/a
No information on Task 3 has been provided for the M24 Review.

Task 4: Establishment of Customer / Cluster Trials
Partially
The Intelligent Control Boxes have been re-designed and re-installed in the Technical Trial clusters. However, when analysing the data, further issues with the Esprit system were discovered, which are preventing the Esprit technology from being fully operational.
EA Technology has conducted analysis on network loading for SSEPD. Threshold settings for the Technical Trial clusters have been generated, but the Independent Reviewers are concerned that the analysis behind this may be incorrect.

6 The first deliverable from the University of Manchester, which covers MEA Task 1, was delivered to EA Technology for comment on 28 June 2014. This was in accordance with the revised delivery schedule for University of Manchester, which covers Task 1 and Task 7. This report was submitted too late for the M18 Review, and therefore, has been included in the M24 Independent Review.
EA Technology have developed various documents and templates for commissioning the Esprit components, however the overall commissioning process is unclear.

Task 5: Monitoring first trials

The MEA team has continued to monitoring the data from the Technical and Social trials.

EA Technology has commissioned and built a new database for managing the data collection, storage and analysis of the MEA trial data, which is obtains from several sources (Appendix 4). EA Technology is in the process of developing a series of “dashboards” for quickly reviewing the data from each Technical Trial clusters.

The contents of the data collection reports is evolving, as the team consider the best methods for presenting the analysis results.

The first examples of the Esprit system switching EV charging on or off have been observed in the data sets for various Technical Trial clusters.

Regular review of the data helped the MEA team identify the communication issues with the operation of the Esprit technology.

Task 6: Trial Participant Interviews

DMU are continuing to track when questionnaires need to be issued and when they should be returned.

As of 16 December 2014, 224 pre-trial questionnaires had been issued and received, covering the Technical Trial, Social Trial and Slough Borough Council “virtual cluster”.

The second questionnaire has been issued and completed by all Technical Trial participants except Lyndhurst.

Face-to-face interviews have been conducted in Chineham.

Further issues with the Esprit technology has resulted in more changes to their timing plan. DMU have maintained good contact with EA Technology during this reporting period. They have been pro-active regarding the changing circumstances of the Esprit technology, and have demonstrated their willingness to flexibility, while ensuring project objectives are met.
Task 7: Modelling

The first three reports from the University of Manchester have been delivered, in accordance with the revised delivery schedule provided in the M18 Review.

UoM has completed Work Activity 1 on “evaluation of the initial trial” (in Bramley), Work Activity 2 on “low voltage networks” and Work Activity 3 on “Model Validation and Data Analysis”.

Task 8: Consultation with EV manufacturers: cycle times

Task 8 was not scheduled to begin until September 2015, although some activities were begun in the reporting period January – June 2014. No further information on Task 8 has been provided for this review.

Task 9: Project and Regulatory recommendations and implementation

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

Task 10: Dissemination

Various presentations on the My Electric Avenue project have been given at several events during this reporting period. The MEA team have also submitted several abstracts for upcoming conferences in 2015.

A banner and flyer were prepared for the LCNI conference.

A “top ten tips” series has been prepared for disseminating project learning and recommendations to other LCN Fund projects. These documents are available to download from the project website.

The project website continues to be an effective tool for engaging with the general public. Information on the website has been refreshed in line with project progress. For example, the home page now features an announcement that registration of interest in the Technical or Social Trials is not finished.

Task 11: Project Management

EA Technology continue to hold regular project progress meetings with SSEPD, project partners and subcontractors, as outlined in the Management and Delivery Documents.

Ofgem have not yet made a decision regarding the Change Request to Project Direction v1.10. EA Technology and SSEPD have responded to the various requests for further information in a timely manner.
Have planned SDRCs been achieved for this reporting period?

Yes

Have the other planned project milestones and deliverables been achieved for this reporting period?

Partially

As discussed in Section 4 above, the SDRCs for the fourth six-month period have been achieved.

Good progress has been made on collecting, analysing and visualising the data from the Technical and Social Trials (Task 5). The frequent data reviews have also helped to identify issues with the Esprit technology that need to be resolved.

Task 6 project deliverables are to be rescheduled again. The new timetable for interviews, focus groups and third questionnaire will be dependent on when the Esprit technology becomes fully operational.

The University of Manchester has delivered their first three deliverables (Task 7).

However, the expected internal deliverables from Task 4 have not been completed to the satisfaction of the Independent Reviewers.
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 (July – December 2014), along with reviewer “traffic light” ranking. Further comments on these SDRCs can be found in Appendix 6.

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<th>SDRC</th>
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<td>9.5.2</td>
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<td>9.5.3</td>
<td>Social Trials: Sign up minimum of 100 EV drivers</td>
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<tr>
<td></td>
<td>Completed to schedule</td>
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7 IMPLEMENTATION OF THE PROJECT

Has the project management been performed as required?  
Yes

As reported in previous Independent Reviews, the project is managed well by EA Technology. There is good participation from all project partners and subcontractors, as witnessed by the Independent Reviews at the face-to-face project partner meeting held in Chester on 3 December 2014.

EA Technology hold monthly project partner audio meetings will all relevant project partners. Meeting minutes from these monthly project partner meetings have been included “for information” in this review.

Each project partner and subcontract completes Monthly Progress reports in Excel spreadsheet format.

EA Technology also completes a monthly report for SSEPD, and holds an associated monthly “Project Assurance” meeting.

Has the collaboration between project partners and subcontractors been effective?  
Yes

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

Is there evidence of underperforming project partners or subcontractors, lack of commitment or change in interest?  
No

There is no evidence of underperforming project partners in the documentation supplied for this review. However, there is evidence of strained relationships between EA Technology and their technology supplier ANDtr.
8 DISSEMINATION OF PROJECT LEARNING

Have the project partners adequately publicised the project to raise awareness of the project with the general public?

Yes

The project team has continued to make excellent progress in advertising the project via the project website, social media, newsletters, conference presentations and exhibition stands.

Have the project partners adequately disseminated results and learning from the project?

Yes

The dissemination activities in this reporting period have continued to be strong. Although some of these have focused on raising awareness of the project rather than reporting results since only initial results are currently available.

Learning from customer engagement, customer recruitment, technology roll-out, the novel commercial arrangement and establishing a good project team has been captured and presented in a series of useful “top 10 tips” series. These tips were made available to attendees at LCNI in November, and have been published on the project website.

A presentation on the My Electric Avenue project has been given at the following events during this reporting period:

- LowCVP Annual Conference, held on 15 July 2014
- International Festival of Business – Clean & Cool Conference, held on 17 July 2014
- SSEPD mid-term observations to Gas NIC audience, held in July 2014
- Meeting with DECC’s Science & Innovation and Heat & Industry team at SSE’s Zero Carbon Homes development on 5 August 2014
- Automotive Battery Management Systems on 23-24 September 2014
- Ofgem Annual Innovation Event (internal) by SSEPD on 25 September 2014
- Ofgem workshop on Demand Side Response, Demand Side Management, Distribution Generation and Storage, held on 13 October 2014
- IET International Hybrid and Electric Vehicle Conference 2014, held on 13 October 2014
- Two presentations at LCNI on 21-22 October 2014
- Developing Systems of the Future Conference, held on 4 November 2014
- Smart Futures event on 12 November 2014

EA Technology also had a MEA project stand at LCV2014, held on 10-11 September 2014.

A new project flyer and banner were prepared for LCNI 2014.

EA Technology has continued to prepare and send out project newsletters to people who have sign the newsletter list via the project website.
The MEA project team have considered the next stage of project dissemination, which will include high quality technical papers on the analysis results from the project. Two abstracts have been submitted to the 23rd International Conference and Exhibition on Electricity Distribution (CIRED), to be held in Lyon, France on 15-18 June 2014. This aligns with the Reviewers’ expectations is evidence of planning for such dissemination activities in this reporting period.
HIGHLIGHTED STRENGTHS

Areas of strength observed in this reporting period include:

- **Strong teamwork** across the project consortium, with **good project partner and sub-contractor engagement in project activities**
- **Successful recruitment** of over 100 participants for the Social Trial
- **Continued good management of customer relationships** by EA Technology, Fleetdrive Electric and Zero Carbon Futures, especially with regard to arranging the re-installation of the ICBs during July to October 2014
- EA Technology **openness and honesty within the project team** regarding the catalogue of issues that the project team has faced in getting the Esprit technology to function as expected
- **Good range of dissemination activities.** In particular, the **“top 10 tips”** series for disseminating project learning to other LNCF projects
- **The first three reports from the University of Manchester** demonstrate a professional approach following a logical structure with clear wording and good learning/conclusions drawn.
- **De Montfort University** have shown resilience in attempting to minimise the impact the technology issues are having on the scheduling of Task 6 activities, whilst ensuring EA Technology were kept aware of the risks to project learning.
10  RECOMMENDATIONS FOR IMPROVEMENTS AND ADAPTIONS TO THE WORKING PRACTICES

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

- Further delay and disruption to the Technical Trial caused by issues with the Esprit system
- Failure or issues with the various processes for data collection, verification and analysis leading to a reduced data set and jeopardising project learning

The numerous issues with the Esprit technology have already affected the delivery schedule for the socio-economic modelling activities (Task 6). DMU have worked closely with EA Technology to revise the schedule for the remaining questionnaires, interviews and focus groups. However, any further disruptions to the Technical Trial will put this task at risk of not delivering the project learning in line with the project objectives.

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

1) **Prepare and communicate the contingency plan should further issues with Esprit disrupt the Technology Trial**

   It is the desire of all MEA project partners and sub-contractors that the remaining issues with the Esprit technology be resolved in January 2015. However, the MEA team should carefully consider the back-up plan in case of further disruption to the Technical Trial.

   It is important that this contingency plan is shared and discussed with all MEA team members.

2) **Review database requirements**

   It is evident that the MEA team has thought about data collection, analysis and visualisation for the Technical and Social Trials. It is good that EA Technology has commissioned a new database to act as the central store for the various dataset used in the My Electric Avenue project.

   However, the documents provided in this review are not quality controlled documents. Data visualisation is at an early stage. Much hope has been placed the use of "dashboards" for verifying the data from each cluster, but these are still under development.

   The Reviewers are concerned that the requirements for the MEA database and its associated visualization tools have not be fully captured and reviewed by all relevant project stakeholders, particularly from a total systems perspective. It is also unclear how the database and its associated tools will be validated.

3) **Identify the risks associated with data collection, analysis and the visualisation tools**

   As the My Electric Avenue project moves into a phase which is mostly data collection data from the Technical and Social Trials, it is important that the project team fully consider the potential risks and hazards associated with gathering, analysing and visualising the data. Although it is unlikely that any of these risks could result in series damage to people or property, a failure in data collection,
transfer, storage, analysis, visualisation or reporting could have a detrimental impact on the project achieving its learning objectives.

Other recommendations relevant for the next six months include:

4) **Consider modifying the Esprit system functionality so the threshold settings can be changed remotely**

   The substation current thresholds for curtailing EV charging are set in the Monitoring Controller. Currently, changing these threshold settings requires someone visiting the cluster substation.

   During the remaining months of the Technical Trial, it is likely that the MEA team will need to frequently modify the threshold settings for each cluster to ensure EV charging is appropriately curtailed. This will be key to achieving the project learning.

   Remote setting of the thresholds will enable the MEA team to closely control charging curtailment and monitor the impact of different threshold settings. It will also save time, resources and travel expenditure.

5) **Continue to improve document control**

   Whilst many of our previous recommendations to improve document control are already being applied at EA Technology’s instigation, there is still scope to further improve project document control.

   The reviewers expect the document control measures outlined in the M12 Review to be applied consistently by all project partners and subcontractors across all project task deliverable documents. This applies to all documents, not just those completed by the core MEA project team.

   Note: Ten documents included in the M24 Review pack were missing author and/or date information. These documents were from Task 5 and Task 10. The lack of such based document information made it difficult for the Reviewers to understand the background context of these documents.

6) **Consider carefully which documents to submit to the independent reviewers “for review” and “for information”**

   The independent review covers the following separate and distinct elements:

   - **Commercial/Business**
     - Review the project as it progresses, evaluating the effectiveness of the commercial and operational structure within the project team, including interactions between project partners;
     - Provide recommendations (if required) on improving processes and methodology to increase effectiveness and efficiencies, maximising value for money and ensuring an unbiased outcome.

   - **Technical**
     - Monitor the trials underway, evaluating the:
       - Effectiveness of the methodology to undertake the trials;
- Quality of the data being generated;
- Validity of the analysis methods being utilised.
  - Provide recommendations (if required) of improvements to processes and methodology to increase effectiveness and efficiencies to maximise value for money and ensure an unbiased outcome.

It is important that the documents supplied for the six-monthly reviews are suitable for allowing the independent reviewers to assess the commercial and technical aspects of the project. The reviewers expect reports submitted “for review” to have been quality checked, approved and issued.

Examples of documents that should be included “for review” are:
- Six Monthly Progress Report
- Task Memos
- Any SDRCs completed in the reporting period
- Any internal project deliverables completed in the reporting period
- Documents supplied as evidence that previous recommendations have been implemented
- Documents requested in the previous Independent Review

7) Consider using an appropriate file sharing system to share project documents among the project consortium

It would be useful if the project had an appropriate file sharing system that could be accessed by the various project consortium members. This would allow the project partners and sub-contractors to have ready access to project documents such as the Learning Log and Risk Register. It would make it easier to share the weekly and monthly data collection reports, which could be aligned with the regular project meetings.

File sharing would also be helpful for providing access to the reports from other sub-contractors, such as DMU and UoM.

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

8) Improve documentation associated with the Esprit technology and its design

Various documents associated with the design, installation and commissioning of the Esprit technology have been included in this review (see the Task 4 documents listed in Table 2 and Table 3). It is the opinion of the Reviewers that there continues to be a need to improve the scope and quality of these documents for future design iterations of the technology (see comments in Appendix 6B and Appendix 7B).

It is evident that the design of the Esprit ICBs is still early prototype. A wider range of improvements should be considered for the next design iteration to enable ease of installation whilst minimising the chance of damage to internal components or incorrect connection. Tamper evidence devices such as a seal
or sticker should be included. Consideration should be also be given to the manufacturability (at scale) of the design.

9) **Improve the technology development processes used to deliver the Esprit system**

This recommendation is learning to be applied for the next stage of development of the Esprit technology after the My Electric Avenue project. The principles could also be applied to future technology demonstration projects.

- **Include “Requirements Capture” and “Specification Setting” tasks at the beginning of the technology demonstration project**

A larger scale trial of a new technology will have requirements that are specific to achieving the objectives of the trial. Some of these requirements may be different to the earlier demonstrations, such as the need to produce the components at a larger volume (e.g. 100 units instead of one or two).

A comprehensive requirements capture activity will help to clarify what the project team will expect from the technology during the trial. These requirements must be discussed with the technology development team, and what is agreed documents for future reference.

Once captured and agreed, requirements can be developed into a specification document. The requirements and specifications will also shape what validation tests will need to be performed on the prototype components prior to installation in the trial sites.

- **Adopt a “systems engineering” approach to the technology development**

The Esprit technology consists of several sub-systems that need to work together to achieve a fully functioning system. A systems engineering approach would ensure that:

- All the sub-systems are suitably defined
- All interfaces between the sub-systems are defined (physical, electrical, control, data transfer, thermal, etc.)
- Each sub-system has a defined “owner”, who will liaise with the various stakeholders in the technology development process

Based on information provided in this review, the Independent Reviewers expect the following to be made available during the M30 Review:

- First draft of “SDRC 9.2.2 – Review of the contract put in place between SSEPD 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”
Other items to be included in the M30 Review are:

- Learning Log
- A project team organisation chart with defined roles and responsibility for each team member
APPENDIX 1 PROJECT TASK STRUCTURE

The ‘My Electric Avenue’ project consists of 12 Tasks, as described in the table below, taken from Annex 2 of the Project Direction letter from Ofgem, dated 21 December 2012, and from the Project Plan (dated Tuesday 18 June 2013). Further information on the Tasks is provided in Section 2 of the LCNF Full Submission Pro-forma.

<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>
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<tr>
<td></td>
<td>0.1 Establish the 3rd party delivery commercial framework (yr 1)</td>
<td>Draft and agree the contract for a non-DNO to manage a LCNF Tier 2 project</td>
<td>2 January 2013</td>
<td>31 December 2015</td>
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<tr>
<td></td>
<td>0.2 Review the commercial framework and recommend changes (yr 3)</td>
<td>Review the initial contract towards the end of the project and make necessary changes following the lessons learnt</td>
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<tr>
<td>Task 1</td>
<td>Initial background – evaluation of initial trial</td>
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<tr>
<td></td>
<td>1.1 Evaluation of initial on-site 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 I²EV Project</td>
<td>2 January 2013</td>
<td>28 June 2013</td>
</tr>
<tr>
<td></td>
<td>1.2 Literature survey - additional load</td>
<td>Literature survey of the estimates regarding additional load to be introduced from EVs and the potential for load shifting</td>
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<tr>
<td></td>
<td>1.3 Literature survey - customer behaviour</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>
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<td></td>
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<tr>
<td>Task 2</td>
<td>Customer engagement</td>
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<tr>
<td></td>
<td>2.1 Customer engagement plan</td>
<td>Develop customer engagement plan for the I²EV Project</td>
<td>2 January 2013</td>
<td>11 December 2014</td>
</tr>
<tr>
<td>Task ID</td>
<td>Task Title</td>
<td>Task Description</td>
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</tr>
<tr>
<td>2.2</td>
<td>Social trials</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></td>
<td></td>
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<tr>
<td>2.3</td>
<td>Technical 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>
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</tbody>
</table>

**Task 3 Integration of the Technology with charging points**

| 3.1     | Technology development of Esprit | Development of the Esprit Technology, integrating learning from the Project (not to be funded under LCNF)                                                                                                    | 17 June 2013   | 30 June 2015    |
| 3.2     | Ongoing development of Esprit during project |                                                                                          |                |                  |
| 3.3     | Engage with charging point manufacturers | Liaise with charging point manufacturers to discuss the Technology and the impact on their equipment                                                |                |                  |
| 3.4     | Integrate technology with charging points | Work on integration of the Technology (Logic and Communication Systems) into Charging Points                                                      |                |                  |

**Task 4 Establishment of customer / cluster trial**

<p>| 4.1     | Managing subsidised rental programme for fleet users | Management of the vehicles and participants in the Fleet Trials                                                                               | 30 September 2013 | 18 December 2015 |
| 4.2     | Managing collection and delivery of cars             | Delivering and managing the Fleet Trial Participants                                                                                           |                |                  |
| 4.3     | Finding trial (fleet) participants and providing funding / risk of funding | Identification, discussion and engagement with Fleet Trial Participants                                                                       |                |                  |</p>
<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task Title</th>
<th>Task Description</th>
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<tbody>
<tr>
<td>4.4</td>
<td>EV leasing costs (fleet)</td>
<td>EV leasing costs (fleet)</td>
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<tr>
<td>4.5</td>
<td>Engage with local network cluster(s)</td>
<td>Identification, discussion and engagement with local network clusters</td>
<td></td>
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<tr>
<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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<tr>
<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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**Task 5 Monitoring first trial**

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<tbody>
<tr>
<td>5.1</td>
<td>Monitor and download data</td>
<td>31 March 2014</td>
<td>30 November 2015</td>
</tr>
<tr>
<td>5.2</td>
<td>Report on data (6 monthly)</td>
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<tr>
<td>5.3</td>
<td>Uninstall monitoring at end of trial</td>
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**Task 6 Trial participant interviews**

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task Title</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Develop interview pack</td>
<td>2 January 2013</td>
<td>30 October 2015</td>
</tr>
<tr>
<td>6.2</td>
<td>Pre-trial interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>During trial interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4</td>
<td>Post-trial interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task ID</td>
<td>Task Title</td>
<td>Task Description</td>
<td>Start</td>
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<tr>
<td>---------</td>
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</tr>
<tr>
<td>6.5</td>
<td>Socio-economic modelling</td>
<td>Modelling and analysis of the data gathered as part of the social trials</td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>Make recommendations and report</td>
<td>Recommendations as to the anticipated acceptance of the Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Task 7 Modelling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<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>
<td>7 April 2014</td>
</tr>
<tr>
<td>7.2</td>
<td>Model the test network</td>
<td>Undertake simulation and modelling of the test network</td>
<td></td>
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<tr>
<td>7.3</td>
<td>Extrapolate to different network types and locations</td>
<td>Extrapolate to different network types and locations</td>
<td></td>
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<tr>
<td>7.4</td>
<td>Compare the results with existing work identified in literature survey</td>
<td>Compare the results with existing work identified in literature survey</td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>Estimate savings through the use of the Solution</td>
<td>Estimate savings that could be achieved using the Technology on wider networks</td>
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<tr>
<td></td>
<td><strong>Task 8 Consultation with EV manufacturers</strong></td>
<td></td>
<td></td>
</tr>
<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 results of charging cycles</td>
<td>1 September 2015</td>
</tr>
<tr>
<td></td>
<td><strong>Task 9 Project and regulatory recommendations with implementation</strong></td>
<td></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>
<td>1 May 2013</td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<td>Task ID</td>
<td>Task Title</td>
<td>Task Description</td>
<td>Start</td>
</tr>
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<tr>
<td>9.3</td>
<td>Technical framework recommendations</td>
<td>Identify any elements of the Project Framework that if changed, would improve the Technical development of the Project</td>
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</tr>
<tr>
<td>9.4</td>
<td>Commercial framework recommendations</td>
<td>Identify any elements of the Project Framework that if changed, would improve the Commercial development of the Project</td>
<td></td>
</tr>
</tbody>
</table>

**Task 10 Dissemination**

10.1 Develop dissemination / comms plan  
   Develop the plans for Project Learning Dissemination and Communication with Stakeholders

10.2 Implement communications plan  
   Implement the Communication Plan

10.3 Reporting of SDRC outputs  
   Reporting of SDRC outputs

**Task 11 Project Management**

11.1 Programme management to deliver the project  
   Programme management to deliver the project

11.2 Project governance and support  
   Project governance and support

11.3 DNO project review and results  
   DNO project review and results

**Notes:**

- A revised scope of work has been proposed for Task 1, Task 6 and Task 7. The Project Task Structure presented above may need to be revised to align with these changes in scope for Task 1, Task 6 and Task 7.
### APPENDIX 2 LIST OF SUCCESSFUL DELIVERY REWARD CRITERIA (SDRC) AND OTHER DELIVERABLES

**Successful Delivery Reward Criteria (SDRC):**

<table>
<thead>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>Learning from third party delivery of a Tier 1 LNCF project – bid submission process</td>
<td>28 February 2013</td>
<td>28 February 2013</td>
<td>v1</td>
<td>EA Technology</td>
<td>Complete</td>
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<tr>
<td>9.2</td>
<td>Supporting Guidance for the I2EV (My Electric Avenue) Novel Commercial Arrangement</td>
<td>30 April 2013</td>
<td>30 April 2013</td>
<td>v1</td>
<td>EA Technology</td>
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<tr>
<td>9.2.1 – Annex 1</td>
<td>Management &amp; Delivery Document</td>
<td>30 April 2013</td>
<td>30 April 2013</td>
<td>v1</td>
<td>EA Technology</td>
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<td>v1</td>
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<td>Partner / Supplier Task Order Template</td>
<td>30 April 2013</td>
<td>30 April 2013</td>
<td>v1</td>
<td>EA Technology</td>
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<td>9.2.2</td>
<td>Review of Novel Commercial Arrangement</td>
<td>30 October 2015</td>
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<td>9.2.3</td>
<td>Updated Principal Contract Template</td>
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<td>SSEPD</td>
<td>Not Started</td>
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<td>9.3</td>
<td>Project Processes Report, including templates, meeting records and evaluation of collaboration between SSEPD and Northern Powergrid with third party interface</td>
<td>30 October 2015</td>
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<td>SSEPD</td>
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<td>Framework for updating policies and procedures at SSEPD, using suggestions identified during the project</td>
<td>30 October 2015</td>
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<td>SSEPD</td>
<td>Not Started</td>
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<tr>
<td>9.3.3</td>
<td>Assessment of DNO Project Management Effort compared to previous innovation projects</td>
<td>30 October 2015</td>
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<td>SSEPD</td>
<td>In progress</td>
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<tr>
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<td>Actual Delivery Date</td>
<td>Current Version</td>
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<td>9.4</td>
<td>9.4.1.1a Month 06 Independent Review Report</td>
<td>31 July 2013</td>
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<td>9.4.1.3a Month 18 Independent Review Report</td>
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<td>9.4.1.4b Report in response to Month 24 Independent Review</td>
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<td>9.4.1.5a Month 30 Independent Review Report</td>
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<td>9.4</td>
<td>9.4.1.6a Month 36 Independent Review Report</td>
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<td>Ricardo</td>
<td>Not Started</td>
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<td>9.4.1.6b Report in response to Month 36 Independent Review</td>
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<tr>
<td>9.5</td>
<td>9.5.0.1 Customer Engagement Plan for Relevant Customers</td>
<td>28 February 2013</td>
<td>29 January 2013</td>
<td>v5.6</td>
<td>EA Technology</td>
<td>Complete</td>
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<td>9.5</td>
<td>9.5.0.2 Data Protection Strategy (DPS)</td>
<td>28 February 2013</td>
<td>29 January 2013</td>
<td>v4.2</td>
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<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>9.5.1.1</td>
<td>Sign up of 3 cluster groups</td>
<td>30 September 2013</td>
<td>-</td>
<td>-</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.5.1.2</td>
<td>Sign up of 5 cluster groups</td>
<td>31 December 2013</td>
<td>-</td>
<td>-</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.5.1.3</td>
<td>Sign up of 100 customers in at least 7 cluster groups</td>
<td>31 March 2014</td>
<td>5 March 2014</td>
<td>v1.0</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.5.1.4</td>
<td>Sign up of 10 cluster groups</td>
<td>31 August 2014</td>
<td>5 March 2014</td>
<td>v1.0</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.5.2</td>
<td>Allocation of Cluster Funding</td>
<td>31 August 2014</td>
<td>-</td>
<td>-</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.5.3</td>
<td>Social Trials: Sign up minimum of 100 EV drivers</td>
<td>31 August 2014</td>
<td>-</td>
<td>-</td>
<td>EA Technology</td>
<td>Complete</td>
</tr>
<tr>
<td>9.6</td>
<td>Findings from socio-economic analysis on public reaction to the Esprit technology</td>
<td>30 October 2014</td>
<td>-</td>
<td>-</td>
<td>De Montfort University</td>
<td>Not Started</td>
</tr>
<tr>
<td>9.7</td>
<td>Technology Integration Assessment Report containing:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Views of the OEM community on the impact of charge cycling on EVs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Recommendations of suitable cycle times for EVs for demand-side response</td>
<td>30 June 2015</td>
<td>-</td>
<td>-</td>
<td>EA Technology</td>
<td>In progress</td>
</tr>
<tr>
<td></td>
<td>c) Evidence on whether the Esprit solution is feasible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.8</td>
<td>Modelling to assess additional thermal and voltage headroom</td>
<td>30 November 2015</td>
<td>-</td>
<td>-</td>
<td>University of Manchester</td>
<td>In progress</td>
</tr>
<tr>
<td>9.8.2</td>
<td>Potential cost and carbon emission savings</td>
<td>30 November 2015</td>
<td>-</td>
<td>-</td>
<td>University of Manchester</td>
<td>Not Started</td>
</tr>
</tbody>
</table>
Other internal project deliverables:

<table>
<thead>
<tr>
<th>Deliverable Reference</th>
<th>Document Title</th>
<th>Original Planned Delivery Date</th>
<th>Re-planned Delivery Date</th>
<th>Actual Delivery Date</th>
<th>Current Version</th>
<th>Author Organisation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1i</td>
<td>Assessment of the initial trial and recommendations on improvements to the design</td>
<td>12 March 2013</td>
<td>30 June 2014</td>
<td>28 June 2014</td>
<td>v01</td>
<td>University of Manchester</td>
<td>Complete</td>
</tr>
<tr>
<td>Task 1ii</td>
<td>Technical literature survey of load shifting potential of EVs and heat pumps</td>
<td>30 May 2014</td>
<td>25 August 2014</td>
<td></td>
<td></td>
<td>University of Manchester</td>
<td>Completed</td>
</tr>
<tr>
<td>Task 1iii</td>
<td>Social-economic literature survey of customer behaviour with EVs and acceptance of direct control of appliances</td>
<td>28 June 2013</td>
<td>-</td>
<td>28 August 2013 (Draft)</td>
<td>Draft</td>
<td>DMU</td>
<td>Late</td>
</tr>
<tr>
<td>Task 3i</td>
<td>Report(s) confirming integration of the technology into charging points or other loads</td>
<td>30 June 2015</td>
<td>-</td>
<td></td>
<td></td>
<td>EA Technology</td>
<td>Not Started</td>
</tr>
<tr>
<td>Task 4i</td>
<td>Report(s) confirming charging points, Esprit technology and monitoring installed</td>
<td>28 March 2014</td>
<td>3 October 2014</td>
<td></td>
<td></td>
<td>EA Technology</td>
<td>Completed</td>
</tr>
<tr>
<td>Task 4ii</td>
<td>Report documenting likely number and length of switch-offs under different scenarios, including impact of higher capacity charging</td>
<td>28 March 2014</td>
<td>31 October 2014</td>
<td>October 2014</td>
<td>v1.1</td>
<td>EA Technology</td>
<td>Completed</td>
</tr>
<tr>
<td>Task 5i</td>
<td>Data collection report 1</td>
<td>2 June 2014</td>
<td>-</td>
<td></td>
<td></td>
<td>EA Technology</td>
<td>Completed</td>
</tr>
</tbody>
</table>

7 The Deliverable Task 1i has been supplied in UoM Deliverable 1.1 from their first Work Activity
8 The Deliverable Task 1ii has been supplied in UoM’s second deliverable report from their Work Activity 2
9 A separate report for Internal Project Deliverable Task 4i has not been prepared. However, confirmation of installation of charging points, Esprit technology and monitoring equipment has been provided in the Monthly Project Assurance Reports and Meeting Minutes, and in the Six Monthly Progress Review Report (Task 11 documents)
10 The Data Collection Reports from Task 5 are now produced monthly, and are the outputs of ongoing data analysis
<table>
<thead>
<tr>
<th>Deliverable Reference</th>
<th>Document Title</th>
<th>Original Planned Delivery Date</th>
<th>Re-planned Delivery Date</th>
<th>Actual Delivery Date</th>
<th>Current Version</th>
<th>Author Organisation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data collection report 2</td>
<td>1 December 2014</td>
<td>-</td>
<td>16 December 2014</td>
<td>v1.0</td>
<td>EA Technology</td>
<td>Completed</td>
</tr>
<tr>
<td></td>
<td>Data collection report 3</td>
<td>1 June 2015</td>
<td>-</td>
<td></td>
<td></td>
<td>EA Technology</td>
<td>Not Started</td>
</tr>
<tr>
<td></td>
<td>Data collection report 4</td>
<td>1 December 2015</td>
<td>-</td>
<td></td>
<td></td>
<td>EA Technology</td>
<td>Not Started</td>
</tr>
<tr>
<td>Task 6i</td>
<td>Report on results from pre-trial questionnaires (Technical and Social Trials)</td>
<td>28 March 2014</td>
<td>To be rescheduled, see notes</td>
<td></td>
<td>DMU</td>
<td>Delayed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report on results from questionnaires issued 6 weeks after receiving the electric vehicle (Technical and Social Trials)</td>
<td>30 May 2014</td>
<td>To be rescheduled, see notes</td>
<td></td>
<td>DMU</td>
<td>Delayed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report on results from questionnaires issued 3 months after receiving the electric vehicle (Technical and Social Trials)</td>
<td>25 July 2014</td>
<td>To be rescheduled, see notes</td>
<td></td>
<td>DMU</td>
<td>Delayed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report on results from questionnaires issued 10 months after receiving the electric vehicle (Technical and Social Trials)</td>
<td>19 December 2014</td>
<td>To be rescheduled, see notes</td>
<td></td>
<td>DMU</td>
<td>Delayed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final Report on results from customer interviews and social economic analysis</td>
<td>29 May 2015</td>
<td>To be rescheduled, see notes</td>
<td></td>
<td>DMU</td>
<td>Not Started</td>
<td></td>
</tr>
<tr>
<td>Deliverable Reference</td>
<td>Document Title</td>
<td>Original Planned Delivery Date</td>
<td>Re-planned Delivery Date</td>
<td>Actual Delivery Date</td>
<td>Current Version</td>
<td>Author Organisation</td>
<td>Status</td>
</tr>
<tr>
<td>-----------------------</td>
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</tr>
</tbody>
</table>
| Task 7 D1.1, 1.2 & 1.3 Combined Report | • Creation of computer-based models to mimic the trial, i.e., corresponding behaviour of (dummy) loads and the technology  
• Report for WP 1 on findings from the initial trial data and the potential improvements of the logic and design of the technology  
• Data requirements for LV network monitoring and agreed approach for data transfer to Manchester University | 30 June 2014 | 30 June 2014 | 28 June 2014 | | UoM | Complete |
| Task 7 D2.1, 2.2 & 2.3 Combined Report | • Translation of network data from SEPD and potentially other DNOs into OpenDSS  
• Creation of non-validated computer-based models of monitored LV networks ready to be used for planning studies  
• Review of available data and techniques to model EV loads including an initial assessment for load shifting | 25 August 2014 | 25 August 2014 | 25 August 2015 | | UoM | Complete |
## Deliverable Reference, Document Title, Original Planned Delivery Date, Re-planned Delivery Date, Actual Delivery Date, Current Version, Author Organisation, Status

<table>
<thead>
<tr>
<th>Deliverable Reference</th>
<th>Document Title</th>
<th>Original Planned Delivery Date</th>
<th>Re-planned Delivery Date</th>
<th>Actual Delivery Date</th>
<th>Current Version</th>
<th>Author Organisation</th>
<th>Status</th>
</tr>
</thead>
</table>
| Task 7 D3.1, 3.2, 3.3. & 3.4 | Combined Report  
- Translation of data/reports from monitoring devices into OpenDSS  
- Production of validated LV networks  
- Creation of aggregated profiles with and without EVs based on monitored data  
- Representative LV networks | 19 December 2014 | 19 December 2014 | 15 December 2014 | UoM | Complete<sup>11</sup> |
| Task 7 D4.1 | Combined Report  
- Scenario-based deterministic impact studies on validated and representative LV networks considering BAU integration  
- Report on findings from the monitoring data and the potential technical and economic challenges that future EV/EHP penetrations will pose to the management of LV networks | 25 May 2015 | 25 May 2015 | | UoM | Not Started |
| Task 7 D5.1 | Combined Report  
- Scenario-based deterministic impact studies on validated and representative LV networks considering the technology  
- Report on the economic and environmental benefits from adopting the technology | 31 August 2015 | 31 August 2015 | | UoM | Not Started |
| Task 10i | Dissemination plan | 30 April 2013 | - | January 2013 | 0.4 | EA Technology & Automotive Comms | Reviewed |

<sup>11</sup> Deliverable Report provided “for information”, not “for review”
Note:

- Little information has been received regarding progress or deliverables from Task 1.

- Data collection reports from Task 5 have been produced monthly, following recommendations from the Independent Reviewers. The reports produced in this reporting period include data from CARWINGS and iHost.

- The “for information” pack from Task 6 included communication regarding the revising the timeline for the questionnaires, focus groups and interviews. This is in reaction to the various issues associated with the Esprit technology, which have affected DMU’s delivery timetable. The exact delivery timetable is still under discussion since it is dependent on the results of the latest software upgrade for the Monitoring Controllers.

- In the M18 Review, deliverables for Task 7 were added to this table to align with the Schedule of Deliverables for Task 7.
### APPENDIX 3 EXPLANATION OF RAG INDICATORS FOR EACH REVIEW QUESTION

<table>
<thead>
<tr>
<th>Question</th>
<th>RAG Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the reviewers’ overall assessment of the project so far?</td>
<td>Excellent / Good</td>
</tr>
<tr>
<td></td>
<td>Adequate</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>Have the objectives for the period been achieved?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Has the project made satisfactory progress towards meeting the overall project objectives?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Has each Task made satisfactory progress against the Project Plan of Works?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Have planned SRDCs been achieved for this reporting period?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Have planned milestones been achieved for this reporting period?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>What is the reviewers’ opinion of the delivered SDRCs?</td>
<td>Excellent / Good</td>
</tr>
<tr>
<td></td>
<td>Adequate</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>Has the project management been performed as required?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Has the collaboration between project partners and sub-contractors been effective</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</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></td>
<td>A little</td>
</tr>
<tr>
<td></td>
<td>Yes</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></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Have the project partners adequately disseminated results and learning from the project?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>
APPENDIX 4 MY ELECTRIC AVENUE DATA COLLECTION TOOLS

The purpose of Appendix 4 is to provide Ricardo staff with a high-level explanation of the various data collection tools and services that are being used by the My Electric Avenue project. Hard data is recorded and collected from the Monitor Controllers (MCs), Intelligent Control Boxes (ICBs) and electric vehicles. Soft data is collected directly from the Technical and Social Trial participants.

The Monitor Controllers and ICBs are components of the Esprit technology. For each Technical Trial cluster, the Monitor Controller is located in the substations for the Low Voltage feeder. The ICBs are connected to the recharging units for participants in the Technical Trial. The My Electric Avenue project is using Nortech's iHost Platform\(^{12}\) for remote monitoring and data collection from the Monitor Controllers and Intelligent Control Boxes (ICBs).

Nortech supply specialist monitoring technology products and services to energy utilities, generator suppliers and system integrators. They use wireless communication technology, such as GPRS, to provide real-time data displays. Email and SMS text messaging can used to alert the project team if a data alarm is triggered. The iHost Platform provides a secure, reliable, central host platform for receiving and storing data from a number of remote sites using various communication channels and protocols.

The Monitoring Controller includes an Envoy unit, which is a Nortech component for sending the data to the iHost central server. The MC receives data from the ICBs on the low voltage network, and forwards this data to iHost. The data string includes:

- MC or ICB serial number
- Date and time stamp, to nearest second
- Voltage for each phase
- Current for each phase

The Nissan CARWINGS service is a vehicle telematics service available for the Nissan LEAF. A CARWINGS app\(^{13}\) is available that allows Nissan LEAF drivers to control some vehicle functionality from their smart phone, such as checking the current charge level, start charging, check with charging should be complete, turning on or off climate control, scheduling when to turn on climate control, and checking the estimated driving range. The MEA project are using the CARWINGS service to collect vehicle data from the Technical and Social Trial vehicles. EA Technology are working with Nissan to clarify which data fields can be made available to the project team. Data from the CARWINGS service includes:

- Vehicle Identification Number (VIN)
- Trip start time and finish time, to nearest second\(^{14}\)
- Trip distance

---

\(^{12}\) Further information on the Nortech iHost Platform is available on their website: [http://nortechonline.co.uk/products/ihost-platform/](http://nortechonline.co.uk/products/ihost-platform/) [Last Accessed: 1 July 2014]


\(^{14}\) Nissan CARWINGS defines the trip as the period between vehicle key on and key off. It is possible that a trial participants journey consists of more than one trip, if they stop the vehicle at points during the journey, such as stopping at a service station.
• Battery state-of-charge at the beginning of the trip, provided as number of segments\textsuperscript{15}
• Battery state-of-charge at the end of the trip, provided as number of segments

EA Technology have requested GPS coordinates to be included in their data set so they can identify where the car was recharged.

The Nissan LEAF sends data to the CARWINGS service after 10 trips. Therefore the frequency of data updates is dependent of how much the participant is using the vehicle.

DMU are responsible for collecting soft data from the Technical and Social Trial participants, via questionnaires and face-to-face interviews, which are activities within Task 6.

\textsuperscript{15} The Nissan LEAF displays battery charge using 12 segments
APPENDIX 5 RICARDO COMMENTS ON TASK MEMORANDUMS

Appendix 5 contains review comments on the Task Memorandums supplied for the M24 Review. Suggestions for improvement are emphasised in bold blue. Open questions or issues are emphasised in bold orange.

My Electric Avenue Memo from Richard Potter to Stuart Bower and Jane Patterson
Date: 11 December 2014
Subject: MEA Task 0 Novel Commercial Arrangement
Filename: MEA Task 0 24 Month Independent Review Memorandum Issue 1.0.docx

A useful document for confirming that no documents have been submitted for review or information from Task 0, and for outlining the proposed activities for the next 6 months. The reviews will expect to review the first draft of SDRC 9.2.2 and the skeleton outline for SDRC 9.3 in the next Review (M30 Review).

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 9 December 2014
Subject: MEA Task 2 Customer Engagement
Filename: MEA Task 2 24 Month Independent Review Memorandum Issue 1.0.docx

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 8 December 2014
Subject: MEA Task 4 Installation of Equipment
Filename: MEA Task 4 24 Month Independent Review Memorandum Issue 1.0.docx

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 8 December 2014
Subject: MEA Task 5 Monitoring of the trials
Filename: MEA Task 5 24 Month Independent Review Memorandum Issue 1.0.docx

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 9 December 2014
Subject: MEA Task 7 Network Modelling
Filename: MEA Task 7 24 Month Independent Review Memorandum Issue 1.0.docx

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 9 December 2014
Subject: MEA Task 10 Dissemination
Filename: MEA Task 10 24 Month Independent Review Memorandum Issue 1.0.docx

These Task Memos provide no information about Task activities in this reporting period. Instead, they refer to the Project Progress Report. However, the Project Progress Report does not make it clear what activities have occurred in each Task. The Reviewers have had to infer Task activities from the overall summary information provided in the Project Progress Report and from the documents supplied “for review” or “for information”.

It would have been helpful if some of the Task Memos had provided background information about the documents and why they had been included in the M24 Review, especially with regard to documents supplied from Task 5 and Task 10.
My Electric Avenue Memo from Richard Potter to Stuart Bower and Jane Patterson
Date: 8 December 2014
Subject: MEA Task 6 Socio-Economic Research (De Montfort University)
Filename: MEA Task 6 24 Month Independent Review Memorandum Issue 1.0.docx

A useful summary of Task 6 activities in the period July to December 2014. It is good to observer regular and frequent communication between the EA Technology team and the DMU team.

It would have been sufficient to supply only the most recent version of the MEA Questionnaire Tracker.

When will the pre-trial questionnaire report be completed (Internal Project Deliverable Task 6)?

Following the M24 Review Meeting, a revised timetable for the remaining questionnaires, face-to-face interviews, focus groups and task deliverable has been made available from the Project Plan (Task 11 documents #28)

My Electric Avenue Memo from Becky Lees to Stuart Bower and Jane Patterson
Date: 9 December 2014
Subject: MEA Task 11 Programme Management
Filename: MEA Task 11 24 Month Independent Review Memorandum Issue 1.0.docx

Task 11 activities have been provided in the Project Progress Report.

An updated version of the Task 11 memo was issued on 6 January 2015 to note the addition of two more documents, however the memo “date” was not updated accordingly.
APPENDIX 6 RICARDO COMMENTS ON DOCUMENTS PROVIDED FOR REVIEW

Appendix 6 contains commentary on the documents submitted “for review”. Suggestions for improvement are emphasised in **bold blue**. Open questions or issues are emphasised in **bold orange**. Some questions were answered by Tim Butler during the M18 Review meeting, held on 9 July 2014.

Appendix 6A Ricardo comments on Task 2 – Customer Engagement documents

SDRC 9.5.2 – Confirmation of allocation of cluster funding
Filename: 86002_11_SDRC_9.5.2 v1.0.pdf
Document Number: #1

- A short report to document the successful establishment of the clusters for the Technical Trial
- **Note:** Although this version was issued in August 2014, it includes Slough Borough Council in the list of Technical Trial clusters. However, the withdrawal of Slough Borough Council from the Technical Trial was confirmed in a memo dated 21 July 2014.

Successful Delivery Reward Criteria 9.5.3
Filename: 86002_2_I2EV (My Electric Avenue) SDRC 9.5.3 Social Trials Issue v1.2.pdf
Document Number: #2

- A short report to confirm that as of August 2014 over 100 participants had been recruited for the Social Trial
- **Note:** Only the SDRC reference number was stated on the report title page. It would have been helpful if the SDRC title had also been included.

Appendix 6B Ricardo comments on Task 4 – Cluster Establishment / Installation of Equipment

MEMO to Nigel Bessant and Richard Hartshorn (SSEPD) from Tim Bulter (EA Technology)
Date: 24 November 2014
Subject: Network Loading Analysis
Filename: 86002_4_PR_ Network Loading Analysis v1.2.pdf
Document Number: #3

- A memo prepared by EA Technology for SSEPD to address concerns regarding the potential for network outages during the “Christmas Day Peak” if the Esprit technology did not function correctly.
My Electric Avenue – Intelligent Control Box Re-Design
Filename: 86002_4 ICB Re-design 06-06-14.docx
Document Number: #12

- Why has a “draft” document been submitted “for review”? Surely by now the document should have been completed and issued as part of the ICB redesign and commissioning process. During the M24 Review Meeting EA Technology confirmed that only a preliminary draft of this document had been made available to the MEA project team. It is believed that a later version has been approved and issued.

- Section 2 – The two documents are listed as relating to this report. The Reviewers have not had access to these documents.

- Section 3 – Why where these somewhat obvious design inadequacies only identified after the 'issues'? Surely they should have been picked up in the design reviews prior to manufacture release?

- Figure 1 shows the Mark 2 ICB design. It is the opinion of the Independent Reviewers that the layout is still far from optimal, e.g.: use of self-adhesive cable tie mounts, use of vertical DIN rail, apparent lack of DIN rail end stops, lack of segregation between control and power wiring.

- It is a shame the unit still requires to be open for site mounting. Consider using external mounting holes in future designs.

- Figure 2 – The use of sprung terminals is now generally accepted as good practice. However the Reviewers are unsure whether this is compatible with the use of bootlace crimps that appear to have been used by looking at the photographs.

- Figure 3 – Are forked crimps still used? If so, were approved crimps and calibrated crimp tools used?

- Also there are two red wires exiting from a single crimp. This is generally not recommended and, if used, the correct version of the crimp must be used.

- EA Technology confirmed that each unit has a unique serial number. This is visible on the PCB board in Figure 1. The serial number is also displayed on the outside of the box. Photographs of the ICB during installation are used to confirm that the serial numbers are consistent and correctly recorded.

- EA Technology confirmed that “tamper” stickers or seals have not been used on the Mark 2 ICB design. Photographs are taken to show the ICB as installed.

- Section 4.4.1 tends to imply that incorrect lights/bezels were selected. The use of epoxy adhesive is somewhat Heath-Robinson.

- How and why was the unit immersion tested when the IP65 rating only calls for water jets?

- Section 4.5 – When is the response expected on parallel contactor rating?

- Section 4.7 – Were the tests carried out with the lid removed?

- Section 6 – Has the independent LV Directive compliance check been completed?

- Section 7.1 – Why were incompatible crimps selected which required the contactor to be modified? It is strongly not recommended not to modify the integrity of the contactor as the CE marking may be affected if you modify approved components.

- Section 7.2 – End stops should always be used. Butting up to the enclosure is not recommended. Are the correct type and size of end stops being used?

- Sections 7.3 & 7.5 – Reflects the non-optimal design process.
• Section 7.4 – Consider the use of a Gore-Tex breather rather than a drain hole.

• It is the opinion of the Independent Reviewers, based on the limited documentation provided, that the Esprit technology is currently at **Technology Readiness Level 4 or 5. Although TRL 5 is sufficient for the scope of the various pre-trials, it is insufficient for the more extensive roll-out of the MEA Technical Trial.**

• The ICB will require further redesign for volume manufacture and successful commercialisation

Appendix 6C Ricardo comments on Task 7 – Modelling

**Work Activity 1 “Evaluation of the initial trial” – Report for Deliverables 1.1, 1.2, and 1.3**
Filename: UoM-EA Technology_MEA_Deliverable1.1-1.3v01.pdf
Document Number: #2

• First project deliverables from University of Manchester. This is a good report with sensible structure, content and quality aspects (date, author, reviewer, number of pages etc.).

• The report hints at various issues with the Esprit technology encountered during the Bramley Trial. The Bramley Trial may have been insufficient to demonstrate that the Esprit technology was ready for larger scale demonstration (TRL 4 or 5 instead of TRL 6 or 7).

• UoM’s recommendations for improving the Esprit technology are good. It is a shame that this work could not have been completed earlier. This may have provided time to improve the Esprit design before roll out in the MEA Technical Trial.

• **Why wasn’t charging start and stop times included in the CARWINGS data? (Section 3.3)**

• **Do EA Technology intend to implement some of UoM’s recommendations into future designs of the Esprit system?**

**Work Activity 2 “Low Voltage Networks” – Report for Deliverables 2.1, 2.2, and 2.3**
Filename: 86002_7-UoM_Deliverable 2.1-2.3 v02.pdf
Document Number: #3

• Another good report from the University of Manchester with sensible structure, content and quality aspects.
Appendix 6D Ricardo comments on Task11 – Project Management documents

LETTER to Dan Hollingworth (EA Technology) from Nigel Bessant (SSEPD)
Subject: Continued failure of ICB communications placing customer service and core learning at risk
Filename: Letter to EATL Nov 14.pdf
Document Number: #1

- Letter from SSEPD voicing their concerns regarding the communication issues between the MC and ICBs.
- SSEPD have raised various concerns since November 2013 with EA Technology regarding communication between the ICBs and MCs.
- The Reviews concur with SSEPD's concerns.

LETTER to Nigel Bessant (SSEPD) from Dan Hollingworth (EA Technology)
Subject: Response to Letter dated 13th November 2014
Filename: 86002_11_M_EATL Covering Letter 13th Nov_v0.1.pdf
Document Number: #2

- Cover letter from EA Technology in response to SSEPD's concerns
- EA Technology acknowledge the “continued poor performance of the [Esprit] technology”
- EA Technology consider “a challenging project management environment” as the ultimate root cause of the technology issues. This statement refers to the specific relationship between EA Technology and ANDtr, and not to the project management of the My Electric Avenue project.
- Based on the evidence supplied in previous reviews, the Reviewers fully acknowledge that the change in project direction imposed upon the My Electric Avenue project by the Ofgem funding restrictions significantly increased the level of technology risk associated with trialling the Esprit system. If the roll-out of the Technical Trial clusters had been phased over a period of time, several of the issues experienced would have been identified earlier. This would have resulted in a lower mitigation cost for the MEA project team.
- Responsibility for the development of the Esprit technology lies within another division of the EA Technology Limited, and is not an activity within the MEA project. The MEA project has been reliant on the Esprit technology development team to provide the Esprit components for the Technical Trial. Based on evidence from this reporting period, it appears that the development of the Esprit technology did not keep abreast of the requirements for the MEA Technical Trial. This does not appear to be the fault of the MEA team, who have made reasonable endeavours to communicate the project requirements with the Esprit development team.
- As implied in the letter from SSEPD, it appears that learning from the previous trials of the Esprit technology at SSE’s Zero Carbon Homes, at Bramley and at Gateshead was not incorporated in time for the MEA Technical Trials.
- Given the level of commercial risk that EA Technology bore to ensure the My Electric Avenue project met Ofgem’s criteria for cluster establishment, it is a shame that they did not apply the same rigour and directorial input to accelerate the development of Esprit for this project.
Response to SSE from letter dated 13th November 2014

Filename: 86002_11_M_Response to letter dated 13th Nov_v0.2.pdf
Document Number: #3

- This report confirms that various project management challenges with their technology provider have strongly contributed to the various technology issues encountered by the MEA Technical Trial. These challenges are outside the scope of the My Electric Avenue project.
- During the M24 Review Meeting, EA Technology confirmed that the alternative solution is not being deployed at this time as the current status of the Esprit system is ‘functional’.
- Note: Section 1, Summary of Response appears to be an Introduction rather than a Summary.
- Section 2.2.2 – The requirements appear to have been poorly communicated and compliance not fully verified during the design, manufacture and factory test stages.
- Section 2.2.3 – Would an alternative fall-back be to have an independent company review the hardware and software? This would assist or confirm the issue resolution strategy. There is no guarantee that the current fall-back option will work.
- Section 2.3 – What are the options for changing technology supplier for the Esprit system? What framework agreement exist between the two companies?
- Section 3 – If the Reviewers understand correctly, the best trial period is now 6 months. Wasn’t the original plan to have at least a 12 month trial?
- Section 4.1 – The success criteria are set quite low.
- It is important that the MEA project team has very good visibility of the role out of new software and its success to enable clear understanding and good quality decision making on how to proceed.
- Appendix A - ID7 – The decision point was Thursday (08Jan15). What was the outcome?
- Appendix B – Impact on learning for Scenario 1 has been shown as written confirmation of verbal discussions with SSEPD.
- It is the opinion of the Reviewers that, whilst this response provides answers to the questioned posed by SSEPD, doesn’t leave the reader feeling confident that the issues have been suitably addressed.

I2EV (My Electric Avenue) – 4th Project Six Monthly Progress Report

Document Number: #28

- Useful summary of key project activities in the period July to November 2014. However, it does not clearly list activities by task, making it difficult to relate these activities to the Task Memos.
- Could MEA confirm the reporting period for this progress report? The front cover states the reporting period as July to November 2014 (inclusive), which is only 5 instead of 6 months. It is understood that this was at SSEPD’s request for timing in to Ofgem. However the Executive Summary mentions June (not July) to November.
During the M24 Review Meeting EA Technology confirmed that the total number of Social Trial participants is 107.

The ICB Mark 2 units were independently verified by CASS Industries, based near Manchester ([www.cassindustries.com](http://www.cassindustries.com)).

The Lyndhurst MC is scheduled for deployment on Monday 19 January 2015.

It is good to see that the need for a bespoke database has been agreed and been implemented.

DMU have prepared a revised plan for the remaining face-to-face interviews (see Project Plan for Task 6)

Ofgem’s response regarding the Change Request time seems somewhat tardy (Section 2.1)

The issues with the Esprit technology have also impacted on the Social Trial, since DMU have had to revise their questions to the Social Trial participants to reflect the changed questions to the Technical Trial participants (Section 3.1.2).

**Table 3.2 – The table title appears to be incorrect**

**Section 5.2.2 – When and where will the ICB communication be studied further?**

**Section 5.2.4 – The analysis of CARWINGS data to predict the EV Charging probably may be incorrect.** See comments on document Task 4 #2.

**Section 5.2.9 – Good learning, even if some of it seems to be somewhat obvious after the event.**

**Section 5.3 – Could you provide us with a copy of the learning log?**

**Section 5.4.2 – Good examples and level of dissemination given.**

**Figures 1-5 – Axes labels are missing**
APPENDIX 7 RICARDO COMMENTS ON DOCUMENTS PROVIDED FOR INFORMATION

Appendix 7 contains review comments on the documents included “for information” in the M24 Review. Suggestions for improvement are emphasised in bold blue. Open questions or issues are emphasised in bold orange.

Appendix 7A Ricardo comments on Task 2 – Customer Engagement documents

**My Electric Avenue: Christmas process for fault with charging**
Filename: 86002_2_MEA Customer Handling and Fault process v0_6.pptx
Document Number: #3

- It is good that the MEA team has thought through the process for reporting and identifying faults during the Technical Trial, especially over the Christmas period. However, in some places the flow charts are difficult to understand, suggesting that a few steps have been missed in explaining the process. For example, it appears that if the participant contacts Fleetdrive Electric, Zero Carbon Futures for the My Electric Avenue inbox, then the participant will be provided with an instruction to contact SSE Contracting. The flow chart arrows do not make this clear
- Who is Anthony at ELM EV?
- Who is Oliver Devos?
- Note for future reference: Consider including a “who’s who” section to describe the various key players and stakeholders
- What are the implications for the MEA data set if the Nissan LEAF has to be temporarily replaced due to a fault with the vehicle? Has this risk been recorded in the Risk Register?

**Diagnostic Questions**
Filename: 86002_2_Diagnostic Questions v3.0.docx
Document Number: #4

- This looks like a useful document for the SSE Contracting team, to help them remotely identify the root cause of the reported problem, and providing guidance on the appropriate response to remedy the issue
- Answer to Question 10 – It appears that the switch for resetting the ICB is located on another device. **Will this be rectified in the next design iteration?**

**Letter to the Technical Trial participants – ICB reinstallation, and Email to the Technical Trial participants – ICB reinstallation**
Filename: 86002_2_ICB reinstallation letter v0.1.docx
Document Number: #5

- Generic letter and email to Technical Trial participants regarding arranging installation of ICBs Mark 2. The contents appears to be appropriate
Letter to Wylam participant
Filename: 86002_2_M_Tech trial relatives letter v0.3.docx
Document Number: #6

- A letter to a Technical Trial participant in the Wylam cluster who does not live at the same address as the Esprit ICB connected charge point. During the previous review (M18 Review) EA Technology mentioned that there were a few cases of Technical Trial participants recharging at addresses that were not their home address. *Does this letter concern one of these special cases? Or, has a new case emerged over the past few months?*

- What action will EA Technology take if the Technical Trial participant continues to recharge at another charge point instead of the Esprit charge point?

MEMO to Sanjay Dhuna and Daniel Hollingworth from Dave A Roberts
Date: 21 July 2014
Subject: My Electric Avenue: Technical trial with Slough Borough Council at SMP
Filename: 86002_2_M_Email to SBC Issue 1.docx
Document Number: #7

- Record of communication to Slough Borough Council regarding installation of charging infrastructure. Since several of the Technical Trial participants have been relocated by Slough Borough Council to another office, the MEA team decided to make this a “virtual cluster”. As a consequence, MEA have decided not to fund the recharging infrastructure.

- However, the middle section of the memo, “Evidence required justifying rolling out charging points from the project at SMP” suggests a scenario in which MEA would fund the recharging infrastructure. This is confusing. *Could EA Technology please clarify the situation with the Slough Borough Council cluster?*

Social Trials Information Pack
Filename: 86002_2_MEA Social Trial Information Pack v1_4.docx
Document Number: #8

- Updated Information Pack for potential Social Trial participants, as clearly indicated on the front page. A good document.

- *Note – There appear to be a few minor formatting issues on the last few pages of this document*

Welcome Pack
Filename: 86002_2_MEA Social Trials Welcome Pack v 0_4.docx
Document Number: #9

- Updated Welcome Pack for Social Trial participants. The document contents is good and laid out well.

- *Note – It is not clear from the front page if this is the Welcome Pack for Social Trial participants or Technical Trial participants*
EMAIL from myelectricavenue
Date: 9 May 2014
Subject: My Electric Avenue – News bulletin from Technical trials
Filename: My Electric Avenue - News bulletin for Technical trials.msg
Document Number: #10

- Why has this email been included in the M24 Review when the email was sent to Technical Trial participants in May 2014? Why was this email not included in the M18 Review?

Appendix 7B Ricardo comments on Task 4 – Cluster Establishment documents

SPREADSHEET for tracking ICB re-installation
Filename: 86002_4_M_Re-Installation Audit v0.3.xlsx
Document Number: #1

- A tool for tracking the re-installation of the ICB units
- Several of the ICB demo units were recorded as “missing”. It is believed that these units have now been found.
- The distance data provided in the second sheet is the distance in metres between the MC and ICB (i.e. distance between the substation and the participants property).
- All the electricians contracted to re-install the ICBs work for Southern & Scottish Electricity Contracting (SSEC).
- The list of ICB commissioning tests in provided Task 4 document #6.
- What is the significance of an ICB failing one of the commissioning tests?
- There appears to be a lot of Commissioning Notes for issues found during installation. During the M24 Review Meeting EA Technology confirmed these issues have been effectively resolved.

Trial Equipment Set-up – Cluster Threshold Settings
Filename: 86002_4 - Cluster Threshold Settings v1.1.pdf
Document Number: #2

- Since this document is Internal Project Deliverable Task 4ii, why was it included “for information” and not “for review”?
- Has this document been approved by SSEPD yet?
- The reporting of the statistical analysis (Section 4) appears to be incorrect
  I assume this data is from CARWINGS and relates to the 110 Nissan LEAFs participating in the Technical Trial. I assume a “charging event” is an EV charging in a given one hour period.
  The report states the number of charging events as 11,720. However, the sum of the number of charging events by hourly period is 45,690.
The probability of EV charging appears to have been calculated as be the number of charging events in the hourly period divided by 11,720. This calculation of the probability is incorrect.

An EV is either charging or not charging. The statistical analysis should consider the number of non-charging events as well as the number of charging events. The probability of an EV charging in a one hour period is the frequently of “charging” divided by the total number of periods (days) covered by the data set. It is the frequency of charging events in a one hour period divided by the total number of “charging events” in the dataset.

- **Over what time period has the data been collected?** This is likely to vary by vehicle.
- **It would be good to analyse the data by Technical Trial cluster to understand how the charging profiles vary by cluster.**
- **EA Technology confirmed that changing the thresholds cannot be achieved remotely, someone has to visit the substation. This could be costly to the project if the thresholds have to be modified frequently during the remainder of the Technical Trial.**
- **Section 4 – Are there still override switches?**

### SPREADSHEET for tracking end-to-end commissioning of Monitor Controllers

**Filename:** *EtE Commissioning Sheet v 1.2.xlsx*

- **Document Number:** #4

  - This appears to be a template, to be completed during the commissioning of the Monitor Controllers. **Was it used?** If so, would it be possible to view the completed commissioning spreadsheet?
  - **Who is responsible for completing the commissioning spreadsheet?** Who is responsible for reviewing it?

### SPREADSHEET for tracking end-to-end commissioning of Monitor Controllers in Pole Mounted Transformers

**Filename:** *EtE Commissioning Sheet1.0 – PMT.xlsx*

- **Document Number:** #5

  - As for the previous spreadsheet (#4), this appears to be another template. **Has it been used?**

### SPREADSHEET for tracking ICB commissioning

**Filename:** *ICB Commissioning sheet 1.1.xlsx*

- **Document Number:** #6

  - Another template
  - This template contains the list of tests to be performed during the installation of the ICB to commission it for service
  - The sheet is designed to be printed on A4 for completion by hand on-site. However, some of the boxes to be completed are narrow, which may make it difficult for some people to neatly complete the form. **For future versions, it may be worth re-formatting the sheet to allow larger boxes for hand writing**
• Note – Typo in “COMMISIONING CHECKLIST”

EA Technology Method Statement – I²EV ICB Commissioning
Filename: 86002_4_MS_ICB Method Statement v6.3.docx
Document Number: #7

• Method Statement document for installing and commissioning the ICBs. This document should be read in conjunction with the ICB Commissioning Sheet since the instructions refer to the Commissioning Sheet frequently

• Why has this document been issued as a “Draft”? This implies that the document is incomplete. However, this document has been used for the re-installation of the ICBs which has occurred during this reporting period.

• What installation instructions have been provided by AND Technology Research?
• Are the cables for “Charger” and “Supply” clearly labelled on the ICB box?
• Why isn’t a terminal box listed in the equipment required?
• What happens to the spare, plugged-in ICB at the end of the ICB installation and commissioning?
• What’s the ratio of indoor to outdoor mounted?
• There are no red arrows on Figure 6
• Section 5 – Safety should be at the front of the document not the back.
• Last page header refers to End to End not ICB commissioning
• Why is PPE in twice – in both 3.1 and 5.2?

Method Statement Esprit Control Equipment – Pole Mounted HV/LV Transformer Structures
Filename: Esprit Installation Method Statement 3.0 PMT.docx
Document Number: #8

• This document is still a draft. Will it be formally issued prior to the installation of the MC at Lyndhurst?

EA Technology Method Statement – I²EV Cluster End to End Commissioning
Filename: 86002_4_MS_EtE Method Statement v1.6.docx
Document Number: #9

• The Method Statement for end-to-end commissioning of the Esprit technology for the whole cluster.
• The instructions provided imply that this commissioning process is linked to the reinstallation of the ICBs, yet the ICB Commissioning Method Statement does not refer to it.
• Section 4.2, item 11 – An ammeter not listed in the required equipment (Section 3)
• Section 5 – Safety should be at the front of the document not the back.
FORM – Risk assessment – remote site working (ICBs)
Filename: Remote site RA Form – ICB installs.docx
Document Number: #10

- A template for completing a Risk Assessment associated with installing the ICBs
- Note – The Assessment Date is provided as a field of today’s date. This means that the record of the Assessment Date may be incorrect if this field is not overwritten during the Risk Assessment

FORM – Risk assessment – remote site working (substation)
Filename: Remote site RA Form Esprit EtE.docx
Document Number: #11

- A template for completing a Risk Assessment associated with installing and commissioning the Monitoring Controllers at the sub-station
- This does not appear to be a comprehensive document given the amount of hazards to be considered. Also, the first hazard on the list is a “domestic” hazard. Is this appropriate for worked carried out at a substation?
- Note – The Assessment Date is provided as a field of today’s date. This means that the record of the Assessment Date may be incorrect if this field is not overwritten during the Risk Assessment

Appendix 7C Ricardo comments on Task 5 – Monitoring of the trials

Nissan API Data Report – Process and Progress (June 2014)
Filename: 86002_M_Nissan API Data Report Issue 1 v0.2.docx
Document Number: #1

Nissan API Data Report – Process and Progress (September 2014)
Filename: 86002_M_Nissan API Data Report Issue 1 v0.9.docx
Document Number: #2

- A series of short reports for documenting what data is expected from the Nissan CARWINGS system, the process for accessing this data, and how much of the available data has been downloaded. EA Technology confirmed that these reports were used in communications with SSEPD. It is effectively a live document that is updated for teleconferences.
- The Reviewers recommend that a suitable introduction is added to this document to provide information about the background content and intended audience.
- The report should be issued monthly for internal project use. This will provide a helpful record for the MEA team as they progress through the data collection during this final year of the project.
- Since it is a short report for internal project use, an Executive Summary is probably not required.
- What number of segments are there in the battery data?
Task 5 – Summary of network data and data from re-installed ICBs – August 2014
Filename: 86002_5.PR_Network and ICB data report_v1.1.docx
Document Number: #3

- What is the target audience for these documents? Internal, project partners, SSEPD?
- EA Technology confirmed that there was a typing error in the headings for the last two columns in the table on page 13.

Task 5 – Summary of network data and data from re-installed ICBs – September 2014
Filename: 86002_5.PR_Network and ICB data report Sept v1.0.docx
Document Number: #4

Task 5 – Summary of network data and data from re-installed ICBs – October 2014
Filename: 86002_5.PR_Network and ICB data report Oct v1.1.docx
Document Number: #5

- Section 3.2 – Could the number of Esprit switches be used to inform where to set the thresholds to ensure curtailment even during the summer months?
- Section 4.1 – Should CARWINGS data quality also be summarised on the Dashboard?

Task 5 – Summary of network data and data from re-installed ICBs – November 2014
Filename: 86002_5.PR_Network and ICB data report Nov v2.0.docx
Document Number: #6

- Lowering the threshold limits for the Marlow cluster on 6 November 2014 allowed EA Technology to confirm that the Esprit switching was also disrupting the ICB communications.
- Section 3.2 – Does the threshold for Chiswick need revising upwards?
- Consider using outlier bars (minimum and maximum) on the graphs to indicate the level of variation on the average daily phase load profiles.

Task 5 – Summary of network data and data from re-installed ICBs – December 2014
Filename: 86002_5.PR_Network and ICB Data Report_Dec_v1.0.docx
Document Number: #7

- Considering these reports are part of Internal Project Deliverable Task 5i, why have they been submitted “for information” rather than “for review”?
- It is good that the MEA team are producing monthly data reports to summarise the quality and quantity of data received from the Esprit system. This has helped the team identify issues regarding communication with the re-installed ICBs, and the need to improve the reliability of communication between the Monitoring Controllers and iHost.
- The progresses and tools for viewing the data are evolving, and this is evident when reading through the monthly data summary reports
- A few of the data summary reports mention issues with calibration of voltage and current measurement. What calibration processes have been included in the ICB design, build, installation and commissioning processes? How frequently is the calibration
of the ICBs checked? Is it possible that the measurement calibration will drift with time?

- During December there were data collection issues in three clusters (Section 2.3). EA Technology confirmed that Nortech has resolved these issues. However, following the ANDtr software fix, there is now a new data issue - Esprit is not forwarding the ICB phase current data to Envoy for data collection.

Network data collection via iHost – Processing and interpretation
Filename: 86002_5_iHostDataStructure_v2.docx
Document Number: #8

- When was this report written? Who wrote it? Who is the intended audience?
- How does the information in this report align with the various changes Nortech have made to the iHost and Envoy tools?

Examples of irregular data samples from iHost
Filename: 86002_5_ClarificationIrregulariHostData_v2.docx
Document Number: #9

- When was this report written? Who wrote it? Who is the intended audience?

MEMO to Richard Hartshorn (SSEPD), Luis Ochoa and Jairo Quiros Tortos (UoM), Simon Hodgeson (Nortech), Dave Howson, John Purdie and Ian Hughes (EA Technology) from Ellin Saunders and Tim Butler (EA Technology)
Date: 14 November 2014
Subject: Phase current measurements on a 1-min average basis
Filename: 86002_5_1minPhaseCurrents_v0.docx
Document Number: #10

- Memo to relevant project team members regard changes to the Nortech Envoy data collection system. Envoy had been collecting data from the MC and ICBs on a 10-minute interval basis. It now collects data on a 1-minute interval basis.

CARWINGS data validation task
Filename: CARWINGS data validation task_v2.docx
Document Number: #11

- When was this report written? Who wrote it? Who is the intended audience?
- The document describes a task to check and validate the data collected by the Nissan CARWINGS system.
- EA Technology confirmed that this CARWINGS validation testing is still on-going within EA Technology.
MEMO from Phoebe Su
Date: 18 December 2014
Subject: <no subject>
Filename: MEA Internal Project Memo 18-12-2014.docx
Document Number: #12

- Who was this memo written for? What was the intended subject?

My Electric Avenue CARWINGS validation tests
Filename: MEA CARWINGS Validation test checklist_v1.0.pdf
Document Number: #13

- What is the purpose of this document?

86002_5 – My Electric Avenue – Stage3a Specification
Filename: MEA SQL Stage 3 Spec_v2.0.docx
Document Number: #14

- It is good that the requirements and specification of the MEA SQL database have been documented. However, why is this document still only a draft version? Surely a released version was required to begin the design and coding work on the new SQL database for the MEA project.
- It is difficult for the reviewers to provide opinion on the quality of this specification document given that it is provided in addition to three other documents that have not been provided to the reviewers. It would be better if all the specification requirements for the SQL database were collated into one single document.
- Change requests to the specifications should be recorded in a software change request system.
- What software testing has been done to ensure that the SQL database meets these specifications?

MEMO to Ellin Saunders and John Purdie from Becky Lees
Date: 17 November 2014
Subject: SQL database checks
Filename: 86002_5_M_SQL database checks.docx
Document Number: #15

- This memo appears to be reporting results from one software test of the new SQL database.
- What other software testing has been completed? How have these software tests been recorded and reported for the MEA team?

My Electric Avenue Dashboard Documentation
Filename: 86002_5_Dashboard Documentation v4.docx
Document Number: #16

- Is this supposed to be the Design Document for the MEA Dashboards?
Is there a Software Requirements Document for the MEA Dashboards?

Is CARWINGS data included in the Dashboard?

Draft diagram of data processing – work in progress
Filename: DataCollectionProcessReassurance.pptx
Document Number: #17

- EA Technology confirmed that this diagram was prepared by Ellin to help her understand the various stages involved in processing the raw data sets collected from the Technical Trial. She has used this document to review the data processing requirements with the MEA team.

- It would be good to complete this diagram, adding an appropriate title, author and issue date. This diagram will continue to be a key tool during the project for communicating the data processing stages.

Re-installation profile – Marlow, 21 July 2014
Filename: 86002_5_ReinstallationProfile_Marlow - v2.pptx
Document Number: #18

- Who wrote this document? When was it prepared and issued? Who was it written for? What is its purpose?

- Several issues are noted in the initial dataset from Marlow. What efforts were made by the MEA team to investigate these issues?

Appendix 7D Ricardo comments on Task 6 – Trial Participant Interviews documents

Document Number: #1

Document Number: #2

Partner/Supplier Monthly Report – DMU – August 2014
Document Number: #3

Partner/Supplier Monthly Report – DMU – September 2014
Filename: DMU Contractor Monthly Report - Sep 14a.xls
Document Number: #4

Partner/Supplier Monthly Report – DMU – October 2014
Document Number: #5
Thank-you for including these reports in the M24 Review. These monthly project partner reports provide a really good overview of Task 6 activities in this reporting period, and show how the activities have developed and evolved. This is useful insight for the independent reviewers.

What caused the delay in delivering the last EV to Lyndhurst?

MEMO to Richard Potter from Jill Fisher
Date: 3 September 2014
Subject: Revised DMU data collection timing
Filename: 2014 09 24 DMU revised data collection timing.docx
Document Number: #6

Communication between DMU and EA Technology regarding changes to the DMU data collection timing (the questionnaires, interviews and focus groups) in reaction to the difficulties experienced with the Esprit technology.

MEMO to Richard Potter and Becky Lees from Jill Fisher
Date: 1 October 2014
Subject: Mileage limitations and impact on data collection
Filename: 2014 10 06 Impact of mileage limitation on DMU research.docx
Document Number: #7

A communication between DMU and EA Technology. DMU raise their concerns regarding the impact on the project of the 10,000 annual mileage restriction on the Nissan LEAFs. Trial participants appear to be curtailing their use of their Nissan LEAF for fear of exceeding this annual mileage limit. This could have knock-on consequences for the Esprit trial.

This format is a good way of recording and documenting such a concern. It is good to include it in the M24 Review.

MEMO to Richard Potter and Becky Lees from Jill Fisher
Date: 4 October 2014
Subject: Esprit delays – impact on data collection timeline for Technical Trials
Filename: 2014 10 06 DMU data collection timeline.docx
Document Number: #8

Another communication from DMU regarding the consequences on their timing plan of the on-going issues with the Esprit technology.

MEMO to Richard Potter from Jill Fisher
Date: 13 October 2014
Subject: Outline structure for DMU final project report
Filename: 2014 10 13 Outline report structure DMU.docx
Document Number: #9

It is good that DMU have already prepared an outline for their final report. The proposed report structure appears to be highly appropriate for this type of study.
MEMO to Richard Potter and Becky Lees from Jill Fisher
Date: 16 December 2014
Subject: Third questionnaire for Technical Trials v.3
Filename: 2014 12 16 MEA Technical trial third questionnaire v.3.docx
Document Number: #10

- Proposed third questionnaire for Technical Trial participants
- **What happened to Question 1?** It appears to be missing
- **There appears to be a typo in the instruction after Question 3.** We assume that Question 4 should be answered if the participant is using their EV less frequently than previously

Focus Group Schedule for MEA Project (26 August 2014)
Filename: 2014 11 7 Focus Group Schedule v1 2.docx
Document Number: #11

Focus Group Schedule for MEA Project (16 December 2014)
Filename: 2014 12 16 Focus Group Schedule v1 2.docx
Document Number: #12

- Proposed agenda and schedule for running the Focus Groups with Technical Trial Clusters
- The schedule has been thought through well and looks like a useful tool for the MEA team facilitating the Focus Groups

MEA Questionnaire Tracker
Filename: 14 07 03 MEA Questionnaire tracker.xlsx, 14 07 16 MEA Questionnaire tracker.xlsx, 14 07 22 MEA Questionnaire tracker.xlsx, 14 07 29 MEA Questionnaire tracker.xlsx, 14 08 06 MEA Questionnaire tracker.xlsx, 14 09 22 MEA Questionnaire tracker.xlsx, 14 10 14 MEA Questionnaire tracker.xlsx, 14 10 21 MEA Questionnaire tracker.xlsx, 14 12 16 MEA Questionnaire tracker_V3.xlsx
Document Numbers: #13-22

- Useful spreadsheet tool used by DMU to track the status of the MEA Questionnaires
- The Reviewers like the front page. This is helpful for explaining the purpose of the spreadsheet and recording when it has last updated

My Electric Avenue – Catch up 16 December 2014 – Agenda
Filename: MEA EA and DMU telecon 16.12.14 Agenda.docx
Document Number: #23

- Example agenda from one of the regular catch-up meetings between DMU and EA Technology
My Electric Avenue – Catch up 16 December 2014 – Meeting Notes
Filename: MEA EA and DMU telecon 16.12.14 Notes.docx
Document Number: #24

- Meeting notes from one of the regular catch-up meetings between DMU and EA Technology

MEMO to Richard Potter and Becky Lees from Jill Fisher
Date: 16 December 2014
Subject: Second questionnaire for Social Trial v.1
Filename: 2014 12 19 MEA Social trial second questionnaire v.1.docx
Document Number: #25

- Proposed Second Questionnaire for the Social Trial. Appears to be similar to the Questionnaires for the Technical Trial, including the same typo in the instructions after Question 3

Appendix 7E Ricardo comments on Task 7 – Modelling documents

“My Electric Avenue” Project – Network Integration of Electric Vehicles (EVs)
Filename: MEA_Project- EA Technology_1st Deliverable-v1.0.pdf
Document Number: #1

- UoM’s presentation from the “First Deliver Meeting” held at EA Technology on 23 July 2014. It covers the contents of the first Task 7 report on evaluation of the initial trial (in Bramley)

Active Management of Electric Vehicle Charging Points in Low Voltage Networks
Filename: 86002_7_UoM IEEE PES 2015.pdf
Document Number: #4

- According to the Task 7 memo, this technical paper has been submitted to IEEE PES 2015
- According to their website, the Power & Energy Society (PES) provide the world’s largest forum for sharing information on the latest technology in the electric power sector. PES is a society of the US Institute of Electrical and Electronics Engineers (IEEE). The 2015 IEEE PES General Meeting will occur in Denver, Colorado, USA on 26-30 July 2015 (www.pes-gm.org/2015/)
- What steps have been taken to protect the IP from UoM’s control algorithm?
Controlling Electric Vehicle Charging Points for Congestion Management of UK LV Networks
Filename: 86002_7_UoM ISGT-NM- 2015.pdf
Document Number: #5

- According to the Task 7 memo this paper has been submitted to ISGT-NM. The Reviewers have been unable to identify this event, conference or publication. The IEEE PES Conference on Innovative Smart Grid Technologies (ISGT 2015) will take place in Washington, DC, USA on 17-20 February 2015. There is also a version of this conference in Latin America (ISGT-LA 2015, 5-7 October 2015, Montevideo, Uruguay), Europe (ISGT Europe 2015, 21-25 October 2015, Warsaw, Poland), and Asia (ISGT Asia 20, 4-5 November 2015, Bangkok, Thailand). Could you confirm which conference this paper has been prepared for?

Proposal Abstract for CIRED 2015 – Probabilistic Impact Assessment of EV Charging on Residential UK LV Networks
Document Number: #6

- Abstract submitted to the 23rd International Conference and Exhibition on Electricity Distribution (CIRED), which will be held in Lyon, France on 15-18 June 2015.

Work Activity 3 “Model Validation and Data Analysis” – Report for Deliverables 3.1, 3.2, 3.3 and 3.4
Filename: UoM-EA-Technology_MEA_Deliverable3.1-3.4v03.pdf
Document Number: #7

- Why was this document submitted “for information” and not “for review”?
- This report uses the LV feeder names (substation names?) to identify the clusters. Although logical, this is inconsistent with other MEA documentation and may cause confusion for the casual reader.
- UoM present good initial analysis of the CARWINGS data.
- Another very professional report from UoM following a logical structure, with clear wording and good learning/conclusions demonstrated.

Appendix 7F Ricardo comments on Task 10 – Dissemination documents

Proposal Abstract for CIRED 2015 – Direct Control of EV Charging on Feeders with EV Clusters
Filename: CIRED2015_MEAabstract_SUBMITTED.pdf
Document Number: #1

CIRED final paper planning
Filename: CIRED final paper planning.docx
Document Number: #2
• It is good that the MEA have submitted an abstract to the 23rd International Conference and Exhibition on Electricity Distribution (CIRED), which will be held in Lyon, France on 15-18 June 2015. The timing of this conference is appropriate for the MEA project duration. However, the on-going issues with the Esprit technology may limit the amount of data analysis available prior to completing the conference paper.

**Top 10 tips for customer recruitment**
Filename: MEA top 10 tips for customer recruitment.pdf
Document Number: #3

**Top 10 tips for customer engagement**
Filename: MEA top 10 tips for customer engagement.pdf
Document Number: #4

**Top 10 tips for novel commercial arrangements**
Filename: MEA top 10 tips for Novel Commercial Arrangements.pdf
Document Number: #5

**Top 10 tips for trial installations**
Filename: MEA top 10 tips for Trial Installations.pdf
Document Number: #6

• A good set of documents summarising some of the initial key learning from the My Electric Avenue. Useful for disseminating project learning and as soft marketing for EA Technology.

• It is good that this series of top 10 tips has been made readily available to others via the LCNI Conference and the project website ([http://myelectricavenue.info/project-learning](http://myelectricavenue.info/project-learning))

• Note – Four of the top 10 tips have been included in the “for information” pack for the M24 Review. There is a fifth top 10 tips on Procuring Partners available on the project website ([http://myelectricavenue.info/sites/default/files/MEA%20top%2010%20tips%20for%20procuring%20partners.pdf](http://myelectricavenue.info/sites/default/files/MEA%20top%2010%20tips%20for%20procuring%20partners.pdf))

• It is interesting to observe that the series of top 10 tips draws on both the experience of what worked well and the experience of what didn’t go according to plan

**EMAIL from My Electric Avenue**
Date: 9 October 2014
Subject: News from My Electric Avenue Issue 5 – October 2014 – Preview
Filename: News from My Electric Avenue Issue 5 - October 2014 - Preview.msg
Document Number: #7

• MEA Newsletter sent via email to those who had signed up for the MEA Newsletter

• **How frequently is the MEA Newsletter issued?**
My Electric Avenue flyer for LCNI
Filename: MEA Flyer LCNI v5.pdf
Document Number: #8

My Electric Avenue banner for LCNI
Filename: MEA Bannerstand v4.pdf
Document Number: #9

- Good project marketing material for LCNI
- Likely to be adapted and re-used for other events

My Electric Avenue presentation
Filename: My Electric Avenue LCNI - ENA website.pptx
Document Number: #10

- Who gave this presentation? What was the date? What was the event? (The filename implies this was the presentation given at LCNI, but there is no mention of this within the printed document)
- What is presented on each slide? Without the presenter, it not obvious what the purpose is of each slide in the presentation.

My Electric Avenue: A Commercial View
Filename: My Electric Avenue presentation - DAR v0_2.pptx
Document Number: #11

- Where was the presentation given? What was the date?

Accommodating Customer Choice: The transition to low carbon transport
Filename: EATL - Accommodating LC transport - Issue 1.1.pdf
Document Number: #12

- No comments

Third Party Delivery – Mid-term Observations
Filename: Third Party Delivery - SSEPD mid-term observations (compressed).pdf
Document Number: #13

- Where was this presentation given? Who was the presenter? Who was the audience?

My Electric Avenue presentation
Filename: Smart Future-Demand Response_12 Nov_My Electric Avenue.pptx
Document Number: #14

- Who gave this presentation? What was the date? What was the event
My Electric Avenue presentation
Filename: MEA - Cologne 23-09-14 v0.1.pptx
Document Number: #15

• When was the presentation given? What was the event

Appendix 7G Ricardo comments on Task 11 – Project Management documents

MEMO to Tim Butler from Becky Lees
Date: 19 November 2014
Subject: Learning Outcomes Assessment
Filename: 86002_11_M_Learning Outcomes.docx
Document Number: #4

• The contents of this document appears to be similar to Appendix B in Task 11 Document #3

MEMO to Tim Butler from Becky Lees
Date: 19 November 2014
Subject: Highlights of learning on My Electric Avenue
Filename: 86002_11_M_MEA Learning highlights.docx
Document Number: #5

• Is this the Learning Log, or extracts from it?

MEMO to Richard Hartshorn from EA Technology
Date: 11 June 2014
Subject: My Electric Avenue response to the Heartbleed bug
Filename: 86002_11_M_Heartbleed response Issue 1.docx
Document Number: #6

• Communication between EA Technology and SSEPD responding to SSEPD's concerns about the Heartbleed bug. The Heartbleed bug is a security bug in open source OpenSSL library, which was publically disclosed in April 2014. SSEPD wanted reassurance that this bug would not cause an issue for the My Electric Avenue project.

• It is not clear why this document has been included in the Review since it concerns an issue raised in the previous reporting period (M18 Review)
My Electric Avenue (I2EV) – Change Request to Project Direction v1.10
Filename: 86002-11_PDirectionCR_Issue_2.10.pdf
Document Number: #7

MEMO to Richard Hartshorn from Tim Butler
Date: 9 December 2014
Subject: Response to Ofgem’s questions regarding the Change Request to the Project Direction v1.10
Filename: 86002_11 CR Response to Questions v0 2.docx
Document Number: #8

- It is beyond the comprehension of the reviewers as to why Ofgem have been unable to make a decision regarding the Change Request first submitted by the I2EV project nearly 18 months ago. Ofgem’s continued indecision regarding the Change Request hidden in yet more requests for further information and clarification, is unnecessarily increasing the administrative burden for the core project team. Such behaviour by the LCN funding body is unacceptable.

MEA (I2EV) Monthly Assurance Reports – July, August, September, November and December 2014
Document Number: #9-13

- These monthly reports provide a good overview of project activities in this reporting period
- **What happened to the Monthly Assurance Report for October 2014?**
- The communication issue between the MC and ICBs appears to have been an ongoing issue between August and December 2014. **Why did it take so long for ANDTR and EA Technology to develop and release a suitable software fix?**

I2EV Project Assurance Monthly Meetings – Meeting Minutes – July, August, September, October and November 2014
Document Number: #14-18

- As for the Project Monthly Assurance Reports, the minutes from the Project Assurance Monthly Meetings provide a useful record of project activities, concerns and issues raised during this reporting period
- Unlike the Project Monthly Assurance Report, the meeting minutes make it clear that there have been a series of issues with the Esprit software and control equipment, or at least, a series of attempts to resolve the issue. The minutes also make clear that the communication issues have been of great concern to EA Technology, and that the impact on the rest of the project was considered.
- **In hindsight, what could EA Technology and ANDtr have done differently to identify the root cause and solution quicker?**
• What could have been done to prevent these issues from occurring?

• There is a comment about overspending the Dissemination Budget. Is this correct? If so, does this mean the Dissemination Plan will have to be curtailed?

MEA Project Partner Progress Monthly Meetings – Meeting Minutes – July, August, September, October and November 2014
Document Number: #19-23

• Record of the Monthly MEA Project Partner meetings conducted by web-conference. At least one Independent Reviewer has attended these meetings

• A useful summary of some of the project activities conducted in this reporting period, and of concerns raised and associated actions taken.

My Electric Avenue (I²EV) Review Meeting – 4 December 2014 – Meeting Minutes
Filename: I²EV MEA Full Meeting - 2014-12-04 Minutes.pdf
Document Number: #24

My Electric Avenue (I²EV) Review Meeting – 4 December 2014 – Meeting presentation
Filename: Project Partner Meeting Presentation 4 Dec v1.3.pptx
Document Number: #25

• Record of the MEA Project Partner face-to-face meeting held in Chester on 4 December 2014. Both Independent Reviewers attended this meeting.

• Contains a record of the various issues experienced with the Esprit system during 2014

Current Risk & Contingency Register
Filename: Risk & Contingency Register v4.27.xlsx
Document Number: #26

• Should this have been supplied “for review” rather than “for information”?

• In the list of risks supplied (the Reviewers have not considered the hidden rows in the Excel spreadsheet) failure of the Esprit technology leading to damage to the network, vehicle, other property or people is mentioned. Has the MEA team considered the risks of further failures of the Esprit technology that although not resulting in damage to property or people could result in the project being unable to meet the learning goals?

Other risks that should be considered:
Communication between MC and ICBs fails
Esprit unable to curtail or switch on EV charging due to communication issues between MC and ICB
Data lost due to issues with iHost system
Bug in database algorithms for processing the MEA data
**Current Project Plan**
Filename: I2EV Project Plan v3.1 - December 2014.mpp
Document Number: #27

- Should this have been supplied “for review” rather than “for information”?
- Task 4 is lacking detail, since this is contained in another file. Could you supply us a copy of the latest timing plan for Task 4?
- Task 5 still shows the six-monthly data reports. Shouldn't this be changed to monthly reports?
- How have the various issues with the Esprit system impacted on the timing of other project activities?
- What is the latest timing plan for Task 6? Provided during face to face meeting 15 January 2015 (see commentary on Task 11 document #28 provided below).
- Task 11 – Expand to include monthly project partner meetings, monthly assurance reports and monthly assurance meetings with SSEPD

**Current Project Plan for Task 6**
Filename: My Electric Avenue - Task 6 - Social Trials Plan 15-01-2015.mpp
Document Number: #28

- ID52 – 56: Post trial questionnaires – Some are shown as complete (ID52) – Is this correct? Other ID still to be confirmed but look to be too early in the schedule?
- ID61 – 63: When and where are these interviews going to be?
- ID61 – 63: When and where are these Focus Groups going to be?
- ID71: Is the data going to be complete by 22/06/15 as the trials complete on 25/09/15 according to ID46?
- ID78 – 80: Post trial questionnaires, when are the dates for these going to be set? What are the constraints on their timing?
- ID94: Have/are the questionnaires being sent out this/next week?