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1 Executive Summary

1.1 Project Background
The Kent Active System Management (KASM) project aims to carry out a range of technical innovation trials to demonstrate more advanced operations and planning techniques for the 132kV and 33kV network in South Eastern Power Networks’ (SPN) East Kent area. It is envisaged that the project will deliver benefits that will span various areas, including the enablement of low carbon generation, the deferral of capital-intensive reinforcement associated with new generation connections, and improved network reliability.

The project spans three years, from January 2015 to December 2017, and was awarded funding of £3.4m by Ofgem under the Low Carbon Networks Fund (LCNF) scheme. Total funding for the project is £3.9m, with the remaining funding provided by UK Power Networks (£450k) and project partners (£50k).

1.2 Project Progress
This six-month reporting period (January-June 2017) is the fifth for the project. The focus of this reporting period has been on testing and demonstrating the use of the Contingency Analysis System (CAS) in the control room.

Following the submission of the previous six-month report, in December 2016, the project has successfully demonstrated the use of real-time contingency analysis (CA) in UK Power Networks’ control room, meeting the key criteria set out at the beginning of the project (see the table below). This is a major milestone of the project and is considered first of a kind capability within the electricity distribution networks industry.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDRC 9.4 Demonstration of use of real-time contingency analysis in the control room</td>
<td>• Published report with description of the solution, the user interface, and the capabilities</td>
</tr>
<tr>
<td></td>
<td>• Completion of user survey identifying the most critical forecast time periods perceived by control room users (e.g. next 15 minutes; tomorrow; next shift)</td>
</tr>
<tr>
<td></td>
<td>• Demonstration of contingency results from live SCADA readings, supplied within 15 minutes of them being collected</td>
</tr>
</tbody>
</table>

In order to achieve the successful delivery of SDRC 9.4, the focus has been on testing and demonstrating the use of the Release 1 CAS in the control room.

Further information about this deliverable is covered in our SDRC 9.4 report (Demonstration of use of real-time contingency analysis in the control room), which was submitted on 14 June 2017. The CAS software has been installed on several user computers to assist with finalising testing and transition to trials, which are expected to start by the end of June 2017. In addition to successfully delivering the SDRC 9.4 report, the project team has commissioned the Inter-Control Centre Communication Protocol (ICCP) link, which is currently in the live environment.

Overall, this reporting period has demonstrated the successful use of the CAS in the control room environment using near real-time SCADA data, which is a significant milestone of the project. The project team will continue to work with users and suppliers to improve the performance and usability of the CAS during the trial period. The team is currently looking at implementing mitigating measures (see section 8) that will ensure the delivery
of full benefits and learning within the reduced trial period (a consequence of the delayed delivery of SDRCs 9.2 and 9.3, mentioned in our December 2016 progress report).

1.3 Key Risks

During this period we have successfully mitigated and closed a number of the risks encountered. Some key bid risks remain open, however, and we are monitoring these closely and formulating mitigating actions. Open bid risks are listed in section 8 of this report. There is also a project risk as described below.

<table>
<thead>
<tr>
<th>Risk Ref</th>
<th>RISK Description</th>
<th>IMPACT Description</th>
<th>MITIGATION - Action Plan &amp; Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0038</td>
<td>The reduced trial period is not sufficient to deliver the full benefits</td>
<td>The benefits cannot be delivered by December 2017 (close of the project)</td>
<td>A strategy has been developed to retrospectively analyse available data and we believe this will deliver the benefits during the period. The project team will regularly monitor project benefits during the trial period.</td>
</tr>
</tbody>
</table>

1.4 Learning and dissemination

The project team recognises the importance of ‘best in class’ learning and dissemination and during this reporting period we have continued to share learnings from the project with our stakeholders. The project team engaged with internal and external stakeholders at a learning and dissemination workshop, which was held on 12 April 2017 at the IET. The objective of the event was to disseminate lessons learned to date regarding:

1. SDRC 9.1 – Development of the strategy for Inter-Control Room Communication Protocol for the purposes of KASM
2. SDRC 9.2 – Completion of the system integration of Contingency Analysis (CA) software into UK Power Networks Systems, excluding a real-time link to National Grid
3. SDRC 9.3 – Completion of installation of forecasting modules that will link the DNO control room with other data sources

The workshop had representation from all bar one DNO and provided an opportunity for attendees to discuss risks, challenges and benefits associated with the above topics. All attendee feedback rated the event as either ‘Excellent’ or ‘Very good’. This demonstrates that the event was considered extremely useful by internal and external attendees. Further information about the event is captured in section 6.2 of this report. In addition to the formal learning and dissemination event with external stakeholders, the project contributed to multiple internal dissemination events which are listed in section 6.1.

The achievements of the project have been recognised by the industry and as a result the KASM project has been shortlisted as Innovation of the Year by the Business Green Awards, which will be held on 28 June 2017.
2 Project Manager's report

2.1 Workstream 1

Workstream 1 is responsible for designing, developing, testing and delivering the Inter-Control Centre Communication Protocol (ICCP) link between UK Power Networks and National Grid. Both UK Power Networks and National Grid will exchange relevant real-time data for the purpose of contingency analysis.

Following on from our December 2016 progress report, which highlighted the test phases associated with ICCP testing, the project team has successfully completed delivery of the ICCP infrastructure solution. During this period the final testing phases were completed and the service is now operational. Figure 1 demonstrates the live SCADA data which has been transferred from National Grid’s Energy Management System (EMS) over the ICCP link to UK Power Networks’ DMS.

The project held a learning and dissemination event with participation from other DNOs and National Grid; this was an ideal forum for discussing and communicating ICCP lessons learned and the overall approach to delivering similar solutions. The key messages disseminated during the workshop are captured in section 6.2. In the next reporting period, lessons learned will be shared with the Electricity Networks Association (ENA) TSO/DSO working groups.

Since the last reporting period, UK Power Networks and National Grid’s respective control system support teams have conducted User Acceptance Testing and Operational Acceptance Testing of the ICCP link. The solution is now live and exchanging real-time metering data between UK Power Networks’ PowerOn DMS and National Grid’s EMS.

The enhanced communication network design mentioned in our December 2016 progress report has now been published on the ENA Smarter Networks portal as an addendum to SDRC 9.1. For further information regarding the design of the ICCP link please see SDRC 9.1 on the ENA portal.

Following the successful installation of the ICCP link for SPN, UK Power Networks is currently exploring the opportunity to develop the same capability for its two other licensees: Eastern Power Networks plc (EPN) and London Power Networks plc (LPN).

The key focus for the next period will be on providing support for the live ICCP service and supporting the roll-out of ICCP capabilities in the EPN and LPN licence areas.
2.2 Workstream 2

Workstream 2 is responsible for delivering the CAS to satisfy the business requirements of Real Time Mode, Study Mode and Look Ahead Mode.

In the previous reporting period, the project successfully delivered CAS Release Zero (the core functionality as set out in SDRC 9.2). During this period the aim was to deploy Release One satisfying all requirements for the solution to transition into trials for SDRC 9.4 (Demonstration of use of real-time contingency analysis in the control room).

During this reporting period the Workstream 2 Lead focused on:

- Preparing the test scripts/scenarios with users in test definition workshops
- Leading delivery of the proposed IT architecture, including the enterprise service bus and cloud servers
- Installing the CAS on UK Power Networks’ infrastructure
- Managing test executions and defect management
- Successfully demonstrating contingency results from live SCADA readings

This reporting period saw Bigwood Systems Inc (BSI) finish the Release One development and their local testing. UK Power Networks’ project members visited BSI to witness the FAT. The solution passed 40 predefined FAT scenarios and is now operational on UK Power Networks’ infrastructure. The test scenarios can be categorised into key high-level topics:

- Importing network models accurately from PowerOn and PowerFactory
- Validating state estimation results
- Validating power flow results under contingencies including validation of violation reports
- Single Line Diagram functionality
- Corrective control capabilities
- Integration within UK Power Networks’ infrastructure (critical testing to demonstrate use of the CAS in the control room)

During testing to date, a number of defects were raised with BSI in order to improve the product. However, no ‘show stopper’ defects were identified which prohibit core functionality.

As shown in Figure 2 below, the CAS is integrated within UK Power Networks’ DMS, which in turn is integrated within National Grid’s EMS, via an ICCP link. Thus, the CAS receives real-time metering data (for the 400kV, 275kV, 132kV, 33kV and 11kV networks) from the DMS.

A significant milestone has been achieved this reporting period by demonstrating the use of the CAS in the control room. The Workstream 2 Lead will continue to support the remaining testing and defect management during the trial period. Specific items for the next period include:

- Conducting non-functional testing proving resilience and business continuity
- Conducting User Acceptance Testing in parallel with the trials (this will be undertaken by the business users)
- Continuing to coordinate defect management
Engaging in a ‘train the trainers’ programme and rolling out the CAS to the wider user community.

Two key challenges were identified during this period:

- Under certain abnormal electrical switching conditions, the KASM network was unable to converge a power flow solution. For the purpose of the trials, the CAS is designed to work within the KASM boundaries, thus any external networks beyond the KASM boundary result in a non-converged solution. The Workstream 2 Lead is working with BSI on how to manage such unusual network conditions within the CAS.
- The CAS is one of the first applications within UK Power Networks to be hosted on Cloud technology; this proved a challenge as numerous additional IT security measures needed to be accounted for. Workstream 2 had to coordinate the implementation of the required security architecture in order for the integrated solution to function – a greater task than originally envisaged.
2.3 Workstream 3

This workstream is responsible for developing and testing the load and generation forecasting modules that will be used in conjunction with the Look Ahead (LA) mode of the CAS tool.

This reporting period has seen the delivery of SDRC 9.4, which demonstrated the use of the CAS in the control room. While there have been no significant changes to the forecasting modules since they were tested in Release Zero, the IT infrastructure in which the application is hosted has changed from using a physical server (where files were dropped manually) to a cloud platform. The cloud platform is integrated with a number of messaging services that automatically transfer data from external data sources to the correct directories in the forecasting software.

Following a demonstration of the CAS in the control room, the control engineers have identified the most critical forecast look-ahead times to be ‘the next shift’, which is considered to be 12 hours ahead of real time. The control room engineers highlighted that they are keen to understand the 12 hour look-ahead time horizon at the start of their shift. This would give them an indication of what could happen towards the end of their shift and would highlight any potential violations that may occur at the end of the shift or into the next one. At the handover between shifts control engineers can pass on any critical information to the control engineer who is managing the next 12 hours.

It is expected that after an extended trial period the control engineers will develop a more informed view as to whether the critical time period highlighted after the demonstration remains so. It is important to note that the LA time period can be adjusted during the trial period to accommodate users’ feedback.

The workstream had significant involvement in preparing and presenting at the external learning and dissemination workshops which were hosted at the IET. The key points from the workshop highlighted that having the ability to use forecast data within our modelling tools would significantly change the current processes of modelling, which simply consider ‘worst case’ scenarios.

Over the next reporting period the Workstream 3 Lead will focus on identifying the benefits associated with using load and distributed generation (DG) forecasting tools. During the trial period the project team and users will run existing business processes alongside the new KASM processes to identify the value of using forecasting modules.
2.4 Workstream 4

Workstream 4 is responsible for understanding the value streams and business process impacts of the CAS and forecasting modules.

The Workstream 4 Lead has continued to engage with trial participants during the FAT and SAT testing phases of Release One and the demonstrations in the control centre. This has involved demonstrating key capabilities of the tool and working with the Workstream 2 Lead to install the software on the relevant user computers. Furthermore, the Workstream 4 Lead has delivered the revised control room display screen equipment required to accommodate the CAS in the control room. Following discussions with control engineers, it was determined that the CAS could not be accommodated on the existing display screen equipment available in the control room. The existing screen layout can be seen in Figure 3 below.

![Existing screen layout](image)

Figure 3 showing the existing display screen in the control room
The updated screen display shown in Figure 4 has been critical in ensuring that trials of the CAS can begin in the control room environment. Further preparations for the trials have taken the form of developing the trials benefit tracking templates.

Figure 4 showing the new display screen equipment in the control room to accommodate the CAS software
To improve the accuracy of the CAS modelling, the Workstream 4 Lead has been engaging with National Grid and a number of transmission connected generating companies to improve the data sharing opportunities between these parties. Currently, National Grid is unable to share certain power flow data with UK Power Networks due to the data items being considered as third party data. The issue has been investigated and the Workstream 4 Lead has been working with a number of generating companies to gain consent for National Grid to share this data over the existing ICCP link.

Following discussions with a number of generating companies, they have highlighted concerns with the impact of REMIT regulations on sharing this data. In order to understand the issue in more detail, one of the generating companies has approached Ofgem for clarification on this matter. Resolving this concern will allow for more accurate modelling within the CAS. Furthermore, it will be an enabler for allowing better coordination for future smart grid projects, which require closer synchronisation between transmission operators and DNOs. In the next reporting period the Workstream 4 Lead will continue to assist in resolving this issue in order to deliver further value for the KASM project and future smart grid projects.

Over the course of the next reporting period the workstream will focus on recording the benefits of the tool covered by the three use cases: reliability management, outage management and capacity management. In addition, there will be a focus on developing the future business processes associated with a business-as-usual roll-out of the KASM solutions.
2.5 Technical Design Authority

The Technical Design Authority (TDA) is responsible for all aspects of commercial, functional and technical design and architecture. The TDA is charged with the review and approval of the commercial, functional and technical requirements specifications and architecture for the project, and for ensuring the end-to-end technical design enables the project to deliver to the objectives outlined in the KASM proposal. Moreover, it ensures that the design is consistent with architectural principles and is capable of being adopted as the reference architecture, which can then be integrated into the wider organisation to deliver organisational benefits. The TDA is made up of five key roles: Technical Lead, IT Solution Architect, Network Control, Outage Planning and Infrastructure Planning. The TDA also includes an external industry consultant, to ensure accurate scope definition.

The focus activities during this reporting period included:

- Assisting with defining the test scenarios and data requirements for FAT and SAT
- Analysing the test results and evaluating the solution against requirements
- Generating network models to resolve any electrical network model queries on which BSI required clarification

Through a series of workshops with business users and subject matter experts, the TDA Lead reviewed the project requirements and developed test case scenarios. In the past, all of the testing was categorised by business function area (Network Control, Outage Planning and Network Planning); however, for this phase (Release One), the approach taken was to test by categorising the CAS functionality:

- Real Time Mode
- Look Ahead Mode
- Study Mode
- Forecasting

This approach enabled the CAS to be tested in a fully integrated fashion, where data is processed end to end.

To support this testing for FAT, a number of real KASM network models were captured which contained changes to the electrical network. These models allowed the testing to validate the Single Line Diagram functionality – new in this CAS release.

Over the next reporting period the TDA will focus on the following areas:

- Working with users to run studies within the CAS
- Providing technical training support
- Supporting with tracking benefits of the CAS during the trial period
- Working with the Workstream 4 Lead to develop the future business processes associated with a business-as-usual roll-out of the KASM solutions
3 Business case update

The business case remains consistent with our December 2016 progress report. Based on regular engagement with the potential users of the KASM solution, there remains a strong case for implementing the CAS and Forecasting Module.

4 Progress against budget

This section is provided as a confidential appendix.
5 Successful delivery reward criteria (SDRC)

<table>
<thead>
<tr>
<th>SDRC</th>
<th>Progress</th>
<th>Scheduled Date</th>
</tr>
</thead>
</table>
| 9.1  | **Criterion**
Development of the strategy for inter-control room communication protocol for the purposes of KASM.

**Evidence**
- Published report on key technical and commercial challenges relevant to inter-control room link and the KASM project, whether proposed by the KASM team or raised by stakeholders, including other DNOs;
- Implementation guidelines for the inter-control room communication link in consultation with National Grid for use by the project.

- SDRC completed and submitted on 29 December 2015 | December 2015 |
| 9.2  | **Criterion**
Completion of the system integration of CA software into UK Power Networks systems, excluding a real-time link to National Grid.

**Evidence**
- Sign-off on set up of CA software;
- Sign-off on successful demonstration and testing of CA software; and
- Published report on CA software integration that includes the control room IT architecture, lessons learned, engagement with other DNOs, and identified risks.

- SDRC completed and submitted on 30 November 2016 | November 2016 |
<table>
<thead>
<tr>
<th>SDRC</th>
<th>Progress</th>
<th>Scheduled Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3</td>
<td>Criterion</td>
<td>SDRC completed and submitted on 30 November 2016</td>
</tr>
<tr>
<td></td>
<td>Completion of installation of forecasting modules that will link the DNO control room with other data sources.</td>
<td>November 2016</td>
</tr>
</tbody>
</table>

**Evidence**
- Sign-off on installation of forecasting modules;
- Forecast data, benchmarked for accuracy against historical data;
- Published report demonstrating forecasts including each of solar, on-shore wind and off-shore wind;
- Forecast error curves plotted at primary substation, 132kV circuit, and GSP levels;
- Description of integration architecture with the overall solution; and
- Published report on data aggregating forecasting modules that includes lessons learned and identified risks.

| 9.4  | Criterion | Delivery of this SDRC has been impacted by the delays to SDRC 9.2 and SDRC 9.3. On 14 September 2016, following discussions with Ofgem, we submitted a notification to reschedule delivery of this SDRC from 31 December 2016 to 16 June 2017. The SDRC was successfully submitted on 14 June 2017. | June 2017 |
|      | Demonstration of use of real-time CA in the control room. | |

**Evidence**
- Demonstration of contingency results from live SCADA readings, supplied within 15 minutes of them being collected;
- Completion of user survey identifying the most critical forecast time periods perceived by control room users (e.g. next 15 mins; tomorrow; next shift); and
- Published report with description of the solution, the user interface, and the capabilities.
<table>
<thead>
<tr>
<th>SDRC</th>
<th>Progress</th>
<th>Scheduled Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5</td>
<td>Criterion Completion of trials and implementation of reliability management, outage management and network capacity management.</td>
<td>Software installed on several users of CAS ready to finalise testing for start of trials</td>
</tr>
<tr>
<td></td>
<td>Evidence</td>
<td>Basic training of participants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trials strategy and plan has been drafted and is being shared with users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>December 2017</td>
</tr>
</tbody>
</table>

- Published results from functional trials and the achieved benefits in reduced DG curtailment;
- Published report demonstrating data collection from Grain, Kemsley, Cleve Hill, Canterbury North, Sellindge, Dungeness and Ninfield 400kV network and sensitivity of the CA results to this data;
- List of connection offers that have been linked to reinforcement when assessed using conventional processes, and identification of those that have been revised to remove the reinforcement requirement after being assessed using the trialled methodology; quantification of the released network capacity based on the comparison of the above list; and
- Published report on considerations for selecting, designing and installing CA software for each use case.
<table>
<thead>
<tr>
<th>SDRC</th>
<th>Progress</th>
<th>Scheduled Date</th>
</tr>
</thead>
</table>
| 9.6  | **Criterion**  
Development of business design to incorporate CA as business-as-usual.  
**Evidence**  
- Identification of business areas impacted by the introduction of CA in a Distribution Network Operator; and  
- Outline of proposed changes to systems, policies and processes required in the DNO operating model in order to incorporate CA as part the business as usual operation. | **This SDRC remains on schedule to be delivered as planned.** | December 2017 |
6 Learning outcomes and knowledge dissemination

6.1 Internal communications and knowledge dissemination activities

Since the last reporting period, the foremost communication has been at a wider internal and external stakeholder event hosted at the IET. Key internal stakeholders joined discussions with a cross-section of users from other DNOs and National Grid. Further information about the event is presented in section 6.2.

Further communication activities were held at an internal UK Power Networks Leaders conference, where 200 ‘Leaders’ across all departments of UK Power Networks learned about our Innovation projects. The Leaders attending this event are all managers in UK Power Networks. At this event the project presented a project overview poster (see Figure 5) to several internal stakeholders, including members of the Executive Management Team. The key message during these presentations was to highlight how the KASM project contributes to the capabilities required for a DNO to transition to a Distribution System Operator (DSO).

![Figure 5 – showing presentation of KASM and TDI at the UK Power Networks Leaders conference](image)

The project has also disseminated key learning at team meetings in UK Power Networks’ EPN licence area. Specifically, the project team presented learnings at an Infrastructure Planning team brief which focused on future opportunities and challenges associated with rolling out the KASM solution to the EPN licence area. The key challenge raised was in respect of the unique data mapping rules set out for the KASM area, which might not directly apply in EPN. Further conversations will be planned to discuss the future roll-out of KASM solutions to other licence areas.

As mentioned in our December 2016 progress report, and demonstrated in Figure 5, the project continues to share key learnings from the Transmission Distribution Interface (TDI) 2.0 project, which is closely aligned with KASM.
6.2 External communications and knowledge dissemination activities

As mentioned in section 6.1, the project held a learning and dissemination workshop with internal and external stakeholders. The workshop was hosted at the IET in London on 12 April 2017. All DNOs were invited to the event and all bar one attended. The attendees represented a broad range of roles within each DNO, allowing varying points of view to be captured. Approximately 20 people attended and the post-event feedback was extremely positive, with attendees rating the event as either ‘Excellent’ or ‘Very Good’.

The workshop consisted of four presentations with time allowed in-between for interactive questions and discussion. The following four topics and messages were disseminated:

1. Learning from installation of a contingency analysis tool
   a. Data mapping – existing applications are appropriate for current use but challenges exist with mapping between data from applications
   b. Data sharing between transmission and distribution networks has become more significant
   c. Data quality issues – large amounts of DG and limited MW measurement points cause difficulty when solving power flows
   d. Challenges arise when determining the direction of flow on some feeders
   e. Metering issues – suspect analogues can impact the accuracy of state estimation results
   f. Grid Code change – the current policy can be adapted to accommodate a changing distribution network

2. Our ICCP link
   a. Application fail over mechanism is important to align with business continuity requirements
   b. National Grid has a requirement to use the ENTSO-e naming convention for ICCP points. This needs to be understood and approved by the DNO operational system owner at the outset of the project
   c. Transmission connected generator data is not readily available due to data confidentiality concerns
   d. Early engagement between the National Grid and UK Power Networks Digital Risk & Security functions ensured the network design and subsequent security testing was agreed and scheduled in a very cooperative manner
   e. The change process for requesting additional ICCP data points needs to be agreed and tested

3. The benefits and challenges associated with short term load and generation forecasting
   a. Input data accuracy can cause challenges with accuracy of forecasts
   b. Generation embedded on the LV network can influence the load forecasting on the 11kV feeders
   c. It is important to identify load types (e.g. industrial, commercial, rail loads) to improve accuracy
   d. Benchmarking for accuracy can be difficult if unique data sets are being used
   e. Forecasting new generators – there is limited data available to train algorithms

4. An introduction to Power Potential (TDI 2.0)
   a. This presentation provided an introduction to Power Potential and highlighted the key learnings from KASM which are being incorporated into the project:
      i. Suggest use of a single source of network data rather than mapping between applications
      ii. The DMS would be the most appropriate application from which to source a real-time data model
      iii. Utilisation of ICCP link from KASM: knowledge on design and implementation
iv. Importance of visibility – network data, Distributed Energy Resource (DER) data, external data

v. Importance of data accuracy – need to focus from an early stage on ensuring data accuracy

vi. Using the industry standard International Electrotechnical Commission (IEC) CIM (Common Information Model) for network data exchange – KASM project highlighted the challenges of CIM data integration to inform the most efficient data integration strategy

Figure 6 shows a KASM team member presenting at the learning and dissemination event hosted at the IET.

Figure 6 showing the KASM team disseminating key learnings
In addition to the learning and dissemination event, the project continues to raise the profile of the project through a variety of communication forums:

<table>
<thead>
<tr>
<th>Conferences and formal dissemination activities</th>
<th>Main Messages/presentation title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press Release</td>
<td>• UK Power Networks and National Grid in key milestone to boost green energy</td>
<td>2 February 2017</td>
</tr>
<tr>
<td>International workshop on Electric Power Control Centres (Wiesloch, Germany)</td>
<td>• Advanced Distribution Analytics Power Network Tool Sub-Transmission and Distribution Tool with UK Power Networks (presented by Bigwood Systems)</td>
<td>14-17 May 2017</td>
</tr>
<tr>
<td>Distributed Generator Owner and Operator Workshop</td>
<td>• Kent Active System Management – an overview of the project and new business processes</td>
<td>12 June 2017</td>
</tr>
<tr>
<td>CIRED 2017 Poster Presentation</td>
<td>• Challenges in Model and Data Merging for the implementation of a Distribution Network Contingency Analysis Tool</td>
<td>12-15 June 2017</td>
</tr>
</tbody>
</table>

### 6.3 Learning and Dissemination activities in the next reporting period

<table>
<thead>
<tr>
<th>Conferences and formal dissemination activities</th>
<th>Main Messages</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Carbon Networks Innovation Conference (Telford)</td>
<td>• Results from the trials and future business processes associated with a roll-out of the CAS</td>
<td>December 2017</td>
</tr>
<tr>
<td>SDRC 9.5 report</td>
<td>• Completion of trials and implementation of reliability management, outage management and network capacity management</td>
<td>December 2017</td>
</tr>
<tr>
<td>SDRC 9.6 report</td>
<td>• Development of business design to incorporate contingency analysis as business-as-usual</td>
<td>December 2017</td>
</tr>
<tr>
<td>Project updates (website, tweets, newsletter, targeted presentation as appropriate)</td>
<td>• Update key stakeholders on progress</td>
<td>Q3-Q4 2017</td>
</tr>
<tr>
<td>Project close down event</td>
<td>• Disseminate all key learnings from the project</td>
<td>Q1 2018</td>
</tr>
</tbody>
</table>
7 Intellectual Property Rights (IPR)

During the period the following IPR (foreground or relevant foreground) was generated (January-June 2017):

<table>
<thead>
<tr>
<th>Workstream</th>
<th>IPR description</th>
<th>IPR Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS2</td>
<td>P.0015.KASM SDRC 9.4</td>
<td>UK Power Networks</td>
</tr>
</tbody>
</table>

8 Risk management

The KASM project has established a risk management process as described in detail in the KASM Project Handbook submitted with our June 2015 progress report. It allows for the communication and escalation of key risks and issues within the project and defines where decisions are made and how these will be communicated back to the workstream of risk origin. Risks are reviewed on a weekly basis and are currently documented on a monthly basis at Progress Reporting Meetings. Key project risks are escalated to the Project Steering Committee for review and approval of the mitigation on a monthly basis.

8.1 Bid risks managed this period

The following table displays the remaining open risks, which are being monitored:

<table>
<thead>
<tr>
<th>Ref BID#</th>
<th>WS</th>
<th>Risk &amp; Impact Description</th>
<th>BID Mitigation</th>
<th>Mitigation (update)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0003</td>
<td>WS1</td>
<td>The software solution fails to perform to specification, leading to system incompatibilities and unsatisfactory trial results.</td>
<td>The software solution will be subject to performance testing using benchmarking or simulators under various operating conditions. Software requirements to be defined at design stage and suitable software chosen for the purpose of the trials. UK Power Networks to agree Service Level Agreements (SLAs) for software solution.</td>
<td>Requirements and design phases involve all parties (suppliers and business users) to ensure that the software solutions meet the performance requirements. Clear test strategies have been implemented to check performance. Final testing is to be completed. The performance of the software will continue to be monitored during the trial period.</td>
<td>G</td>
</tr>
<tr>
<td>B0004</td>
<td>WS5</td>
<td>There is lost learning during knowledge dissemination and stakeholder engagement activities due to differing interests and learning styles of stakeholders.</td>
<td>Identify stakeholders early on. The dissemination workstream is fully engaged with technical workstream at an early stage and lessons learned are captured from the LCNF projects.</td>
<td>Early engagement with all key stakeholders has taken place and will continue to ensure positive support of the project. Successful learning and dissemination events have been held and will continue to be a focus area.</td>
<td>G</td>
</tr>
<tr>
<td>B0006</td>
<td>PM</td>
<td>The software partner goes out of business before the solution is delivered.</td>
<td>Full financial due diligence undertaken as part of UK Power Networks' procurement procedure; identify alternative supplier.</td>
<td>Full diligence has been undertaken and an alternative supplier has been selected. The project team continues to work closely with the supplier to understand and avoid any financial issues.</td>
<td>G</td>
</tr>
<tr>
<td>Ref BID#</td>
<td>WS</td>
<td>Risk &amp; Impact Description</td>
<td>BID Mitigation</td>
<td>Mitigation (update)</td>
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<tr>
<td>B0007</td>
<td>PM</td>
<td>The software partner goes out of business after the solution has been delivered, resulting in lack of continuity/support.</td>
<td>Full financial due diligence undertaken as part of UK Power Networks’ procurement procedure; arrange a software ESCROW (third party agent who stores source code) and novation of liabilities to Original Equipment Manufacturers (OEM).</td>
<td>Full diligence has been undertaken and an alternative supplier has been selected. The project team continues to work closely with the supplier to understand and avoid any financial issues.</td>
<td>G</td>
</tr>
<tr>
<td>B0008</td>
<td>WS4</td>
<td>The trials do not deliver the expected results.</td>
<td>Expectations are managed due to thorough planning and frequent reporting. Lessons gathered throughout process.</td>
<td>The project team will regularly monitor benefits during the trial period. In addition, the team will highlight any areas where benefits are not visible and include the reason why the benefit is not being achieved.</td>
<td>A</td>
</tr>
<tr>
<td>B0013</td>
<td>WS2</td>
<td>Visualisation of outputs from software tool not in line with operator expectations.</td>
<td>Engage with operators early in the process to help inform the design, to mimic existing Distribution Management System. Limited contingency added into timescales to allow redesign if necessary.</td>
<td>Operators are already on board and agreeing to the requirements and designs. This risk will be mitigated at User Acceptance Testing, which will happen during the trial period.</td>
<td>G</td>
</tr>
<tr>
<td>B0014</td>
<td>PM</td>
<td>Connectees commit to pay for significant SGT upgrades at both Canterbury and Richborough and overhead line upgrades, adding significant capacity to the network and removing the export constraints.</td>
<td>Monitor all new connection requests. Support any efforts by distributed generation developers to form group connections or joint connection requests.</td>
<td>The project is in close contact with UK Power Networks’ Connections directorate to ensure early awareness of any potential connection requests.</td>
<td>G</td>
</tr>
<tr>
<td>B0015</td>
<td>PM</td>
<td>Exceeding the estimated budget for the project.</td>
<td>We have conducted detailed project planning and cost reporting based on our prior experience in delivering LCNF projects.</td>
<td>The project undertakes monthly financial reviews and through the contract negotiations is ensuring value for money within the budget restrictions.</td>
<td>G</td>
</tr>
</tbody>
</table>
9  Consistency with the full submission

There have been no changes to the project scope since the full submission.

10  Bank account

This section is provided as a confidential appendix.
11 Accuracy assurance statement

The project implemented a project governance structure as outlined in the project handbook that effectively and efficiently manages the project and all its products. All information produced and held by the project is reviewed and updated when required to ensure quality and accuracy. This report has gone through an internal project review and a further review within UK Power Networks to ensure the accuracy of information.

We hereby confirm that this report represents a true, complete and accurate statement on the progress of the Kent Active System Management Low Carbon Networks project in its fifth six-month reporting period and an accurate view of our understanding of the activities for the next reporting period.

Signed

Signed

Date 12.6.2017

Suleman Alli
Director of Safety, Strategy and Support Services
UK Power Networks