

# Kent Active System Management Low Carbon Networks

Project Progress Report June 2015



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### 1. Executive Summary

The Kent Active System Management Low Carbon Networks project (KASM) aims to carry out a range of technical innovation trials to demonstrate more precise operation and planning of the 132kV network in South Eastern Power Networks' (SPN) East Kent area. The project will support and enable the connection of low carbon generation and the deferral of capital-intensive reinforcement projects associated with generation and will also reduce outages for existing generators.

The project will run for three years, from January 2015 to December 2017, and has been 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).

The main focus of the first reporting period was to set up and mobilise the project to start delivering activities to ensure the successful completion of all major milestones.

The KASM project structure follows the PRINCE2 project management methodology and reflects UK Power Networks' best practice, based upon the extensive experience gained from delivering Tier 2 innovation projects.

The project structure operates under governance arrangements designed to facilitate a focus on identifying and developing the most effective solution, matched with an effective structure for delivering to time, cost and quality. The project structure is supported by simple but effective reporting and project control mechanisms, to enable quick and informed decisions to be made in a controlled manner. Please see Appendix 1 for the Project Handbook, where the governance structure and the roles and responsibilities are documented.

The resources for all key positions within the project have been recruited and are working on the project (please see Figure 1 on page 5). This process began with transitioning some of the members of the KASM bid team into roles within the KASM project team from 1 January 2015, to ensure stability and continuity. The other resources have been transferred from the LCNF Flexible Plug and Play project, which closed in December 2014. These resources have a good knowledge and understanding of both generation and successfully delivering Tier 2 innovation projects.

Progress has been made in the establishment of contractual arrangements with the project partners. UK Power Networks has chosen to contract separately with the two key project partners and one supplier on common terms and conditions, including, in particular, a mutual IPR Agreement between all of the partners. This allows the contracts to be better tailored to the nature of the services being provided by the partners. Delays have been incurred in finalising the agreements, although the project expects to have all of the contracts signed within the next reporting period. The project team and the project partners are continuing to progress the activities in parallel with finalising the contracts, to ensure the delays in signing the contracts do not impact either the quality or timeliness of project deliverables.

### Risk

A key risk (R013) that the project has faced during this reporting period is the timely and efficient conclusion of the contract negotiation with the two project partners and two project suppliers. To minimise any potential for scope variations within the contracts, the project has undertaken a detailed requirements gathering and scope gathering exercise prior to the development of the agreements. To mitigate any significant delays, the project started negotiations prior to receiving notification of successfully being awarded funding. The nature of additional KASM requirements gathering and refinement work required to support the contract negotiations has resulted in the delays in finalising the contract. The delays have been minor and will not impact the delivery of any SDRCs.

### Knowledge dissemination and stakeholder engagement

The project has developed a Knowledge Dissemination Road Map (see Appendix 2), which provides a strategy for delivering the knowledge dissemination and stakeholder engagement activities. The road map details the knowledge activities available for the project and a high-level plan as to when they will be delivered.

The road map is already being implemented and has seen a number of key dissemination activities completed during this reporting period. These activities are:

**Project kick-off meeting** – On 11 February 2015, a meeting was held with key internal stakeholders from all levels within the organisation, project partners and suppliers. The objective of this meeting was to walk through the Project Handbook, which outlines the project aims and objectives, high-level plan, key risks and issues.

**Stakeholder engagement** – The project has already commenced extensive stakeholder engagement activities with the key members within the business-as-usual team. A number of project workshops have taken place to develop the key project requirements to support the design phases. A number of workshops and meetings have taken place with the key project stakeholders.

**KASM website** – An external facing project website has been developed and launched to provide valuable information on the project and will be used to share the key learning generated.  
([www.ukpowernetworks.co.uk/innovation](http://www.ukpowernetworks.co.uk/innovation))

Planning for the first project event with other DNOs is underway, with this currently being scheduled for Q3 2015. The event will be a workshop which will discuss the technical and commercial considerations for implementing an inter-control room communication link.

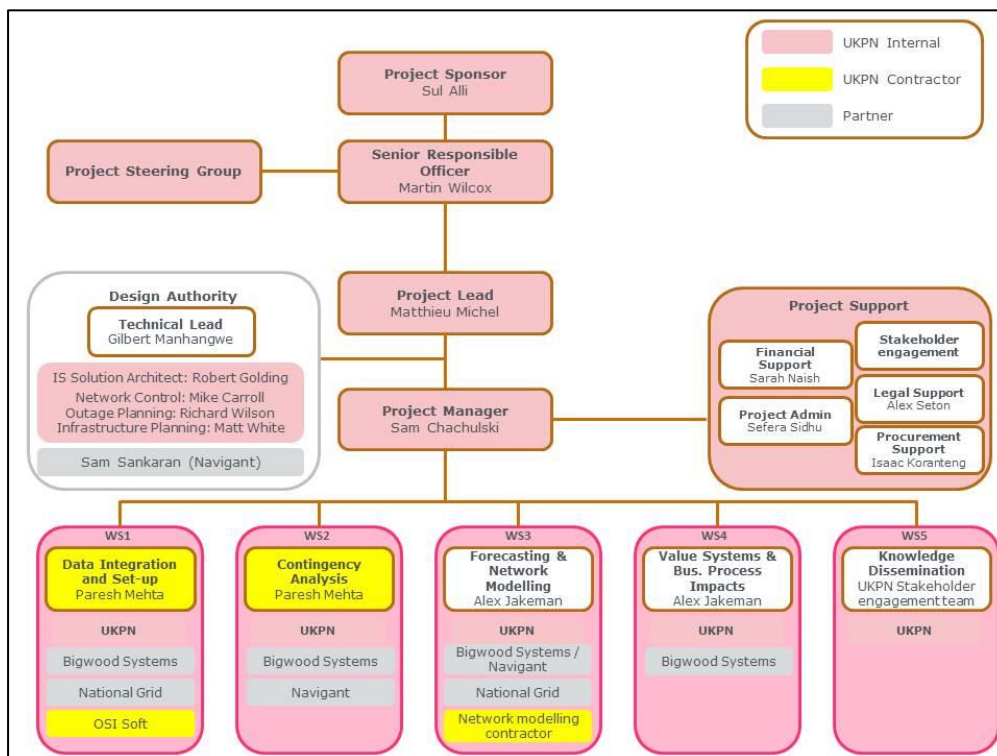
## 2. Project Manager’s Report

### 2.1 Progress in the current reporting period

#### 2.1.1 Project initiation: design and implement project team and governance structures

The first task of the KASM project was to design and implement appropriate project team and governance structures that would allow the project to deliver its objectives in an efficient and effective manner, whilst ensuring it delivers on time, within budget and to the required quality.

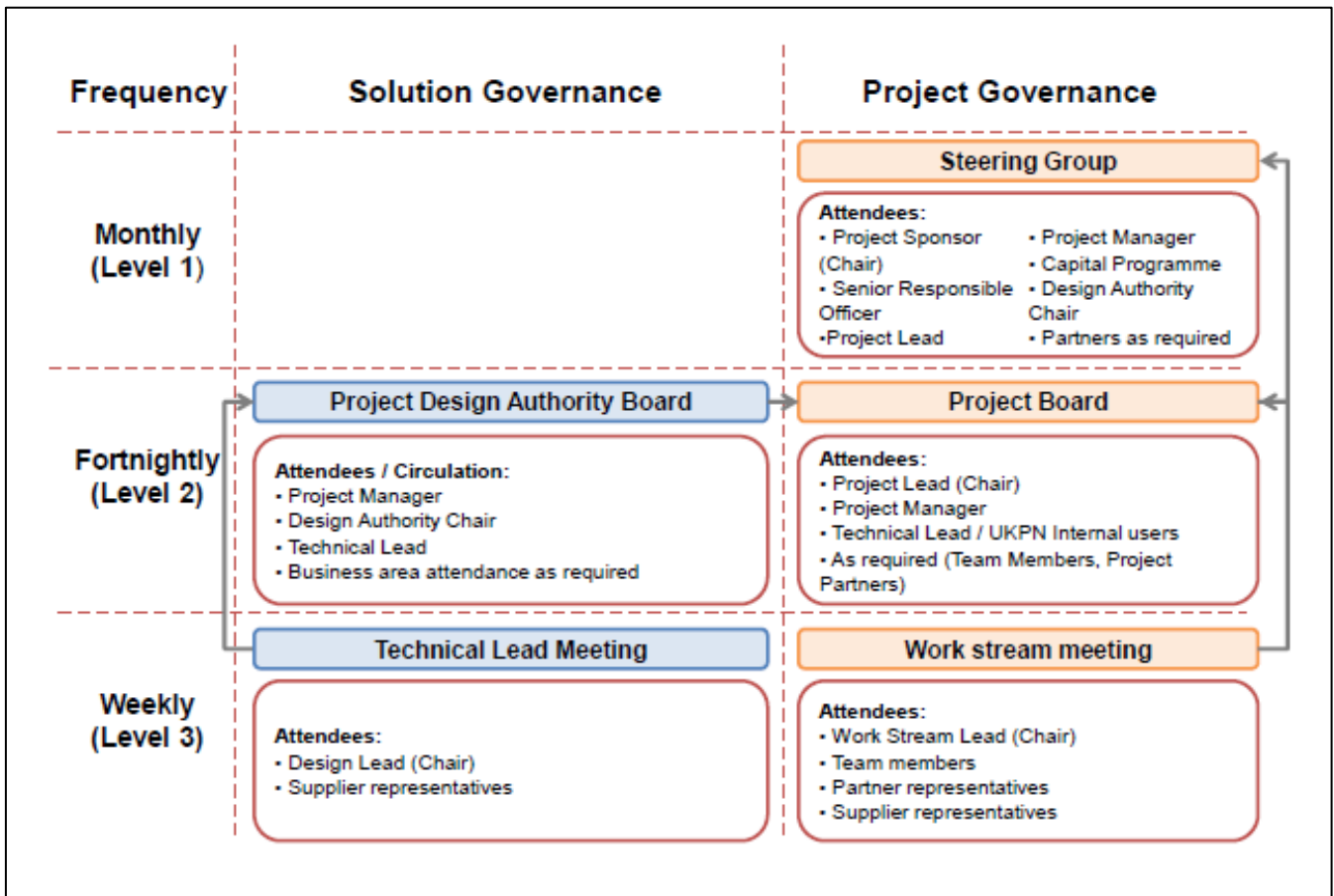
Internal and external recruitment took place between December 2014 and January 2015 to populate the KASM team structure. The organogram in Figure 1 depicts all resources within the KASM project team as of June 2015:



**Figure 1: KASM Organisational Structure**

The organisational structure in Figure 1 is comprised of UK Power Networks employees and external contractors. Each role in the above structure has a clear role definition, reporting line, responsibilities and duties that are described in detail in Appendix 1: *The KASM Project Handbook*.

The organisational structure shown in Figure 1 operates under a governance structure that covers three hierarchical levels (Levels 1-3) and has two different streams: *Solution Governance* and *Project Governance*. This model has been developed utilising UK Power Networks’ experience in delivering Tier 2 innovation projects. The model provides a focus on identifying and developing the most effective solution, matched with an effective structure for delivering the solution to the project’s milestones and budget. The KASM governance model, shown in Figure 2, is supported by, and aligned with, reporting and project control mechanisms to enable quick and informed decisions to be made in a controlled manner. For each of the governance groups shown below there are clear terms of reference detailing the level of delegated authority, required attendees and the relationships with the other governance groups. Details of each governance group are provided in Appendix 1.



**Figure 2: KASM Governance Model**

This governance model has been designed to allow rapid communication of decisions and actions throughout the project, providing effective decision making. Regular engagement sessions are arranged to communicate progress across the project team and project partners.

### **2.1.2 Contracts**

The completion of legal contracts with the two project partners and one key supplier has been a key priority of the project during the current reporting period. The contractual mechanism that UK Power Networks has chosen to implement is based on a separate contract with each project partner, whilst maintaining the same terms and conditions between UK Power Networks and the project partners.

All project partners are obliged to comply with the same collaboration principles and a mutual IPR Agreement between all of the partners sets out the requirements for the treatment of IPR. This approach has proven to be successful for previous UK Power Networks Tier 2 projects, as it allows the contracts to be better tailored to the nature of the services being provided by the partners (ranging from information and communications technology (ICT) activities to the provision of consultancy services).

At present the project has signed one partner contract, which is with Navigant. The development of the second partner and two supplier contracts is being preceded by detailed scope definition activities, resulting in the contracts being signed later than originally planned. This approach will ensure a robust contractual foundation to minimise the need for scope variations over the course of the project. The project team is working towards having all contracts agreed and signed by Q2 2015.

Through the detailed scope definition with Bigwood Systems Inc., it was identified that the original quotation provided at the bid submission following a Request for Proposals (RFP) did not potentially capture all of the project requirements. Since the start of the project, the project team has been working with Bigwood Systems Inc, the project users and UK Power Networks' commercial and procurement teams to understand the difference between the original quotation and the users' requirements, and what is essential to meet the project objectives. Following review and discussion with Bigwood Systems Inc., a final scope of works was agreed. This has resulted in re-negotiation and an overall increase in the costs for the contingency analysis (CA) and forecasting tools. Throughout the design, development and integration phase of the CA and forecasting tools the project team will be working closely with Bigwood Systems Inc. to make savings where possible.

The project team has been working closely with Bigwood Systems Inc. to ensure that any delays in signing the contracts do not negatively impact the project's ability to successfully deliver its objectives.

The table below summarises the current status of the project agreement with each project partner:

Organisation	Partner or Supplier	Contract Status	Target Signature Date
National Grid	Partner	Contract under review by National Grid	June 2015
Navigant Consulting Ltd	Partner	Completed	Completed
Bigwood Systems Inc.	Supplier	Terms and conditions agreed. Finalising contract.	June 2015
GE	Supplier	Work order being finalised	July 2015

**Table 1:** Project Contract Status

**2.1.3 Project initiation: project plan**

The project plan submitted as part of the bid submission is being used for planning activities and for tracking progress. The activities carried out to date are in line with previously submitted information in the bid submission plan and therefore there are no changes to report. In addition to this, a detailed project plan is being developed, with the following activities already completed:

- Review of the bid submission project plan
- Development of a detailed project plan to June 2015 for all KASM project workstreams
- Development of detailed plans for workstreams 1, 2 and 3 through to March 2016. This is due to these workstreams being responsible for delivering SDRCs 9.1, 9.2 and 9.3 (see Section 7 for further details on SDRCs), which are due for completion in December 2015, March 2016 and March 2016 respectively

**2.1.4 Requirements gathering**

In this reporting period, the workstream 1, 2 and 3 teams – involving UK Power Networks’ IT Solution Architects, KASM subject matter experts (including users), project partners and suppliers – have been fully mobilised. A kick-off meeting was held in February 2015, at which the project team agreed roles and responsibilities and discussed the approach and plans for designing, developing and deploying the KASM solution. The requirements phase has also been initiated, and several workshops have been carried out in order to successfully define the scope of work for each workstream and the high-level Requirements Specification for the KASM solution.

Through these workshops, 87 high-level requirements were defined and captured. Each high-level requirement was detailed such that it can be assigned to only one owner within the team. The owner of each requirement will in turn develop design products covering the IT infrastructure and software functional specifications for the requirement. Currently, these high-level requirements are being analysed further by the team and are being used to drill down to define the detail-level requirements.



### **2.1.5 Workstream 1**

Workstream 1 is responsible for reviewing existing business processes for data retrieval and usage. Modifications will be made to current processes and new business processes will be developed for obtaining the data required for contingency analysis (CA) activities. In this workstream the process and expectations to receive and provide data will be defined.

This workstream is also responsible for implementing the IT infrastructure that is required to achieve data transfer to and from National Grid in compliance with the data, security and performance requirements. Staff will be trained and assigned to monitor and ensure data transfer is maintained at the required service level.

As part of this workstream, a data definition group has been established which includes UK Power Networks business users and National Grid. This group has agreed the network boundaries for the KASM project, which primarily is UK Power Networks' SPN licence area. Subsequent workshops will enable the project to detail the design of all the required real-time data and forecast data to be exchanged between National Grid and the KASM project. Some of the forecast data proposed to be received from National Grid may have commercial implications and so there is a joint effort between National Grid and UK Power Networks to analyse the requirement for a Grid Code change to satisfy this data transfer. The project is currently investigating with National Grid the possibility of getting consent from Distributed Generation (DG) customers to use their generation data to remove the requirement for a Grid Code change, which should be confirmed by early July 2015.

All real-time data will be transferred via an inter-control Centre Communication Protocol (ICCP) link between UK Power Networks and National Grid systems. This protocol will be designed and implemented by GE on behalf of UK Power Networks and National Grid will provide connections into their system. This ICCP link is at the design discussion stage and comprises two parts:

1. The IT hardware infrastructure
2. The data interfaces between source and target systems/database

The project has been gathering and building upon lessons learnt from previous implementations of ICCP links. This has involved engaging with Electricity North West to understand their approach to implementing an ICCP and the key learning generated. All learning gathered has been used to feed into the project's implementation approach.

### **2.1.6 Workstream 2**

This workstream is responsible for all activities that enable the CA tool to become operational. In this workstream, activities related to functional design development and documentation will be conducted with input from Bigwood Systems Inc. and UK Power Networks' operational teams. The

developed design will be reviewed by UK Power Networks and potential changes to functionality, performance and output mechanisms will be documented.

Once the functional design is complete, data preparation to populate the CA tool will be a key task for this workstream. UK Power Networks will be required to provide the contingency cases used within the tool and data dumps of the network model at periodic predetermined intervals will be made available to the vendor.

Design and data preparation are followed by the vendor software development and loading of the data provided by UK Power Networks. The provided data are loaded onto development hardware where the CA software operation and design verification is performed. Post-development factory testing, site testing and demonstration are performed by the vendor and UK Power Networks' staff. Successful test and demonstration leads to production implementation of the CA tool.

This workstream is currently detailing with Bigwood Systems Inc. the requirements list and the process flows, which are due for completion in June 2015 and will be used to feed into the design phase of the CA solution.

### **2.1.7 Workstream 3**

This workstream will develop forecasting modules that will be used in conjunction with the look-ahead mode of the CA tool. An important factor to consider in this workstream is the uncertainty in forecasting intermittent resources such as wind, solar and system loads that do not fit the traditional load and generation pattern. A forecasting model architecture that incorporates the following attributes will be developed:

- Generator and load modules
- Forecasting engine
- Historical generation and load patterns
- Historical weather patterns

The overall architecture for the forecasting modules has not yet been defined in detail, but the preferred solution is Bigwood Systems Inc.'s Elite Multi Time-Scale Load and Generation Forecaster. UK Power Networks will work with Bigwood Systems Inc. to assist in designing the architecture.

Workstream 3 has started initial design exercises. The main considerations during this phase have been:

- Clarifying the required inputs to the load and generation forecasting modules provided by Bigwood Systems Inc. These investigations have highlighted that inputs for varying forecast time horizons may need to be extracted from different systems. Short-term forecasting (<48hrs) will require different inputs to long-term forecasting (>48hrs).

- Historical and forecast weather data. Initial discussions with the Met Office have highlighted that the granularity of data required will have a significant impact on the accuracy of the generation output forecasts. Although very fine weather data will provide improved generation output forecasts, it will have a significant associated cost which will need to be accounted for.
- Working with National Grid to determine the best methods for sharing balancing mechanism data.
- There are ongoing discussions with Bigwood Systems Inc. to understand the best import format for Met Office and National Grid forecast data.

### **2.1.8 Workstream 4**

Workstream 4 will focus on value streams and business process impacts of the CA solution and forecasting modules.

To effectively assess the impact of the CA solution and forecasting modules for various users, it is important to clearly understand current planning and operational processes. Workstream 4 has focused on working with infrastructure planners, outage planners and control engineers to map out current processes and highlight specific areas where the new CA solution and forecasting modules will replace or work in parallel with these processes.

Moving forward, Workstream 4 will look at how benefits of the CA solution can be measured during the trials when comparing this to previous methods of working. In addition, there will be a focus on recruiting key trial participants from each of the users – infrastructure planners, outage planners and control engineers.

### **2.1.9 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, and key users from Network Control, Outage Planning and Infrastructure Planning. The TDA also includes an external industry consultant to ensure accurate scope definition.

During this reporting period, the TDA participated in KASM requirements gathering from further development of the KASM specifications set up in the Request for Proposal (RFP) at the inception of the project and was involved in the preparation of detailed KASM Requirements documentation. The detailed requirements were subsequently reviewed by the TDA, and at the time of writing this report the requirements were being finalised for approval, which would enable the project to move into the design stage. The TDA was also involved in discussions, preparation and review of real-

time network data required from the National Grid part of the network (including switching, the output of generators connected to the transmission network, and the output of the HVDC interconnectors in the area) to feed into the CA solution from Bigwood Systems Inc.

The initial challenge was to demonstrate the convergence of the CA power flows. A case study was used for this demonstration by creating a case model from UK Power Networks' SPN network model. The TDA carried out a detailed review of the case study to validate results reported by Bigwood Systems Inc. The case study showed an indicative total of 1,910 contingencies were generated within a running time of under 30 seconds, of which 29 contingencies were categorised as insecure, 735 as critical and the remainder found to be secure. These preliminary indications will be used as a baseline as the project moves into detailed design. The next steps will be to demonstrate convergence from unclesed Supervisory Control and Data Acquisition (SCADA) values.

External technical support, to validate the KASM area network constraints, was obtained from Mott McDonald. The TDA reviewed Mott MacDonald's report and updated the KASM constraints document, diagrams etc. with the report's findings.

### **2.1.7 Project key deliverables**

#### **Knowledge Dissemination Road Map**

A KASM Knowledge Dissemination Road Map has been developed to inform key stakeholders of the knowledge that the project will share, how it will share it and with whom, and at what stages throughout the project. The KASM Knowledge Dissemination Road Map, which is included within Appendix 2, focuses on three areas:

- 1) Internal communications
- 2) External communications
- 3) Knowledge dissemination

#### **KASM Project Handbook**

A KASM Project Handbook has been created with the objective of providing all project members (UK Power Networks teams, partners and key suppliers) of the project with an overview of the project, including the project objectives, structure, organisations involved, governance and project controls. This document has been shared among all organisations involved in the project and issued to all relevant UK Power Networks teams. Any new member joining the KASM team is given the Project Handbook as part of their induction. Please see Appendix 1 for a copy of the KASM Project Handbook.

#### **KASM Project Plan**

The outline project plan, as presented at the bid stage, has been used for planning activities and for tracking progress. Detailed plans have been produced to support the delivery of the various

milestones and ensure all of the SDRCs are delivered on time, within budget and to the required quality.

The project has developed a detailed plan that incorporates all partner and key supplier activities required to successfully deliver the SDRC.

## **2.2 Key challenges during this reporting period**

The key challenge that the project encountered during the first reporting period is the protracted contract negotiations with Bigwood Systems Inc. to finalise the project requirement deliverables. As mentioned in Section 2.1, following further development of the KASM project requirements (specifications provided at RFP stage), the project has encountered issues regarding the Bigwood Systems Inc. quotation provided at the RFP stage – as it now appears that some of the detailed elements in the full Requirements were either partially covered or not allowed for at all.

To resolve this issue, the project team has been involved in extensive negotiations with Bigwood Systems Inc. – which have included input from UK Power Networks' end users and procurement team – to ensure value for money is obtained, the solution is fit for purpose and is delivered on time.

As part of the engagement with the key users, the project has reviewed all of their requirements to understand opportunities for de-scoping without affecting the expected functionalities of the CA solution, whilst ensuring the core functionalities are delivered to meet the project objectives.

Throughout the extended contract negotiations the project team has continued to work on the key activities with Bigwood Systems Inc. to ensure there is no slippage and no impact upon the meeting of any key project deliverables.

## **2.3 Outlook onto the next reporting period**

The project will enter an extensive period of design and development during the summer of 2015 which will see the following elements being delivered in the next reporting period:

- Understand and confirm whether there is a requirement for a Grid Code change
- Gather key stakeholders' considerations for input into the inter-control room strategy, through holding stakeholder engagement events
- Develop, design and build the ICCP link between the National Grid and UK Power Networks control rooms
- Successfully deliver SDRC 9.1 in December 2015

A key focus for the next reporting period is to finalise the outstanding contract negotiations with National Grid and Bigwood Systems Inc. and GE. As good progress has been made in the current reporting period, the project is targeting to have contract negotiations completed within the next reporting period.

## 2.4 Key challenges for the next reporting period

To deliver the project's first SDRC in December 2015, and support the successful delivery of the two subsequent SDRCs in 2016, the project must overcome the following key challenges in this reporting period:

- Understand and provide the best solution to receive the balancing mechanism data from the DG customers within the East Kent area, whilst ensuring the project is compliant
- Finalise in a timely manner the outstanding contract negotiations with the project partners and key supplier

## 3 Business case update

The context, assumptions and methodology used to assess the benefits to be gained from the KASM project, as outlined in the full submission proposal, are still valid for the current reporting period.

Across UK Power Networks, the number of DG connections requests remains high and an increasing number of areas have diminishing spare capacity to accommodate additional DG. More specifically, in the East Kent operating area:

- 720MW of largely intermittent wind and solar PV generation is connected to the 132kV, EHV and HV networks (an increase of 200MW since the full submission) and an additional 170MW of largely solar PV is due to connect in the short term
- Given the current demand growth expectations and the existing GSP capacity, UK Power Networks is not able to provide new connection offers in the area until 2020. Furthermore, the new National Grid funded GSP at Richborough – planned as part of the NEMO project – is not expected to increase the capacity of the East Kent network to accommodate additional generation
- New incremental connection offers in the area are still conditional on the customer paying for a third transformer at Richborough, at an estimated cost of £11m (including the associated switchgear and civil works)

The increase in the Bigwood Systems Inc. costs has had an impact on the project business case (see the table below). Although the benefits for the KASM project have reduced slightly, the benefits for the GB roll-out remain fairly consistent. It is also important to note that:

- The increased costs associated with the CA tool are attributable to additional functionality which has been requested by its future users
- The ongoing maintenance cost of the CA tool has now been included in the calculation. This was not the case for the original business case

	Original Business Case Benefits (£m)	Revised Business Case Benefits (£m)
KASM Project Level Business Case (one site)	0.6	0.4
GB Scale business case (30 sites)	65.6	62.4

The KASM project team will continue to review the current business case and assumptions, and will work to ensure, where possible, that savings can be made to minimise the impact on the business case.

#### **4 Progress against budget**

This section is provided as a confidential appendix.

#### **5 Bank account**

This section is provided as a confidential appendix.

## 6 Successful Delivery Reward Criteria (SDRC)

	SDRC	Progress	Date
9.1	<p><b>Criterion</b>  <i>Development of the strategy for inter-control room communication protocol for the purposes of KASM.</i></p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>• <i>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;</i></li> <li>• <i>Implementation guidelines for the inter-control room communication link in consultation with National Grid for use by the project.</i></li> </ul>	<p>Good initial progress has been made on this SDRC, which has seen the project team carry out the following activities:</p> <ul style="list-style-type: none"> <li>• Requirements definition complete</li> <li>• Detailed design underway</li> </ul> <p>This SDRC remains on schedule to be delivered as planned.</p>	December 2015
9.2	<p><b>Criterion</b>  <i>Completion of the system integration of CA software into UK Power Networks systems, excluding a real-time link to National Grid.</i></p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>• <i>Sign-off on set up of CA software;</i></li> <li>• <i>Sign-off on successful demonstration and testing of CA software; and</i></li> <li>• <i>Published report on CA software integration that includes the control room IT architecture, lessons learned, engagement with other DNOs, and identified risks.</i></li> </ul>	<p>Good initial progress has been made on this SDRC, which has seen the project team carry out the following activities:</p> <ul style="list-style-type: none"> <li>• Requirements definition in progress</li> </ul> <p>This SDRC remains on schedule to be delivered as planned.</p>	March 2016



SDRC		Progress	Date
9.3	<p><b>Criterion</b>                      Completion of installation of forecasting modules that will link the DNO control room with other data sources.</p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>• Sign-off on installation of forecasting modules;</li> <li>• Forecast data, benchmarked for accuracy against historical data;</li> <li>• Published report demonstrating forecasts including each of solar, on-shore wind and off-shore wind;</li> <li>• Forecast error curves plotted at primary substation, 132kV circuit, and GSP levels;</li> <li>• Description of integration architecture with the overall solution;</li> <li>• Published report on data aggregating forecasting modules that includes lessons learned and identified risks.</li> </ul>	<p>Good initial progress has been made on this SDRC, which has seen the project team carry out the following activities:</p> <ul style="list-style-type: none"> <li>• Confirmed forecasting horizons with business users</li> <li>• Identified key inputs that will form part of the forecasting modules</li> <li>• Identified key areas to source historic generation data as well as day-ahead forecast data</li> <li>• High-level integration architecture between forecasting modules and CA tool is currently being defined.</li> </ul> <p>This SDRC remains on schedule to be delivered as planned.</p>	March 2016
9.4	<p><b>Criterion</b>                      Demonstration of use of real-time CA in the control room.</p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>• Demonstration of contingency results from live SCADA readings, supplied within 15 minutes of them being collected;</li> <li>• Completion of user survey identifying the most critical forecast time periods perceived by control room users (e.g. next</li> </ul>	<p>This SDRC remains on schedule to be delivered as planned.</p>	December 2016

SDRC		Progress	Date
	15 mins; tomorrow; next shift); <ul style="list-style-type: none"> <li>Published report with description of the solution, the user interface, and the capabilities.</li> </ul>		
9.5	<p><b>Criterion</b>                      Completion of trials and implementation of reliability management, outage management and network capacity management.</p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>Published results from functional trials and the achieved benefits in reduced DG curtailment;</li> <li>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;</li> <li>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;</li> <li>Published report on considerations for selecting, designing and installing CA software for each use case</li> </ul>	This SDRC remains on schedule to be delivered as planned.	December 2017
9.6	<p><b>Criterion</b>                      Development of business design to</p>	Through the initial work	December

SDRC	Progress	Date
<p><i>incorporate CA as business-as-usual.</i></p> <p><b>Evidence</b></p> <ul style="list-style-type: none"> <li><i>Identification of business areas impacted by the introduction of CA in a Distribution Network Operator.</i></li> <li><i>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.</i></li> </ul>	<p>undertaken by the project, the current high-level processes have been mapped, with stages where the CA impact will be identified.</p> <p>This SDRC remains on schedule to be delivered as planned.</p>	<p>2017</p>

**Table 2:** SDRC Progress Update

## 7 Learning outcomes

The KASM project team has carried out an internal lessons learnt activity from previous UK Power Networks Tier 2 projects, which covered areas such as team structure, governance, level of engagement, resources and partnerships. The objective of this exercise was continuous improvement – to ensure that KASM utilised as much learning from previous Tier 2 projects as possible to support the successful delivery of this project. Lessons learnt sessions will be carried out on a regular basis throughout the project life cycle, to ensure best practice is being followed.

The KASM project will generate extensive learning opportunities for all key stakeholders, such as UK Power Networks, the wider DNO community, the Energy Networks Association (ENA), DECC and Ofgem. To ensure the project shares the appropriate knowledge at the right time with the relevant stakeholders, a Knowledge Dissemination Road Map has been developed in collaboration with UK Power Networks’ Stakeholder Engagement team.

Please see Appendix 2 for the Knowledge Dissemination Road Map.

### Internal communications

- Ensuring the key stakeholders are on board to support the successful delivery of the project
- Embedding the KASM learning to business practices
- Continuously raising the profile of KASM to demonstrate its benefits

### External communications

- Activities are to take place at key points throughout the project to raise its profile
- Enhance reputation as leaders in a low carbon future

### Knowledge dissemination

- To share knowledge gained from KASM with other DNOs and interested parties
- Brief description of what we would like to share, including knowledge dissemination activities

Figure 3 below is a high-level plan that provides an overview of the project knowledge dissemination.



Figure 3: KASM High-Level Dissemination Plan

**7.1 Update on internal communications**

Engagement with key internal stakeholders to obtain support

Since the start of the project, approximately eight workshops have taken place with the KASM internal key stakeholders including senior managers from across the business and internal teams that will support the implementation of the project. These workshops provided the key stakeholders with a clear understanding of the vision of the project, the benefits and future changes in the operation of the network as UK Power Networks.

In addition to the workshops with the business, the project held a kick-off meeting on 11 February 2015 that ensured the key internal stakeholders, project partners and key supplier all had a good understanding of the project. The key areas discussed at the meeting were:

- The project’s aims, objectives and timelines
- Project management and governance approach
- Introduction to the project partners and supplier

**7.2 Update on external communications and knowledge dissemination**

Website

As identified in the Knowledge Dissemination Road Map in Appendix 2, in March the project set up an external facing website as a means to provide information on KASM and, more importantly, disseminate the knowledge that will be generated by the project. The website will have all key documents produced by the project, including SDRC reports and conference presentations.

**7.3 Learning and dissemination activities in the next reporting period**

In the next reporting period the project will disseminate knowledge and lessons learnt through utilising conferences, publishing the SDRC 9.1 report and holding a workshop. A list of currently confirmed activities is set out below:

<b>Conferences and formal dissemination activities</b>	<b>Main Messages/presentation title</b>	<b>Date</b>
Technical & Commercial Workshop	To consult with key stakeholders, including other DNOs, to capture the key technical and commercial challenges relevant to inter-control room links.	Quarter 3 2015
Low Carbon Network Fund 2015	To disseminate the key learning generated by the project to key external stakeholders.	November 2015
SDRC 9.1 Report	Demonstrate and evidence the project has successfully delivered SDRC 9.1.	December 2015

## 8 Intellectual Property Rights (IPR)

During the current reporting period the following IPR has been generated:

Workstream	IPR description	IPR Owner
<b>Project</b>	KASM Project Handbook	UK Power Networks
<b>WS5</b>	Learning & Dissemination Road Map	UK Power Networks
<b>WS1</b>	High Level Requirements	UK Power Networks
<b>WS2</b>	Architecture Design	UK Power Networks
<b>WS1</b>	ICCP Link Design	UK Power Networks
<b>WS1</b>	KASM Data definitions	UK Power Networks

The following IPR is forecast to be registered in the next reporting period:

Workstream	IPR description	IPR Owner
<b>WS1</b>	SDRC 9.1 Report	UK Power Networks
<b>WS1</b>	Test Strategy	UK Power Networks
<b>WS2</b>	Detailed Requirements	UK Power Networks
<b>WS2</b>	Detailed Design	UK Power Networks
<b>WS2</b>	Hardware and Infrastructure Design	UK Power Networks
<b>WS2</b>	Data Extraction Approach	UK Power Networks
<b>WS5</b>	Commercial and Technical workshop slides	UK Power Networks

## 9 Risk Management

The KASM project has established a rigorous and proactive risk management process, as described in detail in Appendix 1: *KASM Project Handbook*. It allows for the communication and escalation of key risks and issues within the project, and defines where decisions will be made and how these will be communicated back to the workstream where the risk or issue has arisen. Risks are reviewed at a project level by the Project Board. Key project risks are then escalated to the Project Steering Committee for review and approval of the mitigation on a monthly basis.

### 9.1 Full Submission (BID Risks) – update

Ref BID#	WS	Risk & Impact Description	BID Mitigation	Mitigation (update)	Status
B0001	PM	Final funding not awarded and project unable to commence in 2014	Ensure high bid quality, regular reviews, clear differentiation and stakeholder engagement.	The project successfully gained Ofgem funding.	Closed
B0002	PM	Project partner(s) withdraw their support at the start of the project	Regular contact maintained throughout bid preparation and up to project start date. Contracts outline LCNF requirements in advance. Reserve supplier has been nominated.	There has been continual close engagement with all project partners and suppliers through the contract finalisation. Project is working closely with Bigwood Systems Inc. to finalise requirements and contractual position.	A
B0003	WS1	The software solution fails to perform to specification, leading to system incompatibilities and unsatisfactory trial results	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.	Requirements and design phases involve all parties (suppliers and business users) to ensure that the software solutions meet the performance requirements.	G

Ref BID#	WS	Risk & Impact Description	BID Mitigation	Mitigation (update)	Status
B0004	WS5	There is lost learning during knowledge dissemination and stakeholder engagement activities due to differing interests and learning styles of stakeholders	Identify stakeholders early on. Dissemination workstream is fully engaged with technical workstream at an early stage and lessons learnt are captured from the LCNF projects.	Early engagement with all of the project key stakeholders has taken place and will continue to ensure positive support of the project.	<b>G</b>
B0005	PM	A lack of available technical and project resources causes a delay to the project	Resource plan completed with UK Power Networks resources. Several other projects closing which will release skilled resource.	The project has successfully resourced all positions, with experienced resource obtained from closing LCNF projects (please see Figure 1 on page 5).	<b>G</b>
B0006	PM	The software partner goes out of business before the solution has been delivered	Full financial due diligence undertaken as part of UK Power Networks' procurement procedure; identify alternative supplier.	Full diligence has been undertaken and an alternative supplier has been selected.	<b>G</b>
B0007	PM	The software partner goes out of business after the solution has been delivered, resulting in lack of continuity/support	Full financial due diligence undertaken as part of UK Power Networks' procurement procedure; arrange a software ESCROW and novation of liabilities to OEM.	Full diligence has been undertaken and an alternative supplier has been selected.	<b>G</b>
B0008	WS4	The trials do not deliver the expected results	Expectations are managed due to thorough planning and frequent reporting. Lessons gathered throughout process.	Initial trial participants have been identified and are being updated accordingly.	<b>G</b>
B0009	WS2	National Grid do not deliver data in the timescales required	Proactive engagement and understanding of risks from early stage. Static values and alternative data sources considered, such as balancing mechanism reports.	Balancing mechanism data definitions are defined and agreed with National Grid for input into UK Power Networks. This risk is expected to be closed in the next reporting period	<b>G</b>
B0010	WS2	National Grid data	Static values and	It may be that the project may	<b>G</b>



Ref BID#	WS	Risk & Impact Description	BID Mitigation	Mitigation (update)	Status
		costs far exceed estimate, resulting in data being too expensive to acquire	alternative data sources considered, such as balancing mechanism reports.	have to purchase the right to use generation data for planning purpose. This is currently under consideration between National Grid and UK Power Networks.	
B0011	WS2	Integration of software solution cannot be delivered in time, resulting in delays	Progress reported weekly, project planning tools implemented.	Plans have to be agreed and baselined with each supplier.	<b>G</b>
B0012	WS5	UK Power Networks' staff are not actively engaged or in a timely manner, resulting in poor engagement and delays	Ensure early engagement activities and stakeholder events for UK Power Networks' staff.	Early engagement with all of the project key stakeholders, including directors and senior managers, has taken place and will continue to ensure positive support for the project.	<b>G</b>
B0013	WS2	Visualisation of outputs from software tool not in line with operator expectations	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 re-design if necessary.	Operators already on board and agreeing to the requirements and designs.	<b>G</b>
B0014	PM	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	Monitor all new connection requests. Support any efforts by DG developers to form group connections or joint connection requests	The project is in close contact with UK Power Networks' Connections directorate to ensure early awareness of any potential connection requests.	<b>G</b>
B0015	PM	Exceeding the estimated budget for the project	We have conducted detailed project planning and cost reporting, based on our prior experience in delivering LCNF projects	The project undertakes monthly financial reviews and through the contract negotiations is ensuring value for money within the budget restrictions	<b>G</b>
B0016	PM	Exceeding the	We have conducted	A detailed project plan has	<b>G</b>

Ref BID#	WS	Risk & Impact Description	BID Mitigation	Mitigation (update)	Status
		estimated implementation timeline and underestimating required resources	detailed project planning, allowing comfortable implementation margins and a multitude of resources. UK Power Networks has significant experience internally in project management and IT project implementation.	been developed and progress and potential risks and issues to project delivery are discussed on a weekly basis. Any significant issues will be escalated as per the governance process.	

## **9.2 Project Risks**

During this reporting period the key risks that the project has been mitigating are:

Ref #	WS	Risk & Impact Description	Mitigation Update	Status
R013	PM	Contract negotiations with the partners and suppliers take longer than planned. These delays result in an impact on the project's ability to meet its targets.	The project has continued to work with partners and suppliers in parallel to progressing the project plan to ensure any delays are kept to a minimum.	A
R0007	WS1	Grid Code change may be required for BM generated data and result in project delays.	The project is in the process of making contact with the DG customers to obtain their consent to use the BM data for project use only.	A

## **10 Other**

There are no other items to report.

## **11 Consistency with the full submission**

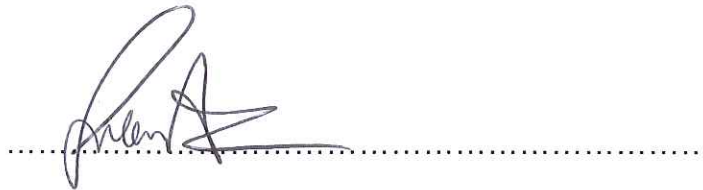
There have been no changes to the project scope since the full submission.

## 12 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 first six-month reporting period and an accurate view of our understanding of the activities for the next reporting period.

Signed



Date

12/6/15

Suleman Alli  
Director of Strategy & Regulation  
UK Power Networks

### **13. Appendix**

**Appendix 1 – KASM Project Handbook**

**Appendix 2 – KASM Knowledge Dissemination Road Map**