Flexible Plug and Play Low Carbon Networks

Project Progress Report

June 2012

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1. Executive Summary

1.1 Project background

The Flexible Plug and Play Low Carbon Networks project (FPP) aims to demonstrate how, through the innovative integration of technological and commercial solutions, the cost effective connection of renewable generation to a distribution network can be achieved.

The FPP project was awarded funding of £6.7million by Ofgem, under the Low Carbon Networks Fund scheme, on 19 December 2011 and the project officially started on 1 January 2012.

1.2 Project progress highlights

During the first reporting period the FPP project has completed its mobilisation stage and has begun delivery activities with all major milestones remaining on target. The following provides a summary of the key activities completed during the first reporting period.

1.2.1 Project initiation

A project structure which complies with the PRINCE project management methodology and which reflects best practice has been designed by UK Power Networks with the support of independent project management experts from PA Consulting. The structure was implemented in February 2012 and operates under governance arrangements designed to facilitate a robust focus on identifying and developing the most effective solution, matched with an effective structure for delivering the solution to time and cost. Roles and responsibilities have been defined for each team member and governance group and these have been documented in a project handbook. This 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.

Resources have been recruited for all key positions and resources for many of the remaining team positions are also secured. This process began with the transitioning of the FPP project bid team into permanent roles within the FPP project from 1 January 2012 to ensure stability and continuity. Resource take up was slower than originally anticipated, with the project comprising 11 Full-Time Equivalent (FTE) staff as of June 2012 rather than the planned 13 FTEs. However, actions taken by the management team to prioritise activities and secure external temporary cover have ensured that key deliverables have not been affected.

Good progress has been made in the establishment of contractual arrangements with the project partners. UK Power Networks have chosen to contract separately with each of the seven project partners 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 (which range from construction activities to the provision of consultancy services). Delays have been incurred in seeking agreement with some partners to the standard IPR arrangements, however agreement has now been reached with all parties and the remaining contracts are expected to be signed by the end of July. UK Power Networks and the affected partners are taking the necessary steps to ensure these delays do not impact either the quality or timeliness of project deliverables.

1.2.2 Project delivery

Delivery activities have focussed in two areas – customer engagement and the development of products associated with Management and Specialist requirements.

The provision of faster and cheaper connection of distributed generation is at the centre of the FPP project. For this to be achieved it is paramount that the FPP project pro-actively engages with existing and prospective generation developers (i.e. customers), demonstrates the functionality of the FPP technical platform, tests the proposed commercial arrangements and delivers the benefits described in the FPP business case.

The project has had very positive engagement with four generation developers. Two of these developers have been formally invited to participate in the project and invitations to the other two developers are expected to be issued by the end of June 2012. The first two projects are wind farms (7.2MW and 5MW) that if connected would cause network constraints. FPP, through its technical platform, aims to actively manage the generator output against the network constraints and to work with generators to develop a suitable commercial framework in order to offer a cheaper and faster connection.

In addition, the project has selected the British Sugar factory site in Wissington as the installation site for the Quadrature Booster transformer. The Combined Heat & Power plant operated by British Sugar currently has seasonal limits in generation which could be mitigated by the Quadrature Booster, enabling the export of additional generation from the CHP onto the electricity grid. UK Power Networks is pleased to report that British Sugar have confirmed their formal support to the project and discussions are on-going.

A number of Management Products have been delivered as required for the effective management of the project. These include the production of workstream specific Project Initiation Documents (PIDs – one for each of the eight workstreams) and an overall project PID. The Specialist Products set out the technical and commercial solution to be delivered by the FPP project. Good progress has been made in the development of these Specialist Products with a number being delivered in the reporting period, including the FPP High Level Architecture, the Functional

Requirements Specification, the Quadrature Booster Specification and Relevant Technical Schedules, and the Active Network Management Outline Design.

Other products delivered in the period include the FPP Knowledge Dissemination Roadmap, the purpose of which is to inform key stakeholders of the knowledge the FPP project will share, how it will share it and with whom, and at what stages throughout the project.

1.3 Commercial highlights

The on-going pro-active engagement that the project has been having with potential generation developers suggests that the net benefits stated in the full submission proposal (£5.25 million) are very likely to have been underestimated. Moreover, the level of distributed generation applications within the FPP trial area has increased from 188MW (as declared in the bid submission) to 250MW (June 2012). In the light of these matters an update of the net benefits to be gained from the FPP will be provided in the next Project Progress Report.

Expenditure has been under budget in some areas, mainly due to the slower than anticipated resource uptake and the delays in partner contract finalisation. The reprioritisation actions implemented by the management team have, as already stated, ensured that key deliverables remain on track and any budget underspend observed in this reporting period will be reversed during the next reporting period.

2. Project Manager's Report

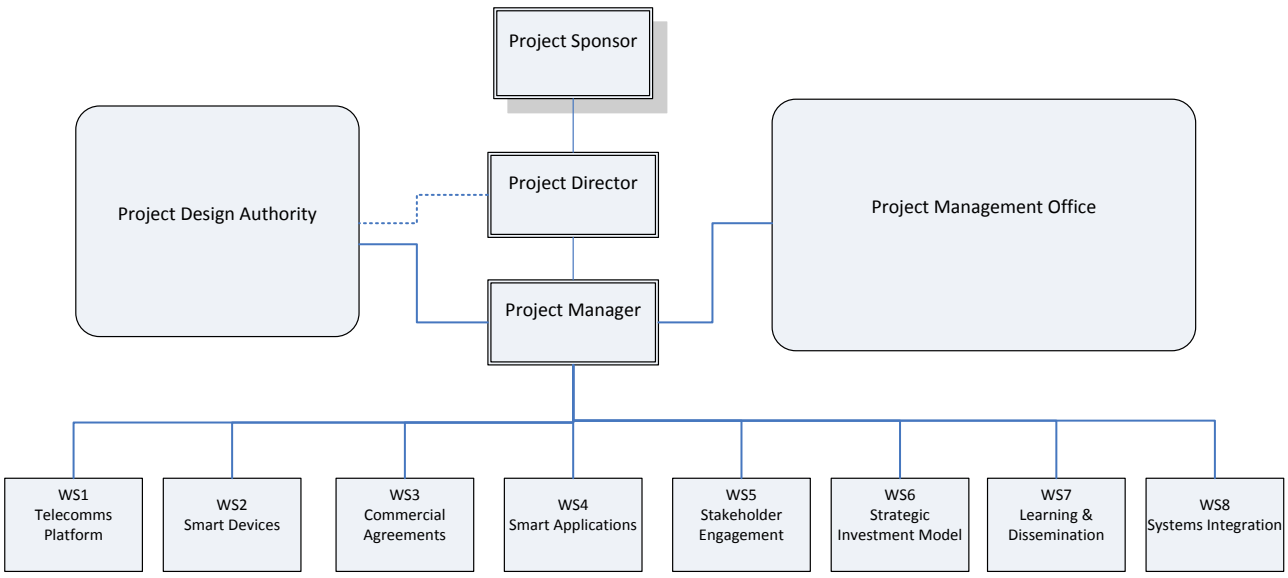
The Flexible Plug and Play Low Carbon Networks project (FPP) aims to demonstrate how, through the innovative integration of technological and commercial solutions, the cost effective connection of renewable generation to a distribution network can be achieved[1]. The FPP project was awarded funding by Ofgem[2], under the Low Carbon Networks Fund scheme, on 19 December 2011 and the project officially started on 1 January 2012. This section describes the progress made and key activities undertaken during the current reporting period and gives an overview of the activities that will be carried out in the next reporting period.

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 FPP project team was to design and implement an appropriate project team and governance structures that would allow the FPP project to be efficiently delivered on time, within budget, and to the required quality. This activity was carried out by UK Power Networks and supported by independent project management experts from PA Consulting.

The established FPP project team structure is depicted in the organisational chart below. This structure was developed following a best practices exercise carried out by PA Consulting.



[1] http://www.ofgem.gov.uk/networks/elecdist/lcnf/pages/lcnf.aspx
[2] http://www.ofgem.gov.uk/Networks/ElecDist/lcnf/stlcnp/year2/Documents1/Funding%20Direction.pdf

Each role in the above structure has a clear role definition, reporting line, responsibilities and duties as described in detail in Appendix A: *FPP FPP Project Handbook*[3]. A summary of the key roles specification is provided below:

Project Sponsor: ultimately responsible for the success of the project. Supported by the Project Director, the Project Sponsor's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering an outcome that will achieve the project benefits. The Project Sponsor is the ultimate escalation point for resolution of risks, issues and change control and, when appropriate, will help the Project Director with internal and external stakeholders and partner organisations.

Project Director: responsible for the definition of the scope and successful delivery of the project objectives from the project, providing oversight, setting the direction of the team and is the escalation point for resolution of project issues, in particular between partners. The Project Director provides guidance and advice to the Project Manager to ensure that project delivery remains aligned with delivery of benefits and on a day to day basis will liaise with internal and external stakeholders and partner organisations.

Project Manager: responsible for the successful delivery of the overall scope, schedule and cost of the project, creating and managing the project plan, monitoring and reporting progress to the Project Director and taking action to resolve variances; managing and responding to issues, ensuring mitigating actions are in place for key risks.

Workstream Manager: responsible for ensuring the production of the workstream's deliverables to an agreed quality, in a timescale and at a cost as defined by the Project Manager. The above structure shows eight workstream manager roles, which aligns with the eight scope workstreams that have been presented in the bid submission pro-forma (Section 2, page 10).

Project Management Office (PMO): tasked to define and maintain the project management standards as defined by UK Power Networks Project Management methodologies and PRINCE2 for the FPP project, and to develop and standardise the project management policies, processes and methods and enforce them over the course of the project.

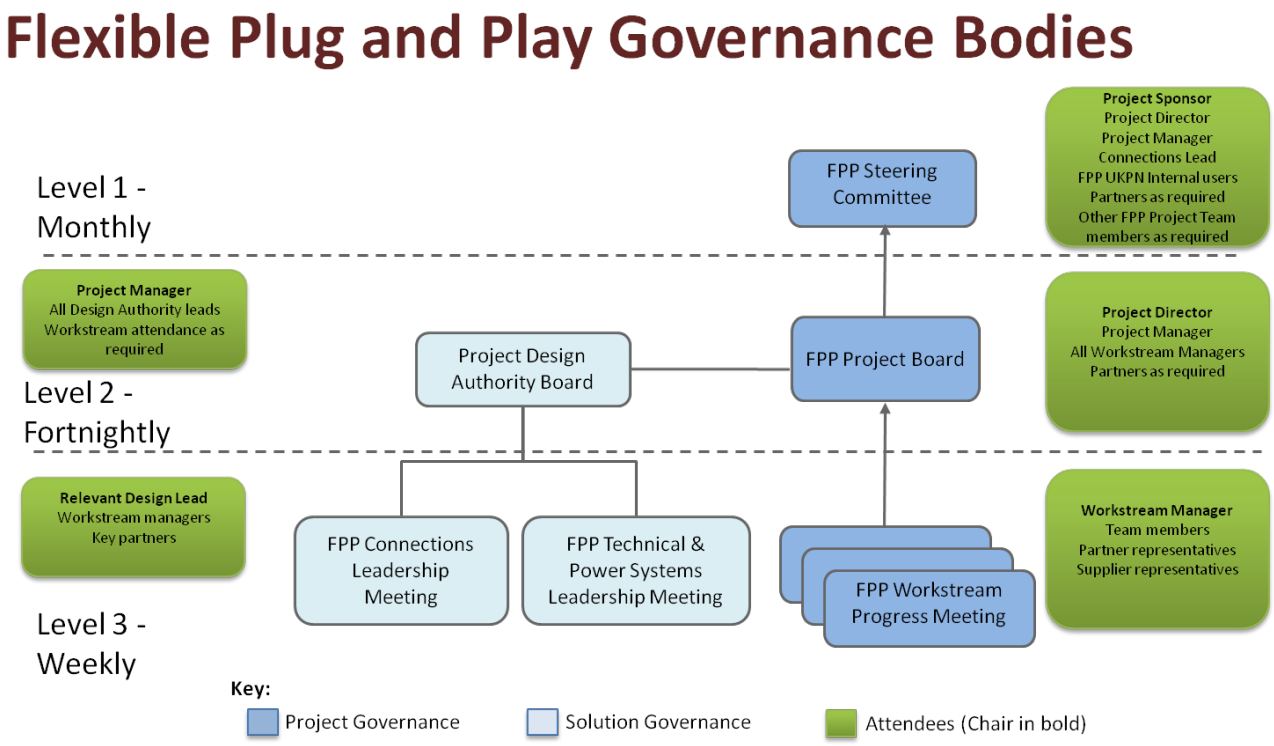
Project Design Authority: responsible for all aspects of commercial, functional and technical design and architecture. The Project Design Authority is charged with developing the commercial, functional and technical specifications and architecture for the project and for ensuring the end to end technical design enables the project to deliver to the requirements outlined in the FPP 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 Project Design Authority is made up of four key roles: Technical Lead, Connections Commercial Lead, Power Systems Lead and IT Solution Architect. These roles report into the

[3] The development of this handbook is described further later in this document.

Project Manager but have a dotted line relationship into the Project Director to ensure accurate definition and, once defined, protection of the scope.

Resource pool: a number of internal UK Power Networks subject matter experts from a number of business departments (IT, Asset Management, Capital Programme, Network Operations, Health and Safety) are available for specific technical input, review and approval of deliverables.

The above team structure operates under a governance structure that covers three hierarchal levels (Level 1-3) and has two different streams: *Solution Governance* and *Project Governance*. This model facilitates a robust 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 FPP governance model shown below is supported by, and aligned with, simple but effective 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 A: *FPP Project Handbook*. This governance model has been fully operational since February 2012.



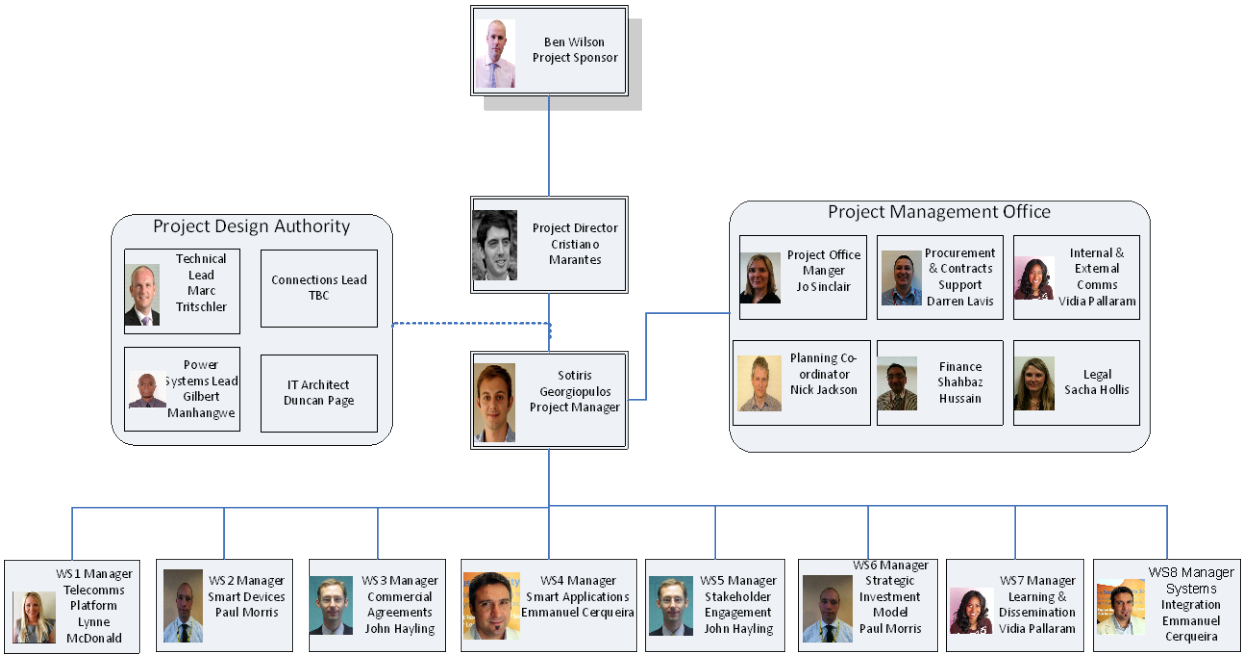
This governance model has been designed to deliver rapid communication of decisions and actions throughout the project, providing effective decision making. There are communications sessions arranged on a regular basis to communicate progress across the whole FPP project team and partners.

The first communications session took place on 17 January 2012 at the University of Cambridge (The Old Library, Sidney Sussex College). This coincided with the **FPP project kick-off meeting** between the whole FPP project team and all project partners. The day-long session was extremely interactive and all project partners demonstrated a high level of engagement and enthusiasm for the project. Attendees were shown a number of presentations as partners explained their involvement and aspirations for the project. This allowed all project partners to better understand the overall scope of the FPP project and establish a strong collaborative spirit between everyone involved in the project. The next communications session will be hosted by UK Power Networks in London on 6 July and quarterly thereafter.

2.1.2 Project initiation: Resources and Partners contracts

As originally envisaged, the FPP project bid team was transitioned into permanent roles within the FPP project team on 1 January 2012. This has ensured stability and continuity in the project during the project set-up phase.

Internal and external recruitment took place during the months of January to May in order to populate the FPP team structure described above. The following organogram depicts all resources within the FPP project team as of June 2012:



The above team comprises UK Power Networks employees in full-time project roles, UK Power Networks employees engaged on normal business activities and external contractors.

The project has made good progress in recruiting a number of key individuals with specialised expertise and skills necessary for the delivery of such complex projects. Nonetheless, a gap in the actual FTE numbers when compared to the estimated number in the bid document has been observed in the first reporting period. This has been mainly due to resources being slower to join the project than assumed in the bid document and a lower required level of support from the resource pool than had originally been assumed.

In order to ensure that key deliverables are not affected, the management team has prioritised activities and responsibilities. The resourcing strategy has also incorporated a number of external temporary covers for certain workstreams to ensure progress is maintained while permanent candidates with the suitable skill sets are being recruited.

It is expected that once work is fully underway, in particular in WS2, the resource pool underspend will be reversed. Furthermore, the team will be looking to recruit an additional 4 FTEs by August in a permanent capacity to reach the estimated levels (15 FTE) for the second half of this year. The project currently has 11 FTEs against a budgeted 13 for the month of June. It is therefore the project's intention to have a fully populated structure by the end of August 2012 and then to maintain the necessary amount of resource on the project for the duration of the three years. Any underspend observed in the first reporting period will be reversed fully in next reporting period.

The completion of legal contracts (project agreements) with the FPP project partners has been a key priority of the FPP project team 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 to the extent possible maintaining the same terms and conditions between UK Power Networks and the project partners. Moreover, all project partners are obliged to comply with the same collaboration principles and a Mutual IPR Agreement between all of the partners which sets out the requirements for the treatment of IPR. This approach has been adopted in order to allow the contracts to be better tailored to the nature of the services being provided by the partners (which range from construction activities to the provision of consultancy services).

The development of each partner's project agreement was preceded by detailed scope definition activities. While this has resulted in contracts with partners being signed later than originally planned, this approach has been adopted to ensure a robust contractual foundation and to minimise the need for scope variations over the course of the project. Moreover, since partner resources to progress the detailed design elements have not been required as early in the project as originally assumed (as described in Section 4) there have been no delays or impact on the delivery of the overall project plan. The table below summarises the current status of the project agreement with each project partner:

Project Partner	Contract Status	Comments	RAG
GL Garrad Hassan	Contract signed on 13 June 2012	-	
Cambridge University	Contract signed on 13 June 2012	-	
Cable and Wireless Worldwide	Contract to be signed w/c 25 June 2012	Contract agreed by both UK Power Networks and CWW. Currently awaiting to be signed.	
Smarter Grid Solutions	Contract to be signed w/c 25 June 2012	Contract is currently at final stages and it will be completed by end of June as originally planned.	
Fundamentals	Contract to be signed w/c 25 June 2012	Contract is currently at final stages and it will be completed by end of June as originally planned.	
Imperial College London	Contract to be signed by end July 2012	Scope definition under discussion with Imperial College.	
Alstom	Contract under negotiation. Expected to be signed by end July 2012	Extended negotiations between Alstom and UK Power Networks have delayed the establishment of a contract. This is now resolved and the project agreement is expected to be signed by end of July 2012. Both parties are working together to ensure that this delay will have no impact on the quality of the project deliverables and the associated timescales.	

2.1.3 Project initiation: Project Plan

The project plan submitted as part of the bid submission is being used for planning activities and tracking progress. The activities carried out to date are in line with previously submitted information in the bid submission plan and there are therefore no changes to report. Notwithstanding 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 2012 for all FPP project workstreams
- Development of a detailed plan for workstreams 3 and 5 until December 2012, as these workstreams are responsible for the delivery of SDRC 9.1 and 9.2 (see Section 7 for further details on SDRC) which are due for completion in September and December 2012 respectively
- Development of a revised three year outline plan per workstream following detailed scope definition

A detailed three year overall project plan is in progress and is due for completion by end of August 2012.

2.1.4 Project Deliverables: Customer engagement activities

The provision of faster and cheaper connection of distributed generation is at the centre of the FPP project. For this to be achieved it is paramount that the FPP project pro-actively engages with existing and prospective generation developers (i.e. customers), demonstrates the functionality of the FPP technical platform, tests the proposed commercial arrangements, and delivers the benefits described in the FPP business case.

An internal process has been established to closely monitor the generation connections activity within the FPP trial area. A 'live' generation projects activity list has been created through close interaction between the FPP team and UK Power Networks' Connections and Infrastructure Planning teams. This has enabled the FPP team to promptly engage with generation developers that could potentially benefit from the solutions proposed by the FPP project.

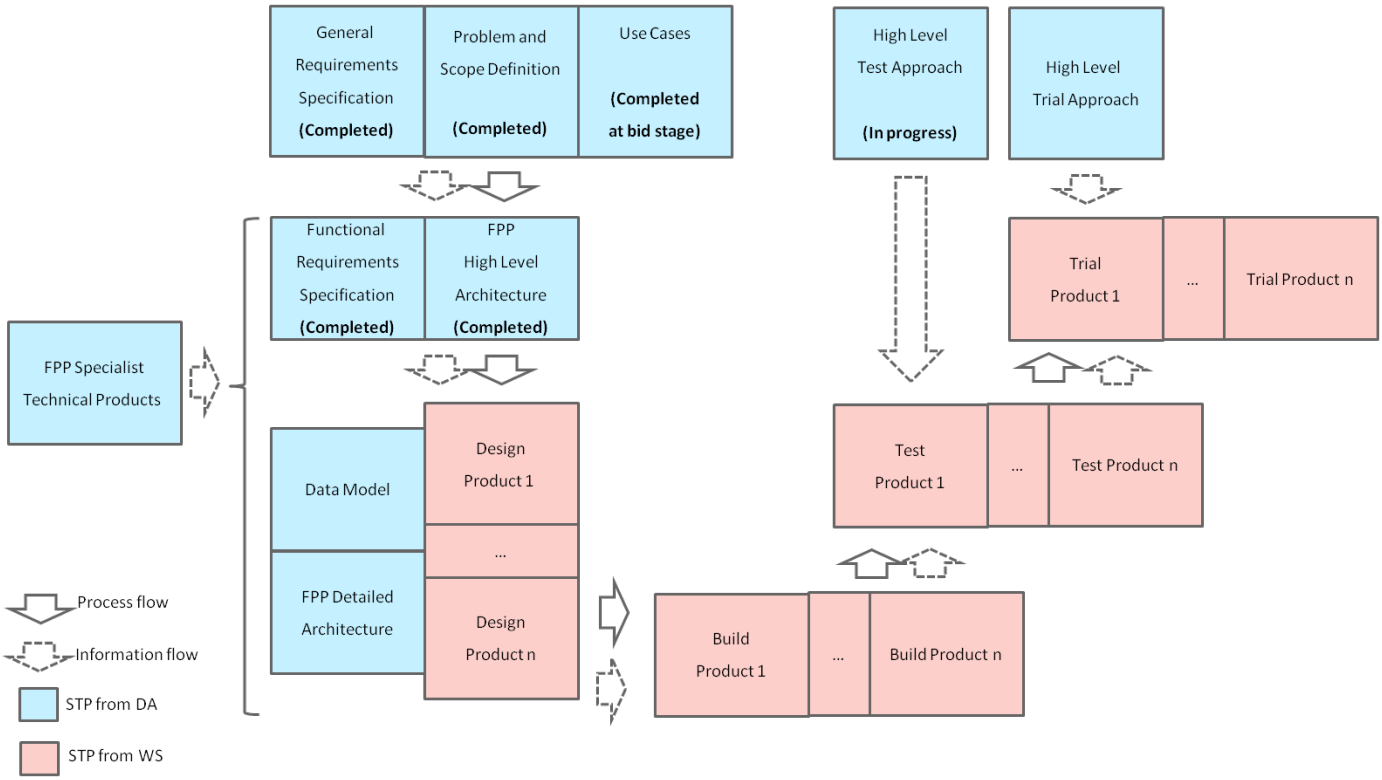
As part of this process, the project has had very positive engagement with four generation developers and has already invited two of them to formally participate in the project (an invitation will be sent to the other two during the course of June). Two projects are wind farms (7.2MW and 5MW) that if connected would cause network constraints (overhead line thermal limits and reverse power flows through the March Grid transformers, respectively) to be exceeded. The reinforcement costs and lead times associated with mitigating those constraints would be unattractive to the generation developers in question. FPP, through its technical platform aims to actively manage the generator output against the network constraints and work with the generators to develop a suitable commercial framework in order to offer a cheaper and faster connection. If the those generation developers accept UK Power Networks' invitation to participate in the FPP project, the detailed network studies associated with the deployment of the FPP solutions to address the above network constraints will be carried out.

In addition, the project has selected the British Sugar factory site in Wissington as the installation site for the Quadrature Booster transformer. Discussions have been held with British Sugar who have confirmed their formal support for the project. The Combined Heat & Power plant operated by British Sugar currently has seasonal limits on generation export due to the suboptimal loading of the three incoming 33kV circuits. The Quadrature Booster will be connected to one of the incoming 33kV circuits to ensure load balancing and it will enable the export of additional generation from the CHP unit onto the electricity grid.

2.1.5 Project Deliverables: Project Management and Specialist Products

The management of the FPP project follows the PRINCE2 methodology. One of the building blocks of this methodology is the development of a suite of products. These are divided into two broad categories, Management Products and Specialist Products. Within the FPP project, Management Products have been delivered as required for the effective management of the project. This includes the production of workstream specific Project Initiation Documents (PID) and an overall project PID.

Regarding the FPP Specialist Products, these have been divided into two categories, Technical Specialist Products and Commercial Specialist Products. The Specialist Products set out the technical and commercial solution to be delivered and are split between the Design Authority and individual workstreams in terms of responsibility for their production. The diagram below depicts the list of Technical Specialist Products that are being developed to ensure a robust design of the FPP technical solution. A similar approach is being developed for the Commercial Specialist Products.



The following outlines the scope and purpose of the Specialist Products that have been completed to-date:

General Requirements Specification

This document provides an overall context for the FPP project, and captures general requirements of the various project stakeholders.

Problem and Scope Definition

This document details the overall scope of the project. This includes the detailed problem definitions for each power systems problem to be solved by the project, including the power systems analysis undertaken to arrive at the defined scope. Smart solution types (e.g. dynamic rating, generator control, Quadrature Booster), smart devices and their locations on the network are specified at a high level.

FPP High Level Architecture

This document provides an overview of the architecture of the FPP technical solution. It sets out the high level architectural principles and mandatory architectural requirements, without defining the detailed architecture of every element of the FPP technical solution. This also includes high level communications interface specifications for all communications interfaces, including IEC 61850.

Functional Requirements Specification

This document details the specific functional and non-functional requirements to be met by the overall technical solution delivered by the FPP project. As such, it covers requirements that are applicable to all elements or groups of elements of the FPP technical solution such as communications, environmental, availability and security requirements. Also, it includes specific requirements applicable to individual elements of the technical solution such as functional requirements specific to one smart device, the Active Network Management solution or the communications infrastructure.

Design Product: Communications field network design

This document outlines the baseline field network design for the Flexible Plug and Play (FPP) Low Carbon Networks' Wireless RF Mesh Network. In order to future proof the design and allow flexibility in accommodating connections of generation projects to the RF communications network, the principles of coverage and connectivity have been used. The design provides connectivity to the identified substations and 33kV poles, and coverage to identified new generator locations. It provides connectivity to the following sites:

- Two Grid Substations
- Ten Primary Substations
- Two 33kV Poles, where Frequent Use Switches will be installed

It also provides coverage to sixteen identified proposed new generator connection locations within the FPP trial area. Although connections to these sites will not be required until the generation is commissioned, tests have been undertaken to ensure that the RF Mesh design will provide the necessary coverage. This document is the product of extensive design work carried by UK Power Networks in defining the requirements and Cable & Wireless Worldwide in producing various design options.

Design Product: QB specification and relevant technical schedules

Following detailed analysis for defining the design parameters, the project has produced a formal technical specification for the Quadrature Booster unit to be built. The unit is a 30MVA, 33kV, 'single tank' design delivering a phase shift of ±12 deg between incoming and outgoing terminals. As part of this process, protection and control studies have been carried out to specify the protection scheme required for the QB. In addition, simulations and design work have been completed and a specification produced for the Quadrature Booster Control System (QBCS). UK Power Networks has opted for an automatic control scheme; i.e. the control relay will instruct tapping of the QB to maintain the line loading within the agreed set-point automatically. We believe this is the first time that a Quadrature Booster solution to a load sharing problem will be implemented at distribution network level.

Design Product: Preliminary design of the Dynamic Line scheme

Preliminary design for the DLR implementation has been produced in order to firm up the requirements and scope.

Design Product: Active Network Management outline design

The Active Network Management scheme is in the heart of the FPP solution. Design work has been carried out with SGS to understand the deployment strategy for the ANM components, the data flows among the components and to inform key architectural decisions. The resulting document is the Active Network Management outline design.

2.1.6 Project Deliverables: Other key deliverables

Knowledge Dissemination Roadmap

The purpose of the FPP Knowledge Dissemination Roadmap is to inform key stakeholders of the knowledge that the FPP project will share, how it will share it and with whom, and at what stages throughout the project. The FPP Knowledge Dissemination Roadmap, which focuses on three areas 1) Internal communications, 2) External communications and 3) Knowledge dissemination, is included in this report in Appendix B.

Topics paper for stakeholder engagement

This document sets out the technical and related commercial and administrative issues to be investigated during the first stakeholder consultation exercise. It also sets out proposed questions to be discussed with each group of stakeholders. All activities are directed towards the key deliverable of the first stakeholder consultation exercise (SDRC 9.1).

FPP Project Handbook

The FPP project involves multiple organisations based across the UK and hence clear project structure, control and governance arrangements are required to keep the project focused on achieving its objectives. A project handbook for the FPP project has been created with the objective of providing all members of the Flexible Plug and Play project with an overview of the project including the project objectives, structure, organisations involved, governance and project controls. This document has been shared amongst all of the organisations involved in the Flexible Plug and Play project and issued to all project team members. Any new member joining the FPP team is given the FPP project Handbook as part of their induction. A copy of the FPP project Handbook is included in this report in Appendix A.

2.1.7 Key issues encountered

The key issue that has been encountered since the start of the project is the protracted negotiations with some of the project partners over specific clauses and interpretations of the Intellectual Property Rights section of the Low Carbon Network Fund Governance document. Some project Partners are concerned that the IPR obligation is too loosely drafted and hence could give rise to exposure to background IP legitimately regarded as commercially confidential. Although this issue is now resolved, it has led to delays in signing certain contracts as discussed in section 2.1.2.

Due to the protracted negotiations, some of the materials costs budgeted for this period have not yet been incurred and expenditure lines relating to these activities therefore appear as an underspend in the budget. It is expected that these orders will be placed as soon as the contracts are signed (June/July 2012) and that the full underspent amount will reverse during the next reporting period.

The only other issue of note is the lower than anticipated resourcing during this first reporting period (as described in Section 2.1.2 above). The project has managed this successfully by putting in place a number of mitigating actions to ensure that no slippage occurs against the project plan. Specifically, a number of external resources were employed as temporary covers to ensure progress while existing project team members were assigned interim roles in managing under resourced areas of the project.

The project structure and governance allows for proactive reporting, control and monitoring of any issues and risks arising and have been key in addressing the above and managing the project. These issues are therefore being effectively addressed and the mitigating actions put in place will ensure that Successful Delivery Reward Criteria Milestones are achieved.

2.2 Project outlook onto the next reporting period

The project is currently focusing on completing all contracts with the project partners, finalising the recruitment of personnel, developing detailed plans and moving into the delivery phase. The focus of the next reporting period will be on recruiting prospective generation developers to the FPP project. This will be achieved through:

1. the continuation of pro-active communications, led by UK Power Networks, with generation developers that wish to connect to the distribution network within the FPP trial area;
2. stakeholder engagement activities, supported by GL Garrad Hassan, comprising structured interviews with relevant stakeholders from June to August 2012 (this work will lead to the completion of SDRC 9.1); and
3. the development of smart commercial arrangements, which will be supported by Cambridge University, as part of SDRC 9.1.

In addition, the technical elements of the FPP project will enter into detail design stage. Specifically, detailed design work will be carried out for the following technical aspects of the project:

- IT Communications platform
- Smart devices
- Active Network Management
- Systems Integration (including IT and substation LAN architecture, and overall data model)

The FPP project team is working closely with Alstom in order to finalise the contract for the supply of the Quadrature-booster (QB) by the end of June 2012. The contract was originally planned for completion in March 2012 to allow sufficient time for the delivery of the QB in June 2013 (SDRC 9.8). This delay was due to protracted IPR discussions, which are now successfully concluded. In order to mitigate this delay Alstom have proposed for the QB to be manufactured in Germany. This should allow for the QB to be ready for commissioning in June 2013 as per SDRC 9.8.

3 Business case update

The context, assumptions and methodology used to assess the benefits to be gained from the FPP project, as outlined in the full submission proposal, are still valid for the current reporting period. Furthermore, the net benefits stated in the full submission proposal (£5.25 million) are also still valid.

The discussions with generation developers who are actively seeking a connection to the distribution network within the trial area have been very encouraging. Two formal offers inviting the customer to participate in the FPP project have so far been issued and a further two are in preparation and are due to be issued by the end of June. The offers in preparation will make use of the Dynamic Line Ratings new technology and the improvement in protection to address the Reverse Power Flow limits at certain substations. It is envisaged that these offers will all provide the customer with revised connection charges significantly below the conventional 'business as usual' offer issued.

The level of distributed generation applications within the FPP trial area has increased from 188MW (as declared in the bid submission) to 250MW (June 2012). In light of this, the FPP project will review the current business case assumptions and provide an update of the net benefits to be gained from the FPP in the next Project Progress Report.

4 Progress against plan

The outline project plan as presented at the bid stage has been used for planning activities and for tracking progress. In addition, detailed project plans for the first six months of the project have been created to ensure that the various milestones are met. This section provides an update on the activities planned for completion during the current reporting period and the activities initiated this reporting period but planned for completion in next reporting period.

4.1 Activities planned for completion during the current reporting period

The table below summarises the tasks planned for completion in the current reporting period as described in the bid outline project plan:

Completion Date (as per bid plan)	Activity	Status
03/01/12	Kick off meeting	Completed
16/01/12	Project governance and controls in place	Completed
07/05/12	Project team mobilisation and resourcing	Completed
27/02/12	Internal and External Communications Plan	Completed
09/04/12	Create benefits plan	In progress, planned for completion July 2012
19/01/12	Review of submission bid plan	Completed
16/02/12	Create Project outline plan and Stage 1 plans	Completed
09/03/12	FPP Contracts Phase 1	In progress – planned July 2012
01/06/12	FPP Contracts Phase 2	In progress – planned July 2012
01/06/12	FPP Contracts complete	In progress – planned July 2012
20/02/12	WS1(Telecomms). Site Surveys	Completed
20/02/12	WS1. Sites Identified	Completed
23/02/12	WS1. Confirm 3rd party site shares & wayleave requirements	Completed
09/04/12	WS1. Installation and field resource training	Not started, planned for completion October 2012
08/03/12	WS1. Complete field network design	Completed
01/06/12	WS2. Detailed design Quadrature Booster	Not started, planned for completion August 2012
20/04/12	WS3 (Commercial arrangements). Map current connections process	Completed
04/05/12	WS3.Incorporate learning from LCL, LCH in the project	In progress
01/06/12	WS3. Evaluate Principles of Access for generators	Not started, planned for completion August 2012

Completion Date (as per bid plan)	Activity	Status
27/04/12	WS5. (Stakeholder engagement). Information gathering and preparation	Completed
11/05/12	WS5. Create stakeholder engagement plan	Completed
01/06/12	WS5. Engage with potential new customers	In progress
10/03/12	WS7. Learning and dissemination map	Completed
11/06/12	WS7. Establish website	In progress, planned for completion September 2012
27/01/12	WS8 (System Integration). Conceptual review	Completed
10/02/12	WS8.Project requirements and use cases reviewed	Completed
05/03/12	WS8. Detailed system design. Develop user requirements	Completed
09/03/12	WS8. Power systems studies and solution modelling	Completed
20/04/12	WS8. Develop system functional requirements specification	Completed
01/06/12	WS8. Develop overall system architecture	Completed
13/02/12	WS8. Establishment of a cyber security framework	In progress, planned for completion August 2012

Although good progress has been made overall, seven activities are currently running behind schedule. These activities, the actions undertaken to address the delays and the impact they will have on the overall project are discussed below

Benefits plan creation

A draft of the plan has been created with the final draft being ready for July 2012. When the bid plan was reviewed, it was concluded that the project will need to reach a sufficient level of maturity before the benefits plan can be fully finalised and signed off. As a result the activity was rescheduled.

FPP Contracts Phases 1 & 2

Phase 1 of the FPP Contracts comprises the contracts with Garrad Hassan, Alstom and Cable & Wireless Worldwide as those were on the critical path for achieving the planned delivery of the SDRC dates. Phase 2 addresses the contracts with the remaining project partners. As per the bid plan, the phase 1 contracts were planned for completion in March with all contracts being in place by June 2012. A detailed update on the contract progress is presented in section 2 as part of the Project Manager's report. It is important to note that although the contracts for Garrad Hassan and Cable & Wireless were not completed as initially planned, work commenced on the basis of a mutual understanding from both parties and Letter of Intent arrangement in order to ensure that the progress to plan is not affected.

WS1 – Communications Platform

Upon award of funding, a review of the original timescales was conducted and it was decided that it would be prudent to allow more time than originally planned on scope definition and design development in order to mitigate any technical risks, and to minimise the potential for any significant changes in the future. The application of RF Mesh network technology for Primary substation SCADA and Active Network Management under an IEC61850 scenario is the first of its kind for the project participants, the UK market and the global market.

The additional effort for scope definition and design development has been accommodated within the workstream timescales without compromising the planned SDRC date for a fully operational communications platform (March 2013). This has been achieved by accelerating the deployment and testing phases. In addition, the field staff training activity has been moved to October 2012 to be better aligned with the timeline for installation activities.

Quadrature booster detailed design

This activity did not start in May 2012 due to the need to await the conclusion of the contract negotiations. It is planned to commence in July 2012 with a completion date of August 2012. UK Power Networks and Alstom are currently discussing mitigation plans to ensure that this delay does not impact the timely delivery of the Quadrature Booster.

WS3 – Smart Commercial Arrangements

There has been a delay in signing the contract and recruiting the research associate at Cambridge University that will carry out the WS3 (and support WS6) work, including the full Principles of Access evaluation study. The contract is now in place and UK Power Networks and Cambridge University are working closely to ensure timely recruitment of the Cambridge research personnel and full initiation of the workstream in delivery mode. Having worked out a revised workstream plan, we do not foresee this causing any delays in delivering the workstream to the agreed scope, budget and timescales.

Project website

At the bid phase we anticipated that the FPP website would be launched in June 2012. This date has been revised to September 2012 as it was more practical to align the FPP website launch with the launch of the new UK Power Networks website that is due to take place in September 2012. The purpose of the website is to share the vision of the project, show the collaboration between the partners and share the knowledge gained from the project in a variety of formats.

Cyber Security framework

Cyber Security requirements have been captured as part of the Functional Requirements Specification for the project. This has ensured that all relevant cyber security requirements have been incorporated in the overall design for the project. The approach described has been deemed sufficient for the purposes of the project to date and a decision has been taken to reschedule the development of a full formal framework for August 2012.

Notwithstanding that unexpected delays have occurred in the above areas, the issues are being effectively addressed and the mitigating actions put in place will ensure that Successful Delivery Reward Criteria Milestones are achieved.

4.2 Activities planned for completion in the next reporting period

Completion Date (as per bid plan)	Activity	Status
06/09/12	WS1. Progress required shared site and wayleave agreements	On target
13/07/12	WS1. Complete high level and detailed application design	On target
19/07/12	WS1. Request and deliver circuits (VPN – backhaul for Comms platform)	On target
26/07/12	WS1. Order required equipment	On target
05/10/12	WS1. Deploy and configure equipment	Re-planned for November 2012 – as discussed in 4.1 (WS1 – Communications platform)
27/07/12	WS2. Detailed design – automatic voltage control schemes	On target
21/09/12	WS2. Detailed design – frequent use switch	On target
21/09/12	WS2. Detailed design – adaptive protection scheme	On target
24/08/12	WS2. Detailed design – dynamic line rating units inc. weather stations	On target
23/11/12	WS2. Plan site works	On target
21/12/12	WS2. Produce method statements and drawings	On target
27/07/12	WS3. Report on principles of access for generators	On target
29/06/12	WS3. Develop market based approach for generation connection	Re-planned to August/September 2012 to ensure that the Principle of Access work feeds into this task

Completion Date (as per bid plan)	Activity	Status
24/08/12	WS3. Commercial arrangements to permit control of RG units by ANM	On target
21/09/12	WS3. Understand technical and commercial options to be offered	On target
16/11/12	WS3. Consequential losses and non-performing implications	On target
28/12/12	WS3. Develop first connection agreement template offering smart options	On target
28/12/12	SDRC 9.2 – WS3. Successful development of smart commercial arrangements	On target
21/09/12	WS4. Detailed design ANM and generation controllers	On target
19/11/12	WS4. LIC Development	On target
31/12/12	WS4. Integrate ANM to PI of data historian	On target
03/12/12	WS4. Build pre-production environment	On target
31/12/12	WS4. Install and configure devices and ANM application	On target
08/06/12	WS5. Engage with existing generator customers	In progress – projected completion July 2012
22/06/12	WS5. Engage with local government	In progress – projected completion July 2012
13/07/12	WS5. Engage with Ofgem/DECC	In progress – projected completion August 2012
03/08/12	WS5. Engage with local electricity customers	In progress – projected completion July 2012
14/09/12	WS5. Consolidation and report production	On target
28/09/12	SDRC 9.1 – WS5. Stakeholder engagement report 1	On target
29/06/12	WS6. Investment model requirements - detailed specification of input & outputs	In progress - projected completion July 2012
27/07/12	WS6. Collate information and data required	Delayed – planned for August 2012 (delay due to contract negotiation)
05/10/12	WS6. Design model and architecture	On target
02/07/12	WS7. UK Power Networks LCNF Conference 2012	Confirmed date – 24 – 26 October 2012
06/11/12	WS7. Workshop	Re-scheduled for Jan 2013 to incorporate feedback on SDRC 9.2 due in December 2012

Completion Date (as per bid plan)	Activity	Status
17/08/12	WS8. RTU procurement	On target
13/07/12	WS8. Develop overall data model	On target
10/08/12	WS8. Develop overall test plan	On target
21/09/12	WS8. Develop specification for FAT & SAT	On target
12/10/12	WS8. Trial objectives	On target
16/11/12	WS8. Trial design	On target
14/12/12	WS8. Trial methodology & KPI's	On target
28/09/12	WS8. Security assessment – design phase	On target

5 Progress against budget

This section is provided in Appendix C.

6 Bank account

This section is provided in Appendix C.

7 Successful Delivery Reward Criteria (SDRC)

DELIVERY REQUIRED IN 2012

SDRC		Progress
9.1	***Criterion*** *Completion of the first phase of stakeholder engagement activities by the end of September 2012. This will include a stakeholder engagement report that will record the findings from the first phase of stakeholder engagement activities identifying key technical and commercial challenges to the FPP project. These findings will be shared with all the relevant stakeholders, including all GB DNOs, and will form a key input to the Strategic Investment Model and Smart Commercial Arrangements FPP project workstreams.* ***Evidence*** ▪ *Publication of a stakeholder engagement report ("Stakeholder Engagement report I").*	The "Stakeholder Engagement report I", will be based on a series of structured interviews with relevant stakeholders. In order to support this, the following activities have already been completed: ▪ List of stakeholders to be interviewed; ▪ List of technical and commercial topics for discussion during the interviews; ▪ Contract with Garrad Hassan, who will support FPP's stakeholder engagement activities, has been signed. Very enthusiastic response from prospective generation developers within the FPP trial area. Two formal invitations for participation have already been sent and two more will be sent before the end of June 2012. SDRC 9.1 is on schedule to be completed by the end of September 2012 as planned.
9.2	***Criterion*** *Development of smart commercial arrangements, which will provide a number of options that can be tested and implemented in new types of connection agreements with generation developers. These will be established in conjunction with key stakeholders. The development of smart commercial arrangements will be completed by the end of December 2012 in accordance with agreed specifications.* ***Evidence*** ▪ *Publication of a report on Principles of Access, which will determine the Principles of Access for Smart commercial*	The following activities have already been completed: ▪ Review of National Grid's (NG) "Connect and Manage" framework. The challenges that NG encountered and which led to the Government initiating a review of access to the transmission system in 2007 (ultimately giving rise to the C&M framework), are similar to those faced by the FPP project. These include high levels of generation activity and a lack of appropriate and effective commercial frameworks to deal with multiple generation connections. ▪ A workshop with NG on the lessons learned through the above review – this made clear that the FPP project should use the learning from the implementation of the C&M arrangements and better understand its use within the current DNO regulatory framework. ▪ Contract with Cambridge University, who will support the

SDRC		Progress
	arrangements. ▪ *Connection agreements templates (new model forms) for actively managed generator connections, to be established in conjunction with key stakeholders.*	development of smart commercial arrangements, has been signed. SDRC 9.2 is on schedule to be completed by the end of December 2012 as planned.

DELIVERY REQUIRED IN 2013

SDRC		Progress
9.3	***Criterion*** *Full deployment of an IP communications platform across the FPP trial area to support open standards communication protocols. This will be completed by the end of March 2013.* ***Evidence*** ▪ *Installation and commissioning documentation of Cable & Wireless Worldwide Multi-Service Platform (MSP) network and Silver Spring Networks Radio Frequency (RF) mesh network in the FPP trial area and in accordance with the specification included in the contracts with the relevant partners.* ▪ *Recorded results of IEC 61850 communication trials using IEC 61850 simulators at installed locations in the FPP trial area.*	The following activities have been completed, which will support the full deployment of an IP communications platform across the FPP trial area: ▪ Substation site surveys ▪ Field network design ▪ Equipment installation methodology and detailed scope of works On-going activities: ▪ Detailed network design Contract with Cable and Wireless Worldwide, who will deploy the IP communications platform, is to be signed in June 2012. SDRC 9.3 is on schedule to be completed by the end of March 2013 as planned.
9.8	***Criterion*** *Successful deployment of a Quadrature-booster within the FPP trial area. This will be completed by end of June 2013.* ***Evidence*** ▪ *Installation and commissioning of a Quadrature-booster and in accordance with the specification included in the contracts with the relevant partners.*	The following activities have been completed, which will support the deployment of a Quadrature-booster (QB) within the FPP trial area: ▪ Site location identified and agreed (British Sugar, Wissington) ▪ British Sugar have expressed an interest to take advantage of the increased export capacity that the QB would facilitate ▪ Technical specifications of the QB and its control system ▪ Preliminary design of the QB

SDRC		Progress
	▪ *Demonstration of improved balance between the circuits allowing increased power flow of 10MW.*	▪ Specification of the electric connectivity of the QB to the distribution network The following activities have been initiated: ▪ Planning permission for the installation of the QB at Wissington ▪ Detailed civil and electrical design for the installation of the QB Contract with Alstom, who will deliver the QB, is scheduled to be signed in July 2012. SDRC 9.8 is on schedule to be completed by the end of June 2013 as planned.
9.4	***Criterion*** *Demonstration of Flexible Plug and Play capabilities of the overall FPP technical solution following completion of the FPP installation phase. This will be completed by the end of September 2013.* ***Evidence*** ▪ *IEC 61850 certification for all relevant RTUs, IEDs and other IEC 61850 field devices.* ▪ *Installation and commissioning documentation of IEDs and other field devices necessary to support the trials and in accordance with the specification included in the contracts with the relevant partners.* ▪ *Installation and commissioning documentation of production of Smart Applications in accordance with the specification included in the contracts with the relevant partners.* ▪ *Pre-production interoperability test results for FPP's Smart Devices and Smart Applications.*	Activities associated with SDRC 9.4 are progressing according to plan. SDRC 9.4 is on schedule to be completed by the end of September 2013 as planned.

DELIVERY REQUIRED IN 2014

SDRC		Progress
9.5	***Criterion*** *Delivery of the FPP strategic investment model including validation and testing of the model utilising data captured within the FPP trials. This will be completed by the end of December 2014.* ***Evidence*** ▪ *Completion documentation for the strategic investment model development and build phase.* ▪ *Recorded validation and test results.* ▪ *Delivery of the strategic network investment model in a fully usable and external issue format.*	Activities associated with SDRC 9.5 are progressing according to plan. SDRC 9.5 on schedule to be completed by the end of December 2014 as planned.
9.6	***Criterion*** *Deployment of active power flow management and active voltage management within the FPP trial area. This will be completed by the end of December 2014.* ***Evidence*** ▪ *Pre-production functional test results for active power flow management and active voltage management applications.* ▪ *Installation and commissioning documentation of production active power flow management and active voltage management applications in accordance with the specification included in the contracts with the relevant partners.* ▪ *Suitable agreements with generators in place (if required).* ▪ *Trial results for the active power flow management and active voltage management trials*	The following activities have been completed: ▪ Preliminary design of the Active Network Management (ANM) solution Contract with Smarter Grid Solutions, who will deploy the ANM, is to be signed by end of June 2012. SDRC 9.6 is on schedule to be completed by the end of December 2014 as planned.

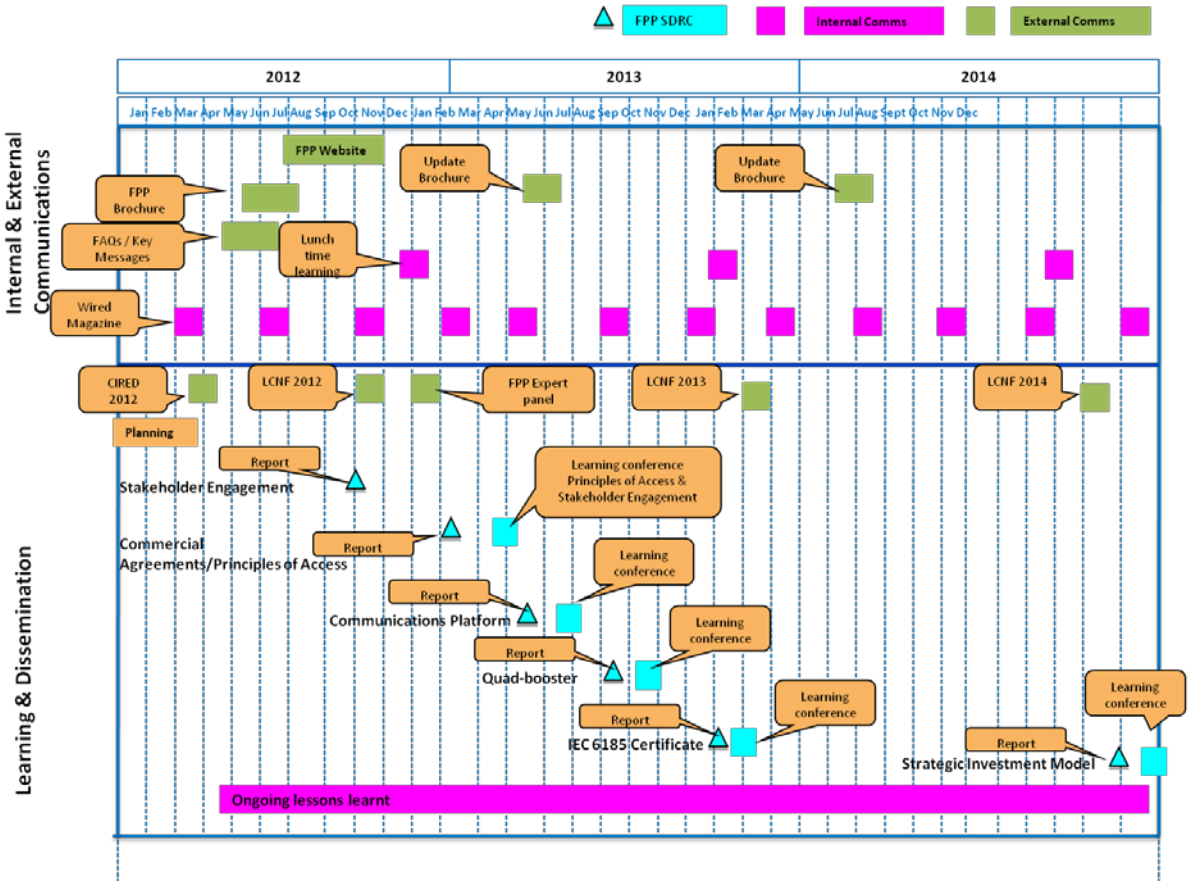
SDRC		Progress
9.7	***Criterion*** *Facilitation of faster and cheaper connection of distributed generation to the distribution network, as compared to timescales and costs of connection utilising traditional approaches. To be completed by end of December 2014.* ***Evidence*** ▪ *Demonstration that distributed generation connection offers are: 1 - Cheaper; and 2 - Offer faster project connection timescales, than offers based traditional reinforcement. The evidence for this criterion will be met through the provision of one connection offer to generators using the FPP methods. If during the duration of the FPP project other generators are in a position to accept a connection offer, then we will use that as evidence supporting this criterion.*	On-going pro-active engagement with prospective developers within the FPP trial area. Very enthusiastic response from prospective generation developers within the FPP trial area. Two invitations for participation have already been sent and two more will be sent before the end of June 2012. SDRC 9.7 on schedule to be completed by the end of December 2014 as planned.

8 Learning outcomes

Six months into the project and Flexible Plug and Play has already captured extensive learning.

The FPP project team has carried out an internal lessons learned activity which covered areas such as team structure, governance, level of engagement, resources and partnerships. The purpose of this activity was to carry out a SWOT analysis of the project's performance over the first quarter of 2012. The outcomes have been shared internally, with the objective of continuous improvement of the FPP project team's performance. This activity is to be run internally on a quarterly basis.

The FPP project will generate extensive learning opportunities for all the key stakeholders such as UK Power Networks, the wider DNO community, renewable generation developers, FPP Project Partners, national and international standards bodies, academia, local authorities and other key stakeholders such as the Energy Networks Association (ENA), DECC and Ofgem. In order to ensure the project shares the appropriate knowledge at the appropriate time to the appropriate stakeholders, a comprehensive Knowledge Dissemination Roadmap (please see the summary figure below) has been developed in collaboration with the project's learning and dissemination partner, the IET.



The Knowledge Dissemination Roadmap, which has been attached to this document (Appendix B), has three core elements:

Internal communications

- Phase 1 – Ensuring the 'key players' are on board for a successful delivery
- Phase 2 – Embedding the FPP learning to business practices
- Continuously raising the profile of FPP to demonstrate our transition from a distribution network operator to a distribution systems operator. This will be a holistic approach with other UKPN low carbon projects.

External communications

- PR at key touch points throughout the project to raise the profile of the project
- Achieve reputation enhancement as leaders in a low carbon future

Knowledge dissemination

- To share world-class knowledge gained from FPP with other DNOs and interested parties
- Brief description of what we would like to share, including knowledge dissemination vehicles

The following provides a brief update on progress in each of the above three core elements.

8.1 Update on Internal communications

Ensuring the 'key players' are on board for a successful delivery (Internal communications)

Since the start of the project, a number of internal learning workshops have taken place with FPP internal 'key players', including senior managers and the internal teams who are at the heart of ensuring a successful implementation of the project. These learning workshops ensured that the key players have a clear understanding of the vision of the project, the benefits to both the customer and the business and future changes in the operation of the network as UK Power Networks makes the transition from distribution network operator to distribution system operator. The learning workshops have included:

- An introduction to the Quadrature-booster, to ensure key players understand the implications of bringing a Quadrature-booster onto the network for the first time
- An introduction to the smart commercial arrangements and the principles of access
- An introduction the communications platform and the interoperability of smart devices

Raising the profile of FPP activities (Internal communications)

In order to raise the profile of FPP, the project has developed a 'Beginners Guide to Flexible Plug and Play', which includes Frequently Asked Questions and Key Messages. The purpose of this important document is to ensure agreed and consistent messaging for internal and external communication documents such as press releases, internal news articles and marketing material.

The FPP project has also featured in UK Power Networks' internal magazine 'Wired' (please see Appendix D). This initial article provides a description of the project and a summary of the successful FPP 'kick-off' meeting with all project partners in January. Further articles providing more detailed information on the progress, benefits and lessons learned by the project are planned for future publications.

8.2 Update on External communications and knowledge dissemination

Partnership with the IET

A focal point for sharing knowledge is via the FPP's learning and dissemination partner, the IET. The collaboration is particularly unique; FPP was the first project to approach the IET as a learning and dissemination partner to share knowledge gained to the engineering community. The IET are keen to trial this partnership and then produce a learning and dissemination framework for all DNOs on low carbon projects. The project will also use the 'communities' model as a platform to share knowledge generated with all IET members.

National and International knowledge dissemination activities undertaken to date

- **Meeting with US Embassy** (London) - Presentation of the FPP project (February 2012)
- **Japan Smart City Mission** - Interactive workshop & conference on the benefits of FPP (March 2012)
- **SmartGrid GB LCNF workshop** - Presentation of the FPP project (March 2012)
- **SmartGrid GB event with Charles Hendry MP** - Presentation of the FPP project (April 2012)
- **CIRED 2012** (Lisbon) - Conference Keynote speech on FPP (May 2012)
- **IET Lecture** (Sussex Network) - Presentation of the FPP project (May 2012)
- **Smart Grids & Cleanpower** Conference (Cambridge) - Presentation of the FPP project (June 2012)

8.3 Other key learning outcomes

The key issue that has been encountered since the start of the project is the protracted negotiations with some of the project partners over specific clauses and interpretations of the Intellectual Property Rights section of the Low Carbon Network Fund Governance document. Some project Partners were concerned that the IPR obligation was too loosely drafted and hence could give rise to exposure to background IP legitimately regarded as commercially confidential. This has led to delays in signing certain contracts.

8.4 Learning and Dissemination activities in the next reporting period

In the next reporting period, the FPP project will continue disseminating knowledge and lesson learnt by presenting at a number of conferences, by publishing the reports associated with SDRC 9.1 and 9.2 and by hosting a knowledge sharing event. The following provides the list of the currently confirmed activities:

- **Universities' Power Engineering Conference (UPEC 2012)** (London) – September 2012
- **Stakeholder Engagement report I** – hosted on the FPP website – (September 2012)
- **LCNF conference 2012** (Cardiff) – October 2012
- **US Embassy Smart Grid Trade Mission (London)** – October 2012
- **FPP Expert panel** – Knowledge sharing event organised in collaboration with the IET (London) – November 2012
- **UK Power Networks internal lunchtime learning sessions** – (London, South East and East of England) - November2012
- **Principles of Access report** - hosted on FPP website – (December 2012)

9 Intellectual Property Rights (IPR)

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

Workstream	IPR description	IPR Owner
WS1	IP Communications network field design	Cable & Wireless Worldwide
WS2	QB design brief for implementation on the distribution network	UK Power Networks
WS2	QB technical specification and technical schedules	UK Power Networks
WS2	QB Control System Performance Specification	Fundamentals
Design Authority	Power systems analysis – Network Constraints & Solutions Scenarios	UK Power Networks
WS7	Learning & Dissemination Road Map	UK Power Networks
Design Authority	Functional Requirement Specifications	UK Power Networks
Design Authority	FPP high-level architecture	UK Power Networks

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

Workstream	IPR description	IPR Owner
WS4	Detailed ANM design	Smarter Grid Solutions
WS4	ANM Acceptance Test Specification	Smarter Grid Solutions
WS8	Detailed RTU 61850 upgrade design	UK Power Networks
WS8	FPP Trial Data Model Description	UK Power Networks
Design Authority	FPP Detailed Architecture	UK Power Networks
WS5	Stakeholder Engagement Report 1	UK Power Networks
WS3	Principles of Access Report	UK Power Networks
WS3	Connection Agreement Templates (to accommodate new smart commercial arrangements)	UK Power Networks

10 Risk Management

The FPP project has established a rigorous and proactive risk management process, as described in detail in Appendix A: FPP 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 weekly at workstream level and bi-weekly at 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.

10.1 Full Submission (BID Risks) – update

Ref#	Risk & Impact Description	BID Mitigation	Mitigation (update)	Learning	Status
BID R0001	The Communications platform may not meet the smart applications' performance requirements leading to system incompatibilities and unsatisfactory trial results	The Communications platform should be subject to performance testing using smart devices or simulators under various operating conditions. Communications requirements to be defined at design stage and suitable Communications technology chosen for the purpose of the trials. UK Power Networks to agree Service Level Agreements for Communications platform.	Communications requirements are being established now as part of the design phase, and learning from the tier 1 project using the same communications infrastructure is being utilised as part of this process. Site surveys have been undertaken to inform the initial designs. Functional requirements for the project also include the requirement for flexibility to allow packet sizes (and therefore performance) to be optimised on the communications infrastructure. Contract negotiations are on-going with the communications infrastructure provider include SLA requirements.	Significant understanding of the interactions of the communications network and the electrical network in a smart grid environment and how to manage technical risks at a time on the project when the full capabilities of the infrastructure are not well understood i.e., the performance will be dependent on a number of physical and environmental factors which will not be certain until deployment, even though site surveys do inform the initial	

Ref#	Risk & Impact Description	BID Mitigation	Mitigation (update)	Learning	Status
			Once the contract is agreed, early work will be done to test the RF mesh infrastructure's capability to carry necessary communications protocols.	design. Time and effort has to be allocated after initial deployment to optimise the performance of the infrastructure, which may also require deployment of additional comms devices.	
BID R0002	Failure to secure suitable mounting positions/space for the Communications equipment due to limited space in UK Power Networks-owned premises or assets e.g. poles - leading to lengthy negotiations with property owners resulting in programme delays	Optimise design and minimise mounting positions/space required. Investigate alternative options for mounting such as a third party provider. Carry out detailed site surveys early in the project.	Site surveys have been carried out, and necessary operational support has been obtained to verify that sites can accommodate new equipment. An installation methodology has been developed for each piece of equipment.	Full understanding of detailed requirements and installation methodology for mounting/installing RF Mesh equipment on electrical distribution infrastructure.	
BID R0003	SS Networks may have to use an unlicensed spectrum if they are unable to get a trial licence on time leading to	Establish whether trial licenses would be available by Q1 2012.	The project has confirmed that there is no issue regarding obtaining the appropriate licence.		

Ref#	Risk & Impact Description	BID Mitigation	Mitigation (update)	Learning	Status
	possible adverse perception from other project stakeholders				
BID R0004	Insufficient levels of RG connecting - Generators may not want to participate (if for example the project interferes with their normal operations) during the FPP project timescales leading to failure to fully trial the FPP in the planned timescales	Engage with Generators as early as possible to understand the risks and issues likely to impact their (Generators) normal operations in order to actively manage/mitigate them	The project team has engaged with four generator developers and the feedback to date has been very positive. There has been acceptance in principle of curtailing should the benefits become clear and a cheaper and faster connection becomes available. The project will look to engage with all generator developers with an interest in the area over the next reporting period.	Generators want to have a very clear picture of the extent to which they may be curtailed, as their capital funding is dependent on expected revenues and therefore probability of curtailment needs to be modelled and quantified. This work will be undertaken under WS3 (Smart Commercial arrangements – see also reference BID R007)	
BID R0005	Different vendor protocols/ characteristics could potentially compromise the interoperability trials which may cause delays during system integration & trials	Ensure that ALL application Communications is based on international standards, and all devices and systems are tested and certified to these standards Ensure that ALL devices are subject to testing in pre-production environment	Requirements specification clarifies the international standards applicable to communications. The project will be using a full pre-production environment to test all devices and their operation as part of the FPP platform.		

Ref#	Risk & Impact Description	BID Mitigation	Mitigation (update)	Learning	Status
BID R0006	Project Partner(s) withdrawing their participation in the FPP project at a late stage leading to lengthy programme delays to institute their replacement(s) and in the worst case the collapse of the FPP	Issue principles of collaboration and request official Letters of Intent from Partners to reduce probability of partners withdrawing from the project - Reduce dependency on specific Partners - this is a vendor agnostic project	All contracts with Partners are due for completion by the end of July 2012 with clear technical and commercial scope. Relevant exit clauses have been incorporated to ensure project continuity in the event of an early withdrawal of one of the parties.		
BID R0007	If actual MWh or hours of RG operation diverge (adversely) significantly from results within smart grid application feasibility assessment then this may lead to possible complaints from generators.	Ensure that RG developers are made aware in advance that the Assessment Results are based on estimates and that the Actual Levels of curtailment are likely to change year on year. Data used in studies should be as accurate as possible and assessment methods agreed by all stakeholders as being suitable. Develop suitable commercial and legal framework for making such connections offers.	See response to BID R0004. The project has initiated engagement and dialogue with the Developers and dialogue on a number of technical and commercial aspects and will seek to address their views as part of the Smart Commercial Arrangements framework definition.	The concept of constraint payments and how these might be built in the agreement (note that constraint payments are already a component of the DG incentive). UK Power Networks has met with National Grid in order to understand the principles of their Connect & Manage scheme and the mechanism for constraint payments.	

Ref#	Risk & Impact Description	BID Mitigation	Mitigation (update)	Learning	Status
BID R0008	Delays in resourcing and negotiation/ drafting of delivery contracts could result in delays in project delivery.	The resourcing process/production of job descriptions & contract drafting to start pre-contract award. Future Networks to partly resource project. Contracting resource has been allowed for key roles.	The resourcing process is still ongoing with a number of internal vacancies to be filled. The team is using external temporary cover to ensure that the project is progressing as planned. A detailed resource plan has been created and is closely being monitored to ensure that the project is delivered to the agreed bid plan and budget.		
BID R0009	Local Opposition to Wind Energy development contributing to negative publicity for UK Power Networks within the project area	UK Power Networks will proactively engage local stakeholders and promote the work the project is doing (looking at alternative to reinforcement and new lines/cables)	The connections project pipeline is increasing as the project progresses, now 250MW (up from 188MW at bid stage). UK Power Networks is communicating effective the reasons for doing the project including the acceleration of the transition to a low carbon economy.		
BID R0010	System integration issues occurring due to inadequate testing in Workstreams 1 - 3 leading to delays	Ensure that the deliverables from each Workstream are appropriately tested prior to system integration activities and allow sufficient time to develop test specifications and to conduct the testing	High-level test plan and detailed pre-production environment specification currently being developed. The relevant activities are being incorporated into the detailed project plan. Extensive lab and field testing will be carried out to ensure no issues in commissioning.		

10.2 Risks that have arisen in the reporting period

Ref#	Workstream	Risk	Mitigation	Learning	RAG
R0039	Project	If the necessary Business as Usual subject matter experts within UK Power Networks are not available to support key FPP deliverables as required, delay in progressing key deliverables might be experienced.	The project is fully supported at the most senior level within UK Power Networks by the Executive Management Team. The Chief Financial Officer as the chair of the Project Steering Committee is taking an active role in ensuring the success of the project. Engagement with all relevant directorates has been a key priority and activity for the FPP team to ensure that the project objectives are widely understood & supported within the business at all levels. The project has developed a detailed resource plan and holds regular update meetings with impacted team to ensure all internal stakeholders have sufficient information to facilitate good project progress.	UK Power Networks directorates recognise the value of being involved with the LCNF projects both from a value/production creation point and knowledge embedment but also for the personal and professional development of their teams.	
R0047	Project	If the scope of works for each contract is not properly defined to deliver the solution as described at bid stage, the project might experience a high incidence of change control which will have scope, plan and financial impacts.	Ensure scope of works agreed incorporates all elements of activity as understood at the time of contract development	Significant time at the beginning of the project is required to define the scope and develop designs and specifications prior to entering into a contract. This will ensure firm contractual foundations and minimise the risk of future changes. This is	

Ref#	Workstream	Risk	Mitigation	Learning	RAG
				particularly relevant to new technologies or their applications.	
R0035	WS1	If SSN's RF mesh is not able to carry IEC 61850 traffic then the project might not be able to achieve one of its objectives, to trial the use of open standards protocol, IEC61850 specifically for inter-substation application.	SSN has carried out informal testing and they are fully confident that the RF mesh will deliver the requirement. Full lab testing will carried out in July 2012 to confirm those assumptions. This is a truly innovative approach and parties are committed to delivering it. The fallback position would be to deliver the functionality utilising DNP3 standard instead.	Learning is already being generated with respect to a) use of the RF mesh for primary SCADA under a IEC61850 scenario implementation b)IP and SCADA network topologies for incorporating the RF mesh and IEC6150 architectures into the existing systems.	

10 Other

No other items to report.

11 Accuracy assurance statement

We hereby confirm that this report represents a true, complete and accurate statement on the progress of the Flexible Plug and Play Low Carbon Networks project in its first six months and an accurate view of our understanding of the activities for the next reporting period.

Signed Ben Wilson

Date 18/6/12

Ben Wilson
Director of Strategy & Regulation and CFO
UK Power Networks

Appendix A: FPP Project Handbook

Appendix B: FPP Knowledge Dissemination Roadmap

Appendix C: Confidential Appendixes

Appendix D: Wired Magazine Article