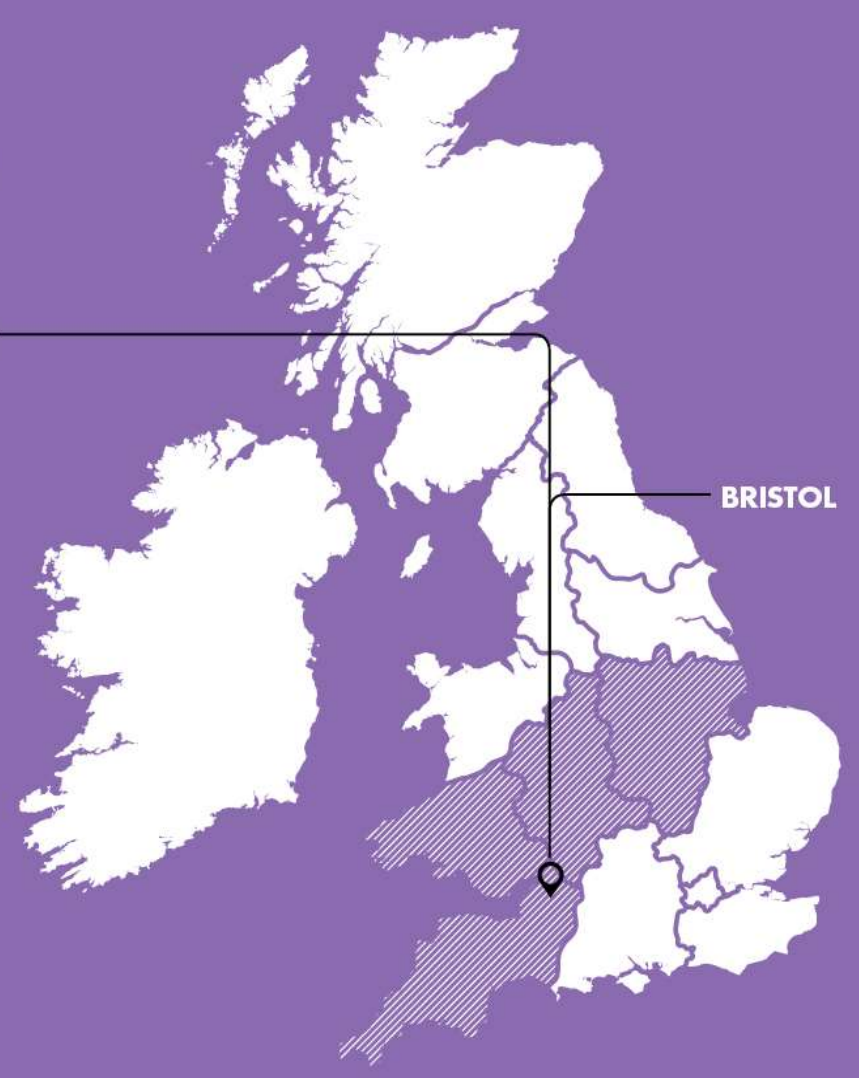


PROJECT SOLA
BRISTOL

SoLa Bristol
SDRC Application



April 2016

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1. Executive Summary

The challenges faced by the energy industry are well documented, SoLa Bristol was attempting to test the hypothesis that Low Carbon Technologies coupled with the introduction of Time of Use tariffs can be used twofold, to firstly encourage different behaviours by consumers and secondly could also be used by DNOs to better manage localised, temporary constraints.

This was a considerable undertaking for WPD and its partners as the scope, while at a high level was straightforward, was actually very complex to manage. More information on the complexities of the project can be found within the Final Report and the Closedown Report (links to both are provided within the Appendices).

Considerable learning was obtained throughout the lifecycle of the project and it is our belief that despite some significant challenges the outcomes are extremely powerful when one considers the breadth and depth of the project. We therefore believe that SoLa Bristol merits its discretionary award.

THE SOLUTION

The trial used in-home battery storage to provide benefits to customers and aid the DNO with network management. Twenty six houses, five schools and an office were commissioned, with solar PV and a battery installed. Within the domestic properties, the solar PV was connected directly to the battery using a DC/DC converter.

The AC lighting circuits in all the premises were converted to DC and a set of DC outlets were installed to enable customers to run small USB connected appliances directly from the PV/battery. The battery was “shared” between the customer and the DNO. The customer was provided with a pseudo variable tariff to encourage electricity use at times of high PV generation and to use electricity stored by the battery when the network is heavily loaded. The DNO was able to communicate with the battery to charge and discharge it to help with network management.

OUTCOMES

The hypothesis was not proven conclusively which is of course disappointing but negative learning is just as important, if not more so, than positive. Learning that tells us that things do not work can be used in other ways to better inform decision making whether than be short, medium or long term.

In this report we qualify the successes & challenges of the project and provide information to support our application for the discretionary award.

2. Successful Delivery Reward Criteria

Below we provide a copy of the table contained within the Closedown Report and where appropriate additional supporting evidence. SoLa Bristol met all of its aims and objectives in a challenging environment. WPD has learnt tremendously from this project and whilst it has not proven conclusively the hypothesis it intended, it has triggered a number of fundamental questions that we feel the industry has to answer in order to move forward.

WPD is proud of SoLa Bristol, engaging with end users around the use of batteries, managing tariffs and using them to influence behaviour is a considerable undertaking.

Criterion	Proposed Evidence	Commentary to support completion of SDRC
<p>9.1 Successful initial engagement with customers: This criterion corresponds to successfully holding a workshop with Bristol City Council, potential trial participants and interested parties before 30th April 2012. Holding the workshop on or before this date will demonstrate the project is on schedule to recruit trial participants' in line with the project plan. Prior to the workshop the customer communication plan will have been submitted and accepted by Ofgem. WPD will work with our partner, Bristol City Council and the trial participant recruitment specialist to engage with target domestic audiences and the selected schools from the Solar PV for schools scheme. The workshop will be used to explain the purpose of the project, provide a guide to the installations, detail the project timeline and gather customer feedback. It will be an</p>	<ul style="list-style-type: none"> •The Customer Communication plan will be sent to Ofgem at least two months before any intended contact with customers, the final version will be shared with customers Energy Retailer when the trial participants have been selected, published on the Western Power Distribution website and on the project SoLa Bristol website. •The recruitment plan, copies of material used to recruit trial participants and locations targeted will be recorded. •Minutes and notes captured from the workshop will be stored for future use during knowledge dissemination outputs. Feedback from the event and recruitment process will be gathered through a post event questionnaire where any outstanding questions can be collated. •An overview of the 	<p>The Customer Communications Plan was written, sent to Ofgem and approved on 18th December 2013. A link to the document is provided here:</p> <p>http://www.westernpowerinnovation.co.uk/Document-library/2016/Sola-Bristol-customer-engagement-Final-(2).aspx</p> <p>These were all recorded and the findings form part of our learning.</p> <p>These were all recorded and the findings form part of our learning. Feedback was an integral part of the learning process within SoLa Bristol, especially given the considerable amount of customer engagement that was required.</p>

<p>opportunity for customers to learn more about the project first hand and ask any questions they may have.</p>	<p>workshop and feedback will be posted on the SoLa Bristol website for interested parties within a month of the event.</p>	
<p>9.2 Confirmation of the BRISTOL design: This criterion corresponds to signing off the design of the installations by 30th September 2012 for homes, schools and office after the trial participants and locations have been confirmed. The design will confirm the capability of the equipment being installed; details which equipment will be connected to the DC network, how the equipment will be connected together and the location of equipment in a typical home, school and the selected office. The design will be developed with our partners, Siemens and the University of Bath. It will build upon the Technical Overview outlined in Appendix C and use the outputs from the detailed survey and planning, participants wiring and structural reviews. The final design will be published through the BRISTOL website. The designs will be reviewed and modelled to predict the performance of the solution, customer benefits and distribution network benefits of the final design.</p>	<ul style="list-style-type: none"> •Regular meetings will be held between WPD, Siemens and the University of Bath to develop the SoLa Bristol design. Summaries of the meetings and design decisions will be captured and recorded. •The results of the surveys, inspections and reviews will be recorded and stored by the University of Bath •The predicted performance and benefits will be recorded and stored. The predicted performance will be compared against the actual performance. •The final design will be signed off by WPD senior engineering managers and subsequently shared through the SoLa Bristol website. 	<p>All deliverables were met and can be seen through the depth of detail captured throughout on learning.</p> <p>The final designs were disseminated via this report: http://www.westernpowerinnovation.co.uk/Document-library/2012/Confirmation-of-the-SoLa-BRISTOL-design-v1-0.aspx</p> <p>All documents have been stored and as part of closure are being transferred to WPD.</p> <p>All documents have been stored and as part of closure are being transferred to WPD.</p> <p>The final designs were published on the WPD Innovation website the link is here: http://www.westernpowerinnovation.co.uk/Document-library/2012/Confirmation-of-the-SoLa-BRISTOL-design-v1-0.aspx</p>
<p>9.3 Installation and commissioning of equipment: This criterion corresponds to installing</p>	<ul style="list-style-type: none"> •A test specification will be completed prior to the factory acceptant test and the 	<p>This criterion was completed and a report developed on the FAT process, this was disseminated as part of the Final Report.</p>

<p>and commissioning equipment in 30 domestic properties before 30th April 2014, 10 schools before 31st August 2014 and an office before 30th April 2014.</p> <p>Prior to the installations WPD and our partners will Factory Acceptance Test the BRISTOL solution, provide training for the installation team, form method statements for installation, risk assessments for installation and operation, an appointment booking process, re-booking process, complaints procedure and operation guide.</p>	<p>commissioning of equipment; this will be signed off by the WPD project manager. The results from the factory acceptance tests will be analysed by Siemens and the University of Bath with final acceptance by WPD.</p> <ul style="list-style-type: none"> •Project documents will be peer reviewed by the WPD Project Manager before they are issued. Copies of the project documentation will be stored by the University of Bath. •Regular installation progress reports will be posted on the SoLa Bristol website for interested parties to view. •A review of the installation and commissioning activities will be carried out, capturing any lessons learnt. If required, the method statements and other related documentation will be updated and stored. 	<p>All documents are peer reviewed internally before any dissemination. Moreover, key documents are reviewed wherever possible by partners and other stakeholders as well. All project documentation was stored at the University of Bath and is now being transferred to WPD as part of project closure.</p> <p>Installations progress was detailed within the PPRs and the final installation report was disseminated as below: http://www.westernpowerinnovation.co.uk/Document-library/2013/Sola-Bristol-Installation-report.aspx</p> <p>This was completed and forms part of the Installations report published in December 2014.</p> <p>http://www.westernpowerinnovation.co.uk/Document-library/2013/Sola-Bristol-Installation-report.aspx</p>
<p>9.4 Early Operational Performance of BRISTOL: This criterion corresponds to successfully operating an integrated DC network with storage in homes, schools and an office. The operational performance from the data captured through the LV Connection Manager will be analysed to provide an early snapshot of the BRISTOL performance since commissioning.</p>	<ul style="list-style-type: none"> •An operations report will be produced and shared through the SoLa Bristol website, Stakeholder Dissemination symposia, and the project board. •The actual data will be collected and stored by the University of Bath. The performance data including system availability, battery usage and data rates will be analysed and 	<p>The early learning report disseminated: http://www.westernpowerinnovation.co.uk/Document-library/2014/Sola-Bristol-Operational-early-learning-report-fin.aspx</p> <p>All documents and data have been stored and as part of closure are being transferred to WPD.</p>

<p>We will capture and share the early learning from deploying and running DC networks and battery storage in customer premises. Data will be captured up to 30th November 2014; the learning will be released by 31st December 2014. No customer sensitive data will be released, and any data relating to customers will be completely anonymous. A review of the early learning will be undertaken to determine if any changes are required in the operation of the LV Connection Manager, including the battery use and charging algorithms to improve the future performance of the SoLa Bristol solution.</p>	<p>compared to the pre installation predictions.</p> <ul style="list-style-type: none"> •If required, the method statements and other related documentation will be updated and stored. •Notes from the project meetings discussing operational performance in homes, schools and the office will be recorded and stored. 	<p>All documents have been stored and as part of closure are being transferred to WPD.</p> <p>All documents have been stored and as part of closure are being transferred to WPD.</p>
<p>9.5 Measured the impact on the LV network: This criterion corresponds to measuring the impact of the SoLa Bristol solution on the trial distribution substations operation, compared to the operation prior to the installation and commissioning of equipment in homes, schools and the office. The long term operation of the distribution network will be captured through the LV Network Manager located in distribution substations, the data recorded will be analysed to monitor any changes in the voltage profile, load profile and power quality of the network as a result of the installation in homes,</p>	<p>Findings shall be shared through a summary report published through the SoLa Bristol website by 31st May 2015. Notes from the project meetings discussing operational performance (changes to the LV voltage profiles, feeder demand profiles and power quality) will be recorded and stored.</p> <p>The actual data will be collected and stored by the University of Bath. The performance data recorded by the LV Network Manager will be analysed and compared to the pre installation predictions. If required, the method</p>	<p>The measured impact was covered within the early learning report . This was shared via the WPD innovation website on 29th December 2014 and the link is provided here:</p> <p>http://www.westernpowerinnovation.co.uk/Document-library/2014/Sola-Bristol-Operational-early-learning-report-fin.aspx</p>

<p>schools and the office. In substations with SoLa Bristol installed on one LV feeder, another similar LV feeder will also be monitored and used as a reference.</p> <p>Through this criterion we will be capturing and sharing the early learning, measuring the network benefits of the BRISTOL solution, sharing the analysis before 31st May 2015.</p>	<p>statements and other related documentation will be updated and stored.</p>	
<p>9.6 Customer Opinion: This criterion relates to learning about customer acceptance of a SoLa Bristol solution. We will specifically report on how they feel about virtual asset sharing, taking up space in their home, the energy savings, how disruptive the equipment has been, how easy it is to operate and if there opinion of the SoLa Bristol solution has changed over time. WPD will work with the trial participant recruitment specialist and the University of Bath to design a process and subsequently capture customers' feelings on the project in line with the customer communication plan. The assessments will be completed before 31st March 2014 to capture customers' opinions before the trial starts, before 31st March 2015 to capture customers' opinions during the trial and before 31st November 2015 to</p>	<ul style="list-style-type: none"> •The Customer Communication Plan, detailing customer contact will be on the website •Knowledge will be captured using a mixture of questionnaires and interviews with results published two months after each assessment is completed. •Any customer complaints will be resolved within 14 days and the responses will be stored. •Analysis will be shared with all trial participants, Bristol City Council and GB DNOs through the BRISTOL website. The learning from the customer opinion will be used to update the customer communication plan. 	<p>As detailed previously this is available on the WPD innovation website.</p> <p>Knowledge has been captured and analysed throughout and has been detailed within the Final Report with some key lessons learnt. In this report, we have taken this to the next level by detailing how we are taking the lessons forward.</p> <p>No complaints were received throughout the project lifecycle, but a process was in place to ensure that complaints received were process expediently.</p> <p>All learning was documented in order to develop and inform the Customer Communications Plan throughout the project.</p>

capture customers' opinions after the trial.		
<p>9.7 Keeping the lights on during power outages: This criterion corresponds to testing the domestic BRISTOL solution during an AC power outage. WPD will ask selected domestic customers to test the energy security section provided by the battery storage between 1st June 2014 and 1st June 2015. The performance of the DC network and batteries will be monitored, through the LV Connection Manager. Customers' behaviour and use of energy during the short outage will also be captured through the LV Connection Manager and a survey. This test will inform us of the capability of the SoLa Bristol system during a power outage and the potential value to customers. The trials will be scheduled at different times of the day with different weather conditions and battery capacities to maximise the learning. Selected customers will be invited to undergo this test only once during the trial.</p>	<p>The data from the LV Connection Manager and responses from the domestic questionnaire will be stored by the University of Bath. The power outage test plan and communication methods used will be designed and stored by the University of Bath and will be signed off by the WPD Project Manager. The learning generated by analysing the data will be shared with all stakeholders and interested parties through the end of project report on 15th January 2016.</p> <p>Customers energy demands during the short power outage test will feed into the battery size review at the end of the project (SDRC 9.8 (5)).</p>	<p>All deliverables contained within this SDRC were disseminated on 15th January 2016 via the WPD Innovation website. The report covered all aspects of the project and detailed the learning throughout.</p> <p>The link is here: http://www.westernpowerinnovation.co.uk/Document-library/2016/WPDT2003_SoLa-Bristol_SDRC9-8-v1.aspx</p>
<p>9.8 Suitability of solution for mainstream adoption: This criterion corresponds to writing a comprehensive end of project report summarising the project findings. The report will contain sufficient information to advise</p>	<p>The end of project report will review the detail knowledge generated from the design and operation of the BRISTOL project. The report will include the appendices from the key areas of learning highlighted in</p>	<p>Disseminated on 15th January 2016 via the WPD Innovation website. This report details all learning, summarises the design and details the benefits analysis of the ToU tariffs and networks.</p> <p>More information should it be required can be obtained by contacting WPD.</p> <p>The link is here:</p>

<p>other UK DNOs: (1)If the SoLa Bristol trial demonstrates solar PV can be integrated into the distribution network using battery storage and DC networks. (2)How the measured results compared to the predictions made in the set up and development period (SDRC 9.2). (3)How the solution could be used to incorporate other LCTs into the distribution network (4) What customer benefits were recorded throughout the trial. (5) The significant lessons learnt during the trial, how these would be reflected in a future roll out of the BRISTOL solution if used as an alternative to conventional network reinforcement. (6)Which policies and standards would need to be modified to allow a BRISTOL solution and (7) What impact the inclusion of SoLa Bristol will have on DNO business plans. The report will also contain an appendix with all the early learning reports from previous milestones and a feasibility study for installing a SoLa Bristol solution in an office using the learning generated from the trial.</p>	<p>the other Successful Delivery Reward Criteria. The report containing the information above will be published by 15th January 2016. The results from this milestone will determine if the solution can be adopted into mainstream. If limiting factors are present, preventing the inclusion into mainstream adoption at the end of the project, the report will recommend areas that need to be monitored (e.g. the future cost of energy storage, deployment of smart meters) which may facilitate the future inclusion as a network reinforcement technique.</p>	<p>http://www.westernpowerinnovation.co.uk/Document-library/2016/WPDT2003_SoLa-Bristol_SDRC9-8-v1.aspx</p>
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Table 1: SDRC’s and completion commentary

As can be seen in Table 1, there is a considerable amount of learning that has been obtained during this project. This learning we believe to be extremely insightful into the realities of implementing LCTs in the current environment and we feel the industry needs to start discussing this as a matter of urgency.

3. Cost Effectiveness

The final costs for the delivery of the project are detailed below. The project came in over budget and the reasons for this are detailed within the Closedown Report and the six monthly reports. It is clear from the line items that the items with the most variance are those where additional time has had to be spent managing the complexities of what has been a significant customer facing programme of work. These items also included those where the designs had to be amended to reflect the actual requirements post surveys of the various properties.

WPD has covered the over spend, this is for two reasons:

1. The overspend could not have been anticipated
2. Given the significant learning that was being gained at the time that the overspend came to light, it was deemed the right thing to do to cover the costs ourselves.

It is our view that despite the challenges, the project has been an undoubted success and delivered significant learning to the industry. It is also interesting to note that despite the additional time that the project required, including the additional analysis and associated costs, that the total spend is similar to the original budgetary costs with the FSP at £2.78m.

Cost Category	New Budget	Actual LCNF Spend Nov 2015	LCNF Variance to Budget Nov 2015	Additional WPD Contribution	Total Project Spend Nov 2015	Notes
Labour	165.7	159.55	-4%	32.05	191.6	
Overall Project Manager	151.2	151.2	0%	32.05	183.25	
Substation installation (including any civil modifications)	14.5	8.35	-42%		8.35	Note 1
Equipment	486.73	479.58	-1%	124.95	604.54	
Distribution Sensing Equipment	11	11	0%	0.44	11.44	
Customer Sensing Equipment	2	2	0%	0.86	2.86	
Substation installation (including any civil modifications)	14.5	8.35	-42%		8.35	Note 1
DC Meters	5	4	-20%		4	Note 2
Domestic premises equipment (supply)	237	237	0%	74.96	311.96	
School equipment (supply)	114.4	114.4	0%	28.34	142.74	
Office equipment (supply)	22.43	22.43	0%	5.54	27.97	
Substation equipment (supply)	50.4	50.4	0%	12.81	63.21	
Smart Appliances & ICT Equipment	30	30	0%	2	32	

Contractors	1329.46	1275.9	-4%	341.48	1617.38	
BCC Project Management	60	60	0%	1.34	61.34	
Detailed Installation Survey and Planning	50	50	0%	0.38	50.38	
Training and Installations	166	166	0%	38.48	204.48	
Trial Property Recruitment, Equipment Maintenance & Ongoing Support	159.5	116.13	-27%		116.13	Note 3
Equipment Decommissioning (including battery disposal)	161	150.81	-6%		150.81	
System Design and Engineering	101.76	101.76	0%	24.84	126.6	
Domestic premises equipment (supply)	67.49	67.49	0%	21.34	88.83	
School and Office equipment (supply)	12.5	12.5	0%	3.1	15.6	
Substation equipment (supply)	70.98	70.98	0%	18.04	89.02	
Data archiving and access equipment (supply)	62.92	62.92	0%	38.14	101.06	
Installation, commissioning and operation support	101.76	101.76	0%	34.46	136.22	
Input to smart tariffing	104.41	104.41	0%	60.69	165.1	
Input to network design	151.89	151.89	0%	95	246.89	
Dissemination planning	59.25	59.25	0%	5.67	64.92	
IT	43.7	43.53	0%	7.91	51.44	
Data Communications (LV Connection Manager & LV Network Manager)	20	19.83	-1%		19.83	
Domestic premises equipment (supply)	8.4	8.4	0%	2.66	11.06	
School & Office equipment (supply)	3.08	3.08	0%	0.76	3.84	
Substation equipment (supply)	8.4	8.4	0%	2.13	10.53	
Data archiving and access equipment (supply)	1.82	1.82	0%	1.1	2.92	
Input to smart tariffing	1	1	0%	0.63	1.63	
Input to network design	1	1	0%	0.63	1.63	
Travel & Expenses	0	-	0%		-	
IPR Costs	47.33	47.33	0%	14.88	62.21	
System Design and Engineering	12.83	12.83	0%	3.14	15.97	

Domestic premises equipment (supply)	2.15	2.15	0%	0.68	2.83	
School equipment (supply)	0.72	0.72	0%	0.17	0.89	
Substation equipment (supply)	1.69	1.69	0%	0.42	2.11	
Data archiving and access equipment (supply)	1.21	1.21	0%	0.74	1.95	
Installation, commissioning and operation support	28.73	28.73	0%	9.73	38.46	
Payments to users	18	2.43	-87%	0	2.43	
Battery Charging Costs	9	0	-100%		0	Note 4
Variable Tariffs - Payments to users for changes in behaviour	9	2.43	-73%		2.43	Note 4
Contingency	149.87	148.12	-1%	30.88	179	
Scope change Contingency (Survey results)	49	47.25	-4%		47.25	
System Design and Engineering	13.8	13.8	0%	3.37	17.17	
Domestic premises equipment (supply)	30.46	30.46	0%	9.63	40.09	
School equipment (supply)	22.33	22.33	0%	5.53	27.86	
Office equipment (supply)	2.59	2.59	0%	0.64	3.23	
Substation equipment (supply)	12.82	12.82	0%	3.26	16.08	
Data archiving and access equipment (supply)	7.72	7.72	0%	4.68	12.4	
Installation, commissioning and operation support	11.15	11.15	0%	3.77	14.92	
Decommissioning	0	-	-	-	-	
Other	40	40	0%	25.02	65.02	
Input to smart tariffing	2	2	0%	1.25	3.25	
Input to network design	2	2	0%	1.25	3.25	
Workshops	12	12	0%	7.51	19.51	
School engagement	24	24	0%	15.01	39.01	
TOTAL	2280.79	2196.44	-4%	577.17	2773.62	

Table 2: Finalised Project Financials

Notes:

Ref.	Commentary
1	Civils in substation installations were less than expected

2	DC Meters for commercial installations not required
3	Overall costs less than originally estimated.
4	Battery Charging & Tariff payment costs have been less than anticipated.

Table 3: notes on exceptions

4. Project Management

4.1 Approach

All projects are managed under WPD's prescribed governance model. This model is based on PRINCE 2 but tailored to suit the individual requirements of the project. SoLa Bristol was created under that methodology and required a controlled start up on award as all our projects do.

Start Up (or Mobilisation) required the formation of the Project Board and all documentation to be created and approved. The schedule was revisited post approval, contracts agreed with the partners and detailed planning for each workstream and work package undertaken as the team came on-board. The Project Board agreed its terms of reference at start up as well as the Project Sponsor agreeing their terms of reference.

One of the key learnings of SoLa Bristol was that more rigour needed to be placed around team member roles and as such a set of Terms of Reference are being applied to all project roles moving forward. This we feel gives everyone involved clarity on expectations, quality and control.

4.2 The Delivery plan and methodology

SoLa Bristol required a waterfall delivery method. This was a relatively straightforward delivery from a scheduling point of view. Therefore, as detailed within the Closedown Report, the method for delivery was as follows:

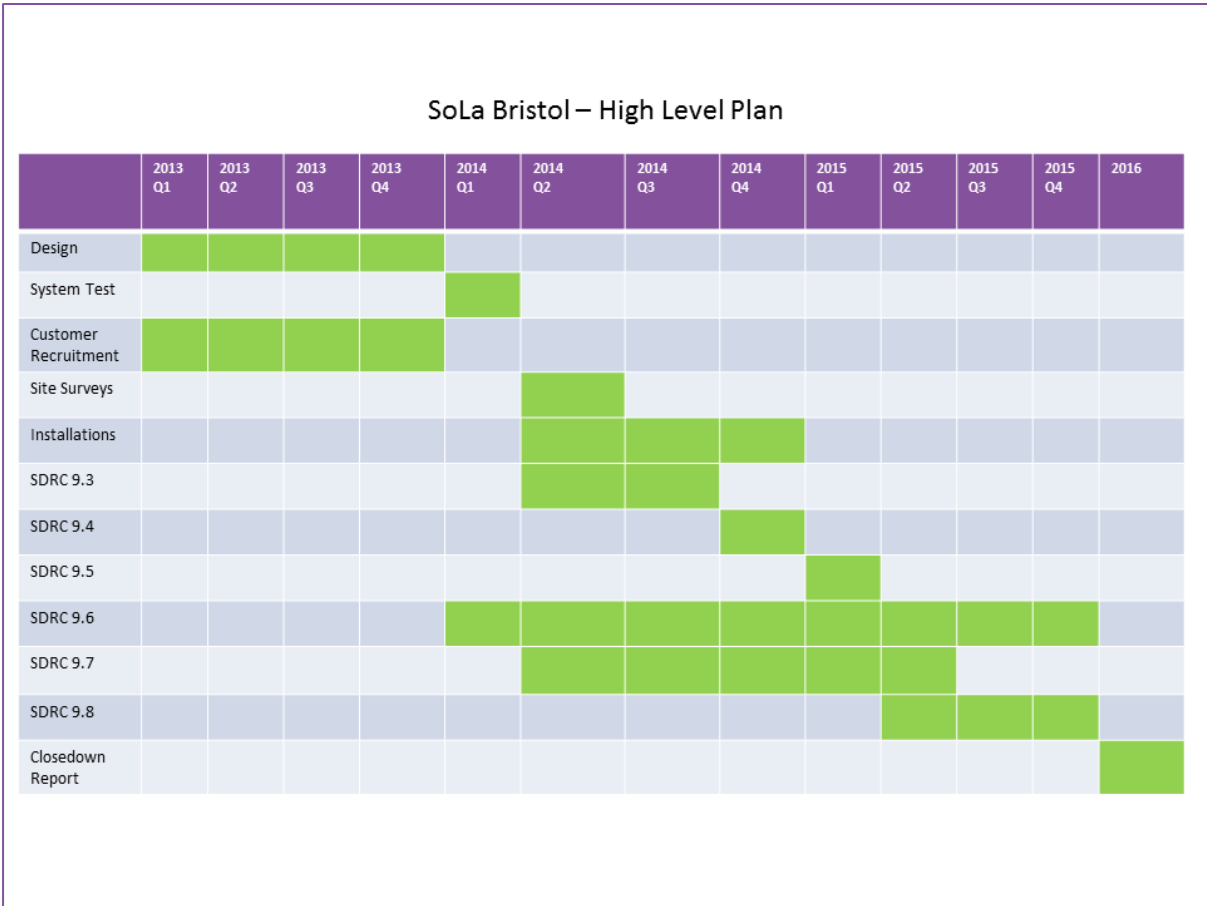


Fig 1: High Level Delivery Plan

There was a need to parallel run some activities but these were not main deliverables, these tended to be the analysis supporting an SDRC. The schedule of work worked well in terms of meeting required outcomes and as the project was relatively small in terms of scope, size and location it was fairly easy to ensure a team ethic throughout. Having the learning workstream in close proximity to the actual project is vital and this is something that we saw on FALCON as well. This has been a key learning point throughout these projects and one that forms the basis of all new projects.

4.3 Roles and Responsibilities

The SoLa Bristol Team was relatively small in comparison to our other Tier 2 projects. It still however required a defined project structure with roles and responsibilities for all team members.

Below is the overall Project Team structure and reporting line to the Project Board.

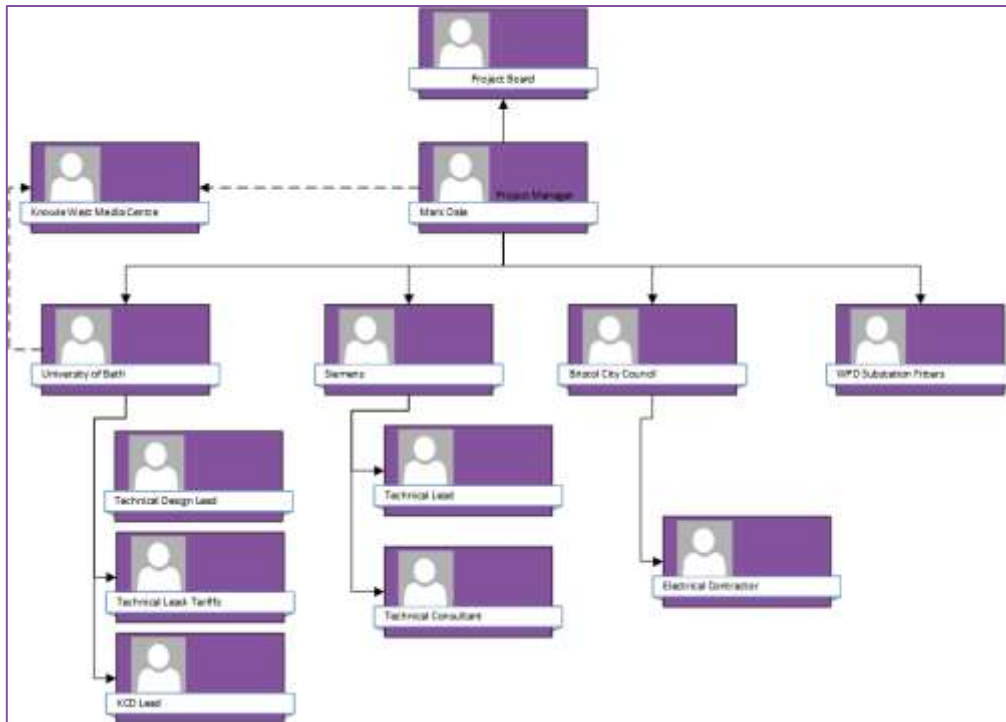


Fig 2: Project Governance Structure

The project board comprised of the following people:

- SoLa Bristol Project Manager
- Project Sponsor
- University of Bath- Position
- Siemens- Position
- Other WPD Stakeholders (as appropriate)

The project required a broad range of membership on its board as the range of issues at given points within the project lifecycle required different points of view and responsibilities in order to expedite issues and agree next steps.

The Project Board's terms of reference were:

- Ensure the project is aligned with organisational strategy.
- Ensure the project makes good use of WPD assets.
- Resolve escalated issues and related risks.
- Provide advice and guidance on business issues facing the project.
- Approve or reject changes to the project with a high impact on quality, timelines and budget, as defined by the PM.
- Assess project progress and report on project to senior management and other authorities.
- Use influence and authority to assist the project in achieving its outputs, where highlighted by the PM.

- Review and approve final project deliverables.
- Perform Gateway reviews at agreed stage boundaries.

The Project Board was chaired by the Project Sponsor. This role is key and has been key throughout all of our projects.

The Project Sponsor's specific terms of reference were:

- Overall responsibility for the successful completion of the project
- Responsible for ensuring that where appropriate escalation is undertaken
- Responsible for ensuring that the project is adequately resourced
- Sets the agenda for each Project Review Group meeting and chairs the meeting
- Responsible for ensuring awareness of the project within the business and it's wider goals

The Project Manager's terms of reference were:

- Track project progress
- Escalating key issues/risks to the Future Networks Project Manager as required
- Reporting on progress to the Project Board
- Developing and managing the project plan
- Risk and Issue Management
- Ensure milestones and objectives are delivered to time, cost and quality
- Manage financial delivery of the project
- Produce bi-annual Tier 2 LCNF reports for Ofgem
- Co-ordination of business resources to ensure successful project delivery
- Ensuring that the project was adequately resourced to ensure delivery

4.4 Risk Management and Change

As part of project start up, a RAID log was created taking the risks identified as part of the bidding process and formally logging them. The Project Manager was responsible for the logging and evaluation of all risks and issues.

The risk management process for SoLa Bristol was exactly the same as the one followed by all our projects. The RAID log being a formal part of the ongoing management of the project as well as being regularly reviewed by the Project Board. Escalated issues were assessed and raised as an exception, by the Project Manager to the board for ad-hoc advice as and when they occurred.

In each six monthly report we highlighted the key risks and issues that had occurred or been resolved during the period.

During the project there was a need to make some changes to the project. The detail behind each of them was detailed within the Closedown Report but a brief summary is provided here as well. Change Request CCR004 required a budgetary change as well as changes to scope:

4.5 Change Request CCR005

As the project progressed it became clear that we would not be able to meet the target number of domestic customers. Therefore we needed to be able to reduce the anticipated domestic sample size from 30 to 26. This would not undermine the quality of the results. The change was needed as we could not maintain a sample size of 30 despite the best efforts of the local team supporting the project.

https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/wpd_hh_change_request_0.pdf

https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/ofgem_decision_solabristol_hh_cr_0.pdf

4.6 Change Request CCR004

This change extended the timeline by another year, and reduced the sample size for the commercial installations. This was needed due to a number of unforeseen challenges faced by the project. It also reduced the budget by £202k which was returned to customers.

https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/wpd_sola_change_request_publication_0.pdf

https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/ofgem_sola_change_request_letter_publication.pdf

5. Basis of application for SDRC award

SoLa Bristol was a relatively small, but extremely complex programme of work. In hindsight, perhaps it was more complex than was imagined. However, the learning that it has provided we believe is extremely powerful. We believe that this was a good project, delivering significant value to the industry- albeit it was not able to prove its hypothesis; although that does not mean that the benefits to the industry are not there. We believe SoLa Bristol has been more powerful for the reason that it did not prove the underlying questions it was seeking to answer.

In summary we believe that the basis of a discretionary award is this:

- The results are a good start for the industry
- A well run project that whilst it encountered some challenges, these could not be predicted and moreover the insights it gives the industry are significant
- Much more work needs to be done in order to make these solutions attractive
- We are not convinced that DNO's are best placed to manage this aspect of the transition to a low carbon economy for a number of reasons- firstly DNO's are not the primary relationship holder with consumers and secondly, we are not convinced that the benefits will make commercial sense to DNOs in the medium term, possibly longer.
- Clear direction is needed about how the market needs to progress in order for LCTs to be effective, we believe that this can only be done via energy policy.

It is on this basis that we believe that SoLa Bristol merits a discretionary award.

In accordance with LCNF project governance (CRC5A) we can confirm that this application has been peer and manager reviewed and approved for publication by a Manager/Director.

6. Appendices

6.1 PPRs

Below are all of the Project Progress Reports for the project:

6.1.1 June 2012 Project Progress Report

<https://www.ofgem.gov.uk/publications-and-updates/bristol-six-monthly-report-june-2012>

6.1.2 December 2012 Project Progress Report

<http://www.westernpowerinnovation.co.uk/Document-library/2013/WPD-PPR-SoLa-BRISTOL-December-2012.aspx>

6.1.3 June 2013 Project Progress Report

http://www.westernpowerinnovation.co.uk/Document-library/2013/PPR_WPD_SOLA_BRISTOL_MAY2013_PUBLIC.aspx

6.1.4 December 2013 Project Progress Report

<http://www.westernpowerinnovation.co.uk/Document-library/2014/So-La-Bristol-Project-Progress-Report-Dec-2013.aspx>

6.1.5 June 2014 Project Progress Report

http://www.westernpowerinnovation.co.uk/Document-library/2014/WPDT2003_May14PPR_Sola-Bristol_Issue1.aspx

6.1.6 December 2014 Project Progress Report

<http://www.westernpowerinnovation.co.uk/Document-library/2014/Sola-Bristol-Nov-14-PPR-V1-0.aspx>

6.1.7 June 2015 Project Progress Report

<http://www.westernpowerinnovation.co.uk/Document-library/2015/SOLA-BRISTOL-Progress-Report-May-2015.aspx>

6.2 Change Requests

These can be found within Section 4.

6.3 SDRC documents

These are documents that pertain to the relevant SDRC's throughout the project lifecycle.

Confirmation of Bristol design- this document, published in December 2014, provides the reader with a detailed description of the overall SoLa Bristol System Design

<http://www.westernpowerinnovation.co.uk/Document-library/2012/Confirmation-of-the-SoLa-BRISTOL-design-v1-0.aspx>

Domestic properties installation report – this document, published in December 2014, gives an understanding of the process and impact of the proposed domestic installations in properties.

<http://www.westernpowerinnovation.co.uk/Document-library/2013/Sola-Bristol-Installation-report.aspx>

Early Learning Report 2014

<http://www.westernpowerinnovation.co.uk/Document-library/2014/Sola-Bristol-Operational-early-learning-report-fin.aspx>

Measure Impact on the LV Network December 2014

<http://www.westernpowerinnovation.co.uk/Document-library/2015/SDRC-9-5-REPORT-Final.aspx>

Final Report (SDRC9.8)

http://www.westernpowerinnovation.co.uk/Document-library/2016/WPDT2003_SoLa-Bristol_SDRC9-8-v1.aspx

6.4 Closedown Report

<http://www.westernpowerinnovation.co.uk/Document-library/2016/SoLa-Bristol-Closedown-Report-FINAL.aspx>

