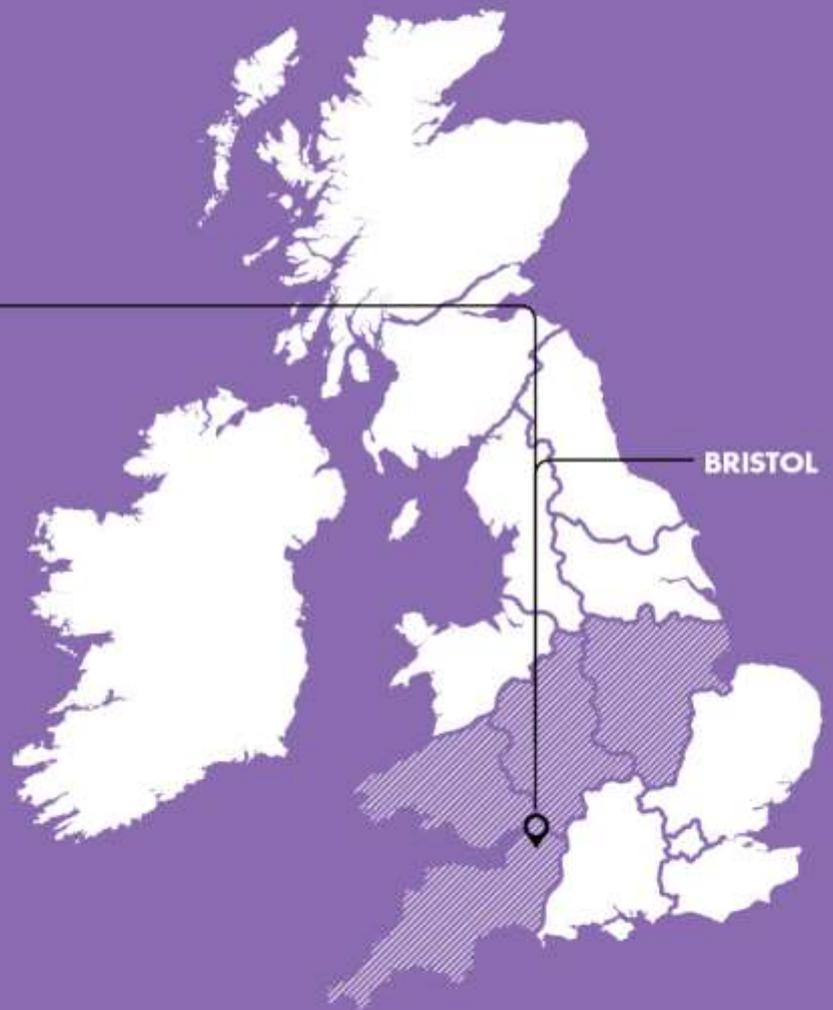


**PROJECT SOLA  
BRISTOL**



Report Title	:	Six monthly progress report Reporting period: June 2014 to November 2014
Report Status	:	FINAL
Project Ref	:	WPDT2003 – SoLa BRISTOL
Date	:	10.12.2014

<b>Document Control</b>		
	<b>Name</b>	<b>Date</b>
Prepared by:	Mark Dale	10.12.2014
Reviewed by:	Roger Hey	10.12.2014
Recommended by:	Paul Jewell	10.12.2014
Approved (WPD):	Philip Swift	10.12.2014

<b>Revision History</b>		
<b>Date</b>	<b>Issue</b>	<b>Status</b>
10.12.2014	1	FINAL

## Contents

1	Executive Summary.....	5
1.1	Business Case .....	5
1.2	Project Progress.....	6
1.3	Project Delivery Structure .....	6
1.3.1	Project Review Group .....	6
1.3.2	Resourcing.....	6
1.3.3	Collaboration Partners .....	6
1.4	Procurement.....	6
1.5	Installation.....	6
1.6	Project Risks .....	7
1.7	Project learning and dissemination.....	7
2	Project Managers Report.....	8
2.1	Project Background .....	8
2.2	Project Progress.....	9
2.2.1	Domestic Installation Progress .....	10
2.2.2	Commercial Installation Progress .....	12
2.2.3	Sub Station Installation Progress .....	13
3	Business Case Update .....	14
4	Progress against Budget .....	14
5	Successful Delivery Reward Criteria (SDRC) .....	16
5.1	SDRC 9.3 Installation and Commissioning of equipment.....	16
5.2	SDRC 9.4 Early Operational performance .....	16
5.3	SDRC 9.5 Measured Impact on the LV Network.....	16
5.4	Future SDRCs .....	16
6	Learning Outcomes .....	17
7	Intellectual Property Rights .....	17
8	Risk Management .....	17
8.1	Current Risks.....	18
8.2	Update for risks previously identified .....	20
9	Consistency with Full Submission .....	21
10	Accuracy Assurance Statement .....	21

### DISCLAIMER

Neither WPD, nor any person acting on its behalf, makes any warranty, express or implied, with respect to the use of any information, method or process disclosed in this document or that such use may not infringe the rights of any third party or assumes any liabilities with respect to the use of, or for damage resulting in any way from the use of, any information, apparatus, method or process disclosed in the document.

© Western Power Distribution 2014

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means electronic, mechanical, photocopying, recording or otherwise, without the written permission of the Future Networks Manager, Western Power Distribution, Herald Way, Pegasus Business Park, Castle Donington. DE74 2TU. Telephone +44 (0) 1332 827446. E-mail [WPDInnovation@westernpower.co.uk](mailto:WPDInnovation@westernpower.co.uk)

## Glossary

Term	Definition
BCC	Bristol City Council
KWMC	Knowle West Media Centre
UoB	University of Bath
WPD	Western Power Distribution
SOC	State of Charge
AC	Alternating Current
DC	Direct Current
LED	Light Emitting Diode
HV	High Voltage
LV	Low Voltage
PV	Photo Voltaic
SDRC	Successful Delivery Reward Criteria
LVD	Low Voltage Disconnect

## 1 Executive Summary

SoLa BRISTOL is funded through Ofgem's Low Carbon networks Second Tier funding mechanism. SoLa BRISTOL commenced in October 2011 and was originally planned to complete in Jan 2015.

This report details the progress of SoLa BRISTOL, focusing on the last six months, May 2014 to December 2014.

### 1.1 Business Case

The Low Voltage distribution network is designed to operate passively. We use an After Diversity Maximum Demand (ADMD) of connected customers to design the network to operate within statutory limits and technical capabilities regardless of time of day or season.

The traditional network designs and operating practices have to date been an efficient method to supply customers. However in the future with much higher distribution peaks and customers exporting generation into the network, it may no longer be the most efficient way to design and operate more complex networks. Innovation may provide improved methods.

The joint Energy Networks Association and Imperial College summary report "Benefits of Advanced Smart Metering for Demand Response based Control of Distribution Networks - version 2.0", April 2010 predicts the reinforcement of GB distribution networks with a like for like replacement strategy using conventional reinforcement will be significantly higher than using smarter network reinforcement techniques.

The report highlighted the greatest potential impact of smart appliances is at HV/LV substations and on the LV feeder. With a 50% penetration of electric vehicles and heat pumps by 2030 the predicted the scale of the LV reinforcement will be £21.8bn, compared to £9.3bn using smart grid techniques.

It is therefore appropriate to look at improving voltage profiles, reducing peaks and improving the power quality of the LV network using innovative techniques that allow the connection of significantly more micro generation and other LCTs to the distribution network without the need for conventional reinforcement.

## **1.2 Project Progress**

In the last six monthly report, 11 domestic installations were complete and one commercial premise. All the associated substations were also complete with the comms links operational.

During this reporting period (May 2014 – December 2014) SoLa BRISTOL has continued with the installations and now has 26 domestic installations complete and six commercial premises' installed and commissioned. All the associated substations are also complete with the comms links operational.

It has been decided that no further installations will be sought, to allow the project to focus fully on the data capture and analysis.

More detail on these and other project highlights can be found in the Project Managers report below.

## **1.3 Project Delivery Structure**

### **1.3.1 Project Review Group**

The SoLa BRISTOL Project Review Group met twice during this reporting period. A new project lead was introduced from BCC due to the original lead leaving the organisation. Staff safety on site was discussed following incidents on site (discussed in more detail in section **2.2.1** along with the difficulty in accessing some of the remaining installations.

### **1.3.2 Resourcing**

The project lead from BCC has been changed

### **1.3.3 Collaboration Partners**

All collaboration partners remain committed to the project, and are working well towards the common goals.

## **1.4 Procurement**

Contracts have been revised to take into account the new project timeline, WPD will not be requesting any additional LCNF funding for this.

## **1.5 Installation**

Over the summer holiday period, all 4 chosen schools had their Sola Bristol installations completed and commissioned, along with a further 15 domestic homes. Several issues and learning points have arisen during these works and these are discussed further in the project manager's report below.

## 1.6 Project Risks

The Project Manager takes a proactive role in ensuring effective risk management for SoLa BRISTOL. They ensure that processes have been put in place to review whether risks still exist, whether new risks have arisen, whether the likelihood and impact of risks has changed, and report significant changes which adjust risk priorities and deliver assurance of the effectiveness of control.

Contained within Section 8.1 of this report are the current top risks associated with successfully delivering SoLa BRISTOL as captured in our Risk Register along with an update on the risks captured in our last six monthly project report. Section 8.2 provides an update on the most prominent risks identified at the project bid phase.

## 1.7 Project learning and dissemination

Project lessons learned and what worked well are captured throughout the project lifecycle. These are captured through a series of on-going reviews with stakeholders and project team members, and will be shared in lessons learned workshops at the end of the project. These are reported in Section 6 of this report.

During this reporting period we have shared our learning from SoLa BRISTOL through events we have spoken at.

In addition to this we have shared our learning (where applicable), through discussions and networking at a number of knowledge sharing events hosted by other organisations.

**Table 1-1 - Contribution to knowledge sharing events hosted by other organisations**

<b>Event Title</b>	<b>Date</b>	<b>Host</b>	<b>Contribution</b>
Community Storage workshop	24/09/2014	Nottingham Uni	Attendee
WS6 Knowledge Sharing	13/10/2014	OFGEM	Attendee
WS6 Knowledge Sharing	16/10/2014	OFGEM	Presenter
LCNI Conference (3days)	20/10/2014	ENA	Presenter
Balancing Demand & Generation	20/11/2014	WPD	Presenter
Customer Focused Workshop	25/11/2014	KWMC/UoB	Attendee

## 2 Project Managers Report

### 2.1 Project Background

SoLa BRISTOL is an alternative method to enable high density photo voltaic solar generation to connect to the low voltage network more efficiently through using an in home battery and variable tariffs. The project aim is to address the technical constraints that DNOs expect to arise on Low Voltage networks as a result of the adoption of solar PV panels. The trial uses in-home battery storage to provide benefits to customers and aid the DNO with network management. Thirty houses, ten schools and an office will have solar PV and a battery installed. The solar PV will be connected directly to the battery using a DC connection. The AC lighting circuits in the premises will also be converted to DC to enable customers to run small appliances on DC directly from the PV/battery. The battery will be “shared” between the customer and the DNO. The customer will be provided with a 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 will be able to communicate with the battery to charge and discharge it to help with network management.

The project will aim to:

- solve the network problems which arise when a number of customers in a local area connect PV solar panels to their house
- investigate how a battery installed in the home can help customers to manage their energy usage and save money on their bills
- test how customers respond when offered different electricity tariffs throughout the day
- explore the benefits of utilising direct current (DC) in the home, rather than the traditional alternating current (AC).

## 2.2 Project Progress

New Project Plan as per the recently approved Change Request.

Table 2-1 - New Project Plan

	2013	2014												2015												
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
<b>Siemens</b>																										
Equipment Design	Completed																									
Factory Acceptance Testing		Completed																								
<b>WPD</b>																										
Recruitment (not selected)	Completed																									
Site Survey (EcoHome only)	Completed																									
Site Survey 2 & 3rd homes	Completed																									
Initial EcoHome Installation	Completed																									
Installation 2 & 3rd homes	Completed																									
Ofgem Reports for approval	Completed																									
Full Recruitment			Completed	Completed																						
Site Survey				Completed	Completed																					
Domestic Installation				Completed	Completed	Completed	Completed	Completed	Completed																	
Commercial Installation				Completed	Completed		Completed	Completed	Completed																	
SDRC 9.3																										
SDRC 9.4																										Proposed
SDRC 9.5																										Proposed
SDRC 9.6																										Proposed
SDRC 9.7																										Proposed
SDRC 9.8																										Proposed

Completed

Proposed

Table 2-2 - Progress to date - Key Outputs and Milestones

Due Date	Type	Description	Status
15/12/2012	Report	Initial Installation Report R2	Received 23/09/13
02/09/2013	Document	Data Protection Plan	Approved 17/12/13
02/09/2013	Document	Customer Engagement Plan	Approved 17/12/13
30/09/2012	Report	Combined domestic FAT report M3	Received 14/2/14
30/09/2012	Report	Commercial FAT report M3	Received 10/4/14
13/06/14	Report	6 monthly PPR	Received 13/06/14
01/09/14	Milestone	Final School commissioned	
17/11/14	Milestone	Office commissioned	
18/11/14	Milestone	Final House Commissioned	

### 2.2.1 Domestic Installation Progress

The Planned phased rollout of domestic installations continued over the summer period and was completed in September, with 25 properties installed and commissioned. The final (26<sup>th</sup>) house was commissioned on 18/11/14

### Technical Issues

Following on from the previous issue where the battery was fully discharged, due to a failure to charge via the mains, a Low Voltage Disconnect (LVD) relay has been installed on all systems as a failsafe to protect the battery from such an event in the future.

An emergency AC to DC power pack has also been incorporated, allowing a quick changeover to restore lighting in the event of a problem with the system.

There have been technical issues that have resulted in the power pack being used on six occasions:

- **House 06** LVD operated as the State of Charge (SOC) of the battery was not high enough to prevent the DC voltage dropping below the cut-out limit. This was because this home was on the E7 tariff so was electrically heated. The settings have been adjusted and no further problems have been encountered.
- **House 19** LVD operated on 2 separate occasions due to this house having an exceptionally high load during the day. There are 3 generations living in this house and the load is high and constant throughout the day, giving little time for the PV to supplement the battery charging regime. Settings were changed in line with H06 above, but the system failed again. This property is now subject to investigation to see if a unique setting can be found to maintain the system and benefit the customer.
- **House 14** Lighting failed, we believe due to the key meter running out of credit and the customer keeping the lights on, unfortunately the LVD device appears to have failed as the battery was completely discharged. Due to the unreliability of the tenant and some personal issues, it has proved very difficult to gain access and to determine the state of the system. This property will be removed from the project and the equipment diagnosed at a later date.
- **House 02, 15 & 26** in these 3 properties the LVD operated after a prolonged period of overcast weather causing little PV generation. The SOC minimum and Target have been raised to 40% and 70% respectively with no further issues.

In view of the fact that there have been several incidents of LVD operation, following this prolonged period of overcast weather. All domestic properties have had their settings updated to compensate. This will be analysed by the UoB to see if there is a need for a separate “winter” and “summer” setting.

### Staff security Issues

There have been several issues on site where the safety of Sola Bristol staff has been an issue:

- During commissioning of a domestic property unbeknown to the commissioning team, the tenant left the property with the team in the loft, with a large dog still present in the house. The team were understandably reluctant to come out of the loft with the dog uncontrolled in the house. KWMC were called and asked to contact the customer and request they return to the house to secure the dog.
- Access was required to another property to diagnose and correct a LVD operation. An appointment was made, but the customer was not prepared to grant access at the allotted time. The team returned later and access was granted. At one point the team needed some equipment, so left the property only to return later and find no one home, despite explaining that they had not finished. The tenant in question was seen walking in the street, so was asked if access could be granted to finish the work. At first the customer completely ignored the request. They were with a group of people and all seemed to be under the influence of alcohol /drugs. After some minor abuse the team were let back in, where they made the system safe and connected the AC/DC power supply and left the property with the system disconnected.
- A third incident occurred when the team were leaving a property after commissioning, only to be confronted by a group of residents, who had been drinking, and were accused of being undercover police officers. There were several threats made, and despite wearing prominent ID cards and corporate clothing, it was difficult to get the residents to understand what the team were doing.

As a result of the above incidents it has been agreed that on no circumstances are any staff to visit homes alone. All future visits will be by appointment only, through KWMC, and a representative from KWMC will remain on site for the duration of the visit.

### 2.2.2 Commercial Installation Progress

Prior to the summer break, four schools had signed up to take part in the Sola Bristol project. The training room at KWMC had been previously installed and commissioned, and will be included in the analysis as it is representative of a school classroom during term time.



Figure 2-1- Training room at KWMC



Figure 2-2 - School External Battery Cabinet

The BCC confirmed in September that the planned office installation could go ahead, as it had been agreed that this office will be staying in the ownership of the council.

PV has been installed along with the Sola Bristol equipment and this was completed and commissioned on 17<sup>th</sup> Nov.



Figure 2-3 - Office with LED lighting



Figure 2-4 - Office commissioning

### Technical Issues

- LED Lighting

The original DC LED drivers, installed in KWMC in April, proved to be unreliable, with several failures in the first month.

New drivers were tested and installed by the manufacturer (ZETA), and these have proved reliable. However the new drivers take more load than the original ones so the DC lighting load has needed to be split over a greater number of circuits than originally planned. In addition to this the light switches provided were only tested for 6A DC, so they needed to be re tested and approved to cover the 10A required. These changes have resulted in more work and higher installation costs than expected, but should not impact on the overall project budget.

- Commercial Property 03.

This school has, by far, the largest ICT load of the four schools, with 31 desk top PC's. The original PC's used a 230v/19v AC/DC power supply, so the Sola Bristol solution was to use several 24v/19v DC/DC power supplies. This enabled us to keep the original desk tops. The monitors however, were 230v AC units, so these had to be replaced with new 19v units. After commissioning the LVD operated on 2 occasions, due to the combined ICT and LED lighting DC load being greater than the charge current allowed for the battery. Settings were changed to increase the charge current and allowing the SOC to be maintained even at full DC demand. The system has operated without incident since this change.



Figure 2-5 - School classroom with DC desktop computers

### 2.2.3 Sub Station Installation Progress

All domestic and commercial sub stations are now installed commissioned and online. Data is being received.

### 3 Business Case Update

No changes to the business case have been forecast at this stage. However, the increasing interest in energy storage beyond the meter has led to the IET investigating the requirement for standards / guides. This will significantly help the adoption of energy storage beyond the meter.

Data is now available for the UoB to commence the Business case analysis.

### 4 Progress against Budget

**Error! Reference source not found.** below reflects the new project budget subject to the approved change request.

Table 4-1 - Progress against budget

		New Total Budget	Expected spend Nov 2014	Actual Spend Nov 2014	Variance over period	Variance over period	Comment
1	BCC Project Management	<b>60.00</b>	50.48	50.48	-	0%	
2	Detailed Installation Survey and Planning	<b>50.00</b>	50.00	1.38	48.62	-97%	See Note 1
3	Training and Installations	<b>166.00</b>	166.00	170.58	4.58	3%	
4	Trial Property Recruitment, equip, maintenance and ongoing support	<b>159.50</b>	115.69	115.69	-	0%	
5	Equipment Decommissioning	<b>161.00</b>	-	-	-	0%	
6	Scope Change Contingency	<b>49.00</b>	36.25	36.25	-	0%	
7	Data Communications Manager and LV Network Manager	<b>20.00</b>	20.00	19.83	0.17	-1%	
8	Distribution Sensing Equipment	<b>11.00</b>	11.00	11.44	0.44	4%	
9	Customer Sensors Equipment	<b>2.00</b>	2.00	2.86	0.86	43%	See Note 2
10	Overall Project Manager	<b>151.20</b>	136.84	136.84	-	0%	
11	Substataion Installation	<b>29.00</b>	15.45	15.45	-	0%	

12	Battery Charging Costs	<b>9.00</b>	-	-	-	0%	
13	Variable Tarriffs	<b>9.00</b>	-	-	-	0%	
14	DC Meters	<b>5.00</b>	4.00	4.00	-	0%	
15	System Design and Engineering	<b>128.39</b>	128.39	139.38	10.99	9%	
16	Domestic Premises Equipment	<b>345.49</b>	345.49	399.57	54.08	16%	See note 3
17	School Equipment	<b>153.02</b>	153.02	166.60	13.58	9%	
18	Office Equipment	<b>25.01</b>	25.01	27.22	2.21	9%	
19	Substation Equipment	<b>144.29</b>	144.29	157.89	13.61	9%	
20	Data archiving and Access equipment	<b>73.67</b>	73.67	80.58	6.90	9%	
21	Installation, commissioning and operation support	<b>141.64</b>	141.64	153.86	12.22	9%	
22	Smart Appliances ICT Equipment	<b>30.00</b>	-	-	-	0%	
23	Input to smart tariff	<b>107.41</b>	85.21	85.21	-	0%	
24	input to network design	<b>154.89</b>	122.88	122.88	-	0%	
25	Dissemination planning	<b>59.25</b>	47.00	47.00	-	0%	
26	Workshops	<b>12.00</b>	9.52	9.52	-	0%	
27	School engagement	<b>24.00</b>	19.04	19.04	-	0%	
		<b>2,281</b>	<b>1,902.88</b>	<b>1,973.55</b>	70.67	4%	

**Note 1.** Awaiting invoice from BCC to include Survey and planning

**Note 2** Costs for C.T's were higher than expected, these costs may be moved to contingency costs at a later date

**Note 3** Extra costs for LVD, Voltmeter and LED display have contributed to overspend, these costs may be moved to contingency at a later date

It is expected that all costs will be within +/- 10% at project end.

## 5 Successful Delivery Reward Criteria (SDRC)

In the previous 6 monthly report it was proposed to reschedule the SDRC's to reflect the change in the project timeline due to the delays explained in the approved change request. The latest updated SDRC situation is reported below:

### 5.1 SDRC 9.3 Installation and Commissioning of equipment

The original due date from the full submission was 30<sup>th</sup> April 2013 for the domestic and office properties and the 31<sup>st</sup> August 2013 for the schools. This SDRC is now complete with 26 domestic properties, 4 Schools and the training room at KWMC and 1 office installed and commissioned.

### 5.2 SDRC 9.4 Early Operational performance

In line with the new project plan (Table 2-1) this SDRC is due on 31<sup>st</sup> December 2014.

### 5.3 SDRC 9.5 Measured Impact on the LV Network

In line with the new project plan (Table 2-1) this SDRC is due on 31<sup>st</sup> May 2015.

### 5.4 Future SDRCs

**Error! Reference source not found.** captures the remaining SDRCs for completion in line with the new project plan (Table 2-1).

Table 5-1 - SDRCs to be completed

SDRC	Status	Due Date	Comments
9.6 Customer Opinions	Green	30/11/2015	Change request new due date 30/11/2015
9.7 Power Outages	Green	01/06/2015	Change request new due date 01/06/2015
9.8 Final Report	Green	31/01/2016	Change request new due date 15/01/2016

Status Key:	
Red	<Major issues – unlikely to be completed by due date>
Amber	<Minor issues – expected to be completed by due date >
Green	<On track – expected to be completed by due date>

## 6 Learning Outcomes

Following on from the domestic issues with the LVD operation, it has become apparent that the load profile of some of the households is not a typical domestic profile. As a result the charging/discharging algorithms, initially set up, were not sufficient to maintain the required SOC once the PV support was reduced due to weather conditions. Changes to the minimum and target SOC have been required to compensate for these abnormal loads.

Similarly with the commercial property with the highest load, unique settings have been imposed to compensate.

The security issues mentioned above have highlighted the difficulties of working in an area of high poverty and unemployment.

An early learning report is due to be published by 31<sup>st</sup> December 2014. This will record the early operational performance of the system and guide the project team on future decisions to optimise the performance.

## 7 Intellectual Property Rights

No relevant foreground IP has been identified and recorded in this reporting period

## 8 Risk Management

Our risk management objectives are to:

- ensure that risk management is clearly and consistently integrated into the project management activities and evidenced through the project documentation;
- comply with WPDs risk management processes and any governance requirements as specified by Ofgem; and
- anticipate and respond to changing project requirements.

These objectives will be achieved by:

- ✓ defining the roles, responsibilities and reporting lines within the team for risk management
- ✓ including risk management issues when writing reports and considering decisions
- ✓ maintaining a risk register
- ✓ communicating risks and ensuring suitable training and supervision is provided
- ✓ preparing mitigation action plans
- ✓ preparing contingency action plans
- ✓ regular monitoring and updating of risks and the risk controls.

### 8.1 Current Risks

The SoLa BRISTOL risk register is a live document and is updated regularly. There are currently ten live project related risks. Mitigation action plans are identified when raising a risk and the appropriate steps then taken to ensure risks do not become issues wherever possible. In Table 8-2, we give details of our top five current risks by category. For each of these risks, a mitigation action plan has been identified and the progress of these are tracked and reported.

Table 8-1 - Graphical view of Risk Register

0	0	0	0	0
0	0	0	0	0
0	0	1	0	0
1	0	2	3	0
0	0	2	0	1
1. Insignificant changes, re-planning may be required	2. Small Delay, small increased cost but absorbable	3. Delay, increased cost in excess of tolerance	4. Substantial Delay, key deliverables not met, significant increase in time/cost	5. Inability to deliver, business case/objective not viable

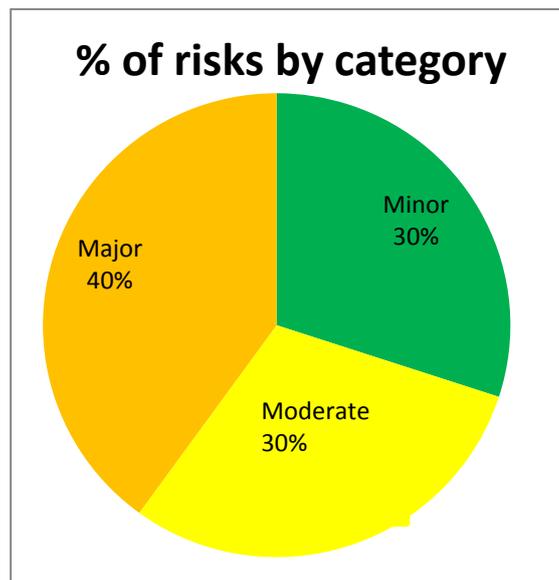


Figure 8-1- Percentage of risks by category

Table 8-2 - Top five current risks (by rating)

Risk	Risk Rating	Mitigation Action Plan	Progress
<b>R005</b> Our partners and supporters perceptions on the project may change	Major	Work with all project partners and supporters throughout the design and development of the project. Ensure communications are clear and the objectives are known. Send final submission to project partners before submission.	BCC have now confirmed project manager appointed until project end date
<b>R018</b> Over 25% of customer/s wish to terminate the trial before 18 months	Major	Engagement specialists KWMC will keep customers interested throughout the project.	Ongoing risk as project develops. No indication of this becoming an issue
<b>R029</b> Access to homes denied, to make system changes following early learning	Major	KWMC and monthly updates to keep customers engaged	<b>New Risk</b> following final installations
<b>R031</b> communication between the LV network manager and the data repository is unreliable causing holes in data capture	Major	Early identification of any issues reported by UoB and acted upon	<b>New Risk</b> following final installations and commencement of Data Analysis
<b>R022</b> Communications between the LV connection manager and LV network manager is unreliable	Moderate	A robust communications network will be installed and tested before installation.	Comms working but a few issues with reliable connection

## 8.2 Update for risks previously identified

Descriptions of the most significant risks, identified in the previous six monthly progress report, are provided in Table 6 with updates on their current risk status.

Table 8-3 -Top five risks identified in previous six monthly report

Risk	Previous Risk Rating	Current Risk Rating	Comments
<b>R002</b> Energy efficient smart appliances used for demand response are not available in the UK when required or appliances cannot be retrofitted (making them smarter)	Moderate	Closed	No smart appliances used. Usb charging of electronic goods only
<b>R004</b> When surveying properties, the BRISTOL scope of works must change, resulting in unanticipated cost variations	Moderate	Closed	All installations complete
<b>R006</b> Thirty homes do not volunteer to participate in BRISTOL in one area, connected to one distribution substation.	Moderate	Closed	25 homes have been installed and commissioned. No more are to be recruited
<b>R007</b> Ten schools do not volunteer to take part in the project.	Severe	Closed	4 schools have been installed along with the training room at KWMC . UoB have provided a letter of support stating that the smaller sample size will be sufficient.
<b>R009</b> Bristol City Councils M&E teams or normal qualified electrical contractors are unable to install and maintain the premises BRISTOL equipment	Moderate	Closed	All installations are now complete

Descriptions of the most prominent risks, identified at the project bid phase, are provided in Table 8-4 with updates on their current risk status.

Table 8-4 -Top risks identified at the project bid phase in addition to those mentioned above

Risk	Previous Risk Rating	Current Risk Rating	Comments
<b>R014</b> There is no suitable location to store the equipment in homes, schools and an office.	Major	Closed	Risk closed. All properties surveyed and suitable locations found. External cabinet designed for commercial properties.
<b>R015</b> The AC wiring in homes, schools and the office are cannot be converted to DC operation	Major	Closed	Risk closed. ERA report commissioned and AC wiring deemed suitable for DC.

## 9 Consistency with Full Submission

A formal Change Request has been submitted (CCR 04) to extend the time line of the project and all the relevant SDRC's, following delays encountered.

## 10 Accuracy Assurance Statement

This report has been prepared by the SoLa BRISTOL Project Manager (Mark Dale), reviewed by the Future Networks Team Manager (Roger Hey), recommended by the Policy Manager (Paul Jewell) and approved by the Operations Director (Philip Swift).

All efforts have been made to ensure that the information contained within this report is accurate. WPD confirms that this report has been produced, reviewed and approved following our quality assurance process for external documents and reports.

