



Bluefield services

ASSET MANAGEMENT

13 June 2018



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Leader in Solar Asset Management

Bluefield Services' highlights¹

- Established May 2015
- Over 24 professionals with extensive and complementary experience
- A portfolio of more than 500MW of operational solar PV assets.
- A total of 88 projects with sizes ranging from 50kW to 50MW.
- 51 operational Special Purpose Vehicles (SPVs) under management.
- Currently managing well in excess of 500 operational agreements.



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Over 5.6GW of management experience in renewable infrastructure

Renewable energy experience in the main areas of operation



Asset Management:

The team members have previously managed over **225 solar PV plants**, totalling **1.3 GW** and ranging in size from rooftop to utility scale installations.



Operation & Maintenance:

Experience of **over 900 MW** and more than 200 small and utility scale projects.

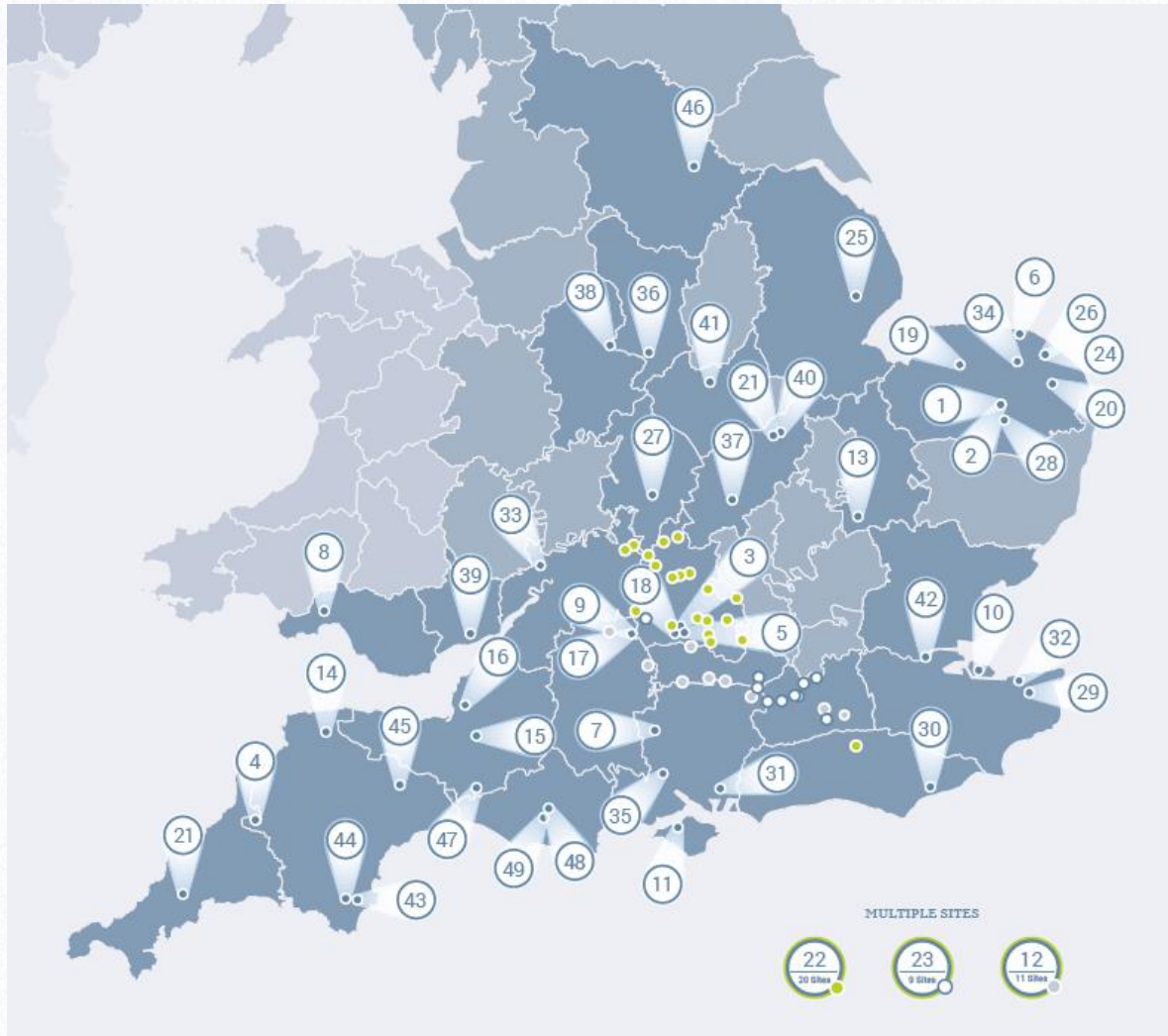


Construction/Design/Development:

Specialist solar PV teams with experience in all stages of development, construction, commissioning and testing acceptance for over **2.1 GW** of renewable energy assets.

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BSL's current portfolio in the UK¹



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BSL

BSL's mission

“To preserve and enhance the value of the solar assets by providing high quality, full scope asset management services, aligning BSL's and the asset owner's interests for the long term.”

Focus on results

- Reducing operational downtime.
- Improving Stakeholder interaction and relationships.
- Technical and procedural optimisation.
- Ensuring compliance to operational, contractual and regulatory obligations.
- Improving SPV cash flow.



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BSL offers a full array of services tailored to the asset's needs

BSL's core competences

- ✓ H&S Management
- ✓ Monitoring
- ✓ Performance improvement
- ✓ Operations management
- ✓ Site Inspections
- ✓ Reporting (financial and operational)
- ✓ Warranty and insurance management
- ✓ Ongoing contract management
- ✓ Ongoing management of planning obligations
- ✓ Interface with DNO, Ofgem, PPA, landlords etc.
- ✓ Financial (management & review of revenues and Opex cycle)
- ✓ Regulatory Services





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MONITORING PROCESS



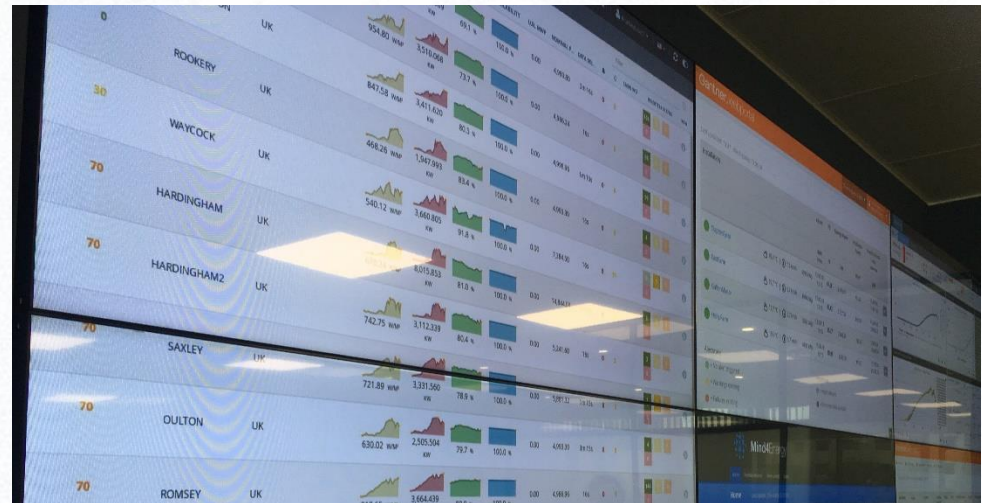
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Monitoring and Fault Finding Process (I)

Step 1 - Daily supervision of monitoring systems:

- BSL's control centre allows to remotely check the status of any plants under management globally, in real time, from the headquarters in Bristol.
- This is the most effective and sophisticated method of identifying faults or underperformance.



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Monitoring and Fault Finding Process (II)

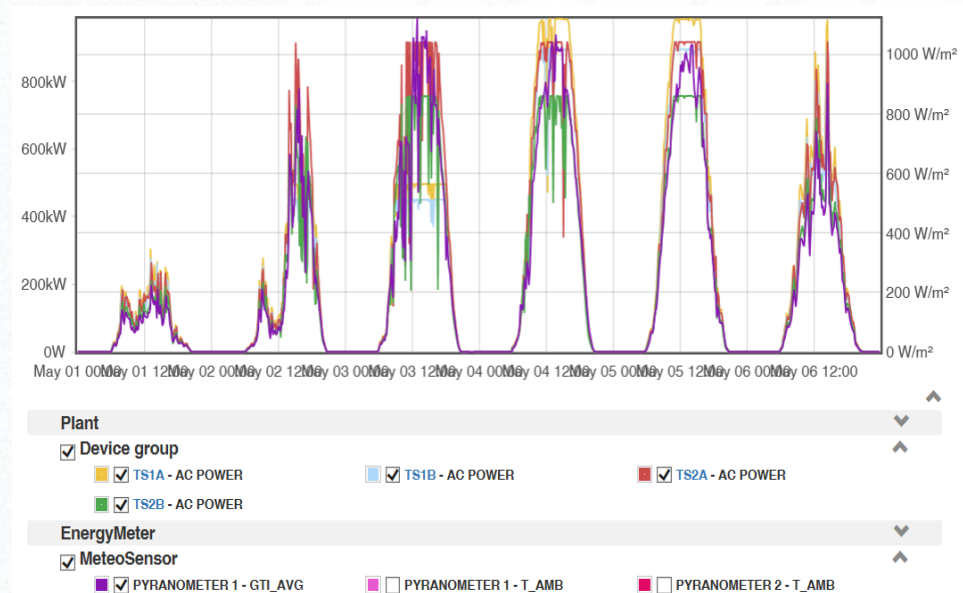
Step 2 – Inform the O&M services provider:

- BSL liaises directly with the O&M contractor to immediately bring into attention any fault or underperformance spotted during the initial system checks.
- BSL minimizes operational downtime due to the synchronization with the O&M provider.



Step 3 - Further analysis of the fault:

- The engineering team checks the irradiation and production curves in extensive detail, going back in time as needed to confirm the extent of the issue.



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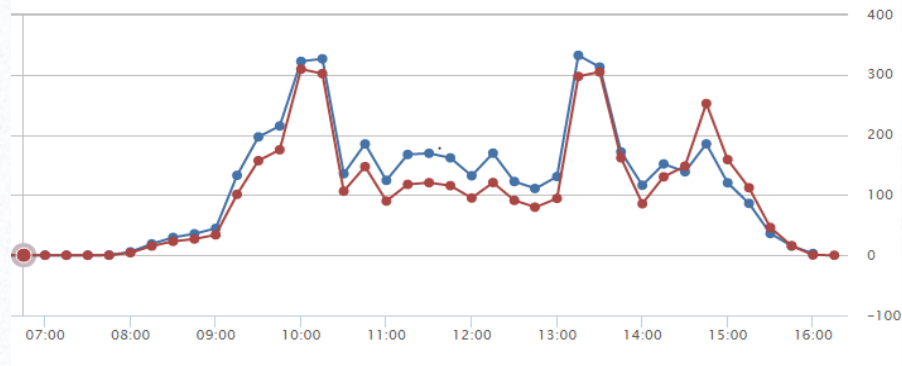
Monitoring and Fault Finding Process (III)

Step 4 - O&M services provider follow-up

- After engaging the O&M contractor, BSL maintains a continues line of communication, ensuring that the repairs and fixes are progressing in accordance to the timescales set forth in the O&M contract.
- In addition, BSL will also review the warranty period and terms & conditions of the equipment.

Step 5 - Confirm details of the works

- If the tasks under consideration are considered of “high risk” (e.g. switchgear replacement), BSL will do a thorough review of the risk assessment and method statement.
- In addition, BSL personnel will attend the site to oversee the process.



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Monitoring and Fault Finding Process (IV)



Step 6 - Enhanced monitoring of the repair:

- Following remedial works, BSL will closely monitor the affected equipment to avoid any recurring incidence or other damage related to the original or associated faults.

Step 7 - Quality checks:

After the task is completed:

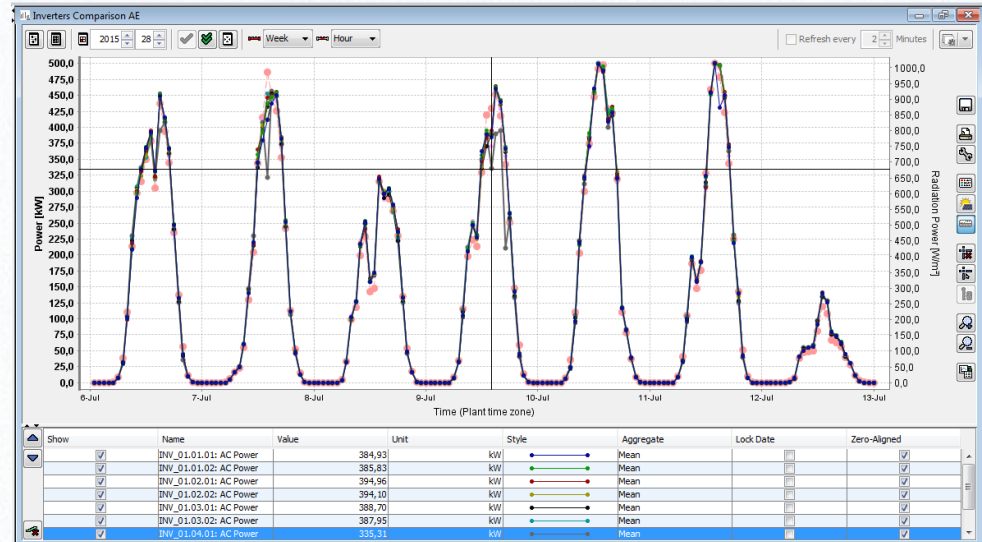
- BSL will inspect and assess the repaired or replaced element/s *in situ*.
- BSL will also verify that the O&M contractor followed the pre-agreed procedures.

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Monitoring and Fault Finding Process (V)

Step 8 – Closing the loop and continuous improvement:

- Following the completion of any major works, the performance of contractors and the BSL team is reviewed to determine if any improvement is required.



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BSL provides periodic reporting for each project under management

The aim of the reporting is:

- To assess the overall technical performance of each project.
- To measure the adherence to the agreed KPIs—including both financial and technical.
- To support the reporting requirements under the various financial agreements in place.
- To ensure that any actions required by the teams are tracked to completion.

Figure 4: Monthly PR (%)

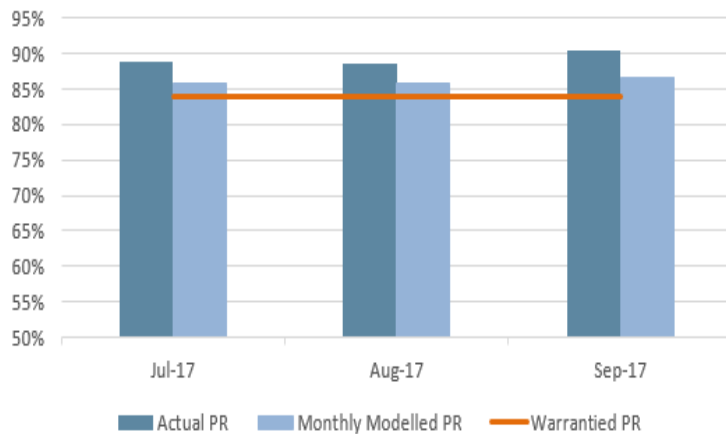
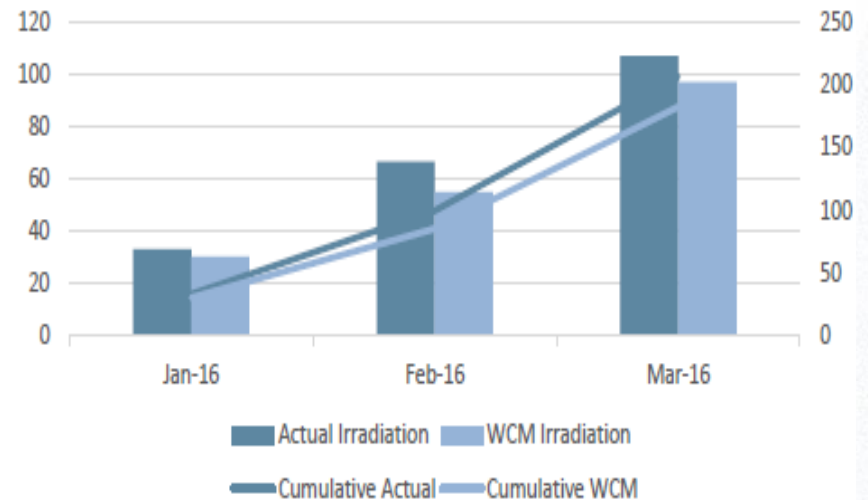


Figure 2: Monthly irradiation (kWh/m²)

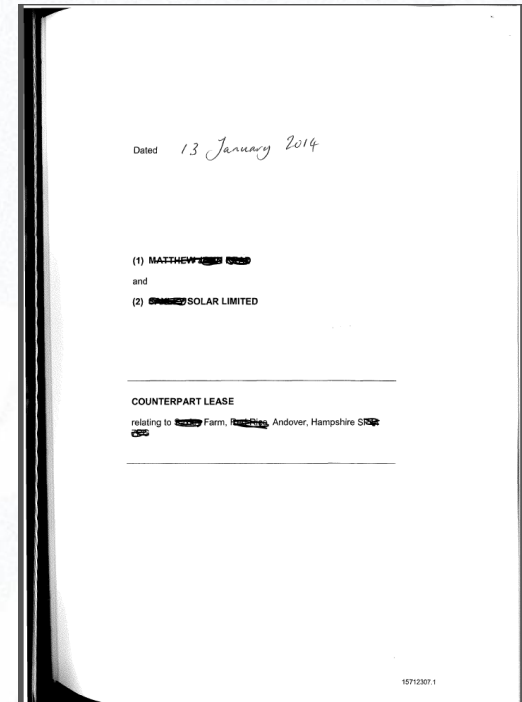
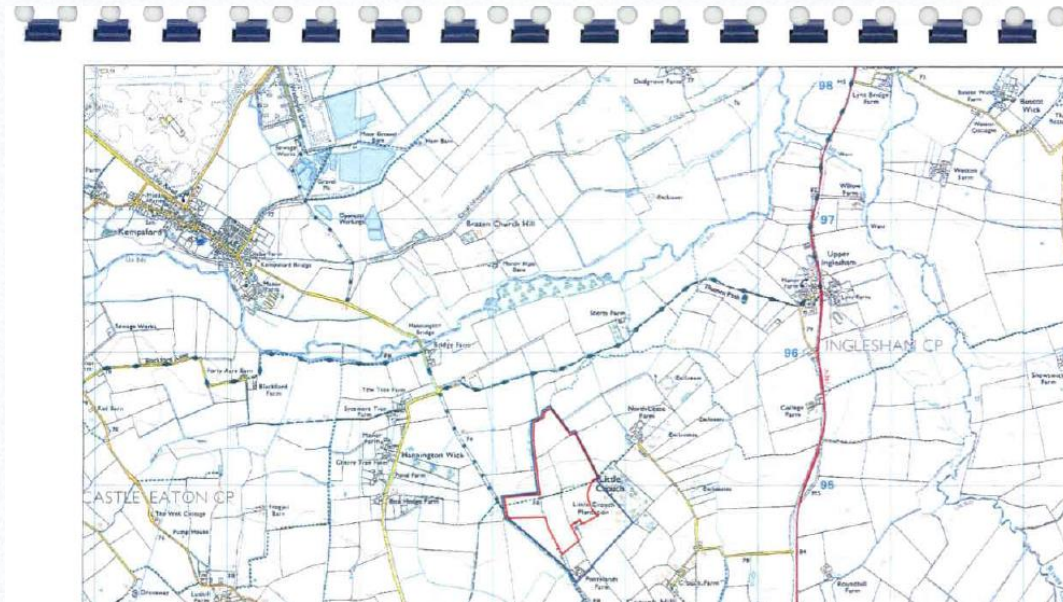


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Stakeholder management

Stakeholder management involves:

- ✓ Payment of rent
- ✓ RPI increase letters
- ✓ Reconciliations of turnover rents
- ✓ Community payments



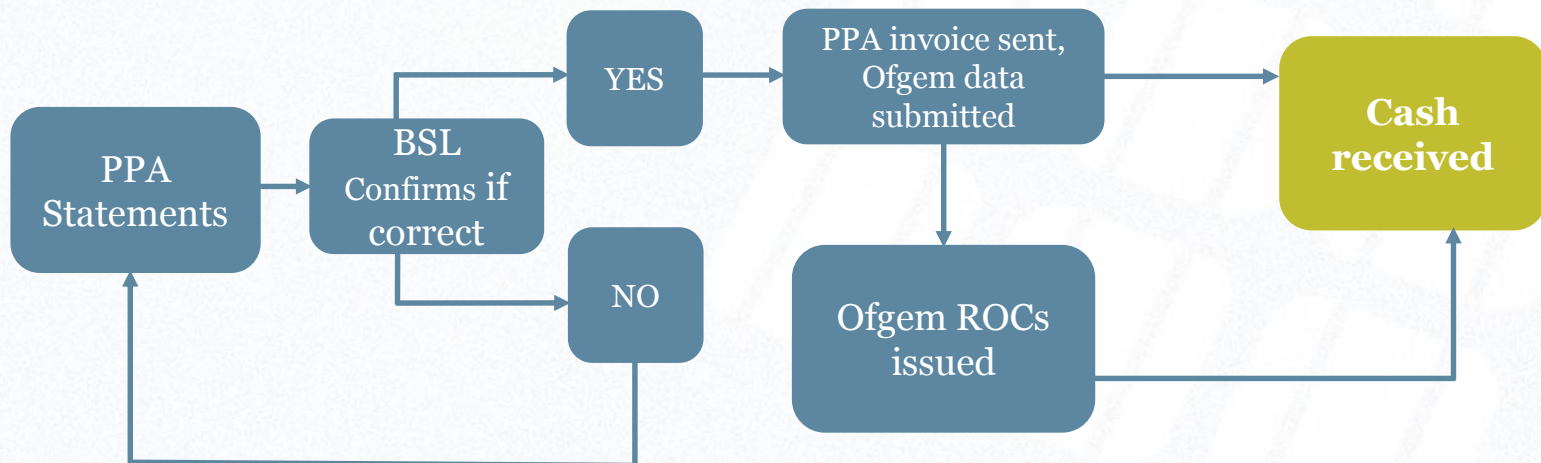
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Finance

Key focus areas of the finance team

- Ensure the integrity of the financial system by facilitating accurate processing and timely management accounts preparation.
- Revenue, cash management and cash flow forecasting.
- Company secretarial.
- Liaison with external auditors to ensure an efficient year end process.

Revenue stream diagram



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Success stories

Financial benefit	The issue	The solution
£370k	Missing generation data due to meter faults	BSL picked up all interfaces with the PPA provider, OFGEM, the meter operator and the data collector. Coordination and the transfer of information among all parties resulted in no loss of revenue.
£180k	DNO meter was recording 11% under the actual production values	After the EPC Contractor replaced faulty CT's, BSL picked up all interfaces with the PPA provider, OFGEM, the meter operator and the data collector. Coordination and the transfer of information among all parties resulted in no loss of revenue.
£100k	Recurring RISO Faults	BSL narrowed down the cause to MC4 Connectors sitting in wet areas. They were all moved off the structure.
£135k	Insurer paying out on repair due to design fault	BSL ensured that all relevant contractors were involved to re-design, purchase, deliver and install new suitable materials on site. BSL promptly raised the claim to the insurer, After four months of negotiation and chasing, the Insurer paid the full loss of revenue.
£39k	Availability charge incorrectly calculated by the Power Supplier	During the monthly checks carried out on the PSA invoices, incorrect values appeared in several invoices for the availability charge. BSL rejected such invoices that were then amended by the supplier. Over a year £39k was saved.
£25k	PPA Seasonal pricing incorrectly applied by the PPA provider	During the monthly checks carried out on the PPA statements, a large number of seasonal pricing errors have been rectified. These errors seldom occur on the borders of where the pricing changes between the seasons.



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OPERATION & MAINTENANCE: A NEW APPROACH



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Beyond standard O&M providers

Scope of work

- Preventative Maintenance
- Corrective Maintenance
- Extraordinary Maintenance
- Landscape Management
- Module cleaning
- Monitoring – real time
- Project Management
- Reporting
- Spare Parts Management
- Warranty Claim Management
- Insurance Claim Management
- Site security



Predictive Maintenance **Condition Based Maintenance**

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Objectives

Predictive Maintenance

- Allows operators to predict when possible failures might occur and plan preventative maintenance accordingly to prevent them.
- Consequently, asset owners will benefit from reduced operational downtimes and lower corrective maintenance costs.

Condition Based Maintenance

- This strategy focuses on monitoring the conditions of the assets and the equipment to plan the maintenance activity accordingly, ensuring that maintenance tasks are performed on as-needed basis.
- Conditional based maintenance will allow to increase the Mean Time Between Repairs (“MTBR”).
- The asset owner also benefits from minimal spare parts requirement and corrective maintenance costs.



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BSL's current portfolio in the UK¹

MAP	PROJECT	MWp	LOCATION	SUBSIDY	INVESTMENT DATE	COMMISSIONING DATE
1	Hardingham	14.9	Norfolk	1.6 ROC	Sep 2013	Dec 2013
2	Hardingham X	5.2	Norfolk	1.4 ROC	Nov 2014	Feb 2015
3	Goosewillow	16.9	Oxfordshire	1.6 ROC	Aug & Nov 2013	Mar 2014
4	North Beer	6.9	Cornwall	2 ROC	Oct 2013	Mar 2013
5	Hill Farm	15.2	Oxfordshire	1.6 ROC	Oct 2013	Feb 2014
6	Hall Farm	11.4	Norfolk	1.6 ROC	Dec 2013	Mar 2014
7	Saxley	5.9	Hampshire	1.6 ROC	Dec 2013	Mar 2014
8	Betingau	10.0	Glamorgan	1.6 ROC	Dec 2013	Mar 2014
9	Pentylands	19.2	Wiltshire	1.6 ROC	Feb 2014	Mar 2014
10	Sheppey	10.6	Kent	1.4 ROC	Jan 2014	Jun 2014
11	Durrants	5.0	Isle of Wight	FiT	Sep 2014	Jul 2011
12	Goshawk	1.1	Surrey / Oxfordshire	FiT	Sep 2014	Jul 2012 - Apr 2013
13	Hoback	17.5	Hertfordshire	1.4 ROC	Jun 2014	Nov 2014
14	Capelands	8.4	Devon	1.4 ROC	Aug 2014	Mar 2015
15	Redlands	6.2	Somerset	1.4 ROC	Aug 2014	Mar 2015
16	Ashlawn	6.6	Somerset	1.4 ROC	Dec 2014	Mar 2015
17	Roves	12.7	Wiltshire	1.4 ROC	Dec 2014	Mar 2015
18	Elms	28.9	Oxfordshire	1.4 ROC	Feb 2015	Mar 2015
19	West Raynham	50.0	Norfolk	1.4 ROC	Mar 2015	Mar 2015
20	Salhouse	4.8	Norfolk	1.3 ROC	Jul 2015	Oct 2015
21	Trethosa	5.0	Cornwall	FiT	Jul 2015	Sep 2015
22	Butteriss	0.8	Oxfordshire	FiT	Aug 2015	Between Mar & Jul 2012
23	Promothames	0.4	Surrey / Hampshire	FiT	Aug 2015	Between Mar & Jul 2012
24	Bunns Hill	5.0	Norfolk	1.3 ROC	Dec 2015	Feb 2016
25	Folly Lane	4.8	Lincolnshire	1.3 ROC	Dec 2015	Feb 2016

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MAP	PROJECT	MWp	LOCATION	SUBSIDY	INVESTMENT DATE	COMMISSIONING DATE
26	Frogs Loke	5.0	Norfolk	1.3 ROC	Dec 2015	Dec 2015
27	Tollgate Farm	4.3	Warwickshire	1.3 ROC	Jan 2016	Mar 2016
28	Rookery	5.0	Norfolk	1.3 ROC	Jan 2016	Feb 2016
29	Littlebourne	17.0	Kent	1.4 ROC	Jan 2016	Oct 2014
30	Pashley	11.5	Sussex	1.4 ROC	Jan 2016	Feb 2015
31	Southwick	47.9	Hampshire	1.4 ROC	Jan 2016	Mar 2015
32	Molehill	18.0	Kent	1.4 ROC	Jan 2016	Mar 2015
33	The Grange	5.0	Gloucestershire	1.3 ROC	Feb 2016	Mar 2016
34	Oulton	5.0	Norfolk	1.3 ROC	Feb 2016	Feb 2016
35	Romsey	5.0	Hampshire	1.3 ROC	Feb 2016	Mar 2016
36	Burnaston	4.1	Derbyshire	FIT	Apr 2016	Jul 2011
37	Kislingbury	5.0	Northamptonshire	1.2 ROC	Dec 2016	Mar 2017
38	Willows	5.0	Staffordshire	1.2 ROC	Dec 2016	Mar 2017
39	Court Farm	5.0	South Wales	1.2 ROC	Dec 2016	Mar 2017
40	Corby	0.5	Northamptonshire	FIT	Dec 2016	Dec 2011
41	Gypsum	4.5	Leicestershire	1.2 ROC	Dec 2016	Mar 2017
42	Barvills	3.2	Essex	1.2 ROC	Dec 2016	Mar 2017
43	Old Stone	5.0	Devon	1.2 ROC	Jan 2017	Mar 2017
44	Place Barton	5.0	Devon	1.2 ROC	Jan 2017	Mar 2017
45	Langlands Farm	2.1	Devon	2 ROC	Feb 2017	Mar 2013
46	Kellingley	5.0	Yorkshire	1.2 ROC	June 2017	Mar 2017
47	Clapton	5.0	Somerset	1.2 ROC	Dec 2017	Mar 2017
48	Galton Manor	3.9	Dorset	1.2 ROC	Mar 2018	Mar 2017
49	Holly	5.0	Dorset	1.2 ROC	Mar 2018	Mar 2017
49	East	5.0	Dorset	1.2 ROC	Mar 2018	Mar 2017