

JLEN Solar Portfolio

CO₂ Analysis Report

April 2019

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Executive Summary

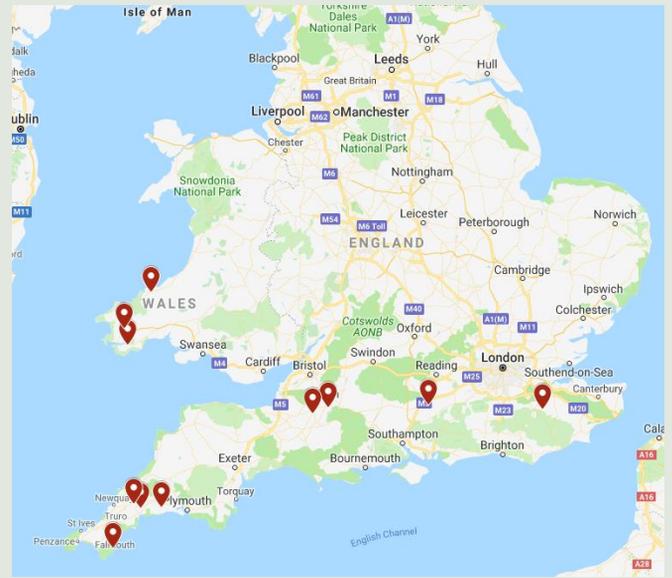
Aardvark Certification Ltd (ACL) has been instructed by John Laing Environmental Assets Group Ltd to assess and report against the carbon savings achieved across their solar photovoltaic portfolio. The portfolio consists of a total of 6 assets, each comprised of multiple rooftop or ground mounted solar PV installations. The total installed capacity of the JLEN solar portfolio amounts to 80.2MW with assets distributed across the country.

Asset Introduction

The JLEN Solar Portfolio is distributed predominantly across the south and south west of the UK with the rooftop assets found more widespread. JLEN hold a 100% stake in all of the solar assets they have invested in. The solar assets are accredited to either the ROC or FiT schemes and all are managed under service contracts with O&M providers.

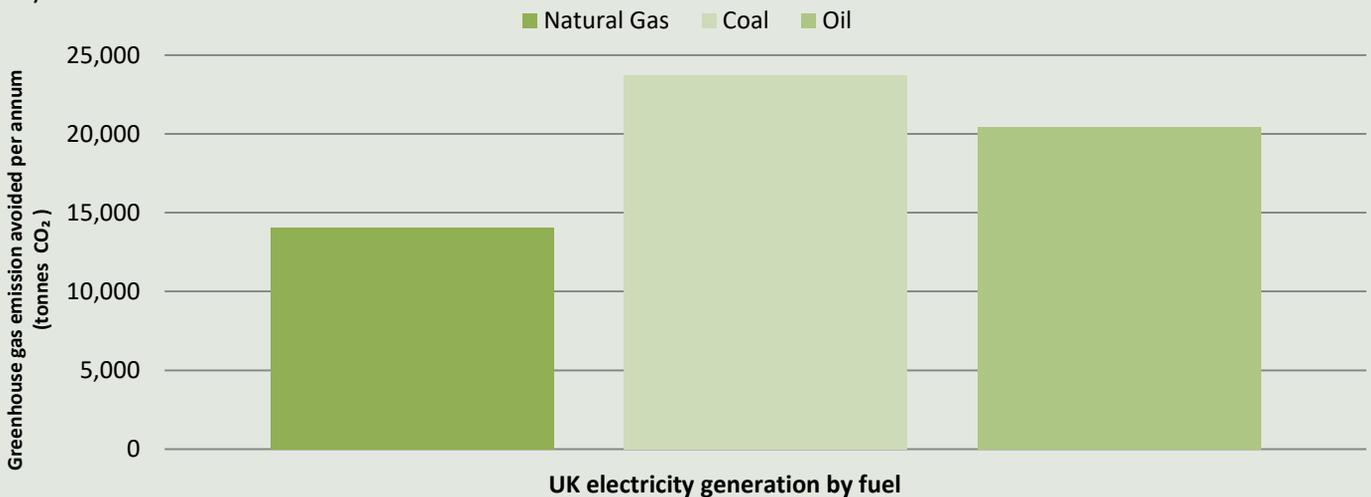
The solar portfolio has produced a total of 368,174MWh of electricity to date. During the course of the installation's total lifetime it is anticipated that up to 1,684,466MWh will be produced.

The renewable energy generated by the solar portfolio is 100% renewable energy and avoids CO₂ emissions which would have otherwise been produced by fossil fuel derived electricity generation.



CO₂ Savings

Using the energy generation data from the solar portfolio, we are able to calculate the quantity of CO₂ that has been avoided had the JLEN Solar Portfolios average annual electricity production (76,241MWh) been produced by conventional fossil fuel sources.



GHG Emissions Avoided

Fuel Type	Average Annual (tonnes CO ₂ e)	Lifetime Saving (tonnes CO ₂ e)
Natural Gas	14,025	309,874
Coal	23,720	524,071
Oil	20,456	451,959

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Energy Production

As there are no green house gas emissions associated with the operational phase of a solar photovoltaic system, the renewable energy produced by the JLEN Solar Portfolio avoids 100% of the equivalent fossil fuel derived energy.

Asset Name	Installed Capacity (MWh)	Electricity			t CO ₂ e			
		Generation to date MWh	Avg Annual Generation MWh	Forecast generation MWh	Emissions avoided to date	Avg annual emissions avoided	Lifetime emissions avoided	Forecast emissions avoided
Amber	9.77	69,145	9,991	171,216	19,573	2,828	68,039	48,466
Branden	7.95	84,194	14,414	247,728	23,833	4,080	93,957	70,124
CSGH	8.84	131,111	32,847	566,957	37,114	9,298	197,602	160,489
Monksham	10.69	30,979	10,033	173,398	8,769	2,840	57,853	49,084
Pylle	5	23,802	5,004	86,189	6,738	1,416	31,135	24,398
Panther	6.47	28,943	4,131	70,804	8,193	1,169	28,235	20,042

What do these savings mean?

The forecast CO₂ savings the JLEN Solar Portfolio will achieve over its lifetime can be difficult to fully appreciate when stated in tonnes. We therefore convert these figures to real-life equivalents to assist the reader in interpreting the reporting. For the solar portfolio, the above figures equate to:

- removing the combined emissions of 8,756 medium sized diesel cars every year from UK roads for the lifetime of the asset portfolio.
- Power 20,445 residential properties based upon the national average electricity consumption statistics.
- Provide enough power to drive a Nissan Leaf 224,238,235 million miles a year – equivalent to driving 9,005 times around the circumference of the earth
- Boil enough water for 13,342,000,000 cups of tea

CO₂ Forecast

Based on the quantity of electricity the solar portfolio produces each year, an average of 21,632 tonnes CO₂e per annum will be avoided compared to the emissions associated with electricity produced for the UK Grid. It is expected that during the course of the solar portfolios remaining operational life, a further 372,603 tonnes CO₂e will be saved.

Other Emissions to Air Avoided

In addition to avoiding CO₂ emissions, other greenhouse gas emissions are also avoided including CH₄ and N₂O. Based on the amount of electricity produced by the JLEN Solar Portfolio per annum, emissions of these gasses which have been avoided have been calculated and shown below. These are included in the total CO₂ equivalent values used within this report.

CO₂e of CH₄ emissions avoided kg/yr

50,319

CO₂e of N₂O emissions avoided kg/yr

116,649

Community Benefits

As well as the various environmental benefits the JLEN solar portfolio delivers, in many instances individual projects also contribute directly to their respective local communities. The individual renewable energy schemes have to date contributed £26,600 to local community funds managed by their parish councils with ongoing commitments to donate to these funds over the lifetime of the projects. The projects the funds are allocated to are for the betterment of the local community with preference for projects which promote sustainability.

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Methodology

This report has been prepared in good faith by Aardvark Certification Ltd based on data obtained from the owner/operator of the asset reviewed. Our calculations of CO₂ savings are based on IFI Approach to GHG Accounting for Renewable Energy Projects. Baseline Emission Factors used in this analysis are taken directly from the Department for Business, Energy & Industrial Strategy Greenhouse gas reporting: conversion factors 2018.

Liability

This document contains information and may contain conclusions and recommendations. Every effort has been made to ensure that the information is accurate and that the opinions expressed are sound. However, Aardvark Certification Limited cannot be made liable for any errors or omissions or for any losses or consequential losses resulting from decisions based on the information.



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