

De Lank Hydropower Project

CO₂ Analysis Report

November 2020

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Executive Summary

Aardvark Certification Ltd (ACL) has been instructed by JLEN Environmental Assets Group Ltd to assess and report against the carbon savings achieved by their 99kW hydropower project located alongside the River De Lank near St Breward, Cornwall. This assessment considers the CO₂ savings made as a result of the hydro turbine's energy production and export to the grid.

Asset Introduction

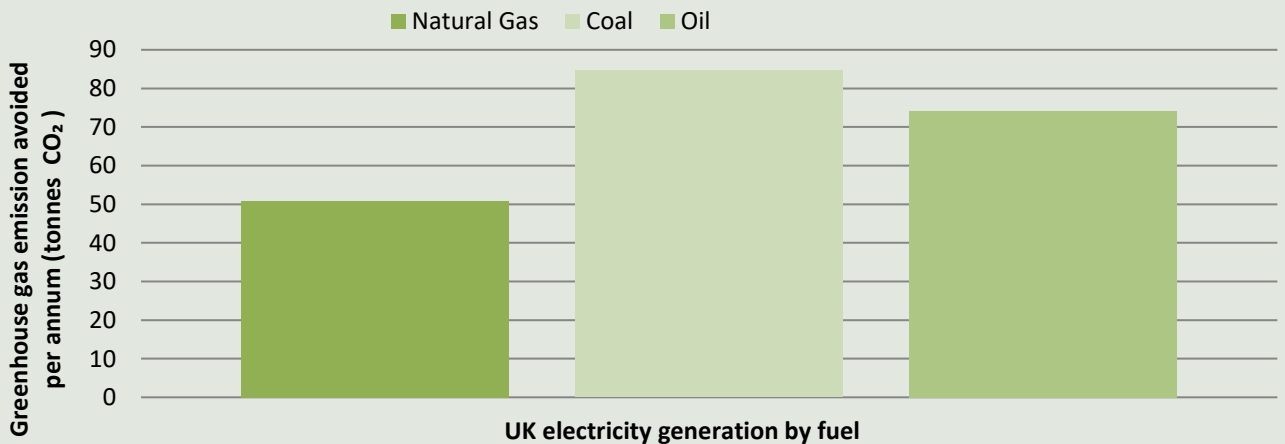
The De Lank Hydropower Project consists of three water pumps converted to run as turbines each able to export 33kW. The project is located alongside the River De Lank which is in North Cornwall. The turbine has a design capacity of 99kW which produces an average 277 MWh of renewable electricity per annum. A total of 2,493 MWh has been produced to date since the project was commissioned in October 2011. During the course of the installations total lifetime it is anticipated that up to 16,618MWh will be produced.

The renewable energy generated by the turbine is exported directly to the local transmission network.



CO₂ Savings

The preceding summary of energy generation from the turbine enables illustration of the quantities of CO₂ that have been avoided had the De Lank Hydropower Projects annual electricity production (277MWh) 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	51	20,072
Coal	85	29,275
Oil	74	33,946

De Lank Hydropower Project

CO₂ Analysis Report

Energy Production

As there are no green house gas emissions associated with the operational phase of a hydro turbine, the renewable energy produced by the De Lank Hydropower Project offsets 100% of the equivalent fossil fuel derived energy.

Total Energy Produced				UK Generated Electricity	Solar PV Generated Electricity
			Conversion factors	0.23314	0.00000
Electricity	276,960	kWh	CO ₂ Equivalent (kg CO ₂ e)	64,570	0
			CO ₂ Difference (kg CO ₂ e)		64,570

What do these savings mean?

The forecast CO₂ savings the De Lank Hydropower Project will achieve over its lifetime is equivalent to:

- removing the combined emissions of 30 medium sized diesel cars every year from UK roads for the lifetime of the asset.
- Power 74 residential properties every year based upon the national average electricity consumption statistics.
- Provide enough power to drive a Nissan Leaf 814,587 miles a year – equivalent to driving 33 times around the circumference of the earth
- Boil enough water for 48 million cups of tea

CO₂ Forecast

Based on the quantity of electricity the turbine produces each year, an average of 65 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 turbine's remaining 51 years of operational life, a further 3,293 tonnes CO₂e will be saved.

Other Emissions to Air Avoided

In addition to offsetting CO₂ emissions, other greenhouse gas emissions are also avoided including CH₄ and N₂O. Based on the amount of electricity produced by the De Lank Hydropower Project per annum, emissions of these gasses which have been avoided have been calculated and shown below.

CO ₂ e of CH ₄ emissions avoided kg/yr	CO ₂ e of N ₂ O emissions avoided kg/yr
183	424

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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 2020.

Liability

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