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Project:	Community Action Northumberland
Site Reference and Address:	No. 1 Longhoughton Community and Sports Centre NE66 3JH
Survey carried out by:	Malcolm Archer
Date of survey:	7th July 2021

Overview

Longhoughton Community and Sports Centre is a modern and well equipped building providing rooms for community and private functions as well as sports events and training. As well as the building it has adequate outside space and a large public car park facility.

The last energy report carried out showed an annual electric usage of 18,102 kw hours p/a (March 2019 to February 2020).

As well as electric the facility has mains gas to provide heating with a Combi boiler. Kitchen water is heated by electric heaters.

Roof and PV

The center has a perfect roof for generating solar energy. The roof is south facing with a tiled roof. Taking into account for 2 roof lights and a vent the roof is capable of taking 162 solar panels in 6 rows of 27 in portrait design. For installation you would use a standard tile roof bracket which is installed onto the roof timbers then the mounting rails clip onto the tile brackets.

Solar panel outputs are constantly improving but I would recommend a panel like the REC325 Full Black Mono N Type, see attached, for reliability, performance and appearance.

I would recommend SMA inverters due to reliability and ease of monitoring individual sites via the SMA sunny portal. You can get warranty for a small fee for up to 20 years.

Potential Energy Generation

The roof is south facing and ideal for a solar installation. The roof is capable of taking 162 solar panels in 6 rows of 27 in portrait which would generate 47,753 kw p/a. As well as roof space there is ample potential to generate more power from ground mounted systems on pieces of land not currently being used or commercial solar trackers which could be installed in the car park area without losing any land. A single commercial solar tracker could generate an additional 15,387 kw p/a and there are several suitable sites for these within the boundary of the facility.

Commercial costs for Longhoughton Community & Sports Centre

1 x 52.65 kw solar installation fully installed and commissioned:-
£43181.00 + VAT

1 x 30.8 kw battery storage facility with smart management and monitoring fully installed and commissioned:- £25676.00 + VAT

Please note this system is larger than they need for their own use and the solar would generate 62% more than currently used on site which would be exported as an income.

The battery storage facility is large enough to store energy for their own use. However, this site has potential to generate more so the battery storage system can easily be extended by only adding additional batteries as the site developed.

Maintenance Costs

The maintenance costs for this type of installation would be very little. I would recommend an electrical check on the system every other year, costing around £180.00 + VAT.

The panels would exceed 25 years but would budget for an inverter replacement every 10 years. A 25,000 watt inverter for this size of system would cost about £2340.00 + VAT. There are 2 of these on this size of system.

Potential Carbon Savings

Just by generating enough solar power to supply the Centre's electricity use will save 8507 kgs of carbon p/a with the potential for more than double that amount.

Payback time

This is a good site for generation and with a large battery storage facility and energy inflation at 2.5% p/a, exporting 62% of the generated power a 8.8% return on capital invested can be achieved with a payback of around 12 years.

Increase energy inflation to 6% and you achieve a 10.7% return p/a and a 11 year payback.

Sell the energy on site at a commercial value and you would reduce your payback further.

Conclusion

This is a good site for generation with potential to do a lot more than just generate power for it's own use.

The roof would already generate 2.6 times more than it would use but has scope to install a local provision for car charging points.

It also has scope to generate power from ground mount solar or ideally commercial solar tracking possibly in the car park.

When the battery storage facility is designed it should be designed to expand in the coming years which is what I have done with these costings. It can be expanded by just adding additional battery units. There is scope to supply additional properties close by with renewable energy.

A site with lots of potential.