CAPITA				
	Project name:	Welsh Sheep Centre	**Project no:**	ED/098555-62
	Title:	Pre-Application Energy and Water Conservation Statement		
	Engineer:	R Colomby	**Date made:**	14/07/2022
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The purpose of this statement is to outline the proposed strategy to energy conservation and the adoption of low carbon and renewable energy sources for the Dairy and Welsh Sheep Centre development.
Whilst the dairy building will not come under Part L2A requirements, it will be designed to meet the clients own aspirations for energy conservation. The WSC may fall within the requirements of Part L2A based on the area of heated space.
It is therefore important that energy efficiency as well as low carbon and/or renewable energy technologies be considered. In this study the energy consumption of the development has been assessed on the basis of 'Be Lean', 'Be Clean' and 'Be Green' models.
The 'Be Lean' measures proposed will reduce the energy consumption of the building and exceed the energy standards required by Part L. This will be achieved by limiting heat loss through the roof, walls, floors, windows and doors by suitable means of thermal insulation to exceed the minimum U-value requirements of the Building Regulations (Part L) for the heated accommodation areas in the Welsh Sheep Centre.

The 'Be Lean' measures include:

- Air permeability rate of 3m3/(h.m2) at 50Pa
- Suitable building orientation to utilise solar heat gains to benefit the spaces e.g. maximising glazing on the East, South and West façades.
- Avoidance of excessive 'thermal bridging' by using appropriate design details and fixings.
- Insulation of pipework, ductwork and hot water systems to current best practice standards.
- Use of efficient systems and equipment with suitable time and/or temperature controls which have been appropriately commissioned to maximise system efficiencies.
- Minimisation of lengths and diameters of 'dead-legs' and appropriately sized and efficient components e.g. fans, pumps and refrigeration equipment.
- Effective control of the lighting systems to achieve the required lighting levels through:
  - use of energy efficient lamps and luminaries
  - suitable energy consumption metering
  - appropriate commissioning
  - suitable manual/automatic switching
  - use of daylight dimming and/or presence detection where possible/practical

For the main building areas which do not fall within the requirements of Building Regulations Approved Document Part L2a systems will be designed to minimise energy consumption. For the Dairy project this will be a large space for cattle with services limited to water supplies and electrical distribution for lighting and power. The project will consider integration of low and zero carbon technologies such as photovoltaics to the roof of the building and rainwater recycling for any wash down requirements.
Similarly the Welsh Sheep Centre is two large buildings to house sheep and lams. The lambing shed will be provided with a water supply and lighting and power services. The main shed will house sheep and a milking parlour which will be installed by a specialist milking parlour designer.
The WSC accommodation building will be subject to Dynamic Simulation Modelling (DSM) using IES. The DSM will be used to assess the respective carbon performance of the accommodation building to realise the Target Emission Rate (TER) and the related reduction due to low and zero carbon technology integration giving compliance in terms of the resultant Building Emissions Rate (BER).

A range of energy technologies have been considered as potential on-site renewable energy sources in relation to the development. These comprise:

- Solar photovoltaic (PV) panels
- Rainwater recycling
- Bore hole water supply
- Recycling of process water used for pre-cooling of the milk from the milking parlour

The design strategy for the development will be as follows:

- Areas where there are no prescriptive requirements such as the sheds and cattle shed will be provided low energy lighting systems which will provide the required lighting requirements for cattle, lambs and sheep whilst minimising energy consumption and maximising natural daylight.
- The WSC accommodation building will meet the requirements of Approved Document Part L2a.
- Review the feasibility of installing a borehole at each site.

Water Conservation

The project will ensure that any water consumption is kept to a minimum using low flow type outlets in general use areas for taps, toilets and showers.
For the toilets and wash down areas in the sheds and parlour the project will utilise rainwater harvesting to minimise mains water consumption.
The milking parlour will also use water through the process with the majority of the usage through pre-cooling of the milk. This water will be recycled back into the Cat 5 water tank to be used for washdown.
The project will review the feasibility of using a borehole. Further investigation will determine the quality of water for potential use as animal drinking water and potential use as potable water. This will be confirmed at developed design stage.