

Specialist Advice Report



Climate change adaption and mitigation

Farm Name: Eat, Sleep, Ride CIC

Farm BRN: 269112

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1. Introduction

Eat, Sleep, Ride CIC are an accessible, community-led social enterprise based in Southeast Scotland. They support people on their journey to wellness and empowerment through therapeutic, educational and community initiatives. Adapting to the current climate and trying to mitigate the businesses impact on climate change is hugely important to Eat Sleep Ride.

2. Business Details

The company moved to this current location in 2022, it is 24 acres in total, comprising of mainly unimproved grassland paddocks, a small quarry, a horse arena and infrastructure for horses and people. Previously waste ground, all roads and infrastructure have been built to provide facilities and give access and parking. Currently they home 21 horses. The site is off-grid, electricity is provided by solar panels and a back-up diesel generator is used in times of shortfall.

3. Current Position

3.1 Climate

The business has not suffered from any major climate events at the current site. The area has high sunshine totals, with 1,462 hours of sunshine recorded in a normal year. Being close to the coast the climate of the area is cooler compared to the rest of the Scottish Borders. Daily temperatures average 6.1 °C in winter and 17.2°C in summer, with annual rainfall totalling 711mm in a typical year.

3.2 Renewable Energy

Currently 10 solar panels are situated on the roof of the stable block, generating around 5,800 kWh per year. Even though there is a good amount of sunshine on site there is a shortfall at times of high demand. Wind turbines have been investigated and a feasibility study has been carried out. Due to the high number of birds on the site conventional turbines would have a negative impact.

3.3 Emissions

The carbon footprint of the business should be calculated to see the areas where emissions are highest and identify areas for improvement. Agrecalc is an online platform where a business can enter key details which then generates the carbon footprint. The business has already started the process to conduct an audit, and this is due to be completed shortly.

4. Potential Impact, Adaptation and Mitigation Measures

4.1 Climate

Due to the nature of climate change, it is not possible to predict the full impact of climate change on the business. Being able to adapt to severe weather events that might come their way is important.

Heavy rainfall events will lead to the already wet areas on the site becoming more so. The potential of developing a wetland habitat in the far corner of the site would not only increase biodiversity and create habitats but it would better manage this area in times of flood.

On the other hand, times of drought could impact the grass growth and level of food availability, this may result in large quantities of purchased feed being required which can become expensive.

Rainwater harvesting from the roof area would store water in the wetter months and this water could be used to irrigate gardens and paddocks in dry spells. Improving the diversity of species in the grass can also help. Herbal leys contain legumes, herbs and grass species with a variety of rooting depths providing protection from drought and flooding. It has been observed during times of drought that it is these additional species within the sward that remain green. Research would need to be carried out to ensure species used do not have a negative impact on horse health.

The changing climate could impact the horse's health and wellbeing. The warming temperatures can increase the potential risk of parasites and viruses reaching the UK. The infected insects which previously could not tolerate the British climate may decide to call it home. It can also increase the chance of dehydration and overheating, and the hard ground can cause foot problems. Alternatively, the wet weather can cause skin disease such as scratches and rain rot, and the changing weather and storms can increase the risk of colic. Most of these are out with our control but it is important to be proactive and prepared for these possibilities by providing shade, shelter, access to freshwater and plan for extreme weather events.

4.2 Land

The land has seen little improvement over quite some time. The grassland is tired with low productivity. Observation of soil type was that at the surface, it is sandy which is prone to drought and burning off. As previously mentioned, the establishment/incorporation of drought tolerant grass species, herbs and legumes would see a sward more resilient to times of drought. This would aid productivity, increase food supply and reduce reliance on bought in feed.

Detailed soil sampling in the first instance would identify the nutrient content of the soil and how it can be managed to ensure maximum productivity, along with which species could be sown to increase resilience, productivity and diversity.

The business has tried planting trees as a way of creating paddocks. This would aid soil structure, reduce soil erosion and increase water absorption at times of heavy rainfall. However, these haven't established due to being eaten by the horses, and a different approach would need to be adopted to allow trees to be planted and established. Forestry Grant Schemes are available through the Scottish Government, and this could help with the cost of planting and management which is expensive. Guards to protect the trees could cost between £10-£15 each, with fences around £7-18/m. A full investigation into the criteria would be required before committing.

4.3 Renewable Energy

Solar

As the site currently produces the majority of its own electricity, the business is not vulnerable to increases in the price of fossil fuels. However, in order to meet growing demand, there is a need to increase the capacity of the business to produce more electricity that will reduce the reliance of the diesel back-up generator, which is used in times of shortfall.

There is space on the roofs of the current buildings to increase the solar panel capacity, which is a current renewable source working well for the business. As a system is already in place, costs should be relatively low to add more panels and increase capacity. Battery storage could also be added to store the electricity generated in the summer months, and also aiding the shortfall in the winter when solar hours are reduced. Many businesses have added batteries now to their PV Systems to provide a backup and supply into the night. A further 8 panels, along with a battery could cost between £8000-£10,000. A detailed look and measurement of the electricity requirement of the business would allow the most appropriate number and size of panels and battery system to be purchased.

Biomass

Another option to consider would be to install a small biomass boiler to produce heating and hot water, fed off the horse manure. This would help with electricity shortfall in winter and make better use of a waste product. Research into size of output and quantity of feedstock required would need to be carried out but if feasible it would be a great option for the business and the resulting biomass could be spread on the grass as an organic fertiliser.

Wind

A feasibility study on the instalment of a wind turbine has previously been carried out. Due to the high number of birds on site it was deemed unfeasible. However, innovation and technology are advancing, and different designs of wind turbines are becoming available. Vertical axis turbines allow for the rotating blades to be enclosed, thus not harming flying birds. There is a variety of design, size, and price options available, research into the most appropriate model would be required.

If the shortfall in electricity supply can be solved, then this would open up many further opportunities for the business. Fully electric Polaris' are now available, this is a small off-road utility vehicle, and would be ideal for carrying out small jobs on site as no great distances are required. Initial purchase price is high but once purchased running costs would be extremely low. A second-hand model could be purchased for around £15,000.

The shorter winter days restrict activities which can be carried out. With increased electricity storage, flood lighting could be installed to the arena and surrounding area. This would enable lessons and events to be carried out later, increasing capacity and generating further income for the business.

5. Summary/Recommendations

The impact of climate change is hard to predict but it will affect Eat, Sleep, Ride in certain areas. The land and horses will no doubt suffer the hardest and practises should be put in place to try to adapt to change before it happens. Better management of the grass to cope with potential drought and floods risks is important as this will have a major impact on the horses. Expansion of renewable energy sources is essential to allow the business to operate fully. Increasing electricity production would allow further business activities to be carried out in the winter months when day light is limited, generating further income for the business which is critical to its survival. A good starting point would be to improve solar panels and add in battery storage as when running this is an effective renewable energy source for the business. Further investigation into other sources could then take place, this might be dependant on grants becoming available to help fund these projects.

Links:

Solar/Battery Storage

[Solar Battery Storage Scotland | Best Solar Batteries \(southscotlandsolarltd.co.uk\)](https://southscotlandsolarltd.co.uk)

[Solar Panels & Battery Storage | Scotland - Greener Energy Group](#)

Biomass

[Turning manure into renewable energy | Equine Wellness Magazine](#)

[Steps And Advantages Of Making Horse Manure Into Fuel Pellets - pellet-richi.com](https://pellet-richi.com)

Vertical Wind Turbines

[British small wind turbines proven robust and reliable \(leadingedgepower.com\)](https://leadingedgepower.com)

Electric Polaris

[Polaris United Kingdom: Ranger XP Kinetic \(polarisbritain.com\)](https://polarisbritain.com)

Herbal Leys

[Herbal leys - Agrovista Environmental stewardship mixtures](#)

[SUPREME Equine Herbal Mix | Greenland Seeds](#)

Agroforestry

[Agroforestry \(ruralpayments.org\)](#)

Rainwater Harvesting

[fas.scot/downloads/water-management-on-your-farm-rainwater-harvesting/](#)

[Rainwater Harvesting Systems - Direct Pumps And Tanks](#)

Pond Creation

[Supporting guidance for Pond Creation for Wildlife \(ruralpayments.org\)](#)

[Layout 2 \(freshwaterhabitats.org.uk\)](#)



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