



THE POTENTIAL FOR RENEWABLE
ENERGY TECHNOLOGY NEAR
LANGHOLM

EXECUTIVE SUMMARY

March 2020



1 Executive Summary

1.1 Background

GCR have been commissioned to conduct a detailed analysis and options appraisal for Langholm Initiative (LI), exploring opportunities for renewable energy technology developments on the Tarras Water Estate, near Langholm. Previously, during Phase 1 & 2 of the feasibility study, the main constraints and risks were identified and the site was appraised for the best suitable technology option(s).

The Tarras Water and Holm Hill Estate is mostly comprised of Langholm Moor, with some of the land located in the Glentarras region of Eskdale, as illustrated in **Figure 1.1**. The estate spans across Dumfries & Galloway and Scottish Borders Council jurisdictions, located between the settlements of Langholm and Newcastleton. Previous land use of the site has mostly involved moorland management for red grouse farming and sheep farming. There are numerous residential properties located throughout the estate, as well as locations considered sensitive to development such as areas Sites of Special Scientific Interest and Special Protected Areas. Any renewable energy development needs to be respectful of the environmental sensitivities of this area rich in biodiversity.

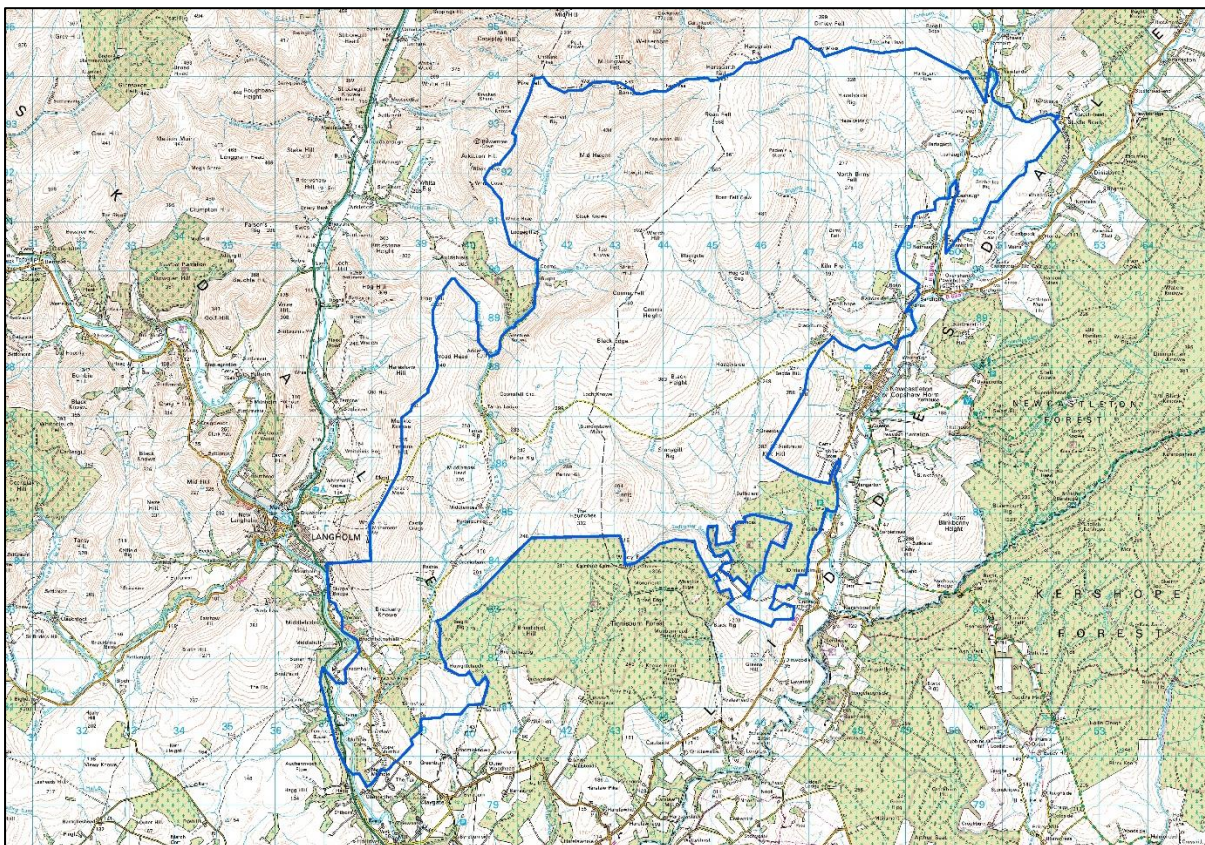


Figure 1.1 Site Location

LI are considering the purchase of land as part of a community buy-out of the Tarras Water Estate, which is currently owned by Buccleuch Estates. The community development trust is aspiring to use the community-purchased land to encourage the profile of sustainable tourism in Langholm, through

developing green infrastructure such as an eco-campsite and a nature reserve. LI seek to employ sustainable development within the attained land, whilst conserving local biodiversity and providing economic benefits to the local community.

Renewable energy development can provide economic benefits to the community through reduced energy costs and provide revenue to drive local projects, such as eco-tourism, whilst lowering the projects carbon footprint. Such developments may also create revenue for sustainable tourism marketing strategies and small scale business development which can boost the areas profile.

1.2 Project Feasibility

This Phase 3 Feasibility Study reports on the key environmental and technical considerations for a potential renewable energy development on the Tarras Water Estate. GCR investigated several opportunities within the landholding to identify the best technology options to meet the aspirations of the community.

The report has considered the viability of the following technologies and their potential to support the needs and aspirations of the community:

- Wind Energy Development
- Ground-Mounted Solar Energy

Following initial assessment, several properties on the estate were found to be suitable for the installation of roof-mounted solar panels or domestic heat pump systems. Domestic scale installations are cost-saving technologies and do not have the capacity to generate revenue required to fulfil the aspirations of the community initiative. As such, they have been omitted from this study. Additionally, the properties were classed with relatively low EPC ratings (D–G) and would likely require insulation upgrades for the domestic developments to be energy efficient. Should LI decide to pursue domestic scale renewables, consultation with a Heating Equipment Testing & Approval Scheme (HETAS) accredited installer should be sought to determine the feasibility of the project at individual properties.

As such, it is recommended that a modest agricultural scale project is taken forward. A domestic-scale renewable development could provide a savings benefit for the occupants of the affected property, but would not generate an income to fund future enterprises in the community. Therefore, as per the conclusions of Phase 2, the Phase 3 assessment will focus on the feasibility of erecting a single wind turbine on Tarrasfoot Hill, and installing a solar array at two sites in the Glentarras area (**Figure 1.2**).

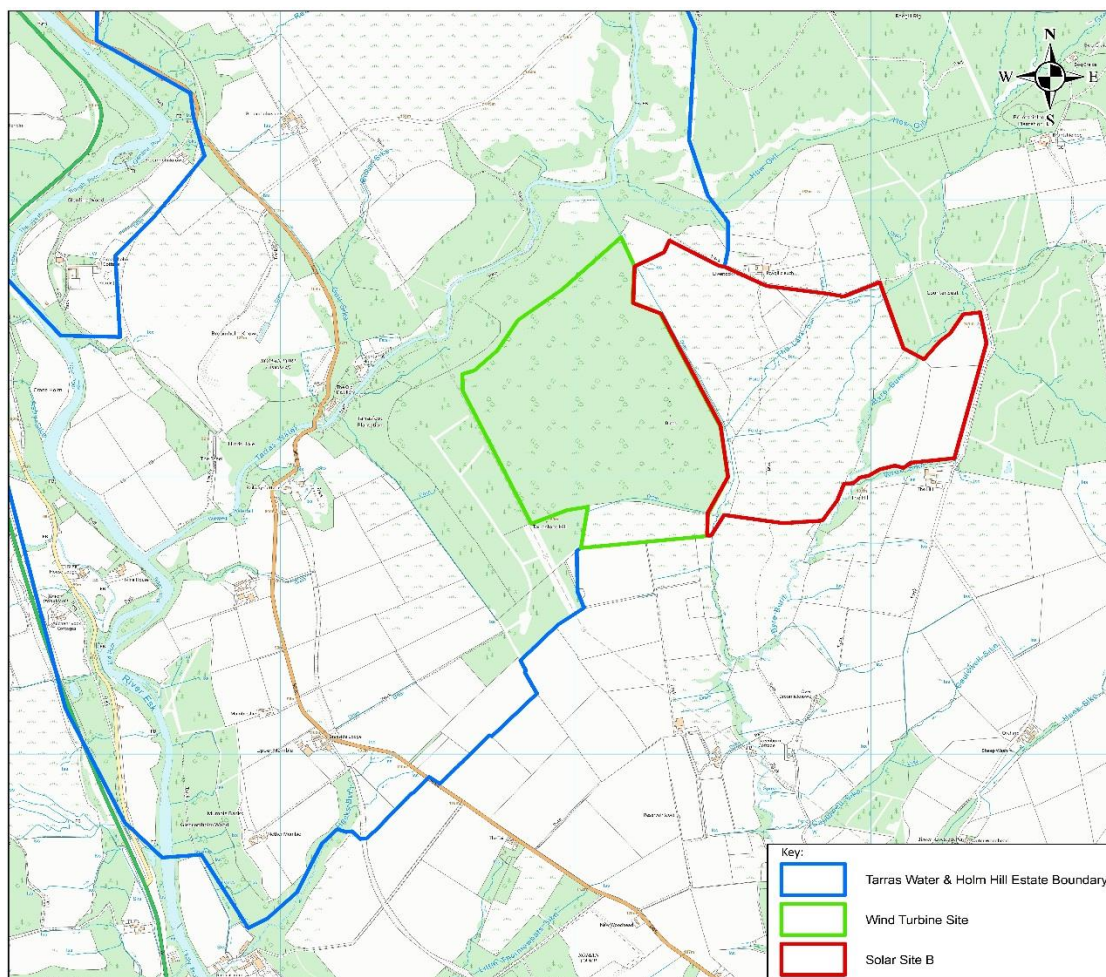


Figure 1.2: Opportunities for Renewable Energy

The community buy-out presents an opportunity for LI to commence projects in sustainable tourism, ecological restoration and small business development with the implementation of renewable energy to complement and support these wider projects. Renewable energy developments of this type would be eligible for funding from the Scottish Government's Community and Renewable Energy Scheme (CARES).

A review of National Planning Policy and Dumfries and Galloway Planning Policy did not highlight any showstoppers to development, however the Local Development Plan for Dumfries and Galloway suggests that there is limited to no scope for large scale wind development in the area, and potential scope for smaller typologies.

1.3 Recommendations

It is GCR's opinion that while a single wind turbine at Tarrasfoot Hill would produce the greatest revenue for LI, solar technology offers least risk of refusal at planning.

A single turbine wind development at Tarrasfoot Hill would have the capacity to generate an estimated income of £4,269,720 - £4,952,875 over a 25 year operational lifespan. However, due to having a greater estimated impacts on environmental receptors, this development is anticipated to present more risks during the planning process.

| Capacity | Capital Expenditure | Assumed Generation Export (%) | Estimated Income Generated over 25 years | Estimated Households Powered |
|-------------------|---------------------|-------------------------------|--|------------------------------|
| Wind: 800kW | £1,267,200 | 100 | £4,269,720 | 500 - 775 |
| | | 80 | £4,952,875 | |
| Solar: 2 MW | £1,275,750 | 100 | £2,799,671 | 402 - 545 |
| | | 80 | £3,247,618 | |
| | | 50 | £3,919,540 | |
| Solar: 4.37 MW | £2,457,105 | 100 | £6,117,282 | 880 - 1200 |
| | | 80 | £7,096,047 | |
| | | 50 | £8,564,194 | |
| Solar: 5 MW | £2,741,550 | 100 | £6,999,178 | 1000 - 1360 |
| | | 80 | £8,119,047 | |
| | | 50 | £9,798,850 | |

Following an indicative energy yield analysis and site optimisation, it is expected that a 4.37MWp solar farm is feasible on agricultural land near Broomholmshiels Farm (Site A), while a 5MWp solar farm is feasible on the rough grazing land to the east of Tarrasfoot Hill (Site B). Based upon the current estimates, Site A is expected to be capable of producing a revenue of £6,117,282 - £8,564,194 across 25 years, while Site B can produce a larger revenue of £6,999,178 - £9,798,850 at a higher capital expenditure. Further details of the feasibility of this development option are set out in the remainder of this report and an indicative site layout has been provided in the accompanying figures.

A scoping opinion should be requested from Dumfries and Galloway Council in order to ascertain the required scope of work and minimise project costs. LI should then aim to create a robust public engagement strategy for during the development and planning stages, as to demonstrate local support for the project which will transmit itself into the planning system.

N.B. Please note that Solar Site A has been removed as a potential area for renewable energy development, following the completion of this report.