THE ISLE OF GIGHA HERITAGE TRUST

MEMBER MEMO

NUMBER 7

DANCING LADIES REPOWERING OPTIONS

This is a summary of what was covered at the community meetings with Colin Anderson, consultant, which took place on Thur. 16th April 2026

The Dancing Ladies were commissioned in January 2005 and have now been operational on Gigha for 21 years. The turbines were bought second-hand, however, so are now 33 years old and among the UK's oldest. Their overall production record is very good, but with a few 'bumps' in recent years related to T2 gearbox replacement and T1 main shaft and generator repairs.

A key issue is that Renewable Obligation Certificates (ROC) support ends from March 2027 after which the turbines' revenue will reduce by nearly half, with the income then coming solely from the Power Purchase Agreement (PPA). This narrows the gap between income and expenditure. The challenge is to ensure the project remains economically viable and the present work has looked at various repowering options, and possibilities for higher value PPAs. The repowering options identified are:

1. Retaining the V27s, aka 'make do and mend'
2. Fully refurbishing the V27 nacelles in sequence
3. Replacing the V27s with a refurbished V52 turbine
4. Replacing the V27s with a new DW54 turbine

Option 1 involves the least capital cost, but assumes the turbines can be kept running with high availability. A capital sum could be set aside to purchase and store key components, thus minimising the downtime associated with repairs to a generator or gearbox. Additional revenue would also be set aside as an insurance premium against major breakdown, so the cost of major repairs would be more evenly spread over the project lifetime.

Option 2 assumes that all three V27 nacelles would be thoroughly overhauled, via sequential removal and off-site refurbishment. Several companies offer this service in Denmark and the Netherlands. A budget capital cost estimate for this option is £629k.

Options 3 and 4 both involve replacing the V27s with a single large turbine. New civil works would include the foundation, plus additional infrastructure to enable transportation and delivery. The V27 turbines would be decommissioned and removed. The capital costs are estimated as £1.2M and £2.1M, respectively. Both options incur high infrastructure and planning costs. They would require road improvements on the island to facilitate transport, and chartered marine vessels to deliver the larger components and heavier crane.

The possibility of building a slipway at the south end of the island to facilitate barge landings has been raised: this has previously been done on islands including Barra and Luing, and on Gigha would bring deliveries in close to the windfarm site.

Funding

Grant funding is useful, but likely to be proportionately less than previously; commercial banks could offer a loan for repowering using the E33 (Harmony) as security; and a crowd-funding model is also a possibility but may be less attractive than conventional bank lending. A novel option would be up-front selling of energy, where a supplier pre-pays for a long-term offtake at discounted price: this gives both generator and supplier a hedge against price uncertainty.

Although the loss of ROCs will cause a significant decrease in revenue from March 2027, better export PPA terms may be available to help offset the impact. A corporate or 'sleeved' PPA would involve selling power to a large electricity user at a fixed price (with Argyll and Bute Council a possible customer).

An economic appraisal of the four repowering options has been carried out based on the above capital cost estimates, assuming bank borrowing at 6% and loan term reflecting the likely technical lifetime of the wind turbine(s). A corporate PPA tariff of £97.50/MWh is assumed, and the annual income calculated as gross revenue minus O&M and finance costs. The results indicate that Option 1 would be significantly more attractive than any of the others, due to its low capital cost. Options 3 & 4 suffer from high borrowing costs, even though they would provide around 30% more annual energy.

Under Option 1, if the turbines can maintain high availability at an advantageous PPA rate they could potentially return around £96k to the Trust annually. This is the most favourable outcome, but it will require a carefully managed O&M strategy and pursuit of the best PPA options. If PPA prices fall, however, Option 1 is also the most robust in terms of the minimum tariff at which the project would still break even.

If you have any comments to make about the Dancing Ladies repowering options then please do so at the upcoming members meeting (April 30) or email directors@gigha.org.uk. The options will be considered by the Board and a decision will be taken re the way forward for Gigha in the near future.