Agenda Item	13
Report No	HC/21/23

HIGHLAND COUNCIL

Committee: **Highland Council**

Date: **29 June 2023**

Report Title: **Renewable Investment in Solar and Battery Storage**

Report By: **Interim Depute Chief Executive**

1 Purpose/Executive Summary

1.1 This Report focuses on the opportunities for the planned development of income generation/cost-saving benefits to The Highland Council from the development of our understanding of the potential around Solar photo voltaic (PV) and Battery Storage in the region

1.2 The report provides insight into how existing Assets could be managed to maximise the benefit to the Council.

2 Recommendations

2.1 Members are asked to:-

i) **Note** progress to date in evaluating and identifying both the cost saving and income generation potential of further development of the Council's Solar PV assets;
ii) **Agree** the development of a business case for the development of solar PPA self-generation model; and
iii) **Agree** the development of the business case for the development of utility grade sites identified as viable to a full business plan for development potential in both solar and battery storage.

3 Implications

3.1 **Resource** – Resource implications are likely to be significant, with most of the renewable's development being an investment supported by a robust business case. This report is not seeking approval for the capital investment at this stage, rather it is seeking agreement to fund the business case work for individual sites that have been identified as offering potential. All capital investment decisions will need to be considered in the context of the Council's review of the current capital programme.

The Council will adopt robust governance for monitoring asset performance to ensure a consistent return of investment is delivered over the whole life of any project. The development and delivery of this type of project will require input from various officers across the Council and external specialists. All projects will require internal resources with specialist knowledge of designing, installing, and managing a commercial energy asset portfolio.

3.2 **Legal** – The Council has the power to sell electricity under the Sale of Electricity by Local Authorities (Scotland) Regulations 2010 (2010 No.1908): '2. For the purpose of section 170A (3) of the Local Government (Scotland) Act 1973, a local authority shall be entitled to sell electricity produced from the following sources— (b)solar.'

The mechanism that the Council could adopt to actively invest in battery storage will require consideration as part of business case preparation. Energy Trading owned and operated solely by the Council for financial gain would not be permitted under current regulations.

3.3 **Community (Equality, Poverty, Rural and Island)** – The ability to deliver community benefit from renewable development is significant and widespread with three clearly identifiable areas:-

- **Procurement**: potential for local suppliers and supply chains to benefit from the significant investment, through the provision of services and materials both during construction and ongoing operational phases;
- **Land and Assets:** the proposal explores alternative use of our land and assets that currently are not productive and re-purposes those assets; and
- **Financial Power**: commits investment to support actions to reduce carbon emissions both internally and regionally.

Community benefits supports the Council's ability to safeguard and enhance public services through innovative approaches and allows the Council to show green economic leadership.

3.4 **Climate Change / Carbon Clever –** Investment in renewables production across the region will assist in the sustainable deployment of low-carbon infrastructure across the Highlands. Attracting scalable investment into the region will provide opportunities to secure funding both directly and indirectly to assist in our net-zero ambition.

3.5 **Risk (including Health & Safety risks arising from changes to plant, equipment, process or people)**

The risk in progressing the development of both solar and energy storage would be that any delay in securing grid connection at the earliest possible stage could delay any planned development significantly, with over 300Gw of accepted connections already in the Transmission Entry Capacity (TEC) register and an ever-growing pipeline of proposed projects. The lead-in time for connection will become increasingly congested.

Any risk from the development of any/all of the proposed sites would be fully assessed as part of the full business case. This will include health and safety considerations around the safe operation and maintenance of Solar and Battery assets.

3.6 **Gaelic** – There are no Gaelic implications arising from this report.

4 Background

4.1 A workshop focussed on investment in renewable technologies was held on 25 April 2023 for Members of the Redesign Board. Members were provided with an evaluation of work carried out to date and an assessment of renewable potential within the region. Members were encouraged to comment on a variety of developments being considered across the following technologies:-

- Battery Storage;
- Biomass;
- Geothermal;
- Heat Networks;
- Hydro;
- Solar;
- Tidal;
- Wave; and
- Wind

All technologies have demonstrated potential within the region. Further assessment is required in respect of several technologies to understand the direct potential for the Council.

4.2 On 31 May 2023 a report on Renewable Investment in Solar and Battery Storage was presented to the Redesign Board. Members agreed all recommendations. The Redesign Board agreed to bring a proposal to Council with the recommendation to proceed with developing a detailed investment business case.

4.3 Work is progressing with Zero Waste Scotland (ZWS) and the Scottish Futures Trust (SFT) to understand how the Council develops the potential for Heat networks in the region. Work between representatives of ZWS, SFT and the Council is planned for this summer. Options for developing a heat network business case will be presented to the Redesign Board later this year

4.4 Further discussions between the Scottish Government's Hydrogen team and Council Officers is planned to identify how partners can work with all developers interested in accelerating Hydrogen production and distribution in the Highlands. The potential within the Highlands and Islands for green hydrogen production is recognised. Work this summer should help shape its development and create clear pathways to delivering at scale. It is expected that this and the progress on potential opportunities for hydrogen production across the region will be presented to the appropriate committee later this year.

4.5 Solar and Battery Storage potential projects have been developed to a stage where additional resources are required to develop a full business case for capital investment to contribute to the Council's economic and climate ambitions for the region.

5 Solar PV

5.1 Commercial opportunities

5.1.1 The Council owns a number of commercial properties which are available for rent. This provides an opportunity to develop a commercial onsite Power Purchase Agreement (PPA) model across tenanted properties within the Council's commercial estate.

5.1.2 Through the development of a PPA agreement, it is proposed that the Council will develop and operate a solar array on the tenanted building in return for the agreed purchase of all energy generated.

5.1.3 This will bring the following potential benefits:-

- added value to our property portfolio;
- additional revenue stream for the Council; and
- encourage significant carbon reduction across the commercial estate (this does not directly impact the Council's carbon footprint, but it does help to support an area-wide reduction).

5.1.4 The benefits to Council tenants will be that:-

- solar is fitted for free and owned by the Council;
- immediate financial savings for the tenant on their energy bills;
- solar panels reduce emissions in a highly visible way, adding more renewable capacity and assisting area-wide sustainability goals; and
- monitoring, maintenance, and remedial works would be the responsibility of the Council.

5.1.5 The Team will work with Estates Management to identify suitable properties to develop an initial proposal. The scope of work will include:-

- a desktop survey of the properties identified;
- assessing market potential for rollout across the managed estate;
- developing operational models, thoroughly assessing the benefits and risks to the Council; and
- developing a business case for the development of on-site commercial solar generation.

This will allow the Council to identify the potential within the property portfolio the Council manages. External resources will be required to develop a commercial business model that maximises the identified potential in the portfolio.

5.1.6 The initial Resource requirement is £25,000 to build a Power Purchase Agreement and appoint the external fund management. A dedicated internal Project Management resource will liaise with external stakeholders and develop the project pipeline. Fully operational, a Megawatt of installed generation can yield a healthy return on investment potential of 22%.

5.1.7

1mW Solar Array Installed	Total cost saving Benefit @ 40% saving via PPA	Operational cost	Annual return on Investment	ROI %
1,480mW p.a.	284,000.00	221,320	62,480	22%

The operational model includes ongoing funding for internal project management and full care and maintenance of the installed assets.

5.2 Utility Scale Ground Mount (Solar Farm)

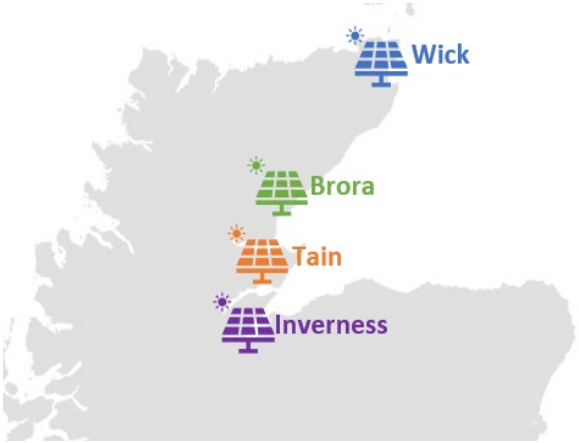
5.2.1 It is widely recognised that a major proportion of Scotland's solar development will need to come from the ground mounted, utility-scale sector. To achieve a projected requirement of 6.0GW by 2035, solar farms would have to account for 3.5GW to understand the scale, which would equate to 14,000 acres of solar of the 10.7m acres available with identifiable potential.

5.2.2 In addition to helping achieve climate change goals, increased solar development will develop a range of other crucial benefits:-

- supporting a just transition - Creates resilient, long-term, sustainable jobs. Deploying 6GW of Solar could support at least 3,000 FTE skilled and high-quality jobs directly, with a wider economic impact across the supply chain;
- expanding industrial base - Supply chain development across a wide range of companies, including those involved in design, manufacture and distribution, project development and management, operations, maintenance and cleaning, software development, civil, infrastructure and landscape engineering, along with legal, financial, and administrative services; and

- reducing pressure on the grid - The investment and engineering work required to transmit the increase in demand for electricity expected as a result of decarbonisation in heat and transport will require a move to a smarter, more decentralised approach to power generation and use. Localised generation of renewable energy will require a mix of technologies to limit the intermittent challenges faced in the transition to green energy.

5.2.3 Initial sites with development potential have been identified as follows:-



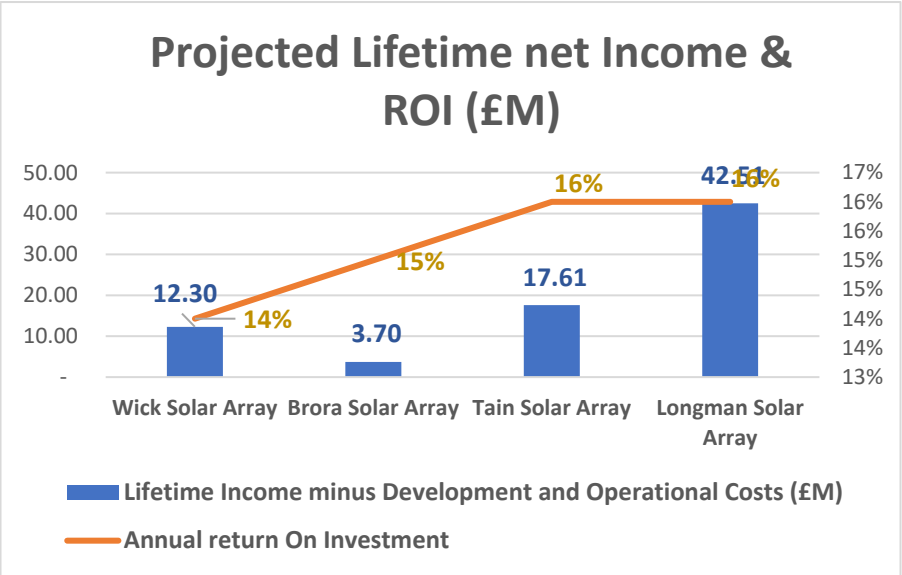
5.2.4 Solar and Battery Storage have been developed to a stage where additional resources are required to develop our full understanding of how they could directly contribute to the Council's economic and climate ambitions for the region.

5.2.5 Work to date is anchored within stage one of a five-stage process in the development of commercial solar. The steps are:

i) **Project Potential:** Data Collection and Opportunity Assessment;
ii) **Project Options:** Strategic and Detailed appraisal of site viability;
iii) **Project Refinement:** Planning and Development;
iv) **Project Implementation:** Finance and construction; and
v) **Project Operation and Maintenance:** Asset Management and Development.

5.2.6 Work undertaken to date has provided insight into land owned by Council, and this has helped develop a high-level understanding of the potential generation which could be achieved from each location. Calculations at this stage are based on current install cost per kW with an average market return based on site specific irradiation calculations

5.2.7



5.2.8 While there is recognition by Distribution Network Operators (DNOs) that the development of grid-connected solar is essential, there is generally bias towards wind solutions, often placing an unfair burden on solar projects to fund future infrastructure costs. It is vital that all costs are identified and understood during a detailed appraisal of project options.

5.2.9 To progress work on the proposed sites, the required work can be split into two phases:-

Phase 1:

- Resource is required to engage external support to complete an independent grid analysis to identify localised capacity and constraints for each site and identify levels of potential and prioritise potential between generation and storage.
- Carry out a detailed analysis of potential connection costs and time constraints for connection.
- Site may be discounted after the first pass, any sites progressing through both stages will incur costs of £2,000 per location.

5.2.10 For the development of a full business case, sites would have to be deemed viable on completion of Phase 1 before the development of:-

Phase 2:

- Engagement across services to identify any issues likely to be encountered in the development of the proposed use of each site.
- Resource external support to complete ground and environmental assessments of the site.
- Resource external support to deliver a detailed plan and specification for the development.
- Resource to assess the potential business models outlining the benefits and risks of each development.
- Develop a fully costed business plan to present to the Re-design Board for review.

5.2.11 The Estimated Cost for evaluating the currently identified sites and developing the suitable sites to a full business case for investment is up to **£250,000.00**. This includes an internal project manager to engage external stakeholders and evaluate the various business models for each site and develop the full business case. The project manager will have responsibility for both solar and battery across all sites including Torvean Quarry detailed under section 6.

6 Battery Energy Storage Systems

6.1 Battery storage in the UK totals around 1.2GW. This is expected to double bi-annually over the next ten years. The value associated with addressing the imbalance between electricity supply and demand caused by intermittent renewable energy production has accelerated the interest of developers, owner-operators, and traders. This is an emerging market.

6.2 For the National Grid Electricity System Operator (ESO) to successfully balance the increased demand for energy produced from intermittent generation sources, energy storage will be required at scale.

6.3 The industry has moved at a pace which has highlighted challenges. Current legislation for grid connections views the large-scale storage sites as a competing demand for consumption despite being designed to support grid balancing during peak demand. This has resulted in challenges in achieving grid connection across the UK. Recent interest in developing utility storage in the Highlands has been driven by Scottish and Southern Energy (SSE), offering potentially faster connections than those currently available in other parts of the UK.

6.4 All Council owned sites are still being assessed for optimum potential use. This is likely to see viable sites best suited to a combination of Solar and Storage with the exception of Torvean Quarry which it is intended to progress as an opportunity for a potential storage only facility.

6.5 It is recommended that the potential for Battery Storage is developed in conjunction with the steps for developing a business case for utility-scale Solar.

6.6 The Estimated Cost for evaluating the sites and developing the suitable sites to a full business case for investment is **£68,000.00.**

7 Conclusion

7.1 This report highlights the potential benefits that the Council stands to gain in delivering both small- and large-scale renewable energy assets. The report also highlights the need for upfront investment to bring those potential projects to investment decision stage. Members are asked to agree that funding previously identified as part of the Climate Change, Green Energy and Jobs investment as agreed at Council in March 2022 is used to fund the initial stage of this work (including the procurement of specialist advisers to carry out all of the due diligence required) to the levels set out within this report. This would be to a maximum of £350,000.

As set out in the resource implications earlier in the report, the capital costs for investment in viable projects will be considered alongside the review of the Council's capital programme but will ultimately be informed by a robust business case approach which details likely returns on any investment. The decisions on capital investment will be brought to Council at the appropriate time once the work referenced above has been completed. Progress will be reported to Redesign Board on a regular basis before the final investment decision point is reached.

Designation: Interim Depute Chief Executive

Date: 7 June 2023

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