
NORTH AYRSHIRE COUNCIL

22 February 2022

Cabinet

Title:	i3 Strategic Investment Campus- Renewable Energy Proposals
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Purpose:	To inform Cabinet of the potential to install a solar photovoltaic (PV) farm and wind turbines at the i3 Strategic Investment Campus as part of our environmental roadmap to achieve net-zero carbon by 2030.
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Recommendation:	<p>That Cabinet:</p> <ul style="list-style-type: none">a) notes the recommendations provided through our partnership with University of Strathclyde for renewable energy systems at i3; andb) agrees to the development of a business case proposal on solar and wind generation at i3, based on the outcome of current feasibility studies, which will also consider potential funding requirements and their impact on project viability.
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1. Executive Summary

- 1.1 In June 2019, the Council declared a Climate Emergency, committing to achieve net-zero carbon emissions by 2030. In May 2021, Cabinet approved the third Environmental Sustainability & Climate Change Strategy (ESCCS 3). The Strategy takes account of emerging intelligence and new technology opportunities and provides a roadmap of actions to achieve net-zero carbon status across North Ayrshire by 2030. One of the aims to achieve this is to maximise access to affordable renewable energy technologies.
- 1.2 In parallel, the Council's objective is to have a sustainable, secure, cost-effective and low carbon energy supply.
- 1.3 Following the Cabinet decision in June 2021 to allocate funding towards a feasibility study into renewable energy at the i3 Enterprise Area, this report provides an update on the evaluation of renewable energy generation potential at the site. This has been explored as part of wider work with the Growth and Investment Service to attract investment to the area.
- 1.4 The proposed solar photovoltaic (PV) farm and wind turbine projects would:

- provide a substantial amount of clean, renewable energy to supply the new infrastructure on the Ayrshire Growth Deal site, as well as potentially to local industry and the electricity grid;
- assist in attracting strategic inward investment at the site as part of our aspirations for a clean, green, economic recovery;
- contribute to the North Ayrshire Council Climate Emergency declaration commitment to be carbon neutral by 2030; and
- make a positive contribution to national carbon reduction targets and decarbonisation of the National Grid.

1.5 Over the coming years North Ayrshire Council's energy demand will be affected by several factors including:

- property rationalisation, property closures and community asset transfers;
- estate-based energy efficient projects; and
- addition of new build properties.

Taking into account the above factors it has been estimated that the Council's future energy demand would be approx. **21,000 MWh**. With this figure it is possible to assess the impact of the various renewable projects, including the i3 Strategic Investment Campus, on the Council's energy demand.

1.6 Feasibility studies for renewable energy generation investment at i3 Strategic Investment Campus are ongoing, and it is proposed that the detailed proposals arising from the studies are the subject of a future report to Cabinet.

2. Background

2.1 i3 Ayrshire Growth Deal

i3 Irvine Enterprise Area is one of North Ayrshire's key strategic sites where £21m investment is being targeted as part of the Ayrshire Growth Deal. Two major projects are being developed on this site to create employment and attract new inward investment:

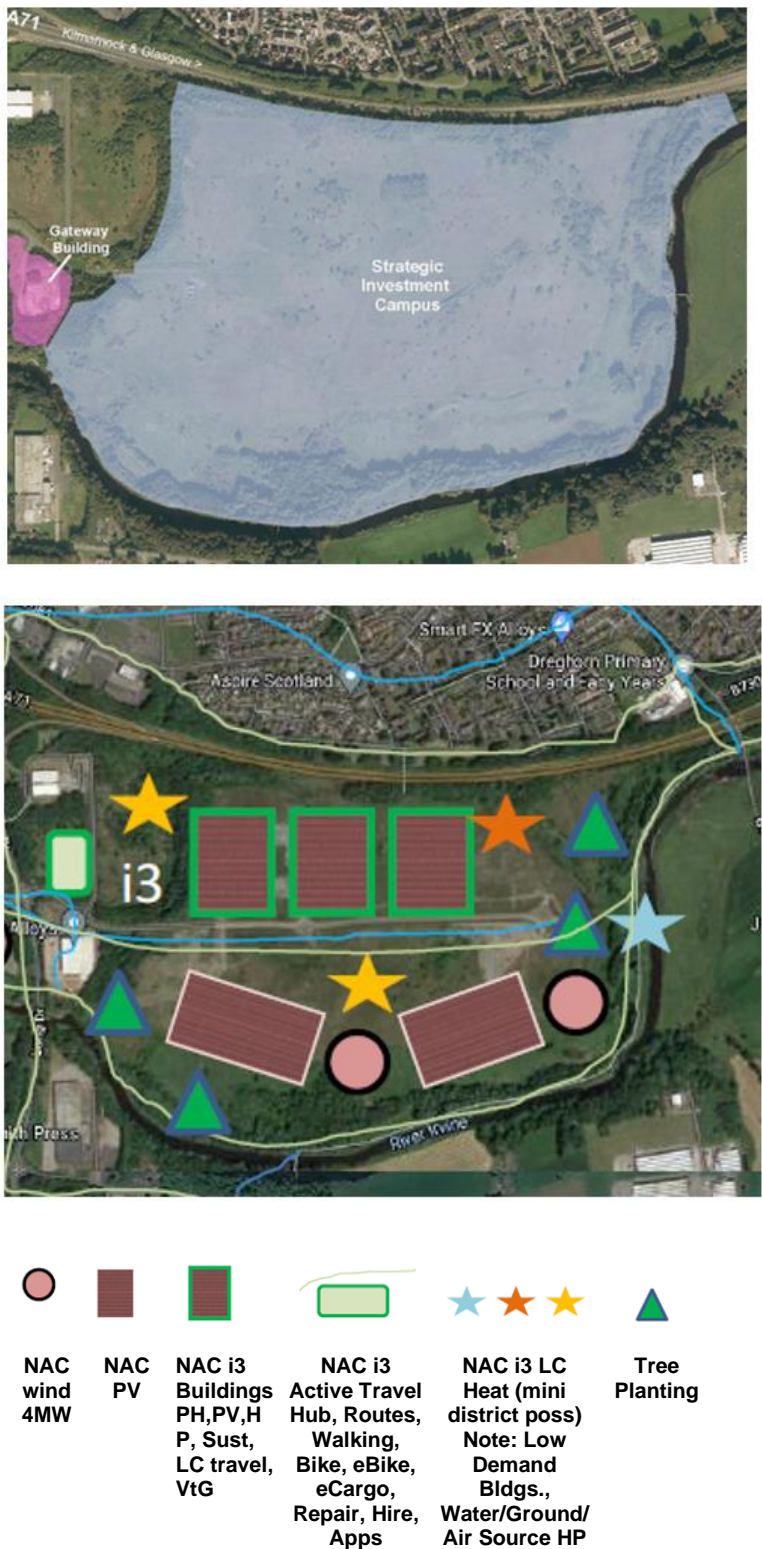
- construction of new advanced manufacturing business space (or flexible space)
- development of a Digital Processing Manufacturing Centre (DPMC)

2.2 It was identified that the area of i3 known as the Strategic Investment Campus could have significant renewable energy generation potential, to not only supply the energy requirements of the Enterprise area, but perhaps also supply the energy needs of existing local industry and balancing of the local electricity network.

2.3 We are working with the University of Strathclyde, through an Energy Technology Partnership (ETP), to inspire innovation in our climate change action. The University's Engineering Faculty have assisted in the review of the wider i3 area and have developed an Energy Masterplan for the area. Figure 1 below highlights the i3 Strategic Investment Campus area, and details part of the overall masterplan specific to the Strategic Investment Campus. It is important to note that the areas highlighted in the images below are indicative locations only for potential solar and wind infrastructure. Feasibility studies will identify more precise locations and maximum capacities of renewable energy technologies suitable for the site.

The proposed location and size of the renewable energy technology will be designed to ensure that proposals are complementary to the wider Ayrshire Growth Deal investment proposals.

Figure 1: Strategic Investment Campus and High-Level Masterplan



Legend:

PH-Passivhaus, Sust-Sustainable, LC-Low Carbon, VtG-Vehicle to Grid, Bldgs-Buildings, HP-Heat Pump

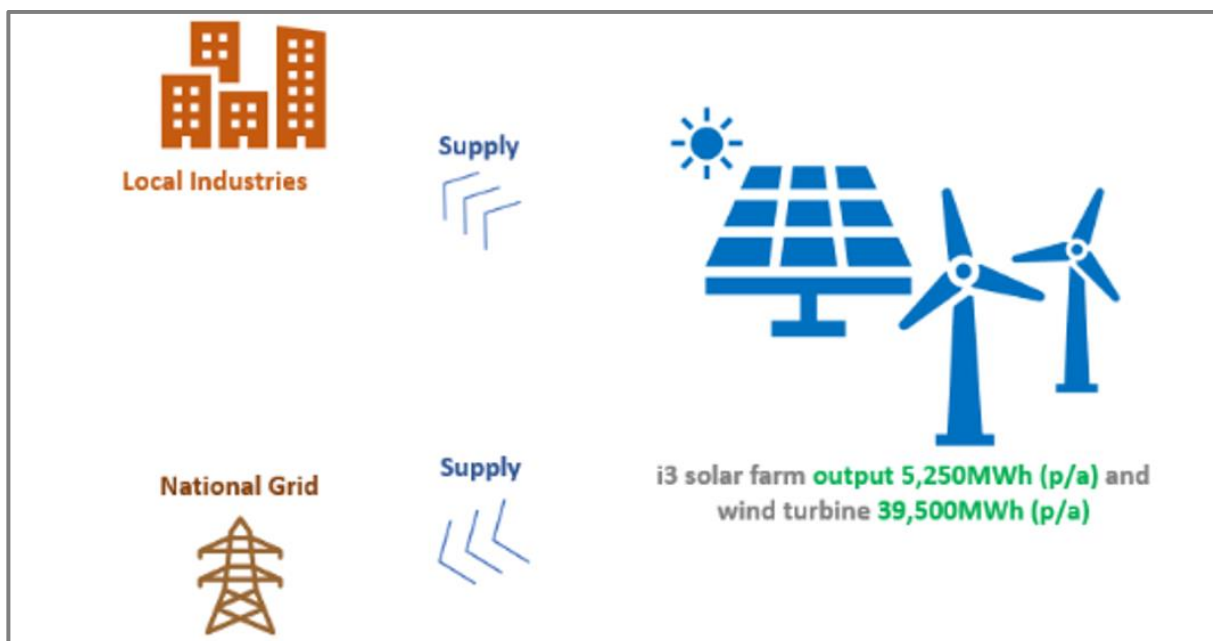
- 2.4 As part of their review of the Strategic Investment Campus, the University has identified the potential to install a 5MW solar PV farm and 12MW of wind generation. Figure 1 above shows two wind turbines on the Strategic Investment Campus site; however, a third turbine could be incorporated on the site. An analysis of the location has been undertaken and high-level forecasts for the energy generation of the solar PV farm and wind generation proposal at the i3 Strategic Investment Campus are detailed in table below. The table reflects wind generation capacity based on three turbines.

RENEWABLE ENERGY GENERATION AT I3 STRATEGIC INVESTMENT CAMPUS		
TECHNOLOGY	PROJECT CAPACITY	ANNUAL GENERATION
Solar PV Farm	5MWp	5,250 MWh
Wind Generation	12MWp	39,500 MWh

Table: Renewable Energy Generation at i3 Strategic Investment Campus

The diagram below provides an illustration of the potential renewable energy generation from solar and wind at i3 Strategic Investment Campus and how this renewable energy could be sold and distributed to supply the new infrastructure on the Ayrshire Growth Deal site, local industry and electricity grid:

Diagram: Distribution of Renewable Energy Generation at i3 Strategic Investment Campus



2.5 The vehicle for the sale of the energy will be investigated as part of a separate exercise to identify the most viable option. There are several options available, and the export solution may be one or a mix of the following:

- Sell the energy direct, via a Private Wire Purchase Power Agreement, to buildings on the i3 site and possibly existing local industry through a direct cabled supply; and/or
- Sell the energy to the electricity grid via the wholesale electricity market; and/or
- Enter into a sleeving agreement with a provider as part of the Council's energy consumption requirements; and/or
- Consider a virtual Power Purchase Agreement with a strategic partner(s)

A study of export options for our current and anticipated pipeline of renewable energy projects is currently being commissioned, which will inform analysis of the preferred export strategy for the i3 site should a viable project be identified.

2.6 It is important to note that the Council is progressing with two solar PV farms at Nethermains and Shewalton. Considering the potential amount of energy generated from the above two projects and additional i3 project it is estimated that these proposals would generate **57,913MWh** of renewable energy **per annum**.

The table below summarises the annual energy generation from the Council's renewable energy generation proposals in comparison with the Council's future energy demand.

NAC RENEWABLE ENERGY GENERATION PROJECT	ANNUAL ENERGY GENERATION (MWh/Annum)	PERCENTAGE OF EXISTING ENERGY DEMAND	PERCENTAGE OF FUTURE ENERGY DEMAND
NETHERMAINS SOLAR PV FARM	7,681	34%	36%
SHEWALTON SOLAR PV FARM	5,482	24%	26%
i3 SOLAR PV FARM AND WIND TURBINE	44,750	200%	214%
TOTAL	57,913	259%	277%

Table: Annual Generation Potential from Council Owned Renewable Proposals

2.7 In order to fully understand the energy generation potential identified within the Energy Masterplan for i3 Irvine Enterprise area, solar and wind feasibility studies will be completed. These will be funded by the £0.060m allocation made by Cabinet in June 2021 for this purpose. The studies will be informed by liaison with Scottish Power Energy Networks (SPEN) to ensure that grid capacity and constraints for the wider i3 area are properly understood.

- 2.8 Cabinet will be presented with a business case based on the outcome of i3 solar and wind energy generation feasibility studies. It is expected the feasibility studies will be concluded by Spring 2022, with a business case being developed thereafter and presented to Cabinet after the summer recess.

3. Proposals

- 3.1 It is proposed that Cabinet:

- a) notes the recommendations provided through our partnership with University of Strathclyde for renewable energy systems at i3; and
- b) agrees to the development of a business case proposal on solar and wind generation at i3, based on the outcome of current feasibility studies, which will also consider potential funding requirements and their impact on project viability.

4. Implications/Socio-economic Duty

Financial

- 4.1 The i3 solar and wind feasibility studies will provide details of anticipated capital costs, annual operation and maintenance costs, and potential income. A business case for the i3 renewable energy proposal will be presented to Cabinet later in 2022 with full financial details.

Human Resources

- 4.2 There are no Human Resources implications arising from the report.

Legal

- 4.3 The Council has power to sell electricity, including solar generated power, under the Sale of Electricity by Local Authorities (Scotland) Regulations 2010 (2010 No.1908).

Equality/Socio-economic

- 4.4 Achieving a net profit from the solar PV farm and wind turbines would provide the Council with opportunities to reinvest that income to support wider socio-economic priorities, including supporting the creation of green jobs as part of economic recovery.

Environmental and Sustainability

- 4.5 The solar PV farm and wind turbines proposal aims to:

- make a positive contribution to national carbon reduction targets;
- contribute to the North Ayrshire Council Climate Emergency declaration commitment to be carbon neutral by 2030;
- encourage business and inward investment to North Ayrshire by promoting a low carbon i3 Irvine Enterprise Area; and
- contribute to the decarbonisation of the National Grid.

The proposals would also contribute to the delivery of the North Ayrshire Environmental Sustainability & Climate Change Strategy (ESCCS) by reducing carbon emissions, increasing energy security and increasing renewable electricity generation.

Key Priorities

- 4.6 The i3 solar PV farm and wind turbines proposal supports the North Ayrshire Council Plan priorities of:
- Active and strong communities;
 - Inclusive, growing and enterprising local economy;
 - Vibrant and welcoming places;
 - A sustainable environment; and
 - An efficient Council that maximises resources and provides value for money.

Community Wealth Building

- 4.7 The i3 solar PV farm and wind turbines proposal supports the following pillars of community wealth building:
- Procurement: creation of green employment opportunities.
 - Land and Assets: exploring alternative use of our land and assets that currently are not productive and re-purposes those assets.
 - Financial Power: commits capital investment to support actions to reduce carbon emissions across North Ayrshire and to help achieve carbon neutrality by 2030.

5. Consultation

- 5.1 Discussions have taken place between Corporate Sustainability and Growth & Investment teams to explore the potential for and maximise large scale renewable energy technologies at i3 Strategic Investment Campus.
- 5.2 The wider i3 area renewable energy potential was assessed by Strathclyde University colleagues who have delivered a presentation to North Ayrshire Council. Further consultation will be undertaken once the solar PV farm and wind turbines feasibility studies have been fully developed.

RUSSELL McCUTCHEON
Executive Director (Place)

For further information please contact **David Hammond, Head of Sustainability, Corporate Property & Transport** on Tel. No. 07391 324570

Background Papers

The University of Strathclyde 'High Level Future Vision Masterplan' for the wider i3 area.