

Appendix 2 – Property & Facilities Management Renewables Update

PROPERTY & FACILITIES MANAGEMENT RENEWABLES UPDATE

1 Executive Summary

- 1.1 The purpose of this appendix is to describe and review ongoing progress with the various Renewables-related projects led by Property & Facilities Management (P&FM).
- 1.2 There have been five categories of Renewables projects identified:
- Carbon reduction feasibility studies
 - other carbon studies
 - non-domestic energy efficiency framework (NDEEF)
 - ongoing building design / construction projects
 - carbon budget 2024/25 – P&FM contribution

2 Carbon Reduction Feasibility Studies

- 2.1 Arcadis were appointed to provide a scope of service / specification for a series of feasibility studies exploring different aspects of the Net Zero Carbon or Carbon Reduction agenda. The studies are as follows:

No.	Type	Location
1	Gas to Air Source Heat Pump	Portlethen Swimming Pool
2	Oil to Electric Heating	Crathie Primary
3	Roof Top PVs	Aberdeenshire-wide – 15 Sites
4	Whole building	Mackie Academy, Turriff Academy, Meiklemill Primary
5	Renewables – Wind Turbines, Solar Farms and Battery Storage – Council Assets	Aberdeenshire-wide – 24 Sites

- 2.2 Study 1 – Gas to Air Source Heat Pump (ASHP) – Portlethen Pool. The aim of this study is to assess the viability of ASHP being installed in an existing building to replace a gas boiler, where no improvements are made to the building fabric or heating ancillaries. Harley Haddow were appointed from Aberdeenshire Council’s consultant framework in August 2023 to carry-out this study. Draft report was issued in November 2023, and comments provided to the consultant by Council officers. While the study is focused on changing the heating source, notably in the report the consultant is recommending upgrades to the building fabric and installing PVs. The final report should be available in February 2024.

- 2.3 Study 2 – Oil to Electric Heating – Crathie Primary School. The aim of this study is to assess the viability of electric heaters being installed in an existing building to replace an oil boiler, where no improvements are made to the building fabric or heating ancillaries. Harley Haddow were appointed from Aberdeenshire Council's consultant framework in August 2023 to carry-out this study. Draft report was issued in November 2023, and comments provided to the consultant by Council officers. As with Study 1, the consultant has included a fabric-first recommendation along with other renewable technologies which go beyond the narrow remit of this study, and there are technical issues with some of their proposals. The final report should be available in February 2024.
- 2.4 Study 3 – Rooftop PVs – Various locations across Aberdeenshire. The aim of this study is to assess the viability of a rooftop PV array solution across 15 sites, while providing evidence that the roof is structurally suitable for the installation of PV, and any additional works required to ensure this. Mott MacDonald were appointed through a mini competition organised by hub North Scotland in November 2023, with the site surveys organised for January 2024 and completion of the study in April 2024.
- 2.5 Study 4 – Whole building – Mackie Academy, Turriff Academy and Meiklemill Primary. The aim of this study is to use the whole building method to assess the viability of a range of carbon-reducing measures in an existing property – it is similar to the work undertaken at Johnshaven (Items 3.1 & 3.2) but at a larger scale. Rybka were appointed to lead a multi-discipline team through a mini competition organised by Hub North in December 2023, with completion of the study estimated in April 2024. There was a kick-off meeting in January 2004, and a SharePoint site has been set-up with access for the consultant team.
- 2.6 Study 5 – Renewables on Council Assets. The original Arcadis study on ground-mounted PV panels (solar farms) was rewritten by Council Officers to include wind turbines and battery storage, and rationalised to avoid repetition. List of council assets finalised – this will be a desktop study on 24 sites, and a survey followed by detailed site assessment on 8 sites. Green Cat have been awarded the contract and a kick-off and progress meeting have taken place. The initial information was issued to Green Cat in November 2023. The completion of the study is estimated to be in May / June 2024.
- 2.7 The findings of the five different studies, which are all going to be costed fully, have been commissioned to inform the Council's thinking on the scale of the carbon reduction programme, with the resulting impact on carbon reduction, financial outlay and cost carbon consumption (and impact on revenue budgets) to delivery on Carbon Budget commitments. For one output of the studies the consultants will be providing marginal abatement cost curves, which will assist the Council in making decisions as to those aspects of the programme to be taken forward.
- 2.8 Further development and the transition to become a 'real' project is particularly relevant for Studies 3, 4 and 5. Carbon Savings are likely to be realised in

2025/26 and for several years following this, directly or indirectly from these studies.

3 Other Carbon Studies

- 3.1 Johnshaven Primary School. Johnshaven has been assessed on an incremental basis with a range of options from 'do nothing' through to a full fabric & building services upgrade. The purpose of the options appraisal exercise was to determine which option offers the Council the most significant carbon reduction saving for every pound spent. An initial draft of the options appraisal was issued in October 2023, recommending to progress with renewable technology for the building services upgrade, and fabric work being enhanced through lifecycle maintenance. This was reviewed during November 2023, and as part of an intention to apply for the Scottish Government's Heat Decarbonisation Fund, the Energy, Capital, and Whole Life (30 year) costs were updated, and the report changed its recommendation to a fabric-first / deep retrofit approach. The report is currently being updated again by a multi-discipline team within Property to take account of a recently developed utility pricing forecast model.
- 3.2 Unfortunately Johnshaven was not part of any application to the Heat Decarbonisation Fund, as at the deadline for 2023 the information necessary was unavailable. This funding would have provided 80% of the estimated capital cost of £1,179,200 for the preferred option, so it was disappointing the Council were not able to apply this year. Going forward, in 2024/25, the plan is for Johnshaven to be launched as a new project for the upgrade works, and P&FM would develop the design and get all governance in place, but the project will not go ahead until some sort of funding is secured for it.
- 3.3 Inch Primary School. Inch is currently being assessed according to the 'EnerPHit' energy standard. Using the Passive House Planning Package (PHPP) tool, this study aims to define and provisionally quantify the retrofit works required to achieve this challenging energy standard for retrofits. Passivhaus is an international construction system which leads to very low energy buildings, and can be employed on every building type; EnerPHit is the Passivhaus equivalent standard for deep retrofits. The draft report suggests Inch achieves more than 95% reduction in carbon emissions, and around 90% reduction in space heating demand, if EnerPHit standard is achieved. Due to the cost associated with the plant and improving the fabric to EnerPHit standards, it is likely that a similar approach as Johnshaven will be adopted – namely, in 2024/25 the design will be developed but not go ahead until funding is attained.
- 3.4 Council officers will include Johnshaven and Inch Primary Schools in the next application to the Heat Decarbonisation Fund in December 2024.

4 Non-Domestic Energy Efficiency Framework (NDEEF)

- 4.1 NDEEF Phase 1. Twelve properties were included within the main project during 2022/23 and 2023/24, with five energy efficiency measures implemented:

LED lighting, EC (Electronically Commutated) fans, pipework insulation, rooftop PVs, and BMS (Building Management System) upgrades. Three schools remain to be re-fitted with LED lights – Turriff, Mintlaw and Mackie Academy – with the works expected to be complete by end-March 2024. Overall NDEEF-1 will have provided approximately 346 tCO₂e savings, making up an important part of the Council's Carbon Budget in 2022/23 and 2023/24.

- 4.2 NDEEF Phase 2. Work is currently underway on NDEEF-2, managed by Property, with the emphasis to decarbonise buildings as well as improving energy efficiency. A list of 12 Council properties were provided to a consultant (funded by Scottish Government), who subsequently prepared a report on possible Energy Conservation Measures (ECMs). The report provided estimated capital costs and potential carbon savings for each of the ECMs on all 12 buildings, including a Lifetime Carbon Savings Cost Metric (£/LTt.CO₂). This report is currently under review by Council Officers as part of a prioritisation and decision-making exercise. All carbon savings from further development of the ECMs would not be realised until 2025/26 or 2026/27.

5 Ongoing Construction Projects

- 5.1 The Ellon Office has been designed using Passivhaus principles, characterised by high levels of airtightness, super-insulation and a heat recovery system. It has rooftop PV panels producing 50kW of energy, which is re-used by the building's services, making it a Net-Zero-ready project. This project has a Glulam and Cross Laminated Timber (CLT) structure to meet embodied carbon targets. Ellon Offices was designed largely by an in-house team and started on-site in September 2023, and is on-track for completion in February 2025.
- 5.2 Peterhead Community Campus is being developed as a fully Passivhaus-certified project, to attain the key funding outcomes on Energy Efficiency and Condition of Scottish Government's Learning Estate Investment Programme (LEIP) Phase 2. Funding is spread over 25 years, with Passivhaus considered the best way to meet the outcomes, including an energy performance target of 67 kWh/sqm/annum to access the payments. The design team of external consultants is managed by P&FM. A main contractor has been appointed through a Two-Stage Design & Build contract, with the project scheduled to start on-site in May 2024 and completion in July 2026.
- 5.3 Fraserburgh Primary School is being developed as a fully Passivhaus-certified building. It was designed to the funding requirements of LEIP Phase 3, which as well as an Energy Efficiency and Condition targets in earlier phases had an Embodied Carbon outcome, so the steel structure was replaced with Glulam and CLT early in the design process. Passivhaus is considered a route map to meet the funding outcomes, and although the Council was unsuccessful with the LEIP funding application, the final Passivhaus-certified building will be an exemplar Net Zero Carbon project. The project was led by an in-house team scheduled to complete RIBA Stage 4 in March 2024. It is anticipated that the project will be paused at that stage..

6 Carbon Budget 2024/25 (P&FM contribution only)

- 6.1 By way of Asset Rationalisation it is estimated there will be Carbon Savings = 248 tCO₂e. Through the Office Space Strategy, which went to Committee in January 2024, a number of Council buildings are recommended for closure in the next financial year. The figure takes account of the development of new offices in Ellon (refer Item 5.1), and the move of staff away from their current energy-intensive properties.
- 6.2 In addition, non-Housing Refurbishment Works will provide an estimated Carbon Savings = 79 tCO₂e. Fabric and lighting improvements are considered part of the Carbon Budget, as these measures mean it takes less energy to provide heat and power to these buildings. This is based on the figures for 2023/24: Windows Upgrades 19, Roof Upgrades 40 and Lighting Upgrades 20.
- 6.3 In line with other Local Authorities, the creation and implementation of a more formal Heating Policy by Aberdeenshire Council should unlock significant savings through the prevention of energy waste. Services will be supported on this focus with tools and advice, but ultimately empowered at a site level to take direct action and apply best practice. By ensuring heating is being operated within the most appropriate schedules and setpoints to meet operational needs – and identifying and tackling persistent overheating – it should mean the release cost and carbon savings, with minimal investment. The Heating Policy is intended to be ready for communication in early-Summer after passing appropriate approvals, but it will need support from all leadership levels to deliver the forecast benefits.
- 6.4 Council officers in the Energy team have calculated the Heating Policy will provide an estimated Carbon Saving of 923 tCO₂e in both 2024/25 and 2025/26. This reduction level aligns with the experience of other local authorities. If the Heating Policy is launched Spring 2024 as planned, and there is an 18 month period for the behaviour change it formalises to take effect, this would fall equally between the next two financial years.
- 6.5 The total estimated Carbon Savings from these measures being led by P&FM as part of the Business Services contribution to the Carbon Budget 2024/25 (Asset Rationalisation, Non-Housing Refurbishment Works and Heating Policy) = 1,250 tCO₂e. The situation will improve in 2025/26 and later years because, as well as the above items in this section, there would be the opportunity to add Johnshaven, Inch and NDEEF-2, and following the feasibility studies, some of the Rooftop PVs, Whole Building and Renewables on Council Assets projects.

Appendix prepared by Iain Wylie, Engineering Services Manager
17 January 2024