

Solar Energy Investment Projects

Timetable	
Meeting	Date
Climate Transition, Corporate and Environmental Services Policy Advisory Committee	8 July 2024
Cabinet	24 July 2024

Will this be a Key Decision?	Yes
Urgency	Not Applicable
Final Decision-Maker	Cabinet
Lead Head of Service	Anna Collier Head of Insight Communities and Governance
Lead Officer and Report Author	James Wilderspin, Biodiversity and Climate Change Manager
Classification	Public
Wards affected	Fant & Oakwood, Park Wood & Mangravet, Shepway

Executive Summary

This report outlines three solar photovoltaic (PV) investment projects aimed at supporting the Council's goal of achieving net zero by 2030. The proposed projects encompass the Lockmeadow Entertainment Complex, the Parkwood Depot, and Mote Park and the Leisure Centre.

Collectively, these projects represent a total potential investment of £960,000. The combined solar PV capacity of these installations could reach up to 945 kWp, with the potential to offset between 108 tCO₂e annually. The projects offer significant financial benefits, with estimated annual savings of £110,000 and payback in an average of 7.6 years average over all three projects.

These initiatives not only contribute substantially to the Council's carbon reduction efforts but also provide additional benefits such as improved energy security, and opportunities for income generation through power purchase agreements.

The report recommends considering investment in all three projects to maximise the overall impact of the Council's solar PV strategy.

Purpose of Report

Decision

This report makes the following recommendations to the Cabinet: That

1. Investment in solar photovoltaic projects, as outlined in the report, be approved for:
 - a. Lockmeadow Entertainment Complex;
 - b. Parkwood Depot; and
 - c. Mote Park and the Leisure Centre.

Solar Energy Investment Projects

Issue	Implications	Sign-off
Impact on Corporate Priorities	Embracing Growth and Enabling Infrastructure And Safe, Clean and Green	Head of Insight, Communities and Governance
Cross Cutting Objectives	Biodiversity and Environmental Sustainability is respected.	Head of Insight, Communities and Governance
Risk Management	Please refer to paragraph 8.1 of the report	Head of Insight, Communities and Governance
Financial	Accepting the recommendations will demand spending of approximately £960,000. This will be funded from the budget for Biodiversity & Climate Change in the Council's approved capital programme.	Paul Holland, Senior Finance Manager
Staffing	We will need access to extra expertise to deliver the recommendations.	Head of Insight, Communities and Governance
Legal	No legal implications arise from reporting to the PAC. However, further input will be required from legal services in the event that Cabinet decides to take forwards any of the proposed schemes.	Deputy Head of Legal
Information Governance	No impact.	Head of Insight, Communities and Governance
Equalities	No impact	Policy & Information Manager
Public Health	No direct Health impacts.	Public Health Officer

Crime and Disorder	There are no implications to Crime and Disorder.	Head of Insight, Communities and Governance
Procurement	On accepting the recommendations, the Council will then follow procurement exercises for to find suitable suppliers and contractors.	Head of Insight, Communities and Governance
Biodiversity and Climate Change	<p>The implications of this report on biodiversity and climate change have been considered and aligns with Action 7.1 of the Biodiversity and Climate Change Action Plan to Deliver Maidstone Borough Council 2030 Net Zero Commitment, by:</p> <ul style="list-style-type: none"> • Decarbonising the councils’ buildings through low carbon heating, LEDs, insulation and smart controls, • decarbonising the council’s fleet to fully EV, • investing in renewable energy generation, • incorporating energy saving principles into office strategies, and • supporting staff to shift to electric/ultra-low emission vehicles, public transportation and more flexible working. 	Biodiversity and Climate Change Manager

1. INTRODUCTION AND BACKGROUND

- 1.1 The Council has set an ambitious goal to reach net zero emissions by 2030, with substantial financial commitments already in place. A significant portion of the Council's emissions can be offset by maximising Solar Photovoltaic (PV) installations on its buildings, which have a good medium-term investment for both cost savings and carbon reduction. Investment in Solar PV now forms part of the capital programme for 24/25 and received final approval at Council as part of the overall budget on 21 February 2024, totalling £1.9million investment in renewables and carbon offsetting by 2030.
- 1.2 Laser Energy was commissioned to assess the Council’s existing solar installations and recommend areas for improvement and additional investment. This is building on the work conducted by APSE Energy who conducted decarbonisation audits of 13 key Council properties, providing recommendations for emissions reduction through solar investments, to maximise the renewable energy generated for direct use by the Council

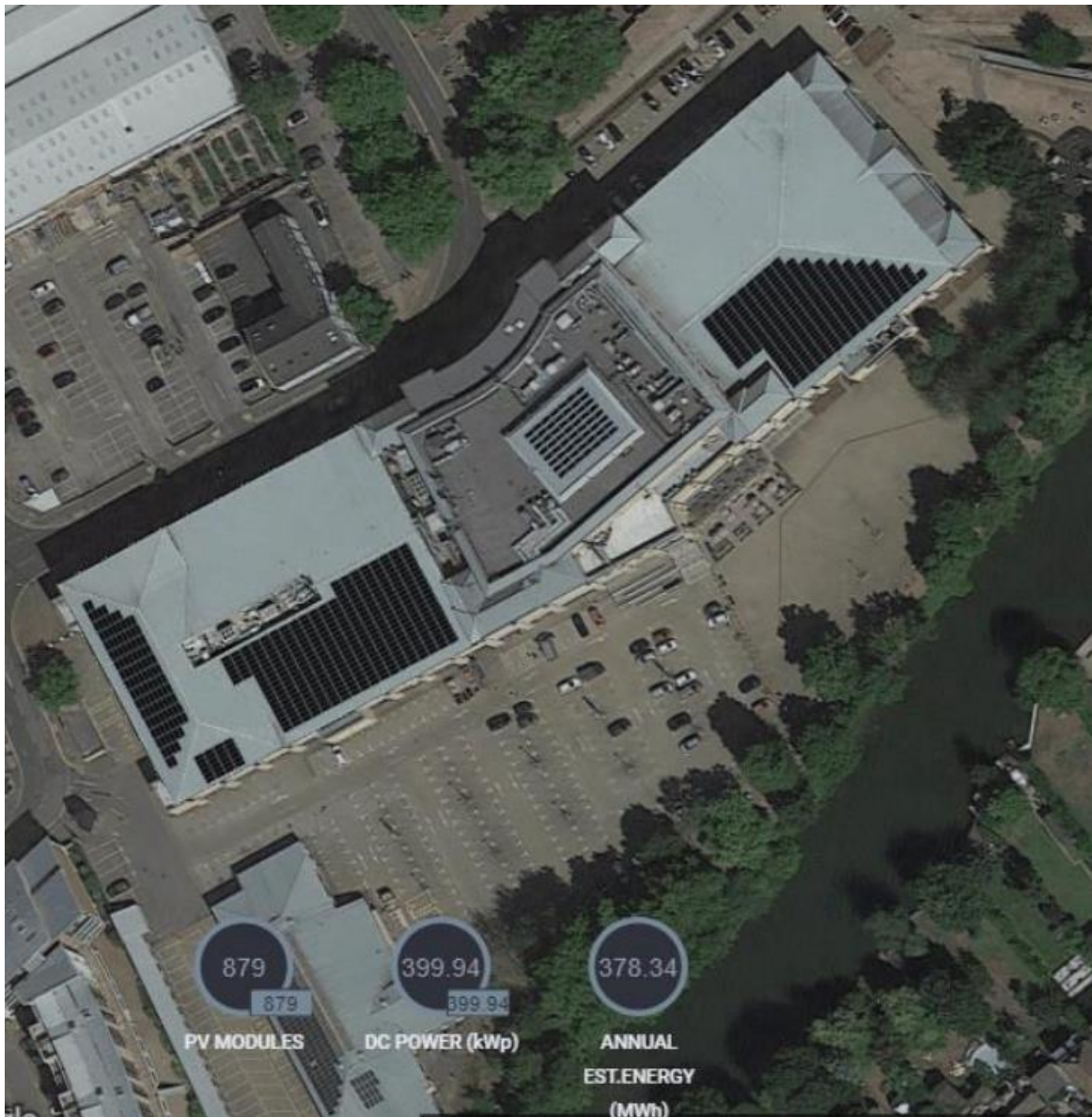
cutting utility bills and reducing the Council's carbon emissions with a relatively fast payback period for the investment.

- 1.3 The primary costs associated with large scale solar installations are the trenching and cabling require to take the electricity produced to grid or place of use. Therefore, there are advantages to seeking rooftop space where solar can be installed that minimises connections needed, so that electricity can be used where it is generated and avoid additional costs. Solar panels require low maintenance and are a one-time investment with long-term returns that are a quiet, simple, and safe way to generate energy in operation.
- 1.4 Officers have been exploring the viability of various solar investment projects and this report presents the three most viable options which were all approved by the Climate Transition, Corporate and Environmental Services Policy Advisory Committee to recommend to Cabinet to invest the capital.

2. Lockmeadow Entertainment Complex

- 2.1 Lockmeadow Entertainment Complex has a 2,300m² roof, providing ample space for a solar PV array. The curved metal sheet roof also allows for a relatively quick and easy installation.
- 2.2 The cinema and five other tenants have their own electricity supply. However, there is possible opportunity with a Solar PV array for a power purchase agreement (PPA) to be direct wire into these distribution boards with the excess solar power generated. Allowing the Council to control the costs of the electricity supply produced by the solar PV, potentially lowering costs to attract new tenants and/or pass on reductions in utility costs to tenants.
- 2.3 Equally, the Council currently supplies energy to the food hall this could be metered to provide an income but would also substantially lower the running costs currently incurred by the Council as part of the tenancy agreement. Finally, there is a large telecommunications antenna on the roof which is sub metered, and a further opportunity to sell the power generated to the telecommunications company which could also bring in an income to offset the installation costs.
- 2.4 The proposed PV system is estimated to cost between £450,000 to £600,000 and consist of 879 panels with a maximum generation capacity of 390W per panel and have a total generation output of 400 kWp, generating a total of 316,886 kWh/year. This system would offset 60 to 90 tCO₂e per year by reducing grid electricity import by 33% and saving the Council approximately £70,000 per year in utility costs with a payback period of 10 years.

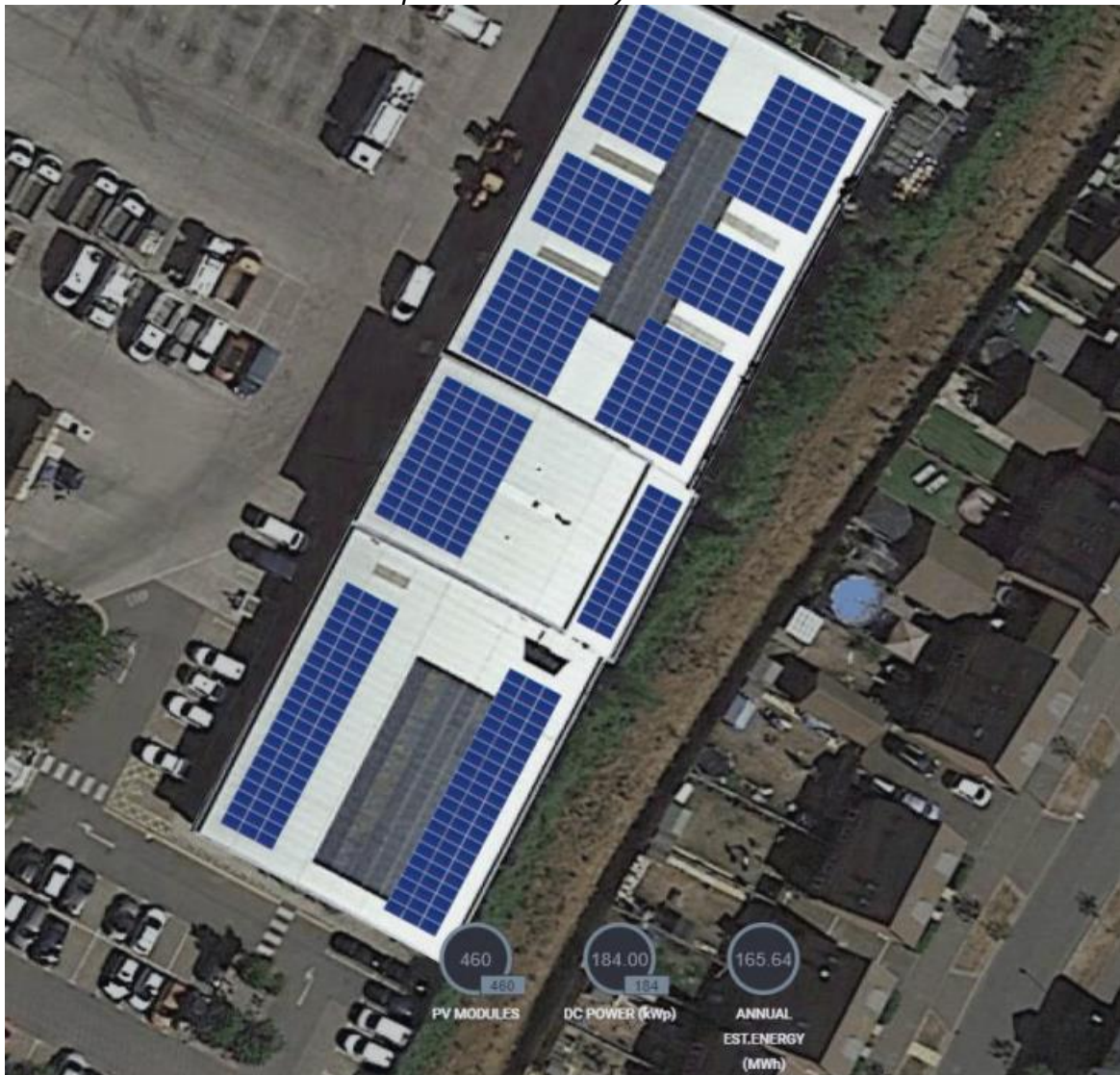
Figure 1: Proposed Location of the Lockmeadow Solar Array



3. The Parkwood Depot

- 3.1 The Laser Energy’s investigation found that the existing 50kWp array situated on the Depot roof requires total decommissioning, removing from roof, cleaning and recommissioning due to being poorly and dangerously installed. Some panels may be damaged and need replacing, and when recommissioned would be placed correctly enhancing the efficiency of the existing solar.
- 3.2 While recommissioning the existing Depot’s PV, there is an opportunity to increase the Solar PV to more than double totalling a 185kWp array.

Figure 2: Proposed Location of larger Depot Solar Array (light blue indicated new panel locations)

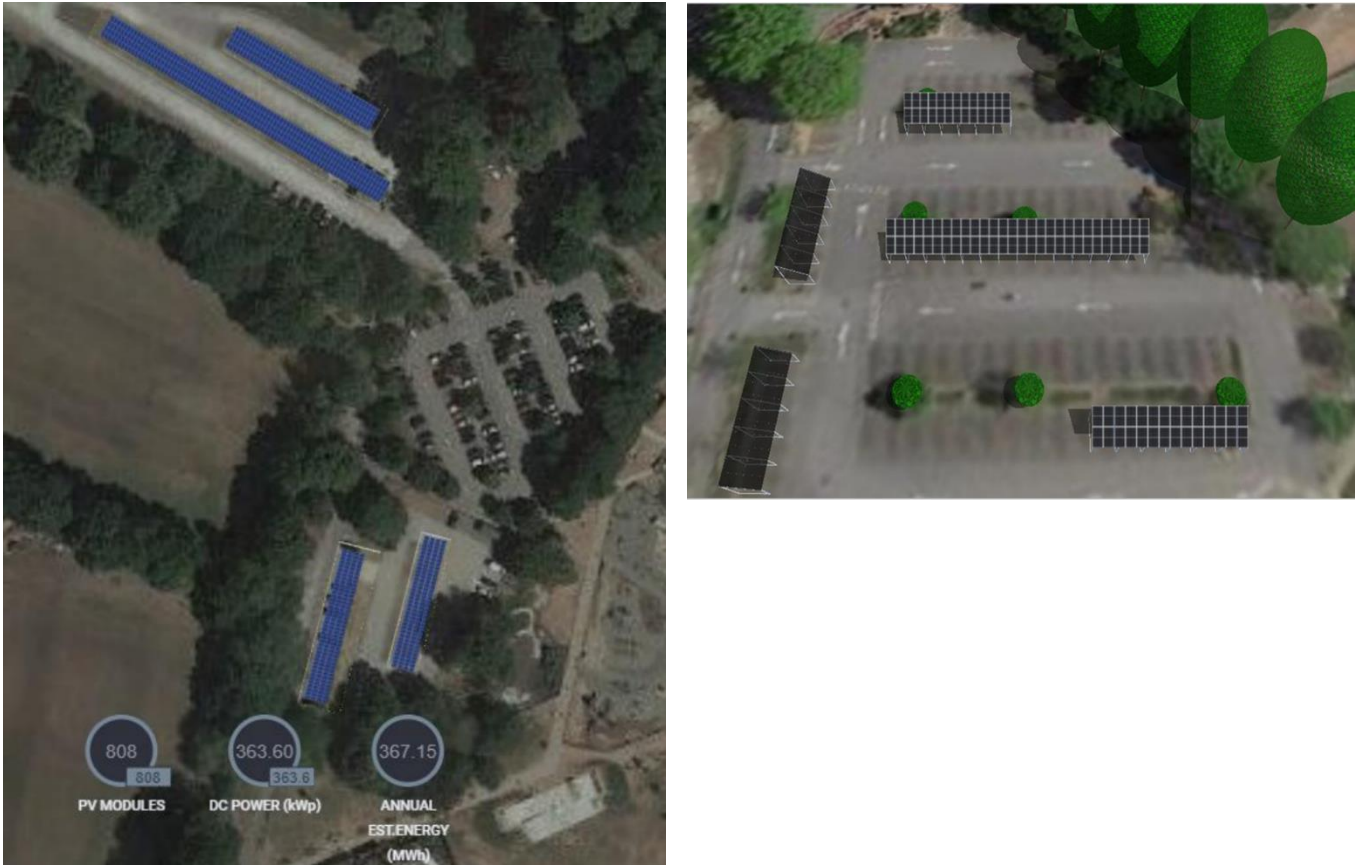


- 3.3 A larger array and the instillation of a battery has numerous benefits at the depot. Including the ability to charge the growing number of Electric Vehicles (EVs) at the Depot using solar energy. With a battery storage it would also be possible to charge the battery throughout the day and then charge the EVs over night reducing costs to the Council. The Depot is also an emergency planning location for the Council and in terms of business continuity in relation to the possibility of a future National Power Outages or other emergencies, solar PV and a battery would enable the Depot to continue to operate.
- 3.4 Investment in PV at the Depot is estimated to be around £80,000 however this does not include provision for cleaning and recommissioning the existing solar PV or the costs of the battery which requires further market research in relation to the size of the Council's electric fleet. The full 185kWp array is estimated to cut emissions by 25tCO₂e and a potential payback of 5 years.

4. Mote Park and the Leisure Centre

- 4.1 Maidstone Leisure Centre has a Carbon Footprint of 648tCO₂e (in 2022-23fy). This is the largest single source of carbon emissions of Council buildings, and more than double the emissions of Maidstone House. A PV array was previously installed on the Leisure Centre roof - these were poorly installed and decommissioned as the roof structure could not withstand the additional structural load.
- 4.2 The car park adjacent to the Leisure Centre was initially explored for installation of solar carports (solar car park canopies), which provide additional benefits of protecting cars from the elements. However, due to significant shading by trees around the car park and pending decisions on the future of the Leisure Centre, the Mote Car Park adjacent to Mote Park Main Children’s Playground was selected for the proposed PV system installation.

Figure 3: Proposed Location of Mote Park Car Park Solar Canopies



- 4.3 The suggested location is approximately 350m away from the Leisure Centre and would incur additional trenching and cable routing costs, however it offers a larger square meterage and less shading from obstacles compared to the Leisure Centre’s car park. Finding the best trenching route south is vital to reduce cost of this project as there are several risks associated with planning permission and the route between the Mote Park Car Park and the Leisure Centre:

- Mote Park is Grade II Listed, and the solar canopy would require minimal visual impairment to be given planning permission. There is also a planning stipulation for the trees next to the site to remain, and no tree can be removed and would need protecting for this project to go ahead.
- Event disruption works could temporarily damage the football pitch and space for parking for events will be lost temporarily.
- Depending on the proposed route, additional costs and time may be accrued to take precautions needed for the asbestos in the soil, unexploded ordnance and archaeology surveys, as has been encountered in other projects in this area of Mote Park.

4.4 The proposed installation is for 122kWp to 360kWp solar carports over two adjoining sites costing £70,000 to £150,000 depending on the final designs. Please note that the costs do not include the trenching and wiring to the Leisure Centre, expected to cost upwards of £70,000 depending on the final route. The array is expected to offset approximately 23 to 60 tCO2e due to reduced grid electricity import to the Leisure Centre. Conservative simulation results indicate that the proposed installation would meet 14% to 30% of the Leisure Centre's annual electricity consumption needs, saving approximately £20,000 to £50,000 per year on the leisure centres utility costs, with a payback period of 8 years for the PV.

5. Summary and Next steps

- 5.1 It is recommended that all three projects be invested in simultaneously, as the combination of the three projects would attract suppliers and contractors and reduce costs for purchasing the PV with a larger scale tendering process.
- 5.2 By investing in all three projects, the Council would maximise both financial and environmental returns across diverse properties.

Table 1: Solar Project Summaries

Site	Size/capacity of Solar Array	Capital Costs of Solar Project	Annual savings to council	Pay back in Years	Carbon reduction (CO2te)
1. Mote Park Car Park for use at Maidstone Leisure Centre	360kWp	£240,000	£20,724	8	23+
2. Lockmeadow Entertainment Complex	400kWp	£600,000	£70,852	10	60
3. The Depot	185kWp	£120,000 (estimated, not including battery)	£20,000 (estimated for new PV only)	5	25
Total	945kWp	£960,000	£111,576 Saved PA	7.6 Years average	108 CO2te reduced

- 5.3 All three projects offer significant long-term cost savings and relatively quick payback periods, averaging 7.6 years if all the projects are conducted under one tender. The combined projects have the potential to offset 108+ tCO₂e annually. The projects, particularly at The Depot, enhance the Council's energy security and business continuity capabilities. Beyond energy generation, the projects offer additional advantages such as potential income generation, improved tenant relations, and enhanced public amenities and aligns with the Council's commitment to renewable energy and a proactive step towards achieving its 2030 Net Zero goal.
- 5.4 This report was considered at the Climate Transition, Corporate and Environmental Services Policy Advisory Committee and all three of the projects were recommended to Cabinet to invest the capital.
-

3. AVAILABLE OPTIONS

- 3.1 Option 1: invest in all three projects.
- 3.2 Option 2: invest in two projects.
- 3.3 Option 3: invest in one project.
- 3.4 Option 4: choose not to invest in any of the projects.
- 3.5 Option 5: request further information.
-

4. PREFERRED OPTION AND REASONS FOR RECOMMENDATIONS

- 4.1 Option 1: Invest in all three projects, simultaneously is the recommended option as this would enable officers to attract contractors and improve purchase power of the PVs.
-

5. RISK

- 5.1 The risks associated with this proposal and these individual projects, including the risks if the Council does not act, include:
- Costs of Solar PV increasing
 - Difficulties in private wiring at the Mote Park project, and cost increase from trenching.
 - Lack of contractor/supplier interest.
 - Shortage of inverters/PV.
 - Utility costs to Council continue to increase.
 - Not meeting Net Zero 2030 commitment.
-

6. CONSULTATION RESULTS AND PREVIOUS COMMITTEE FEEDBACK

- 6.1 Informal Cabinet met on the 4th of October 2023, and were presented a briefing exploring options to focus the Council's Strategy and resources including achieving net-zero housing borough-wide, progressing sustainable integrated transport, solar energy generation investment, local energy action plans, and biodiversity enhancements for the borough.
 - 6.2 The report was considered by the Climate Transition, Corporate and Environmental Services Policy Advisory Committee on Monday 8 July 2024 who recommended that the Cabinet approve the report recommendations.
-

7. NEXT STEPS: COMMUNICATION AND IMPLEMENTATION OF THE DECISION

- 7.1 Commission Laser Energy to project manage, finalise designs and structural integrity of buildings.
 - 7.2 Start tendering process and frameworks to attract and discuss with contractors and suppliers to find the best price.
 - 7.3 Continue planning approval process.
-