Agenda Item No:4

Low Carbon Heating Programme Update

To:	Environment and Green Investment Committee
Meeting Date:	3 March 2022
From:	Steve Cox, Executive Director of Place and Economy
Electoral division:	All, but in particular Huntingdon West and Ely North
Forward Plan ref:	2022/018
Key decision:	Yes
Outcome:	Reduction of 357 tonnes of carbon dioxide equivalent (CO_2e) emissions per annum as part of the Council's "scope 1" direct carbon emissions through the replacement of fossil fuel heating at 22 sites, including Scott House and Larkfield Resource Centre, with low carbon Air Source Heat Pumps (ASHPs).
Recommendation:	(a) To authorise the required additional spend as detailed in paragraphs 2.6 to 2.12 on the projects to install ASHPs at Scott House and Larkfield Resource Centre (b) To delegate authority to the Executive Director of Place and Economy, in consultation with the Chair / Vice-Chair of the Environment and Green Investment Committee, to authorise any further increases of costs on individual projects, as long as the business case for the entire programme as a portfolio remains within the other agreed investment criteria.

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1. Background

1.1. In December 2019, following an update to Buildings Regulations on 'Nearly Zero Energy Buildings', the Council's General Purposes Committee resolved unanimously to install low carbon heating systems for any refurbishments and boiler replacements.

1.2. In February 2020, the Council included a £16million Environment Fund in its budget plan to support delivery of its commitments set out in the Climate Change and Environment Strategy approved in May 2020 at Full Council. £15million of the fund was earmarked for replacing oil and gas heating with renewable heating. There are approximately 70 buildings owned and occupied by the Council.

1.3. The Council's latest annual carbon footprint report shows that heating buildings with oil and gas accounted for around two thirds of the Council's 'Scope 1' carbon footprint. Scope 1 emissions are direct emissions from the Council's own assets and as such are those that we have the greatest control over. It will not be possible to meet the Council's climate change targets whilst so many of its buildings are heated with gas and oil.

1.4. In June 2020, the Environment and Sustainability Committee agreed the assessment criteria for the Low Carbon Heating Programme for the Council's buildings against which individual projects can draw down investment from the Environment Fund for their implementation and thus enable the Council to proceed with significant work towards meeting its climate change commitments. The approved criteria for investment include:

- Individual sites are owned (either freehold or long term leaseholds) and occupied by the Council, and not planned to be sold or let out within the next five years (based on currently known and agreed plans);
- The proposed design meets the Council's renewable heating specification;
- The Programme is expected to achieve a simple average payback of 20 years or better for the £15million investment, taking into account the value of carbon. (Individual projects may exceed this as long as the average is maintained);
- If any individual project is greater than £500,000, the project will come forward to Committee for approval.

1.5. Also, in June 2020, the committee resolved to approve the inclusion of a carbon savings cost into the business case to sit alongside the financial business case for the low carbon heating programme. In October 2020 the same committee resolved to implement a virtual internal carbon price, to be taken into account in decision making for all applicable business cases.

1.6. The most suitable technologies for heating buildings from renewable sources are Air Source Heat Pumps (ASHPs) and Ground Source Heat Pumps (GSHPs). In ASHPs, outside air is used to heat a liquid refrigerant. The pump uses electricity to compress the refrigerant to increase its temperature then condenses it back to release stored heat. This heat is then used to heat water which is then piped to either radiators or under-floor heating. ASHPs still work well even when the outside air temperature is very low. They are generally very reliable sources of heat and require very little maintenance. GSHPs work in a similar way, except that coils or pipes containing refrigerant are buried in the ground. Note that whilst

heat pumps do use electricity, they are very different to traditional electric heating, in that the electricity is not the source of heat. Heat pumps typically produce a heat output 3 to 4 times as much as the electricity they use. GSHPs are considerably more expensive than ASHPs.

1.7. 22 projects have been brought into the low carbon heating programme so far.

1.8. The intended outcome of this report is to agree the continuation of this programme in the light of new information detailed below.

2. Main Issues

2.1. Progress to date. At the time of writing, 8 projects are finished and another 14 are currently on site. By the date of the committee meeting, all except 5 are expected to be complete.

2.2. The 22 sites in the programme so far are as follows:

33 Haviland Way, Cambridge. Finished
78 Victoria Rd, Wisbech. Finished
Bargroves Resource Centre, St Neots. Finished.
Cottenham Library. Finished
Ely Branch Library. On site, expected to complete in March 2022.
Hereward Hall, March. Finished.
Huntingdon Community Centre. Finished
Huntingdon Library. On site, expected to complete in April 2022..
Larkfield Resource Centre, Ely. expected to complete in March/April 2022.
Scott House, Huntingdon. On site, expected to complete in March 2022.
Victoria Lodge, Wisbech. Finished
Woodland Lodge, Huntingdon. On site, expected to complete in March/April 2022.
Burwell House. On site, expected to complete in May/June 2022.
Roger Ascham site, Cambridge. On site, expected to complete in May/June 2022.
Cambridge Central Library. On site, expected to complete in March/April 2022
Chatteris Library. On site, expected to complete in February/March 2022.
March Library. On site, expected to complete in March 2022.
Ramsey Library. On site, expected to complete in March 2022.
Shortsands Day Centre, St Neots. On site, expected to complete in February/March 2022.
Stanton House, Huntingdon. On site, expected to complete in March 2022.
Wisbech Library. On site, expected to complete in March 2022.
Bassingbourn preschool. Finished

2.3. All 22 sites are having ASHPs installed. A few of the sites are also having additional energy measures including solar photovoltaic panels, double glazing, or upgraded heating controls. Some sites have also required upgrades to the incoming electricity supply.

2.4. The total capital cost of these 22 projects is forecast to be around £5.2m. This is funded through a combination of grants and borrowing.

2.5. In late 2020, the government's Public Sector Decarbonisation Scheme (PSDS) was launched by Salix Finance, offering grant funding to local authorities for heating decarbonisation projects. We were successful in securing grant funding for 3 applications, which will in total contribute just under £3m towards the cost of 21 projects. The grant

covers costs of up to £500 per tonne of carbon saved over the project lifetime, plus up to 100% of some specific costs such as metering and electricity supply upgrades. Overall, the grant is expected to cover around 56% of our costs for this programme. The net cost to the council is therefore reduced to nearer £2.3m.

2.6. Rising costs. At some sites, unforeseen additional work has been required. Reasons for extra costs include the need for temporary heating and hot water solutions, asbestos surveys and removal, out of hours work, and minor changes to designs requiring additional pipework or alternative equipment such as different sized radiators or acoustic barriers. This varies from site to site, with a few sites coming in cheaper than expected and a few considerably more expensive. Across the whole programme, additional costs and expected variations add around 8% to the expected costs. This is already included in the totals above.

2.7. Due to these unforeseen additional costs, two sites are now at risk of exceeding the £500,000 limit of delegated authority. These are Scott House and Larkfield Resource Centre.

2.8. The overall programme across all sites is still within the agreed payback and other criteria. Across the whole portfolio, the simple average payback is currently estimated at 5 years. This is based on the differential costs compared to a counterfactual of replacing heating systems like with like (rather than low carbon) and taking into account the value of carbon (which is a virtual cost), in line with the previously agreed investment criteria.

2.9. The project at Scott House was originally forecast to cost £472,879. Since the project started work, additional unforeseen costs have occurred, totalling £22,772. The reasons for these additional costs at this site are minor design changes that were unknown to be needed until work started on site, including additional electrical work, the need for a fire partition to house the buffer vessels, revised prices of steel frame for the acoustic enclosure, repositioning of the cycle shed, cable support in the basement, and out of hours work. Further costs are expected in the next few weeks of £4,829 for weekend work to drain and flush the system and £2,477 for temporary heating. This brings the new forecast total cost to £502,957 (excluding costs of staff time), slightly exceeding the £500,000 limit. This figure is unlikely to change much now because this project is very close to completion.

2.10. The project at Scott House is expected to save 20 tonnes CO_2e per annum and annual energy use will reduce by over 80,000 kWh. Energy and maintenance bills for the site are also expected to be slightly reduced (estimated saving £372 per year). The high cost of this project means these savings will not pay back the cost of installation on this individual project, which would be more expensive than a like for like replacement of gas boilers. However the overall portfolio of projects remains within the agreed investment criteria. The PSDS grant for the site is around £135,871 and so covers around 27% of the estimated total project costs.

2.11. The project at Larkfield Resource Centre was originally forecast to cost £444,371. Additional costs of £37,939 have occurred to date, some of which were unforeseen. The reasons for additional costs at this site include revised trenching and related works for the required UKPN substation, tree works, resized radiators, temporary hot water solution, electrical variations and out of hours work. Further additional costs are going to be required here too, estimated at £28k, for an acoustic enclosure. The revised total project cost is therefore likely to be around £513,237.

2.12. The project at Larkfield will save an estimated 41 tonnes CO_2e per annum and reduce

annual energy usage by over 175,000 kWh. Energy bills for this site are expected to increase in the early years of the project by about 3.5% before becoming cheaper (compared to gas) from around year 8 onwards (forecast average of 4% cheaper over 25 year lifetime). The PSDS grant funding for this site is around £390,701 and so covers about 75% of the total project costs. Taking into account the value of saved carbon emissions, the total lifetime cost (installation and operation over 25 years) is estimated at £311,530 less than replacing like for like with gas (based on undiscounted prices). Excluding the value of carbon emissions, the low carbon option is still estimated £90,710 cheaper over 25 years.

2.13. ASHPs do make some noise (mainly due to the fan) but are not generally loud. However, the noise levels vary by make/model and the impact of noise also varies by location and use of the site. An acoustic engineer has been engaged to assess noise levels. The majority of projects do not require any acoustic mitigations, but a small number, including Larkfield, will need these additional measures. Scott House already has an acoustic enclosure.

2.14. None of the other projects are at risk of exceeding the £500,000 limit, other than Burwell House which already has committee approval to exceed that value should it be necessary, and is currently forecast at £490k.

2.15. Timing. The conditions of the grant funding require the grant-funded portion of the works to be completed by 31 March 2022 for most projects. Supply chain challenges are a significant risk to the delivery and meeting the planned timetable. For example:

- One of the heat pump manufacturers has informed us of significant delays to delivery lead times due to a global shortage of microprocessors and various raw materials.
- The potential for labour shortages due to Covid-19
- The potential for unforeseen technical or practical issues on site, such as asbestos.

2.16. A small number of sites are at risk of not completing this financial year, for various reasons. Huntingdon Library started late due to a delay whilst waiting for planning permission, but is now on site. However, the heat pumps are not expected to be delivered until early April. At Burwell House, delays have occurred for two main reasons. Firstly, the heat pumps are not expected until April or May due to manufacturer delays. Secondly, we are waiting for confirmation of dates for the work required by UK Power Networks for the electricity supply upgrade. Nonetheless, we still expect to complete most of the work in advance and so expect to have spent the grant-funded portion of the costs for both of these sites before the grant deadline of 31 March 2022. Cambridge Central Library is expected to complete at the end of March but may run into April if there are any unforeseen delays.

2.17. Once these projects are all complete, these 22 projects between them are expected to save around 357 tonnes carbon emissions per year and reduce the Council's gas usage by around one third.

2.18. The council's other sites that are still heated by fossil fuels may be considered for future projects, and a pipeline of potential projects is being developed for when resources allow. It is unknown whether further grant funding for these types of projects will be available in future, but from what we know so far, the eligibility criteria is likely to be stricter than the previous grants we secured.

3. Alignment with corporate priorities

3.1. Communities at the heart of everything we do

There are no significant implications for this priority. However, there will be a benefit to workers involved in the works. The sites having updated heating systems will benefit the staff and service users who use the sites.

3.2. A good quality of life for everyone

There are no significant implications for this priority. However, a reduction in the carbon footprint for Cambridgeshire has benefits to the quality of life of our residents.

3.3. Helping our children learn, develop and live life to the full

Some of these sites provide important services for children and young people. For example, Woodland Lodge is a children's home. Burwell House offers residential and non-residential courses for children, young people and adults. Our libraries are also important places of learning for children and others. These sites will benefit from the updated heating systems with a reduced carbon footprint.

3.4. Cambridgeshire: a well-connected, safe, clean, green environment.

This programme is helping the Council to meet its carbon reduction ambitions in relation to this priority.

3.5. Protecting and caring for those who need us

There are no significant implications for this priority.

4. Significant Implications

4.1. Resource Implications

The report above sets out details of significant implications in paragraphs 2.4 to 2.12, and 2.14. Our experience to date is that delivering low carbon heating schemes for projects does also require significant staff resource.

4.2. Procurement/Contractual/Council Contract Procedure Rules Implications

Tenders for the first batch of projects (14 sites) were completed using the Council's existing property minor works framework. The remaining 8 sites are being delivered through the Council's existing energy performance contracting framework.

4.3. Statutory, Legal and Risk Implications

All building works will need to comply with Building Regulations and Health and Safety legislation and policies.

Key risks include potential delays or additional costs owing to asbestos remedial works, COVID-19-related delays to materials supplies or contractor staff shortages or electricity

supply upgrades. These are all being monitored and managed by the project team.

4.4. Equality and Diversity Implications

Access to the buildings by staff and service users may, for some sites, be temporarily restricted whilst works on site are taking place. This could include temporarily closing buildings or relocating access routes, workspaces and services to other parts of the building or other buildings. Alternative plans are put in place where required to ensure staff and service users with protected characteristics are not negatively impacted. For example, temporary relocating the service from Shortsands Day Centre to another nearby location. These plans are being managed by the service manager, with transport provided for service users who require it.

4.5. Engagement and Communications Implications

The Council's Energy and Property FM teams have worked together to identify a list of properties to bring forward projects to replace oil or gas heating with ASHPs. This list was assembled with input from representatives of the Cambs2020 team, the Property FM team, the Energy Investment Unit and the Strategic Property Asset Board. The project teams have worked closely with building users to co-ordinate works at the sites where projects are taking place.

4.6. Localism and Local Member Involvement

Members have been informed about the Low Carbon heating Programme through reports to the Green Investment Advisory Group. In some cases, where there have been particular issues, engagement with the local councillor has been undertaken to share information and progress on the project.

4.7. Public Health Implications

The works will need to be done whilst minimising disruption and still adhering to social distancing requirements that may still be in place at the time, due to the COVID-19 situation.
Reducing our carbon footprint and helping to mitigate climate change also has public health benefits in the long term.

4.8 Environment and Climate Change Implications on Priority Areas:

4.8.1 Implication 1: Energy efficient, low carbon buildings.
Positive Status:
Explanation: This project will directly reduce carbon emissions from heating our buildings.

4.8.2 Implication 2: Low carbon transport.
Neutral.
Explanation: There are no changes to transport as a result of this project.

4.8.3 Implication 3: Green spaces, peatland, afforestation, habitats and land management.
Neutral.
Explanation: no impact

4.8.4 Implication 4: Waste Management and Tackling Plastic Pollution.
Neutral.
Explanation: no impact

4.8.5 Implication 5: Water use, availability and management:
Neutral.
Explanation: no impact

4.8.6 Implication 6: Air Pollution.
Neutral.
Explanation: no impact

4.8.7 Implication 7: Resilience of our services and infrastructure, and supporting vulnerable people to cope with climate change.
Neutral.
Explanation: no impact

Have the resource implications been cleared by Finance? Yes
Name of Financial Officer: Sarah Heywood

Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement? Yes Name of Officer: Clare Ellis

Has the impact on statutory, legal and risk implications been cleared by the Council's Monitoring Officer or LGSS Law? Yes Name of Legal Officer: Fiona McMillan

Have the equality and diversity implications been cleared by your Service Contact? Yes
Name of Officer: Elsa Evans

Have any engagement and communication implications been cleared by Communications? Yes
Name of Officer: Ken McErlain

Have any localism and Local Member involvement issues been cleared by your Service Contact? Yes Name of Officer: Sheryl French

Have any Public Health implications been cleared by Public Health? Yes
Name of Officer: Iain Green

If a Key decision, have any Environment and Climate Change implications been cleared by the Climate Change Officer? Yes Name of Officer: Emily Bolton

5. Source documents guidance

5.1. Source documents: none.