

School Low Carbon Heating Project Approvals

To:	Environment and Green Investment Committee
Meeting Date:	3 October 2024
From:	Executive Director Place of Sustainability
Electoral division(s):	Hardwick Soham South & Haddenham Roman Bank & Peckover Romsey
Key decision:	Yes
Forward Plan ref:	2024/073
Executive Summary:	The report provides information on the financial investment required to deliver low carbon heating projects in schools that exceed the £500k key decision threshold. The report seeks Committee approval for the investment, from the approved capital programme, into the projects as these will decarbonise the schools' heating and prevent installation of new gas and oil boilers.
Recommendation:	The Committee is recommended to: a) Agree that funding is allocated for the low carbon heating projects at Meridian, Robert Arkenstall and St Philip's primary schools as set out in paragraph 3.6. In the event that one project cannot proceed, Committee is asked to approve funding for a low carbon heating project at Alderman Payne primary school as a reserve. b) Note that an urgent decision-making process was used to approve funding for a low carbon heating project at Stretham Community Primary School for the reasons set out in paragraph 3.10. c) Confirm the ongoing availability of up to £214k as the lending facility from the Council for the schools specified in this report for low carbon and energy efficiency projects, continuing the approach set out in paragraphs 2.1 and 2.2. d) Agree the proposed use of UK Power Networks for both non-contestable and contestable elements of electrical supply upgrades as discussed in paragraphs 3.11 and 3.12.

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1. Creating a greener, fairer and more caring Cambridgeshire

1.1 This report relates to **Ambition 1: Net zero carbon emissions for Cambridgeshire by 2045, and our communities and natural environment are supported to adapt and thrive as the climate changes.** Decarbonisation of heat in buildings, including the county's schools, is essential to achieve this target. Emissions from maintained school energy use form part of the Council's Scope 3 emissions.

1.2.1 The report also relates to **Ambition 7: Children and young people have opportunities to thrive.** The proposed low carbon heating projects all deliver net energy bill savings relative to retaining gas and oil heating, reducing pressure on school budgets, and enabling greater focus on educational spend.

2. Background

2.1 The General Purposes Committee on 14 September 2014 agreed a loan funding budget for a programme of projects installing **energy efficiency measures** at schools. The maximum borrowing facility to provide loans for these projects was raised to £20m by the Assets and Investment Committee on 22 July 2016. Schools are charged interest at 1.8% above the Council's Public Works Loan Board (PWLB) borrowing rate in order to cover Council staff time. The investment criterion for these projects is that projected bill savings over a maximum of 20 years should fully cover loan repayments to the Council. 61 schools have been supported to date. Operational performance of projects is monitored. Current data shows electricity savings achieved 99.8% of those projected. Gas and oil savings achieved appear to be 87% of those projected, although there are gaps in consumption data provided by schools. A key factor behind this latter under-performance has been some schools struggling to maintain optimised control of their heating. With current energy prices being around three times those projected when projects went ahead, the financial benefit achieved is far in excess of that projected.

2.2 In addition, the Environment and Green Investment Committee on 1 July 2021 agreed a new funding model for **low carbon heating projects** at maintained schools. This retained the use of loan funding (as described in 2.1, but with no uplift charged over the Council's PWLB borrowing cost), repayable from projected energy bill savings, but supplemented this with non-repayable capital contributions. These capital contributions are from Education Capital (equivalent to costs that would otherwise be incurred in replacing boilers on a like for like basis) and from the Environment/Decarbonisation Fund, equivalent to the monetised value of the carbon savings delivered by the programme. It was agreed that Environment/Decarbonisation Fund contributions could be allocated flexibly across schools in the programme, with "surplus" monetised carbon savings from projects with stronger business cases cross-subsidising higher contributions to support schools with weaker business cases. In addition to Council capital contributions, central Government grants from the Public Sector Decarbonisation Scheme (PSDS) would be applied for.

School low carbon heating projects completed to date are summarised below.

PSDS Phase	Number of School	Capital Cost	PSDS Grant	Education Capital contribution	Decarbonisation Fund contribution	Loan
Phase 2	Two	£415,052	£186,099	£80,119	£39,205	£116,611
Phase 3a	Seven	£2,276,518	£991,212	£258,996	£679,400	£321,910
Totals	Nine	£2,691,570	£1,177,311	£339,115	£718,605	£438,521

- 2.3 These projects will deliver 189 tonnes of CO₂ savings per annum, contributing to the Council's target of a 50.4% reduction in Scope 3 emissions (of which schools make up 7%) by 2030. The programme implements Action 51 of the Council's Climate Change and Environment Strategy commitment to supporting maintained schools to replace end of life boilers with low carbon heating.
- 2.4 Investment decisions in individual school projects within the programme are delegated. The delegation was most recently updated by Environment and Green Investment Committee on 19 January 2023 to the following:
- "the delegation of individual green investment and contract decisions for schools to the Executive Director Finance and Resources in consultation with the Assistant Director for Education & Place Planning, Executive Director Place & Sustainability and Chair/Vice Chair of Environment and Green Investment Committee."*
- 2.5 Key decisions e.g. investments in excess of £500k, may not be taken by delegated decisions, but require Committee approval.
- 2.6 This report seeks Committee approval to invest in low carbon heating projects at Meridian, Robert Arkenstall and St Philip's primary schools. Business cases for these projects are due to be presented to the schools in September. A verbal update will be provided to Committee on whether the schools are minded to accept the proposals. If one of the schools decides against proceeding, or cannot proceed, Committee is asked to approve investment in a low carbon heating project at Alderman Payne primary school as a reserve. Available budget is sufficient to take any three of these schools forward.
- 2.7 The funding package for these projects is in line with the approach agreed by Environment and Green Investment Committee in July 2021, but Committee approval is required as the projects exceed the £500k delegated decision threshold. The projects will ensure that end of life gas and oil boilers at these schools are replaced with Air Source Heat Pumps (ASHPs) combined with LED lighting upgrades and/or solar PV installations to reduce carbon emissions and deliver energy bill savings to the schools. The Council's investment in these schools has been budgeted for, and will be managed within, the existing Environment/Decarbonisation Fund budget for 2024/25.

3. Main Issues

- 3.1 The Council secured £2.3m of grant funding for 13 school low carbon heating projects at Phase 3b of PSDS in early 2023, but with the grant being deferred to the 2024/25 financial year. A further £587k of grant funding for five school low carbon heating projects was secured at Phase 3c of PSDS earlier this year.
- 3.2 Grants were secured on the basis of Outline Business Case (OBC) proposals produced by the Council's Energy Performance Services Framework contractors Equans and SSE. These business cases involve significant work (site surveys, energy analysis, outline design and financial modelling) and are produced at no cost to the Council and at the contractors' risk.
- 3.3 Two of the Phase 3b schools have progressed to installation works. Draft Investment Grade Proposals (IGPs) have now been received for the remaining eleven. IGPs are firm price proposals that have been produced by a process of detailed design, subcontractor tendering and obtaining UK Power Networks quotations for upgrading the capacity of the schools' electrical supplies (to meet the additional demand from the ASHPs). Inflation in project capital costs over the two years since OBCs were provided has been 43% on

average. In addition to general inflation in construction costs, high UKPN connection upgrade costs, lengthy pipework runs due to space constraints on ASHP locations, increased Project Management and Provisional Cost budgets have contributed to these cost increases.

- 3.4 Capital cost for all but three of the 13 Phase 3b projects has come in above the £500k threshold for delegated approval. The projects that are the subject of this approval request are affordable within the £1.85m Decarbonisation Fund budget available for schools in 24/25. CPCA have agreed to provide a contribution towards three school projects, which would otherwise not be affordable, of which St Philip's is above £500k capital cost and included in the table below.
- 3.5 Subject to Committee and school approval, the projects at Meridian, Robert Arkenstall are ready to proceed to works contracts. St Philip's will require planning consent prior to entering into works contract.
- 3.6 The capital costs, grant funding, Council investment, energy bill savings, net savings after loan payments and carbon savings of these projects are summarised below.

		Meridian	Robert Arkenstall	St Philip's	Total
Capital cost		£893,480	£612,029	£928,446	£2,433,955
PSDS grant		£394,521	£182,855	£301,602	£878,978
Council investment	Decarbonisation Fund	£302,388	£380,409	£389,775	£1,072,572
	School Condition Allowance	£53,417	£10,539	NA	£63,956
	Loan	£143,154	£38,226	£32,064	£213,444
CPCA contribution		-	-	£104,000	£104,000
Bill savings (over 20 years)		£310,369	£91,900	£65,890	£468,159
Net financial saving after loan (over 20 years)		£48,504	£13,239	£10,923	£72,666
Carbon savings (over 20 years) tCO2e		1,250	536	734	2,521

- 3.7 The above figures are based on draft IGPs, but inclusive of Provisional Cost allowances to accommodate unknowns and inflation in subcontractor costs between now and start of works. Occasionally scope of works is varied during installation, which may necessitate an increase in Council contributions. Approval for any such changes will be sought via the delegated approval process referred to in paragraph 2.4.
- 3.8 If one of the above schools does not wish to or is unable to proceed, it is proposed to substitute it with a low carbon heating project at Alderman Payne primary school (subject to the school's acceptance). This will ensure that as much grant funding as possible is secured for delivering carbon savings on Cambridgeshire schools. The capital costs, grant funding, Council investment, energy bill savings, net savings after loan payments and carbon savings for this project are summarised below.

		Alderman Payne
Capital cost		£625,335
PSDS grant		£207,881
Council investment	Decarbonisation Fund	£381,850
	School Condition Allowance	£0
	Loan	£35,604
CPCA contribution		-
Bill savings (over 20 years)		£75,788
Net financial saving after loan (over 20 years)		£15,526
Carbon savings (over 20 years) tCO2e		640

- 3.9 St Philip's is a Voluntary Aided school. The site is owned by the Diocese of Ely and Church Schools of Cambridge. Responsibility for maintenance of this site sits with the Diocese of Ely, who have agreed to contribute £101,005 (the equivalent cost of like for like boiler replacement). The Department for Education classes Voluntary Aided schools as local authority-maintained schools and their carbon emissions sit within the Council's Scope 3 emissions.
- 3.10 Approval for the Stretham Primary School was granted by the Chief Executive in July under urgent approval procedures. This project has a capital cost of £634,096 of which £215,179 is from PSDS grant funding, £145,452 from Education Capital, £184,471 from the Decarbonisation Fund and £88,904 in loan funding. The IGP Business Case for this project was delivered on 9 July 2024. Unfortunately, the school suffered a heating pipework failure and hot water calorifier failure while the IGP was in development. These required rectification over the summer to ensure the school had heating and hot water in the autumn term. For these reasons, urgent approval was sought and granted.
- 3.11 All of the PSDS Phase 3b schools projects require an increase in the electrical supply capacity of the schools. In all cases, this involves upgraded cabling to the site. In some cases, it also requires new substations on site or upgrades to existing UK Power Networks' (UKPN) substations. These costs are highly variable from site to site, depending on length of trenched cabling required and scope of substation works, which in turn depends on how constrained the local distribution grid is. Total UKPN costs across the three schools are £89k. To avoid paying Framework Contractor markups on these costs, the Council plans to pay UKPN direct. The costs of this are included in the Capital cost and Decarbonisation Fund contribution figures in paragraph 3.6. We have raised high UKPN supply upgrade costs with the Department for Energy Security and Net Zero as a barrier to decarbonising some sites.
- 3.12 UKPN are a monopoly supplier for part of the supply upgrade works. "Contestable" elements of supply upgrade works can be delivered by other suppliers. It is proposed to use UKPN for both non-contestable and contestable works rather than competitively tendering for the contestable element of the works. This is because many of the upgrades are low value with only minor cost savings possible and, more significantly, procuring both elements from UKPN reduces technical and project management risks in delivering the supply upgrades e.g. incompatibility of an Independent Connection Provider's contestable works with UKPN's non-contestable works, co-ordination of works by two separate suppliers. The Council is not well placed to manage this technical risk as it requires electrical engineering

expertise. As procurement of supply upgrades from UKPN is a single tender, we will submit a waiver approval request for this work. We will batch the upgrades into a single waiver request covering as many schools as possible.

4. Alternative Options Considered

4.1 **Do Nothing:** In the absence of making a decision to invest in low carbon heating projects at Meridian, Robert Arkenstall and St Philip's primary schools (Recommendation (a)) the projects will not go ahead.

4.1.1 All of these schools have boilers which are nearing the end of their lives. If the projects do not go ahead, the boilers are likely to be replaced with new gas or oil boilers. Costs of emergency boiler replacement at Meridian and Robert Arkenstall would sit with the Council's Education Capital team and with the Diocese of Ely for St Philip's. New boilers are likely to remain in operation for a further 20 years or so. This is in conflict with Action 51 of the Council's Climate Change & Environment Strategy (which says the Council will support schools to replace end of life boilers with low carbon heating) and with the Council's Ambition 1 to achieve Net Zero by 2045. Schools form 7% of the Council's Scope 3 emissions. The Do-Nothing option has been discarded as it is inconsistent with Council policy.

4.2 **Delay a Decision:** In principle, we could delay decisions to invest in these projects and use the delay to re-tender in an attempt to drive down costs.

4.2.1 The projects have all been procured under the Council's Energy Performance Service Framework with Equans and SSE. The contractors have competitively tendered within their supply chain to drive best value. There has been several months delay in finalising Investment Grade Proposal business cases for these projects while Equans and SSE review and value engineer their designs. This has involved re-tendering with their supply chain and seeking lower UK Power Networks connection upgrade costs. It is therefore unlikely that a further re-tendering would deliver significant cost savings. More critically the projects have PSDS grant funding (totalling £879k) that has to be spent in the current financial year, or it will be lost. The Delay option has been discarded due to this risk of loss of grant funding.

5. Conclusion and reasons for recommendations

5.1 Agreeing the investment in three school low carbon heating projects will deliver 2,521 tCO₂e savings over the 20-year equipment lifetime and deliver a modest (£72,666) financial saving to the schools over 20 years. These will contribute to the Council's Ambition 1 and avoid new gas and oil boilers being installed, locking in these schools' carbon emissions from heating for another 20 years.

6. Significant Implications

6.1 Finance Implications

6.1.1 The Education Capital and Decarbonisation Fund contributions for three of these projects are affordable within the budgets allocated for this financial year (£1.85m Decarbonisation

Fund budget for schools, £200k Education Capital contribution). Repayable loan funding for up to £214K is also expected to support the projects specified in this report.

6.1.2 Proceeding with these three projects will secure £879k of central Government grant funding investment into decarbonising these schools.

6.2 Legal Implications

6.2.1 If approved, project delivery will be under the Council's Energy Performance Services Framework. Works contracts are between the schools and the framework contractors Equans and SSE rather than the Council being in contract for the works. The works contract terms are standardised under the Framework and utilise industry standard (JCT Design & Build) contract terms. Council staff will support the schools on any contractual issues arising during works delivery. Pathfinder Legal Services Ltd will be instructed to review the necessary contractual documents.

6.3 Risk Implications

6.3.1 Capital cost over-run: To mitigate this risk, projects are contracted on a firm price basis. Increases in contract value are only permissible where a change in project scope is agreed by the client. This is relatively rare. In the nine PSDS Phase 2 and 3a projects, only one contract value increase was agreed, and this was to add additional low energy lighting into scope of the project. Approval of additional funding for any such variations would be subject to the delegated approval process referred to in paragraph 2.4. There are some elements of project scope which cannot be accurately costed ahead of works e.g. asbestos management costs, trenching for electrical supply cable upgrades, low voltage electrical works etc. Each project has a Provisional Cost budget, included within the capital costs summarised in paragraph 3.6, to cover such costs and general contingency. These Provisional Cost budgets are summarised below.

	Meridian	Robert Arkenstall	St Philip's	Total
Provisional Cost Budget	£135,860	£81,349	£101,198	£318,407

6.3.2 Provisional Cost over-allocation: Provisional Cost budgets are substantial, and the contractors have included significant contingency within these budgets to manage their risk of over-spend in delivering the contracted scope of works. There is therefore a risk that these budgets will not be fully spent and some of the funding package transferred to the school might have to be clawed back at completion. To prevent this, we will only transfer Provisional Cost budget to the schools as its use is authorised (a Variation Order has to be signed by the school for each item of Provisional Cost budget spend).

6.3.3 Operational under-performance: These projects involve a full plant room refurbishment including new controls. Whilst all the individual technologies are mature and their potential performance in real world conditions is well understood, performance does vary from site to site and there are complex interactions between pre-existing sensors, relays, actuators, new controls, and new plant. Control software is also effectively a "black box" which can have visually undetectable faults. In our experience from the schools energy efficiency programme and Phase 2 and 3a school low carbon heating projects, all of the above issues have been encountered. To address these risks, we have:

- Reviewed IGP assumptions on ASHP performance against operationally achieved ASHP Coefficients of Performance to ensure realistic average performance assumptions;
- Specified heat and electricity sub-metering with Council remote access as mandatory for all projects, so performance and effective control can be validated and monitored;
- Required the contractors to provide evidence prior to project completion that all plant responds to control system heating and hot water schedules as expected;
- Contingency allowances in Provisional Cost budgets to cover cost of replacing failed pre-existing sensors, actuators, relays etc;
- Where affordable, energy savings guarantees within the contracts. These require the contractor to compensate for under-performances due to design or installation faults;
- Our own monthly monitoring of performance using meter remote access.

6.3.4 Other operational cost increases: From Phase 3a projects we have learned that electrical supply upgrades can expose sites to new electricity bill costs not associated with the volume of energy consumed. The most significant of these is Distribution Use of Service (DUoS) charge which applies to all supplies over 100 kVA capacity and can typically add up to £300 a month to a school's electricity bill. Meter operating services contracts and changes in standing charge between an old and new supply can also add costs, although these are smaller than DUoS costs. This risk is being mitigated through:

- Keeping connection capacity below 100 kVA where possible;
- Accounting DUoS and meter operating service costs within IGP business cases when calculating the net bill impact of a project;
- Monitoring kVA usage post completion and administratively reducing supply capacity to minimise DUoS costs. NB the physical supply capacity required is always higher than the kVA usage. This is because physical kVA capacity needs to cater for high startup power demand from the ASHPs that occurs only for short duration transients. For billing purposes, kVA usage is assessed based on the highest half hourly average kVA in each month.

6.4 Equality and Diversity Implications

6.4.1 There are no implications under this category.

6.5 Climate Change and Environment Implications

6.5.1 The projects will make a positive impact contributing 2,521 tCO₂e savings over the 20-year equipment lifetime to reducing the Council's Scope 3 carbon emissions, see paragraphs 1.1 and 2.3 for more detail on the Council's decarbonisation targets. The projects will be delivered under the terms of the Council's Energy Performance Services framework. This requires the contractors to deliver year on year reductions in their supply chain carbon emissions in line with the Council's Scope 3 emissions target.

7. Source Documents

None