

# HAMPSHIRE COUNTY COUNCIL

## Decision Report

<b>Decision Maker:</b>	Executive Member for Countryside and Regulatory Services
<b>Date:</b>	27 November 2023
<b>Title:</b>	Decarbonisation of Schools using Ground Source Heat Pumps
<b>Report From:</b>	Director of Universal Services

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### Purpose of this Report

1. The purpose of this report is to provide detail and seek approval for the installation of ground source heat pump (GSHP) pilot projects at three schools.

### Recommendations

2. That the Executive Member for Countryside and Regulatory Services approves the Project Appraisal for the installation of three Ground Source Heat Pumps (GSHPs) at Heatherside Junior School, Hiltingbury Junior School and Nightingale Primary School.
3. That approval be given to procure, spend and enter into necessary contractual arrangements, in consultation with the Head of Legal Services, to install GSHPs at three schools at a total cost of £1,755,817:
  - Heatherside Junior School, at a cost of £557,832, part funded from Public Sector Decarbonisation Scheme funding (£226,699) and Schools Condition Allocation (£331,163);
  - Hiltingbury Junior School, at a cost of £576,120, part funded from Public Sector Decarbonisation Scheme funding (£329,846) and Schools Condition Allocation (£246,274); and
  - Nightingale Primary School, at a cost of £621,865, part funded from Public Sector Decarbonisation Scheme funding (£375,170) and Schools Condition Allocation (£246,695).
4. That authority to make the arrangements to implement the scheme, including minor variations to the design or contract, be delegated to the Director of Universal Services.

## Executive Summary

5. In July 2022, the Government announced [Phase 3b of the Public Sector Decarbonisation Scheme \(PSDS\)](#) (managed by Salix Finance) to provide grant funding for the de-Carbonisation of heat in public sector buildings.
6. Hampshire County Council was successful in receiving nearly £30million via the PSDS' phase 1, and delivered schemes across the Hampshire schools and corporate estates on multiple workstreams including solar photo-voltaic (PV), glazing, heating controls, cavity wall insulation and lower carbon heating. Since phase 1, the PSDS grant funding criteria has changed and is now focussing solely on the decarbonising of heat.
7. A PSDS Phase 3b grant application was submitted in October 2022 and Salix informed the County Council in April 2023, that its application had been approved. The grant will allow the County Council to undertake three pilot projects for the installation of Ground Source Heat Pumps (GSHP) at Heatherside Junior School, Hiltingbury Junior School, and Nightingale Primary School in 2024.
8. All three sites have system built, Second Consortium of Local Authorities (SCOLA) buildings constructed in the late 1960s and early 1970s. The buildings have been (or are in the process of being) reclad making them suitable for a GSHP pilot. Their heating systems are now aged, considered at end of life, and in need of replacement, making their selection appropriate.
9. Within the PSDS criteria, Hampshire County Council is required to make contributions to the cost of the projects by funding the equivalent cost of 'like for like' (fossil fuel) replacement of the heating systems. As life expired systems, funding from the Schools Condition Allocation (SCA) may be used for this purpose.

## Contextual Information

10. SCOLA Buildings are predominantly heated by older gas fired boilers, many of these boilers are now life expired and are due for replacement. These existing gas boilers are inefficient and produce higher carbon emissions when compared to modern high efficiency gas fired condensing boilers, which is the current default for replacement. The Climate Change Act 2008 commits the UK government to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. To achieve these, heating systems powered by fossil fuels such as natural gas need be replaced lower carbon alternatives such as electrically driven heat pumps. GSHP's are the most efficient type of heat pump and produce lower carbon emissions when compared to new high efficiency gas condensing boilers.
11. GSHP's work by absorbing heat naturally stored in the ground, which is transferred into a fluid contained within underground pipework arrays, the heat then passes through a heat exchanger in a "heat pump", which raises

the temperature of the fluid, transferring that heat into the heating distribution system which feeds radiators etc. GSHP's operate at lower temperatures than conventional heating systems and offer a greater coefficient of performance (COP). For every 1kW of electrical energy 3-5kWh's of heat energy can be produced dependant on the ambient conditions.

12. GSHP's are most suited to buildings with high thermal performance which can operate at the lower temperatures produced by heat pumps. Only these three sites met the Salix funding criteria at the time of the bid, making them ideal candidates for the pilot project. Heatherside Junior School has recently been reclad. Nightingale Primary School and Hiltingbury Junior School recladding projects are currently on site. All three schools have life expired heating boilers.
13. GSHP horizontal ground pipework loops known as "slinkies" will be installed at all three sites. This will require a large area of the school playing fields to be excavated. After the slinkies are installed, the ground will be infilled and seeded with grass. The fields will be unavailable for school activities for a period of 12 months whilst the grass grows, and the fields become playable. All three schools have been briefed on the projects and are fully aware of the impact of installing a GSHP and their operating costs.
14. A 30kWp Solar Photovoltaic (PV) array has been installed at each of the sites as part of the PSDS Phase 1 to facilitate the use of GSHP's and to help to offset the increased electrical load usage when changing from gas to electricity as the main heating source.
15. To determine the success of the pilot, data from the three projects will be examined carefully over the next few years and if the anticipated outcomes in terms of carbon emissions reduction, fuel economy and neutral revenue costs are achieved, the use of GSHP's could be rolled out into future SCOLA reclad programmes, subject to available funding.

### **Climate Change Impact Assessment**

16. Hampshire County Council utilises two decision-making tools to assess the carbon emissions and resilience impacts of its projects and decisions. These tools provide a clear, robust and transparent way of assessing how projects, policies and initiatives contribute to the County Council's climate change targets of being carbon neutral and resilient to the impacts of a 2°C temperature rise by 2050. This process ensures that climate change considerations are built into everything the authority does.
17. Climate Change Adaptation – the climate change adaption project screening tool has assessed the project as one which will reduce vulnerability rather than increase it, by having a positive adaptation to climate change in increasing the energy efficiency of the three buildings through changing the existing gas boilers to fossil free electric GSHP's to generate primary heating.
18. The climate variables pose no additional vulnerability to the project, as identified by the adaptation tool. Works also include refurbishment and replacement of existing thermal elements plus enabling works which include

but are not limited to replacement of distribution pipework and emitters to make the systems fit for purpose when utilising low grade heat from heat pumps.

19. The buildings are not particularly vulnerable to flooding as the buildings are not situated in any flood zone with surface water/flash flooding being very low risk. Heatherside Junior School has a residual risk from flooding due to its proximity to the Basingstoke Canal, however the works do not increase this existing risk.
20. The projects will improve the longevity of the buildings and increase their capacity and useability, making best use of the operational and embodied carbon. Generally, the buildings are considered to have a negligible vulnerability risk to climate change.
21. Carbon Mitigation - the project is the replacement of life expired gas fired heating boilers with new electric GSHP's. Works include upgrading of thermal elements and upgrading of the heating distribution systems, associated controls, and pipework insulation etc. which will improve the energy efficiency and running costs of the buildings.
22. The previously installed PV arrays will offset some of the increased energy costs, which have been used to facilitate the change from a gas tariff to an all-electric fossil fuel free heating system.

## Finance

23. Authority is sought to approve funding through the PSDS 3b scheme, which will be drawn down in instalments in 2024/25 as per the grant offer letter received from Salix.
24. As part of the PSDS criteria, the County Council must contribute the 'like for like' costs of the boiler replacement as well as additional funding over the grant value for associated works. Hampshire County Council's contribution to these works will be funded by the Schools Condition Allocation (SCA) funding.
25. The anticipated costs and funding for this scheme are outlined in the tables below, the total cost and funding for all three Schools being £1.755 million.

<b>Heatherside Junior School</b>			
<b>Funding</b>	<b>Buildings £</b>	<b>Fees £</b>	<b>Total Cost £</b>
Public Sector Decarbonisation Scheme – Phase 3b	194,565.67	32,103.33	226,669.00
SCA Funding	284,260.09	46,902.91	331,163.00

<b>Total</b>			<b>557,832.00</b>
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<b>Hiltingbury Junior School</b>			
<b>Funding</b>	<b>Buildings £</b>	<b>Fees £</b>	<b>Total Cost £</b>
Public Sector Decarbonisation Scheme – Phase 3b*	283,129.61	46,716.39	329,846.00
SCA Funding**	211,393.99	34,880.01	246,274.00
<b>Total</b>			<b>576,120.00</b>

\* adjusted from £300,000 notified at [ELMUS Decision Day January 2023](#)

\*\* adjusted from £280,000 approved at [ELMUS Decision Day January 2023](#)

<b>Nightingale Primary School</b>			
<b>Funding</b>	<b>Buildings £</b>	<b>Fees £</b>	<b>Total Cost £</b>
Public Sector Decarbonisation Scheme – Phase 3b	322,034.33	53,135.67	375,170.00
SCA Funding	211,755.37	34,939.63	246,695.00
<b>Total</b>			<b>621,865.00</b>

## **Maintenance**

26. GSHPs require very little maintenance compared to gas fired boilers and the associated gas safety equipment etc. The revenue impact of changing from a gas boiler to a GSHP considering the specialist servicing and periodic testing can be considered revenue neutral. The life expectancy of a GSHP is 20-25 years, which is the same as a commercial condensing gas boiler making the lifecycle maintenance costs comparable.

## **Consultation and Equalities**

27. Planning permission is not required for these projects.

28. It is anticipated the works will commence in Spring 2024 and be completed in the Autumn 2024. Consultations with the three schools over the benefits and impacts of installing GSHP's have taken place over the past year, the schools have been very supportive and have engaged with staff and users.
29. An Equalities Impact Assessment (EIA) has demonstrated that the overall impact of replacing life expired gas boilers with new GSHP's is neutral for those in the protected characteristic groups who will be unaffected by the proposed installations.
30. During the works, large areas of the school playing fields will be excavated to install the ground pipework. After installation, the ground will be infilled and seeded, which will take a while to grow. Parts of the fields will be out of use for around 12 months. However, the schools have significant playground, multiuse games areas (MUGA) and indoor facilities to mitigate the loss of the external playing fields, together with access to adjacent schools for schools sports day etc. Nightingale School has an extended field which they require part of for their annual fireworks display, which is being retained during the GSHP works.

**REQUIRED CORPORATE AND LEGAL INFORMATION:**

**Links to the Strategic Plan**

<b>Hampshire maintains strong and sustainable economic growth and prosperity:</b>	no
<b>People in Hampshire live safe, healthy and independent lives:</b>	yes
<b>People in Hampshire enjoy a rich and diverse environment:</b>	yes
<b>People in Hampshire enjoy being part of strong, inclusive communities:</b>	no

**Section 100 D - Local Government Act 1972 - background documents**

**The following documents discuss facts or matters on which this report, or an important part of it, is based and have been relied upon to a material extent in the preparation of this report. (NB: the list excludes published works and any documents which disclose exempt or confidential information as defined in the Act.)**

Document

Location

None

## **EQUALITIES IMPACT ASSESSMENT:**

### **1. Equality Duty**

The County Council has a duty under Section 149 of the Equality Act 2010 ('the Act') to have due regard in the exercise of its functions to the need to:

- Eliminate discrimination, harassment and victimisation and any other conduct prohibited by or under the Act with regard to the protected characteristics as set out in section 4 of the Act (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation);
- Advance equality of opportunity between persons who share a relevant protected characteristic within section 149(7) of the Act (age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex and sexual orientation) and those who do not share it;
- Foster good relations between persons who share a relevant protected characteristic within section 149(7) of the Act (see above) and persons who do not share it.

Due regard in this context involves having due regard in particular to:

- The need to remove or minimise disadvantages suffered by persons sharing a relevant protected characteristic that are connected to that characteristic;
- Take steps to meet the needs of persons sharing a relevant protected characteristic that are different from the needs of persons who do not share it;
- Encourage persons sharing a relevant protected characteristic to participate in public life or in any other activity in which participation by such persons is disproportionately low.

### **2. Equalities Impact Assessment:**

An Equalities Impact Assessment (EIA) has demonstrated that the overall impact of replacing life expired gas boilers with new GSHP's is neutral for those in the protected characteristic groups who will be unaffected by the proposed installations.

During the works, large areas of the school playing fields will be excavated to install the ground pipework. After installation, the ground will be infilled and seeded, which will take a while to grow. Parts of the fields will be out of use for around 12 months. However, the schools have significant playground, multiuse games areas (MUGA) and indoor facilities to mitigate the loss of the external playing fields, together with access to adjacent schools for schools sports day etc. Nightingale School has an extended field which they require part of for their annual fireworks display, which is being retained during the GSHP works.<sup>47/</sup>