

Phase 4 Public Sector Low Carbon Skills Fund – Heat Decarbonisation Plans and Standalone Detailed Designs



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Department for
Energy Security
& Net Zero



salixfinance.co.uk

Welcome - Introductions

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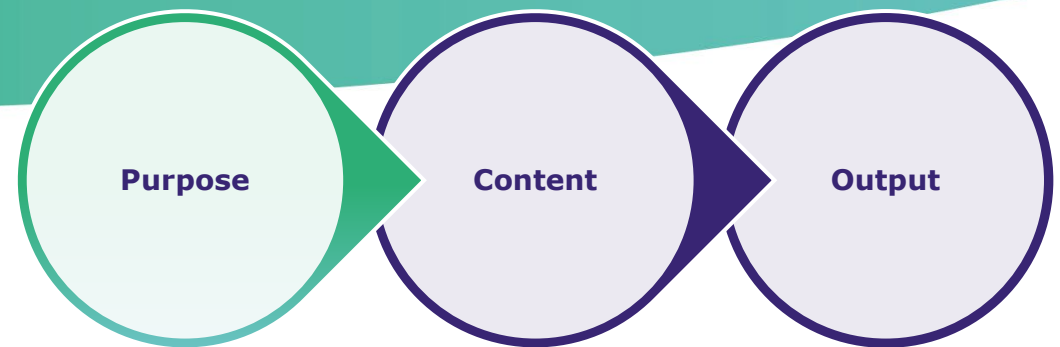


Contents

- Welcome
- Your Low Carbon Skills Fund project
 - Introduction
 - Purpose of the LCSF
 - What is new
 - Eligibility: Who can apply?
 - Heat decarbonisation plan content
 - Heat decarbonisation plan and detailed design outputs
- Resources available



Your Low Carbon Skills Fund Project



Introduction

- Salix is a non-departmental public Body of the Department for Energy Security and Net Zero (DESNZ) and it is delivery partner for Phase 4 Public Sector Low Carbon Skills Fund (LCSF).
- DESNZ have confirmed that **£17,000,000** worth of grant funding will be provided for Phase 4 LCSF.
- This follows the success of Phase 3 LCSF that completed in March 2023 where £14,500,000 was awarded to 149 public sector bodies.
- For Phase 4 LCSF, there are three funding options:
 1. Heat decarbonisation plans
 2. Standalone designs
 3. Both



Purpose of the LCSF

The LCSF will fund the production of a heat decarbonisation plan (HDP) and/or standalone detailed design works which will need to be submitted by 28 March 2024.

A HDP describes the current state of an organisation's energy use and its plans for decarbonising its building estate. The option for detailed designs will prepare organisations to begin capital works.

This will ensure that all bodies in the public sector, regardless of size and expertise, will know how to decarbonise, to enable them to operationalise their ambitious net-zero targets.

What is new?

The changing of timelines to align with the Public Sector Decarbonisation Scheme timelines

Funding for standalone detailed designs

Introduction of grant value caps

Eligibility: Who can apply?

The organisations eligible to apply are the same as for PSDS. These include:

- Central government departments and their arm's length bodies
- Emergency services
- Institutions of further and higher education
- Local authorities
- Maintained schools within the state education system, including academies, multi-academy trusts and free schools
- Nursery schools maintained by a local authority
- NHS Trusts and Foundation Trusts
- Schools funded by charities, private schools, private colleges and private universities are **not eligible** to apply.
- Scottish and Welsh public sector bodies are also **not currently eligible** to apply to LCSF.
- A private sector organisation cannot apply on behalf of an eligible public sector organisation.

Heat Decarbonisation Plan Content

HDPs should aim to include the following content (more information can be found in the HDP guidance document on the website):

	Content
a.	Executive summary
b.	Introduction
c.	Buildings
d.	Energy consumption and carbon emissions
e.	Heating and hot water systems
f.	Estimating cost
g.	Delivery plan
h.	Resources

	Content
i.	Determining the whole solution
j.	Previous energy efficiency projects and existing low carbon heating technology
k.	Heating networks and opportunities on site
l.	Electricity loading capacity to support a switch to electric heating solutions
m.	Supporting information
n.	Plans for the sites
o.	Key challenges

Executive Summary

The Executive Summary should summarise the report and provide you with a clear understanding about the current energy usage and carbon emissions as well as the steps needed to decarbonise buildings.

Executive Summary: Talbot Primary School

Overview

Talbot Primary School is located in Leeds with pupils from nursery to year 6.

The school has **3.5 times higher energy use** than the expected target of 75 kWh/m²a to reach Net Zero Carbon.

The primary reasons for this are:

- No or limited wall insulation in Block 1,2,3
- Poor heating and hot water efficiency
- Limited roof space insulation in Block 1

The key decarbonisation opportunities are:

- Cavity wall insulation to Blocks 1 & 2
- Replacing gas boilers with ASHP
- Flat roof insulation to Block 1

By carrying out the medium term heat decarbonisation measures outlined in this plan the school could reduce carbon emissions by approximately **72% on current emissions values**.

The delivery of this HDP is divided into immediate organisational actions and short, medium and long term capital works.

Existing building constraints

Blocks	Age	GIA m ²	Heritage	Conservation area	Listed
1	1936	1032	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1936	1069	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1953	264	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	2016	155	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Building fabric and technologies

	Blocks	Wall insulation	Roof insulation	Airtightness	Windows single glazed	Heating gas boilers	Heating heat pump	Hot water gas boiler	Hot water heat pump	Point of use	Windows ventilation	Heat recovery ventilation	LED lighting	Solar	Photo Voltaics	Electrical load upgrade req'd
Existing	1	6%	60%	Avg	0%	90%	0%	95%	-	5%	100%	0%	94%	0%	-	-
	2	21%	100%	Avg	0%	100%	0%	100%	-	0%	100%	0%	99%	0%	-	-
	3	0%	100%	Poor	0%	100%	0%	100%	-	0%	100%	0%	100%	0%	-	-
	4	100%	100%	Good	0%	100%	0%	50%	-	50%	90%	0%	100%	0%	-	-
Medium term	1	45%	100%	Good	0%	0%	100%	0%	-	100%	100%	100%	100%	100%	tbc	-
	2	40%	100%	Good	0%	0%	100%	0%	-	100%	100%	100%	100%	100%	tbc	-
	3	0%	100%	Good	0%	0%	100%	0%	-	100%	100%	100%	100%	100%	tbc	-
	4	100%	100%	Good	0%	0%	0%	0%	-	100%	100%	100%	100%	100%	0%	-

Outcome of proposed decarbonisation projects

	Gas kWh/yr	Electricity kWh/yr	EUI kWh/m ² /yr	TCO _e /yr	% TCO _e saved / yr	Operational costs / yr	Capital costs	£/TCO _e saved
Existing	545,084	104,201	258	143.64	-	£89,793	-	-
Short term works	347,066	90,728	174	98.03	32%	£64,536	£267,350	£5,940
Medium term works	0	183,446	73	49.46	72%	£42,864	£2,288,320	£39,450
Long term works	0	141,985	56	38.28	75%	£35,933	£2,588,640	£172,580

Reduction in carbon emissions over time

Heat decarbonisation timeline

Talbot Primary School Heat Decarbonisation Plan | March 2023
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5

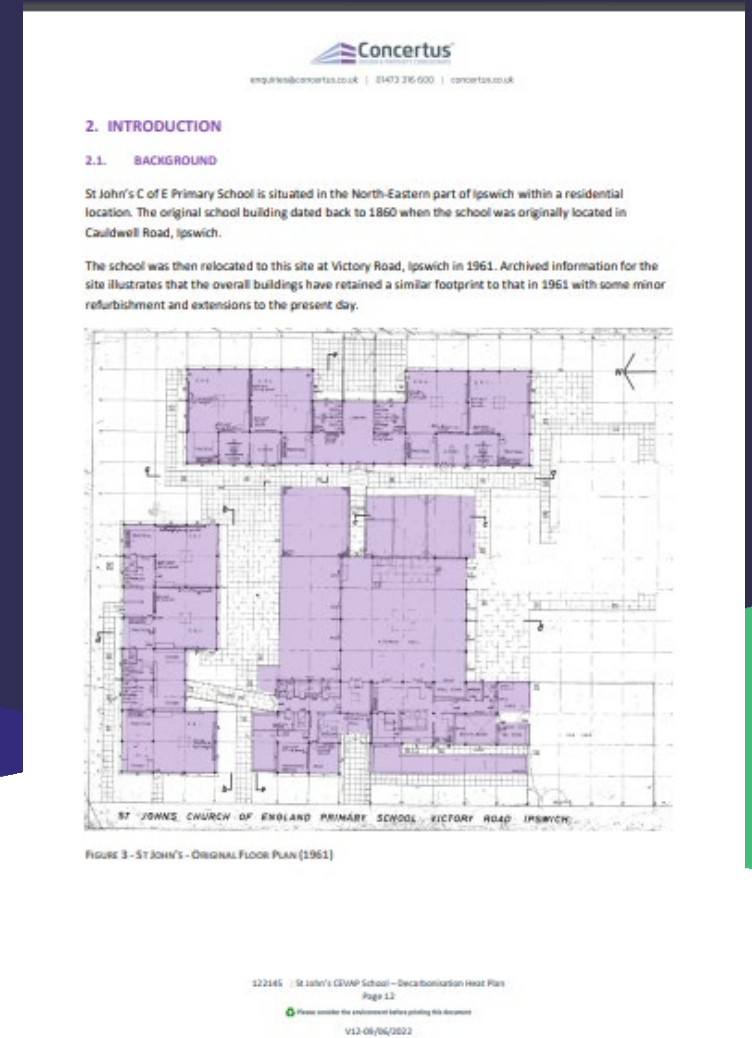


Introduction

The introduction section should provide a summary of the organisation's current situation and set out a plan in context.

This should include what the organisation's estate looks like and set out a summary of what is included within the scope of this plan. This should include -

1. Estate
2. Its use
3. Age
4. Energy consumption
5. Other characteristics



Buildings

There should be a section in your heat decarbonisation plan about buildings, which should provide background information on existing non-domestic buildings, regarding the condition and energy consumption of these sites. Other important information to know about these buildings includes -

1. Age of the buildings.
2. The gross internal areas (GIA) in metres squared.

Portfolio	✓
How many buildings are included in this plan?	
Do you hold a building inventory? This can be just for buildings that are owned or occupied under long term leases by the Public Sector Body.	
Building characteristics	✓
What age are the buildings?	
Where are they located (urban, rural): in groups/clusters or close to each other?	
What is located in the surrounding area?	
What is the buildings Gross Internal Areas (GIA) in metres squared (m ²)?	
What is their use in terms of activity and occupants and hours of use?	
What is the condition of the building fabric such as roofs, windows and walls?	
What is the estimated heat loss of the building and could this be a barrier to low carbon heating?	
Are there any proposed disposals, changes in use, major refurbishments or new builds planned?	

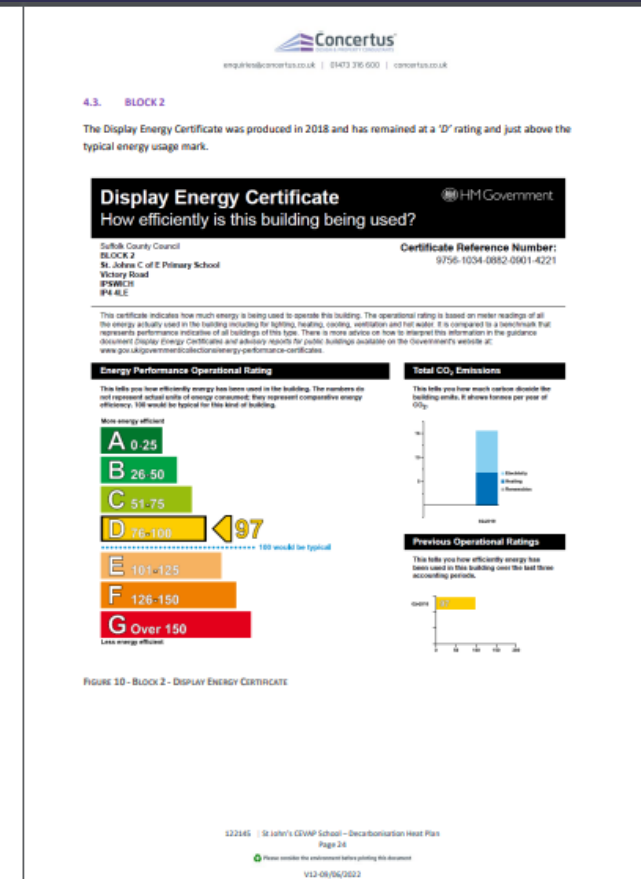
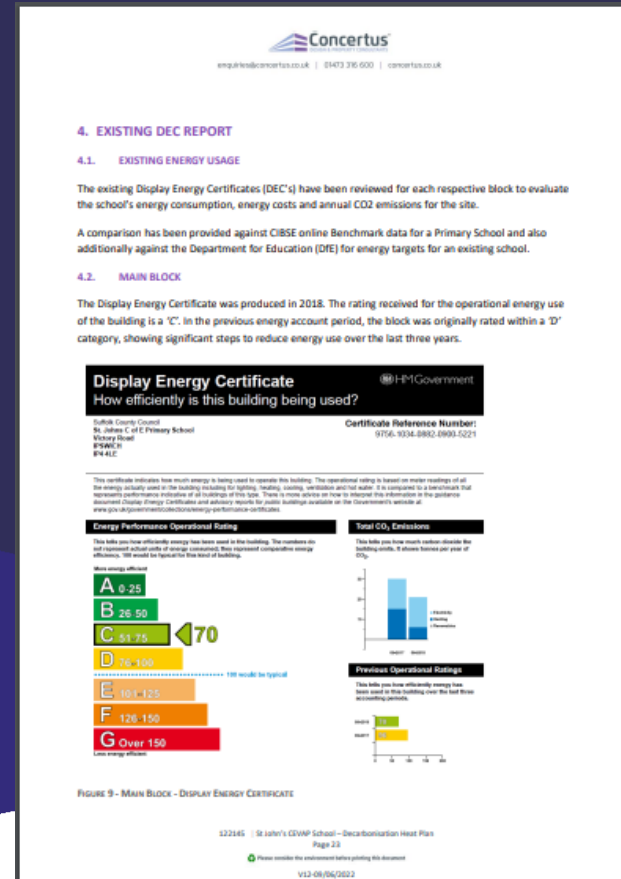
Energy consumption and carbon emissions

Energy consumption

Reflecting on the current consumption, quality of data, data collection methods and future considerations.

Carbon emissions

Accurately forecast future emissions to understand business-as-usual trajectory.



Heating and hot water systems

A section in your heat decarbonisation plan needs to be about the current state of your building heating and hot water systems. This section aims to provide background on the condition and energy consumption of the heating systems.

Current state of your building's heating and hot water systems	✓
What are the current heating technologies for the buildings? Or is it connected to a heat network?	
What fuel is being used by the heating system?	
Is it a wet system? If so:	
What heat emitters are used in the building(s)? (e.g., radiators/under floor heating)	
How is heat transferred throughout the building? (e.g., Low, Medium, High Temperature Hot Water/Steam)	
What is the total output load of your heating system?	
What is the condition of the heating system?	
What is the condition of the primary heat source of the system (such as the boiler?) How close is to the end of its useful life?	
What is the condition of the distribution system (pipework)?	
What is the condition of the heat emitters? Are they suitable for a new low carbon heating measure such as heat pump?	
If it is a heat network what is the source of the heat?	

Estimating cost

You should explain what the budget costs are in an appropriate level of detail and accuracy for the stage that you are at (initial budgets to finalised quotes from contractors).

You should think about if everything has been included in your budget cost, and not just the purchase and installation of the equipment.

7.05 Whole school cost summary

Cost estimate from Doig + Smith

Whole School Costs Summary		Short Term Works		Medium Term Works		Long Term Works		Total
	Rate	Costs	Rate	Costs	Rate	Costs		
Nett Building Sub-total - 2023		£162,275		£1,285,328		£1,348,900		£2,796,503
Prelims	20.00%	£32,455	20.00%	£257,066	20.00%	£269,780		£559,301
Development Costs (e.g. Prof Fees)	15.00%	£29,210	15.00%	£231,359	15.00%	£242,802		£503,371
Risk	15.00%	£33,591	20.00%	£354,751	25.00%	£465,371		£853,712
Gross Construction Total (Incl. Prelims / Fees / Risk / Inflation) - 2023 / 2025		£257,530		£2,128,504		£2,326,853		£4,712,887
Gross Internal Floor Area (GIFA)		2671 m2		2671 m2		2671 m2		2671 m2
Cost per m2 2023		£ 96 /m2		£ 797 /m2		£ 871 /m2		£ 1764 /m2
Inflation Phase 1 - 3 (2023 - 2025)	3.75%	£9,657	7.50%	£159,638	11.25%	£261,770.91		£431,066
		£267,188		£2,288,141		£2,588,623		£5,143,953
Total 2023 - 2025 Cost		2671 m2		2671 m2		2671 m2		2671 m2
Gross Internal Floor Area (GIFA)		£ 100 /m2		£ 857 /m2		£ 969 /m2		£ 1926 /m2
Cost per m2 2023 - 2025		£ 112 /m2		£ 966 /m2		£ 1040 /m2		£ 2119 /m2

*Refer to Doig + Smith report for breakdown / detail.

Delivery plan

This section of the HDP(s) should cover implementation of the proposed technologies/systems that have been recommended.

6.02 Heat Decarbonisation - delivery plan detail

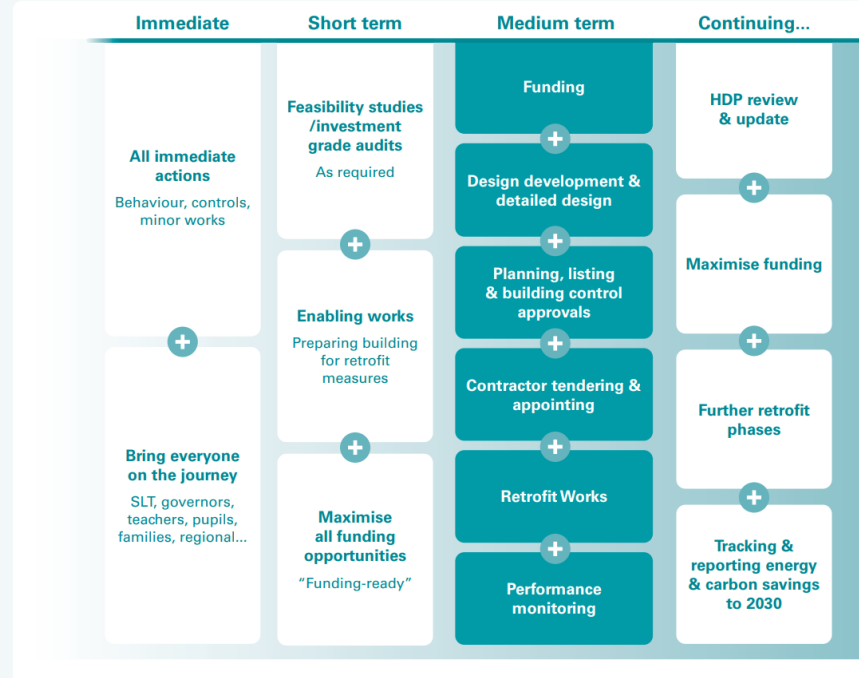
HDP - delivery plan detail

To decarbonise by 2030, the net Zero Carbon execution plan starts with immediate actions that the school can start now. The graphic on the right illustrates how these actions fall into different phases.

Starting by gathering information and planning now will help to:


- Identify 'Easy Wins' that the school could do immediately
- Put the school in a good position to plan ahead for harder capital works and be ready for funding

Following the steps and reiterating the plan after each phase of works will mean the school is always be ready for any new funding for further works.



Resources

This section of the heat decarbonisation plan aims to provide context on the existing resources available and outline the future resources required to develop and deliver the heat decarbonisation plan.

 Concertus
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3. ROLES & RESPONSIBILITIES

3.1. PROJECT MANAGER

The key responsibilities of the Project Manager are to:

- 1) Develop the initial Design Brief for the project, which should become more detailed as the design is developed.
- 2) Develop and implement a specific procurement strategy for the project and carry out the obligations necessary to achieve a satisfactory completion of the project.
- 3) Assist in the appointment of consultants to the Consultant Team as required and appropriate to the preferred procurement route.
- 4) Coordinate the individual consultants and collective Consultant Team in order to produce project reports, including cost plans and programmes, as needed.
- 5) Establish and implement project management processes that facilitate efficient management of the project and serve to highlight / rectify any issues.
- 6) Establish formal communication procedures for the Consultant Team and a hierarchy of responsibilities.
- 7) Work with the Consultant Team to refine, amend and adapt the Design Brief and agree with the Council Project Manager.
- 8) Undertake risk assessments and manage project risks, including the development of contingency plans.
- 9) Work with the Cost Consultant to establish cost control procedures and monitor against each developed design, to ensure that the budget is not exceeded.
- 10) Update and compile monitoring reports
- 11) Report through an agreed process on the progress of the project in relation to design, programme and cost.
- 12) Work with the Consultant Team to coordinate the production of the tender documentation.
- 13) Co-ordinate, issue and evaluate tender appraisals leading to the appointment of the successful contractor.
- 14) Administer the terms of the contract, implementing the full range of defined duties of the Consultant Project Manager.
- 15) Ensure that all contract documentation is produced and issued, as required by the terms of the contract.

Concertus – Project Execution Plan (PEP) PAGE 9

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- 16) Preparation of all necessary final documentation, including contractual certificates and final accounts.
- 17) Preparation of a completion report for the client including cost and programme achievements.

3.2. CONSULTANT TEAM

Name	Role	Organisation	Responsibilities
Daniel Jones	Buildings Officer	St Edmundsbury and Ipswich Diocesan Board of Education	Responsible for management of St Edmundsbury and Ipswich Diocesan school estate.
Jason Walton	Associate Director	Concertus	Client account management and business accountable.
TBC	Project Manager	Concertus	Plan and coordinate project team and monitor progress through out acting as Contract Administrator
TBC	Building Surveyors	Concertus	Review all matters related to resultant aesthetics related to proposed implementation
TBC	Mechanical Engineers	Concertus	Prepare and review all matters related to mechanical engineering design
TBC	Electrical Engineers	Concertus	Assist and prepare all matter related to electrical engineering design.
TBC	CDM	Concertus	Assist in reviewing proposed designs for CDM purposes
TBC	Structural Engineer	Concertus	Prepare and review all matters related to Building Structure to suit Proposed Implementation.
TBC	Civil Engineer	Concertus	Prepare and review all matters related to Civil Engineering design.
TBC	QS	Concertus	Prepare and Review all matters related to cost.
TBC	Contract Administrator	Concertus	Administration of the selected contract in accordance with the agreed terms and conditions.

3.3. THE CONTRACTOR

The Contractor will be appointed at an appropriate time to carry out the construction works.

The Contractor will report through, and along with, the Project Manager, at regular Project Team Meetings.

Social Values will be one of the core criteria's for the tender scoring process to determine the number of jobs created from the scheme, in particular number of apprentices that will be involved in each of the schemes. Educational engagement, work experience and the creation of apprenticeships will be actively promoted to encourage and promote the next generation to the construction industry.

Concertus – Project Execution Plan (PEP) PAGE 10



Determining the 'whole solution'

A section of your plan should focus on the solutions to help reach net zero. Think about how easy it will be to implement certain solutions.

Explain in your plan what your solution will be:	
Previous energy efficiency projects and existing low carbon heating technology	
Heating networks and opportunities on site	
Electricity loading capacity to support a switch to electric heating solutions	
Plans for the sites	

Questions to consider are:	✓
Is the solution going to work for this site?	
Will it be easy to install?	
How will it fit with other technologies on the site (will it complement them or overlap or be difficult to work together)?	
Are there other elements of a system that ought to be installed in advance or in parallel to get it to work better (i.e., building fabric improvements (fabric first approach), controls upgrades, or ventilation)	
What energy reduction will it offer? Will it move away from fossil fuels in part or fully? What will the replacement fuel supply be? Is that readily available (i.e. biomass or electricity?)	
Are there permissions and other agreements one would need to seek before being able to go ahead (planning permission, access to land etc.,)	
Who will install the technology?	
How easy will it be to operate? Who will operate it?	



Previous energy efficiency projects and existing low carbon heating technology

The previous energy savings and heating projects section of the HDP outlines all the previously implemented energy efficiency/heating works that have occurred, if any further energy efficiency works are planned and how these measures may have been factored into the transition to low carbon heat.

3.16 Existing LED audit

LED Overview

RAFT has conducted a full school LED feasibility study to establish the extent of LED and its condition at the school.

The aim of the study was to:

- Identify the different types of non LED lights and their quantities
- Examine the quality of current diffusers in non LED fittings
- Determine activities conducted within specific rooms to help specify appropriate light levels
- Identify adequate modifications to current lighting system to promote savings

School Overview

In 2017 the school upgraded its lighting system to LED lighting within a new suspended ceiling and is still in generally very good condition.

In total there are 321 light fittings at the school and only 20 are non-LED, making the school 94% LED upgraded.

Measurements of brightness levels were in the range of 350 and 1650 lux, which shows certain areas of the school have high brightness levels compared with those recommended for primary school classrooms.

This school has two 4.5m height halls indicating any issues with lighting within the halls will require a tower or a cherry picker.

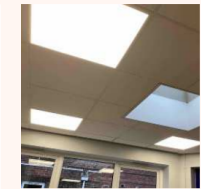
Lux levels found at this school were too high according to the school's staff in Block 4 brightness levels are so high they have stopped using the lights altogether.

Some emergency lighting have come to an end of life and has been replaced with LED however the older fittings still remain.

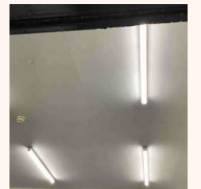
LED summary

Block	% LED
1	94%
2	99%
3	100%
4	100%

For more detail, please refer to the full LED audit and feasibility study for the school.



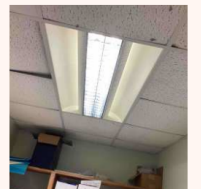
600 x 600 LED panels fitted in entrance area



6' LED battens in KS2 classrooms



5W Emergency LED running man light fitting



2 5' 35W fluorescent lamps



Round 18W emergency panel



Some round 18W panels not in use

Heating networks and opportunities on site

This section of the HDP should focus on whether there are any local heating resources available that could facilitate the transition to low carbon heat.

This section aims to understand whether you have any local heat resources available that could facilitate the transition to low carbon heat.	✓
Are there any existing or planned heat network developments located close to the sites that your buildings could connect to?	
Is there scope for the organisation to provide a potential baseload for a future heat network to benefit the wider community?	
Are there any other sources of secondary heat in proximity to the site(s) or on site?	
These may include:	
Heat Sources such as: water, air, ground	
Heat recovery opportunities	
Sewer, industrial sites or anywhere where there is waste heat such as data centres or battery storage sites	
Energy from waste e.g. Potential for anaerobic digestion	
Significant cooling plant	



Electricity loading capacity to support a switch to electric heating solutions

By adding additional electrical loading through the switching of your heat source, there is a chance that there won't be enough electrical capacity coming into your building(s) or in the wider area.

The cost of increasing the electrical supply to a site can vary substantially (and can be high). Therefore, it should be investigated before any projects are commissioned.



Supporting information

This section brings together the energy data you have used to support the heat decarbonisation plan.

It should include the following supporting information:	✓
Display Energy Certificates (DECs)	
Age of buildings and, where possible, U values of building elements	
Energy consumption data across the estate, to include where possible half hourly data and as granular as possible	
Energy costs across the estate	
Maintenance costs	
Current contractual agreements (e.g., facilities management) and their targets	
Target emission savings for the decarbonisation plan	
Site surveys	
Floor plans	
Images of the systems and building fabric	
Heating system/building fabric condition reports	
Heating and electrical schematics and data sheet	
Heat loss calculation for the buildings	



Plans for the sites

This section outlines plans for sites and the proposed expansion or rationalisation of sites that are in the public domain.

This section could consider	✓
Any planning restrictions or planning guidance in your area (including listed status of buildings)?	
Plans for demolition and rebuilding, major refurbishment or change of use, occupancy, or operational hours?	
Are there plans that are in the public domain for expansion or rationalisation of sites or change of usage?	
Plans for new builds and the planning standards for new builds in your area?	
Planning guidance for heating systems and energy efficiency in new builds in your area/buildings?	
Building standards and building regulations?	

Key challenges

This section outlines plans for sites and the proposed expansion or rationalisation of sites that are in the public domain.

This section could consider	✓
Any planning restrictions or planning guidance in your area (including listed status of buildings)?	
Plans for demolition and rebuilding, major refurbishment or change of use, occupancy, or operational hours?	
Are there plans that are in the public domain for expansion or rationalisation of sites or change of usage?	
Plans for new builds and the planning standards for new builds in your area?	
Planning guidance for heating systems and energy efficiency in new builds in your area/buildings?	
Building standards and building regulations?	

Heat decarbonisation plan outputs

A HDP can include the following outputs:

1. Heat decarbonisation strategy
2. Feasibility studies
3. Investment grade proposals
4. Desktop analysis
5. Building audit or site surveys
6. Specialist technical site surveys
7. Detailed design of heat decarbonisation measures

What do you need to achieve your objectives?



Good versus bad HDPs

Good HDPs

Provide you with the opportunity to gain a thorough understanding about your buildings with respect to energy efficiency and the steps needed to implement carbon savings measures.

Utilise a whole building approach and the three stages of achieving a net zero carbon building: building fabric, energy efficiency and carbon savings.

Bad HDPs

May show you how to decarbonise, but not showcase the resources that will be required to achieve this.

May only cover some stages of achieving a net zero carbon building.

Detailed design expectations

- Produce a technical design, including a design specification and schematics for proposed low carbon technologies (At least RIBA stage 3).
- Consider facilitating works: infrastructure upgrades, pipe work improvements, emitter replacements ...
- On completion: Heat loss calcs, technical site surveys, data sheets, sizing calcs, design drawings.

Resources available

Further information can be found on the Salix website:

- [Phase 4 LCSF Guidance Notes](#)
- [HDP Guidance](#)
- [Application Guidance](#)
- [Phase 4 LCSF application portal questions](#)
- [Supplementary Information Document](#)
- [Phase 4 LCSF FAQs](#)
- [RIBA Plan of Work](#)
- [Modern Energy Partnership Guidance](#)





Thank you!

Our Phase 4 LCSF team can be contacted at
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