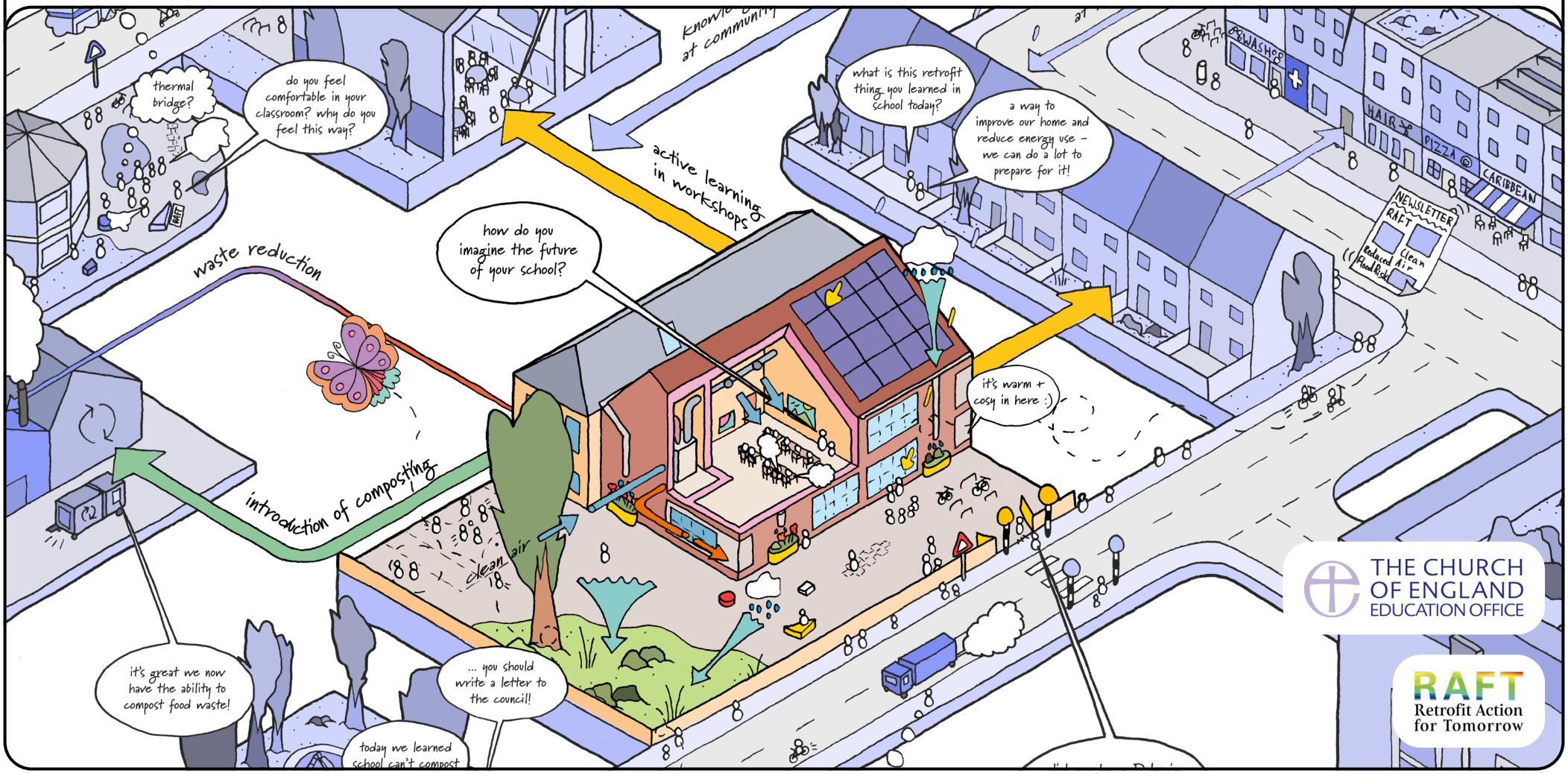
Energy & Buildings Self Audit

Helping your school reduce its carbon emissions

School Name		**School Type**	
Local Authority		**Postcode**	
Diocese		**Date Completed** (DD.MM.YYYY)	



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Energy & Buildings Self Audit

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Purpose of Tool

Energy & Buildings Self Audit

What is the purpose of this tool?

The Church of England's ambitious Net Zero Carbon by 2030 programme aims to equip, resource and support all parts of the Church to reduce carbon emissions from the energy used in its buildings, schools and through work-related transport by 2030.

For the Church of England, being net zero carbon means the carbon emissions of our buildings and travel will be reduced to less than 10 per cent of our baseline levels. The remaining emissions will be offset in verified schemes that reduce carbon. That means overall, our buildings and travel will not contribute to rising carbon emissions: their contribution will be 'net zero'.

This new Energy and Buildings Self Audit Tool aims to help you understand the energy efficiency of your school buildings and to help you with action plans aimed at reducing carbon emissions.

Why should we use this tool?

- Greater understanding of your school building.
- A summary of your buildings which can be used as a reference.
- Knowledge of next steps to retrofit your school to be more sustainable and climate resilient.
- Preparation for funding and planning.
- Information for architects and retrofit consultants to start retrofit process.
- Create a source of information that diocese can use to understand all their schools.
- Engage pupils with their schools building.

What is Retrofit?

Building retrofit can also be called thermal/energy upgrade. School retrofit is a set of measures, both physical and operational that can be made at a school to:

- **reduce energy bills**
- **improve comfort, air quality and well-being**
- **improve sustainability & climate resilience**
- **keep the building warm in winter**
- **keep the building cool in summer**

This might include improving insulation, window performance, solar shading, air source heat pumps etc.

Is this just another document to fill in?

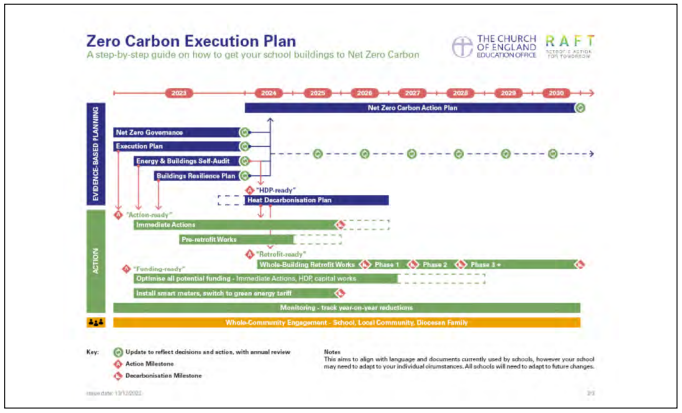
Ultimately yes, this is another document to fill in, but we hope it **supports your school and key staff members in making the decarbonisation process as easy as possible.** We recognise that schools are under pressure with time and cost barriers to implementing measures you and the school may have already identified but not had the resources to implement. This audit will look at the whole building to give a rounded view of the most effective ways to retrofit, and help build your capacity to take action, be retrofit ready and optimise available funding and resources.

Who should fill this in?

Your **school premises manager / caretaker** may be best placed to fill in this survey, with the assistance of the **business manager / finance manager.** Some of the audit can be filled in from a desk location, and some parts will require looking around the school, to obtain further information.

How does this tool link to other resources?

The Energy & Buildings Self Audit Tool is part of a **set of documents produced by the Church of England Education Office and RAFT to help schools to reduce carbon emissions** as part of the Church of England's ambitious Net Zero by 2030 programme. For more details, visit: **www.churchofengland.org/about/education-and-schools/net-zero-carbon-schools**



Thank you to staff and pupils at Alverstoke, Barnwood, Cranham, Kempsford, St Mark's Cheltenham, St Mary's Thornbury schools who have helped to create and give feedback on this guide, to ensure that it is as easy as possible to use in the school environment.

How to use this tool

Overview

What is the structure of this tool?

The main section of the audit is split into two: guidance and data input.

Guidance: Helps you to understand the school building, the different aspects of retrofit and ensure consistent responses in the data input section.

Data Input: Space to fill in information about the school, mostly in a table format.

How should I input data?

It is recommended that if you are involved in filling in the survey, that you have a discussion about which parts you will take responsibility for and that as much data as possible is input from a desk location, with the remaining data collected whilst looking around the school.

Where can I find information?

Please fill in everything that you can and only mark things as unknown if you have exhausted your options to find information. The more information you are able to complete, the more useful the audit will be. Sources of information you might use include:

- Condition Surveys
- School Energy Data
- Available drawings of school
- Data from H&S Files

How long will it take to fill in?

Depending on how much of this information is already available and collected, this audit should take about 2 hours for a school of 3 blocks.

Should I print this tool?

If it is easier to print the audit for filling out, yes, but if you want to save paper and printing costs, you might only want to print out the essential data input pages relevant for your school size.

Do I need any special equipment?

The audit requires very little equipment, although a tape measure might be helpful in some sections.

Are there health & safety measures I should take?

Whilst it may seem obvious, please do take care when completing the survey, especially when looking in roofs & investigating walls. It is vital to refer back to your school policies and considerations before collecting data around the school:

- ⚠ Asbestos Management Plan
- ⚠ Working at Height
- ⚠ Health & Safety Protocols
- ⚠ Building Risk Management Plans

How to fill in this tool

The inputs of this guide can be filled in on paper or directly into the pdf. Save the pdf with '_YourSchoolName' at the end

Roof Self Audit Blocks A-D

Description		Shape	Surface Appearance	Proportion	Roof Age	Ceiling pitch	Insulation Amount	Issues
Block	Type	• Flat • Shallow pitch • Normal pitch • Mansard • No roof	• Tile • Metal sheeting • Flat roof roll sheeting • Other (describe)	Estimate the proportion of roof type in each block to nearest 10%. Does NOT need to equal 100%.	When was the roof last updated or insulated? Please give the estimated date.	• No ceiling • Flat • Pitched parallel with roof • Hybrid	• None • Low • Medium • High See guide for matrix	Water ingress; Missing or slipped tiles; Condensation or mould on under-side; etc.
A	1							
	2							
	1							

Blocks
The block as determined in the school overview.

Type
The main, secondary and tertiary types of an element within a block.

Colours
Colours relate between the guidance page and table.

Shape

Flat

Pitched

Mono-pitch

Data Input
These boxes contain standard suggestions. If appropriate please use this wording, or feel free to use a term that better describes the situation at your school. If you are unsure, or don't know any of the data inputs please write "unknown".

Opportunities
Key opportunities identified or already known for retrofit.

Opportunities Identified	

Interactive navigator
Click on the input page you want to navigate to.

Self Audit Overview General

General

School address

Line 1

Line 2 (optional)

Town

No. of students

No. of blocks

Filled in by:
Name, Role

URN

To find out your school URN go to the government 'Get Info' website via this link and use the search function. This is a DfE unique reference number for schools and academies.

URN

Hours

Term time hours of operation	e.g. 7am - 5pm		
Out of term hours of operation	e.g. 7am - 3pm		

Blocks

It is important that blocks are identified clearly which can be difficult because many schools have different systems. For each of your blocks, please provide the name the the school uses (eg. DT Block) and then match it to the government 'CDC' blocks if you can, these are normally in the format 'EFAA' where A is the block name or sometimes 'ANC1'. If you don't have your CDC info follow this link. Add the internal floor area of each block (m^2). This block matching process means that someone unfamiliar with the school could use the audit to understand the building as they would know which block is which too.

	Informal Block Name	*CDC Block*	*Floor Area (m^2)*	*Pre-fab cabin? (yes/no)*
Block A				
Block B				
Block C				
Block D				
Block E				
Block F				

	Informal Block Name	*CDC Block*	*Floor Area (m^2)*	*Pre-fab cabin? (yes/no)*
Block G				
Block H				
Block I				
Block J				
Block K				
Block L				

Self Audit Overview General

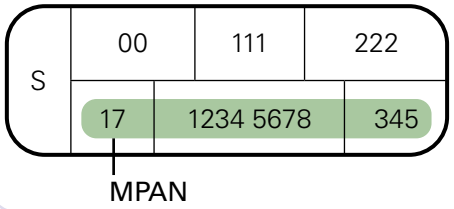
Electricity supply

No. of supplies — This should match the no. of import MPANs

	MPAN *13 digit number* *see below*	Meter type *import / export*	Meter serial number	Meter capacity *capacity*	*units*	Phases *1 or 3*	Block(s) served *List all relevant blocks*	Smart Meter *yes / no*
1								
2								
3								
4								
5								
6								

Kitchen meter? — List any meters which are specific to the school kitchen

MPAN
The Meter Point Administration No. is unique to each meter. It is found on bills, often in the form of the grid below and sometimes called the Supply Number.



Meter type
Select import for all meters unless it is a solar panel meter that exports power.

Meter serial number
Meter ID or 'MSN'. Your meter serial number may appear on your bill. You can also find it on the meter as a mix of both letters and numbers, around 10 characters long.

Meter capacity
kVa, amps, or kW (If you do not know, check your bill or ask your DNO)

Phases
Your supplies will either be single phase or 3-phase. If you do not know, your meter may say the number of phases. Alternatively check with your engineer.

Self Audit Overview General

Electricity use

Please provide the previous years annual consumption of each meter identified on the previous page. Please provide the total annual cost including standing charges.

Meter	Consumption	Cost	Date from	Date to
	Usage in kWh	*£*	*MM/YY*	*MM/YY*
1				
2				
3				
4				
5				
6				

If you have solar panels, what is your annual kWh production and export

Production

Export

Large electricity loads (if applicable)

If you have any of the following, tick the relevant block letter. If you have any other large loads that you consider significant please add below.

Block	A	B	C	D	E	F	G	H	I	J	K	L
Air conditioning												
Air handling												
EV Charging												
Floodlights												
Forge												
Kilns												
Laundry												
MVHR												
Swimming pool												

Other: Input name	A	B	C	D	E	F	G	H	I	J	K	L

Self Audit Overview Heating Fuel: Gas

Gas supply (if applicable)

No. of supplies — This should match the no. of import MPANs

	MPRN	Meter serial number *Meter ID*	Block(s) served *List all relevant blocks*	Smart Meter *yes / no*	Consumption *Annual Usage*	Units *kWh. m³, BTU, therms*	Cost *£*	Date from *MM/YY*	Date to *MM/YY*
1									
2									
3									
4									
5									
6									

Kitchen meter? — List any meters which are specific to the school kitchen

MPRN
You can find your meter's MPRN on your gas bill. It's usually marked 'Meter Point Reference Number' and is six to 10 digits long. You will not find the MPRN on the actual gas meter box.

Meter serial number
Meter ID or 'MSN'. Your meter serial number may appear on your bill. You can also find it on the meter as a mix of both letters and numbers, around 10 characters long. It is generally near the barcode on newer meters.

Self Audit Overview Heating Fuel: Other fuels and large loads

Other heating fuel (if applicable)

Specify fuel 1 — Propane, kerosene, fuel oil, biomass

Block(s) served — *List all relevant blocks*

Consumption	Units	Cost	Date from	Date to
Annual Usage	*eg. kg, tons, m^3, litres*	*£*	*MM/YY*	*MM/YY*

Specify fuel 2 — Propane, kerosene, fuel oil, biomass

Block(s) served — *List all relevant blocks*

Consumption	Units	Cost	Date from	Date to
Annual Usage	*eg. kg, tons, m^3, litres*	*£*	*MM/YY*	*MM/YY*

Large heating fuel loads

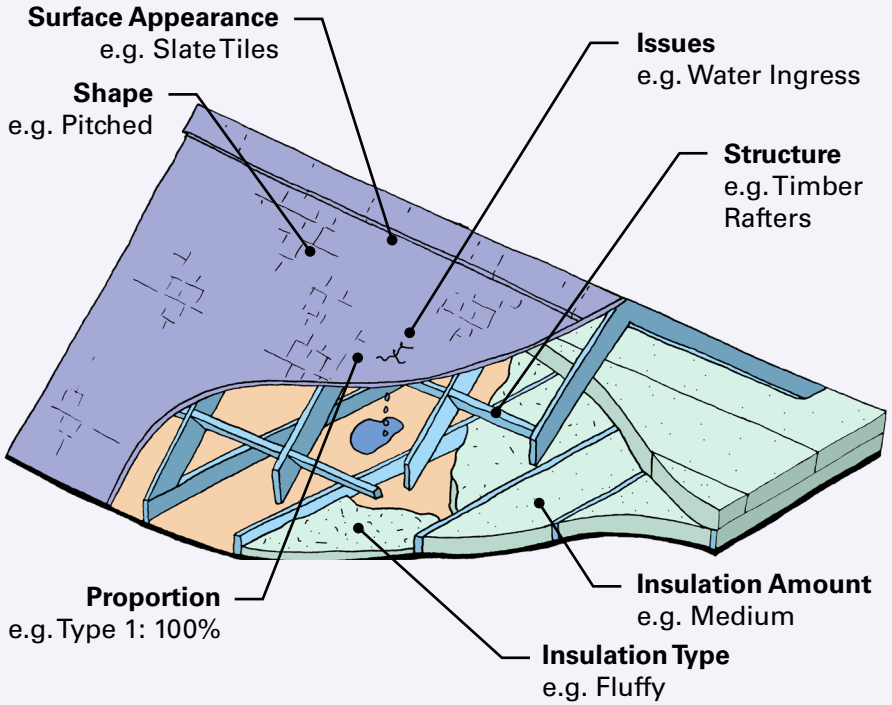
If you have any of the following, tick the relevant block letter. If you have any other large loads that you consider significant please add below. This could be any heating fuel.

Block	A	B	C	D	E	F	G	H	I	J	K	L
Bunsen burners												
Catering kitchen												
DT Food												
Forge												
Kilns												
Laundry												
Swimming pool												
Other: Input name	A	B	C	D	E	F	G	H	I	J	K	L

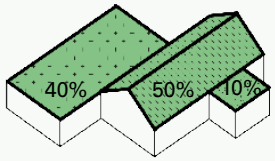
Roof Guidance

Energy & Buildings Self Audit

Overview



Proportion

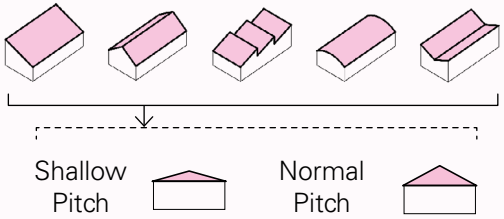


Estimate based on plan area, proportions to nearest 10%. Can be done visually using aerial images, or actual areas if available.

Shape

Flat

Shallow or normal pitch
Includes monopitch, sawtooth, curved and buttterfly



Mansard

Insulation amount

Above structure | Horizontal loft | Pitched parallel with roof | Hybrid

Top Tip

Tidying up messy roof insulation can improve performance of the roof by up to 50%.

Insulation amount

Use the matrix below to summarise how much insulation you have based on how thick it is and what you think its coverage is.

Insulation Depth (mm)		Tidiness	0 - 100	101 - 200	300 +
Insulation coverage (%)	1 - 50	Poor	Low	Low	Medium
	51 - 75	Average	Low	Medium	High
	76 - 100	Good	Medium	High	High

Roof Self Audit Blocks A-D

Block	Type	Shape	Surface Appearance	Proportion	Roof Age	Insulation location	Insulation Amount	Issues
Description		• Flat • Shallow pitch • Normal pitch • Mansard • No roof	• Tile • Metal sheeting • Flat roof roll sheeting • Other (describe)	Estimate the proportion of roof type in each block to nearest 10%. Does NOT need to equal 100%.	When was the roof last updated or insulated? Please give the estimated date.	• Above structure • Horizonal loft • Pitched parallel with roof • Hybrid • Don't know	• None • Low • Medium • High See guide for matrix	Water ingress; Missing or slipped tiles; Condensation or mould on under-side; etc.
A	1							
	2							
B	1							
	2							
C	1							
	2							
D	1							
	2							

Opportunities Identified	

Roof Self Audit Blocks E-H

Block	Type	**Shape** • Flat • Shallow pitch • Normal pitch • Mansard • No roof	**Surface Appearance** • Tile • Metal sheeting • Flat roof roll sheeting • Other (describe)	**Proportion** Estimate the proportion of roof type in each block to nearest 10%. Does NOT need to equal 100%.	**Roof Age** When was the roof last updated or insulated? Please give the estimated date.	**Insulation location** • Above structure • Horizonal loft • Pitched parallel with roof • Hybrid • Don't know	**Insulation Amount** • None • Low • Medium • High See guide for matrix	**Issues** Water ingress; Missing or slipped tiles; Condensation or mould on under-side; etc.
E	1							
	2							
F	1							
	2							
G	1							
	2							
H	1							
	2							

Opportunities Identified	

Roof Self Audit Blocks I-L

Description		Shape	Surface Appearance	Proportion	Roof Age	Insulation location	Insulation Amount	Issues
Block	Type	• Flat • Shallow pitch • Normal pitch • Mansard • No roof	• Tile • Metal sheeting • Flat roof roll sheeting • Other (describe)	Estimate the proportion of roof type in each block to nearest 10%. Does NOT need to equal 100%.	When was the roof last updated or insulated? Please give the estimated date.	• Above structure • Horizontal loft • Pitched parallel with roof • Hybrid • Don't know	• None • Low • Medium • High See guide for matrix	Water ingress; Missing or slipped tiles; Condensation or mould on under-side; etc.
I	1							
	2							
J	1							
	2							
K	1							
	2							
L	1							
	2							

Opportunities Identified	

Wall Guidance

Energy & Buildings Self Audit

Wall Structure

The wall structure is easiest to identify around window openings and ceiling grids, if appropriate, it could be helpful to look above the ceiling tiles where wall structure may be exposed where it meets the roof.

Steel frame

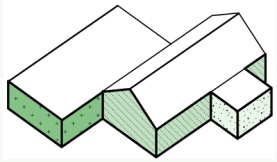
Concrete Frame

Load Bearing Masonry

Timber Frame

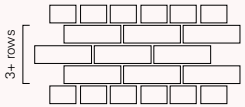
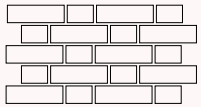
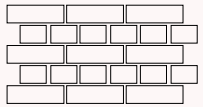
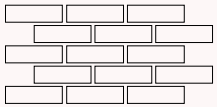
Proportion

Estimate based on plan area, proportions to nearest 10%.



Solid or cavity (for brick walls)

If you don't know if you have cavity or solid walls, use this table to judge which is the most likely. Brick walls often have holes or gaps, which you can use to identify if the wall has a cavity or is solid. If you do not see your brick pattern, make a judgement, based on age, similar patterns, or other solid/cavity identifiers.

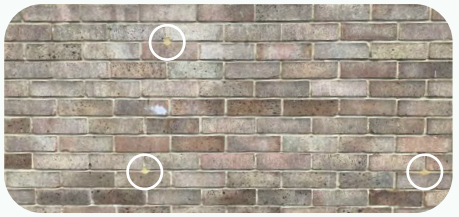
	Brick Pattern				
Age	Pre -1919	solid	solid	solid	cavity
	Pre 1970	solid	solid	solid	cavity
	1970+	indistinct	cavity	cavity	cavity

Thickness

Wall thickness can be measured at the handle side of a single door or window. Often the door frame width extends past the inside face of the wall, so be sure to account for this and only measure the wall thickness.

Insulation

If a wall was constructed after 1981, its is likely to be insulated in some way. If you have a cavity wall, it may have been insulated years after it was built. You can identify if this is the case by looking out for regularly spaced circles at the corner of bricks. Sometimes this is quite obvious, while sometimes it is very subtle. Occasionally, cavity walls are filled from the inside which could be identified by looking through school databases and records.



Insulation Location

External: On the outside face
Internal: On the inside face

Cavity: Between layers such as between brick & block or behind cladding panels

External Walls Self Audit Blocks A-D

Description		Surface	Age	Proportion	Structure	Thickness	Solid or Cavity	Insulation	Insulation Location
Block	Type	• Brick • Stone • Concrete blocks • Timber • Metal panels • Concrete panels • Render (external plaster) • Curtain walling (opaque panels)	When was the wall built?	Proportion of the block's walls made up of each wall type to nearest 10%.	• Load-bearing masonry • Steel frame • Timber frame • Concrete frame • Other	Measure at a doorway or window to the nearest 1cm.	Does the wall have a cavity? • Yes • No • Unsure	• Yes (original) • Yes (added later) • No • Unsure	• External • Internal • Cavity • No Insulation • Don't know
A	1								
	2								
B	1								
	2								
C	1								
	2								
D	1								
	2								

Opportunities Identified	

External Walls Self Audit Blocks E-H

Block	Type	Surface	Age	Proportion	Structure	Thickness	Solid or Cavity	Insulation	Insulation Location
Description		• Brick • Stone • Concrete blocks • Timber • Metal panels • Concrete panels • Render (external plaster) • Curtain walling (opaque panels)	When was the wall built?	Proportion of the block's walls made up of each wall type to nearest 10%.	• Load-bearing masonry • Steel frame • Timber frame • Concrete frame • Other	Measure at a doorway or window to the nearest 1cm.	Does the wall have a cavity? • Yes • No • Unsure	• Yes (original) • Yes (added later) • No • Unsure	• External • Internal • Cavity • No Insulation • Don't know
E	1								
	2								
F	1								
	2								
G	1								
	2								
H	1								
	2								

Opportunities Identified	

External Walls Self Audit Blocks I-L

Description		Surface	Age	Proportion	Structure	Thickness	Solid or Cavity	Insulation	Insulation Location
Block	Type	• Brick • Stone • Concrete blocks • Timber • Metal panels • Concrete panels • Render (external plaster) • Curtain walling (opaque panels)	When was the wall built?	Proportion of the block's walls made up of each wall type to nearest 10%.	• Load-bearing masonry • Steel frame • Timber frame • Concrete frame • Other	Measure at a doorway or window to the nearest 1cm.	Does the wall have a cavity? • Yes • No • Unsure	• Yes (original) • Yes (added later) • No • Unsure	• External • Internal • Cavity • No Insulation • Don't know
I	1								
	2								
J	1								
	2								
K	1								
	2								
L	1								
	2								

Opportunities Identified	

Floor Guidance

Energy & Buildings Self Audit

Solid or Suspended

The presence of vents on the outside surface of the wall may indicate a suspended and ventilated floor void. Assume solid floor if no vents are visible. Some vents might be hidden behind gravel / plants.

Structure

You may be able to see the floor, or determine its structure visually, but often the floor is hidden. Jumping on the floor can help. A timber suspended floor will feel hollow or bouncy. A beam & block floor will feel more solid but still feel hollow. A solid floor will feel hard & dense.

Timber

Beam & Block

Solid Concrete (often covered)

Proportion

Estimate based on plan area, proportions to nearest 10%. This will be hard to do, as floor type changes are not always visible. We are aware of this and best estimates are still useful for this exercise.

Below Floor

Identify if there is an accessible space below the floor, as shown in the suspended timber floor photo above. This should be big enough to allow someone to access and work from below.

Floor Self Audit

Description		Solid or Suspended	Structure	Proportion	Below Floor
		Vents below your floor visible from the outside, and solid feel of the floor suggest it is suspended.	• Timber • Concrete Beam & Block • Solid Slab	Proportion of the block's floor made up of each floor type to nearest 10%.	Accessible space below the floor that someone could access to work from below?
Block	Type				
A	1				
	2				
B	1				
	2				
C	1				
	2				
D	1				
	2				

Opportunities Identified	

Floor Self Audit Blocks E-H

Block	Type	**Solid or Suspended**	**Structure**	**Proportion**	**Below Floor**
Description		Vents below your floor visible from the outside, and solid feel of the floor suggest it is suspended.	• Timber • Concrete Beam & Block • Solid Slab	Proportion of the block's floor made up of each floor type to the nearest 10%.	Is there an accessible space below the floor that someone could access to work from below?
E	1				
	2				
F	1				
	2				
G	1				
	2				
H	1				
	2				

Opportunities Identified	

Floor Self Audit Blocks I-L

Block	Type	**Solid or Suspended**	**Structure**	**Proportion**	**Below Floor**
Description		Vents below your floor visible from the outside, and solid feel of the floor suggest it is suspended.	• Timber • Concrete Beam & Block • Solid Slab	Proportion of the block's floor made up of each floor type to the nearest 10%.	Is there an accessible space below the floor that someone could access to work from below?
I	1				
	2				
J	1				
	2				
K	1				
	2				
L	1				
	2				

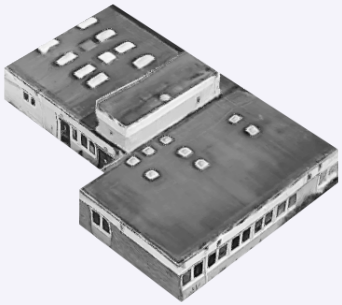
Opportunities Identified	

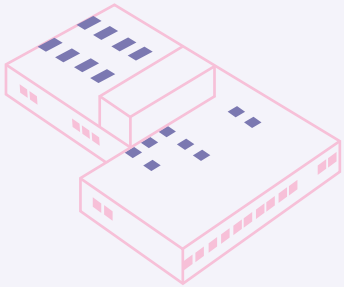
Windows & Curtain Walls Guidance

Energy & Buildings Self Audit

Window Proportion

Estimate the window proportion as an area of the total wall. This can be done visually without measurement. Include windows in doors on **all sides of the building**. Include window frames, but not structure around the window in your estimations.





60% Type 1

40% Type 2

Issues

Blown seals in double and triple glazing can be identified when there is moisture in between panes of glass, meaning thermal performance of the window is reduced.

Glazed Walling

Glazed curtain walling may be present in the building, this is where the glazed curtain wall itself has a self-supporting structure, often attached to a main structure behind it.

1970's - 80's

2000 +

Glazing Type

Single

Double

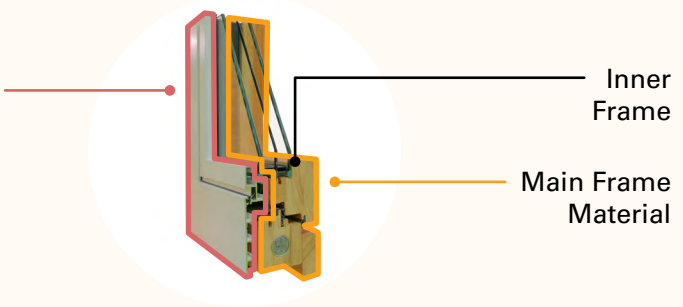
Triple

You can identify whether the windows are single, double, or tripled glazed, by counting the glass layers, or the spacer bars between the glass, next to the frame. There will be no spacer bars for single, one for double & two for triple glazing. The image has one spacer & two panes of glass (double glazed).

Secondary Glazing

Secondary glazing is an additional layer of glass that is normally single glazed.

Frame Material (For Double and Triple Glazed Windows)



The frame material of single glazed windows is fairly easy to identify, but some double or triple glazed windows may have a different **surface appearance** than the material they are made of. For the survey, we only need to determine the **main frame material,** which you will be able to see when you open the window and look at the inner frame.

Windows & Curtain Walls Self Audit Blocks A-D

Description		Window Proportion	Glazed Walling	Rooflight	Glazing Type	Date Installed	Frame Material	Condition	Notes
Block	Type	Proportion of the block's glazing that is this type to nearest 10%.	• Yes • No	Is this a rooflight? • Yes • No	• Single • Single (w/ secondary) • Double • Triple	• Pre 2000 • 2001 - 10 • 2010 +	• Metal • Timber • PVC	• Good • Fair • Poor	• E.g. description of single glazing if you have secondary • Draughtiness / Broken Seals • Rotted frame etc. • Broken Mechanisms
A	1								
	2								
B	1								
	2								
C	1								
	2								
D	1								
	2								

Opportunities Identified	

Windows & Curtain Walls Self Audit Blocks E-H

Description		Window Proportion	Glazed Walling	Rooflight	Glazing Type	Date Installed	Frame Material	Condition	Notes
Block	Type	Proportion of the block's glazing that is this type to nearest 10%.	• Yes • No	Is this a rooflight? • Yes • No	• Single • Single (w/ secondary) • Double • Triple	• Pre 2000 • 2001 - 10 • 2010 +	• Metal • Timber • PVC	• Good • Fair • Poor	• E.g. description of single glazing if you have secondary • Draughtiness / Broken Seals • Rotted frame etc. • Broken Mechanisms
E	1								
	2								
F	1								
	2								
G	1								
	2								
H	1								
	2								

Opportunities Identified	

Windows & Curtain Walls Self Audit Blocks I-L

Description		Window Proportion	Glazed Walling	Rooflight	Glazing Type	Date Installed	Frame Material	Condition	Notes
Block	Type	Proportion of the block's glazing that is this type to nearest 10%.	• Yes • No	Is this a rooflight? • Yes • No	• Single • Single (w/ secondary) • Double • Triple	• Pre 2000 • 2001 - 10 • 2010 +	• Metal • Timber • PVC	• Good • Fair • Poor	• E.g. description of single glazing if you have secondary • Draughtiness / Broken Seals • Rotted frame etc. • Broken Mechanisms
I	1								
	2								
J	1								
	2								
K	1								
	2								
L	1								
	2								

Opportunities Identified	

Lighting Guidance

Energy & Buildings Self Audit

Non-LED

Incandescent & Halogens

Incandescent (1) and halogen (2,3) lights have an exposed filament. LEDs can be made to look like they have a filament, but the diodes are visible on inspection.

Fluorescent

Will typically be found in ceiling lighting across the school, and may not immediately switch on & off.

LED

LED

LEDs are the most efficient light type and if correctly specified can be used to reduce energy costs and improve the classroom environment.

If you are unsure about which lighting type is present in a room, use these steps:

- Switch the lights on and off, if it is not instantaneous, it is not LED
- Can you see behind any lighting cover safely? You should be able to see the individual diodes of the LED lights
- Is the light flickering? If it is, it is not LED.

Lighting Self Audit Blocks A-C

Block	LED	Motion sensors	Time controlled	Lights Left On	Other Issues
Description	Proportion of the lights are LEDs to the nearest 10%.	Percentage of motion controlled lighting to the nearest 10%.	Percentage of lighting on timers to the nearest 10%. This will generally be for external lighting.	• Rarely • Occasionally • Regularly • Often • Almost always	• Flickering • Headaches & glare • Insufficient lighting • Can't reach to change bulbs
A					
B					
C					

Opportunities Identified	

Lighting Self Audit Blocks D-L

Description / Block	LED	Motion sensors	Time controlled	Lights Left On	Other Issues
	Proportion of the lights are LEDs to the nearest 10%.	Percentage of motion controlled lighting to the nearest 10%.	Percentage of lighting on timers to the nearest 10%. This will generally be for external lighting.	• Rarely • Occasionally • Regularly • Often • Almost always	• Flickering • Headaches & glare • Insufficient lighting • Can't reach to change bulbs
D					
E					
F					
G					
H					
I					
J					
K					
L					

Opportunities Identified	

Heat Source Guidance

Energy & Buildings Self Audit

Central Heat Source Type

A centralised heat source is a system that creates / generate heat that is then distributed around a building. Examples of heat sources include but are not limited to:

- Boiler
- Direct hot water cylinder
- Air to Water Heat pumps

The above would work with a standard wet radiator system. The radiator emits heat from the hot water that is heated by a central boiler. The boiler is the heat source and the radiator is a heat emitter. Electric radiators are considered as a heat emitter - they have their own power supply but do not distribute the heat to secondary emitters.

Year of Install

Knowing the age of a heat source helps to estimate how efficient a boiler is and to determine whether there might be opportunities for public funding. If you do not know how old your boiler is, the manufacturer can tell you from the serial number over the phone. For example, on this Vaillant boiler the serial starts with '21**11**' this means the boiler was manufactured in the year 2011, in the 21st week of that year.

Heat output

The heat output is measured in kW. On boiler plates it is often denoted with the letter 'P'. Heat input is often denoted by the letter Q.

Flow temperature

Flow temperature is the temperature the boiler supplies hot water at. You may set this on your BMS, or directly on the boiler. You could also use an infrared thermometer to check.

Top Tip

For maximum efficiency, flow temperature should be at 60 degrees celsius or lower depending on your legionella management. Reducing the flow temperature of boilers if they are higher than required can improve the efficiency and reduce energy use and bills.

Heat Sources 01-08

Number	Heat Source Type	Heat Source Fuel	Make	Model	Year of Install	Heat Output	Hot Water	Flow Temps	Issues
Description	• Boiler • Direct electric hot water cylinder • Air to water heat pump • Ground source heat pump • Water source heat pump • District heat • Solid fuel burner	• Gas from grid • Gas cylinders • Electricity • Oil • Biomass • District heat network	Eg. Vaillant or Hamworthy	Eg. EcoTEC or Purewell	Eg. 2001	In kW	Does the heat source produce hot water for sinks? • Yes • No	**Flow temp for heating in degrees** °C	• Under heating • Reliability • Lack of understanding of the controls • Unavailability of spare parts. • Anything else
Heat source 01									
Heat source 02									
Heat source 03									
Heat source 04									
Heat source05									
Heat source 06									
Heat source 07									
Heat source 08									

Opportunities Identified	

Heat Emitters Blocks A-D

Block	Type	Emitter Types	Proportion	Heat Source Type	Age	Control	Pipework Insulation	Condition	Comments
Description		• Hot water radiators • Underfloor heating (wet) • Electric underfloor • Electric radiators • Storage heaters • Infrared panels • Localised electric fan heaters • Air handling unit with heating • Air to air heat pumps	Proportion of the block's emitters that are this type (nearest 10%).	• Select heat source from previous sheet • or n/a (for emitters with inbuilt heat source	When was the distribution system installed?	• Building level • Zoned • Room Level • Other • None	• Mostly • Partial • None	• Good • Fair • Poor	Eg. radiators need balancing frequently, TRV control, difficult to heat rooms to a comfortable temperature.
A	1								
	2								
B	1								
	2								
C	1								
	2								
D	1								
	2								

Opportunities Identified	

Heat Emitters Blocks E-H

Block	Type	Emitter Types	Proportion	Heat Source Type	Age	Control	Pipework Insulation	Condition	Comments
Description		• Hot water radiators • Underfloor heating (wet) • Electric underfloor • Electric radiators • Storage heaters • Infrared panels • Localised electric fan heaters • Air handling unit with heating • Air to air heat pumps	Proportion of the block's emitters that are this type (nearest 10%).	• Select heat source from previous sheet • or n/a (for emitters with inbuilt heat source	When was the distribution system installed?	• Building level • Zoned • Room Level • Other • None	• Mostly • Partial • None	• Good • Fair • Poor	Eg. radiators need balancing frequently, TRV control, difficult to heat rooms to a comfortable temperature.
E	1								
	2								
F	1								
	2								
G	1								
	2								
H	1								
	2								

Opportunities Identified	

Heat Emitters Blocks I-L

Block	Type	Emitter Types	Proportion	Heat Source Type	Age	Control	Pipework Insulation	Condition	Comments
Description		• Hot water radiators • Underfloor heating (wet) • Electric underfloor • Electric radiators • Storage heaters • Infrared panels • Localised electric fan heaters • Air handling unit with heating • Air to air heat pumps	Proportion of the block's emitters that are this type (nearest 10%).	• Select heat source from previous sheet • or n/a (for emitters with inbuilt heat source	When was the distribution system installed?	• Building level • Zoned • Room Level • Other • None	• Mostly • Partial • None	• Good • Fair • Poor	Eg. radiators need balancing frequently, TRV control, difficult to heat rooms to a comfortable temperature.
I	1								
	2								
J	1								
	2								
K	1								
	2								
L	1								
	2								

Opportunities Identified	

Hot Water Guidance

Energy & Buildings Self Audit

Central Heat Source Type

A **centralised** system is fed from a main hot water tank such as the one below. This example is a gas hot water boiler (the heat source) with an immersion water cylinder attached.

A **decentralised** unit is normally a direct electric water heater located adjacent to the sinks it serves. Small units serve just a few sinks. Large units have a more obvious tank, often on a bathroom wall and may serve all the sinks in that location.

Centralised hot water

Decentralised (small)

Decentralised (large)

Heat output

The heat output is measured in kW. On the heater plates it is often denoted with the letter 'P'. Heat input is often denoted by the letter Q.

Heat Output information location

Hot Water Blocks A-D

Description		Hot water	Proportion	Heat source	Age	Heat Output	Pipework Insulation	Comments
Block	Type	Does the block use hot water?	Proportion of the block's water use of this type (must total 100%)	• Select heat source number from the Heat Sources sheet • or direct electric • or direct gas	When was the system installed?	• Output in kW • Unknown	• To nearest 25% • n/a • Uninsulated	Eg. Long distribution, uninsulated pipes, long wait for hot water, kitchen specific water heater
A	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
B	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
C	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
D	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							

Opportunities Identified	

Hot Water Blocks E-H

Description		Hot water	Proportion	Heat source	Age	Heat Output	Pipework Insulation	Comments
Block	Type	Does the block use hot water?	Proportion of the block's water use of this type (must total 100%)	• Select heat source number from the Heat Sources sheet • or direct electric • or direct gas	When was the system installed?	• Output in kW • Unknown	• To nearest 25% • n/a • Uninsulated	Eg. Long distribution, uninsulated pipes, long wait for hot water, kitchen specific water heater
E	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
F	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
G	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
H	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							

Opportunities Identified	

Hot Water Blocks I-L

Description		Hot water	Proportion	Heat source	Age	Heat Output	Pipework Insulation	Comments
Block	Type	Does the block use hot water?	Proportion of the block's water use of this type (must total 100%)	• Select heat source number from the Heat Sources sheet • or direct electric • or direct gas	When was the system installed?	• Output in kW • Unknown	• To nearest 25% • n/a • Uninsulated	Eg. Long distribution, uninsulated pipes, long wait for hot water, kitchen specific water heater
I	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
J	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
K	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							
L	Centralised				as above	as above		
	Decentralised (small)							
	Decentralised (large)							

Opportunities Identified	

Kitchen / Catering Self Audit

Description	Block	Purpose of Kitchen	Kitchen Use Timings	Meals per Day	Hob Type	Oven Type	Kitchen Heating	Food Waste
Kitchen	Which block is the kitchen located in?	• Catering • Food Tech • Staff • Servery Only	When is the kitchen used on a daily basis? Add timings.	How many meals per day does the kitchen serve?	• Electric • Gas • Induction	• Electric • Gas	Are the ovens or hobs switched on to keep kitchen staff warm in winter?	Is food waste composted and what quantity (in bin bags) is composted?
1								
2								
3								
4								
5								
6								
7								
8								

Opportunities Identified	

Opportunities Identified

Block	Roof Insulation	Wall Insulation	Windows	LEDs	Heat Sources	Hot Water	Energy Management
Description	Identify demand reduction opportunities where there is low or no insulation, elements need work and could be 'trigger points'.			Identify opportunities for energy use reduction through altering how the building is serviced, or where existing systems could be managed differently.			
	Could you insulate areas of roof where there is no or a low amount of insulation?	Could you insulate areas of wall where there is no or a low amount of insulation?	Replace "blown" double glazing, upgrade any single glazing to double or triple glazing, or add secondary glazing.	Upgrade any non-LED lighting to LED and consider adding motion sensors.	Any gas boilers nearing end of life, plan to upgrade to ASHP when possible.	Switch to electric POU when there are unnecessary isolated pipe run.	Have you identified anything that you could manage better to save energy?
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							

Where Next?	Take immediate action on no/low cost Quick Wins. Follow the Heating Resilience Flow Chart. Identify blocks and/or retrofit measures for project development. Start on your Zero Carbon Execution Plan. Consider actions listed in the Practical Path to Net Zero. Speak to your diocese, local authority, and governors to share insights, opportunities, and ambitions to reach net zero as a school.	Refer to RAFT & CEEO guidance and templates