RdSAP Refresher

By Joanne Bailey

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Agenda Layout

- Property Description and Dimensions
- Conservatories and Construction
- Flats and Roof Types
- Floor Types & Openings
- Ventilation Cooling and Lighting
- Space Heating
- Secondary Heating and Hot water
- New Technologies



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PROPERTY DESCRIPTIONS AND DIMENSIONS

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Property Types

House

Two or more storeys, no dwellings above or below and no shared entrance (includes dormers and chalets)



Bungalow

Bungalows have only one storey in RdSAP



Flats/Maisonettes

Dwelling that does not extend to all storeys of the building

Can have two or more storeys.

Acceptable to use either flat or Maisonette.



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Number of Storeys

Basements

A basement is the floor of the building which is partly (at least 50%) or entirely below ground level.

Must have staircase and also contain heating and/or be open plan to dwelling space above



Roof rooms

More about what defines a 'roof room' later on. But in general only include if they have a fixed staircase.





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Habitable room count

Habitable room definition

A count of the total amount in the dwelling (for all building parts)

The room must have access to natural day light

Open plan connection between two rooms counts as one room only if hinge holes filled where doors previously were.

Rooms to include ✓

Lounge / dining room / Study/Bedroom/ Nursery / playroom

Kitchen-diner (should fit a table and four chairs)

Conservatories (Only those open plan or internal quality doors





Rooms to EXCLUDE ✗

Halls/stairs/landings

Pantries/walk in cupboards/Utility rooms/

Bathrooms/WCs

Kitchens (unless kitchen-diners)

Conservatories separated by external quality doors

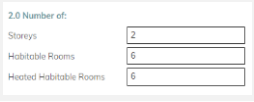
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Heated habitable rooms

Heated habitable room count

Heated habitable rooms are defined as:

Having a **fixed** heat 'emitter' (which could be your main or secondary heating – more later)







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Extensions

When to enter an extension:

- Building part built at different date to the original dwelling
- There is a different amount of storeys in one part of the dwelling
- Building part has a different roof or floor type to the rest of the dwelling.
- Max of 4 extensions can be entered (merge if more)

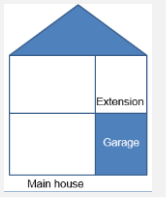




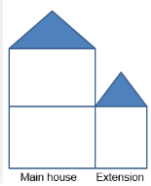
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Extension Examples

House with section over garage



House with single storey extension on side



Heated Basement

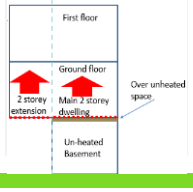


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Extension Examples

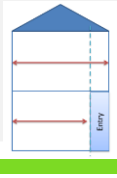
Unheated basement

Treat floor above basement as suspended floor above unheated space.



Overhang upstairs

Only split as extension if overhang adds 10% or more floor area from that of the ground floor.



Property on a hillside

May appear 2 stories from front and 3 from back



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Other Rooms to consider

Garages

Include them in floor area (usually as an extension) if they are heated by the main heating system or fixed emitters

Otherwise totally disregard garages



Detached rooms away from house

Might be a detached study in garden.

If heated from main heating system, always include as an extension.

Otherwise disregard



Porches/Stores/Utility rooms

If thermally separate - exclude. (unless heated)

If thermally open to dwelling - include.



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Extension date bands

- No rules relating to dating extensions , try to:
  - approximate date based on features and construction.
  - knowledge/paperwork
  - Look on the local council planning website
  - **If in doubt then go with the same date band as the house**.



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Conversions – How to date them ?

Originally Unheated	Originally heated
Originally an unheated building (barn, outbuilding, warehouse, mill building etc) turned into domestic dwelling/s. **Use the conversion date as the date of construction** based on the documentary evidence e.g. the date of building control sign off or the date and details of installed insulation (if available)	Originally a heated building turned into domestic dwelling/s (e.g.school, a hotel, a community hall or other) Or property sub divided **Always use the original construction date,** and specify upgraded elements only where documentary or visual evidence is available. Different in Scotland, U values can be overwritten with Building warrant. Convention 3.05a



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Measuring Rules

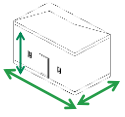
- If measuring room by room include an allowance for the thickness of internal partitions.
- Internally - measure between finished internal surfaces of the walls bounding dwelling.
- Measure all bay windows and merge into floor area
- Measure to **TWO** decimal places **(0.01m)**
- Lowered ceilings (e.g. Kitchens and bathrooms are disregarded)



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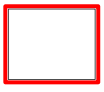
Measuring each building part



Floor Area and Ceiling Height

Floor area (m²)
= Width x Length

Ceiling height (m)
= measure floor to ceiling



Heat loss Perimeter (HLP)

HLP (m)
= The total length of walls that are exposed



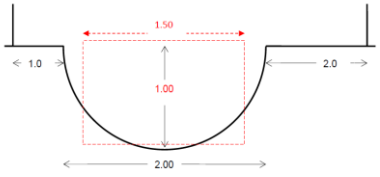
Party Wall

Party wall (m)
= The total length of walls that are joined to another building

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Bay windows curved or semi circular

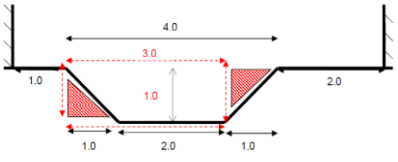


- **Area** 1.50 x 1.00 = 1.50
- **HLP** of bay 2.00 + depth 1.00 = 3.00

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Splayed bay



- **Area** 3.00 x 1.00 = 3.00
- **HLP** of bay 4.00 + 1.00 = 5.00

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Questions?

1. A bungalow with a room in the roof added is a house?
True
2. Extensions require paperwork to date them?
False
3. Unheated conversions you are allowed to use the conversion date with paperwork?
True
4. Measurements must be entered to an accuracy of 2 decimal places?
True

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CONSERVATORIES & CONSTRUCTION

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Conservatory

75% glazing/translucent material to the roof

AND

50% glazing/translucent material to external walls

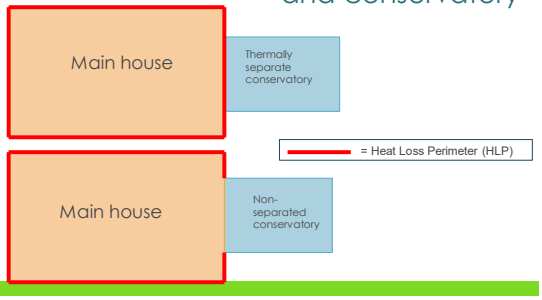
- **Thermally separate -** Exterior quality doors separating Establish if heater in there?
- **Non Thermally separate -** Interior quality doors or open plan to the main house/Extension.



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HLP between house and conservatory



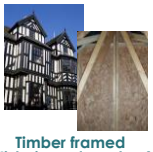
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Construction



Stone – Sandstone/Limestone Granite/Whinstone

Usually found Pre 1900 but can be later
Only found in areas where it is mined nearby
Very thick 400-600mm



Timber framed (Historic and modern)

Older type pre 1900
modern 1970s onwards
Windows inset
Weep holes
Plywood visible at gable



Cob

Usually found Pre 1900 (rare to find it later)
Rendered finish
Walls look uneven
Thicker downstairs 400+

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Construction



System Build

A post war construction 1940s – early 60s
Tower blocks and flats can also be system build from 60s to modern day.
Concrete and steel visible



Cavity

Can be found usually 1920/30s onwards (rare but could be earlier)
Stretcher bond visible
250-330mm thick
Blockwork/stretcher at gable



Solid Brick

Used for 100s of years till around 1920s when it was phased out
Header and stretcher bond
225mm thick

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Curtain Wall

Generally translucent or opaque parts. Can be glass, terracotta or fiber enforced plastic



Basements

Wall type that is adjoining the earth. If adjoining an unheated basement then treat as Heat loss walls. If confirmed heated space treat as party walls.

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Rules - Alternative Walls

- Alternative walls are classed as:

(i) A sheltered wall (to unheated corridor or stairwell), or

(ii) A wall that has a construction type or heat-loss characteristics (U-value) different from the main external wall.

- Disregard any alternative wall(s) in case (ii) if it is less than 10% of total exposed wall area of the building part (including windows and doors).



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What evidence?



External Insulation

A photograph showing the thickness (hold ruler)

Paperwork which confirms the presence (guarantee, builders invoice etc)



Internal Insulation

Paperwork from installer

Photos of work in progress accompanied by insulation receipts

Last resort - willing to expose several areas for you to see and photograph



Cavity Filled

Take photos of drill pattern visible all way round (look 3 bricks down under window)

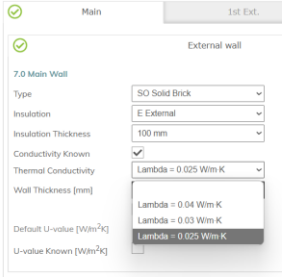
Paperwork (guarantee, warranty etc)

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Lambda Values

- **For Solid Stone/Brick In age Band A-E only**, if internal or external insulation is specified
- Where documentary evidence confirms the thermal conductivity of the insulation material the appropriate λ-value should be selected.
- If thermal conductivity not available the options below should be applied (where **visual or documentary** confirms presence):
- **0.04 W/m·K -** mineral wool, rock wool, fibre glass or EPS (expanded polystyrene)
- **0.03 W/m·K -** XPS (extruded polystyrene)
- **0.025 W/m·K -** PUR (polyurethane foam), PIR (polyisocyanurate), phenolic foam



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Wall Insulation Types



Mineral Wool



Extruded Polystyrene



Expanded Polystyrene



PUR or PIR Boards



PUR or PIR Boards

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Other Wall Factors

Dry Lining

Solid, Stone and cavity (age band A-E)

Use tap test - if inconclusive mark as 'No' dry lining. Includes:

- Plasterboard on dabs
- Lath and plaster



Wall Thickness

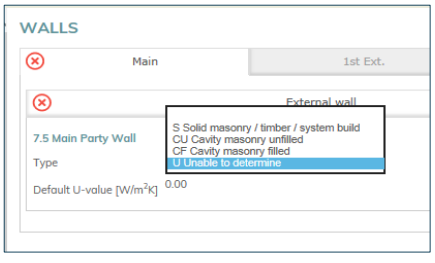
Recorded to establish:

- ➢U value of stone walls and solid walls
- ➢to convert external measurements to internal
- ➢For internal auditing

•Varying thickness calculate average (not for stone/solid if varying by more than 100mm)

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Party Wall construction options

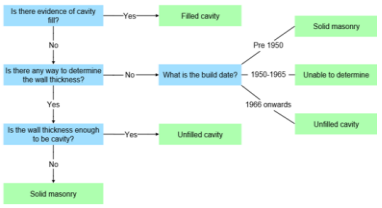


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Blockwork visible at party wall

- Basis for determining party wall type to be entered when stretcher bond brickwork / blocks face on only and laid upright are encountered and there is no other specific construction evidence.





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Party wall Options



Cavity unfilled

Select if stretcher bond

No evidence that party wall is insulated

Pre 1950- select solid

1950-66 – Unable to determine

1966 onwards - cavity



Solid, timber framed, System build

Select if stretchers and headers visible

Select if timber frame and system build



Cavity Filled

Very rare

Paperwork required to prove PARTY wall insulation present

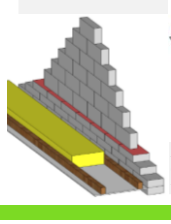
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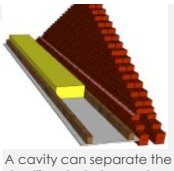
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Party Walls

Solid, timber framed, System build

Breeze blocks laid flat





A cavity can separate the dwellings but change to solid in the loft.

Unable to Determine

Select if no access to loft

If party wall not visible from loft hatch

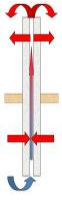
Can see it but unable to identify

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Party Walls

- If 'unable to determine' is selected for party walls then a U value loss of 0.25 is assumed, if solid can be identified then no loss is assumed.

Party Wall type	Party wall assumed U value
Solid masonry, timber frame or system built	0.00
Masonry cavity unfilled	0.5
Masonry cavity filled	0.2
Unable to determine (if house or bungalow) (if flat or maisonette)	 0.25 0.00



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Questions

1.A single glazed exterior door separating the house from a conservatory would make it thermally separate?

True

2. Selecting 'Unknown' for the insulation type of a wall will allow a recommendation to appear?

False

3. Selecting 'unable to determine' for party walls is detrimental to the rating.

True

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FLATS & ROOF TYPES

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Flats and Maisonettes

- RdSAP software will require the following information:
  - Corridor/Stairwell Information (heated or unheated)
  - Flat position
  - Floor position
  - Number of storeys in block

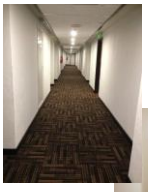


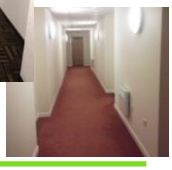
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Corridor/Stairwell

First enter corridor type:

- **None -** normally applies to maisonettes
- **Heated -** heating device is present in the communal corridor.
- **Unheated Corridor -** no heating devices are present in the adjoining corridor
- **Unheated Stairwell -** no heating devices are present in the adjoining stairwell





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Corridor and Stairwell?

- Where the dwelling adjoins both a corridor and stairwell, add the lengths together and use the sheltered wall type of greatest length as your input.
- For example, if a corridor is 10m in length (6m is stairwell and 4m is corridor) then enter 10m as being adjoining a stairwell.

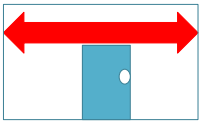


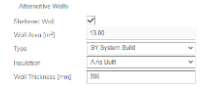
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Corridor/stairwell Entry

- Required information - **length**, **Construction and thickness** of wall that adjoins the unheated corridor:
- **Length of wall**:
  - Enter within your overall heat loss perimeter
  - Then again in the 'Length of Sheltered wall' box
- **Construction and thickness of wall:**
  - Tick the 'sheltered wall' box in the wall section of the software
  - Enter the construction of wall (based on thickness)
  - Thickness of wall

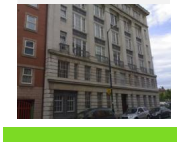




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Flat Data

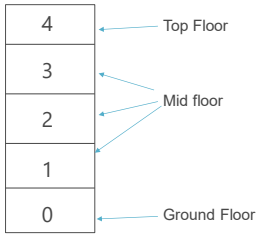
Position of flat	Which Floor	Storeys in block
• Ground-floor • Mid-floor • Top-floor	Enter the position of the lowest floor of the dwelling Can enter between 0-30 '0' signifies the dwelling is on the lowest floor of the building (i.e. Ground floor)	• Count from outside or from inside a lift.





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Example





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Blocks of flats – 3 storeys or higher

- Record the construction of the heat loss walls of the dwelling being assessed and not the construction of the overall superstructure.
- Select Addendum 1, 'Wall type does not correspond to options available'
- If cavity construction is identified (and retrofit cavity wall insulation is therefor recommended) where the dwelling is on the third storey or above, select "Access issues" from "hard to treat cavity wall" addenda.



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Roof Construction

- Pitched – slate/tile (access to loft)
- Pitched – slate/tile (no access to loft) (This means no hatch)
  - Pitched roof – Sloping ceiling
- Pitched – thatch
- Flat
  - Same dwelling above
  - Another dwelling above
  - Non residential space







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Roof Options

Pitched Slate/Tile/ Thatch	Insulation?
Means pitched/thatch roof visible from outside with a flat ceiling visible from inside. **Access** – Means hatch present **No Access** – No Hatch present	**Joists** – Insulation visible at joists (then select depth) **Rafters** – No access to joists, insulation visible at rafters only **None** – Access to loft and no insulation present anywhere **Unknown** – If no access, boarded/obstructed. **Considerations** **If joists and Rafter insulation present – Ignore Rafters** **If varying levels, apply an area-weighted average.** **Areas of no insulation should be split off as an extension**



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Boarded/obstructed lofts

- If loft insulation fully obstructed enter 'unknown' unless;
  - householder has documentary evidence (maximum thickness is depth of joists)
  - or is prepared to lift the boards or removes obstructions.
- If the loft, or part of the loft, is boarded and the assessor can establish and evidence the insulation present under the boards at multiple locations below the boarded area (visible through gaps or extending in from the edges) the boarded area is treated as insulated to the thickness that can be proved by the evidence.

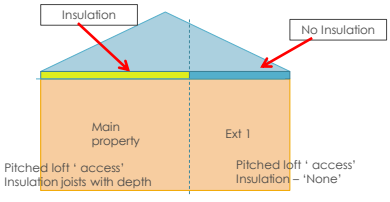






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Loft area with no insulation

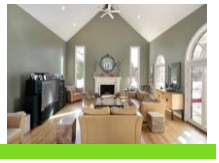


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Roof Options

Sloping or Flat Roof	Options
It is rare to see inside them, usually 'as built' is selected and building regs are assumed for insulation. Ask for paperwork of any insulation added	**As built** – Select if cannot establish insulation present **Unknown** – Select if conflicting visual and paperwork (Avoid this option) **Insulation depth** - if known, same as joists options





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Roof Options

Non-residential space

- Garage above
- Unheated corridor above
- Commercial premises above

Another Dwelling Above

Indicates that the dwelling is under dwelling space that does not belong to the subject dwelling.

The software assumes no heat loss to such roof types.

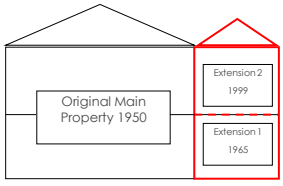


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Roof Options

Same Dwelling above

- **Used mostly for vertical extensions**
- The part above or below another part of the building can then be modelled using the "Same dwelling above" and "Same dwelling below" options for roof and floor



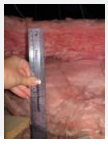
Example above
Main property built 1950.
Ext 1 added in 1965 – Roof 'Same dwelling above.
Ext 2 added in 1999 – Floor 'Same dwelling below'

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Insulation

Insulation types

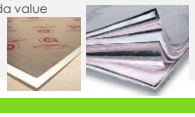
Enter the depth of insulation visible using a measuring tape/ruler



Double the depth?

Any insulation **(apart from Solid/stone in age band A-E)** can be entered as double the depth if evidence that the 'Lambda' value of the product is less than 0.025 W/mk (usually compressed boards)

Multifoil you don't need evidence of Lambda value



Halve the depth?

Any insulation with a lambda value greater than 0.08 W/mk has to be halved.

This usually only applies to vermiculite



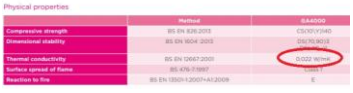
51

Insulation Thickness

Ask Occupiers for paperwork

- If compressed insulation boards are found, ask for paperwork to prove what 'model' the board is (receipts, builders invoice etc)
- With this information you can check manufacturers websites to see if the product meets the required 'Lambda' value





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Room in the Roof Types

Type 1

Room In roof fully in the roof (No common wall)



Type 2

Room in roof built into roof space (Common wall present).



53

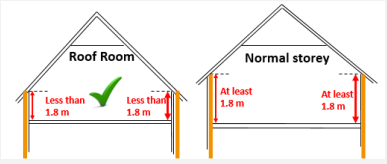
Room/s in the Roof

Definition

A common wall is a vertical continuation of the external wall of the storey below, if present in roof room:

- must be less than **1.8 m** for at least 50% of the common wall
- If more than 1.8m then classed as normal storey.

How to identify it?



Note: the orange line indicates a wall that continues from the storey below (usually going all the way down to the foundations of a property)

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Examples of roof rooms



Note the neighbouring property has no conversion

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Common Wall?

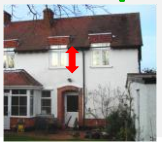
Example 1

There is a small height of common wall in this photo



Example 2

There is a small height of common wall in this photo



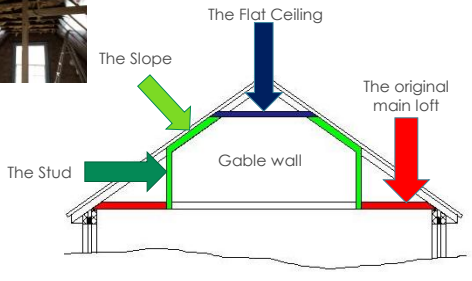
Example 3

This property has no common wall in the roof, don't measure the height of any dormers



56





Room in the roof parts

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Simplified

- This option will assume building regulations for all the elements (flat, slopes, stud etc)
- **Use this option if no known insulation levels**
- You would still need to measure the gable ends

8.1 Room in Roof

Assessment	Simplified
Type	Room in roof type 1

	Length	Height	U-value
Gable Wall 1	5.00	2.45	0.25
Gable Wall 2	12.00	2.45	0.25

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Detailed

- This option involves measuring the length and height of:
  - Flat ceiling
  - Stud wall
  - Slope
- **Use this if any element has known insulation levels**

8.1 Room in Roof

Assessment	Detailed
Type	Room in roof type 1

	Length	Height
Flat Ceiling 1	2.00	5.00
Flat Ceiling 2	10.00	1.00
Stud Wall 1	5.00	2.00
Stud Wall 2	10.00	2.00
Slope 1	5.00	2.00
Slope 2	0.00	0.00
Gable Wall 1	5.00	2.45
Gable Wall 2	12.00	2.45

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Stud

- Includes:
  - Stud facing cold loft space
  - Dormers that are both facing cold loft space or to outside
  - Dormer cheeks
- Measure height and length
- Add areas together if necessary and enter total area in the length and height as 1
- Enter 2 different studs if different insulation levels found



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Slopes

- Measure the total length of the slopes and height.
- If there are differing heights and lengths, or insulation, then enter as slope 1 and slope 2.
- If necessary, add sloping areas together and enter total area in the length and height as 1 (only if all the slopes have the same insulation).

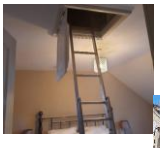


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Flat Ceiling

- Flat ceiling includes:
  - A flat ceiling with/without a hatch
  - The flat roof on top of a dormer.
- Any dormers can be ignored if less than 20% of the floor area
- Use flat ceiling 1 and 2 option to show that one flat ceiling may differing levels of insulation
- Merge flat ceiling areas together if necessary and enter in the length and the height as 1







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Gable end options

State the length and height of each gable and what it is adjoining



Field	Length	Height	Gable Type	Default U-value
Gable wall (1)	2.50	2.20	Exposed	0.45
Gable wall (2)	2.50	2.20	Party	0.25

Exposed Gable

The gable end is completely exposed to the outside with no shelter



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Gable end options

Connected

If other parts of the same dwelling are connected to the room in the roof (on the same storey)



Party Gable

Adjacent to neighbouring property where the space appears to be either original room in the roof, or a verified loft conversion, or where dormers are visually present from the outside



Sheltered Gable

The gable is adjoining an unheated space, like a neighbouring properties loft space.



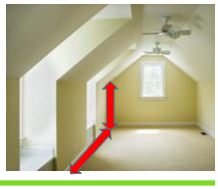
64

Common Wall

Type 2 Room in the roof ONLY

- Measure the length and height of the common wall, they are entered as common wall 1 and common wall 2
- The common wall will be assumed to be the same as the main walls, only overwrite U value if evidence exists.



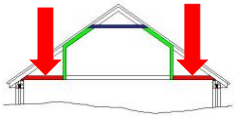


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Room in the roof or main roof insulation?

- **Firstly you should enter what is seen in the eaves/residual roof (which is still your original main roof).**
- The red line in the diagram is entered as '**Main Roof**'
- If no access select '**unknown**' for insulation.





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Age band for roof room

Age band is Same as the building part unless evidence proves otherwise.

Evidence for Room in the roof includes:

- Planning applications (can be a screen shot off council website)
- Building control sign off
- Dated architects drawings

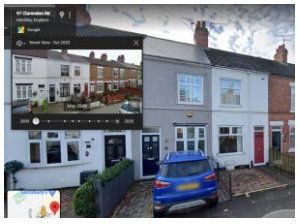




67

Age band for roof room

- Evidence may also include:
  - Dated photographs of the property concerned validating date of construction
  - the evidence might establish the earliest possible date of construction if roof room is absent in photograph
- Google street view has a timeline



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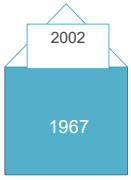
Age Band of Room in Roof

For Example:
If a House was built in 1967

Then a room in the roof is added in 2002

Homeowner has no paperwork proving that the loft was converted in 2002

The dates entered into RdSAP should be 1967 for both the main house and the room in roof.



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Room/s in the Room

Other Considerations

If the top storey has mixed roof rooms and non roof rooms, treat as a normal storey if over 50% of the floor area is normal storey (otherwise split into extensions).

Room in the roof with no dwelling space below (dwelling space belonging to your dwelling) cannot be entered as a room in the roof, enter as:

- Normal storey, timber frame construction
- Ceiling height 2.2m
- Enter any gable ends as alt wall.





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Questions

1. An unheated corridor for flats would be included in the overall HLP?

True

2. Unknown should always be selected for a boarded loft?

False – may have paperwork, visible through gaps etc

3. Compressed board can only be doubled with documentary proof of lambda value?

True

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FLOORS & OPENINGS

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Floor Location options

Ground Floor

Suggesting the lowest floor of the property is at Ground floor level

This means you are on the Earth



Above unheated Space

An enclosed unheated space
- Over garages
- Over unheated common area (corridor etc)
- Unheated cellar below



External Air

- Over a passage or over an archway
- Built on stilts



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Floor Location options

Above Partially Heated Space

ONLY when above a commercial premises



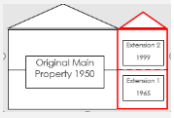
Another Dwelling Below

Where another dwelling (not part of inspection dwelling) is below



Same Dwelling Below

Used for vertical Extensions (as discussed in roof section)



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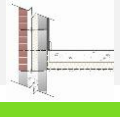
Floor Construction

Solid

Can be found with any age property

Heel test would feel solid

No ventilation bricks usually



Suspended Timber

Older properties (up to 1950's probably)

Suspended off earth

Heel test- hollow and springy

Air-vents visible outside



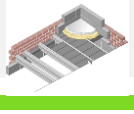
Suspended Non Timber

Modern floor construction (1990's onwards)

Known as beam and block

Heel Test – much firmer

Some vents visible outside



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Doors

How many doors?

Specify the **number of external doors** (including those to unheated corridors)

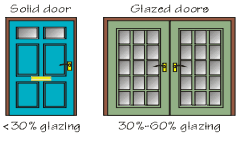
An external quality door is a door within the heat-loss perimeter of the dwelling and one which provides resistance to external environment

If door is 60% of more glazed then not a door!

Insulated doors?

A door is counted as insulated only if documentary evidence is provided of the U value

For example a receipt confirms the model number, the manufacturers website might confirm a U value



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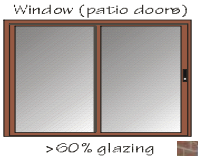
Window Definition

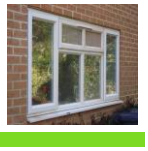
Window Definition

A window is an opening in an external wall or roof of a building, fitted with glass or similar material, usually in a frame, that admits light.

If it can be opened, then it is primarily to admit fresh air and not to provide entry into the property (with the exception of patio doors).

Patio doors may be treated as windows due to the high ratio of glazing (generally when glazing is 60%>)





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Windows

Window data to collect

1. **Measure** the height and width of each window (inc frame)
2. **Orientation (south, north etc)**
3. **Position** within building (main wall, ext 1 wall)
4. **Type** of window from list of options

Window options

For all regions the options will be:
- **Single Glazing** – Is frame PVC, wood or metal?
- **Double glazed** – 3 date options (see next slide)
- **Triple Glazed** – 3 date options (see next slide)
- **Secondary Glazing** – Is glass Low Emissivity or not?
- **Known U/G value** – If documentary proof is available

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Entering Glazing

Glazing option 	Installed	Establish 6mm,12mm or 16mm gap?	Establish Metal, wood or PVC frame?
1. Double or triple	E&W: before 2002 Scotland: before 2003 NI: before 2006	Yes	Yes
2. Double or triple	E&W: 2002 – 2021 Scotland: 2003 – 2022 NI: 2006 - 2021	No	Yes
3. Double or triple	E&W: 2022 or later Scotland: 2023 or later NI: 2022 or later	No	No
4. Double or triple	Unknown install date	Yes	Yes

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Glazing Options

Option 1 (before)

Only select if there is a date stamp on the window to suggest this

Or the windows are original to the build date

Option 2 (during)

- Property date banding is post 2002/2003/2006
- Certass/FENSA certificate or documentary evidence available
- date stamp on windows
- Sec glazing on top of old double glazing
- Presence of thermal spacer bars

Option 3 (post)

- Property date banding is post 2022 or 2023
- Certass/FENSA certificate or documentary evidence available
- Date stamp on windows



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Proof



Thermal spacer bars

Look like a plastic strip between panes of glass, mostly black. (only proves 2002-2022)



Evidence of date

Can often be seem imprinted into spacer bar



Paperwork

Ask for installers documentation or manufacturers documentation.

In E&W there is FENSA and Certass.

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Glazing Options

Triple Glazing

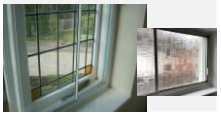
As the name suggests (three layers of glass) ensure evidence of install date



Secondary Glazing

Second layer of glazing fitted inside (still include if temporarily removed for summer)

Evidence of low E can be from paperwork or using a device



Unknown Install Date

Select this option if you have double glazing but no evidence of a date band either way.

Double with known U value

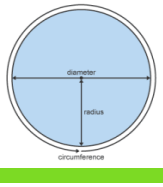
Only if paperwork is available with U and G value information on. (BFRC or Manufacturers)

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Unusual windows

- For other unusually shaped windows, calculate to area by the most appropriate means. Enter the area as the width and enter the height as 1.
  - For circular windows, calculate the area using the radius (half of the diameter). First calculate the square of the radius (multiply it by itself) then multiply that by 3.14.
  - For oval windows, multiply the longest radius by the shortest radius and multiply that by 3.14.
  - For semi-circular or half oval windows, apply the approach above as if the other half were present and halve the result.





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Glazing Options

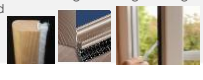
Draught Proofing

Includes factory applied seals, plus retrofit self adhesive or nailed strips, brushes and spray foams

Check all windows and doors.

If cannot establish then assume Double, Triple, Secondary are DP

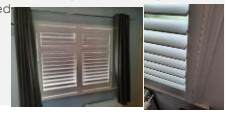
DO NOT assume Single Glazing is draught proofed



Shutters – Internal and External

Shutters are hinged panels which can be closed in order to fully cover a window. Shutters must be operational on the day of survey, confirmed by opening the shutter.

Evidence needs to prove that they are insulated



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Questions

Solid floors are more thermally efficient than timber floors?

True

When there is a room in the roof, the 'main loft' area is the eaves/residual areas?

True

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VENTILATION, COOLING AND LIGHTING

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Ventilation options

Ventilation	Mechanical Ventilation	Air Pressure Test

12.0 Ventilation & Cooling

No. of open chimneys	3
No. of open flues	1
No. of open chimneys/open flues attached to closed fire	0
No. of flues attached to solid fuel boiler	0
No. of open flues attached to other heater	0
No. of blocked chimneys	0
No. of intermittent extract fans	3
No. of passive vents	0
No. of flueless gas fires	0
Fixed space cooling	
Draught Lobby	Not present

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Definition of an Open Chimney

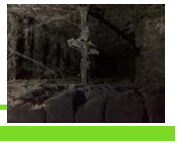
Open to the room and defined as a vertical duct for combustion gases with a diameter of ≥= 200 mm (or equivalent)

Anything temporarily blocking the fireplace is disregarded (chimney balloons, insulation, newspaper etc)

A chimney fitted with a damper is also classed as an open chimney

A vent exceeding 10 x 30cm (or equivalent) found on a blocked chimney



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Number of Open flues

What to include:

An open flue or vertical duct with a diameter of <200mm, this includes:

- A boiler with an 'open' flue (not fan assisted or balanced) with a **controlled** flow of air supply.
- An opening in a fireplace not meeting open chimney definition



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Fans, fireplaces and flues

Number of chimney/open flues attached to closed fire	Number of open flues attached to solid fuel boiler	Number of open flues attached to other heaters
Solid fuel only		







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Ventilation

Intermittent Extractor fans

These are extractors that are not running all the time and 'intermittently' operate

They could operate via a light switch, moisture sensing, or a simple pull cord/switch.

These will be local extract fans in kitchens, WCs and bathrooms.

Ensure they extract to outside the heated envelope of the dwelling. (usually to outside)







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Ventilation

Number of blocked chimneys

This applies to permanently blocked chimneys only if fitted with a small vent

If vent exceeds 10cm x 30cm or equivalent then it becomes an open chimney





Flueless Gas Fire

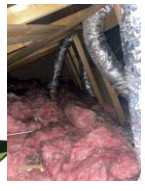
Flueless gas fires have no flue or chimney but adequate supply ventilation for the room is needed



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Passive Stack Ventilation









- This is a non-mechanical form of ventilation
- Passive stack relies on convection and currents to remove stale air through ducts
- Look for vents in the ceiling and ducting the loft
- Choose this option if vents present but no access to loft to confirm mechanical ventilation (new convention)

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Fixed Space Cooling

- Include fixed air conditioning units. (Do not include reversible heat pumps)
- Tick box If present

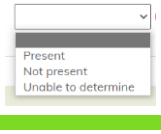


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Draught Lobby

- A draught lobby is an arrangement of 2 doors that forms an airlock as you enter the dwelling, needs to be at least 2m² (only refers to entry at the front, not referring to any back doors)
- Should be that a person with a pushchair or similar can enter the lobby, then close the door behind them before then entering the main dwelling.
- *Must lead into a further hallway, not a habitable room. (*It may additionally provide access to a cloakroom (with or without WC).
- Examples include:
  - Thermally separated Porches (heated or unheated)
  - Corridors leading to flats unheated or heated





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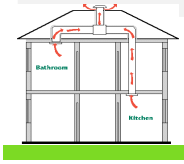
Mechanical Ventilation

Extract or Input Only

This includes:
Positive input – from loft or outside
Mechanical extract – Centralised
Mechanical extract – Decentralised











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Mechanical Ventilation

Whole house without heat recovery

This is a whole house system that is inputting fresh air and extracting stale air.



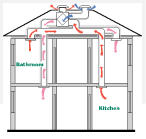


Whole house with heat recovery



Whole house system that is inputting fresh air and extracting stale air. These systems use a heat recovery unit which recovers heat to preheat the incoming air. (more efficient)





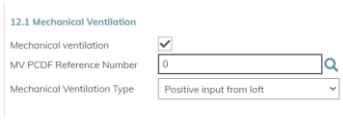
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Mechanical Ventilation

- There are two options:
  - **Database** (see manual for further guidance)
  - **Default**

Note: this must be used for Positive input systems



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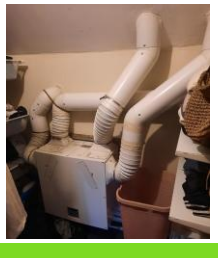
98

Mechanical Ventilation with Heat Recovery







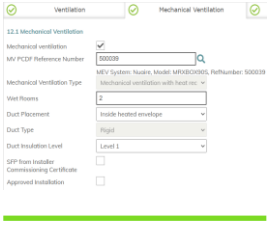


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Entry on the PCDF

- Ensure the correct manufacturer and model is selected, the types of systems you will have the option of choosing are:
- **Mechanical Extract – Decentralised and Centralised**
- **Balanced Whole house – with and without heat recovery**
- Over 800 models in there, brands like, Nuaire, Vent axia, Envirovent, Mitsubishi, Kingspan, Panasonic



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PCDF Mechanical Ventilation

Applicable when chosen from the PCDF.

Wet rooms

Wet rooms are spaces where significant moisture is added to the air, including kitchens, utility rooms, bathrooms, shower rooms, and rooms with flush toilets or urinals. Bedrooms with hand basins are not considered wet rooms.

Duct Type

The two duct types are:

Rigid: Solid, inflexible ducting, usually plastic.

Flexible: Made from bendable plastic over a wire coil, forming a tube.

Duct Insulation

Options for:

Level 1 – if insulation known

Level 2 – If insulation not known

101

Approved Installation & SFP

- You are likely only going to get an SFP if you have an approved installation certificate (Which looks like a checklist)
- Approved installers for Mechanical Ventilation Competent person scheme - current schemes and how schemes are authorised - GOV.UK
- The list is out of date and does not show ATTIMA, NICEIC, BPEC and Elmhurst who are approved

Mechanical ventilation and air-conditioning systems

Type of building	Schemes
Dwellings (not including work on systems shared with other buildings	BESCA, Blue Flame Certification, Certsure, NAPIT
Other buildings (not involving work on other parts of a building occupied separately)	BESCA, Blue Flame Certification, Certsure, NAPIT

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Pressure Test

- Option to enter test score if Certificate available
- The lower the air pressure test score, the better
- In the absence of a certificate 15 (Pa) will be assumed.
- There are two types of air pressure test methods;
  - **Blower door (50 Pa)**
  - **Pulse (4 Pa).**



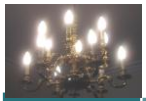



103

Lighting Count

Rules for Lights

1. Count total number of bulbs/lamps
2. Count low energy (LED or CFL option)
3. LED strips, 1 lamp per 1m
4. If an individual lamp is missing, or the lamp type cannot be identified, record as CFL
5. If more than 50% of the lamps which are not Incandescent cannot be identified or are not present, record all non-incandescent lamps as LEL.




What to count

Under cupboard kitchen lights and plinth lights

Lamps in fixed light fittings attached to walls and ceilings - how many lamps are included in each

What not to count

- External lights
- Garage lights
- Store cupboard lights
- Portable lamps/lights

104

Low energy?

Low energy

- Compact fluorescent lamps (CFLs)
- LED (light emitting diode)
- Conventional fluorescent tubes (entered as CFL)





Non Low Energy

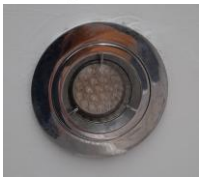
- Incandescent lamps
- Halogen lamps
- Low voltage halogens
- Xenon filled halogen lamps
- Infrared coated halogen lamps






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LED examples







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SPACE HEATING

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What is a main Heating System?

General / Rules

The system that is heating the **habitable rooms**

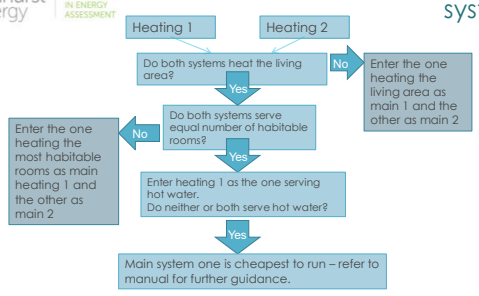
If system is not yet installed/inaccessible – do another survey when installed/accessible. (excludes Community heating)

If fixed heating source or heat emitters fitted/installed but not working (or condemned) it should still be taken into account when deciding on the primary and secondary heating.



108

If there are two main heating systems?



109

Only Room heaters?

- Main Heating 1 or 2 cannot be room heaters, except if the dwelling's heating consists solely of room heaters
- So, if there are only room heaters present, these will become elevated to main heating
- Enter as MH1 & MH2 and follow the rules for main heating, if there are more than 2 types of room heater one type will become secondary.






110

Two systems?



- Therefore in this example:
- Main heating 1 = storage heaters
- Secondary heating = Panel heaters
- 3 Heated habitable rooms

111

Boiler Controls

Room Thermostat

temperature switch enabling control over the dwelling temp



Programmer

Time switches enabling control over heating and hot water.



TRVS

Senses local temperature closes off supply of primary water to the radiator

50% or more of rads



Boiler Energy Manager

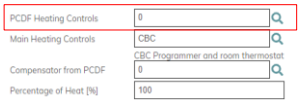
Sophisticated programmers that can delay boiler firing and adjust firing temperature



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PCDF Heating Controls

- Generally for Smart control systems
- Only a few systems on there.







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Compensator from PCDF

Load Compensator

A device that maintains the temperature inside the building by sensing and limiting the temperature of the water circulating round the heating circuit

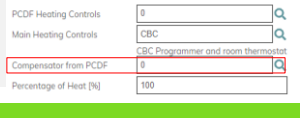


Weather Compensator

A device or feature within a device which maintains the temperature inside the building by sensing the temperature outside



- These can only be chosen off the PCDF
- Loads of models in there



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Time and Temperature Zone controls



- A system of controls that allows heating times of at least two zones to be programmed independently, as well as having independent temperature control
- It includes wired or wireless remote or mobile control systems – (Only include if fixed receiver in dwelling)





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Types of Storage Heaters



Large volume Old Style
>200mm depth



Integrated storage /direct acting
Extra vents, two cable points, electrical switch on heater



High Heat Retention
Only choose off PCDF
Two cable points



Modern Slimline <=200mm depth



Fan assisted
Extra vents, two cable points

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Storage radiator controls

Manual Charge

No thermostat inside storage radiator, manually takes a set amount of charge every night





Automatic Charging

Automatic or 'Auto-Set' means that the input is controlled by an internal thermostat

The output is controlled by a 'room temperature'

Identification for manual or auto can only be confirmed by looking up model number online – if in doubt always use **'manual charge'**

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Community Heating

Community Heating System

A system in which a heat generator provides heat and/or hot water to more than one dwelling, the options are:

- Boilers, CHP & Heat pumps

If there is no access to establish fuel/system type assume:

- ✓ **Boilers**
- ✓ **mains gas**

Controls options same as boiler, should specify if 'charging linked' (meter visible) or 'flat rate charge'.

Assume 'flat rate charging' if in doubt.





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Wet circuit

Radiators

Heat emitters found with boiler systems, have pipes going in and out.

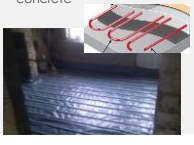
Where a cast iron range-style cooker boiler is present treat the cooker as a radiator.



Underfloor

Pipes carrying hot water (like radiators) under the floor

Usually laid in a screed of concrete



Radiators and Underfloor

If one system serves both, split into main heating 1 and 2 based on the percentage of floor space they serve. (MH1 is the one in the lounge)

If heat pump is present then do not split in MH1 and MH2, enter the emitter as whichever is serving majority of floor space.

119

Flow Temperature Known?

Design Flow Temperature

For Heat pumps and condensing boilers there is an option to enter 'Design flow temperature' if paperwork is present

This is the temperature the hot water runs through the radiators/underfloor, the options are

Normal (> 45°C)
36° - 45°C *(only for boilers)*
<= 35°C
Unknown (always assume this if no paperwork available)



Heat Emitter	Radiators
Design flow temperature	Unknown

120

Heating Pump Age

2012 Or Earlier	2013 or later	Unknown
Select if pump age not known Or no EEI markings visible 	EEI rating visible on pump Date of manufacture on the ID plate For pumps inside boilers only ask for paperwork if replaced 	Pump not visible or inside boiler casing 

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Questions

If a property has a combination boiler and a hot water cylinder, the cylinder should be ignored?

False

The boiler has been disconnected but is still present, we should ignore this from the survey?

False

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SECONDARY HEATING AND WATER

123

Secondary Heating

General / Rules

Secondary Heating Rules

1. Enter if a room heater is present in addition to the main heating system (can be in any room)
2. Only room heaters are allowed to be entered in this section (i.e. no boilers or storage radiators etc)
3. Where a solid fuel or oil range cooker (no boiler) is present treat as a closed room heater.
4. If there is more than one secondary heating system select the one heating the greatest number of habitable rooms, if same choose cheapest fuel, if same choose device with lowest efficiency.



124

Secondary heating- some examples

- Secondary heating in any room can now be included

Examples

1. Boiler and radiators in a house, electric fan heater in bathroom is the only secondary heater, therefore this becomes the secondary heating
2. Boiler and radiators in a house, gas fire in the lounge and electric heater in the bathroom, choose the room heater in the habitable room over the one in the non habitable room/space
3. Boiler and radiators with old storage radiator in the hallway, storage radiator is ignored as secondary heating as its not classed as a room heater

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Gas Room Heaters

RGA	50	Old style gas fire pre1980 (open front)
RGB	63	Modern gas with open flue post 1980
RGC	58	Modern gas fire with balanced flue
RGD	63	Modern gas fire with back boiler (no radiators)
RGE	85	Condensing gas fire
RGF	72	Gas fire or room heater with fan assisted flue
RGG	20	Gas decorative fuel effect fire, open to chimney
RGH	40	Gas flush fitting live effect fire, sealed to chimney
RGI	45	Gas flush fitting live effect fire, fan assisted flue
RGJ	90	Gas fire, flue less
RGK	40	Gas flush fitting live effect with back boiler no rads
RGI	50	Old style gas fire with back boiler no rads

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Secondary Heaters

Old Style Pre 1980 Open Front

- Gas burns in open radiants
- These fires are all open flue



Modern Style post 1980 Closed Front

Fuel effect but flames are purely ornamental behind a glass screen Not open to the room

Balanced or open flue options



Gas Decorative Fuel effect open to chimney

Utilises a previous solid fuel fireplace and a full open chimney above



127

Secondary Heaters

Gas flush fitting live effect fire, sealed to chimney

Sealed to Chimney type has a built in metal fire back and restricted access to the chimney flue, sometimes with a convector grille above



Gas fire, flue less

Look a bit like plasma TVs!

Built safety devices and airbrick would always be found in the room

Can be identified by a gas pipe and probably some sort of lever on the side to turn it on



128

Secondary Heaters

If an appliance can only burn one fuel, specify that fuel, otherwise:

Closed room Heater

Assume wood logs if capable in a non smoke controlled area (Otherwise Anthracite)

Assume anthracite in a smoke controlled area



Open Fire

Assume dual fuel in a non smoke controlled area

Assume smokeless fuel in a smoke controlled area

Ignore if found in a bedroom



Fuel Options

Fuel type options

- Anthracite
- House Coal
- Dual fuel
- smokeless fuel
- Wood pellets in bags
- Wood pellets in bulk
- Wood chips
- wood logs

129

Electric Heaters

Panel, convector or radiant heater (fixed)

Generally no capacity to store heat (some have small clay storage, this can be ignored)

Usually wall mounted

Select this option for underfloor mats and infrared heaters

Electric focal point fires fixed to the wall are included even if not wired by a fixed spur.



Oil or water filled heaters

Look similar to wet system, but will have wires instead of pipes.



130

Water Heating options

Options for water heating:

- From Space Heating
- Boiler Circulator
- Community Scheme
- Range Cooker
- Water Heater
- No Hot water

131

Water Heating

From Space Heating – No Cylinder

Select 'from space heating' if a combi boiler is present (as this will be serving both space and water heating)



From Space Heating – with Cylinder

Select if regular boiler present and cylinder is connected to it

- Look for flow and return pipes, this indicates water is running 'indirectly' through the cylinder coil meaning it is being heated by the boiler.
- Ignore electric immersion heaters fitted for summer or back-up use



132

Water Heating

Water Heater – Electric - Immersion

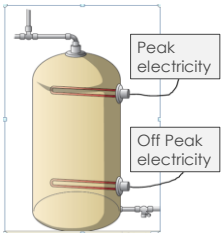
Select if Cylinder NOT connected to a boiler

Electric immersion heaters.

Single or dual option

Dual immersion heaters used with off peak overnight supply (if single rate electric supply present change to single immersion)





133

Water Heater

Water Heater – Electric - Instantaneous

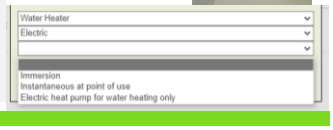
Only use if all water heating is from instant electric heaters

Rules:
Disregard a small water storage volume (<=55 litres)
If >55 litres, it is specified as an electric immersion or gas boiler for water heating only.

Use this option if electric combi







134

Water Heating

Water Heater – Gas – Single/Multipoint

'Single points' usually over sink units like the old Ascot

'Multipoints' serve several outlets. They are commonly located near to or in a bathroom. This photo is a multipoint.





Boiler Circulator – Gas, Oil, Solid Fuel

These boilers provide domestic hot water to a cylinder only

Available for gas, oil and solid fuel

Common with warm air boilers

May be situated near to the hot water cylinder or next to the warm air unit

135

Water Heating

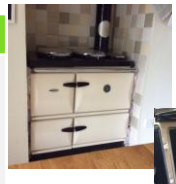
Range Cooker – Hot water only

Select if a range cooker was serving **hot water only**

If doing space heating also, select 'From space Heating'

Available for gas, oil or solid fuel

The heating options are referred to as single or twin burners





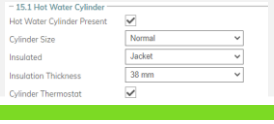
136

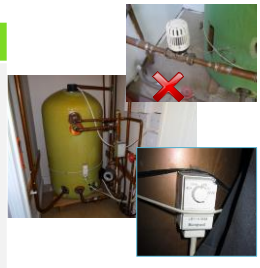
Cylinder Thermostats?

Cylinder Thermostat

Include only when mounted on the side of the cylinder and has an electrical connection

Note: this means that a TRV installed next to a cylinder is not counted as a cylinder stat





137

Encased Cylinders

Encased Cylinders

- For a modern unvented pressurised steel or plastic encased hot-water cylinder (e.g. Megaflo) or factory fitted jacket, **treat insulation value as 50 mm factory-applied foam and assume "cylinderstat is present".**
- For Elson (wooden box) type record the actual thickness as factory applied insulation (foam) and check for the presence of a cylinder stat (Elmhurst will accept no access, they are often fitted into cupboards)
- If thickness cannot be measured, assume 25mm for spray foam and 12mm for jacket.







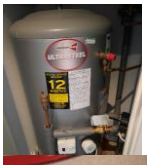


138

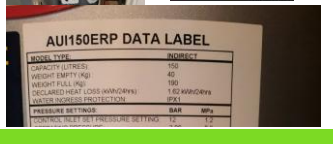
Hot Water Cylinders

Cylinder size

- The actual size of hot-water cylinder should be used if it can be obtained from the label on the cylinder
- Otherwise:
  - Normal – up to 130 litres
  - Medium – 131 – 170 litres
  - Large – greater than 170 litres



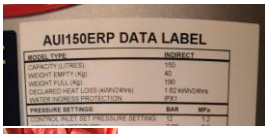




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Heat Loss from Hot Water Cylinders

- **Either -** cylinder measured loss in kWh/day
- **Or -** cylinder insulation thickness, options available: 0, 12, 25, 38, 50, 80, 120, 160 mm
- If the measured loss in kWh/day is available it should be used







140

Solar water Heating

Solar Water Heating

These are systems which produce domestic hot water from sunlight, usually just one/two panels on the roof

Either, tick box to show solar water heating is present (RdSAP will make assumptions about the system present)

Or, if paperwork is present then select 'Panel details' and enter:
Size, Orientation, Pitch and shading of the panels and there is the option to enter cylinder details (depending on the detail of the paperwork)

See RdSAP manual for further information





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Flue Gas Heat Recovery

Flue Gas Heat Recovery

Sit above boiler and recover heat from the outgoing flue gases, and pre-heat the cold mains feed to a combi boiler

If present, these systems will usually have been fitted into a condensing boiler at the time of initial installation, or they will be integral to specific boiler models.

It is very rare that this system could be retro installed

Some FGHRS have built in dedicated PV systems to drive pumps and fans

Can only be selected from PCDF (if not listed, then ignore)



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NEW TECHNOLOGIES

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Photovoltaics

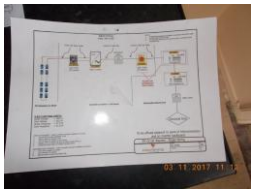
- The peak power, kilowatt peak (**kWp**) of the PV array is required, if this is not available the declared net capacity **DNC** can be used instead.
- If the kWp or DNC cannot be ascertained, do not allocate the PV (except where it is connected to a meter serving a single dwelling).
- **Evidence** required for the KWP or DNC, examples include:
  - **Schematic diagrams**
  - **MCS Certificate**
  - **Installers paperwork**
  - **Energy company paperwork**





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Sources of Information - examples





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Example Property



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Panel details or % of roof covering?

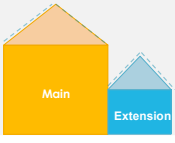
Panel Details

Select "Panel Details" If documentary evidence is available of the kilowatt peak (Kwp)

- KWP – from paperwork
- Orientation - can be visual
- Elevation - can be visual. If midway between two elevations use the higher value
- Over-shading - can be visual

Percentage of Roof Covering

Record the percentage of the total roof area occupied by PVs.
The total roof area includes main dwelling and all extensions where present.



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Photovoltaics

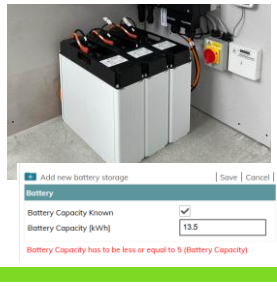
- PV connection to the dwelling's meter must be verified by the presence of a PV generation meter or documentary evidence.
- In all cases, the PV-generated electricity is included in the assessment of a dwelling only if the dwelling has a PV generation meter serving it.
- Where it cannot be determined that the PV supply is feeding into a meter serving the dwelling being assessed, the PV panels are still allocated to the dwelling but should not be specified as being connected.





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PV Battery Storage



- For PV batteries, photographic or written evidence of manufacturer and model of battery unit used, and usable capacity (kWh) is required.
- If this cannot be obtained, use a default of 5kWh per battery.

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PV Diverters

- For PV diverters, written evidence of manufacturer and model of diverter system installed is required. If this cannot be obtained, then the diverter cannot be entered.



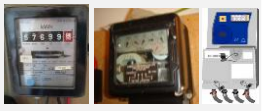


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Meters

Single

Means standard tariff electricity charged at a single rate. (one reading will be visible on the meter)



Dual

two readings on a dual meter or there may be two separate meters for normal and off-peak (Economy 7 or Economy 10)



18hr and 24 hr Tariff

Available in Scotland and England (special arrangement – evidence of bill)



151

Other Meter Considerations

Unknown

If the electricity meter cannot be accessed, the RdSAP software will default to the standard tariff except where main heating or water heating are intended to run off an off-peak tariff

General Notes

Pre payment meters/digital meters can be single or dual

If two meters present – select dual

If choosing a particular tariff, additional information should be gathered such as recent electricity bill.

Otherwise, if tele-switch is present -treat as single, if a time-switch is present – treat as dual

152

Smart Meters for gas and Electric

- Communicate wirelessly with the meter network which may have a variable tariff.
- For Electricity - They can be dual or single tariff and are often difficult to establish, assume single where no off peak appliances are present, assume dual if off peak appliances present.
- They do not have to be functioning at the time of the visit (e.g. 1st generation meters) but the evidence must be either a smart meter unit or a portable display that shows meter readings.



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Feedback Forms

We hope you enjoyed the course!
Please complete our feedback form by using the QR link below.

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