GUIDE TO RETROFIT ASSESSMENT

How to complete an excellent assessment focused on specific improvement measures

DOCUMENT AIMS AND OBJECTIVES

The success of the entire PAS2035 process is reliant on a high quality and comprehensive Retrofit Assessment. C6 Funding look to go above and beyond the current minimum requirements and provide our clients with a detailed assessment which covers all potential measures and enables the Retrofit Coordinator to confidently recommend a package of improvement measures which are suitable and achievable.

CONTENTS

TOP TIPS

This is a big guide which has valuable information throughout so please read the whole thing however we have compiled some top tips which will help to ensure the reports provided are of a high quality:

1. Good Quality Photos – please make sure photos are in landscape format, in focus and level.
2. Consider potential measures - please consider the potential improvement measures for the property and include photos as required, for example if the front door is in perfect condition, then a photo of the door and the draught proofing will suffice. If it is in poor condition, then multiple photos including manufacture dates, would be beneficial.
3. Consider ventilation improvements - if a wet room does not have an extractor of any sort then it is very likely that one will need to be installed as part of improvement works, please consider where this could possibly be installed and include clear photographs of the wall area or ceiling. If installing a fan is likely to be very difficult practically due to little wall space or obstructions then please photograph this for later consideration.
4. Accuracy – the information on the floorplan, condition report and RdSAP file should all match.
5. Detail – if there are defects or issues in a property then a detailed description is required. Close up and wider view photographs are really helpful to provide both detail and context.
6. Secondary heating – please be vigilant with regards to secondary heating when completing RdSAP assessments, consult the conventions if required.
7. Ventilation – whether a fan is intermittent or continuous is really important. If any dMEV are present in the property then 'Mechanical Extract - decentralised' must be selected on the RdSAP assessment.
8. Floorplan – as well as all the standard requirements of RdSAP, please include the property address, a compass orientation, location of sub floor vents and dimensions of the wet rooms. The wet room dimensions are used to size the extract rates of dMEV so is really important. Please consult the example floorplan.
9. Communication – any issues on site or queries then please contact us immediately.
10. The 10% rule applied by the RdSAP methodology for various parts of the construction and dimension calculations **should not be used.** The assessment must include all different construction types present for all building elements and dimension calculations should include all intricacies which might usually be disregarded if completing a standard assessment for an EPC.

GENERAL REQUIREMENTS

Appointments

It is the expectation of our clients that all surveys are completed during a pre-arranged appointment so it will be necessary to make phone calls to the residents in order to book an appointment time that is mutually suitable. Once a number of unsuccessful attempts have been made to contact a resident, we can ask for help from the client and check we have the most current contact information. Following this, we may need to start knocking on doors. Should you need to cancel an appointment with a resident, please do this at the earliest opportunity. Should you be running late for an appointment, please contact the resident as soon as possible as they may have other engagements such as the school run or getting to work. Please dress appropriately at all times and remember we are representing our client who are in turn representing the local authority, so good impressions matter.

Photos

Wherever possible please try to take photos in landscape format. This makes the photos easier to view within the condition reports and generally looks better.

All photos must be date and time stamped as well as geotagged. If you are not using a specific app to complete the report on site (Elmhurst's Condition Report GO for example) please use geotagging software such as Solocator to take all photos. Please turn off any function which tries to automatically imbed the property address onto the photo itself as this often leads to incorrect address information being displayed, which can make for confusion particularly when surveying multiple properties in the same street.

Dropbox

We will provide you with a link to your own DropBox where we will provide all of the information you might need. There will be a 'Property Folder' where you can create a folder per property and upload the Retrofit Assessment documents. If using an app such as Solocator, please upload the original photos as well to a separate folder titled 'photos'.

Other information we will share may include contact lists, copies of letters sent to residents and any general information about the project which may be relevant.

CONTEXT

We require 4 main pieces of information to be provided around property context

- Photos of the Street Scene showing similarities / differences to neighbouring properties
- Conservation Area
- Flood Risk
- Radon Potential

Streets Scene

Providing a few photos of the surrounding street scene helps the Coordinator to get a better understanding of the context and how well certain measures or designs might suit the property.

Conservation Areas

Local authorities usually have an interactive map that can be used to find out if a property is within a conservation area. This is important as some measures, such as Solar PV, may require planning consent or permission if they are within one of these areas.

Flood Risk

The flood risk of a property can be found by using the following website: (https://flood-map-for-planning.service.gov.uk/location)

This is an important piece of information to collect because some measures may not be suitable to be installed in areas that are high risk.

Flood Risk

Description This property is in flood risk zone 1

Condition NA

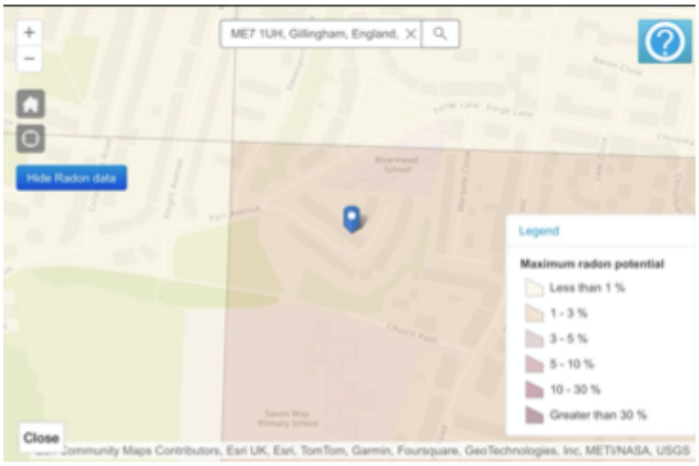
Radon Potential

The radon potential of a property can be found by using the following website: (https://www.ukradon.org/information/ukmaps). This information is useful to pass back to the local authority because there is often an assumption that Radon is not an issue in areas outside of the South West and Wales, which is not correct. While addressing Radon in social housing may not be something that is currently considered during most retrofit projects, it is an issue which we want to raise awareness of because 21000 people die each year from lung cancer caused by Radon.

Radon Potential

Description This property has a maximum radon potential of between 1 and 3%

Condition NA



CONSTRAINTS

Physical or practical constraints which may impact the installation of measures are extremely important to point out at the Assessment stage, some access issues may be very obvious on site but might not be clear on the Condition Report if not highlighted. Examples might include:

- Lofts are very full of resident belongings – please speak with the resident, is it actually achievable for the loft to be cleared?
- Lofts are boarded – please speak with the resident, would they be opposed to boards being lifted?
- Elevations which are only accessible from neighbouring properties – while it might not be possible to speak with neighbours, is it actually possible for contractors and machinery to access the required areas? This can be particularly tricky with rear gardens that do not have their own access, such as below where the side elevation is impossible to access without working from the neighbour's property:

If you cannot access an elevation please make this clear on the condition report and floorplan.

- Public footpaths – if property elevations are only accessible via public paths or car parks, is there space for scaffold if required?
- For solid wall properties where EWI may be an option, constraints such as external meter boxes and fence lines should be evidenced.
- For a number of measures scaffolding may be required for installation, please highlight any power cables or phone lines which may restrict the install of scaffolding.

EXTERNAL ELEVATIONS

Photos of all external elevations must be taken. Please also take a photo of each elevation for all extensions. Try to stand as far back as possible and take a photo of entire elevation showing all junctions with extensions or rooflines.

ROOFS

Condition

Roof condition can be difficult to inspect in any detail during a Retrofit Assessment but some basic photos and considerations can be completed. A couple of photos to show there are no major issues is enough here. It may also be possible that cleaning of roofs is included in future projects so an insight into how dirty they are is useful.

Guttering and Drainage

Please keep an eye out for basic issues such as blocked and leaking gutters, while these may not be visible from the ground there are often tell-tale signs of issues such as staining to the walls as shown below.

When inspecting bungalows, an inspection of the gutters is usually possible.


Where issues are found, close up and context photos are useful when reporting back concerns to the client, as with the damage to the fascia board below.


A basic investigation of external drains is important as it may give clues to water damaged brickwork

Solar Suitability

Not all projects will be installing Solar PV however as we move towards Net Zero this measure will become more and more common and collecting a small amount of basic information at this stage may become useful in the future. Please take a photo of the most suitable roof and some further photos showing whether shading may be an issue.

Solar Suitability

Description The most suitable roof for Solar faces South East

Condition The amount of Solar shading is significant

Date image taken: 2024:10:10 14:40:01
Latitude: 51° 22' 2" N
Longitude: 0° 37' 18" E

Date image taken: 2024:10:10 14:40:03
Latitude: 51° 22' 2" N
Longitude: 0° 37' 18" E

Date image taken: 2024:10:10 14:40:29
Latitude: 51° 22' 2" N
Longitude: 0° 37' 18" E

LOFT

Loft inspections should include the following:

- A photo of the open access hatch
- A photo of each corner of the loft showing the insulation in those areas
- Photos of the gable and party wall where applicable
- Photos of whether the loft hatch is insulated and draught proofed
- Any damage or rot to the rafters and sarking felt
- A depth measurement of the insulation
- Photos of any existing ventilation provision or not as the case may be. If ventilation is supposed to be provided from the soffits but this has been blocked, then please take photos showing this. Where soffit vents are present an external photo showing these is required.
- If extractor fans have ducting that runs through the loft then please take a photo of this showing the quality and where the ducting terminates if possible
- Should skeilings (section of sloping ceiling) be present in the floor below the loft, then please measure the rafter depth and distance between rafters as this will help the designer to determine a suitable solution.

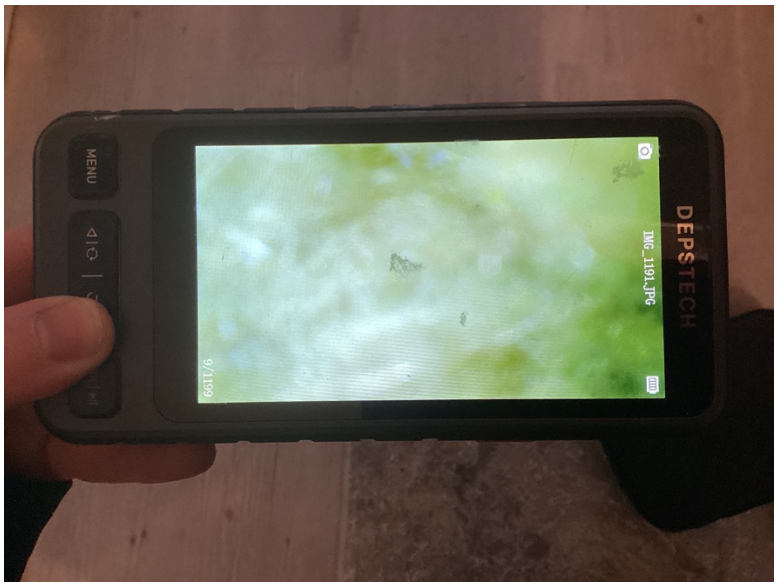
Example of skeiling:

Borescope Inspection

A borescope inspection is an important part of the Retrofit Assessment so that informed decisions can be made about the suitability and requirement for cavity wall insulation. Please inspect each elevation so that a full understanding of the quality and condition of the CWI is achieved. Where cavities are clearly empty then a single inspection is sufficient. Please photograph the borescope on-site and include in the condition report, so that the photos are date and time stamped (or have this info embedded in the data file if using the Emhurst app or similar). See some examples of common findings below:

Good quality bead insulation:

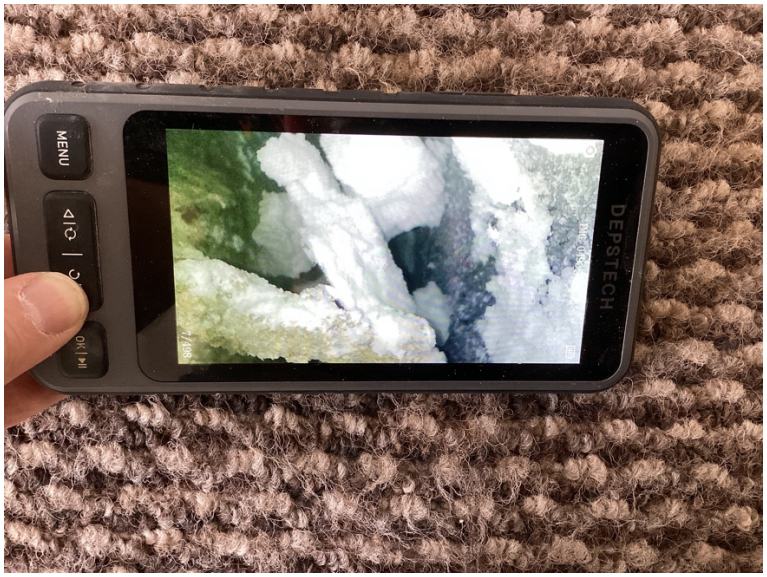
Good quality fibre insulation:



Fibre insulation with voids:

Empty cavity with wall tie visible:

Foam insulation with evidence of failure:



A depth measurement of the cavity is also a useful thing to include in the assessment:

Wall Width

Please include a photo of the wall width, along with the cavity depth measurement this will supply the evidence required to calculate a u-value for a post retrofit cavity wall:

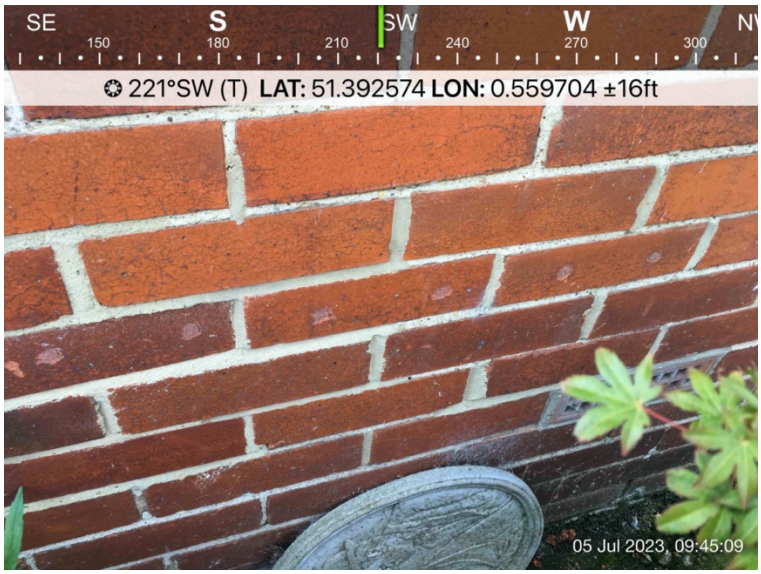
Condition of brickwork

Some investigation into the condition of both the brickwork and pointing is required, if either are in particularly poor condition then they will need to be repaired before CWI or EWI could be installed.

DPC

The damp proof course (DPC) should be 150mm above ground level to stop rain splash back rising up through brock work through capillary action, if incorrectly placed or bridged by the external ground level then damp issues can permeate. Please measure on all elevations and evidence as many times as required. Below is a picture where a paved drive has been installed leaving the DPC at just 80mm.

Where chemical DPCs are identified, please evidence this.



ALTERNATIVE WALLS

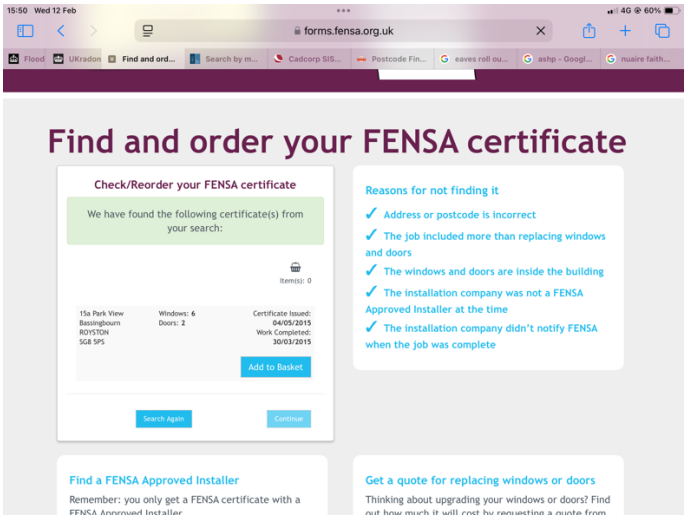
Alternative wall constructions which make up less than 10% of the overall wall construction are not required to be included under the RdSAP methodology however when it comes to completing an EPR for a Retrofit Assessment, these sections of wall **MUST** be included within the calculations, this allows solutions to be modelled in Design SAP.

A good example of this would be a typical 1970's cavity wall property which may have a small section of either Tile Hang or PVC board as below:

Please either include these in the RdSAP Assessment or make sure that they are clearly highlighted in the Condition Report with close up and elevation photos. A description of the construction type would be useful if simply provided in the condition report, this should identify the full wall construction confirming whether it is timber frame of solid wall with a timber frame construction to hang the cladding / tiles.

WINDOWS AND DOORS

Please take clear photos of all external doors when they are closed and a close up of their draught proofing and seals. The installation dates and number of windows and doors can be searched prior to the assessment using the FENSA website. Be aware that not all window installs are registered with FENSA particularly older installs. Please still investigate the date stamping on the windows to make sure they corroborate each other as below:



Accurate aging of windows is very important, if you can evidence the KiteMark then that is ideal. In some cases you may find the u-values of windows and doors on the frames themselves, if you have evidence of this then please use in your assessment.

Some common issues with windows and doors:

Seal damage around doors

Damaged frames and mechanisms not sealing properly

Glazing blown

External sealant degradation

SUSPENDED FLOOR VENTILATION

Suspended timber floors must be ventilated to ensure that the joists do not rot as a result of a buildup of humidity. Typically, timber floors are ventilated by a series of air bricks just below DPC level which are installed on opposite elevations to allow cross flow ventilation. Air bricks should be 75mm above ground level, keep a look out for air bricks which have been blocked either partially or fully. Photographs of all sub-floor airbricks should be included in the condition report and their locations should be noted on the floorplan. Sub-floor vents will often be hidden by furniture or plants, please make an effort to capture a photo of them. There should be close ups so that their type can be determined, and photos from further away to show locations.

In some cases, the Retrofit Designer will need to undertake an assessment using the methodology in 'BS493:1995 +A1:2010 Specification for airbricks and gratings for wall ventilation' to ensure that adequate ventilation is present.

Airbricks blocked by ground level:

INTERNAL ROOMS AND WHAT TO LOOK OUT FOR

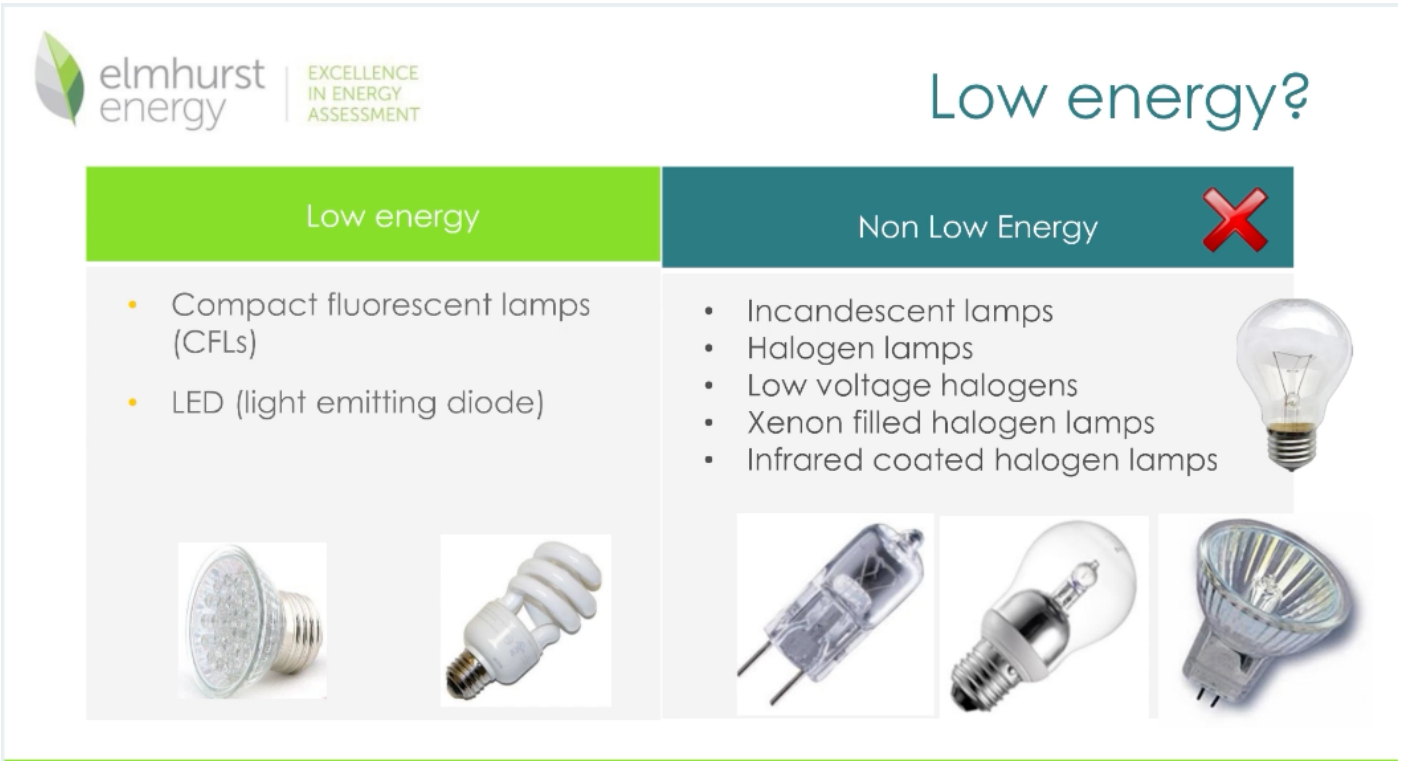
Capturing damp and mould concerns is an important part of the retrofit assessment. Please take as many photos of each room as is need to provide full context, this is usually 3-4 photos but it may require more. Damp and mould should be evidenced with a close up photo and one from further aware to confirm the location. If the equipment is available then, measurements of moisture levels, internal temperatures, relative humidity and surface temperatures are all useful to gather as part of the assessment – see example assessments.

HEATING AND HOT WATER

Please include all heating system evidence within the condition report paying particular attention to the presence of any secondary heating such as focal point fires or electric downflow heaters in bathrooms.

LIGHTING

Please provide evidence of all different types of lighting.



VENTILATION

Background Ventilation

External photos of all windows should be taken to show whether trickle vents are present within each room. Trickle vents should also be marked up on the floorplan.

On newer windows there may be evidence of the equivalent area supplied by each trickle vent, if it is present then please evidence this. If this is not present, then a dimensional measurement should be taken and recorded on the condition report, measurement evidence of each size is required ie: if all trickle vents are the same size then only one photo is required.

Please include all background ventilation that is present, not just trickle vents. Core vents may need to be closed as part of any airtightness improvements planned by the designer or coordinator.

Undercuts

Please ensure all undercuts are evidenced clearly using a measurement tool and a labelling system as below. Doors must be closed when measuring the undercut. The door width must also be evidenced within the condition report, this can be written in the notes or displayed as below:

Extractor fans

When evidencing fans, the most common and key item to record is whether a fan is intermittent (IEV) or continuous (dMEV).

Under RdSAP10, where a property has even just a single dMEV, it should be recorded as 'mechanical extract, decentralized (MEV dc)'. This is a change to the previous version of RdSAP which required dMEVs to be operating as a whole house system (installed in all wet rooms) before inclusion as mechanical ventilation on RdSAP.

Identifying a dMEV is fairly easy – they will have a trickle rate so will be running continuously. Below are some common types found across social housing in particular:

Envirovent Filterless Infinity and Filterless

Greenwood Airvac / Unity

Nuaire Faith Plus

Vent Axia Revive 5 and 7

Vent Axia Response 7

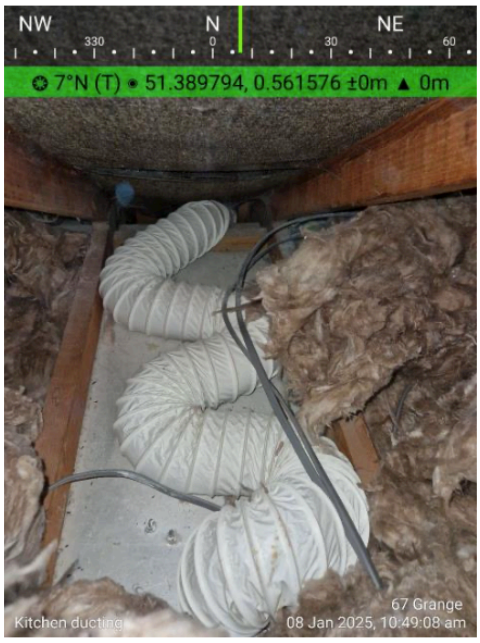
Vent Axia Centra

Envirovent ECO dMEV

Ducting

Ducting should be installed to the requirements of Part F. Where fans are installed through walls then the ducting will not be visible however in loft spaces it is important to try and see the ducting and makes sure it is the correct type and installed well. In loft spaces the ducting should be semi rigid and insulated, pulled taught and connected to an external grille or vent. Flexi ducting should only be used for final connections and if it is used, it should be pilled to 90% of its length, supported and protected.

Poor standards of ducting type and installation:



Kitchen ducting

Ventilation is a key part of the PAS2035 compliance process so having fans installed is not enough to show that the ventilation rates required by Part F have been achieved. To do this Retrofit Assessments should include a physical measurement of the flow rates from each fan using a calibrated vane anemometer as picture below. Both the trickle and boost rates should be measured and recorded.

METERS AND ELECTRICS

The installation of some measures, particularly Solar PV and electric forms of heating, will require work to be completed to the properties electrical circuits. Capturing clear photos of the distribution board (with lid open) and fuses to show whether the property has a single or 3-way supply is important but not always easy due to resident belongings, please try your best to capture this information. When the meters are located in an external box, this is usually straight forward.

OCCUPANCY

A standard occupancy assessment should be completed detailing any items that may suggest an excessive use of water, electricity or gas as well as anything which may result in higher-than-normal humidity with the property.

Examples may be residents mining bitcoin (which uses a lot of electricity and creates a lot of heat), residents with health conditions such as arthritis who need to bathe more regularly, lots of animals, house plants or simply being over occupied.

OVERHEATING

Consideration of overheating risk should be made. The main concerns may be excessive South facing glazing or lack of cross ventilation. Please familiarize yourself with Part O of the building regulations.

HUMIDITY READINGS

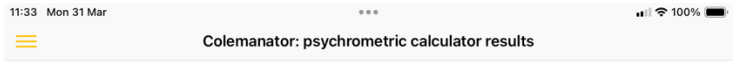
Assessing the Internal Air Quality (IAQ) during a one off assessment is difficult due to many factors which may affect this, such factors include: external temperature, external humidity, current occupancy, has the resident just cooked / had a shower, have the windows been open, have they just mopped the floor etc etc however taking some basic readings can give some vital insight and can be used to compare and contrast post retrofit.

BS40104 is likely to be adopted into the PAS3035 framework and is likely to include the measurement of some basic IAQ information: internal temperature, relative humidity, dew point, surface temperature (in problem areas) and external information.

Where possible, we would ask assessors to start gathering this information. Most hygrometers are relatively inexpensive and extremely easy to use in order to gather this information.

The Bosch model below collects and displays this information with just a button press and displays a basic warning light, there are some nuances to understand but this should be explained in the product user manual:

In some cases, this information may be used to analyse the IAQ in order to understand where improvements can be made, this will be done by inputting the figures into an automated psychometric chart and displayed as below:



Internal air quality

Temperature
17.1°C
Score: 4, **Good**

Humidity
RH 58.0%
Score: 4, **Good**

Vapour pressure excess
0.4 kPa
Score: 4, **Good**

Final IAQ Score
GOOD
12 / 15

Ambient Internal Relative Humidity %

Constant Temperature °C

15.0°C	**66.3%**
16.0°C	**62.2%**
17.0°C	**58.4%**
18.0°C	**54.8%**
19.0°C	**51.5%**
20.0°C	**48.4%**
21.0°C	**45.5%**
22.0°C	**42.8%**