



Building Survey

In respect of:

The Old Vicarage

Bondgate

Helmsley

York YO62 5BP

For:

Maria Calderon

**North Yorkshire Moors National Park
Authority**

Report produced by Peter Ward, BSc

**FOR AND BEHALF OF
Heritage House Surveys LLP**

July 2021

Summary:

The Vicarage is a good example of a building which has evolved over the years, with numerous additions. These have involved the gradual introduction of modern impermeable materials such as plastic paints and Portland cement. Internally the building is in surprisingly good condition, with original features and lime plasterwork largely intact to the first floor. Even the ground floor still retains much of the original fabric despite conversion to offices.

Externally the story is a little different. Maintenance has clearly been on a very ad-hoc basis with no properly defined specification to take into account the solid walled, and breathable nature of the building. There is no evidence of a joined-up maintenance / improvement strategy.

Ground levels have been changed with no consideration for the effect on the building. Drainage is poorly maintained and leaking. The driveway has been tarmaced and now drives water towards the building walls.

The roof is in a poor state of repair generally, with some areas of tiles disintegrating. Leadwork is poorly fitted. Guttering and downpipes are in poor condition and leaking. Cement has been used to re-point areas of the external walls, trapping moisture. External joinery is beginning to deteriorate under multiple layers of modern plastic paints.

Broader issues such as ventilation and insulation appear to have been implemented without an holistic approach. The building has reached a point in its life where if substantial intervention is not made, it will begin to deteriorate rapidly. There are numerous leaks occurring, and significant damp problems are beginning to accumulate at, and below ground level.

This report presents an overview of the issues seen – opening up works will no doubt reveal more serious problems.

The fact that this survey has been commissioned does however give rise to the opportunity to formulate a detailed restoration plan. This can be designed to not only showcase how such a plan can be applied to other old buildings in the area, but takes into account the modern drive for energy efficiency. Appropriate methods and materials need not be expensive – creating awareness by the public that they exist, and of their huge benefits is key.

Listing:

Grade: 2

Number: 1295462

Date Listed: 18 March 1985

Former vicarage, now National Park Offices. c1900. For Rev C N Grey. Hammer dressed sandstone, plain tile roof, stone stacks. Queen Anne style. 2 storeys and attic, 7 bays. Unequal 15-pane flush sashes with French door in sixth bay, all beneath cambered stone arches. First floor: 12 pane flush sashes. Attic: 12-pane flush sash dormers. Swept roof, gable coping, shaped kneelers. End stacks and ridge stacks. Mc Donnell (ed), History of Helmsley, Rievaulx and District, 1963.

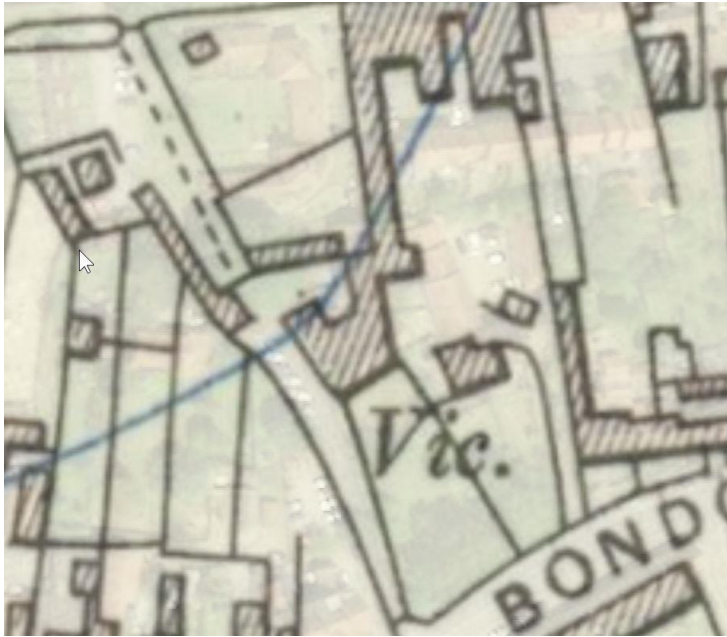
The Listing makes no mention of any of the extensions behind the front range. The design of the fireplace in the post room raises questions in my mind as to what was built and when – as fireplaces do not tally with any form of domestic / cooking taking place in the front section.

History:

The OS 25 inch series of maps, 1892-1914 show the building clearly – with an accompanying stable block to the rear. Seen here overlaying the modern satellite image.



The OS 6" series (1888-1913) shows the building as well, with stables. This does beg the question as to whether the Listing description of a 1900's build is perhaps a bit later than when it was actually built:



The earliest map on which it seems to appear is the OS 1" – 1885-1900, although this appears considerably smaller, and perhaps represents a first phase of building, perhaps just the front range:



The OS 1949 Series shows the same building, but now minus the rear stable block.

Roof and Drainage:

This is a large roof area, and to fully assess the associated valleys, chimneys and flashings, scaffold will be required. Notwithstanding this, we were able to view most of the exposed roof areas from the ground and first floor windows. The front range is in better condition than the rear pitches, although leadwork to the dormers and chimneys needs to be assessed when scaffolded. There are

one or two missing and slipped tiles needing repair. One has to assume that the front range has been tiled more recently than the rear as it is the only pitch with flat clay tiles as opposed to pantiles, and is in apparently better condition. Interestingly the Listing refers to 'Plain tile roof' – so a degree of research may be needed to establish which finish is more appropriate. The majority of problems are located to the rear and are documented in the photos below. Note these are not in any particular order of importance – they simply document the issues seen.

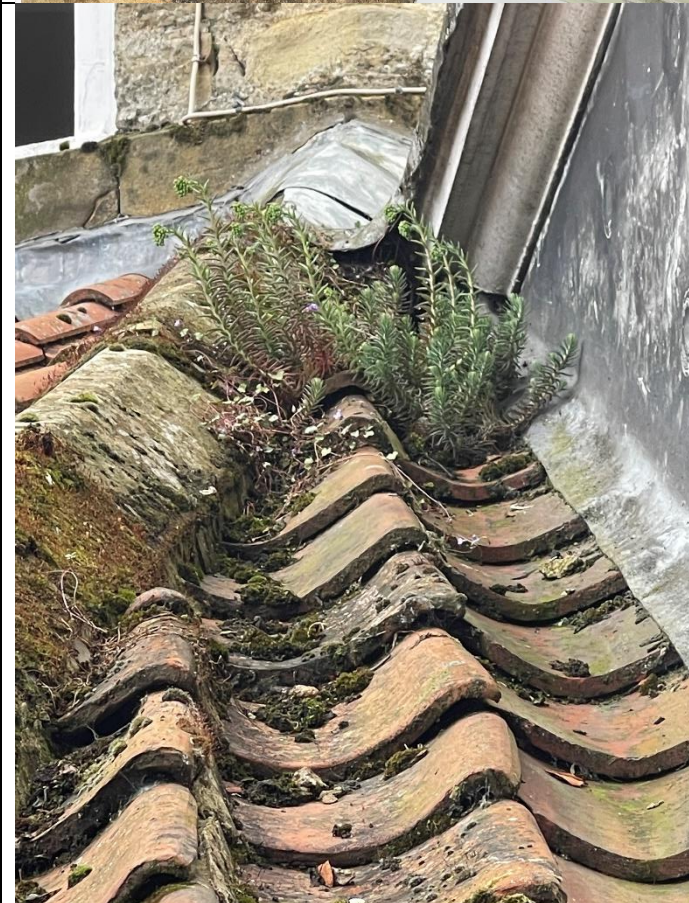
Over the years interventions have been made using cement – in particular to areas where leadwork has been fitted. The parapet capstones present a particular problem – most have been bedded with cement (presumably when leadwork was fitted to the pantiles and verges). This has now cracked in many places, and is allowing water ingress along the tops of the walls. Water staining, cracking and erosion of the stone is commonplace. Although we could not access the chimneys closely, it appears they are suffering similar issues – and are mainly capped, preventing adequate ventilation of the flues. Lead has been inserted using angle grinders, damaging the historic stonework, rather than following the mortar beds.

Gutters and downpipes are mostly not fit for purpose and are variously leaking and discharging where they should not be. Some are cast iron – I am not a fan of cast iron due to its excessive weight. It is fitted to timber fascias and is dragging on the brackets. Some rise and fall brackets are fitted which are stronger – but these have inherent problems of their own (fixings rust and jack stonework). I suggest perhaps a change to cast aluminium would result in a much more maintenance friendly approach, bearing in mind that most of the guttering is also too small for today's rainfall volumes, and is inappropriately fitted to catch water from the pantiles.

The pantile roof to the rear catslide extension is very badly damaged by weathering. It is also heavily moss infested, which may have contributed to the spalling that is evident. I understand this was 'aged' using yoghurt when first re-roofed, and this has unfortunately accelerated decline. This all needs to be urgently replaced.



Badly deteriorated
pantiles require
replacement.



Poor maintenance
resulting in frost
damage, water
ingress etc.



Water able to track underneath the kneeler and soak the walls.

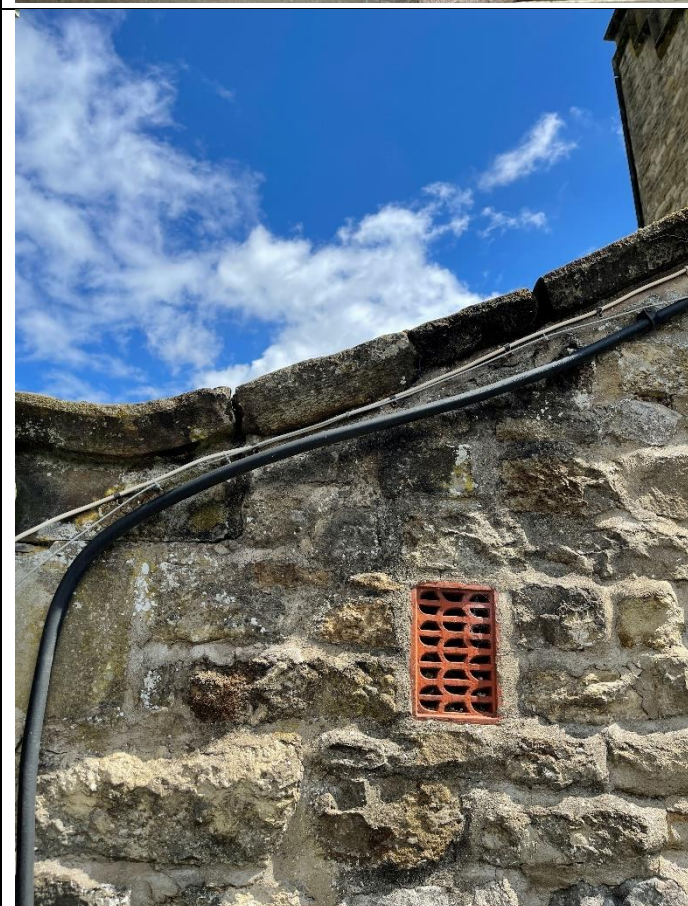


Disintegrating parapet built with cement, water tracking from coping to kneeler and soaking top of wall. Note disintegrating pantiles.

Note wet wall around downpipe in background.



Parapet wall, disintegrating kneeler with similar problem – laid in cement, water tracking down back of kneeler and into wall. Note crumbling cement below it. Leadwork fitted incorrectly, ponding water in the middle of the stonework underneath it. There is even evidence of resin being used to try and seal cracks.



Main building – parapet capstones fitted with cement, water ponding into top of wall behind kneeler and causing surface damage to pointing and stonework. Note cement pointing. One wonders whether a more sensitive approach could be taken to cable location if restoration work takes place.



Water has been pouring off kneeler and running down wall, damaging stone below. Cement pointing is falling out of joints, indicating severe moisture stress. All of this needs to be removed, and the parapet caps re-set and profiled to direct water correctly. Windows leak around frames, excessive use of plastic paints is helping to rot them.



Gaps to the capstones, allowing water to run into the top of the wall. All set in cement, which has cracked and is trapping moisture into the wall. Most of the wall re-pointed in cement. Needs removal and replacing with hot lime mortar. Note partial disintegration of some of the stones. This will just become progressively worse if cement is left in place.



Water tracking down wall from cracks and gaps in the copings.



Side elevation – water being shed from parapet copings, and soaking wall causing damp problems internally. Note rather insensitive placement of cables within the Listed setting.



Poorly maintained gutters tipping backwards, soaking fascias, and allowing water ingress internally.



Complete break in gutter – not properly sealed and dripping water down the wall and onto ground where it splashes the base of walls and creates damp problems. Note deteriorating stonework where it is being constantly wetted.



Similar problem – old join, rusted, and leaking.



Gutter in this case wrongly angled and allowing water to both run out of the end and down the wall. Note rust staining on the fascia and spalling stone.



Gutter in photo above, showing how the base of the wall is soaked, and suffering damp internally. Water running under door, and splashing / rotting door frame as well as the fascia board that is soaked every time it rains. Very poor maintenance. Ground levels are at least 150mm too high.



Lead cheeks to dormer are scrap and need total replacement. Serious leakage internally to this room.



This entire roof section is scrap and is allowing water ingress. I am surprised it has not collapsed into the roof space below.

Walls and floors:

Many of the walls have been pointed using cement – this is inappropriate for a solid walled building, as it traps moisture into the walls, and causes spalling of stonework. There is evidence of such spalling all over the building.



Cement pointing, causing spalling of the sandstone.



Spalled stone step. Partly caused by the waterproof coatings over the top of the slab in the entrance foyer. This is trapping moisture, which is breaking away through the edge of the slab preferentially. Perhaps the original stone surface can be exposed to allow it to remain dry..



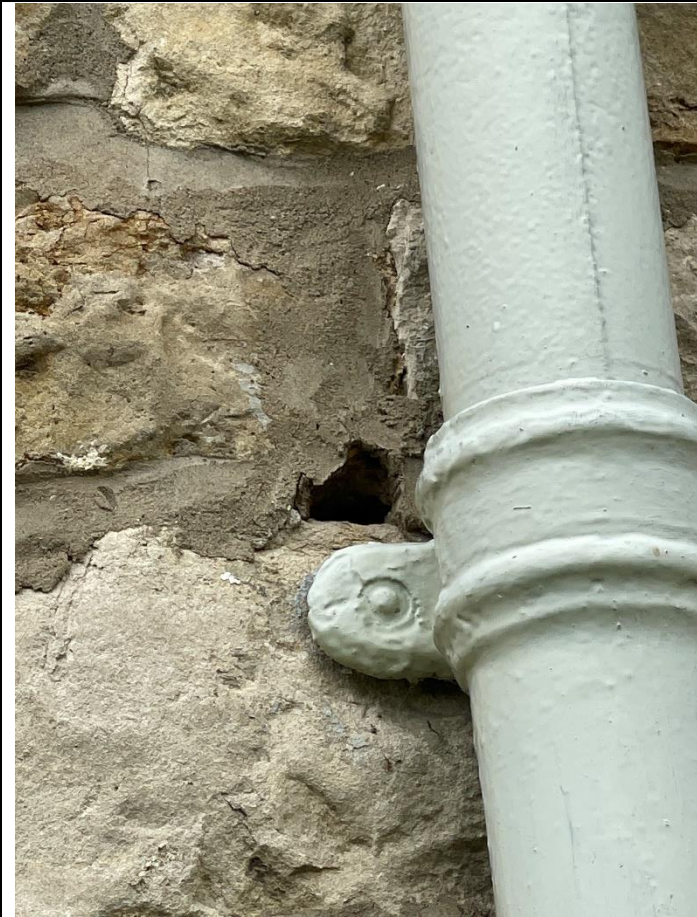
Impervious coatings damaging stone slabs in foyer – ideally this needs to be removed and the stone exposed so it can stay dry.



Cement pointing allowing water ingress to stone – there may be minor movement as a result of breakdown in the lime mortar at low level. I suspect water has tracked in through the porous bricks at ground level.



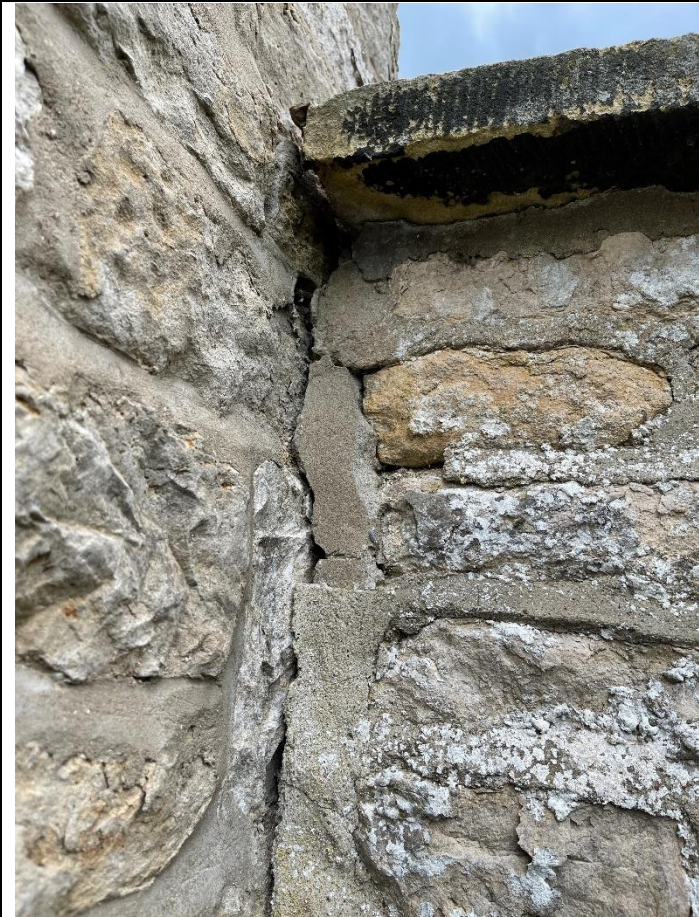
Another cement pointed joint allowing water ingress.



Poor quality cement pointing and exposed hole allowing water ingress.



Cement pointed wall butting up to the building. The joint will hold water into the main wall, creating damp problems internally. Note also disintegrating window sill. This joint needs to be raked out and allowed to dry. It can be plugged with hot lime mortar which will let moisture go.



Detail of the top of wall, showing how cement is disintegrating and trapping moisture at the same time. Note spalling stonework on the right.



Lower wall, but very similar situation, moisture trapped by cement construction. This should be separated from the main house wall.



Very poor detailing causing soaking of the stone wall. There is no cill to the window to provide a drip rail. Note gap around window which needs to be plugged with a breathable sealer (oakum) and pointed with hot lime.



Detail of window above – mortar being forced out of joint by water – wall is sopping wet behind. Frame exposed to the elements and rotting towards the bottom.



Very poor detailing of base of window – no cill, and gaps allowing water ingress. Plastic paints trapping water into timber and rotting it. Lead flashing is actually tilted backwards and pushing water under the cill.



Ditto – water trapped into timber, rotting it. Cement repairs, poorly fitted lead which actually would be better if it was not there at all – as the base of the window sill would at least be in contact with stone, and able to dry out, rather than having water trapped by impermeable lead.



Another rotted cill. All windows need to be stripped of plastic paint and linseed paint system used. (Linseed Paint Company based in Leeds)



Gaps around windows allow water ingress. Gaps such as this also allow cold air flow in winter, which encourages draughts, and consequential dampness / mould etc. Properly attending to such gaps makes the building more airtight, and helps enormously in reduction of overall energy usage.



Cement removed to expose lime mortar underneath. Gap round window allowing water ingress and draughts.



Poorly maintained sash window – multiple layers of paint, sticking entire system together. These can be completely restored, and weather sealing applied to parting rails and beads before painting with linseed paint system. (This system used now by Chatsworth Estate, resulting in over 75% reduction in external joinery maintenance costs)



More water ingress around windows causing damp masonry and heat transfer as a result. Lead flashings underneath are pushing water into the cill.



Gaps around door allowing water ingress and draughts.



Cement removed to show very narrow, beautifully made joint in stonework – obscured by ugly wide cement pointing.



One would hope that at some point, the poor quality wide cement pointing could be replaced with hot lime mortar pointing to showcase historically and materially relevant techniques...

Drainage and ground levels:

The entire site is in serious need of re-profiling and drainage. Successive small scale improvements (Let's tarmac the driveway...), (Create a pathway for safe access away from the parking area etc) have inadvertently created a serious problem which is starting to cause fabric deterioration. Each

issue on its own is relatively minor, but taken holistically, they are starting to cause a lot of damage to building fabric.

We were fortunate that on the day of the survey, we encountered heavy rainfall, and were able to document what happens when the site is subjected to water stress.

With ANY building, established wisdom is that ground levels should be at least 150mm below the top of internal floors. This is reinforced by Building Regulations. The external ground levels of the rear and sides of the building are consistently level with internal floors. This issue is compounded by the fact that many of these external surfaces actually slope TOWARDS the building, causing ponding of water, as will be seen in the photos. In modern cavity construction, such an issue can take a long time to reflect internally – but in solid walled buildings this causes repeated soaking events, and results in dampness throughout the walls. Rapid deterioration of building fabric and internal dampness is the result. In the photos, concrete slabs are retaining water, ground levels at the rear entrance are too high, and the access driveway to the side elevation is pushing water against the walls and ventilation bricks, literally flooding the base of walls regularly. At the Vicarage we were able to watch flooding taking place inside the basement. The exact nature of the floors to the front range was hard to ascertain – I understand they are suspended in some areas and solid in others. Any form of moisture stress will have a negative impact on air quality underneath suspended floors, possibly resulting in rot to timbers. I suggest it is quite important that access is created so sub floor areas can be monitored regularly.

Most, if not all of the stormwater drains were inoperative on the day. All the drainage gullies were blocked and have clearly not been cleared out for a long time. The building is very unusual in having what looks to be an early form of damp proofing or ventilation (I am not sure quite what these bricks were designed to do). They are hollow, and allow water to pass freely through them. When it rains and the stormwater gullies and channels are flowing, these bricks are allowing water to flow freely into the base of the walls. I am surprised there is not more serious damage happening already.



Paving at the rear, almost level – showing ponding. This has clearly not been laid with a view to free drainage, and is forming a well in which water collects and stresses the base of the wall. Paving is at the level of the internal floors and causing damp problems internally.



High ground levels which will ultimately cause damage to this wall internally. Note low level moisture in foreground between wall and paving



Rear door access to maintenance office. Water can just run under the door. Clearly the door is being badly splashed by water falling out of badly fitted guttering as well. The base of the frame is rotting, and stonework has been repointed in cement mortar presumably after the lime mortar leached out of joints.



Blocked drain from rear roof area – clearly this has not been maintained for a long time. Note leaking downpipe, and accumulations of moss and algae, showing water retention against the base of walls. Downpipes should NEVER be allowed to discharge against the base of a wall like this.



Blocked drainage gulley. Note the gulley itself is also cracked – allowing water to simply escape and soak the ground around the gulley, soaking the walls and foundations. This needs replacement as a matter of urgency.



Another old, blocked gulley – water is splashing backwards, finding its way between gulley and wall, creating damp wall.



Drainage gulley at side of building – note perforated bricks allowing water to pour sideways under the building.



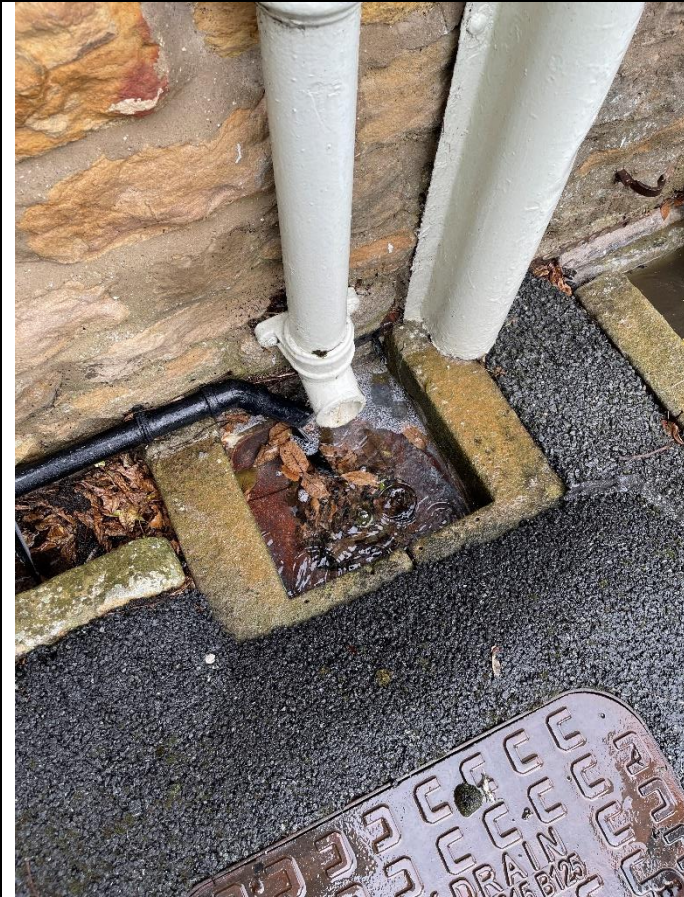
Similar situation near the main entrance – gulley blocked with rubbish, water building up and pouring through the bricks into the base of the wall and under floors. Note how the stonework here is spalling badly. This is because of extreme moisture stress created by damp walls and damp environment, together with cement pointing.



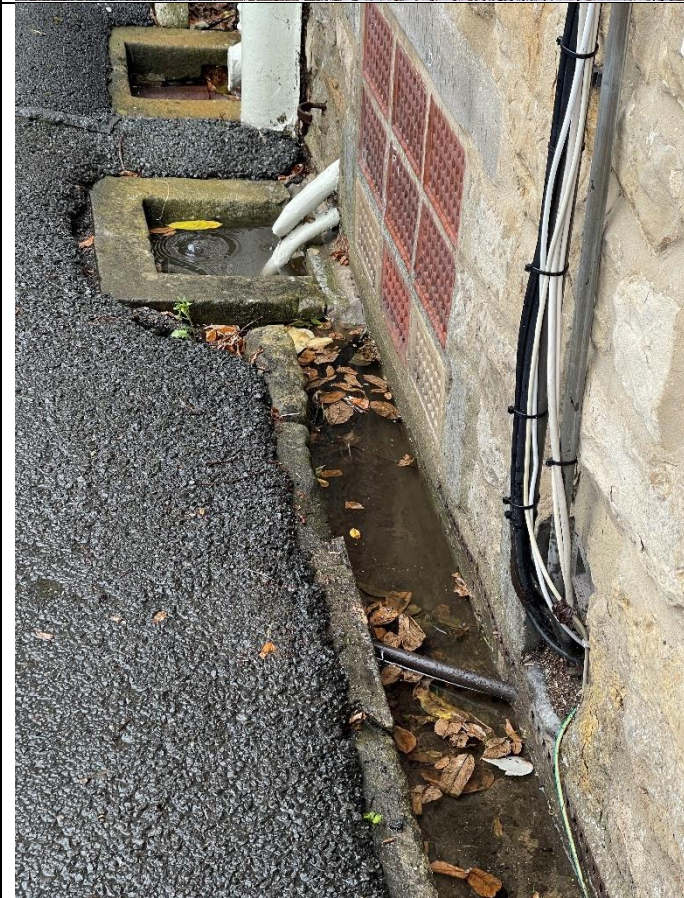
Blocked gulley at the front of the building. Choked with vegetation. Note perforated bricks, and cement pointing.



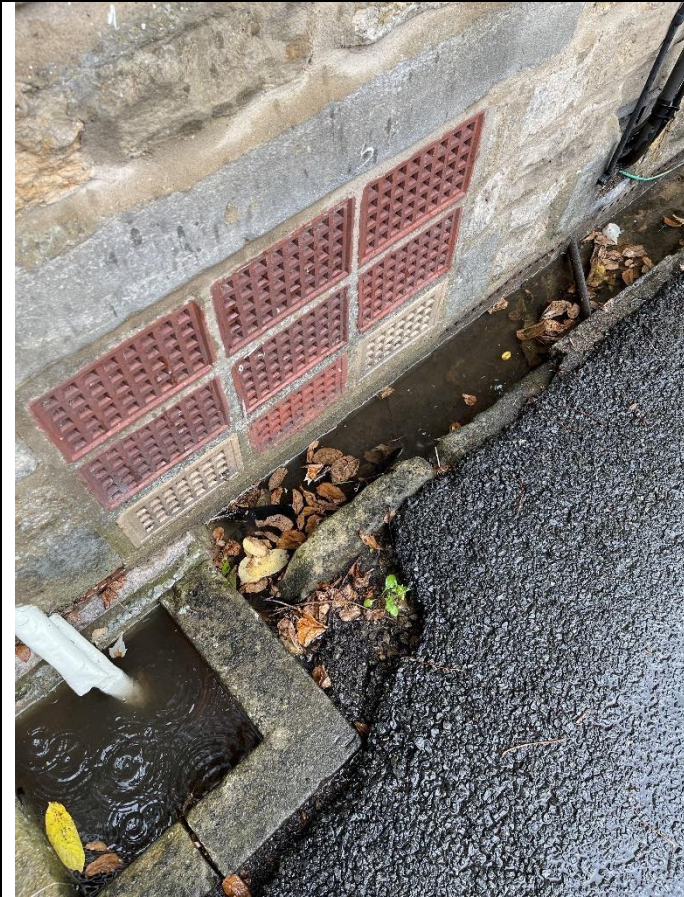
Drainage gulley by rear entrance showing water splash from broken gutter. Note also ground levels are way too high, and cement pointed stonework (This is modern extension – but should still comply with Building Regulations re: internal floor levels and drainage)



Another blocked gully and cement pointing.



Entire side of building flooded, allowing water to pour into basement. Gullies and drains blocked, openings very poorly constructed (note ventilation bricks in what was presumably a cellar entrance at one point – these are not allowing for humidity controlled ventilation) Note cables entering and water able to draw into cable entry hole.



Note tarmac draining into gully, blocked, and water now pouring into the basement.



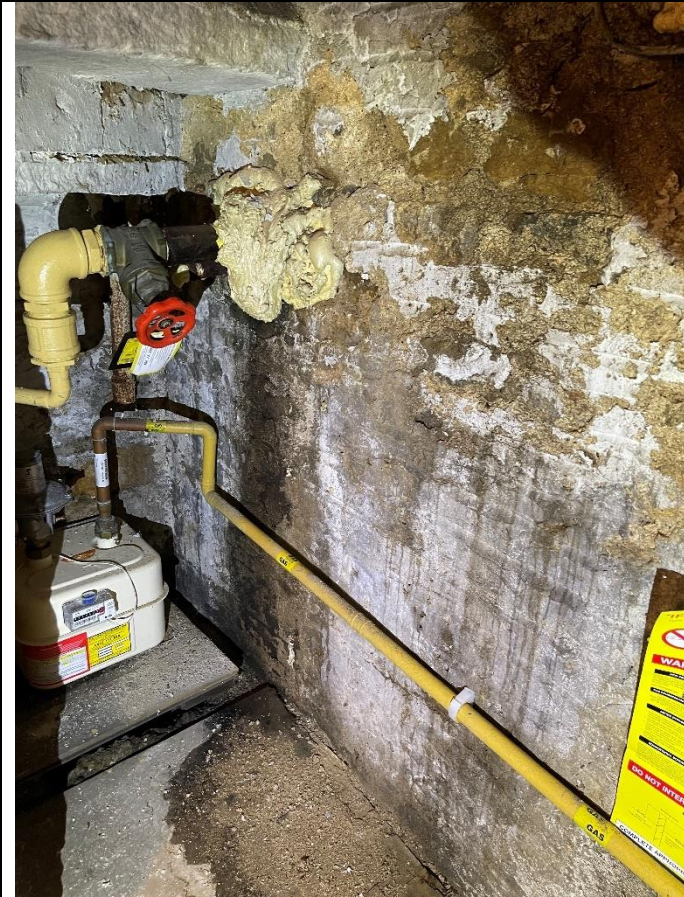
More drainage bricks allowing water ingress to base of wall from badly profiled tarmac pushing water to the wall.



Basement showing water pouring into the area.



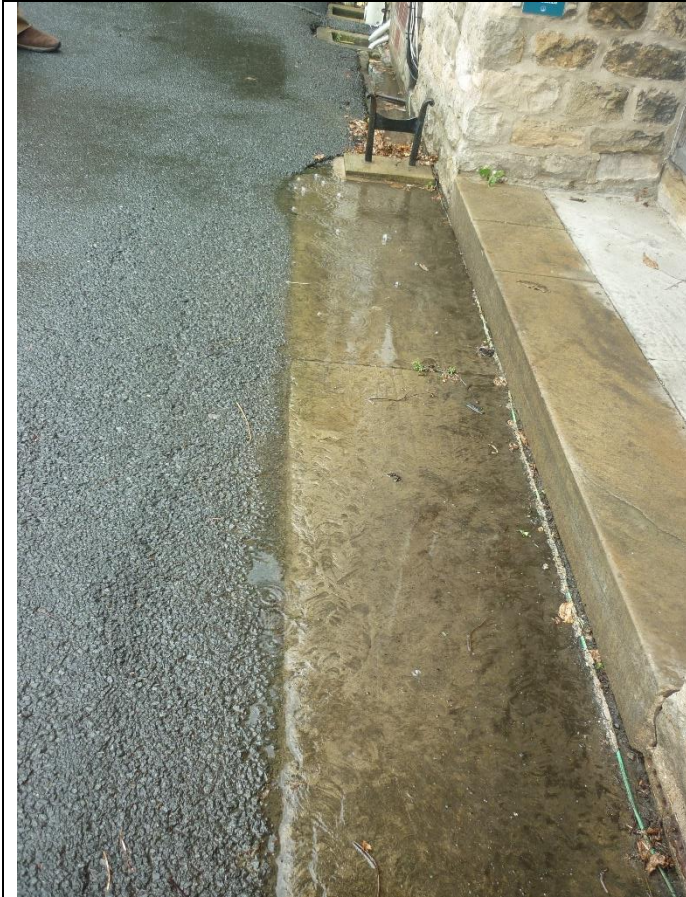
Entire basement was wet.



Soaked floor, water ingress everywhere. Note very poor approach to sealing round gas intake pipe with foam. This seals moisture into everything it touches – including the pipe. Ideally needs to be removed and replaced with lime mortar, in conjunction with sorting out drainage externally.



Rusting iron fixing in wall – this will cause jacking and structural damage of stonework if not removed. Iron expands greatly when it rusts.



Tarmac draining towards building, ponding at front steps – very poor drainage.



Another blocked gully at right front elevation.

Internals:

Internally the building is not suffering from much obvious moisture damage. There are specific areas where water ingress has occurred as a result of roof damage – but a more subtle pointer was the overall humidity readings within the building taken during the day. Bearing in mind that there were very few people in the building, so the human moisture loading was low, I was surprised that the front and side of the building was showing slightly elevated numbers. This was until we discovered the drainage issues noted. This would tend to explain possible sub-floor moisture and constant low level diffusion of water from walls into the building. Despite the rain, average moisture level externally was 10g/m³, whereas internally this was consistently around 12 g/m³, showing that moisture is being trapped at low level (sub-floors, basements) and rising through the building to inevitably finish in the attic rooms as it is not being dealt with by active ventilation. Any moisture in the attic rooms will be trapped by the PU foam insulation screwed to the rafters – damp problems may well be happening behind this insulation, but until areas are stripped out, it is impossible to establish what actually is happening. If roof works are carried out, there will be an opportunity to examine the internal structure without much disturbance.

Insulation fitted under the roof is not a good idea. PU foam insulation is known to release toxic chemistry, and has been clearly demonstrated (Grenfell et al) as a fire risk. Fitted in the manner which it has, there is a possibility that condensation will be taking place over the top of the insulating board, and running down behind it. What effect this is having on the overlying roof timbers is hard to define given the random way in which it is installed. Ventilation above it is not measurable, although moisture readings taken were not excessive on the day.

Originally, the tiles would have been laid with lime mortar (a method known as torching) which acted as a moisture 'sink' – absorbing moisture when it was excessive, and allowing it to evaporate when conditions changed. The roof now does not have this luxury – it appears to have what I suspect is bitumen felt, which will trap moisture both underneath and on top of the impermeable felt – causing rot to the lath timbers, and rusting any nails or fixings.

The basement needs proper humidity controlled ventilation once drainage has been sorted out.

All fireplaces have been blocked, resulting in almost zero air flow within the rooms of the building. This does not encourage a healthy atmosphere as there is very little airflow without windows being opened.

Internally walls are all painted with plastic emulsion paints. The majority of walls are actually still original lime plaster – and the job of removing plastic paint to get them properly breathing again would be huge. Removing moisture at source via humidity controlled ventilation should suffice, and will ensure that even though the breathability of the fabric internally is compromised, it cannot get damp because only low levels of moisture are allowed in the air (keeping dew point suppressed, and eliminating interstitial condensation). This does pre-suppose that the outside of the walls is brought back to breathability by re-pointing in hot lime mortar in the meantime.

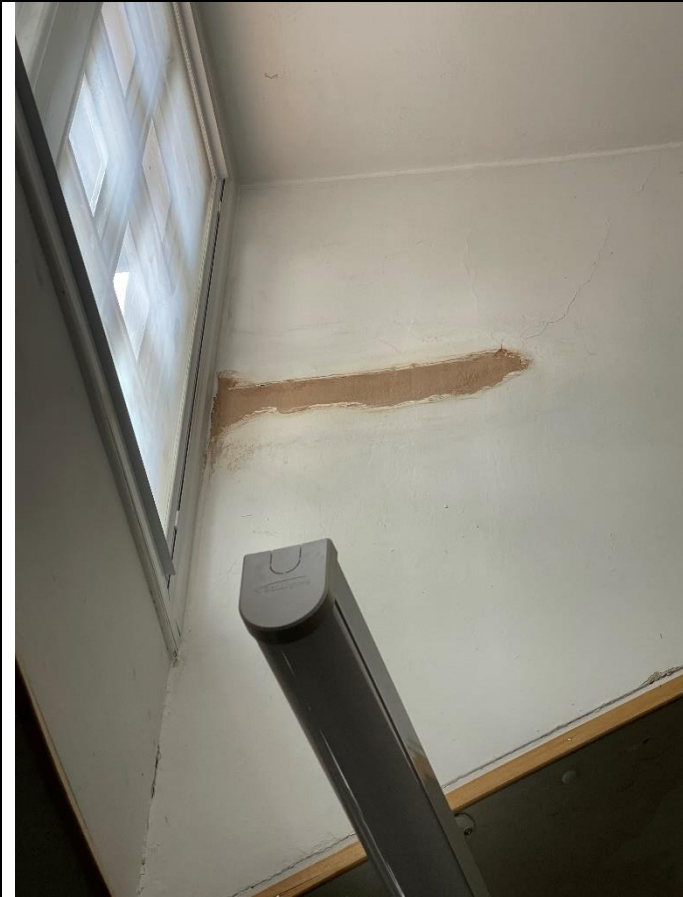
We have noted already that many of the windows and doors are poorly sealed around their frames. Part of the quest for energy efficiency is about ensuring there are no unwanted draughts – air leakage in the wrong places is very detrimental to the overall approach, and we need to establish a simple methodology to use with all openings within the building that makes them air and watertight. There are also openings for pipes and wires which need similar treatment. There is a delicate balance between air tightness and ventilation. As an example, chimney flues need ventilation to ensure they remain dry, and salts within them are not allowed to absorb moisture from the air.

Conversely, these same chimneys cannot be allowed simply to vent uncontrollably. Using them as a means of controlled hourly air changes will reduce the incidence of stuffy, damp air that we observed within the building during the survey. This will only become worse if occupancy increases.

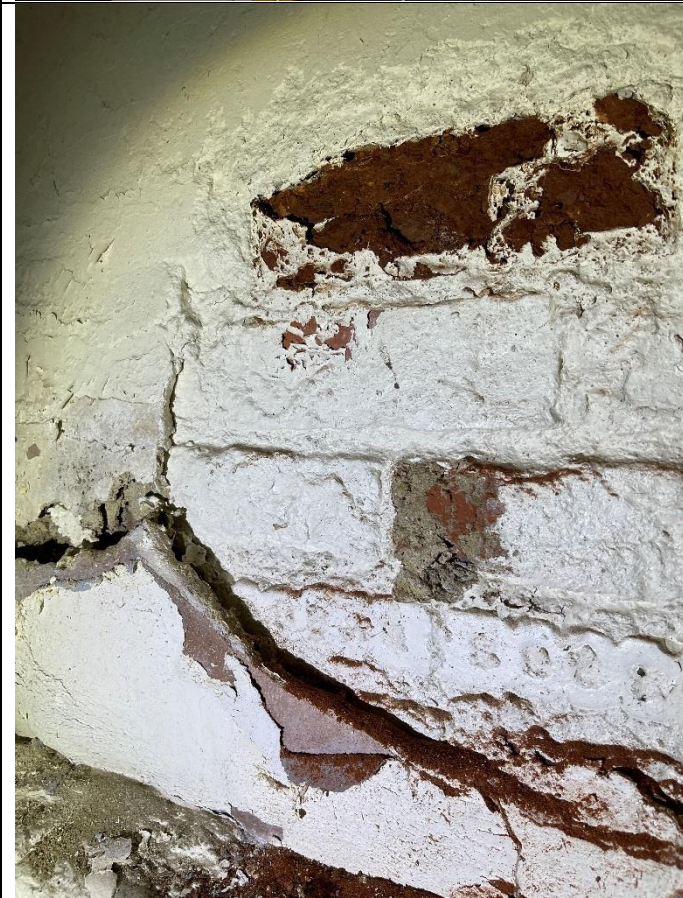
We noted that windows and doors to the front range were panelled – whether it would be possible to use the original shutters is an interesting possibility – shutters have been demonstrated by Historic England to be excellent ways of retaining heat.



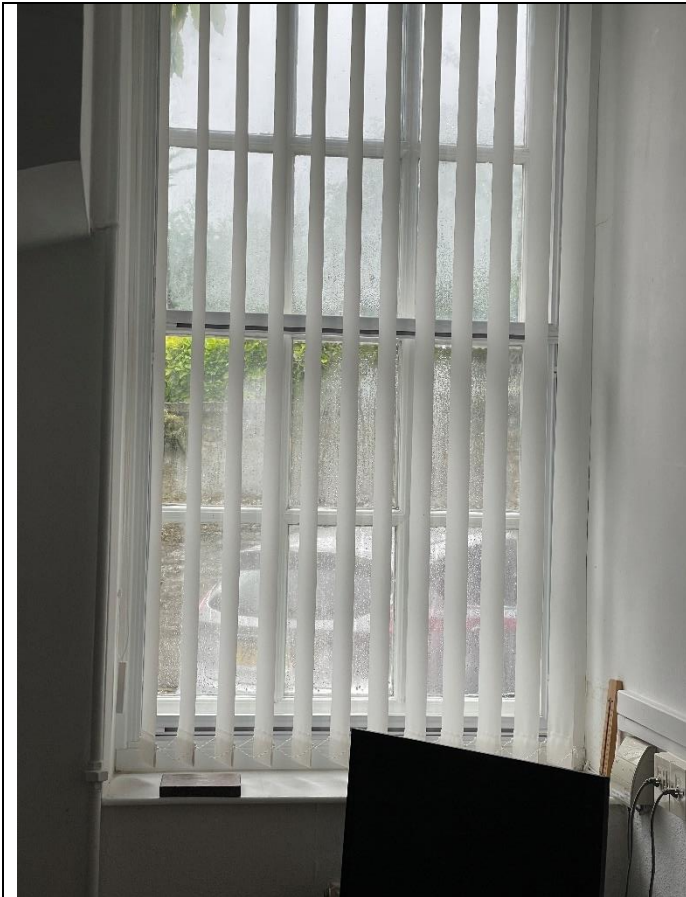
Physical roof leaks at the rear causing internal problems. There is no documentation as to how well insulated these ceilings are – it would be sensible to undertake some minor opening up works to see how this has been done, and whether it is trapping any moisture.



Ditto – the leadwork to the cheeks of the dormer is scrap. Thermal imaging showed very little insulation to any of the dormers, so these need to be documented as a priority area to reduce heat loss.



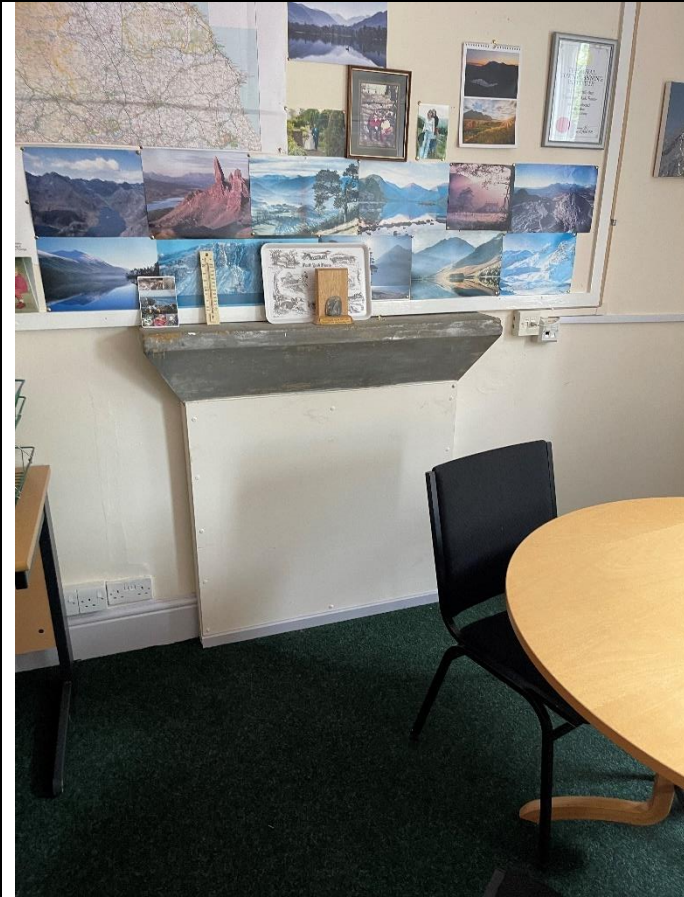
Disintegrating stone in the basement due to plastic paint trapping high levels of humidity. Note cement render falling off the wall at bottom. The basement area is a priority for drying out the fabric and reducing moisture levels.



Office window almost running water from the basement rooms below – this is diffusing up through the floor and doorway, saturating the air above.



Condensation appeared on this window within minutes of water starting to flow in the basement from blocked drains. This shows how reactive a building like this is to applied moisture.



Blocked fireplace. At present there is no information as to the state of these flues – they all almost certainly need sweeping clean to remove salts and soot deposits which will hold moisture, and increase rates of heat loss resultingly.



Blocked fireplace again..



... and another. All opportunities to improve air quality and potentially address minor moisture issues from salt related moisture absorption.



Historic roof leakage damage – I could find no evidence of any current moisture



Moisture being driven sideways from under the concrete slab to the rear entry hall. This is the join between modern, impermeable building 'technology' and traditional, breathable wall – moisture from under the modern slab is trying to escape and is blowing the stonework and leaving salts behind. It is struggling to escape because the wall is pointed with cement.



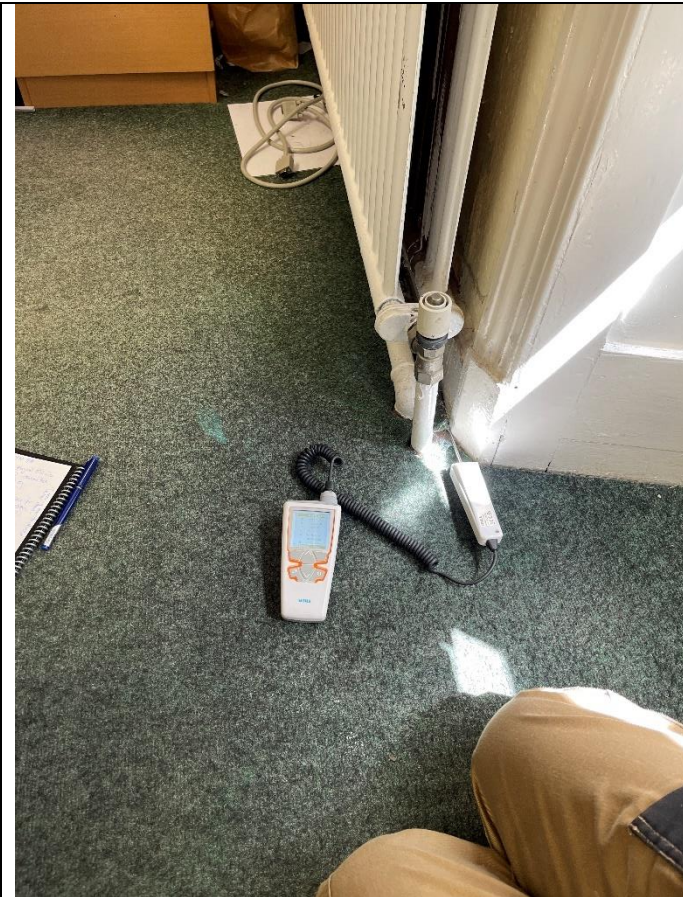
PU foam board on ceilings. Traps condensation between underside of roof and boards, often resulting in damp problems at the join with the wall. Leaky joins, which means poor quality insulation and draughts bleeding heat away. Note mould in corners of window reveals, indicating historically high moisture levels in the air – humidity control of the atmosphere in the building will reduce this, prevent interstitial condensation, and consequent heat loss.



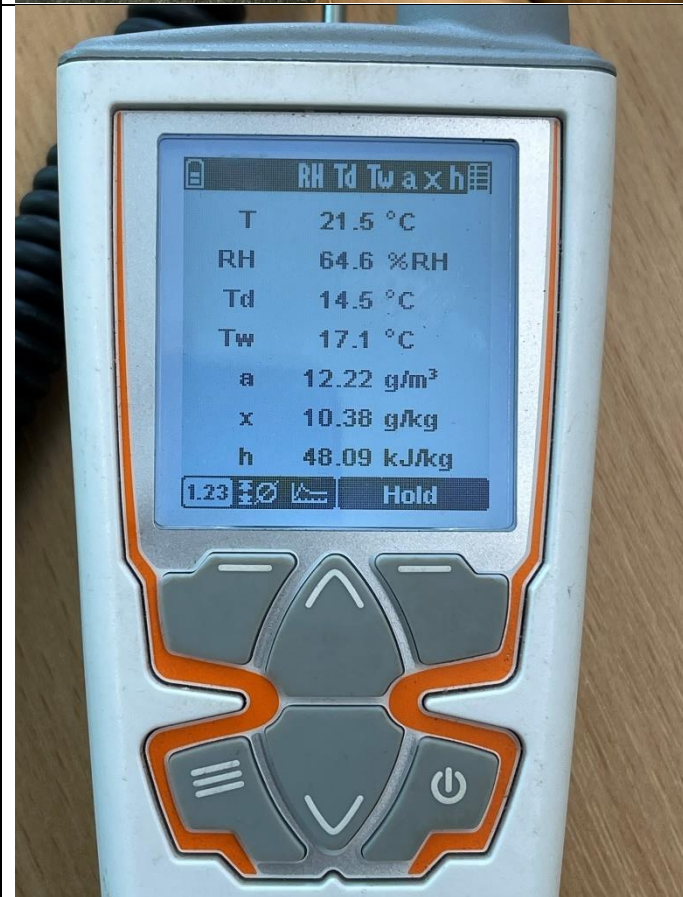
The only ventilation I could find – not working! Such outmoded technology needs to be removed and replaced with modern humidity controlled equipment. Existing openings may well be usable to prevent any further impact on the Listed fabric.



Historical leak – timber was tested and found to be dry – so should not be deteriorating in any way.



Front elevation near blocked drain – moisture levels were a little high – floors appear to be sending moisture sideways (water finds it hard to escape through plastic carpet / underlay... so goes sideways into the walls. Ideally more investigation of these floors is needed to establish how dry the spaces below them actually are.



High moisture level relatively speaking – Absolute of 12.22 grams as opposed to ideal of 7 g/m³. This begs the question that sub floor spaces need better ventilation and investigation of any possible moisture sources – probably drainage related. Floor coverings are non – permeable so are trapping moisture into any voids below them.

Conclusions:

A large building which under more normal conditions would have been under a lot of moisture stress. Because of the fact very few people are actually working there on a day to day basis at the moment, moisture levels were low on the day. Moisture is important, because the more internal moisture, the more diffusion into walls. If these are cold, moisture then condenses within the walls and creates low level dampness. It is this dampness that allows heat to transmit rapidly through solid walls. As Colin King (Director, Building Research Establishment) has said to me in the past – “dry walls don’t transmit heat – it’s the damp ones that are the problem. If every old house in the country had dry walls, we wouldn’t need to insulate them”.

As part of any responsible energy retrofit, we have to ensure that the walls are dry. It was pointless even testing the actual walls for moisture levels during the survey as they were visibly wet at low levels for the reasons discussed. The most practical way to approach the problem is to eliminate sources of moisture, both externally and internally so we reduce moisture stress on the walls. Discussion of moisture readings in the building is to be found in energy report. To achieve low moisture levels, humidity controlled ventilation will be needed.

Walls with high levels of moisture within them will have a high probability that this turns into liquid water in cold periods – ie, interstitial condensation. If internal air is maintained at a dry target level of around 7 to 8 g/m³, and constant internal temperature between 15 and 20 degrees Centigrade, walls will stay dry because their temperatures never approach dew point. Obviously they need to be kept dry externally from sources of penetrating damp. They then begin to present a favourable environment for thermal mass and heat retention.

- Install humidity controlled ventilation internally
- Restore windows – allow approx. £2k per window fitted. This will reduce the annualised cost of re-painting using petrochemical based products, and dramatically reduce costs of maintaining (replacing rotted timber)
- Carefully seal around windows and doors to eliminate incidental draughts and cold bridging
- Improve / change rainwater goods – cast aluminium guttering and downpipes
- Roof works – rebuild parapet walls where needed / replace capstones and kneelers with lime mortar, replace / upgrade all lead work
- Assess chimneys at same time remove caps, ventilate, flash correctly
- As part of this process, design appropriate insulation into roof space / dormers / flat roof areas.
- Check and assess plumbing and heating. Possibly replace radiators and improve efficiency
- Feasibility of alternative ground source heat pump (GSHP)
- Open up all chimneys and fireplaces internally, sweep flues, remove salts.
- Re-plaster in lime internally where necessary – try to eliminate the use of modern paints and gypsum / cement products
- Stormwater drainage – total overhaul. I am of the opinion this is currently a major issue through lack of maintenance
- Remove external cement pointing
- Re-point in hot lime mortar, with minor stone replacements where needed
- Landscape external ground levels to drain away from buildings and reduce where appropriate
- Remove PU foam insulation
- Sheepwool / hemp insulation to loft areas

- Linseed paint system to all external joinery
- Sort out floor to main public entrance
- Sort out basement – remove plastic paint to walls, allow to dry, limewash, drainage, etc
- Remove / adjust abutting walls where possible externally
- Insulate internal plumbing – heating pipes.

Strategy

Given the very public nature of the building, it has been suggested that the process of assessing the building, planning and specification of works done can form the basis for more generalised public education. This survey could be regarded as a scoping exercise, which we can expand into more detailed strategy and advice documentation for the general public. We have not included, for example, detailed description of 'breathability' and the interactions of modern impermeable materials with commonly found historic fabric in the area. This can be expanded upon at a later date as required. We could, for example assist with producing fact sheets addressing singular issues like restoring and looking after historic windows. The basics of moisture, ventilation, breathability. Maintenance issues such as drainage, the use of cement pointing, lime mortars etc. Basic information can be used to educate the public in the enormous carbon cost of Portland cement as opposed to using lime in building.

The survey may lead to a much more detailed schedule of works with specifications which can be prepared once there is broad agreement on the energy strategy. Does one only look at site specific 'embodied carbon' or is a broader approach of removing high carbon materials such as foam insulation, and Portland cement products and making the building a showpiece of a low carbon approach using the right materials? Personally I believe the latter approach is the right way – simply plastering over the problems does not make them go away, and the opportunity to demonstrate a much more resilient and low carbon approach is not to be missed.



Peter Ward

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