



Dampness Report

Old Pub Building

3 March 2025

To whom it may concern,

Please see below the results of the recent dampness survey performed on your building.

The following information is covered:

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Feel free to contact me with any questions you might have.

REASON FOR INSPECTION

We have been asked to investigate the dampness problem in this former old pub, a future residential property, before its upcoming remodelling and renovation, in order to better understand the condition of the property and the effect of moisture onto the wall fabric.

KEY FINDINGS – SHORT SUMMARY

After performing a detailed technical inspection (detailed in the next section), here is a short summary of the key findings:

- The property has probably not been comprehensively renovated for several decades. Most renovation works seem to have been limited to emergency repairs and patch-up jobs, executed with modern non-breathable materials at a poor working standard.
- **The ground floor** is primarily affected by rising damp and water leaks. Additionally, fairly large wall areas have been boarded up, hiding some other potential dampness-related problems.
- **The first floor** is affected by some leaks and an overall general wear-and-tear and neglect.
- **The rear flat** is in very similar condition as the main pub building, being renovated with the same modern materials as the main building.
- **The cellar** is also damp, affected by heavy salt crystallization and water seepage. During the last intervention – probably decades ago – the cellar has been tanked with cement. Today, the old tanking is decaying, being in very poor condition.
- The general removal of the old modern plaster is recommended, followed by a sympathetic holistic restoration concept using lime-based plasters and breathable materials.

FINDINGS

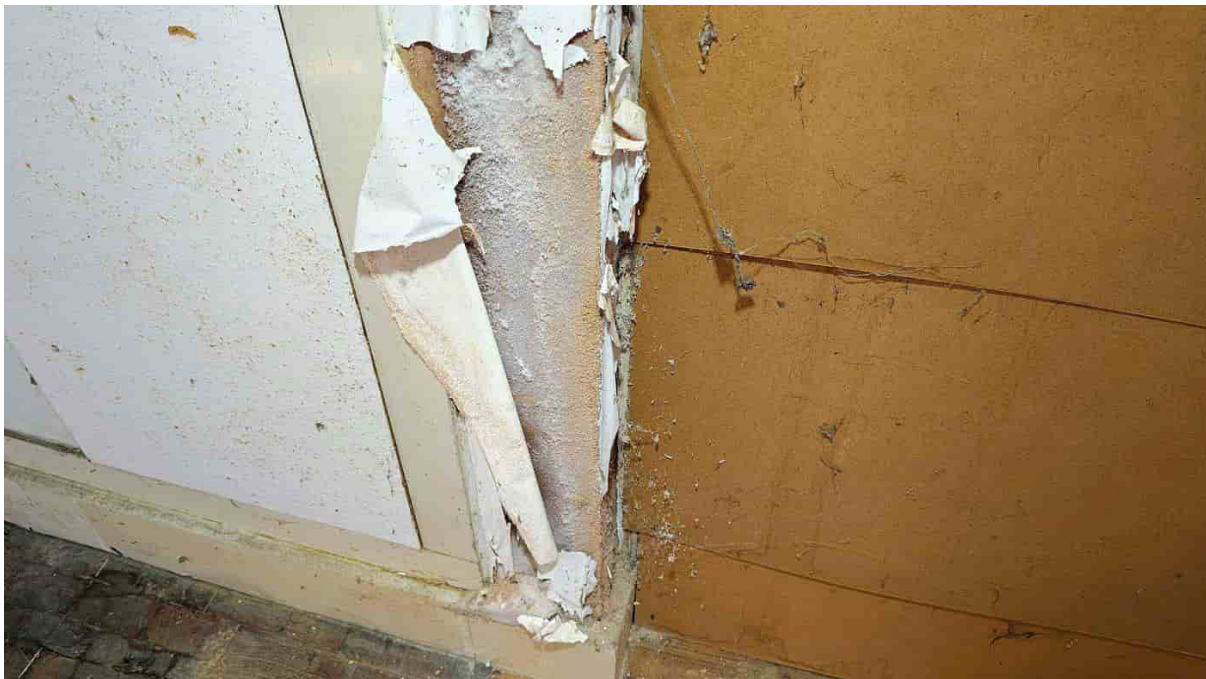
Thank you for your time earlier, for showing me around your property. Here is a quick summary of findings and some of the points we have discussed.

Ground Floor

Rising Damp

Due to the building's age, the ground floor of the building is affected by rising damp.

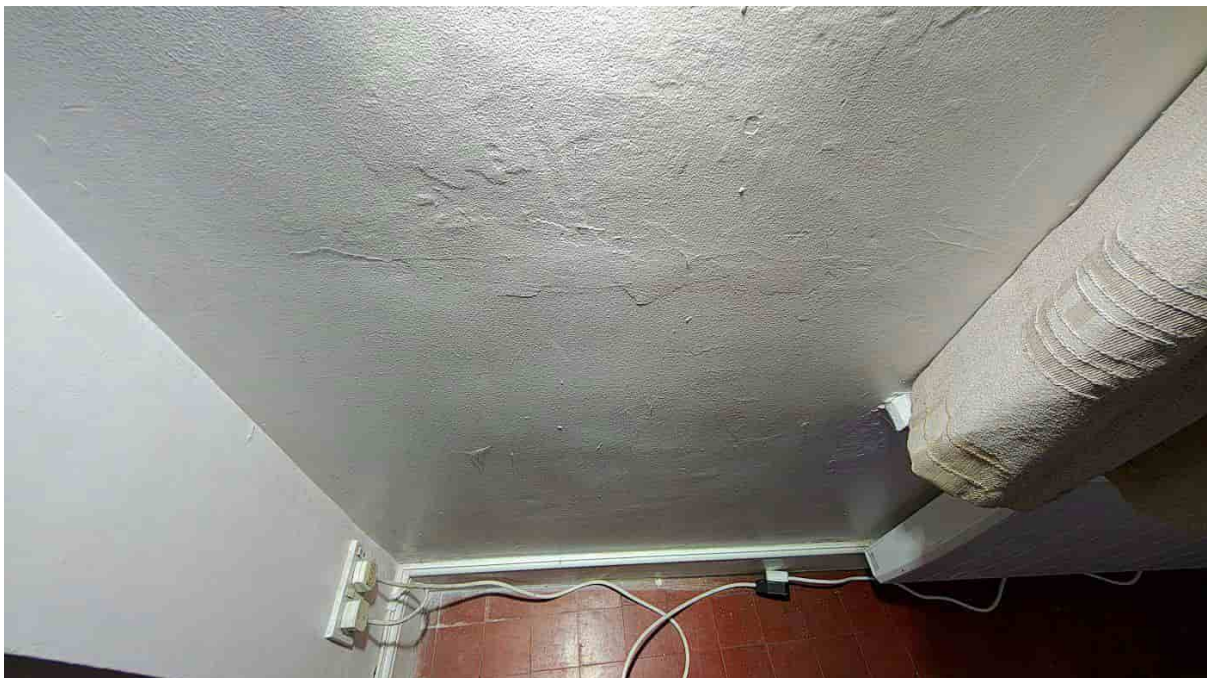
The water evaporates through the plaster and when the growing salt crystals expand in volume (up to 10X), they break down the building fabric, resulting in potential crumbling, peeling and/or damp patches.



There is heavy salt crystallization on some ground floor wall sections.



Rising damp is not a new problem but a rather old one. Some replastering on the lower side of the walls indicates that rising damp has been attempted to be sorted before – however the problem still persists.



Water Leaks

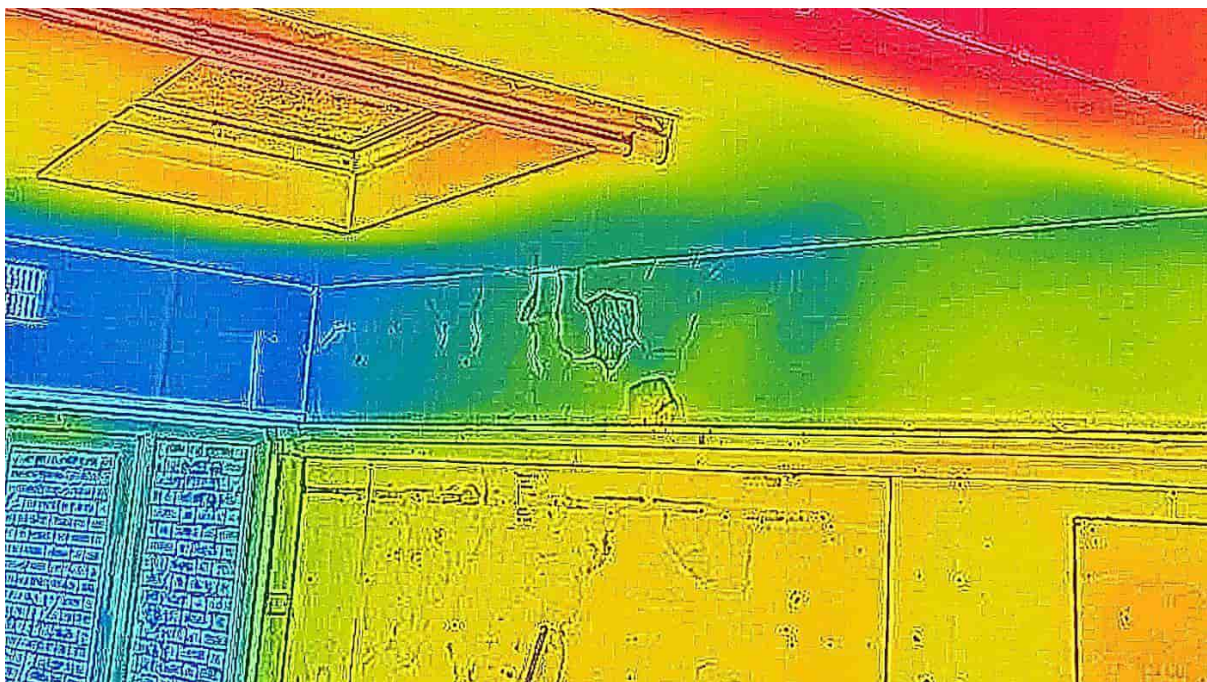
Several areas of the building have (or had) leaks.

This external wall has been affected by a severe water leak, still ongoing today.





The damp area of the walls is colder, as highlighted by the blue/green colour of the infrared camera.



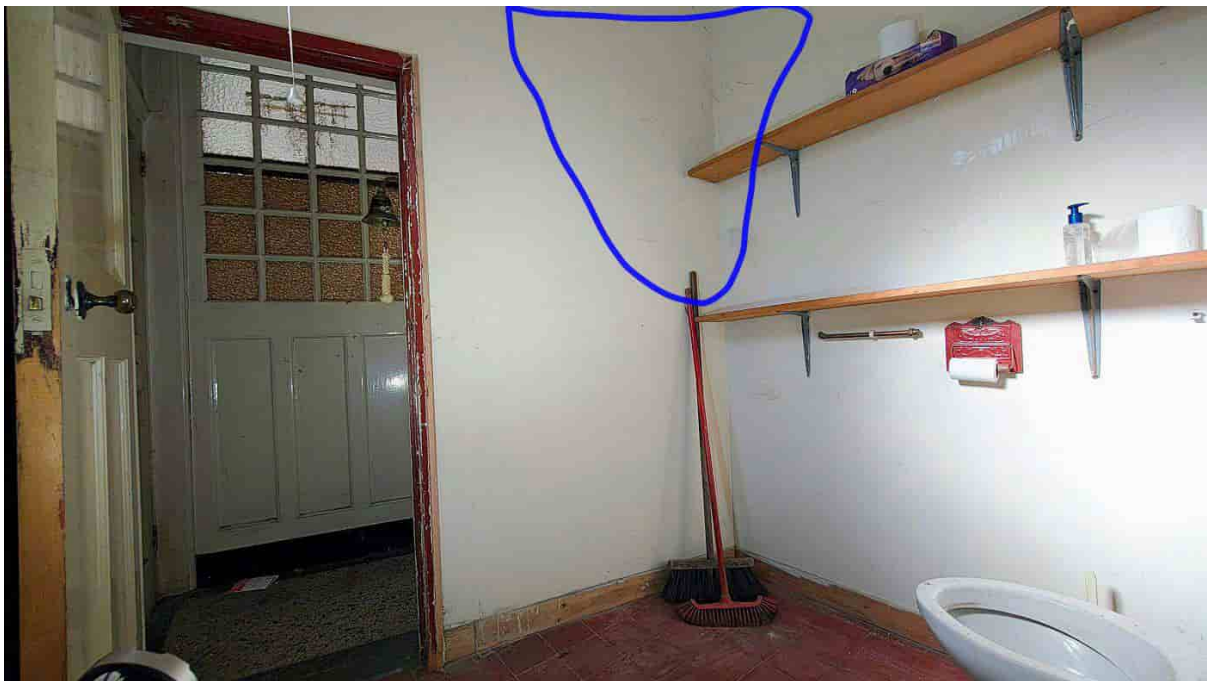
This leak is most likely originating from the flat roof above. The flashing in some areas came off which has been attempted to be patched up with foam insulation.



There is another leak on the left side of the rear garden door.



Then another leak from the ceiling of ground floor bathroom.



These leaks need to be investigated and if still present, remedied.

The staircase wall looks affected by a water leak, however this is a historic issue, not a problem in present time.

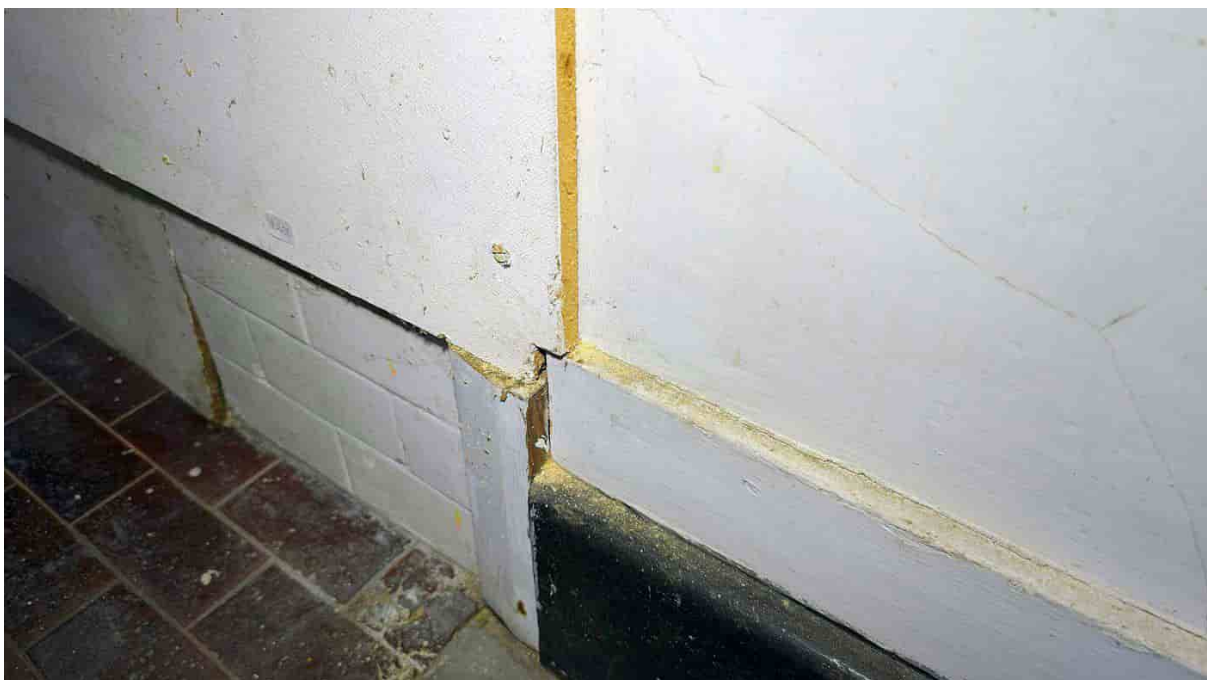


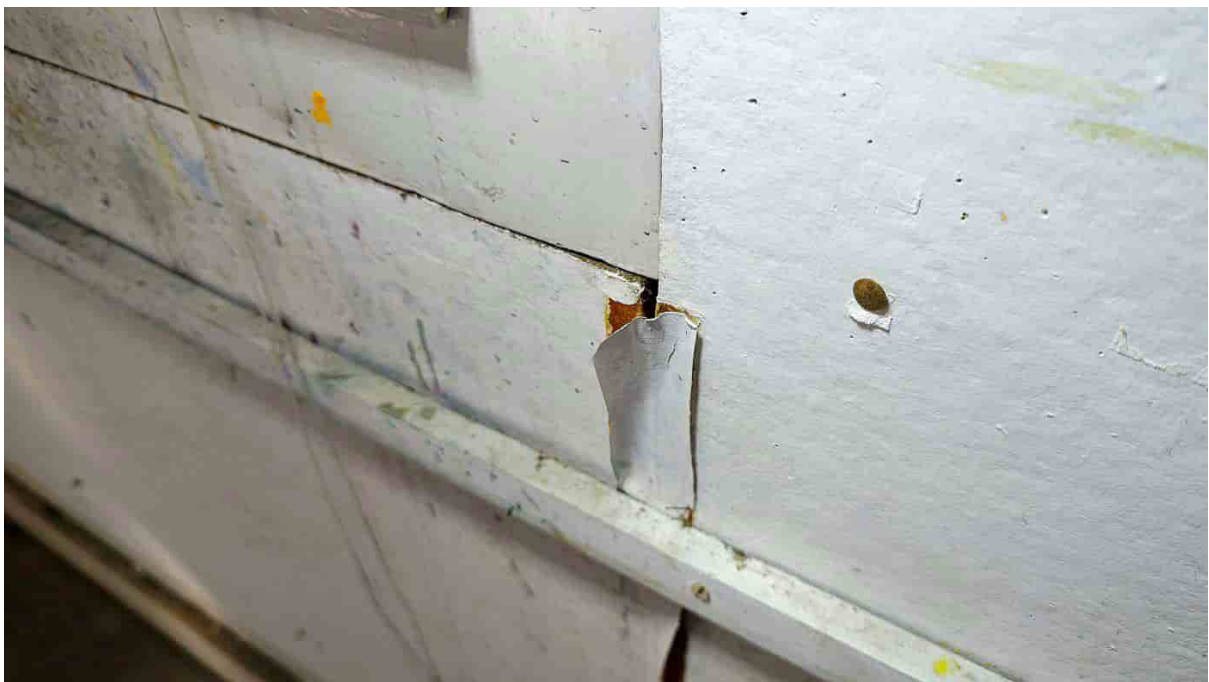
The staircase wall is not damp, as indicated by the deep penetrating dampness meter. The readings are all under 70, thus in the normal range.



Boarded-Up Areas

Many wall sections on the ground floor are covered up by boards or pieces of cardboard. This boarding most likely has been installed with protective purposes, to protect the walls from chairs and general wear-and-tear while the building was still a pub. However, these boards can easily hide various dampness related problems.





First Floor

Water Leaks

There are some water leaks signs around the hallway window.



Measuring the moisture content of the wall, the problem seems historical, the wall presently being dry. The wallpaper has not been changed, indicating a poor maintenance history of the property.

The front room wall is mouldy and stained, possibly from some past water leaks. The wallpaper also looks very old and worn.



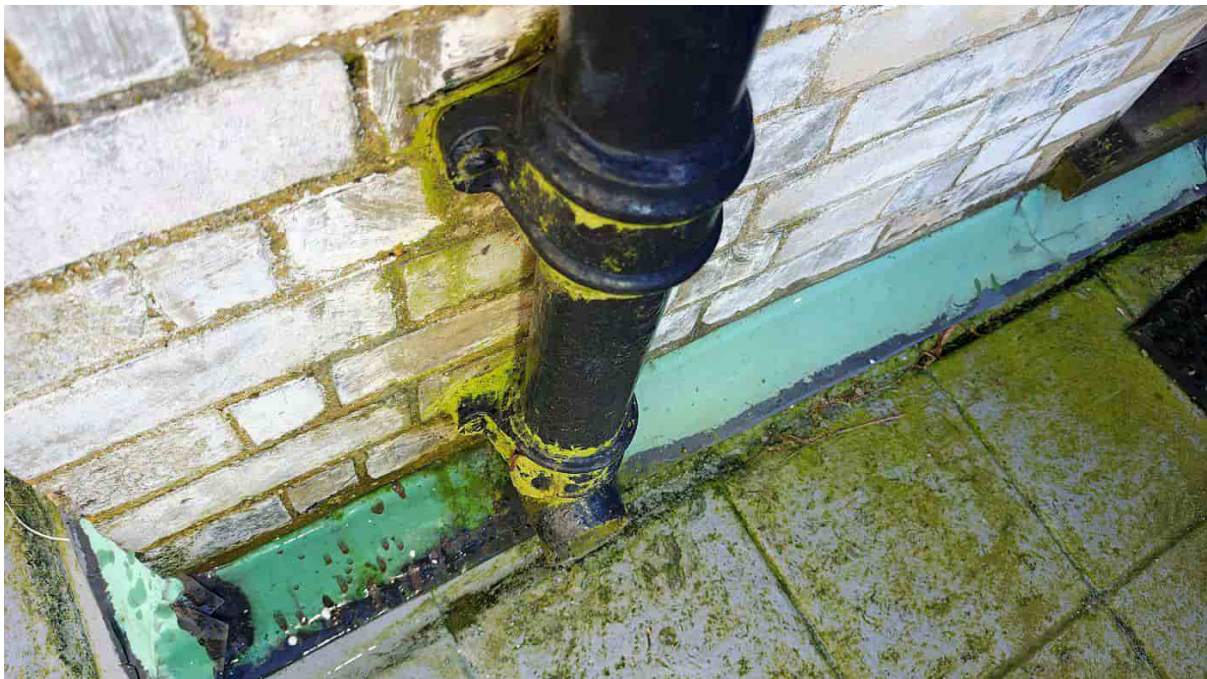
But overall, there are no major problems on the upper floor, which is generally in a better condition than the ground floor.

Flat Roof / Balcony

The building has a fairly large flat roof. The roof is largely covered in moss indicating consistent water flow. The water seems to have flown on the roof in every direction, resulting in moss deposits, which grow in very wet areas.



The unchanneled water flow partially can be attributed to a cracked drainpipe making water run down the wall and go everywhere on the flat roof.



Roof, Chimneys

A visual inspection of the roof area and chimneys revealed some dislocated roof tiles.



The chimneys in the past have been pointed with cement. The pointing has many cracks which can cause water leaks inside or around the chimneys.





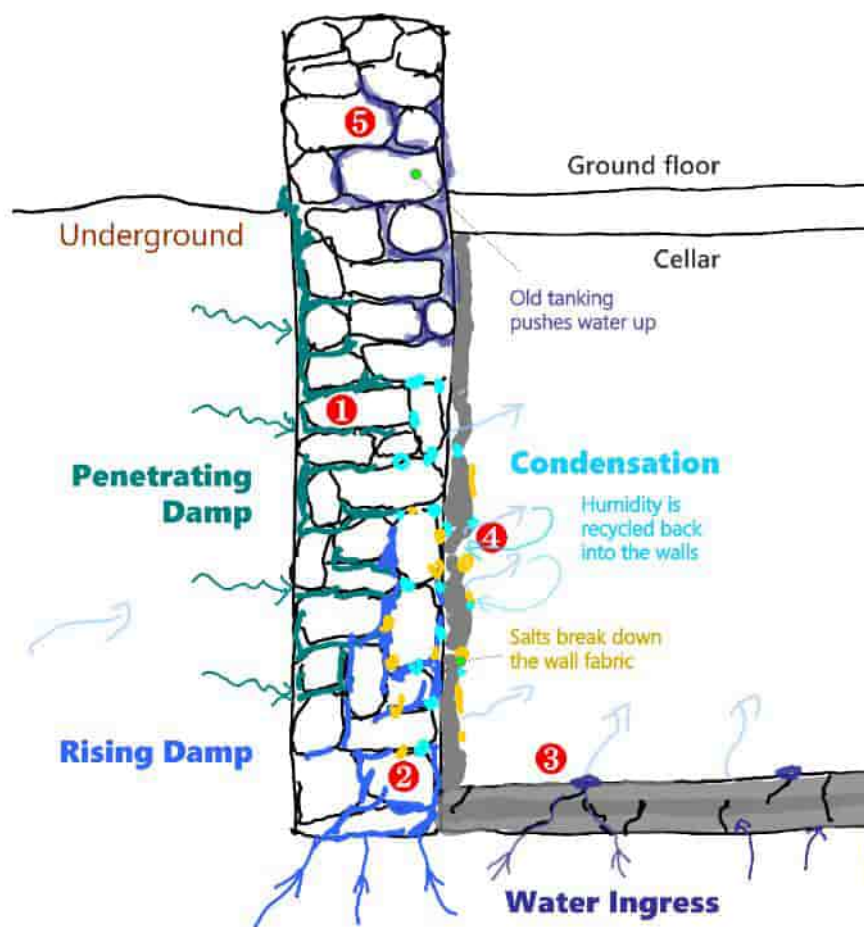
The cracks along the flashings of the chimneys must be rectified and redone with lime.

Cellar

The building also has a cellar, which is fairly damp.

Cellars are usually subject to the following sources of moisture:

- Leaks from the surface
- Sideways moisture penetration from the soil
- Rising damp from the ground
- Condensation, as a result of which the moisture is recycled back into the fabric
- Additional moisture problems generated by incorrect past renovations



Being a pub, the cellar in the past has been used mainly for storage. To keep the cellar waterproof, it has been tanked with a modern cement plaster then painted with some modern paint. Both the paint and plaster are decaying badly.



The lower part of the walls is most affected by plaster decay.





At the time of inspection there was liquid water on the floor, most likely from the rising water table, water seeping through the wall / floor cracks.



Ongoing water seepage was visible from the bottom stairs.



Heavy salt crystallization is present along the steps and the bottom of most walls.



The Flat

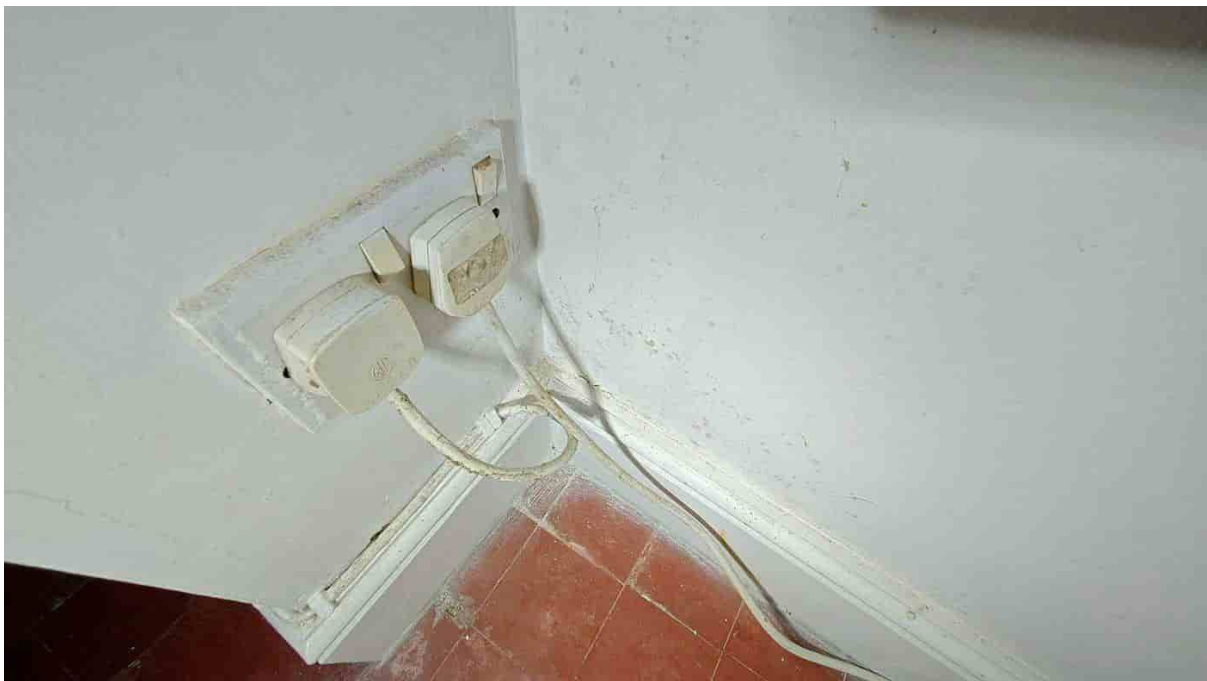
There is a standalone flat behind the building. The one-bedroom flat is largely suffering from the same problems than the rest of the building. There is rising damp near the base of the walls, and modern materials cause moisture accumulation inside the walls.



The wallpaper is damp and raised near the base of the wall.



There is also some condensation in the corner of some external walls.



Problems Caused by Past Non-Sympathetic Repairs and Materials

Many problems present in the building can be attributed to the **modern renovation materials** used throughout the building during the past years or decades. Cement and gypsum plasters, modern paints and materials prevent the wall from breathing, resulting in gradual moisture accumulation behind the surface.

Cement Plaster

The internal plastering is modern cement and gypsum, which are not breathable. Modern plasters also contain salts, which are one of the most significant causes behind the decay of old masonries. Salts, through expansion, cause crumbling, leading to the gradual destruction of the historic wall fabric.

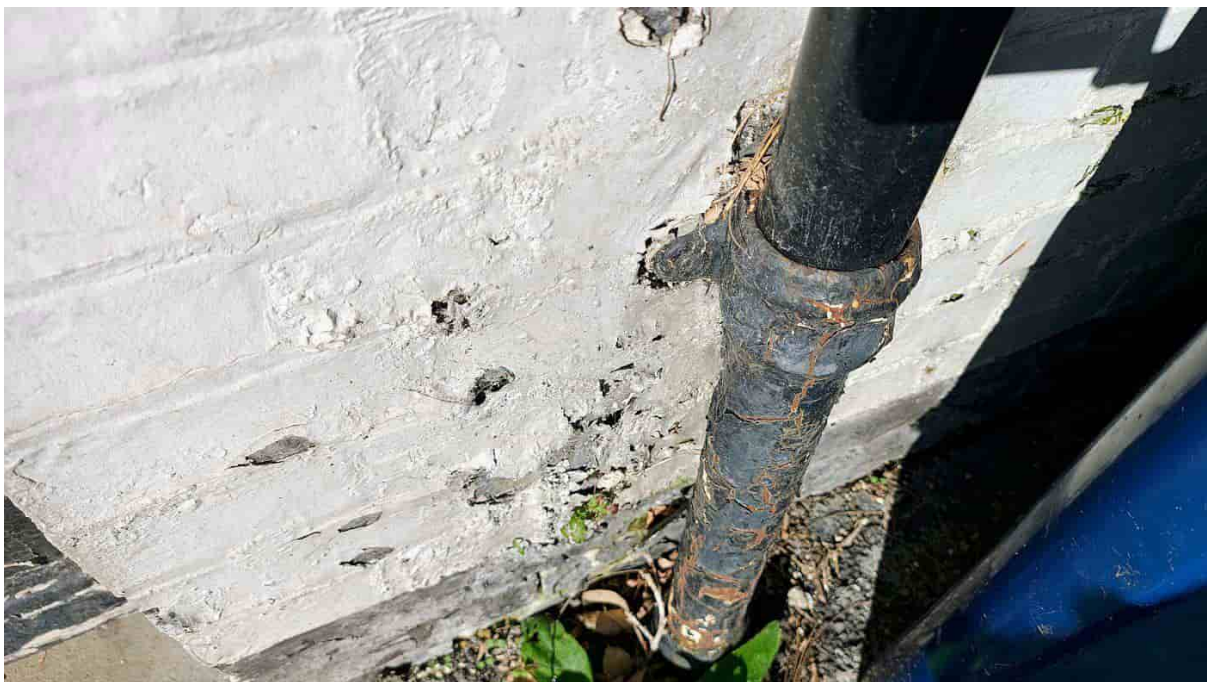


A non-breathable plaster is **not the cause of dampness problems**, however by blocking the evaporation of existing humidity, it can significantly accelerate the long-term accumulation of moisture in the wall fabric.

Future renovation works are recommended to be done with breathable lime plasters. Modern cement plasters should be entirely avoided.

Modern Masonry Paint

The building is painted outside with modern, non-breathable masonry paint. Such paints retain moisture, contributing to accumulation of moisture inside the wall fabric.



The use of breathable paints and finishes is recommended for the future.

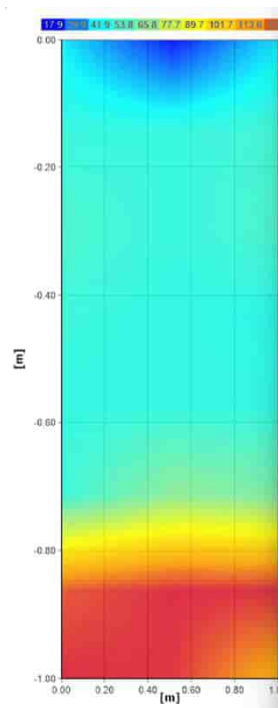
PROFESSIONAL DAMPNESS MEASUREMENTS

The moisture content of the walls has been analysed using a **Trotec T3000 state-of-the-art moisture meter / digital wall scanner**, made in Germany. This instrument can be interfaced with a range of professional moisture sensors and is capable of detecting moisture up to **300 mm deep** using microwave (ground penetrating radar) technology.



The results of the moisture analysis are presented below.

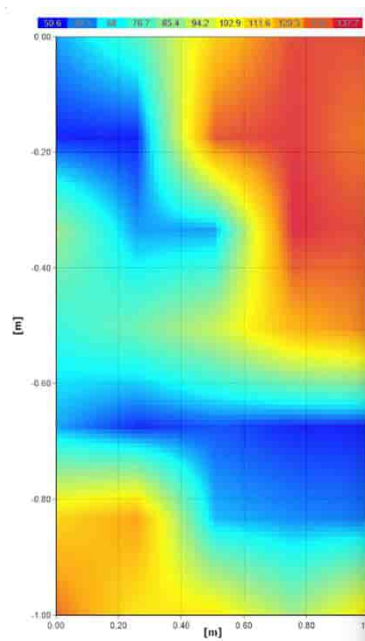
Wall 1 – Pub Internal Wall



Wall moisture content

Red / orange / yellow areas are very damp, light blue moderately damp which need attention, while dark blue areas are normal. Rising damp near the base of the wall shows up as a distinct red area.

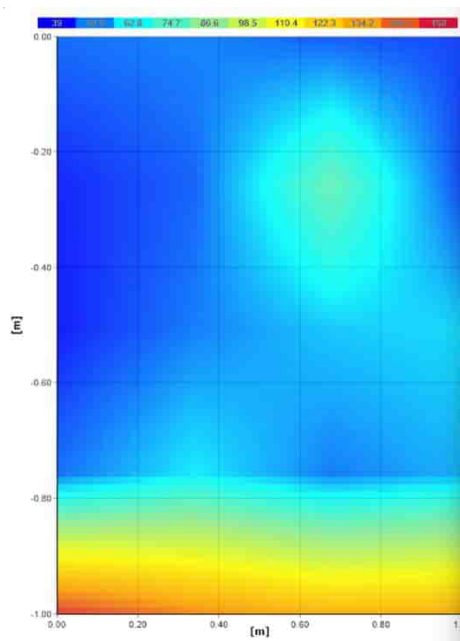
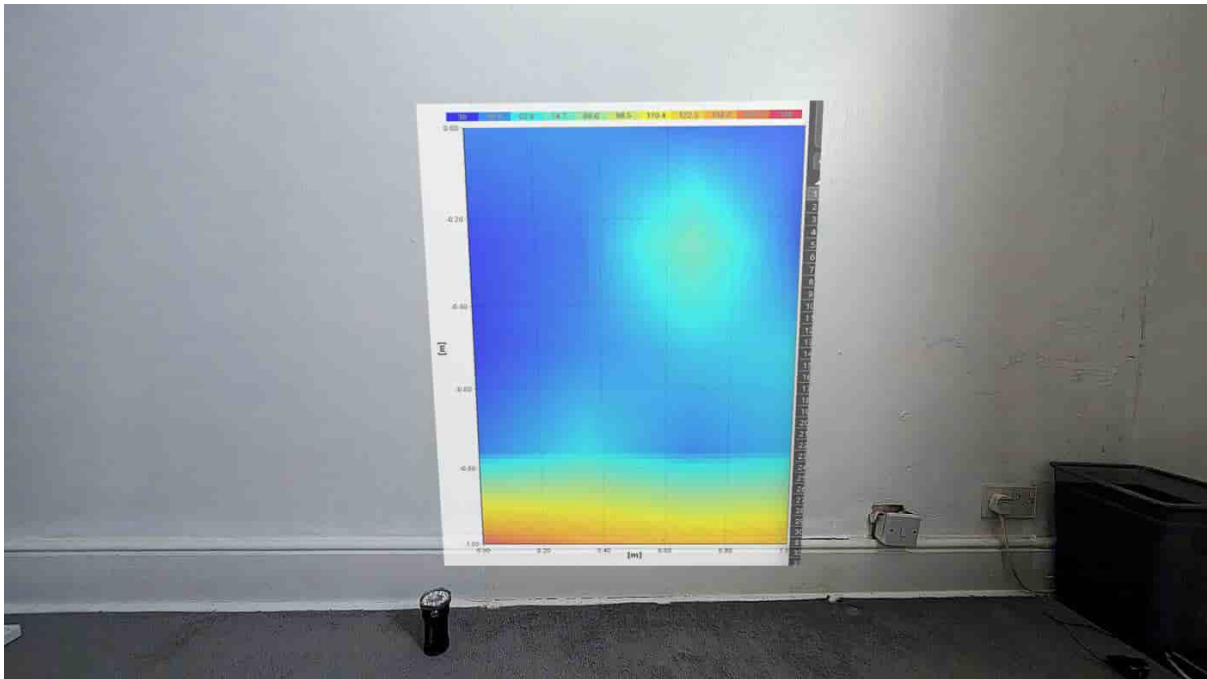
Wall 2 – Bathroom Wall



Wall moisture content

Red / orange / yellow areas are very damp, light blue moderately damp which need attention, while dark blue areas are normal. Rising damp at the bottom, water leaks from the top. We can see rising damp at the bottom and some water leaks on the top right corner.

Wall 3 – Flat Bedroom Wall



Wall moisture content

Red / orange / yellow areas are very damp, light blue moderately damp which need attention, while dark blue areas are normal. Some rising damp is visible where the wallpaper is damp and raised.

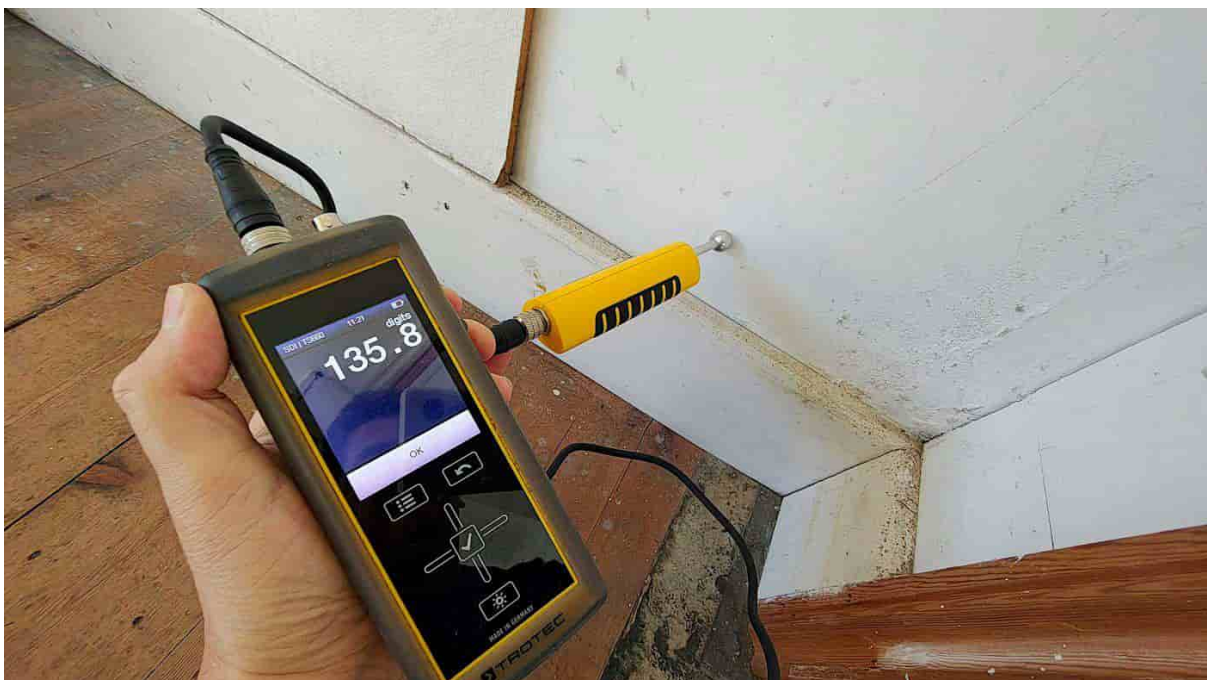
Depth Readings from the Walls

Dampness meter readings confirm this. **Readings over 70 are higher than normal.** There is a significant difference between the upper and lower parts of the walls.

Normal readings on top: 47



Damp values at the bottom: 135

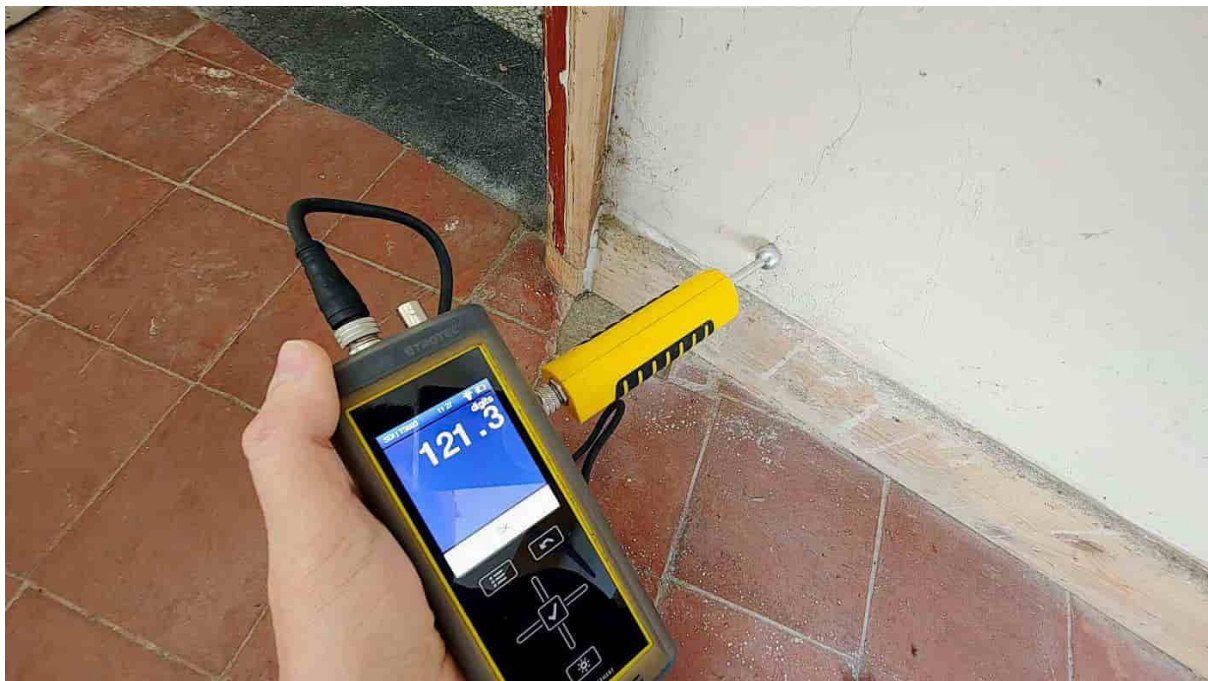


Other areas show similar values.

On top: 59



At the bottom: 121



Salts – Professional Salts Analysis

In addition to dampness, salts and salt crystallization is a major threat to the integrity of the wall fabric and plastered finishes. Transported by water, salts crystallize, breaking down the bricks and mortar.

A professional salt analysis has also been performed, and the concentration of **chlorides, nitrates and sulphates** – the most common salt types known to damage the masonry – has been determined using lab grade chemical strips.

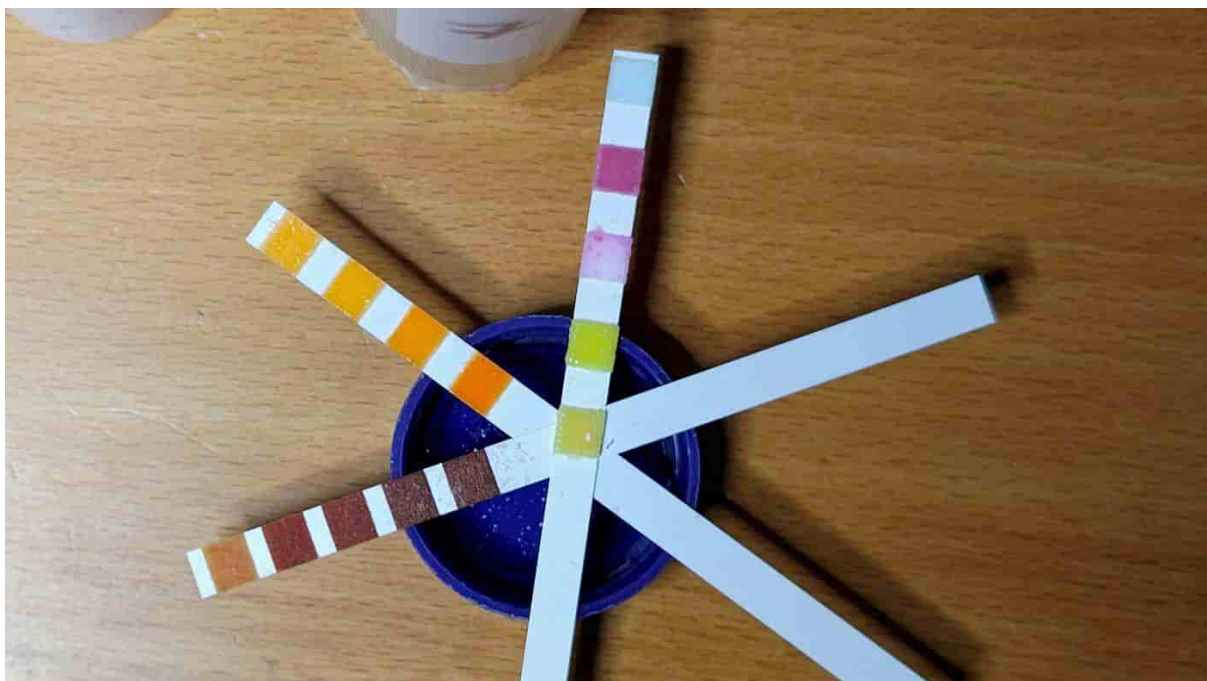


The origin of various salts is detailed below:

1. **Chlorides:** the main source of chlorides are [sea salts](#). They can also originate [from the ground](#) which contains chlorides, [from road salts](#) used for de-icing or as a result of [flooding](#).
2. **Nitrates:** nitrates originate from ground from the [decomposition of organic materials](#), organic waste or fertilizers (including animal excrements such as urine etc.). They are prevalent in [farming areas](#), around [drains, sewers, churches and cemeteries](#). Nitrates are carried up into the building fabric primarily by rising damp, and their presence is a strong indication of rising damp.
3. **Sulphates:** the most damaging salt type due to their unique needle-shaped crystallization structure. Sulphates primarily originate [from modern building materials](#) (cement, gypsum etc.) or from the combustion of wood and other fossil fuels as a [by-product of burning](#). They can be found in/around [old chimney breasts](#), or in large cities in the air due to [high air pollution](#) or [in the ground](#).

The following salts have been found in your walls:

- **Nitrates** (white to purple): very high concentration, from the ground, as a result of rising damp.
- **Sulphates** (pink to orange): high concentration, can originate from several sources, including the ground or the decaying gypsum plasterboard.
- **Chlorides** (brown to white): none.



SOLUTIONS & RECOMMENDATIONS

1. Choice of Renovation Materials

Because older buildings have been built of older, more porous bricks and a very porous lime mortar (as opposed to a modern dense sand-and-cement mortar), there is a considerable moisture movement inside the fabric of old buildings, the old fabric constantly evaporating out some of its moisture. The ongoing evaporation, also known as “breathing”, is how old buildings regulate their humidity and stay dry long-term.

Most modern plasters, however, are non-breathable. In addition to liquid moisture they supposed to block they also block all vapour movement, essential for old properties to stay dry. This results in unwanted **moisture accumulation** behind the plaster, leading to serious dampness problems long-term.

Breathability (Vapour Permeability)

Thus, the application of modern cement plasters is not recommended in older buildings as **they lead to moisture accumulation and dampness problems long-term**. One such problem can be the appearance of rising damp in higher areas of the wall as the non-breathable tanking materials “push” up the moisture upwards to the next floor above.

The recommended solution would be a “breathable” plaster that is allowing the underlying building fabric to breathe, thus preventing excess moisture accumulation inside the wall fabric long-term.

Flexibility

Lime plasters being more porous and softer, they are much more flexible than hard, rigid cement-based plasters, which over time tend to crack.

Salt-Resistance

A significant majority of plaster damages (flaking, crumbling, peeling etc.) are **not the result of humidity, but salts**. These most often originate from the ground from rising or penetrating damp, but salts can also originate from the air (sea spray, air pollution etc.). Due to the ongoing evaporation, most salts are drawn to the outer 10-15 mm area of the wall where they **crystallize**, increasing in volume by 500% – 1,000%. The crystallization pressure can exceed 800 atmospheres which breaks down the plaster, the wall fabric, even concrete – the strongest concrete rarely can withstand 550 atmospheres.

Additionally, salts **can chemically bond humidity from the air** (hygroscopy). Crystallizing salts near the surface can make the plastering look damp even when the wall fabric in depth is much drier.



Crystallizing salts breaking down the plaster

Some lime mixes are highly resistant to salts and as a result, they don't crumble, lasting for decades in very humid and salty environments. To prevent the crumbling of the plastering a **salt-resistant protective lime base coat must be used under the main lime coat**. This protects the plastering making it last much-much longer, typically decades even in high dampness conditions.

Waterproofing Ability

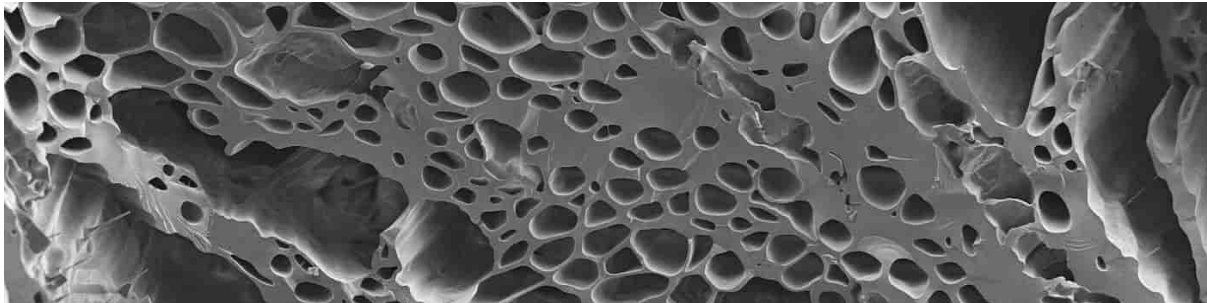
Some lime mixes are completely waterproof while also being vapour permeable. These plasters have been "invented" by the Romans, who discovered that mixing lime with carefully selected **volcanic ashes and sands**, in the right proportions, results in special lime plasters that are salt-resistant. Moreover, they are also waterproof that can stop liquid water while letting water vapours through.

These plasters were very well known from the antiquity for their waterproofing abilities, being used by Roman architects in the construction of ports, canals or other hydraulic works where waterproofing was necessary.



A selection of volcanic sands and ashes

The outstanding properties of these materials can be attributed to the volcanic ingredients. When the lava cools down, it results in a light, porous, breathable material. The chemical reactions between the lime and the volcanic ingredients will **make the mix waterproof** which can also withstand salt crystallization.



The pore structure of natural volcanic pozzolans facilitates breathability

The lifespan of these volcanic tanking mixes is also outstanding, **it can last for decades** in very harsh environments (e.g. submerged in sea water), **significantly longer than modern cement**.

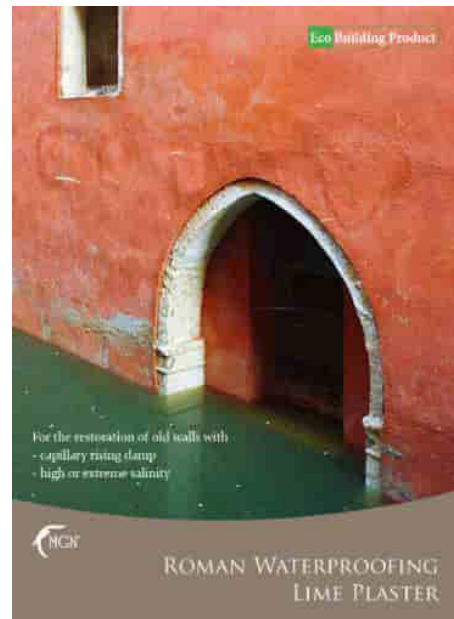


Applying one coat of Rinzafo MGN Roman waterproofing mortar – described next – onto the walls can make them waterproof and salt-resistant while preserving the wall fabric's breathability.

Rinzaffo MGN – Roman Salt Resistant Lime Mortar

The Rinzaffo MGN Roman salt-resistant lime base coat has been developed in Venice to solve the problem of rising damp, penetrating damp, wind driven rain and salts. The plaster is based on a 2,000-year-old Roman recipe. The Romans have figured out that by mixing the lime with **volcanic ashes and sands** (also known as volcanic pozzolans) results in salt-resistant, waterproof yet fully breathable lime mixes. Using this traditional technology throughout the Roman Empire, the Romans have built their famous viaducts, baths and wells, some of them still standing today.

Rinzaffo MGN's unique pore structure acts as a natural salt filter. It regulates the evaporation of humidity; preventing the crystallization of salts inside its pore structure and the premature damage of plastering by salt crystallization. As a result, the life expectancy of plastering increases multifold, the plaster stays dry and aesthetically pleasing much longer.



Because Rinzaffo MGN is **both waterproof and breathable**, it is suitable for many demanding applications such as:

- A base coat in any building subject to **rising or penetrating damp**
- A plaster against the damp patches, discoloration or the crystallization of salts (sulphates) around old **fireplaces and chimney stacks**, a frequent problem in old buildings
- A lime-based breathable tanking slurry for making **basements or cellars waterproof**
- A render against **driving rain**
- A mortar for **pointing chimney stacks and roof areas**
- A waterproof (but breathable) floor screed **to prevent flooding** in high water-table or pressure water situation

2. Replastering, Renovation, Thermal Insulation

In view of the fact that:

- The last replastering in the building has been done probably decades ago, and
- The existing plaster is a modern non-breathable plaster not compatible with the building fabric, and
- Many walls are boarded, hiding to a large extent some dampness problems

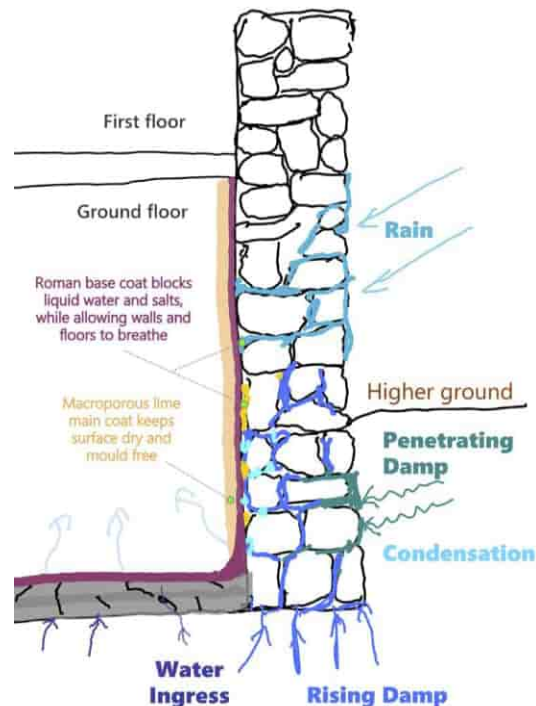
a full stripping and replastering will be needed both in the main building and rear flat. All works should be completed with building-friendly lime-based or other breathable materials and renovation procedures.



The problem of thermal insulation should also be addressed for increased thermal comfort and to reduce energy bills.

How to Replaster and/or (Optionally) Thermally Insulate Old Walls?

The damaged walls can be replastered with a breathable lime plastering system or, optionally for external walls, with a breathable thermal lime plaster. To make the renovations long-lasting, the following actions are recommended:



For internal walls with no need for thermal insulation the following plastering is recommended:

- Salt resistant, waterproof lime base coat (**Rinzaffo MGN**): @10 mm thickness
- High quality main lime coat, fully breathable (**Calce Fondo MGN**) @12 mm
- High quality lime finishing coat (**Rasacol MGN**) @4 mm

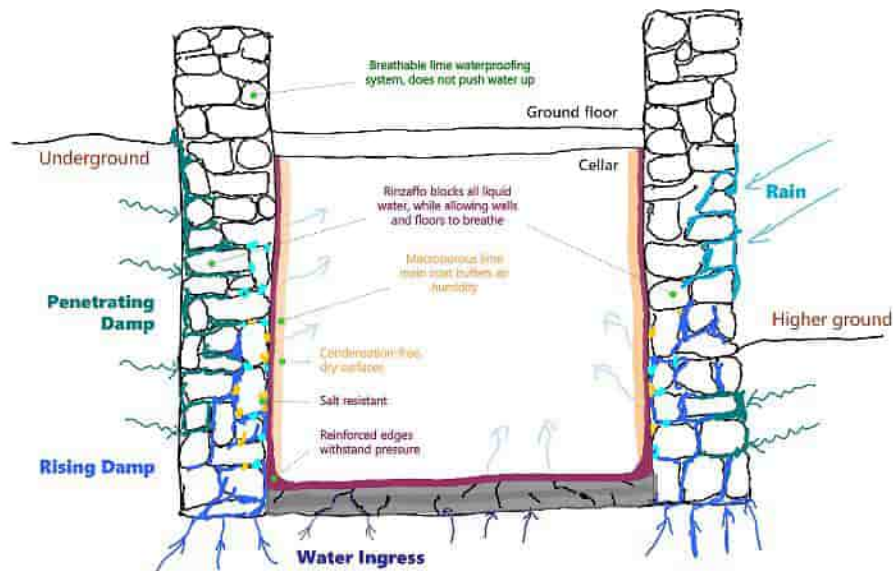
For external walls in need for thermal insulation the main lime coat can (optionally) be replaced by a special lime thermal insulation coat, as per below:

- Salt resistant, waterproof lime base coat (**Rinzaffo MGN**): @10 mm thickness
- Lime thermal insulation coat: depending on the application, a combination of 1 or 2 types of thermal plasters (**Termointonaco 2020 MGN** and/or **Termorasante Aerogel MGN** lime-aerogel superinsulation with extremely good thermal value.
- High quality lime protective finish (**Rasacol MGN**) @4 mm

Other thermal insulation options are also available.

3. Cellar Waterproofing

The cellar can be made waterproof with the Rinzafo MGN Roman waterproofing mortar by applying 2 x 10 mm coats onto the walls and the floor.



The ventilation in the cellar also needs to be improved to reduce the high internal humidity levels.

Work Schedule / Application

To make the cellar waterproof, the following actions need to be performed:

1. Hack off the existing old plaster (if present).
2. Clean the wall well to be free of loosed debris, oils etc. – sandblasting is recommended.
3. Abundantly wet the wall surfaces before the application of the plaster (this action applies to the application of *any* lime plaster). If the surface is not well wetted, the drier wall fabric will suck out the moisture content of the lime, making it dry too fast and not carbonate well. So the wall fabric must be wetted abundantly before application especially for the first base coat.
4. Using the **Rinzafo MGN Roman lime waterproofing mortar** apply a levelling / repair / dub-out coat onto the wall to make the surface as even as possible.
5. Apply 2 x 10 mm coats of the same material onto the walls (and if needed, on the floor).
6. Apply a coat of traditional **Cocciopesto MGN** brick coloured plaster as the main coat which performs extremely well in damp environment, buffering the excess moisture (absorbs and lets it go).

Here is a photo of both plasters. The Cocciopesto brick coloured main coat can be left on its own (in a cellar) having a nice, brick-coloured look, or finished with a white lime finish (in a converted basement), then painted with a breathable paint to give the walls a nice appearance.



4. Chimney / Roof Area

The chimneys **should be inspected for leaks** to ensure that there is no ongoing water ingress. Any pointing of flashing deficiencies found should be remedied, making the chimneys watertight.



The [Rinzaffo MGN Roman lime base coat](#) is recommended to be applied for pointing works around the chimney stack and for the replastering of salt-laden chimney walls – this being a long-lasting, heritage-friendly, sympathetic renovation solution.

ABOUT CORE CONSERVATION LTD

Core Conservation has been operating since 2013. We are an Award Winning company providing damp investigation and remedy solutions for any old or listed building.

We have won several industry awards including the **Homebuilding and Renovating Awards** as well as the prestigious **Build-It Awards**.

Our activity covers 4 main areas of expertise:

- **Research:** in our in-house labs we research moisture movement in porous building materials and connected electronic phenomena associated with wetting, movement of moisture and dehydration of materials.
- **Professional dampness surveys:** using cutting-edge diagnostic equipment we assess all types of damp. Very old buildings, especially the ones older than 200 years present their own specific challenges that are very different from newer buildings. We specialize in solving difficult or complex dampness cases, our surveyors are amongst the best in the business.
- **Solving dampness problems:** using a patented magnetic dehydration system we permanently resolve the problem of rising damp non-invasively. As a result the building dries out permanently, the crumbling of the wall fabric slows down or stops altogether, the building becomes warmer and often the musty smell vanishes too. For peace of mind, we also monitor the dehydration of every building for 1-2 years or until it becomes dry.
- **Sympatethetic renovations:** dampness problems and associated ground salts often create a lot of decorative or structural damage; in most cases some restoration work is necessary. We advocate and use specialist traditional building materials which not only allow the building to breathe, but which are suitable for the long-term restoration of very old, salty buildings.

We have worked on many listed buildings, cottages, manor houses and commercial properties.



Hope you find the above helpful. If you have any question, please feel free to get in touch.

Kind regards,

Eng. Val Juhasz

Mobile: 0750 746 8303

val.juhasz@coreconservation.co.uk

www.coreconservation.co.uk

Val Juhasz is an Electronic Engineer with a Master's Degree from the Manchester Business School (MBS). He is the co-founder of Core Conservation Ltd, pioneering the most modern, non-invasive dampness remedy solutions which can be safely applied even to very old, listed or heritage buildings throughout the UK. He regularly attends conservation seminars and workshops throughout Europe, including Venice where dampness remedy technologies are at their best. He has held numerous talks to private architectural and surveying practices throughout the UK, as well as the CIOB and RICS.