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[CLIENT NAME] **[PROPERTY ADDRESS]**

SPECIALIST PROPERTY
SURVEYORS IN ALL ASPECTS
OF DAMP AND TIMBER DEFECTS

Our Ref:

Date:

Dear Mr & Mrs

Further to your request I am pleased to confirm I have inspected the above mentioned property and enclosed is my report which is based upon your verbal instruction.
The verbal instruction is documented on page 2 of this report (The Instruction).

Should you believe that I have or, know that I have omitted reference to any problems identified by others or, of which you know of then I should be informed immediately.

All references made about the property are as facing the property from the road unless otherwise stated dependent upon the location of the building.

The text report comprises of: (12) pages including this page.
Photograph(s): (6).

The Instruction

I was instructed by Mr & Mrs via e-mail on Friday 26th February 2021 to inspect the stated property regarding internal dampness and timber defects.

The inspection

I inspected the property on Friday 5th March 2021, the arrival time was 1.30 pm and the weather conditions were dry.
The property was unoccupied and keys were collected from Stonehouse Estates Estate Agents.

The Property

- Is a one bedroom, solid brick constructed, ground floor flat within a mid-terrace row built circa late 1800s/early1900s.

Limitations

I did not carry out an intrusive inspection unless otherwise stated.

Helpful information

When surveying for damp problems in properties in almost all instances the surveyor will use a hand held "Moisture/Conductivity" meter.
Its common name is a "Moisture meter" implying that it does in fact determine moisture levels however this is a misconception.
As stated it is both a moisture and conductivity meter and reacts to both moisture and salts but, it cannot differentiate between the two.
It is however more precise in timber.
This means that when used on surface plasters and renders a positive reaction could be due to moisture, salts or both.
In conclusion therefore it can only be used as a tool of indication and is inconclusive meaning the results cannot be relied upon and further investigation and observations are necessary to determine the true cause of any positive readings.
The pattern of positive readings plays a major part in diagnosis for example, if positive readings were restricted to a localized band of plaster 300mm wide at the base of the wall extending 1m upwardly the most likely cause would be something like a defective external down-pipe allowing localized water penetration.
Observations externally would confirm or deny this.
Localized positive readings would normally be caused by something other than rising damp due to damp proof course failure.
In conclusion therefore on-site analysis is based upon observation, knowledge, experience and expertise.

SURVEY REPORT

My test procedures included the use of an electronic moisture/conductivity meter in both conductive (pins) and capacitance (radio frequency) modes.
The moisture/conductivity meter when used in masonry or plaster provides moisture equivalent readings of dampness (wme).
Conductivity pins used on masonry or plaster surfaces will give an indication whether or not the surface has reached a satisfactory equilibrium and is air dry or damp.
A capacity pad works on radio frequency and will measure beneath the wall surface to an approximate depth of 10-20mm giving an indication as to moisture content within the masonry.

- I used a Protimeter MMS2 moisture meter principally using capacitance mode which will measure beneath the wall surface to an approximate depth of **20mm** giving an indication as to moisture content within the masonry.
  The readings are displayed using a similar traffic light system of display but with numbered gradient indicative displays, green 1-169 sufficiently dry, amber 170-200 within acceptable tolerance levels and red 201-999 further investigation required.

Rising damp

Because of impediments such as external renders, external mortar pointing, internal finishes, internal joinery and floors I was not able to establish the presence of an original physical damp proof course.

- Whilst conjecture I would expect this property to have an original Slate type damp proof course.

Records state that physical damp proof courses were incorporated into property building as early as 1870 but the Public Health Act of 1875 included they become mandatory, full implementation was entered under the Building Act of 1878.

- This property is thought to post-date 1878.

Contrary to belief physical damp proof courses rarely if at all fail unless the property has suffered for example significant movement which causes them to break and subsequently become incomplete.
There is no published evidence to support the idea that slate damp-proof courses "fail".
Slate is a very stable geological material which is millions of years old.
Even when it is exposed to the worst of the elements on a roof for example, slate can last for centuries, it is usually only the eventual rusting of the fixing nails that causes roof slates to slip.
When slate is used as a damp-proof course (DPC) material, sandwiched between two beds of mortar it is in a very benign environment.
There is no known reason for it to "fail", no chemical attack, no oxidation, no weathering, and no mysterious undiscovered slate disease.
Moisture by-passing them is normally due to building defects commonly high external ground levels and external renders etc causing them to become bridged.

- An inspection both internally and externally did not reveal any obvious, readily seen or apparent significant evidence of structural movement which would be detrimental to the effectiveness of the damp proof course.

Good building practice denotes that external ground levels should be maintained circa 150mm (two brick courses) below the damp proof course to avoid bridging of it and to deter the effects of rainwater splash-back penetration through the base of the walls over it.

- An inspection externally revealed that high external ground levels do exist **across and around the rear and back-addition walls** as seen in the selective photographs below in relation to where I would expect the damp proof course to be located in the structural brickwork.

Whilst in past times it was common to render walls down to the ground this is now considered to be less than ideal building practice as it has the potential to draw-up moisture and bridge the damp proof course.
Where external render and/or rendered plinths are in-situ it should not be in contact with the ground or form a bridge over any damp proof course.
The render and/or rendered plinths should be isolated from the ground and/or finished above any damp proof course.

- An inspection externally revealed that external rendered plinths are in-situ however the indicative waterproof material composition of them is not deemed detrimental to the effectiveness of the damp proof course.

The internal wall finishes generally appear to be a combination of waterproof renders and dry-linings which are designed to provide a dry inner skin keeping any moisture behind them.

- Waterproof renders are dense composition and naturally suffer cold surfaces thus the detrimental effects of condensation (surface moisture) over them are greatly exacerbated in comparison to fibrous plasters and dry-linings etc.
  (Refer to condensation).

- If applied correctly waterproof renders generally speaking have a life expectancy of circa 25-30 years after which they have a tendency to degrade and subsequently require repair/renewal.

- If applied correctly dry-linings have an indefinite life expectancy.

Chimney breasts (3, front reception room, dining room and bedroom) are always high risk areas that suffer from retained moisture in one form or another due to their solid mass construction and rarely have an effective damp proof course within them.
Chimney breasts will inevitably be contaminated by aggressive ammonium salts which are a by-product of the burning of fossil fuels and are commonly found in chimney flues and chimney breasts.
Nitrate and chloride salts are also found where ammonium salts are present.
Ammonium salts are generally hygroscopic (having the ability to attract moisture from the atmosphere).
Here-to over the chimney breasts waterproof renders have been applied.
The chimney breast within the front reception room is faced brickwork (un-plastered), here moisture control is beneficially achieved by evaporation.

Random moisture meter readings were taken over various selective and accessible internal wall surfaces at low level throughout and whilst some positive readings recorded were recorded they were not synonymous with rising damp.
(Refer to penetrating damp).

Conclusions

The existence of upwardly rising moisture from the ground (Rising Damp) is dependent on geological factors and the absence of a damp proof course does not automatically mean that Rising Damp will occur however, properties that do not benefit from an effective Damp Proof Course are at risk if changes in the geological factors take place.

British Standard code of practice for the installation of chemical damp proof courses BS 6576:2005 stipulates that all other forms of dampness i.e. lateral penetration of dampness, bridging, condensation, penetrating dampness and moisture from any other source such as leaks must all be rectified first prior to specifying a secondary damp proof course installation and a sufficient drying out period allowed prior to a further assessment being made.

- Considering the above and having witnessed site conditions and noted defects I have given due consideration to the Control Of Substances Hazardous to Health (COSHH) 2002 (as amended) and B.S. 6576:2005 conclude that the installation of a new chemical damp proof course **is not warranted and/or justified.**

The effects of dampness rising from the ground actually or potentially should be resolved by freeing the existing damp proof course of impediment to allow it to fully function as designed.

- At any convenient location **across and around the rear and back-addition walls** a trial hole should be dug to locate the damp proof course.

When located a channel should be cut circa 100mm back from the walls and excavated downwardly circa 150mm below the damp proof course.
The channel should then be back-filled using pea-shingle (but not above the damp proof course) to depressurize moisture bearing against the base of the wall and enhance drainage.
Using pea-shingle will remove the effects of rainwater splash-back as it is not a hard dense material.
If a trip hazard is created between the top of the newly installed shingle and retained ground levels then large stones sourced from a garden centre or similar can be laid over the shingle.

- An example of external ground level reduction works as seen in the selective photograph below.

The above works can be carried out by a competent small works building contractor.
As helpful assistance I suggest a budget cost of circa £1,400.00 plus vat is allowed for the works however you may consider it prudent to obtain quotations prior to legal exchange of contracts.

Penetrating damp (above ground level)

These types of properties because of their design principally solid walls (without cavity) and timbers built into them are and always will be considered high risk in terms of damp and timber defects.
Penetrating dampness is an inherent problem with solid external walls and any timbers in contact with a damp affected area will be prone to decay.
Walls of such design often incorporate concealed timbers for example lintels above window and door openings and built-in floor joists and wall plates.
These means that if you proceed to purchase this property you must acknowledge and accept the risks of damp and timber defects which can be greatly reduced by ensuring the external fabric is maintained in good watertight condition.
Moisture from whatever source causes decay.
It is essential that any source of moisture is removed.
Modern buildings are now designed with cavity walls to provide a gap between the outer and inner skin so that penetrating damp cannot migrate through into the internal leaf and wall finishes.

An inspection externally albeit from the ground which greatly restricted sight of high level areas did not reveal any obvious, readily seen or apparent defects which would exacerbate the effects of penetrating damp laterally through the walls **except for:**

- Poorly maintained and degraded external joinery as seen in the selective photograph below.

- Blocked rainwater goods as seen in the selective photograph below.

- Broken roof tiles as seen in the selective photograph below.

Random moisture meter readings were taken over various selective and accessible internal wall surfaces at low, mid and high level throughout and all readings recorded were within acceptable tolerance levels **except for:**

- Over and across the front bay wall within the front reception room where elevated readings were recorded together with degradation of the wall finishes as seen in the selective photograph below synonymous that they have reached the end of their useful life but exacerbated by longstanding inherent penetrating damp.

- Over and across the front alcove within the front reception room where elevated readings were recorded together with advanced degradation of the wall finishes synonymous that they have reached the end of their useful life but exacerbated by longstanding inherent penetrating damp notably the external rainwater goods which have indicatively been replaced in recent times as seen in the selective photographs below.

- Over and across the rear alcove within the dining room where elevated readings were recorded together with advanced degradation of the wall finishes as seen in the selective photograph below synonymous that they have reached the end of their useful life but exacerbated by longstanding inherent penetrating damp and previous less than perfect repairs.

Over and across the rear section dividing wall on both the kitchen and bedroom sides where elevated readings were recorded together with degradation of the wall finishes as seen in the selective photographs below synonymous with water ingress from the flat roof above.

Conclusions

- A complete and thorough inspection of the building externally is advised now and periodically in the future by a building contractor including access to high level areas as part of an on-going maintenance programme.

All noted defects which will be a source of moisture ingress in one form or another must be rectified to ensure the property is and remains watertight.
You should acknowledge and consider any comments, advice and/or recommendations offered by your building surveyor regarding this matter.

These principally are:

- Chimney stacks, mortar pointing, renderings, flashings and fillets.
- The roof coverings.
- Rainwater goods, gutters, hoppers and down pipes.
- External joinery, fillets, mastic joints and sills.
- Plumbing ware and pipe-work.

Certainly there is a need to repair/renew items of external joinery.

Certainly there is a need to repair/renew/clear items of rainwater goods.

Certainly there is a need to repair/renew the single storey front bay roof coverings and possibly the flat roof coverings over the kitchen although whilst conjecture any defects here are thought historic.

The above works can be carried out by a competent building contractor.
Because of the nature of the works (general building work) I am unable to provide a meaningful budget cost for them therefore you may believe it prudent to obtain comparable competitive quotations prior to legal exchange of contracts.

Moisture is detrimental to internal surfaces finishes by migration and is likely to carry with it soluble salts.

- Re-plastering works will be required at least over and across all those areas referred to on pages 7, 8 & 9 above elsewhere similar works cannot be ruled out in the future.

All degraded plaster should be removed to a minimum height of 1.2m and if necessary 300mm further past any last evidence of degradation in all directions to compensate for capillary retained moisture movement within the walls.

- Re-plastering should be carried out using clean washed sharp sand and Sulphate resistant cement in the ratio of 3:1 with the inclusion of a waterproofing/salt inhibitor additive and skim plaster finished which satisfies the requirements for "M" Grade (Table 5) laid down in British Standard 882 (1993).

- Alternatively where practically possible dry-linings are best applied although these normally require full height application mainly for reasons of thickness continuity.

- Under no circumstances should gypsum based plasters be used as backing coats as these are notorious for their moisture and salt retention capabilities.

The above works can be carried out by a competent plastering contractor.
As helpful assistance I suggest a budget cost of circa £2,500.00 plus vat is allowed for the works however you may consider it prudent to obtain quotations prior to legal exchange of contracts.

Timber in contact with damp walls may suffer decay.

When carrying out the recommended works and after removal of the internal wall plaster which will allow sight of concealments behind all timbers, flooring and joinery should be checked for decay.
If decay is found the timber(s) should be removed and replaced with new.
Timber decay (common wet rot) does not require chemical treatments.
Remedy simply involves removing the source of moisture and replacing the decay timber ideally using Tanalised (pre-treated).
If timber decay is found with cubical like cracking and/or fungal growth further expert advice is essential.

Penetrating damp (below ground level)

The bathroom is subterranean

Because of its design and location below ground level the walls and floors within this area are and always will suffer the effects of dampness in one form or another unless they have been waterproofed to provide a dry surface.

You should be aware that BS: 8102: 2009 the British Standard for waterproofing below ground structures states that almost all below ground level structures are likely to be subjected to water pressure at some period during their life even when the site examination indicates dry or near dry conditions and the risk of entry by free flowing water (flooding) at some time in the future should be considered regardless if there is a history of it or not.

A common mistake when treating earth retaining structures is to damp proof when waterproofing is required.
In basic terms you damp proof above ground level and you waterproof below ground level.
A structure that has been damp proofed or poorly waterproofed will most likely fail if subjected to external water pressure.

Conclusions

- All of the accessible wall surfaces are completely tiled therefore no meaningful inspection of the walls was possible nor would any moisture meter readings be reliable.

- What I can report is that I found no obvious, readily seen or apparent evidence of the tiles de-bonding or blowing (loss of key/adhesion) which if I did would indicate that the wall finishes in one form or another are failing.

- You must acknowledge the risks involved in subterranean areas such as this and in doing so accept there is a particular possibility of defects in the future that will inevitably involve costly waterproofing works.

Timber decay and woodworm infestation

The habitable living accommodation comprises of the entrance hall, front reception room, dining room, kitchen, bathroom and bedroom.
The kitchen and bathroom floors are solid construction.
No visual inspection of any timber suspended floors was possible due to a wood-strip surface overlay.

The single storey front bay roof void is inaccessible therefore no inspection of the concealed timbers within was possible.

The kitchen roof is flat construction therefore no inspection of the concealed timbers within was possible.

- Where inspected I found no obvious, readily seen or apparent evidence of active woodworm infestation.

- Where inspected I found no obvious, readily seen or noticeable evidence of convex and/or concave distortion of the localized skirting boards which if there were would indicate them to be decayed.

- Where inspected I found no obvious significant abnormal floor movement/deflection underfoot which if I did would indicate decay to be present.

Conclusions

- I have given due consideration to the Control Of Substances Hazardous to Health (COSHH) 2002 (as amended) and based upon no active woodworm infestation conclude that the application of in-situ chemical preservative timber treatments **is not warranted and/or justified**.

Finding timber decay somewhere or another is not uncommon in these types and ages of properties in fact, unless modern refurbishment works have been carried out previously it can be deemed the norm.
Timber decay (common wet rot) is not a particular problem unless the affected timber has lost its structural integrity causing collapse.

If at some time in the future timber decay is found (common wet rot) it does not require chemical treatments.
Remedy simply involves removing the source of moisture and replacing the decayed timber ideally using pre-treated.

Sub-floor ventilation

The provision of adequate and sufficient airflow within ground floor timber suspended floor voids is essential to enhance air-drying of timbers and to reduce humidity which is a source of moisture.

Conclusions

- An inspection externally revealed the current provision of airbricks within the bedroom peripheral walls is adequate and sufficient.
  Once the external ground levels are reduced as previously referred to a compliant number airbricks should be introduced.

The above works can be carried out by a competent small works building contractor.
As helpful assistance I suggest a budget cost of circa £400.00 plus vat is allowed for the works however you may consider it prudent to obtain quotations prior to legal exchange of contracts.

Solid floors

These are in-situ within the kitchen and bathroom.
Whilst the solid floors appear basically level with no obvious, readily seen or apparent visual defects it is not uncommon for them to subside due to poor workmanship or deficiencies in the hardcore or ground beneath.

Conclusions

- Without further intrusive and highly destructive investigation I am unable to comment specifically on the quality of the floor construction, the sub-floor ground conditions and its design including any provision of an adequate and/or sufficient damp membrane.

Condensation

- Condensation can in the most part be deemed seasonal occurring most prominently during colder seasons.

Condensation occurs when the water content of air rises above a level referred to as the dew-point. When the RH reaches a degree of circa 70% water droplets will form on the colder surfaces such as windows and walls etc whether they are insulated or not.
Relative humidity (RH) is described as the amount of moisture in the air expressed as a percentage.
Once the (RH) reaches or exceeds 70% moisture content (MC) the atmospheric conditions for condensation to occur become ideal.

Condensation dampness together with its associated mould growth is a form of dampness that is most prevalent during the coldest months of the year and is characterised by water droplets collecting on cold impervious surfaces, damp patches and the formation of black or green mould growth.

Damp conditions can occur in the home for a variety of reasons and according to the Building Research Establishment, 80-85% of dampness problems arise due to condensation or manmade moisture (Allen 1995).

- **Condensation is a major problem throughout the United Kingdom.**

The 1991 House Condition Survey found that 10.4 million homes were affected by mould growth (Wheeler & Critchley 1998) and the Northern Ireland House Condition Survey 1996 found that 16% of homes experienced some form of dampness or mould growth (approximately 95,000 houses).

The occurrence of condensation dampness depends on the relationship between heating, ventilation, insulation and the patterns of the occupiers' activities, thus the predominant cause can be difficult to identify.
The presence of mould growth and its associated odour not only creates unpleasant living conditions and damage to property but is associated with ill-health.
Cold and damp living conditions can be a factor which affects both physical and mental health.

A number of studies have examined the effect of housing conditions on health and several large epidemiological studies have been able to show that damp housing and the presence of mould growth is associated with respiratory symptoms and other illnesses (Brunekreef et al 1989, Hunt et al 1989, Garrett et al 1998, Koskinen et al 1999, Williamson et al 1997).

Moist air is created by many factors such as the lack of adequate ventilation, cooking, bathing and the drying of clothes over radiators etc.

It is not possible to precisely determine how much water vapour any one human being exhales since a lot of it depends upon other conditions for example: how big is the person breathing, what is the temperature outside, what is the humidity outside, what is the temperature inside and how hydrated is the person?
The average person's breath is about 4% water by volume which amounts to about 20ml of water vapor per breath.
If we average about 20 breaths per minute, and 8 hours of sleep, that would come to 20ml x 20 breaths per minute x 60 minutes per hour x 8 hours = 192 liters of water!
Source: (www.newton.dep.anl.gov/askasci/gen99/gen99801.htm).

With very rare exceptions the air always has a moisture content which greatly increases during cooking and bathing/showering etc.
Warm air is capable of carrying a larger amount of moisture than cool air.

When the air is carrying all the moisture it is capable of at that temperature it is at saturation point and the temperature when this occurs is the dew point.
If this air meets a surface which is at a lower temperature than the air temperature the moisture in the air will condense into water upon the cooler surface thus forming condensation.

The most obvious symptoms of condensation are surface moisture and mould growth.
The surface moisture could be to the touch and/or visible.
The mould growth occurs initially as spots increasing to larger patches.
Four of the most common moulds known in residential properties in this country are Penicillium, Trichoderama, Aspergillus and Pullularia.

Mould usually appears as unsightly growths in various colours green, yellow, pink, black, grey or white and will form over wall ceiling and floor surfaces and over clothes and all other fabrics particularly leather.

With modern gas fired heating systems there is a tendency for the heat to be provided in limited periods throughout the 24 hour day.
This means that there is a considerable temperature range throughout the day which brings with it the risk of condensation.

You should further acknowledge the following:

- Houses situated next to vacant houses are more prone to condensation.
- Mould growth is most prevalent on external walls.
- Most homes experiencing condensation have no wall or roof insulation.
- Some heating systems are inadequate or not used properly due to financial constraints.
- Double-glazed windows do not eradicate condensation dampness in the absence of other measures.
- Some homes are inadequately ventilated due to a lack of extractor fans in the kitchen and/or bathroom, an absence of trickle ventilators in the window frames and in some cases, a reluctance to open the windows.

There are two prime sources of moisture: The bathroom(s) and kitchen(s)

Within the bathroom and kitchen areas abundant moist air is created when bathing, showering and cooking etc.
The unseen moisture and humidity within the atmosphere will circulate around the property.

- Current Building Regulations stipulate that Bathroom fans should extract @ 15 ltrs per second and Kitchen fans @ between 30 and 60 litrs per second dependant on their close proximity with the cooker.

It is critical adequate ventilation and means of extraction is provided for within these prime source areas and that it is not reliant upon human activation to control an unseen problem within the atmosphere.

Sub-prime sources of moisture:

- Not opening windows to enhance ventilation and air movement.
- Drying of clothes etc over radiators which abundantly increasing the moisture within the atmosphere.
  This should never, ever occur.

- If there is a tumble dryer in the property.
  If it is not self-condensing it must be vented through an external wall to exhaust the moist air otherwise, do not use it.

- If there is not a tumble dryer in the property.
  Consideration should be given to installing one or a combination washer dryer to ensure there is a means of drying other than air drying or over radiators. It must be vented or self-condensing.

- Positioning of furniture immediately against walls reducing air movement.
  Where possible and practical ease furniture away from walls.

- Maintain ambient heating and avoid sharp changes in temperature range.
  During colder seasons heating is best maintained 24/7 at between 18-20c although it can be increased if particularly cold but it should not be decreased.

Conclusions

Condensation is the most common form of "dampness" within UK properties and you will digest from all the helpful information above that its causation and control is not about one particular subject but many.
It would be easy to advise our clients to spend thousands of pounds in making changes to the property to try to achieve atmospheric perfection although we prefer to advise in a more pragmatic way working through a process of elimination.

It is obvious that simple measures such as the drying or clothes etc in an uncontrolled way internally should be avoided, moving furniture away from walls will enhance air movement, more importantly maintaining ambient heating and when using the shower and/or bath and upon exit from the bath/shower room the door should be closed to keep the created steam within a confined space for controlled removal by extraction and/or an open window all of which help tremendously to reduce the humidity which plays a critical part in atmospheric control.

Apart from the measures referred to above consideration of resolve must include controlling the Relative Humidity within the property by adequate extraction of the moist air in a controlled and effective manner.

Other matters

- This survey must not be regarded as a substitute for a structural survey.

Whilst I report no evidence of significant dampness within the property other than that referred to actually or potentially you must acknowledge the limitations of my inspection and subsequently accept that there is a risk of this within inaccessible and concealed areas predominately but not exclusively behind skirting boards at the floor/wall joint and within the kitchen and bathroom areas due to extensive fixtures and fittings.
You must further acknowledge that these types of properties in terms of dampness are high risk and future damp related problems which are not apparent now can never be ruled out.
I can therefore give no assurances that apart from that referred to other areas of the property are completely free of known or potential dampness in one form or another.

Whilst I report no evidence of timber decay other than that referred to potentially or active woodworm infestation you must acknowledge the limitations of my inspection and subsequently accept that there is a risk of these within inaccessible and concealed timbers.
You should be aware that woodworm can be active within the heart of a timber section unseen to the naked eye and that it can infest within a property at any time.
I can therefore give no assurance that timber decay and/or active woodworm infestation is not present within the property.

Terms and Conditions

This report is for the private and confidential use of the client for whom the report is undertaken and should not be reproduced in whole or part or relied upon by third parties for any use without the express written authority of the surveyor.
Consent granted.

Yours sincerely

[Signature]

[Surveyor Name]