



Structural Survey (Inspection)

to

**60 Commercial Street
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TABLE OF CONTENTS

EXECUTIVE SUMMARY

SECTION 1	INTRODUCTION
SECTION 2	SURVEY DETAILS
SECTION 3	PROPERTY INFORMATION
SECTION 4	STRUCTURAL SURVEY (INSPECTION) – GUIDE FOR CLIENTS
SECTION 5	STRUCTURAL SURVEY (INSPECTION) DETAILS
	EXTERNAL CONDITION
	INTERNAL CONDITION
SECTION 6	CONCLUSIONS
SECTION 7	RECOMMENDATIONS
SECTION 8	GUIDE TO REPAIR COSTS
SECTION 9	WHAT TO DO NOW
APPENDIX A	TYPICAL HOUSE DIAGRAM

EXECUTIVE SUMMARY

Structural Surveys UK were commissioned to undertake a Full Structural Survey (Inspection) to a residential property at 60 Commercial Street in Ystalyfera.

The survey was carried out on a non-intrusive basis, the observations of which form the body of this report, together with the conclusions and recommendations for repair where applicable. Any defects that were hidden which could only be ascertained by intrusive works are not covered, in addition to areas that were in-accessible.

The property is a mid-terrace two storey dwelling and comprises of 2 reception rooms and storeroom on the ground floor, with 3 bedrooms, kitchen and bathroom on the first floor. A basement is located below the full footprint of the property. A 2 storey timber structure is located at the rear of the property.

The main items addressed externally included the roof coverings, load-bearing walls, damp courses, building ventilation and foundations.

Our internal inspection included the roof void, ceilings, load-bearing walls, ground and first floors, together with a visual inspection on the presence of damp in the property.

Having completed a structural survey to 60 Commercial Street in Ystalyfera, we conclude its present-day condition to be substandard and requiring significant repair. There are a number of defects present as shown below :

The Condition Rating **3** defects that require remedial works in a more timely manner are :

- Theoretically, the roof tiles have reached their minimum design life and should be replaced (based on the current age and condition of the roof tiles).
- The survey noted areas of missing render to the rear elevation – see photos 7-8. Due to the condition of the render to the rear of the property it is recommended that the render to the rear of the property is removed in its entirety and replaced.
- Penetrating damp was noted to the front wall elevations in bedroom 1 and 3 and penetrating damp was noted to the rear wall elevation on the landing – see photos 36-40. We'd expect that the cause of these areas of penetrating damp is the condition of the external render to the front and rear wall elevation along with the substandard roof drainage.
- Damp and mould growth were noted to the ground floor boards and joists in basement room 2 and 4 – see photos 64 and 66-69. This is expected to be due to the beam ends being supported directly by the solid walls (and so susceptible to moisture attack) and a lack of passive ventilation into the basement.
- Penetrating damp was noted to the internal basement walls (see examples in Photos 70-71) along with rising damp (see example in Photo 65).
- The timber structure to the rear is in a significant state of disrepair, is in an unsafe condition and it is recommended that the structure is demolished.

The Condition Rating **2** defects that will require remedial works to prevent further more problematic degradation occurring are as follows:

- We noted the absence of passive ventilation route into the main roof profile. Passive ventilation is required to ensure moisture and condensation that builds up within the roof void has an opportunity to escape (otherwise it would attach itself to the structural timber frameworks and create defects in the form of dry rot).
- Trickle vents were absent from the window frames so there is an inadequate means of providing passive ventilation to evacuate internal condensation and moisture. Some of the window frames are sub-standard and should be replaced.
- Render cracking (damage category 1) was noted to both sides of the window on the front wall elevation. It is expected that these cracks have led to de-bonding of the render in these areas and the cause of the penetrating damp into bedroom 2 of the property.
- During the survey bowing was noted to the timber ceiling of the entrance.
- All properties with basements should have provision for a free flowing passage of air into the basement.
- Indications of vermin were noted within the roof void.
- Corrosion to the steel beam below the basement was noted in basement room 4.
- All timber panelling to fascia boards were present but weathered and some had rot present. We'd recommend that fascia boards are fully replaced.
- Defective guttering was evident, see example in Photo 4.
- Several areas of exposed masonry were evident to the rear elevation and some units had deteriorated. A void was also noted where previous infilling had been attempted.
- Some of the timber members have water marks present / surface deterioration. Treatment of the timbers is recommended.
- Roofing felt was installed to the underside of the roof profile and appears in adequate condition overall, although some areas are loose / substandard.
- Some internal plaster finishes are considered substandard and should be replaced.
- The floor to bedroom 1 sagged which indicates there was some flexure to the joists..
- Condensation damp was evident to a number of internal surfaces.
- Some of the brickwork infill panels are in poor condition and should be repaired.
- Internal cracking to plaster/render finishes were noted in the basement room 2 – see photo 59 & 60 and external wall of basement room 3 – see photos 61-62. Repairs are needed to include the removal and reinstatement of areas of de-bonded plaster (along with a check on the load-bearing wall condition)
- The basement floor construction is substandard, does not conform with Building Regulations and should be replaced throughout.

Further details on the above are presented in the main body of the report which follows:

SECTION 1 INTRODUCTION

Structural Surveys UK are a group of highly skilled Chartered Civil & Structural Engineers who have acquired over 25 years experience in the design and construction of a wide range of buildings and facilities. We have also gained considerable experience in the structural inspection, appraisal, assessment and investigation of building structures, including commercial and residential properties.

This report details the results of a Full Structural Survey (Inspection) to a residential property at 60 Commercial Street in Ystalyfera. The scope of the report covers the main property only and is not inclusive of any further outbuildings or other structures.

In accordance with your instructions we have completed the internal and external survey at the above property, the results of which are contained in Section 5.

Section 6 details the conclusions of the survey, indicating areas where remedial works are required.

Section 7 and 8 discuss the recommendations for these works and a guide to repair costs.

Section 9 provides guidance on what to do now.

Appendix A provides a 3D view of a typical house and the various building components listed to ease reader understanding.

1.1 Scope of the Report

The scope of our Full Structural Survey (Inspection) covers an assessment of 6 key 'structural' areas of a typical property, which if defects were identified would be the most costly to repair. These 6 areas include a structural inspection of the following:

- 1). **Roof Structure** (external profile including chimneys where applicable, roof coverings as well as internal structural timber framework in roof void and roofing felt)
- 2). **External load-bearing walls** (including finishes where applicable, e.g. render)
- 3). **Internal load-bearing walls** (including plaster finishes)
- 4). **Foundations** (presence of settlement / building movement / heave / subsidence)
- 5). **Suspended and ground floors** (including finishes to underside of suspended floors, i.e. ceilings)
- 6). **Damp and Ventilation** (visual inspection only)

1.2 Exclusions

This report provides an assessment on the **Structural Condition** of the property only, concentrating on the 6 structural items noted above. This report does not cover a condition assessment of non-structural items, apart from those that may affect the performance of or provide further supporting evidence to the condition of the 6 structural items noted in 1.1.

Clients generally have an understanding on whether they need to replace non-structural items, hence why we concentrate on the 'structure' only. This is of most importance when assessing the structural condition of the property / building as any defects noted to the six items listed above in 1.1 will provide an indication on how well it's performing.

Non-structural items not specifically covered (unless agreed with the client at point of instruction) include:

- **Services** (e.g. gas, water, electrical)
- **Windows and doors** (Window condition is only checked to support our assessment on whether any movement (settlement / heave) of the property has occurred, i.e. any consequential damage to the frames that prevents them being opened or closed. We do inspect the windows to confirm whether they provide an adequate means of internal ventilation and this is reported herein. Our report does not address the actual condition of the windows in terms of their acoustic and / or thermal performance. Any defects to the windows that have not been caused by structural movement of the property or are not associated with ventilation are out of scope of this report)
- **Internal joinery** (e.g. staircases, coving, skirting, doors)
- **Insulation** (to roof void, walls, floors)
- **Chimney Flues** (N.B. the chimney structure is included in our report if a chimney is present)
- **Fixtures and fittings** (e.g. bathrooms, kitchens)
- **Rainwater pipes and guttering** (unless these are defective and are creating damp in the walls)
- **Below ground drainage inspection** (manholes, pipes, soakaways, septic tanks)
- **Presence of contaminated materials** (e.g. asbestos)

The report is based on the condition of the property on the date of inspection and no liability can be accepted for any deterioration in the condition of the property after this date. The structural condition of the property is based on the expert judgement of a Chartered Civil / Structural Engineer, taking account of the outcome of the inspection and any defects identified during the survey, ascertaining the history of the property from the current owners where such information is available (e.g. any structural modifications, building works, previous defects and repair works undertaken etc.) and also performing any relevant searches if required (e.g. coal mining for subsidence, ascertaining local geology) or desk top studies that may have influenced the buildings performance.

In addition, the report contents are based on a **non-intrusive survey** of the building as presented. No liability can therefore be accepted for defects that were hidden and not accessible, which could only have been noted from intrusive investigation or where physical access was precluded (e.g. working at height due to health and safety reasons).

SECTION 2

SURVEY DETAILS

Property Address	60 Commercial Street Ystalyfera Swansea SA9 2HS
Property Occupancy	Property was vacant at time of inspection.
Client(s) Name	Bryn Belton
Client(s) Address	Not disclosed
Property Agent	Clee Tompkinson Francis
Buyers Solicitor	Not disclosed
Date of Inspection	1 st of December 2020
Weather	Sunny Spells
Our Engineer	Geraint Lambie – M.Eng (Hons) C.Eng MICE

Signed



Review/Approved

Simon Clarke – B.Eng (Hons) C.Eng MICE

Signed



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Simon will be pleased to talk to you about your report and answer any questions you may have.

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SECTION 3

PROPERTY INFORMATION

Description and Age

The property is a mid-terrace two storey dwelling and comprises of 2 reception rooms and storeroom on the ground floor, with 3 bedrooms, kitchen and bathroom on the first floor. A basement is located below the full footprint of the property. A 2 storey timber structure is located at the rear of the property.

It is estimated the property was constructed in the late 1800's, so will be circa 120+ years old.

The front of the property faces due North approximately.

Structural timber frameworks have been used to construct the roof, which are supported off the external perimeter walls. As well as providing vertical support to the roof coverings, the timber roof frameworks also provide horizontal restraint to the top of the load-bearing walls acting as a horizontal diaphragm tying the walls together to maintain structural robustness and stability.

The main roof structure adopts a traditional pitched roof profile, is built at an approximate 30-35 degree pitch and is covered with composite slate roof tiles. Non-breathable felt has been installed to the underside of the roof profile.

We could not determine the exact form of construction adopted for the structure due to the non-intrusive nature of the survey. However, we would consider that a solid wall construction has been adopted for the original property. The above form of construction would be expected to have been used for all load-bearing walls within the main property. Externally, the load-bearing walls adopt a rendered finish.

Suspended floor construction will have used structural timber beam frameworks supported off and bearing directly onto the load-bearing masonry walls. As well as providing vertical support to the first-floor loading, the timber beams also provide horizontal restraint to the load-bearing walls at mid height and are thus integral to their overall stability.

Ground floors adopt a flag stone construction throughout the basement floor.

Timber boarding has been used for the external fascia to the front, side and rear elevations of the property. Windows and doors were timber frames throughout.

It would be expected that the foundations consist of a stone filled trench or a concrete footing. The foundation details could not be presented here due to the non-intrusive nature of the survey.

Wall and Ceiling finishes – anticipated to be typically solid plaster throughout. N.B our engineer was unable to confirm the exact form of internal wall finish due to the non-intrusive nature of the survey. Wall and ceiling finishes are non-structural items but do offer some indication on the condition of the load-bearing walls if defects were noted, e.g. cracking.

Insulation – Rockwool insulation was noted throughout the roof profile, however we were unable to confirm insulation in wall constructions (if present) or the concrete ground bearing slabs due to the non-intrusive nature of the survey.

SECTION 4 STRUCTURAL SURVEY (INSPECTION) - GUIDE FOR CLIENTS

Types of Survey

The Construction Industry Council (CIC) has produced a highly informative leaflet entitled 'Definitions of Inspections and Surveys of Buildings' clarifying the terminology used in conjunction with the various kinds of survey. The term 'Structural Survey' has come into common use to describe a survey which covers all visible and accessible parts of a building.

Eleven different types of 'survey' are described by the CIC and the one which is discussed with here is a 'building survey' which is defined as*an investigation and assessment of the construction and condition of a building and will not normally include advice on value. The survey will generally include the structure, fabric, finishes and grounds; the exposure and testing of services are not usually covered.*

The extent of the survey will be subject to specific agreement between the professional and the client. The report will include reference to visible defects and guidance as appropriate on maintenance and remedial measures.

The current differences in survey nomenclature are further set out in 'Guide to Surveys and Inspections of Buildings & Similar Structures' published by the Institution of Structural Engineers. In consequence, the term 'Structural Survey Report' has been adopted as a preference when preparing reports of this nature.

Purpose of Survey

The primary purpose of a survey is to give an independent professional opinion on the structural condition of a property.

The word 'independent' requires further explanation. In the strict sense of the term the engineer carrying out the survey is acting on behalf of his client, the purchaser, and therefore cannot be wholly independent as he serves the purchaser's interests. However, the main object of such a survey is to ensure that an opinion is given by someone who has no connection with the vendor or their agents.

Those who are best qualified to carry out such work will have considerable experience in the performance of buildings and their components as well as their design and construction. This would suggest that a Chartered Civil / Structural Engineer would be best suited to this type of work.

Clients Instructions

In the first instance the client should provide the engineer with the address and a general description of the property concerned. In particular, the type of property, its age, use, size and the means of access thereto should be noted.

In addition, the client should stipulate any specific requirements for the survey, e.g. if a known defect exists that requires further investigation.

The client should be advised of the method by which the engineer's fees will be calculated. Sometimes it is possible to give an approximate cost if the engineer has knowledge of the property concerned, or if the description by the client is sufficient for the engineer to assess the extent of the work which will be required.

For many years the Royal Institute of Chartered Surveyors attempted to complete a scale rate of charges for building surveys, but this in practice proved very difficult. The reasons are manifold but the principal difficulty is that more time and trouble can easily be spent on a small two up and two down cottage in a bad state of repair, than on a large four or five bedroom dwelling which is of modern construction and in good order.

Generally, fees are charged on an hourly rate.

The client must be advised that the engineer is a 'General Practitioner' and will not provide specialist reports on drainage, heating systems or electrical installations. A broad opinion usually based on visual observation is given in the report but if the client requires more detailed information then the engineer must advise specialist tests and reports which will involve additional costs.

Condition Rating

To help describe the condition of the property, the engineer gives 'Condition Ratings' to the main parts (or elements) of the building. Some elements can be made up of different parts. For example, a home can have a pitched (sloped) roof to the main buildings and a flat roof to an extension. In this case, the engineer will give each a condition rating.

The condition ratings are described as follows :

Condition Rating	Definition
3	Defects which are serious and / or need to be repaired, replaced or investigated urgently (e.g. property is potentially unstable and / or risk of partial or complete collapse).
2	Defects that need repairing or replacing but are not considered to be serious or urgent. The property must be maintained in the normal way.
1	No repair is currently needed. The property must be maintained in the normal way.
NI	Not inspected (See 'Important Note' below)

Important Note

The engineer will only carry out a visual inspection. This means that they do not take up carpets, floor coverings or floorboards, move furniture or remove the contents of cupboards. Also, they do not remove secured panels or undo electrical fittings.

The engineer will inspect roofs, chimneys, and other surfaces on the outside of the building from ground level and, if necessary, from neighbouring public property and with the help of binoculars.

They will inspect the roof structure from inside the roof space if there is access (although they will not move or lift insulation material, stored goods or other contents).

They will examine floor surfaces and under-floor spaces so far as there is access to these (although the engineer will not move or lift furniture, floor coverings or other contents). The engineer is not able to access the condition of the inside of any chimney, boiler or other flues.

The engineer will note in their report if they were not able to check any parts of the property that the inspection would normally cover. If the engineer is concerned about these parts, the report tells you about any further investigations that are needed.

Classification of Visible Damage to Walls (Guide for Clients)

Most buildings develop cracks in their fabric. This often happens soon after construction when many materials are drying out; however sometimes it occurs later during the life of the structure.

Most early cracking is not structurally significant but it may be aesthetically offensive and rain penetration maybe increased. It is easily repaired and unlikely to recur to any great extent. Only rarely does cracking indicate a reduction in structural capacity.

Diagnosis of specific causes of cracking is often difficult; every building is unique and several factors may combine to produce the observed defect. These range from physical changes (i.e. temperature, freeze / thaw action), chemical changes (i.e. sulphate attack, carbonation), imposed load effects (changes to the building load, i.e. extensions / conversions), differential soil movements (i.e. settlement, heave) and vibration (i.e. traffic, mining).

The following information is presented to inform the client about the different crack categories and the influence they have on the performance of the structure.

Damage Category	Description of Typical Damage	Typical Size of Crack	Ease of Repair
0	Hairline cracks classed as negligible	Less than about 0.1mm	No action
1	Fine cracks with damage generally restricted to internal wall finishes. Cracks rarely visible in external brickwork	Up to 1mm	Treated easily during normal decoration
2	Cracks not necessarily visible externally; doors and windows may stick slightly	Up to 5mm	Cracks easily filled. Recurrent cracks can be masked by suitable lining. Some external pointing may be required to ensure water-tightness

Damage Category	Description of Typical Damage	Typical Size of Crack	Ease of Repair
3	Doors and windows sticking. Service pipes may fracture & weather tightness often impaired	5-15mm	Cracks require some opening up and can be patched by a mason. Repoint external brickwork and maybe a small amount of brickwork to be replaced.
4	Extensive damage, especially over doors and windows. Framework distorted, floor sloping noticeably, walls leaning or bulging noticeably. Some loss of bearings in beams & service pipes disrupted	15-25mm	Requires breaking out and replacing sections of walls
5	Structural damage; beams lose bearing, walls lean badly and require shoring; windows broken with distortion; danger of instability	>25mm (but depends on number of cracks)	Requires a major repair job, i.e. partial / complete rebuilding

SECTION 5 – STRUCTURAL SURVEY (INSPECTION) DETAILS

The following section details the condition of the main structural components of the property. A description is provided of defects that were found and the probable cause of their development.

Report conclusions are set out in Section 6. Recommendations for remedial works are discussed in Section 7. A guide to repair costs are detailed in Section 8. Section 9 discusses what to do now.

Roofs

We noted no major undulation, deflection or other distortion to the roof structure of the property, i.e. sagging or leaning of the timber frames to the front or rear elevations – See Photo 1 to 2. However, some sagging was noted to the roof ridge and left hand section of the roof profile – see photo 3 below. This sagging is suspected to be due to the age of the property. This deflection is considered not to be of structural concern and considered to be a characteristic of the property. N.B. further commentary on the condition of the structural timber frameworks follows later in the report, see ‘Internal Condition – Roof Void.’



Photo 1 – Front Roof Profile



Photo 2 – Rear Roof Profile

There is no obvious indication of the roof structure ‘spreading’ or pushing out, which would otherwise have a noticeable effect on the stability and alignment of the load-bearing walls, which in turn would develop cracking and possibly spalling / detachment of external render finishes from the substrate below (i.e. the load-bearing masonry).

The tile covering (including ridge tiles) is generally complete with no obvious indication of missing tile units, although they are in a substandard condition (see further commentary below).

The lifespan of composite slate roof coverings can vary depending on the quality of the materials used, although 40-60 years (50 average) would be a reasonable assumption (as per the table below).

The original roof tiles to the property would have been replaced in the past, partly due to the presence of roofing felt (as noted by our internal inspection of the roof void) and the fact that the condition of the external roof coverings are not representative of tiles that are 200 years old (estimated age of the property). Roofing felt (or sarking felt) was introduced in the 1960/70s, so it would be reasonable to assume that the roof tiles to 60 Commercial were changed after this date (i.e. approximately 50-60 years ago).

Theoretically, the roof tiles have reached their minimum design life and should be replaced (based on the current age and condition of the roof tiles) although degradation / delamination of roof tile materials can differ depending on the quality of tiles used and the environment and weather conditions (which vary across the UK).

N.B. Any decision to replace the roof tile coverings shall be based on their ability to act as the primary barrier to resist rainwater penetration into the property. If rainwater

penetration develops through the external roof fabric then roof tile coverings will need to be replaced either locally or as a whole. Further commentary on the weather-tightness of the roof structure is discussed further in this report, see ‘Internal Condition – Roof Void.’

	Years
Hot-bonded, built-up mineral felt flat roofs to BS 747, well constructed	10–15
Hot-bonded, built-up felt roofs constructed to lesser standards	3–10
Good quality flat lead roofs, well detailed and laid with rolls	80–100
Good quality flat copper roofs, well detailed	30–75
Zinc roofs, well laid with rolls, in areas not subject to chemical pollution	20–40
Zinc roofs in situations of chemical pollution	15–20
Asphalt, well laid and detailed, in two coats to BS CP 144, Part 4: 1970	20–40
Hand-made clay tiles with battens and sarking felt	60–70
Machine-cut clay tiles with battens and sarking felt	40–60
Plain concrete tiles, double lap with battens and sarking felt	50–90
Interlocking concrete tiles with battens and sarking felt	50–80
Interlocking Dutch or Belgian clay tiles	40–60
Asbestos-cement tiles or roofing sheets	20–25
Good quality Norfolk reed thatch	50–60
Straw thatch	20–25
Local stone slabs (depending upon porosity)	10–100
Good quality Welsh slates with battens and sarking felt	80–100
Poorer slates, subject to lamination with age	40–60
Shingles (depending upon quality and frequency of treatment)	5–30
Perspex, clear or obscure unplasticised polyvinyl chloride (PVCu) sheets, etc. (depending upon brittleness, etc.)	5–25

Typical Life Span of Roof Covering Materials

The periphery of the roof profile, i.e. the top ‘ridge’ level, the lower ‘eaves’ level and ‘verge’ lines in between appear in a reasonable condition overall, although please see our comments above regards condition of the tiles overall.

The roof periphery and the adequate ‘closure’ between the roof line and the top of the load-bearing walls is important as the aim is to ensure the roof profile remains weather-tight and does not allow rainwater to penetrate the internal roof void area or to the top of the load-bearing cavity walls. All timber panelling to fascia boards were present but weathered and some had rot present. We’d recommend that fascia boards are fully replaced. Further commentary on the weather-tightness of the roof coverings are discussed further in the report, see ‘Internal Inspection – Roof Void.’



Photo 3 – Bowing to Roof (Front Roof Profile)



Photo 4 – Defective Guttering (Front Roof Profile)

Defective guttering was evident, see example in Photo 4 above. Roof drainage shall be replaced throughout.

We noted the absence of passive ventilation route into the main roof profile. This is discussed in more detail below in 'Ventilation'.

Condition of main roof profile based on an external inspection - Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required.

Walls

The front and rear / side walls of the property did not indicate any sign of external wall movement, bulging or misalignment of elevations to the property. The vertical and horizontal alignment of the external walls is satisfactory, which suggests the load-bearing wall constructions continue to act compositely and maintain support to the superstructure loading (i.e. roof loading, first floor loading and the load-bearing walls self-weight) – See Photos 5-6.



Photo 5 – Front Wall Elevation



Photo 6 – Rear Wall Elevation

The survey noted areas of missing render to the rear elevation – see photos 7-8 below. Due to the condition of the render to the rear of the property it is recommended that the render to the rear of the property is removed in its entirety and replaced. Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required

Render cracking (damage category 1) was noted to both sides of the window on the front wall elevation – see photo 9 below. These cracks are expected to be due to render shrinkage which will require repairs to negate rainwater penetrating behind the render (via capillary action) which can otherwise spread and become entrapped behind the render, which can encourage de-bonding of the render via freeze-thaw actions. These cracks have led to de-bonding of the render in these areas and the cause of the penetrating damp into bedroom 2 of the property. Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required

At the time of the investigation no high level tap tests were carried out therefore the render above 2m was not assessed (N.B. our company health and safety policy prohibits ladder access greater than a single storey). The tap tests confirmed that a number of areas of render to the front elevations had detached from the masonry behind.

Several areas of exposed masonry were evident to the rear elevation and some units had deteriorated. A void was also noted where previous infilling had been attempted. We'd recommend that, following removal of the render, that the load-bearing masonry is inspected to confirm no structural defects occur (e.g. compressive / crushing, shear type failures) and that mortar joints remain serviceable (to ensure compatibility between masonry units). Some local repairs are envisaged).

A part remaining timber structure was noted at the rear. This is in a very poor condition and will need to be demolished.

During the survey bowing was noted to the timber ceiling of the entrance – see photo 10 below. It is recommended that the timber boarding is removed from the entrance ceiling to assess the condition of the supporting timber above and undertake any necessary repairs where required. Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

All door and window openings through the load-bearing walls remained ‘square’ and there was no obvious sign of structural cracking or other defects adjacent to the openings that could otherwise suggest issues with the load bearing walls.



Photo 7 – Missing Render (Rear Wall Elevation)



Photo 8 – Missing Render (Rear Wall Elevation)



Photo 9 – Render Cracking to Both Sides of the Window (Front Wall Elevation)



Photo 10 – Bowing to Entrance Ceiling (Front Wall Elevation)

Ventilation

No air bricks were noted to the external wall elevations. The property at 60 Commercial Street has a basement with a ground bearing slab and solid walls, so a means of natural ventilation is necessary to allow air to circulate within the basement. All properties with basements should have provision for a free flowing passage of air into the basement. It is recommended that air bricks or other form of passive ventilation to the basement is installed at the property. Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

Additionally, current Building Regulation requirements specify that a permanent free flow of air be provided to the internal living areas to prevent the build-up of moisture, damp and condensation. This natural ventilation is usually provided by ‘trickle vents’ installed in windows and doors – See Figure 1 below, or by having windows with a secondary lock that allows the windows to ventilate (while maintaining security) – See Figure 2.

It was noted that trickle vents were absent from the window frames in the original property, so there is an inadequate means of providing passive ventilation to evacuate internal condensation and moisture - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required. Although not a structural issue, the window / door frames at the rear of the property are in poor condition and should be replaced.

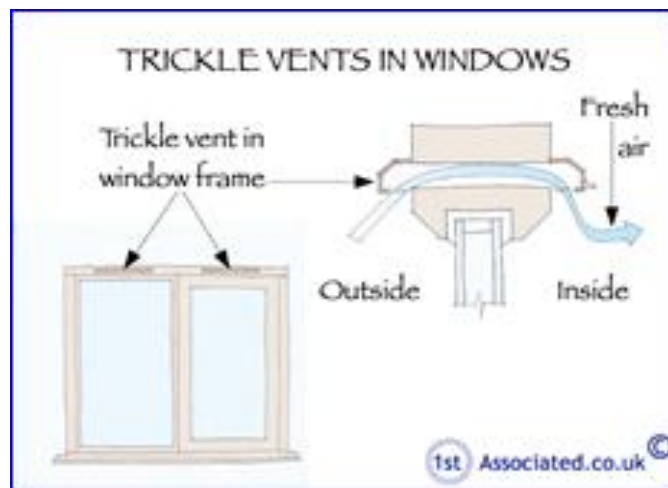


Figure 1 : Trickle Vents to Window Frames



Figure 2 : Double Security Locks to Window Frames
(to aid ventilation while maintaining security)

Having natural ventilation in the roof void is also required by current Building Regulations as it prevents the onset of defects developing to the structural roof timbers, e.g. dry rot. The solution is to install either 'ventilation roof tiles' to the front and rear roof profiles OR to install 'ventilation slots' to the soffit boards at eaves level (See Figures 3 and 4 below).



Figure 3 : Ventilation Roof Tiles



Figure 4 : Ventilation Soffit Boards

Both the ventilation tiles and ventilation slots serve the same purpose which is to ensure a free air path into the roof void to negate the build up of moisture and the potential for defects to occur (e.g. dry rot in the structural timber sections).

We noted the absence of passive ventilation route into the main roof profile. Passive ventilation is required to ensure moisture and condensation that builds up within the roof void has an opportunity to escape (otherwise it would attach itself to the structural timber frameworks and create defects in the form of dry rot) - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

Foundations

The Public Health Act of 1875 introduced bylaws for new properties to ensure structural stability of houses and prevent fires, which included the need to construct properties on a suitable concrete footing. As the original property is expected to date back 150 years a solid concrete footing as required post 1875 cant be guaranteed. In this regard, the type of foundation would most likely have consisted of a stone footing of suitable width either side of the solid walls to safely transmit wall loadings into the supporting ground (without inducing settlement).

The adequacy of the foundations to support the super-structure loading from the property is assessed by the condition of the above ground portion of the property that is visible to us for inspection. Of prime interest would be the alignment of roof and wall profiles (e.g. sagging, bowing, leaning), in addition to the presence of cracks to the load-bearing cavity walls (both internally and external).

Where cracking is evident, it's important to understand how this has occurred and its probable cause, either from **physical changes** (i.e. temperature, freeze / thaw action), **chemical changes** (i.e. sulphate attack, carbonation), **imposed load effects** (changes to the building load, i.e. extensions / conversions), **differential soil movements** (i.e. subsidence, settlement, heave) and **vibration** (i.e. traffic, mining). It is important to establish whether a risk remains for any further crack development that could affect the structural integrity of the property.

As noted previously, there was no clear evidence of external 'structural' cracking to wall finishes that could have been caused by problematic / excessive building movement, or misalignment of door and window openings (which would be apparent if excessive building movement and cracking to external and internal walls had been observed). Some cracks were notes to the wall elevations (internally and externally), defective / spalled render but these are not linked to problematic foundation failures. The roof profile remains satisfactory also from a building movement perspective.

We do not consider the property to be at risk of building movement through foundation failure or consolidation / settlement, subsidence or heave of the supporting ground below based on the inspection conducted and the evidence collated.

Condition Rating **NI** as the foundations could not be fully inspected.

Structural Dampness

'Structural dampness' is the presence of unwanted moisture in the structure of a building, either the result of intrusion from outside or condensation from within the structure.

A high proportion of damp problems in buildings are caused by condensation, rain penetration or rising damp – see Figure 5 below.

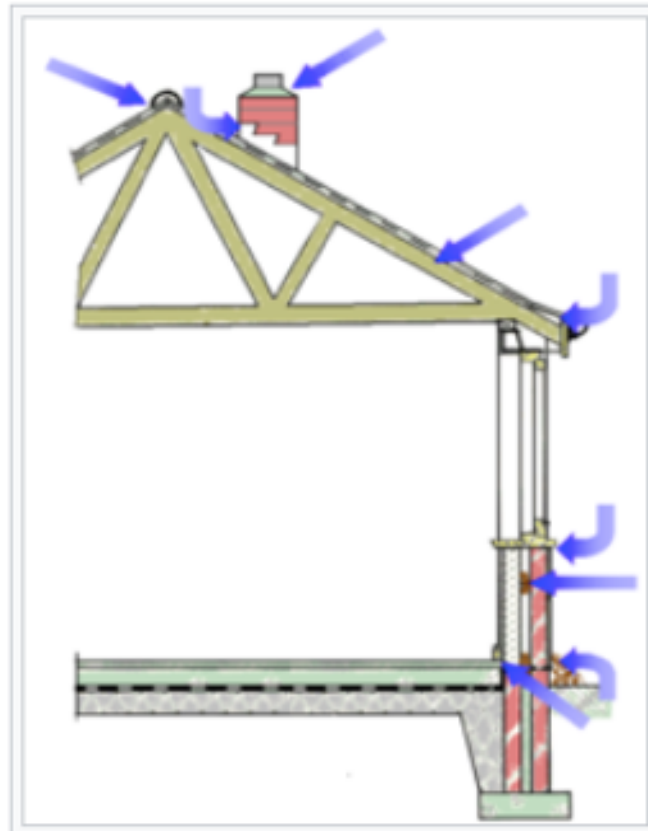


Figure 5 – Detail showing some of the causes of damp penetration

Rain Penetration (also known as "penetrating damp" is a common form of dampness in buildings. It can occur through walls, roofs, or through openings (e.g. window reveals).

Water will often penetrate the outer envelope of a building and appear inside. Common defects include:

- Roof defects such as faulty flashing, cracked or missing slates or tiles.
- Faults in the brickwork or masonry such as missing or cracked pointing. Porous bricks or stones.
- Missing or defective mastic around windows and doors.
- Blocked weep holes.
- Missing or defective trays in cavity walls.

An inspection of potential damp in roofs and external walls is discussed in 'Internal Condition' below. For the case of potential rising damp, this would be prevented by the presence of an adequate damp proof course (DPC) to load-bearing walls and the presence of a Damp Proof Membrane (DPM) to concrete ground bearing slabs.

The damp proof course (DPC) provided to the property could not be ascertained due to the non-intrusive nature of the survey. However, for the type and age of the original property we consider this DPC may have taken the form of a layer of slates applied 150mm above finished ground level. Although it's also conceivable that no dpc exists due to the irregular shape / arrangement of the solid stone works (unless one has been retrospectively installed by the current or past owners).

For the lower ground floors (basement), modern day standards require a DPM consisting of a layer of heavy duty polythene sheeting (or 'Visqueen') applied to the underside of the slabs before placement / construction was undertaken to prevent the slab gaining moisture through capillary action – see example in image below. Clearly the basement floor (flagstones) does not meet building regulation requirements and will need to be replaced.



Example of a Damp Proof Membrane being installed before placement of concrete slab

The presence of a suitable DPC and DPM would be required to prevent the ingress of moisture via rising damp migrating through the load-bearing wall constructions and ground floor slabs and entering the internal living space.

Condition Rating **NI** as the DPC and DPM (if present) could not be inspected. However, further discussion on the presence of damp is discussed below for each of the habitable rooms inspected.

*N.B. Structural Surveys UK **do not use** 'Damp Meters' to initially assess the presence of moisture in a property. To be clear, damp meters are unreliable in measuring damp and are not appropriate for use in measuring moisture content in masonry, plaster. British Standard 5250: 2011 (Code of Practice for the Control of Condensation in Buildings) clearly states on Page 19 the following:*

B 8: Measurement of dampness

Accurate measurements of the moisture content of brick or mortar cannot be obtained by the use of electrical moisture meters because the presence of salts increases the electrical conductance of the water, giving falsely high readings. Gravimetric methods carried out on samples taken from the fabric give the most reliable results. The use of chemical absorption type moisture meters will give a result in a short space of time and be almost as reliable.



‘Damp’ Meter used by Surveyors

(N.B. Structural Surveys UK **do not use these devices** due to their unreliability)

Our approach for assessing damp in walls is to check for any obvious means of rainwater to penetrate the wall thickness and migrate through to the internal wall surface which can lead to blistering emulsion / plasterwork, unpleasant damp smells, ‘brown’ stains on walls or indeed black mould marks). This includes (but not limited to) checking the condition of the external masonry wall surfaces, mortar joints and render where applicable. Also, to check peripheral roof drainage remains in good condition and is not discharging rainwater down the face of the external walls (which would otherwise encourage damp to form internally), external ground levels, damaged below ground drainage (where possible). Internal wall finishes also provide an indication whether damp is present (as described above).

If damp is suspected at a level that would be detrimental to the performance of the building then we would undertake testing of material samples (e.g. in a laboratory facility or onsite Gravimetric tests) to assess the actual level of moisture present. However, before any testing is considered one has to detect its visual presence first and assess whether a material sample test is justified (N.B. material sample tests are outside the scope of this report).

Internal Condition

Roof Void

There was limited access to inspect the roof structure to the main property due to lack of runner / floor boarding in the roof space. Our inspection was performed by access adjacent to the loft opening to ensure the safety of our engineer and to prevent any damage to exposed ceilings within the roof void. The layout and configuration of the internal roof structure to the original property can be seen in Photo 11-13.

The structural timber frameworks consist of rafter sections supported at the top of the load-bearing walls and extending diagonally up to the ridge level where they abut the rafters from the opposite side of the roof. These are supported by two horizontal purlin / beam equally spaced along the length of the rafters which are in turn extends between and are directly supported via the party walls and primary rafters.



Photo 11 – Timber Roof Frameworks



Photo 12 – Timber Roof Frameworks



Photo 13 – Timber Roof Frameworks

The layout of the principal structural members is suitably configured to support the external roof coverings (tiles) as well as external loading (snow and wind).

There was no obvious indication of distress or misalignment of the structural timber members, i.e. noticeable deflection, bending or torsional (twisting) effects that would otherwise suggest potential issues with the structural integrity of the roof. We did not identify any obvious areas of major dry / wet rot or insect infestation (e.g. woodworm) that could possibly affect the integrity of the roof. Some of the timber members have water marks present / surface deterioration which would be expected as the roof would not have had roofing felt present when the property was originally built. Also, as the roof tiles will have been replaced in the past (due to the presence of heavy duty roofing felt) then it will have been subject to condensation attack due to the lack of passive ventilation. Treatment of the timbers is recommended.

Some timber members have been previously repaired as some rafters have been cut and new sections installed (albeit some years ago now).

The strength and stiffness properties of the structural timber frameworks appears to remain adequate and the condition of the structural timbers is as one would expect for a property of this type and age, although some remedial works are necessary as noted above.

Roofing felt was installed to the underside of the roof profile and appears in adequate condition overall, although some areas are loose / substandard. Apart from the external roof tiles (which provides the main rainwater barrier), roofing felt would offer an extra weather barrier in case of blow-offs or water penetration through the roofing or flashing. Its absence would lead to potential leakage into the roof void. Some evidence of previous patch repairs to the roofing felt was noted during the survey.

Indications of vermin were noted within the roof void – see photos 14-15 below. It is recommended that a pest control specialist is consulted which can provide specialist advice on removing the wildlife from the property - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.



Photo 14 – Indications of Vermin (Main Roof Profile)



Photo 15 – Indications of Vermin (Main Roof Profile)

A further issue to note is that Building Regulations require a permanent and passive free flow of air is provided to the roof void to prevent the onset of defects developing. Dry rot for example can occur and attack the structural timber if moisture in the roof space (lack of ventilation, water penetration / leakage etc) is combined with other conditions (e.g. humid temperatures).

Dry rot typically occurs in timber where the moisture content exceeds 20%. This moisture can be exacerbated by the lack of a free passage of air into the roof void area, which is evident in this case (i.e. no roof ventilation tiles are present).

Dry rot affects mostly softwoods and often causes extensive damage. Remedial works can be very expensive. Dry rot is sensitive to high temperatures (over 25°C) and drying, and is therefore rarely found on exposed timbers or in situations where fluctuating conditions are likely (such as well ventilated roof spaces or sub-floors). It is able to grow through bricks and mortar but requires timber to feed on. Strands can transport moisture from damp areas, allowing the spread of fungus to dry wood in unventilated conditions. The fungal characteristics are silk white sheets or cotton wool-like mycelium, white to grey strands (sometimes as thick as a pencil), yellow or red fruiting body with white or grey edges and profuse reddish brown dust spores. Dry rot can cause widespread structural damage.

Decayed wood has a dull brown colour, typically with deep cracks across the grain. It is light in weight, crumbles between the fingers and there is no skin of sound wood.

We noted the absence of passive ventilation route into the main roof profile. Passive ventilation is required to ensure moisture and condensation that builds up within the roof void has an opportunity to escape (otherwise it would attach itself to the structural timber

frameworks and create defects in the form of dry rot) - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

Bedroom 1, 2, 3, Bathroom and Kitchen (First Floor)

No deflection or distortion to the ceiling finishes were evident in the bedrooms, bathroom and kitchen. This would suggest the horizontal timber roof beams above (which provide support to the ceiling finishes) are satisfactory from a structural perspective, continue to perform as intended and that sagging / deflection is not a concern. We do recommend treatment of the roof timbers is undertaken (as noted previously) - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.



Photo 16 – Bedroom 1



Photo 17 – Bedroom 2



Photo 18 – Bedroom 3



Photo 19 – Bathroom



Photo 20 – Kitchen



Photo 21 – Landing

Overall, internal walls remain in a satisfactory condition from a load-bearing structural perspective, i.e. the walls maintain their ability to support and transfer building loads through the structure down to foundation level. The vertical and horizontal alignment of the walls are adequate, with no sign of structural cracking, spalling of the plaster finish which would otherwise suggest the potential for structural defects. Internal cracking (damage category 1) to plaster finishes were noted in the kitchen, bathroom and the landing – see photos 23-25, 28-32 and 35 below. This cracking is low grade in nature and expected to be confined to the non-structural plaster finishes only. There is no loss of structural support or failure of the wall panel at this location. Some plaster finishes are considered substandard and should be replaced - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

Cracking (damage category 1) was noted to the studwork wall in the kitchen and bedroom 1 – see photos 22 and 26-27 below. These are not considered to be of structural concern and can be remediated through general maintenance and decoration.

Cracking (damage category 1) was noted to the windowsill in the bathroom – see photos 33-34 below. These are not considered to be of structural concern and can be remediated through general maintenance and decoration.

During the survey it was noted that the floor to bedroom 1 sagged which indicates there was some flexure to the joists. Further intrusive inspection is needed, by removing floor boards, to check the adequacy of the timber beam frameworks beneath. The remainder of the first floors appear adequate. The floor condition is satisfactory and considered to be sufficient to support vertical floor loads and also act as a lateral tie support to the external and internal walls – Condition Rating **NI**. N.B. We were unable to confirm the actual condition of the supporting timber beams to the first floor (due to the non-intrusive nature of the survey) so the presence of woodworm, rot etc could not be confirmed. Further inspection by the owners should be performed to corroborate this.



Photo 22 – Cracking to Edge of Studwork Wall (Kitchen)



Photo 23 – Wall Plaster Cracking (Kitchen)



Photo 24 – Wall Plaster Cracking (Kitchen)



Photo 25 – Wall Plaster Cracking (Kitchen)



Photo 26 – Cracking to Edge of Studwork Wall (Kitchen)



Photo 27 – Cracking to Studwork Wall (Bedroom 1)



Photo 28 – Wall Plaster Crack (Bathroom)



Photo 29 – Wall Plaster Crack (Bathroom)



Photo 30 – Wall Plaster Crack (Bathroom)



Photo 31 – Wall Plaster Crack (Bathroom)



Photo 32 – Wall Plaster Crack (Bathroom)



Photo 33 – Crack to Windowsill (Bathroom)



Photo 34 – Crack to Windowsill (Bathroom)

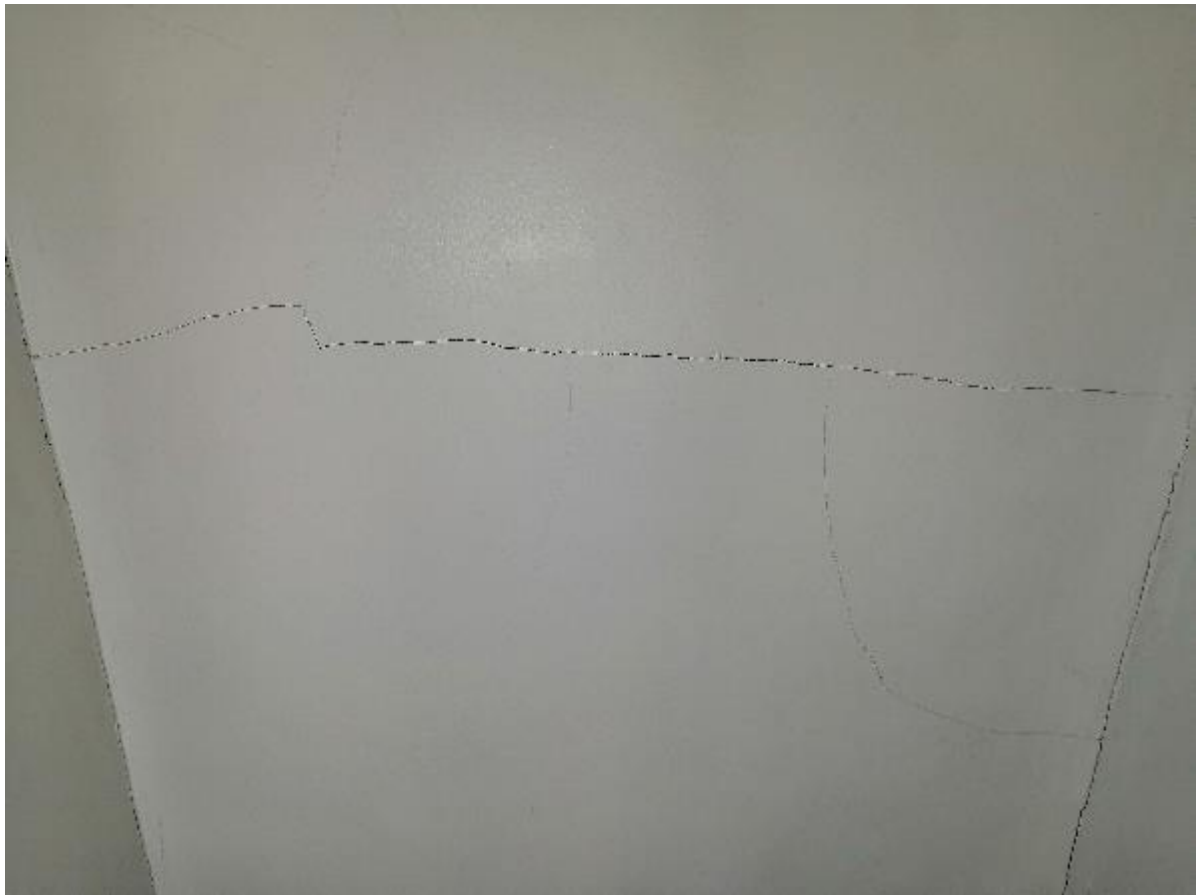


Photo 35 – Wall Plaster Crack (Landing)

Window condition* and alignment is satisfactory (i.e. open / close without catching), which indicates no movement of the walls or the foundations which support them. Trickle vents (or other means of ventilation, i.e. by having windows with a secondary lock that allows the windows to ventilate) should be provided to enable the free flow of air into the property. The windows had no trickle vents present in the frameworks so are unsatisfactory to provide passive ventilation into the property – Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required

** Window condition is only checked to support our assessment on whether any movement (settlement / heave) of the property has occurred, i.e. any consequential damage to the frames that prevents them being opened / closed, and whether they provide an adequate means of internal ventilation. Our report does not address the actual condition of the windows in terms of their acoustic and / or thermal performance. Any defects to the windows that have not been caused by structural movement of the property or are not associated with ventilation are out of scope of this report*

An inspection was undertaken to confirm the presence of damp in the property. Penetrating damp was noted to the front wall elevations in bedroom 1 and 3 and penetrating damp was noted to the rear wall elevation on the landing – see photos 36-40 below. We'd expect that the cause of these areas of penetrating damp is the condition of the external render to the front and rear wall elevation along with the substandard roof drainage. It shall be recognised that solid wall construction as adopted throughout the original property offers less protection against penetrating damp when compared to cavity wall construction. Damp can be more prevalent during winter months and can be exacerbated by cracked or defective external render and mortar joints / pointing. Damage to internal wall surfaces most commonly occur due to inadequate passive ventilation into the habitable rooms (i.e. no trickle vents or secondary locks in the window frames), where moisture and condensation is not given an opportunity to escape and ends up damaging the internal wall finishes over time (i.e. condensation damage). Condensation damp was evident to a number of internal surfaces. To minimize and control the build up of moisture internally (and thus damage to internal wall surfaces), a passive means of ventilation is necessary as discussed above regarding trickle vents in the window frameworks - Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required.



Photo 36 – Penetrating Damp (Bedroom 1)



Photo 37 – Penetrating Damp (Bedroom 1)



Photo 38 – Penetrating Damp (Bedroom 3)



Photo 39 – Penetrating Damp (Bedroom 3)



Photo 40 – Penetrating Damp (Landing)

Living Room 1, 2 and Storeroom (Ground Floor)

Overall, no deflection or distortion to the ceiling finishes were evident to any of the ground floor rooms. This would suggest the timber first floor beams above (which provide support to the ceiling) are satisfactory from a structural perspective, continue to perform as intended and that sagging / deflection is not a concern. However, please note our comments regards sagging to bedroom 1 floor and so further investigation is necessary. We noted a ceiling crack to the storeroom – see photos 50-51 below. This crack is expected to be caused by flexure of the ceiling joists due to loading of the 1st floor rooms. Some ceiling finishes are substandard and should be replaced - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required



Photo 41 – Reception Room 1



Photo 42 – Reception Room 2



Photo 43 – Storeroom



Photo 44 – Base of Stairs



Photo 45 – Corridor

Overall, internal walls remain in a satisfactory condition from a load-bearing structural perspective, i.e. the walls maintain their ability to support and transfer building loads through the structure down to foundation level. The vertical and horizontal alignment of the walls are adequate, with no sign of structural cracking, spalling of the plaster finish which would otherwise suggest the potential for structural defects. Internal cracking (damage category 1) to plaster finishes along with detached/de-bonded plaster were noted in the storeroom and living room 2 – see photos 48-50 and 52-53 below. This cracking is low grade in nature and expected to be confined to the non-structural plaster finishes only. Plaster finishes are considered substandard in areas and should be replaced - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required

Cracking (damage category 1) was noted to the studwork wall at the base of the staircase – see photos 46-47 below. These are not considered to be of structural concern and can be remediated through general maintenance and decoration.

Inspection of the ground floors did not indicate any problematic sagging or deflection of floor boards to the reception rooms and storeroom (and by default the supporting timber beams and other frameworks beneath). Initially, the ground floor condition appeared adequate. Further inspection from within the basement did confirm some issues to the suspended ground floor here (discussed later in the report).



Photo 46 – Cracking to Studwork Wall (Base of Stairs)



Photo 47 – Cracking to Studwork Wall (Base of Stairs)



Photo 48 – Detached Plaster (Storeroom)



Photo 49 – Cracked and Detached Plaster (Storeroom)



Photo 50 – Cracking to Wall and Ceiling (Storeroom)



Photo 51 – Ceiling Cracking (Storeroom)



Photo 52 – Wall Plaster Crack (Living Room 2)



Photo 53 – Cracked and Detached Plaster (Living Room 2)

Window condition* and alignment is satisfactory (i.e. open / close without catching), which indicates no movement of the walls or the foundations which support them. Trickle vents (or other means of ventilation, i.e. by having windows with a secondary lock that allows the windows to ventilate) should be provided to enable the free flow of air into the property. The windows to the front of the property had no trickle vents present in the frameworks so are unsatisfactory to provide passive ventilation into the property – Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required

** Window condition is only checked to support our assessment on whether any movement (settlement / heave) of the property has occurred, i.e. any consequential damage to the frames that prevents them being opened / closed, and whether they provide an adequate means of internal ventilation. Our report does not address the actual condition of the windows in terms of their acoustic and / or thermal performance. Any defects to the windows that have not been caused by structural movement of the property or are not associated with ventilation are out of scope of this report.*

An inspection was undertaken to confirm the presence of damp in the property. There was no obvious evidence of rising damp (i.e. tide marks to the base of walls) or penetrating damp to walls or ceilings at the time of our inspection (e.g. blistering emulsion / plasterwork, unpleasant damp smells, circular or oval damp or ‘brown’ stains on walls). It shall be recognised that solid wall construction as adopted throughout the original property offers less protection against penetrating damp when compared to cavity wall construction. Damp can be more prevalent during winter months and can be exacerbated by cracked or defective external render and mortar joints / pointing. Damage to internal wall surfaces most commonly occur due to inadequate passive ventilation into the habitable rooms (i.e. no trickle vents or secondary locks in the window frames), where moisture and condensation is not given an opportunity to escape and ends up damaging the internal wall finishes over time (i.e. condensation damage). Condensation damp marks were noted around the window in the living room 2 – see photo 54 below. To minimize and control the build up of moisture internally (and thus damage to internal wall surfaces), a passive means of ventilation is necessary as discussed above regarding trickle vents in the window frameworks (which are present) - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.



Photo 54 – Condensation Damp (Living Room 1)

Basement

Damp and mould growth were noted to the ground floor boards and joists in basement room 2 and 4 – see photos 64 and 66-69 below. This is expected to be due to the beam ends being supported directly by the solid walls (and so susceptible to moisture attack) and a lack of passive ventilation into the basement. Repairs will be needed - Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required



Photo 55 – Basement Room 1



Photo 56 – Basement Room 2



Photo 57 – Basement Room 3



Photo 58 – Basement Room 4

Overall, the main internal walls remain in an adequate condition from a load-bearing structural perspective, i.e. the walls maintain their ability to support and transfer building loads through the structure down to foundation level. The vertical and horizontal alignment of the walls are adequate, with no sign of structural cracking, spalling of the plaster finish which would otherwise suggest the potential for structural defects. Some of the brickwork infill panels are in poor condition and should be repaired. Internal cracking to plaster/render finishes were noted in the basement room 2 – see photo 59 & 60 below. Repairs are needed to include the removal and reinstatement of areas of de-bonded plaster (along with a check on the load-bearing wall condition - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required

Cracking was noted to the external wall of basement room 3 – see photos 61-62 below. We were unable to confirm if the cracks are mirrored on the opposite face of the wall as access to the opposite face of the wall is not available. It is recommended that the plaster/render finish. It is recommended that further intrusive investigation through removal of the internal plaster/render should be carried out in order to establish if the cracking has penetrated the substrate below - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

Corrosion to the steel beam below the basement was noted in basement room 4 – see photo 63 below. This corrosion is expected to be due to penetrating damp within the area. It is recommended that the steel beam is removed and replaced or a strengthening beam is installed below. Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.

No indication of movement (through subsidence, settlement or heave), deflection, cracking or other defects to the flag stone floor. However, the floor construction is substandard, does not conform with Building Regulations and should be replaced throughout - Condition Rating **2** See Section 7.0 Recommendations for guidance on repair works required.



Photo 59 – Crack Above Fire Place (Basement Room 2)



Photo 60 – Crack to Internal Wall (Basement Room 2)



Photo 61 – Crack to External Wall (Basement Room 3)



Photo 62 – Crack to External Wall (Basement Room 3)



Photo 63 – Corrosion to Beam Below Pavement (Basement Room 4)

An inspection was undertaken to confirm the presence of damp in the property. Penetrating damp was noted to the internal basement walls (see examples in Photos 70-71 below) along with rising damp (see example in Photo 65 below.) It shall be recognised that solid wall construction as adopted throughout the original property offers less protection against penetrating damp when compared to cavity wall construction. Damp can be more prevalent during winter months and can be exacerbated by cracked or defective external render and mortar joints / pointing. The damp to the basement is exacerbated by the lack of tanking or other internal protection that would otherwise prevent damp migrating into the wall and slabs. Remedial works will be necessary to ensure the basement can remain dry - Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required.



Photo 64 – Damp to Floorboards and Joists (Basement Room 2)



Photo 65 – Rising Damp (Basement Room 3)



Photo 66 – Damp to Ends of Floor Joists (Basement Room 4)



Photo 67 – Damp to Ends of Floor Joists (Basement Room 4)



Photo 68 – Damp to Ends of Floor Joists (Basement Room 4)



Photo 69 – Rot and Mould Growth to Floor Joists (Basement Room 4)



Photo 70 – Penetrating Damp (Basement Room 4)



Photo 71 – Penetrating Damp (Basement Room 4)

Rear Timber Structure

A 2 storey timber structure was located at the rear of the property. The timber structure is in a significant state of disrepair. The roof structure was mostly missing and has exposed the internal timbers to the elements. Rotten and damaged timber boards and members as well as corrosion to steelwork were present throughout the timber structure - see Photos 72-77 below. This timber structure is in an unsafe condition and it is recommended that the structure is demolished. It should be noted that the timber structure is not suspected to provide structural support to the main property. During demolition of the structure it is recommended that closer inspection of the areas where the timber structure connects to the original property should be undertaken to confirm if any damage has been caused to the original property from the degradation of the timber structure. Condition Rating **3** See Section 7.0 Recommendations for guidance on repair works required.



Photo 72 – Timber Structure Roof



Photo 73 – Timber Structure Basement



Photo 74 – Timber Structure Floor



Photo 75 – Timber Structure Floor



Photo 76 – Timber Structure Floor



Photo 77 – Timber Structure Floor

Clients Requirements

1) Timber Column and Beam in Basement

A timber beam and column were noted within basement room 4 of the property. These timber members provide support to floor joists of reception room 1 on the ground floor. The timber beam and columns cannot be removed without a replacement support being provided to the floor joists.

Due to the presence of damp within the basement it is expected that this timber column and beam will eventually rot. The timber members can be treated along with the remedial works to prevent moisture and damp within the basement.

If the timber column is required to be removed or a longer-term solution is required it is suggested that the timber beam and column arrangement is replaced with a steel beam supported on the existing walls. Structural design and calculations would be required for the sizing of the steel beam and if a steel column is required.



Photo 78 – Timber Column and Beam (Basement Room 4)

SECTION 6

CONCLUSIONS

Having completed a structural survey to 60 Commercial Street in Ystalyfera, we conclude its present-day condition to be substandard and requiring significant repair. There are a number of defects present as shown below :

The Condition Rating **3** defects that require remedial works in a more timely manner are :

- Theoretically, the roof tiles have reached their minimum design life and should be replaced (based on the current age and condition of the roof tiles).
- The survey noted areas of missing render to the rear elevation – see photos 7-8. Due to the condition of the render to the rear of the property it is recommended that the render to the rear of the property is removed in its entirety and replaced.
- Penetrating damp was noted to the front wall elevations in bedroom 1 and 3 and penetrating damp was noted to the rear wall elevation on the landing – see photos 36-40. We'd expect that the cause of these areas of penetrating damp is the condition of the external render to the front and rear wall elevation along with the substandard roof drainage.
- Damp and mould growth were noted to the ground floor boards and joists in basement room 2 and 4 – see photos 64 and 66-69. This is expected to be due to the beam ends being supported directly by the solid walls (and so susceptible to moisture attack) and a lack of passive ventilation into the basement.
- Penetrating damp was noted to the internal basement walls (see examples in Photos 70-71) along with rising damp (see example in Photo 65).
- The timber structure to the rear is in a significant state of disrepair, is in an unsafe condition and it is recommended that the structure is demolished.

The Condition Rating **2** defects that will require remedial works to prevent further more problematic degradation occurring are as follows:

- We noted the absence of passive ventilation route into the main roof profile. Passive ventilation is required to ensure moisture and condensation that builds up within the roof void has an opportunity to escape (otherwise it would attach itself to the structural timber frameworks and create defects in the form of dry rot).
- Trickle vents were absent from the window frames so there is an inadequate means of providing passive ventilation to evacuate internal condensation and moisture. Some of the window frames are sub-standard and should be replaced.
- Render cracking (damage category 1) was noted to both sides of the window on the front wall elevation. It is expected that these cracks have led to de-bonding of the render in these areas and the cause of the penetrating damp into bedroom 2 of the property.
- During the survey bowing was noted to the timber ceiling of the entrance.
- All properties with basements should have provision for a free flowing passage of air into the basement.

- Indications of vermin were noted within the roof void.
- Corrosion to the steel beam below the basement was noted in basement room 4.
- All timber panelling to fascia boards were present but weathered and some had rot present. We'd recommend that fascia boards are fully replaced.
- Defective guttering was evident, see example in Photo 4.
- Several areas of exposed masonry were evident to the rear elevation and some units had deteriorated. A void was also noted where previous infilling had been attempted.
- Some of the timber members have water marks present / surface deterioration. Treatment of the timbers is recommended.
- Roofing felt was installed to the underside of the roof profile and appears in adequate condition overall, although some areas are loose / substandard.
- Some internal plaster finishes are considered substandard and should be replaced.
- The floor to bedroom 1 sagged which indicates there was some flexure to the joists..
- Condensation damp was evident to a number of internal surfaces.
- Some of the brickwork infill panels are in poor condition and should be repaired.
- Internal cracking to plaster/render finishes were noted in the basement room 2 – see photo 59 & 60 and external wall of basement room 3 – see photos 61-62. Repairs are needed to include the removal and reinstatement of areas of de-bonded plaster (along with a check on the load-bearing wall condition)
- The basement floor construction is substandard, does not conform with Building Regulations and should be replaced throughout.

SECTION 7

RECOMMENDATIONS

The Condition Rating **3** defects:

- 1). Theoretically, the roof tiles have reached their minimum design life and should be replaced (based on the current age and condition of the roof tiles).

Roof tiles to be replaced with an equivalent tile unit (i.e. shall not be a heavier tiles unit to prevent overloading the roof frameworks), new breathable roofing felt and timber battens.

- 2). The survey noted areas of missing render to the rear elevation – see photos 7-8. Due to the condition of the render to the rear of the property it is recommend that the render to the rear of the property is removed in its entirety and replaced.

Render shall be fully removed, following which the wall surface condition is check and all necessary repairs carried out prior to reinstaement of the render. It is envisaged that this may require some masonry units to be broken out and replaced. All works shall take cognisance of Eurocode 6 ‘Structural use of Masonry’ where necessary to ensure the correct masonry unit strength and mortar designation are adopted.

- 3). Penetrating damp was noted to the front wall elevations in bedroom 1 and 3 and penetrating damp was noted to the rear wall elevation on the landing – see photos 36-40. We’d expect that the cause of these areas of penetrating damp is the condition of the external render to the front and rear wall elevation along with the substandard roof drainage.

This will be better controlled with the repair works to the external render noted in recommendation 2 and replacement of roof drainage as per recommendation 15.

- 4). Damp and mould growth were noted to the ground floor boards and joists in basement room 2 and 4 – see photos 64 and 66-69. This is expected to be due to the beam ends being supported directly by the sold walls (and so susceptible to moisture attack) and a lack of passive ventilation into the basement.

Damaged/ rotten floor beams shall be replaced. Those beams that retain their strength / stiffness shall be treated accordingly to prevent wet rot.

Mould growth will be better controlled with the inclusion passive ventilation into the basement.

- 5). Penetrating damp was noted to the internal basement walls (see examples in Photos 70-71) along with rising damp (see example in Photo 65).

The basemeent will need to be appropriately tanked to prevent moisture migration through the walls. The use of Vandex cementitious slurry is one solution that can be applied to the walls. The basement floor is substandard and needs to be replaced (as noted in recommnndation 24), which will include a new DPM.

- 6). The timber structure to the rear is in a significant state of disrepair, is in an unsafe condition and it is recommended that the structure is demolished.

The timber structure shall be demolished. During the demolition it is recommended that further inspection of the areas where the timber structure connects to the

original property should be undertaken to confirm if any damage has been caused to the original property from the degradation of the timber structure.

The Condition Rating **2** defects :

7). We noted the absence of passive ventilation route into the main roof profile. Passive ventilation is required to ensure moisture and condensation that builds up within the roof void has an opportunity to escape (otherwise it would attach itself to the structural timber frameworks and create defects in the form of dry rot).

In order to improve the natural ventilation to the roof voids and to prevent defects developing to the structural timber frameworks beneath, install ventilation tiles to the rear roof profile as per Figure 3. This work shall only proceed at such time where the roof ties are replaced as noted in recommendation 1.

8). Trickle vents were absent from the window frames so there is an inadequate means of providing passive ventilation to evacuate internal condensation and moisture. Some of the window frames are sub-standard and should be replaced.

Trickle vents should ideally be post-installed to the window frames as currently there is a lack of a free air passage. This will help control the build-up of moisture / condensation / damp internally. Other factors that would help control internal condensation and minimise damage to internal wall and ceiling surfaces include:

- Reducing the moisture in the air (e.g. dry clothes outside, make sure tumble dryers are vented, avoid blocking radiator heat)***
- Ventilation (ensure window vents are open if installed, use extract fans, open windows)***
- Heating (regulate heating, i.e. if under-heated then condensation increases)***

For those windows that need replacing, then trickle vents will come as standard.

9). Render cracking (damage category 1) was noted to both sides of the window on the front wall elevation. It is expected that these crack have lead to de-bonding of the render in these areas and the cause of the penetrating damp into bedroom 2 of the property.

Where render has deteriorated around the cracks then this shall be cut back to sound material (no feather edges permitted), all deleterious materials removed from the load-bearing wall face before a new render finish is applied, all in accordance with BS EN 13914 Design , preparation and application of external render and internal plastering.

Where render is still sound around the cracks then the cracks be remediated through either a cementitious waterproof filler being brushed into the crack or injecting a waterproof resin typically a 'SIKA' product to prevent water penetration de-bonding the render from the substrate below. All works should be in accordance with BS EN 13914 Design, preparation and application of external render and internal plastering.

10). During the survey bowing was noted to the timber ceiling of the entrance.

It is recommended that the timber boarding to the ceiling of the entrance is removed and the condition of the support members is assessed prior to reinstatement of the timber boarding.

11). All properties with basements should have provision for a free flowing passage of air into the basement.

It is recommended that a means of passive ventilation is installed into the basement (e.g. telescopic vents) to allow free air flow into the basement and prevent condensation damp / mould growth.

12). Indications of vermin were noted within the roof void.

A professional pest control specialist shall be consulted such as Rentokill to provide advice on managing the rodents in the property

13). Corrosion to the steel beam below the basement was noted in basement room 4.

The steel beam below the pavement shall be removed and replaced.

14). All timber panelling to fascia boards were present but weathered and some had rot present. We'd recommend that fascia boards are fully replaced.

Fascia boards shall be replaced with UPVC panelling along the eaves lines to maintain the water-tightness of the top of walls / roof support.

15). Defective guttering was evident, see example in Photo 4.

Roof drainage shall be replaced throughout.

16). Several areas of exposed masonry were evident to the rear elevation and some units had deteriorated. A void was also noted where previous infilling had been attempted.

We'd recommend that, following removal of the render, that the load-bearing masonry is inspected to confirm no structural defects occur (e.g. compressive / crushing, shear type failures) and that mortar joints remain serviceable (to ensure compatibility between masonry units).

17). Some of the timber members have water marks present / surface deterioration. Treatment of the timbers is recommended.

The timber frameworks shall be treated accordingly to prevent any onset of problematic rot in the members, that could otherwise affect their strength/stiffness.

18). Roofing felt was installed to the underside of the roof profile and appears in adequate condition overall, although some areas are loose / substandard.

This will be resolved following recommendation 1 above.

19). Some internal plaster finishes are considered substandard and should be replaced.

Replace substandard plaster finishes as necessary.

20). The floor to bedroom 1 sagged which indicates there was some flexure to the joists.

Further intrusive inspection is needed, by removing floor boards, to check the adequacy of the timber beam frameworks beneath.

21). Condensation damp was evident to a number of internal surfaces.

This will be controlled better following recommendation 8 above.

22). Some of the brickwork infill panels are in poor condition and should be repaired.

Defective / loose masonry shall be removed and repaired with new brickworks of equivalent compressive strength.

23). Internal cracking to plaster/render finishes were noted in the basement room 2 – see photo 59 & 60 and external wall of basement room 3 – see photos 61-62. Repairs are needed to include the removal and reinstatement of areas of de-bonded plaster (along with a check on the load-bearing wall condition)

Internal plasterworks/render shall be removed to expose the load-bearing masonry wall surface in order to establish if the cracking has penetrated the substrate below. It is envisaged that the cracking is limited to the plaster finish; however, some masonry joints may need to be broken out and replaced. All works shall take cognisance of Eurocode 6 ‘Structural use of Masonry’ to ensure the correct mortar designation are adopted.

24). The basement floor construction is substandard, does not conform with Building Regulations and should be replaced throughout.

The basement flagstone floor shall be removed in order to construct a new reinforced concrete slab, all in accordance with Building Regulation requirements.

SECTION 8 GUIDE TO REPAIR COSTS

This section details the 30 most common repairs. The only way to establish the cost of repairs accurately is to obtain estimates from reputable contractors. If you are buying the property, it is essential that you do so before exchanging contracts when you commit yourself to buying at the agreed price.

Prices for repairs vary for many reasons - there are historical variations; the prices of materials fluctuate; the size of the work required can make a job more or less attractive to a builder as can his current workload. No repair is identical to another. **For all these reasons this is a best rough guide.**

The prices are drawn from figures collated and published by the Royal Institute of Chartered Surveyors in their BMI Building Maintenance Price Book. Prices are updated quarterly.

The published figures are given by a unit - e.g. square metre, or per metre length and come from figures given by experienced estimators all over the country. Remember to add on call out charges.

The help you visualise the sums involved, there are some typical costs which you could expect for a three bedroom semi detached house (**all costs are approximate**)

Roof	Unit	Cost £
Repair pitched roof - tiles	sq.m	22.00
- slates	sq.m	31.00
Replace ridge or hip tiles	per m	30.00
Refelt & batten using current tiles/slates	sq.m	44.00
Repair area of damaged felt (flat roof)	sq.m	26.00
Repair flat roof including roof boarding	sq.m	45.00
Repair damaged chimney pot and repoint (900mm high)	each	136.00

Sample : to strip and relay a tiled pitched roof with existing tiles, allow at least £2400

Sample : to strip and relay a tiled pitched roof with new tiles, allow at least £4700

Sample : to renew a small flat roof extension, allow at least £1200

N.B. No costs could be provided for the installation of steel straps to the wall plates and gable ends as this is not a common cost price assessed by the building industry. The author suggests a detailed quote is obtained to cater for the works as recommended in Section 7.

Walls (masonry)

Repoint soft mortar in brickwork	sq.m	12.00
Repoint stonework	sq.m	27.00
Form new door openings in cavity wall	each	312.00
Form new window openings in cavity wall	each	250.00

Fill in window opening	each	174.00
Insert damp proof course (excludes replastering)	m	49.00
Provide air brick to cavity wall	each	45.00
Apply renovating plaster to internal walls	sq.m	21.00
Apply cement/lime/sand render to external walls	sq.m	19.00

Repairing/renovating brick / blockwork - cutting out
Decayed, defective or cracked work and replacing with
New common bricks PC £240/1000 in gauged mortar
(1:1:6) :

Half brick thick	sq.m	126.00
One brick thick	sq.m	247.00
One and a half brick thick	sq.m	354.00
Two brick thick	sq.m	457.00

Ceilings

Repair plaster cracks	per m	5.00
Fix 12.5mm plasterboard	sq.m	28.00
Plaster skim new plasterboard	sq.m	6.00

Sample : renew a bedroom ceiling with plasterboard, allow at least £600

Floors

Renew floor with tongue and groove boards	sq.m	43.00
Renew floor with chipboard	sq.m	20.00

Sample : to treat floors against woodworm throughout, allow at least £1200

Sample : to treat floors (including roof space) against woodworm throughout, allow at least
£1750

SECTION 9

WHAT TO DO NOW

Getting estimates

The cost of repairs may influence the amount you are prepared to pay for the property. Before you make a legal commitment to buy the property, you should get obtain reports and estimates for all the repairs and further investigations the surveyor may have identified.

You should obtain at least two estimates from experienced contractors who are properly insured.

You should also :

1. Ask them for references from people they have worked for
2. Describe in writing exactly what you want them to do
3. Get the contractors to put the estimates in writing

Some repairs will need contractors with specialist skills and who are members of regulated organisations (for example electricians, gas engineers, plumbers and so on). Some work may also require you to obtain Building Regulation permission or Planning Permission from your local authority. You can obtain more advice on these from the Government website at www.direct.gov.uk/en/HomeandCommunity/Planning/Index.htm.

Further investigations

If the surveyor was concerned about the condition of a hidden part of the building they may recommend that further investigations should be carried out to discover the true extent of the problem.

Who you should use for these further investigations

You should ask a suitable qualified and experienced person (SQEP) to undertake the works.

What will the further investigations involve?

This will depend on the type of problem but, to do this properly, parts of the property may have to be disturbed. In some cases, the cost of the investigation may be high.

When to do the work

The condition ratings help describe the urgency of the repair and replacement work. The following summary may help you decide when to do the work.

1. Condition Rating **2**

Repairs should be undertaken soon. Exactly when will depend on the type of problem but it usually does not have to be done straight away. Many repairs could wait weeks or months, giving you time to organise suitable reports and estimates.

2. Condition Rating **3**

Repairs should be undertaken as soon as possible. The speed of your response will depend on the nature of the problem. For example, repairs to a badly leaking roof need to be carried out within a matter of hours, while other less important critical repairs could wait for a few days.

Warning

Although repairs of elements with a Condition Rating **2** are not considered urgent, if they are not dealt with they may develop into more serious repairs. Flat roofs or gutters are typical examples. These can quickly get worse without warning and result in serious leaks.

As a result, you should regularly check elements with a Condition Rating **2** to ensure they are not getting worse.

Appendix A - Typical House Diagram

