

STRUCTURAL INSPECTION & REPORT

AT

Pen Y Llan House, Overton

FOR

Carolyn & Paul May

Prepared by

CASTREE

4 Chapel Court
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Structural Inspection & Report, Pen Y Llan House, Overton

Purpose of Survey:	To establish the structural condition of the building fabric of the property to accompany a planning application.
Description:	Listed brick development consisting of residential, commercial areas with adjoining Barn Buildings.
Occupancy:	Dwelling and commercial premises unoccupied, outbuildings formerly used for agricultural purposes.
Weather:	Cold and cloudy
Date of inspection:	27 th February 2015
Survey details:	Survey undertaken by Liam Pender, on behalf of Castree Ltd
Extent of Survey:	Our observations are based upon a visual inspection of the structure only. Crack widths given are estimates only. We did not undertake any physical investigation of the structural elements, drainage, building fabric or foundations, and fixed cladding, floor coverings or stockpiled materials were not removed to any extent. Manhole/inspection chamber covers were not lifted during the inspection. A detailed inspection of timber components for signs of rot, infestation and other defects was not undertaken. A detailed inspection for asbestos based materials was not undertaken. Inspection and appraisal of service installations (gas, electric, water etc) was not included in this survey. The results of the survey are recorded below and supported where necessary by photographs in Appendix A at the rear of the report. Reference to left, right and rear externally are in relation to looking at the property from the front (Main Road). Elsewhere, left and right hand sides are taken when viewing the particular face of the building. Internal rooms identified as per three 6T Architecture existing plan drawings.

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Survey Results

Main House

- **External Inspection - House**
- **Front Gable Elevation (from road)**
- Brick masonry in reasonable condition
- Air bricks present to provide ventilation below to basement
- Mortar to lower courses of brickwork defective in areas.
- Timber windows in reasonable structural condition considering age of property
- Some localized mould and damp staining to timber window frames
- Front lawn appeared saturated in close proximity to building
- Vegetation to guttering, no downpipe front elevation.
- Some deflections and undulations to roof as viewed externally
- **Right Side Elevation of House– From Access Path**
- Brickwork in reasonable condition mortar defective to lower courses.
- Chimney stack slightly out of plumb
- Possible use of cement based mortar in localized areas
- Peeling paintwork and areas of damp to bay window
- Other painted timber doors and windows subject to areas of damp and peeling paintwork
- No gable ladder, rain water goods in poor condition
- Large vertical crack through mortar where adjoining coal shed
- Crack to external concrete slab at doorway
- Air bricks present to ventilate basement
- **Rear Elevation of House – From Rear Grounds**
- Brickwork elevation appears in a reasonable condition
- Guttering and rain water down pipes in poor condition.
- Gulley's blocked and overflowing saturating ground locally
- Timber window frames appear in reasonable condition although subject to localized areas of damp and peeling paintwork
- Masonry coal shed adjoining rear elevation, no flashing over roof
- Coal Shed in a very poor condition large diagonal cracks to gable. Corrugated sheet roof appears close to collapse.
- Vegetation growth to rear wall, does not appear to have any detrimental effect
- Chimney stack in very poor condition
- Air bricks present to ventilate basement
- Slight undulations and deflections to roof
- **External Rear Elevation – Barn/Store**
- Roof appears in a reasonable condition
- Vegetation/growth to walls as noted to house
- Opening in-filled below timber lintel
- Timber lintel likely to be subject to loss of section due to rot/damp

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- Some bulging to masonry side walls, slight roof spread and out of plumb
- 20mm diagonal crack to wall emanating from door head
- Diagonal crack present to stone bearing pad beneath timber lintel
- Timber door and window frames subject to areas of damp and peeling paintwork
- Evidence of re-build/infill masonry at 1st floor level
- Circular masonry arch in good condition
- Random ground bearing stone/concrete slabs to outbuildings
- Floor joists appear to generally span side to side (towards gables)
- Large random section size timber beams over ground floor level
- Existing load paths and relationships between floors beam and walls unclear.
- In general lintels appear to be of timber construction and subject to damp, decay and sagging.

- ***External Side Elevation***

- Gable elevation brickwork in a reasonable condition
- In general mortar defective to lower courses of masonry

- ***External Front Elevation – Shop/Barn***

- Vegetation/Growth to corner adjoining gable
- Rear barn wall appears in a reasonable condition
- Rainwater goods blocked and generally defective
- Lower courses of masonry damp, mortar defective
- Large timber window and door frame subject to damp, mould and peeling paintwork
- Roof covering appears to be of a reasonable condition

- ***Internal Inspection***

- ***Main House***

- Ground floors are generally of ground bearing concrete construction and not likely to have any damp proofing or insulation
- Suspended timber floor over the basement
- Limited inspection of basement due to visibility but appears to be in a reasonable condition, no excessive damp or standing water.
- Historic random size section timber floor joists and support beams over ground floor appear to be of a generally good condition where inspected.
- Historic timber beams likely rotten at bearings where built into wall.
- Vertical crack over chimney breasting in Kitchen below beam bearing
- Crack to window frame to Dining Room
- Damp and mould to corner of Dining Room below projecting bay window
- Hairline crack over doorway to Shop
- Crack to timber in bay window, generally damp and peeling paintwork
- Historic timber beams over bedrooms in a reasonable condition where inspected although possibly rotten at bearings

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- First floor joist feel slightly bouncy, subject to excessive deflection
- ***Shop and Store – Internal Inspection***
 - Open Shop areas appear in a reasonable condition
 - Concrete ground bearing slab to shop in reasonable condition although not likely to be insulated or damp proofed
 - Ground floor concrete/stone slab construction, given the buildings age it is likely to have been built directly of the ground over infill material.
 - Crack to joint between wall and ceiling in ceiling on left hand side of shop to finishes only.
 - Large glazed timber window opening to shop front subject to damp and peeling paintwork.
 - Crack and localized repair to large window frame in lower left hand corner, likely a previous repair of defective section.
 - Damp, mould and peeling paintwork to shop doorframe.
 - Storeroom over shop appears to be of a reasonable condition other than cracking to isolated areas of finishes in plaster wall.
 - Internal plaster finishes appear to be holding the stonework on this elevation together.
- ***Barn/Store Areas***
 - ***Barn/Store – Ground Floor***
 - Ground floor constructions to Barn buildings are generally of random stone and infill concrete construction.
 - No damp proofing or insulation present to any ground floor constructions
 - Intermediate load-bearing stud wall to built off masonry below
 - Minor cracking to brickwork piers around main barn opening
 - First floor joists over barns do not appear to be of either sufficient section size or condition for domestic use.
 - Random section size timber over barns supporting floor joists are subject to localized damp and decay particularly at bearings.
 - Timber floor joists and support beams over barns appear to have suffered from exposed unheated environment and lack of maintenance.
 - Masonry cross walls appear in a poor condition assumed to be built off stone slab.
 - Limited inspection carried out to roof structure over barns due to unsafe access.
 - Roof appears of a reasonable condition although torching has diminished between battens and rafters
 - Random section size purlins and intermediate support structures appear to be of a reasonable condition.
 - Splices to purlins in poor condition

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Conclusions

Main Dwelling and Shop

The building has suffered from a lack of maintenance, particularly as it has not been inhabited recently for example the lack of heating or unblocking of drains has resulted in much of the damp and mould noted.

Further investigation would be required to the roof structures, but given both the age of the building, at this stage it would be safe to assume that all existing roof rafters and purlins would require removing and replacing or a significant scheme of strengthening be required.

Other than the deterioration of mortar in the lower courses the brick masonry walls appear to be in a reasonable condition. Particularly given the age of the building except where otherwise noted.

Both projecting chimney stacks are in a very poor position and need to be removed and re-built. It is likely that both had previously been subject to chimney fires and subsequent loss of mortar has resulted in the loss of arching/corbeling thus becoming unstable.

Rainfall discharge as a whole is insufficient and is either not adequately draining water away from the building via gable ladders, guttering and land/ground drainage or directing rainwater run-off from surrounding areas in the direction of the building.

It is possible that given both the age and condition of the building that any timbers built into the external walls will be suffering from decay due to the dampness of the walls, although where inspected do not appear to be suffering from any significant loss in section size.

Internally the building is supported by a series of large random section size timber support beams. It is understood that these beams form a part of the building being listed. If it is the case that these beams are to be retained then they should be subject to a specialist timber survey to check for rot and decay prior to the start of any works.

The Shop and Store areas are in a reasonable condition given the age and fact that the both had been uninhabited for a number of years. It is likely that further cracking may appear within the walls once that plaster finishes are removed although these will likely be minor of a non structural nature.

The large timber window that to the shop front is subject to damp, decay and previous repair as noted and would probably need to be replaced or a scheme of remedial works provided.

The single storey masonry Coal Store at the rear of the property is of a very poor condition throughout. The lack of tying indicates that it did not likely form part of the original construction. The corrugated tin roof, brick masonry walls and ground slab are all beyond the point that a reasonable repair could be completed and would require removing and rebuilding.

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Conclusions

Barn/Store Areas

The buildings have suffered from a lack of maintenance, particularly as it has not been inhabited for a number of years, and it is probable that maintenance was not carried out for many years prior to it being uninhabited.

The building appears to have suffered from historical movement and the indications are that this movement may be on-going/ progressive. Extensive cracking and bulging is visible in the walls. Extensive cracking in the external walls makes it a requirement that large sections would need to be rebuilt to maintain stability.

The existing stone slab floors would need to be removed and replaced with ground bearing/ suspended concrete slabs appropriately damp-proofed and insulated. Existing walls would probably need a scheme of underpinning to be carried out in advance to accommodate the installation of the slab.

It is likely, given the age of the building, (100 years +), that any timbers built into the external walls will be suffering from localized decay due to possible dampness of the walls, it is possible over time that these timber will suffer from loss of section size.

Areas of infill masonry noted to the rear elevation are generally of a poor condition and would require removing and rebuilding locally using a suitable mortar.

Visible timber lintels show extensive infestation and decay and would require replacing. The large timber lintel which previously spanned over the main barn opening which has been infilled with brickwork below and is likely incapable of re-spanning the opening without strengthening work being carried out in the beforehand.

Cracking noted to the original feature stone pads below lintel bearings will require localized resin repair only and will be suitable for retention.

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Recommendations.

Main Dwelling

Given the observations and conclusions made within the report we are of the opinion, given the age of the building that the main structural walls, although in poor condition in parts are of a reasonable condition generally and considered suitable for the proposed conversion works subject to a scheme of remedial works being required.

It is recommended that a scheme of foundation strengthening/underpinning be required in addition to an allowance of re-building/re-pointing to approximately 35% of the external brick masonry walls using a suitable lime mortar. Localized areas of crack stitch repairs should also be accounted for particularly to gables below where chimneys are to be rebuilt.

We would find it difficult to justify the existing roof structure as suitable to be retained on the basis that additional loading is to be applied from insulation, waterproofing and ceiling finishes that would be required to upgrade the roofs to be habitable areas. It will be likely that a combination of both replacement and remedial repairs will need to be considered in this case.

The existing large random section size first and second floor level beams appear to be in a reasonable condition and at this stage it would appear that they are in a suitable condition to be retained. We would however recommend that a specialist timber survey be carried out to them along with a further exploratory investigation at a later stage. It is likely that the bearings where built into walls will be subject to extensive damp and decay and will require strengthening.

It is possible that a scheme of localized underpinning may be required. Any strengthening or remedial works required to the masonry walls is to be carried out prior to underpinning. Brickwork to affected areas to be exposed and assessed, in this case all stabilization of both chimney stacks would be required beforehand.

Consideration should be given at this stage to the temporary roof and access structures which will be required to enable high level works to be carried out safely. Each chimney stack will require removing and rebuilding by hand in addition to the removal and re-covering of roof tiles. Additional detail of typical structures here can be supplied in due course.

The coal store outrigger at the rear of the property is in a very poor condition. It is understood that this is to be demolished and does not form part of the proposed scheme.

Although the basement structure appeared to be of a reasonable condition it is highly likely that all timbers particularly where built in to the walls will be subject to extensive damp and decay and account should be made of the remedial or replacement works which will be required to some extent. Similarly it would be recommended to consider the application of an additional tanking membrane within the existing basement walls.

The large existing timber frame window to the shop front will require replacing unless a suitable remedial repair can be determined.

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Although the vegetation that is growing on the brick does not currently appear to be of any detrimental effect it is recommended that these are removed to prevent any potential future problem.

Barn/Store Buildings

Given the observations and conclusions made within the report we are of the opinion that given the age of the building - the main structural walls, although in poor condition in parts are of a reasonable condition elsewhere and considered suitable for the proposed conversion works subject to a scheme of remedial works being required. This would typically involve localized areas of re-building of masonry and crack stitch repairs.

It is difficult to determine the full extent of repair or replacement work that will be required to the timber structural elements of the building. It would be preferred that all structure at first floor level be replaced with a suitable alternative. Elements of the roof structure appear to be suitable for retention subject to the proposed usage and a fuller survey at building regulation stage being carried out.

It is recommended that a scheme of foundation strengthening/underpinning be required in addition to an allowance of rebuilding/re-pointing to approximately 35% of the external brick masonry walls with a suitable mortar. We would advise that all timber floor joists and lintels be removed and replaced with a suitable alternative.

It is likely that a scheme of localized underpinning may be required. As recommended for the main house all masonry repairs at high level would need to be completed first to ensure that they are of sufficient structural integrity for the operation to be completed.

Although the vegetation that is growing on the brick does not currently appear to be of any detrimental effect it is recommended that these are removed to prevent any potential future problem.

The large timber beam over the main barn opening will more than likely require strengthening prior to the removal of existing masonry walls below. This would likely be achieved by attaching a steel flitch plate or channel to the back of the beam.

We trust the above report meets with your approval and is of assistance.

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Yours faithfully
For and on behalf of
Castree Ltd

Checked by

.....
Liam Pender

.....
David Evans

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Appendix A

Photographic Record Friday, 27th February



























