

Consulting Civil & Structural Engineers

# STRUCTURAL INSPECTION REPORT

# **BARN, TOWN FARM, PENDLETON**

## **Mr & Mrs J FILDES**

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### 1.0 INTRODUCTION

At the request of Mr & Mrs J Fildes, Reid Jones Partnership Ltd carried out a structural inspection of the barn at Town Farm in Pendleton, Clitheroe. The barn forms part of the farm buildings within the 'yard' area of Town Farm.

Mr & Mrs J Fildes currently own the barn and requested a structural inspection to ascertain its overall condition prior to conversion to a dwelling.

Edwin Jones BEng (Hons) CEng MIStructE MICE of Reid Jones Partnership Ltd carried out a structural inspection on Monday 03<sup>rd</sup> February 2020. The structural inspection was of a visual nature, and no opening up of the fabric of the building was carried out.

This report details the observations made during the inspections, lists structural defects found and makes recommendations on remedial and repair works considered necessary. Photographs are included in Appendix A.

This report shall be for the sole use of Mr & Mrs J Fildes and their professional advisors and shall not be relied upon by any third party without the full written consent of Reid Jones Partnership Ltd.

### 2.0 DESCRIPTION

For orientation purposes, the right- and left-hand sides of the building are those viewed when standing at the front of the building and looking directly at the front wall. When in a room and looking at a wall, or when viewing an external wall from the outside of the building, reference to left and right relates to the wall as viewed.

The barn is located adjacent to Town Farm farmhouse within the 'yard' and is accessed via a stoned driveway. The barn is rectangular in plan with a single storey store centrally on the front elevation. The main entrance is via an arched opening on the front elevation with three personnel doors on the right-hand gable, one on the left-hand gable and one on the rear elevation. There is a stone internal wall dividing the barn in two; the wall extends to the underside of the first floor.

The right-hand half of the barn has been partially converted to form a playroom. The construction is of suspended timber joists supported on brick dwarf walls above the barn floor with timber stud wall lining to the barn walls. The ceiling is of timber joists with a central timber beam providing support mid-span. The timber beam spans from the right-hand gable to the central wall dividing the barn.

The construction is of random stone walls with a suspended timber hayloft over half the barn. The other half is used as a playroom as described above. The first floor is of suspended timber boards and joists. The joists are in turn supported on timber beams spanning from front to rear walls. Intermediate circular hollow section columns have been introduced to reduce the effective span of the beams. The columns are bolted to the concrete ground floor. The store is constructed of brick.

The roof consists of three king post timber trusses spanning between front and rear walls with timber purlins supporting cut timber rafters. The roof covering is stone slates.

The ground floor is concrete formed with steps to provide drainage from when this area of the barn was used as a shippon.

All doors are barn doors with the main entrance having two full height hinged doors of timber construction

#### 3.0 OBSERVATIONS

#### External

There are several areas of 'open' joints in the masonry.

There is a mature tree in close proximity to the rear right hand corner of the barn.

The ground level along the rear elevation is high compared to the internal floor level.

There is a slight drop in the arch over the entrance leading to cracking in the masonry above.

There are several air vents on both front and rear walls.

#### Internal

Access onto the first floor was not possible due to the fragile state of the timber boards. As such all notes for the roof are based on inspection from a ladder level with the first floor. The right half of the barn has had a partial conversion to a games room precluding a close inspection of the ground floor and internal walls within this half of the barn.

There is a felt membrane beneath the roof covering suggesting the covering has been re-laid in the recent past.

All timber rafters and purlins and truss members appeared dry.

The condition of the timber bards over the first floor is poor in places with broken board visible.

There is a diagonal crack above the right-hand side of the arch to the main entrance. The left-hand truss is supported close to the left-hand side of the arch.

The beams supporting the first floor have a circular hollow section steel post providing added support at mid span. The posts are fixed to the concrete floor slab.

All cattle stall dividing walls have been removed.

The concrete floor has several steps and plinths.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

The barn is in relatively good overall condition and it appears that the roof covering has been re-laid relatively recently.

The cracking noted to the main entrance arch is due to a slight drop in the arch stones. It was noted that one truss is supported on the wall partly over the arch adding a relatively large load onto the arch itself. We would recommend the arch stones be re-set and that bed joint reinforcement be inserted into the joints above the arch over its full width. This will help with spreading the load and provide a masonry lintel above the arch itself.

The roof timbers appear in good overall condition with no signs of dampness. Due to access limitations we were not able to closely inspect the truss ends where they are built into the walls. As part of the early works of conversion we would recommend a timber specialist be asked to check on the truss ends to ensure there is no rot.

The first floor boards and joists will require replacing as part of the conversion. Steel beams may well be required in lieu of the existing timber beams to provide adequate support for the first floor without the need for additional internal columns.

The existing playroom conversion will need to be removed to enable close inspection of the walls and floor in this half of the barn.

There will be a requirement to provide an insulated cavity to the external walls. New floor joists could be supported from this new inner leaf. A downstand to the new ground floor slab would be required to ensure adequate load bearing onto the ground. The levels of any foundation stones for the barn will need to be checked to avoid underpinning particularly in relation to the excavation required for the new ground floor slab construction. Insulation could be placed on top of the slab to reduce the overall excavation depth.

Externally, there are several areas of open joints in the masonry. These areas will require pointing with lime mortar.

To the rear elevation the ground levels are high compared to the internal floor level. The external ground level will require lowering to prevent damp ingress. The tree to the rear right corner is within 2m of the corner of the barn. There are no indications of any damage due to tree roots on the barn walls, however, consideration should be given to removal of this tree.

No evidence of structural movement was noted, and we would confirm the structure suitable for conversion subject to the noted repairs being carried out to the fabric.

Please note that we have not inspected parts of the structure that are covered, unexposed or inaccessible and we are therefore unable to state that any such part of the property is free from defect. We are not able to comment on fixtures or services unless they have a direct influence on the behaviour of the structure. We did not inspect the main drainage system.

APPENDIX A

PHOTOGRAPHS



PHOTO 1- FRONT ELEVATION



### PHOTO 2 – PART REAR ELEVATION



PHOTO 3 – PART REAR ELEVATION



PHOTO 4 – LOW LEVEL VIEW TO LEFT SIDE OF REAR ELEVATION



PHOTO 5 - LOW LEVEL VIEW OF CENTRAL SECTION OF REAR ELEVATION



PHOTO 6 – LEFT HAND GABLE ELEVATION



PHOTO 7 – RIGHT HAND GABLE ELEVATION



PHOTO 8 – RIGHT HAND END OF RIGHT-HAND GABLE SHOWING PROXIMITY OF TREE



### PHOTO 9 – CLOSE VIEW OF RIGHT SIDE OF FRONT ELEVATION INDICATING OPEN JOINTS IN THE MASONRY



PHOTO 10 – CLOSE VIEW OF LEFT-HAND GABLE INDICATING PREVIOUS RE-POINTING AT HIGH LEVEL



PHOTO 11 – TYPICAL VIEW OF ROOF TRUSS AND GENERAL CONSTRUCTION



PHOTO 12 – VIEW OF ROOF CONSTRUCTION AND REAR WALL



PHOTO 13 – VIEW OF TRUSS SEATING ABOVE LEFT-HAND SIDE OF ARCH



PHOTO 14 – VIEW OF CRACK TO RIGHT HAND SIDE OF ARCH



PHOTO 15 – VIEW OF BOARDING TO HAYLOFT



PHOTO 16 – VIEW OF SUPPORT JOISTS AND BEAMS TO LEFT HAND SIDE OF BARN



PHOTO 17 – VIEW OF ADDITIONAL STEEL POST SUPPORTS



PHOTO 18 – TYPICAL VIEW OF CONCRTE FLOOR