



Ref: 21-966

Matthew Bell  
Fieldway Avenue  
Rodley  
LEEDS  
LS13 1ED

29 September 2021

Dear Mr Bell

FORWOOD FARM, TRESWELL, RETFORD, DN2 0EE

An inspection of Forwood Farm was carried out during Tuesday 28 September 2021; the inspection being undertaken in order to comment upon the overall structural stability of the property. The subsequent report being prepared in order to satisfy a Planning Application requirement.

It is the intention to convert existing barns into dwellings. The barns have the benefit of brick elevations. The roofs are pantiles generally supported off king post trusses, purlins and rafters.

The inspection looked at the visible faces of walls and found as follows:

North East Elevation

- To the North East elevation are two small openings (to the lower floor area). The openings have no lintels to support the above brickwork. Support is currently being provided by the timber frames.
- To the extreme left-hand end of the North East elevation and at first floor level is a pattress plate. This has a tie bar which extends through to the opposing solid wall.
- Adjacent to the return of the South East elevation the North East elevation is showing lateral deflections with maximum deflections tending to occur at about first floor level. The maximum deflection was measured at approximately 25mm. Deflections reduced to zero at ground level and eaves. The



pattern plate and tie bar have most probably been inserted as a result of the deflections.

### South East Elevation

- To the right of the South East elevation is a two storey element with, at one time, two arched entrances to the ground floor. Most likely to increase the workable size of the openings, the relatively large central brick pillar has been removed and replaced by a central steel circular section prop plus horizontal steelwork to support the first floor brickwork etc.
- To the right hand steel support (as looking directly onto the elevation), a short length of vertical cracking was evident (very adjacent to the return North East elevation).
- Further cracking was observed extending upwards from above both first floor windows with the cracking tending to slope upwards in the direction of the North East elevation.
- Beneath the right hand first floor window opening some vertical cracking was observed extending up from the steel horizontal support.
- Within the open garage areas to the single storey element of the elevation, inclined cracking was observed in the panel of masonry. The cracks were observed to slope upwards towards the North East Elevation.

### North West Elevation - Yard Area

- Within the yard area and in the open unit, the king post trusses have been amended with the horizontal cord member being cut out and lifted; most probably to form a better working headroom. This has been undertaken by cutting out the bottom cord, lifting the timber and bolting through the main rafters plus the base of the king post.
- Within the two storey unit, a section of solid brick partition is supported on a timber beam. The internal end of the timber beam is supported on a timber prop. The brickwork partition



forms one side of the access stairway leading up to the first floor level.

It is clear that the timber beam plus the prop are suffering from deflections. Cracking is now evident in the supporting masonry panel including for vertical cracking at the junction of the panel with the main elevation wall.

### Detached Cart Barn

- The cart shed has clearly evolved from the original construction. Evidence on site indicates that the original construction consisted of a timber frame in bays. Some of the bays have now been removed with the timber post sockets still present in the she. concrete slab floor.
- Residual timber props of the frame are now showing the effects of decay particularly at the base.
- The concrete slab forming the floor is in a poor condition being thin and cracked.
- To replace the frame, cross walls have been constructed with these sitting on the concrete slab. Some cracking of walls is evident.

Based on the above observations the following comments can be made:

- We would consider that cracking affecting the South East elevation plus deflections affecting the North East elevation are most likely due to the activities of removing the masonry support to the ground floor wall. This masonry pillar split the two arched openings into the South East elevation and carried the load of the first floor elevation wall etc. The replacement of the brick pillar by steelwork has probably allowed some deflections both in the replacement horizontal steelwork and also likely possible deflections in the central steel support. Associated rotation of the horizontal members has most likely created the lateral deflections affecting the North East elevation. General vertical deflections are most likely the cause of the cracking evident in the first floor area.

- Inclined cracking in the open area of the South East elevation is most likely due to settlement affecting the structure. Additional load placed on the wall as a result of the insertion of the steelwork to the two storey section could well have increased loading onto foundations which may also have contributed to the cracking.
- We understand that trial holes to this area proved that the brickwork extends a mere four course below ground level. The solid wall was also found to sit directly onto the underlying foundation material (no widening of the wall was evident to provide some load spread).
- The Cart Barn is currently in a poor structural condition. The construction consists partly of a timber frame with decay affected timber posts. Brickwork partitions have been constructed built of a very poor quality concrete slab.

We would consider that development of the barns into domestic accommodation will include for structural remedial works.

The conversion of the single story element of the south east elevation will replace internal walls so reducing loads onto the elevation wall. We would anticipate therefore that this section of the elevation will become 'stable'.

Deflections affecting the two story section of the South East elevation will require addressing. Long term viability of the existing (and retro fitted) steel frame cannot be guaranteed. It is possible that the steel frame could be replaced with a more suitable structure, but this would most probably have a negative impact on the viability of the conversion. In this instance the more appropriate option would be to take down the elevation and rebuild. The rebuild could also extend around the North East elevation to eliminate the lateral deflections. On completion of the work the 'existing' patras plate and tie bar can be removed.

Internally the brick panel supported on the propped timber (beside the first floor access stairway clearly requires taking down and rebuilding with adequate support

The Cart Barn is in a very poor structural state. We would assume that it has developed on a 'needs must' basis as certain aspects of the construction have failed. Indeed the Cart Barn is in such a poor condition that it is not considered to be suitable for any use. We would therefore consider that (if incorporated in any redevelopment) that the Barn be demolished and rebuilt in a manner to comply with Building Regulations.



Throughout the conversion we would recommend that all first-floors be 'strapped' to elevations. We would also recommend where solid partitions are not bonded to elevations then steel straps be introduced to 'strap' the walls together. All straps should be introduced to comply with Building Regulations and BS5628.

We consider that the roof support to the long South East elevation is likely performing in a satisfactory manner and could be re-used. The altered trusses (North West elevation) should be renewed as appropriate. Indeed, truss rafters may well be the preferred option.

Within elevations are openings without supporting lintels. Appropriate lintels should be introduced.

The inspection of Forwood Farm revealed a barn requiring some rebuilding works. The extent of rebuilding work is low compared to the size of the overall elevations. It will also be necessary to replace some existing and altered king post trusses.

We have not inspected parts which are covered, unexposed or inaccessible, and are therefore unable to report that any such part is free from defect.

This report is for the sole use of the addressees and their professional advisers. The report cannot be assigned without the written authority of Holdgate Consulting Ltd.

Yours sincerely

Ian Holdgate  
for Holdgate Consulting Ltd