



Steve Gilman Design Ltd

Consulting Structural & Civil Engineers

Mr W Fletcher
Broadgate Nurseries
Gedney Broadgate
Spalding
Lincolnshire
PE12 0DG.

BY EMAIL

19th December 2022

Dear Mr Fletcher

Project No. 8467a - BRICK BUILT BARN

Ref: Structural Inspection of Brick Built Barn at Broadgate Nurseries, Gedney Broadgate, Spalding

Further to your recent instructions received via James Lambert at Brown and Co, we confirm having visited this site on Tuesday 6th December 2022.

The purpose of our visit was to undertake a structural assessment of a brick-built barn at Broadgate Nurseries and to subsequently prepare a letter type report to comment on its "fitness for conversion" and will form part of a planning application only.

General Description

Broadgate Nurseries is located on Bullock's Short Gate to the south of the village of Gedney near Spalding in Lincolnshire.



Pic 1 – Site Location

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Brick Built Barn

Pic 2 – Location of Brick Built Barn on the Site

The brick-built barn measures some 19.8m long x 8.1m wide and is a 2-storey loadbearing masonry building with a pitched roof and is estimated to be in the order of 120 years old. The building is located in the north-west corner of the site and is orientated so that its ridge line runs in a SW-NE direction generally parallel to Bullock's Short Gate.

There is a drainage ditch at the side of the road and a line of "pollarded" poplar trees on the site side bank some 8-10m away from the building. Attached to the south-west gable end of the barn are further timber framed storage buildings. These extend the length of the building footprint by some 11m or so.

Limitations

This report does not constitute a full structural survey of the building and should not be relied upon by others except for the purposes that it is intended and as noted above. The report is based on visual observations only taken during a single visit. No opening up works have been inspected, nor stored items moved during our inspection – as such we are only able to comment on the areas of structure visible at that time.



External Observations

North-west facing wall (side) Elevation



Pic 3 - North-west facing wall (side) Elevation

- The wall is constructed from red brickwork set in a lime-based mortar and is generally plumb.
- It is punctuated by timber framed window/door openings at ground and first floor level. One of the window openings has been infilled
- There are some areas of mild weathering, and the alignment of the brick coursing is good.
- There are a number of orientated/stepped fractures in the brickwork, notably above and below window openings – some of which are in the order of 3-4mm in width.
- There is some water staining partway along the elevation and a decayed timber beam above a first-floor loading door.



North-east facing wall (gable) Elevation



Pic 4 - North-east facing wall (gable) Elevation

- This gable wall is constructed from red brickwork set in a lime-based mortar and is generally plumb.
- This elevation includes a set of sliding timber doors giving access to the ground floor storage area and a pair of arched headed windows at first floor level.
- There is some mild weathering of the masonry on this elevation, but the wall is generally plumb and in good condition bearing in mind its age.
- There is a small area of loose brickwork at eaves level to the left of the elevation and the timber lintel beam above the doors is decayed.



South-east facing wall (side) Elevation



Pic 5 - South-east facing wall (side) Elevation

- Part of this elevation was partially obscured by an adjacent barn
- It is constructed from red brickwork set in a lime-based mortar and is generally plumb with some minor in plane distortion
- This elevation includes a door opening giving access to the ground floor storage area. Window openings have been bricked up.
- There is evidence of previous single storey buildings having abutted this side of the building, but these have long since been removed. Door openings into them have been bricked up.
- The elevation is reasonably well weathered and there are a few spalled bricks.
- Alignment of brickwork coursing is good.
- The timber lintel beam above the door exhibits signs of decay.



South-west facing wall (gable) Elevation



Pic 6 - South-west facing wall (gable) Elevation

- The majority of this elevation is sheltered by the attached timber framed part of the building. The upper part of this wall is exposed to the elements and shows some signs of the effects of weathering.
- There is a timber window serving the first-floor area above which is an arched head. There is also a timber beam built into this wall at window head level, but this is showing signs of decay etc.
- Above the window there is a vertical fracture in the masonry.
- When viewed from within the timber framed storeroom attached onto the end of the building, the brick wall appears to be in good order albeit most of it was obscured from view by stored racking/shelving etc.



Timber framed part of the building



Pic 7 – North-west facing elevation of attached timber storage area



Pic 8 - South-east facing elevation of attached timber storage area

- The attached timber storage area is clad in horizontally laid boarding attached to a timber stud wall.
- The boarding is quite well weathered and there is some evidence of woodworm etc.
- Some decay was noted within structural studwork posts especially close to ground level.



Roof

- The roof over the main brick-built part of the barn is covered in a lightweight flat tile/slate arranged in a diamond pattern
- Red clay ridge tiles are present – these have a good alignment.
- The roof has good alignment within its own plane.
- Some of the roof tiles/slates are missing from the south-west end of the building and there are holes in the roof allowing water ingress.
- The roof is served by a cast iron gutter at eaves level – this is damaged part way along the north-west elevation.
- The gutter, in turn, discharges to single down pipes located at the western end of the elevation – these simply disappear into the ground
- The roof over the timber framed part of the building is covered in single skin profiled metal sheeting and has a comparatively low pitch.
- Some undulation of this lower lean-to type of roof was noted



Internal Observations

Ground Floor Level

- The ground floor area is essentially one large open space albeit mostly occupied by stored materials at the time of our visit. There is a small internal block-built compressor room attached to the southeast wall.
- The internal faces of the perimeter walls are mainly white painted and are generally in good order bearing in mind their age. Some of the defects (cracks) noted externally reflect themselves on the internal wall faces.
- The visible areas of the concrete floor slab appear to be relatively level and in good condition apart from a few isolated cracks.
- The underside of the first-floor structure can be seen from this level. The first-floor joists are fully exposed and were recorded as 275mm x 75mm timbers spaced at 360mm average c/c spanning the full width of the building (approx. 7.6m internally). Herringbone strutting was present between joists at $\frac{1}{4}$ points along the joist span.



Pic 9 – Underside of first floor (showing herring bone strutting)



First Floor Level and Roof Structure

- The first floor is accessed via a well-worn timber staircase and is covered in 20mm thick T and G boarding.
- Some slight undulation/out of level of this was noted towards the southern end of the barn.
- The defects observed externally in the perimeter walls area also generally reflected internally



Pic 10 – Roof structure – General view

- The timber roof structure is visible from first floor level.
- This comprises T and G sarking boarding laid over 100 x 38 regularised softwood rafters spaced at approx. 600mm c/c.
- The roof system includes 75 x 75mm square canted timber purlins and 175mm deep collars set at mid span of rafter level.
- Further timber collars are present at wall-plate level spanning across between wall-plates (connected via twisted wrought iron straps)
- The roof appears to exhibit good alignment and is in good overall condition with the exception of some areas of damage towards the southern end of the building where there are holes in the roof.
- Some decay of timber elements was noted at this end of the building.



Timber framed Part of the Building

- The internal timber structure forming the “lean to” at the western end of the building is visible from within this area.
- The underside of the roof sheeting can be seen, and this is attached to canted timber purlins spanning between a main central rafter and the perimeter stud walls.
- Some woodworm infestation and decay was noted.
- The visible parts of the concrete floor slab appeared to be in good condition.



General Comments

The main brick-built part of the building is, with the exception of a few areas, in good condition bearing in mind its age.

The roof is covered in a relatively lightweight tile/slate. The introduction of insulations and plasterboards etc will increase loadings and as such some nominal strengthening may be required. Some localised timber repairs will be required but this should be a relatively small percentage of the overall roof structure. Rainwater drainage provisions will need to be reviewed.

Cracks in the masonry walls can be readily repaired and any defective areas of masonry walls made good. Exposed (and decayed) timber beams built into the external walls should be removed/replaced.

The proposal to convert the barn into a dwelling will no doubt mean that internal walls will be constructed at both ground and first floor levels. These walls will help to enhance stability of the building and therefore help to demonstrate compliance with part A of the building regs.

We understand the first-floor area was used for packing/storage and will have been subject to some reasonable loading over its lifetime. The introduction of plasterboard and sound insulation will warrant structural checks on the strength of the joists.

At this stage, no assessment of the building foundations, floor slabs or subsoils has been undertaken and this should be carried out as part of a building regulations assessment etc. The effect of the poplar trees should be considered accordingly.

The timber framed part of the building that is attached to the western gable end is, by contrast, not very structurally robust and in its current condition/form would be difficult to prove structurally without extensive repair/enhancement. New roof elements would be required, and the perimeter walls would need to be strengthened to ensure adequate load bearing strength and stability. The floor slab and foundations of this part of the building would also warrant further investigation/assessment.



Conclusions

Brick Built Area

Apart from a few relatively minor defects noted, the majority of the building fabric forming this barn is in good condition bearing in mind its age and in our view is structurally “fit for conversion”.

To achieve technical approval under the building regulations, some further assessment and a modicum of strengthening work will be required but the base structure represents a good starting point.

Timber Framed Area

The timber framed area attached to the western gable end will, as noted above, require extensive structural strengthening works and it may prove to be more cost effective to consider reconstruction of this area.

We trust you find the above self-explanatory and satisfactory for your present purposes, but should you require any further information, clarification or assistance please do not hesitate to call.

Yours sincerely

Steve Gilman
For and on behalf of Steve Gilman Design Ltd