

Your Ref.

Our Ref.

AW/RD

Date.

01st March 2018

R.A. Bennett & Son
c/o Russell Swan
Swann Edwards Architecture Ltd
Fen Road,
Guyhirn,
Wisbech,
Cambs,
PE13 4AA

Dear Russell

RE: 11218 – BARN CONVERSION, HOME FARM, FLEET HARGATE

Following your instruction to proceed, on behalf of your client, to undertake the site survey works as quoted in our letter of 08th January 2018, we visited site to undertake the inspection and ground investigations on 01st February and we report as follows.

Local colloquial knowledge suggests the property was purpose built as a general purpose out building and agricultural barn during the 1930's, although the property does not appear on any historical maps until the 1969 OS map, (Extract attached).

The property is formed with traditional load bearing masonry walls, with timber trusses and purlins forming the roof. To the North the elevation is generally open with steel and timber framing to carry roof loads to foundation. To the West of the barn a ceiling has been installed with timber joists spanning from the external wall to an internal load bearing brickwork wall.

To the South, rear, of the property is a lean-to, again formed in traditional load bearing masonry with cut timber rafters.

The roof of both sections of the property is clad with single skin fibre cement. We are told, by the architect, that an asbestos survey has been undertaken. The arrangement of the property is illustrated in Swann Edwards drawing No.d SE-868101.

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Generally the masonry is a solid single brick wall (215mm thick), there is a single pier on the North elevation of 340mm thick construction. In general the masonry is in good condition bar a small number of what appear to be isolated issues. The masonry wall construction is a traditional English garden wall bond however internally the stretcher courses have been laid using a concrete block rather than a brick. (Photograph 1)

Shown on our drawing No.d 11218/SK01 (Attached) are the locations of three cracks in the loadbearing masonry.

The crack in the internal blockwork is immediately adjacent, what appears to be a post installed cast iron tie bar. (Photographs 2 & 3) The crack in the lean to gable wall is rotational and appears to be caused by foundation settlement. Without monitoring it is not possible to fully assess if movement is ongoing, however visually the elevation is demonstrating no obvious signs of ongoing movement.

The internal blockwork wall is a single block construction (100mm thick) and has suffered a severe crack to the Northern end. (Photograph 4)

There is a severe crack to the East elevation of the rear lean-to. Photograph 5)

The tie bar to the internal block wall is fixed to a pattress plate on the South barn wall. There is some cracking to the area around this pattress plate, and it is our belief that the rotational movement to the lean-to gable has led to movement in the barn wall which has in turn stressed the tie bar subsequently leading to the internal wall cracking.

The roof structure is a mixture of timber purlins, trusses and iron plates and rods. The roof structure is generally in a condition expected of a structure of this age.

The lean-to roof is a cut rafter timber structure and again visually appears in a good condition for a property of this age.

The clients proposals consist of the conversion to a domestic property, including a first floor. The proposals include for introducing a timber stud wall internally to dry line the property and provide an insulation and damp barrier to current standards. Proposals are illustrated in Swann Edwards drawing SE-8681013 rev A.

The current roof structure cannot be easily or economically amended to suit the introduction of a first floor and as such we would recommend the full replacement of the roof structure.

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The new roof should take the form of proprietary timber collar tie trusses, designed by specialist manufacturers. Due to the height of the collar and the age of the existing masonry walls care should be taken in design to ensure eaves spread lateral forces are not imposed upon the masonry.

The borehole ground investigation, shown on our log attached showed the underlying strata to be of a consistent good mid dense silt to a significant depth. As such it is considered strata at 0.6m BGL are capable of a safe allowable bearing at kN/m^2 .

The existing foundation detail, shown on our ground investigation log attached, is assumed to be symmetrical about the load bearing wall and as such is providing adequate support for the current loading conditions

The proposed conversion and introduction of a first floor will introduce additional loads onto the structure. The current foundation is likely to experience unacceptable differential settlements if these loads are placed upon them.

The masonry walls are in a condition suitable for the loads which will be attracted by the proposed arrangement in the conversion. Some windposts may be necessary at large opening locations, exact details should be established by calculation during detailed design.

It is recommended that as part of the conversion the ground floor slab is replaced by a structural raft slab foundation which also has needle underpinning beams to also pick up the existing masonry walls. This solution will ensure differential settlement is limited to acceptable levels.

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The masonry to the lean-to gable elevation will require stitching and potentially for aesthetics, rebuilding. However these are limited to isolated areas with simple, cost effective repairs available.

In summation, whilst the barn has some defects they are limited, and as such the barn structure is suitable for conversion trusting the recommendations within the report are acted upon.

We trust the above and attached, findings and conclusions are clear and sufficient for your current requirements. Should you wish to discuss please do not hesitate to contact us.

Yours sincerely

For and on behalf of **SIDEBOTTOM RICHARDSON CHENG LTD**

A handwritten signature in black ink, appearing to be 'A.P. Wilson', with a stylized, flowing script.

A.P. WILSON IEng AMIStructE

Enc.

1969 OS Map Extract

11218/SK01

11218/BH01

Photographic Record