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Report on

Structural Condition

At

The Dipping Barn
Bullsland Farm
Bullsland Lane, Chorleywood
Rickmansworth,WD3 5BG

For

Mr S Hayes

REPORT COMPILED BY: Robert M Wallbank BSc., C.Eng., M.I.C.E.
DATE: 31st March 2020
JOB REFERENCE NUMBER: RMW/13249/20

Mr S Hayes
MSC Planning Consultants
Beech House
259 Amersham Road
Hazlemere
High Wycombe
HP15 7QW

Our ref: RMW/ss/13249/letrep2/20
Date: 18th November 2020

Dear Mr Hayes

Re: The Dipping Barn, Bullsland Farm, Bullsland Lane, Chorleywood, Rickmansworth WD3 5BG

Thank you for your instructions to comment upon the structural condition of the above property with specific reference to the requirement for a structural inspection in terms of loadings on existing foundations, the condition of principal structural components and any other structural implications of the renovation and conversion works. In accordance with planning rules, we confirm or otherwise that the buildings to be converted are of sound, permanent and substantial construction, and whether or not they will require extensive reconstruction.

My structural survey will cover the main structural elements of the main barns.

I confirm I undertook my inspection on Tuesday 31st March 2020.

Reference should be made to our standard terms and conditions regarding Structural Engineer's inspections, these are appended and form an integral part of this Report.

1.0 Description of Building

1.1

The Dipping Barn is a freestanding structure comprising of low-level cast in situ concrete walls measuring approximately 19 metres long by 5.5 metres wide, with intermediate timber support posts approximately every 4 metres that extend above the concrete walls which support the roof. Due to the tapering nature of the base of the concrete walls, the width of the structure at ground level is 4 metres.

1.2

The timber roof posts bear onto cast in situ concrete longitudinal walls forming the original dipping pen. The earth has been banked up on either side of the longitudinal walls, but much of the dipping pen is subterranean. However, at the northern end the dipping pen is approximately at natural ground level and at the southern end approximately 1.5 metres subterranean.

1.3

The pre cast concrete wall height measures 2.1 metres and has been cast in two operations.

1.4

The concrete side walls measure approximately 150mm thick and have been cast in situ using wooden shuttering. There are intermediate buttress piers at every post position.

1.5

The predominant posts are a railway-sleepers measuring 310mm deep and 140mm wide.

1.6

Some of the original posts have been replaced with circular telegraph poles, no doubt when some of the original timbers have rotted or as a result of fire damage.

1.7

The longitudinal poles support the main roof timbers and purlins, which are clad in a metal profile sheets.

1.8

The side walls have timber purlins fixed to the timber poles and posts and form support to vertical timber cladding, with a small gap between the top of the concrete wall and the base of the timber cladding.

1.9

The height of the structure from ground level to roof level is 5.2 metres.

2.0 Structural Condition

2.1

The original timbers have been set onto large blocks of concrete that go down to the full depth of the wall, but some of the circular posts have independent pad foundations cast onto the flinty clays that are naturally forming.

2.1

2.2

2.2

The posts to the eastern flank elevation have rotated out from the vertical, largely because there is no cross bracing to the structure and the roof timbers are hung from the longitudinal eaves timbers. Without adequate cross bracing, either by timbers or internal wall structures, the structure is always going to be prone to wind damage and racking. In addition, the racking may have been caused by a lack of restraint at a time when there has been a previous fire. There is clear evidence of fire charred timbers spanning across the structure as well as to the longitudinal purlins, which have been repaired and supplemented by other timbers to help provide support to the roof.

2.3

The concrete wing walls are in sound condition with no evidence of any significant defect and are performing their function for support of the structure adequately.

2.4

There is some hollowness in some of the original timbers, possibly as a result of some long term rot or deterioration of the timbers, and these have been supplemented by newer timbers on the reverse side and coach bolted through.

2.5

In other areas there is evidence of fire degradation to the timbers and therefore there is reduced strength in these timbers. However, the size of the posts and the supplemented timber allow for the roof to be adequately supported.

2.6

The support of some of the cross timbers at roof level do not align with a notch-out on the side posts, particularly to the west elevation.

2.7

There is one diagonal member that has been placed on the western elevation to support the structure as the result of some racking issues, which may have helped to assist in preventing further movement.

2.8

All external cladding sheets are in good serviceable order and are well supported on the structural frame and secondary support rail timbers.

3.0 Comments and Conclusions

3.1

The main concrete walls to the dipping barn are in adequate condition with no evidence of any structural issues. Whilst elements of the concrete show voids between the pads and the side wall, these are largely due to general deterioration over the years but have not affected the structural rigidity or capacity of the elements.

3.2

Historic fire damage has clearly had an influence on the integrity of some of the timbers, but these have been supplemented, therefore the structural strength of the posts is more than adequate to support the roof structure. The strength of the roof timbers, either major or secondary, are

adequate to support the roof cladding, therefore overall, the structure is sufficient to take new wall cladding with the extra weight of insulation.

3.3

The external cladding need not be removed from the building in order to convert it. Insulation can be added internally, in the form of a manufactured cassette type, that is fixed entirely to the main structure and leaving an air gap to the cladding sheets. The cladding relies upon the main structure and secondary support rails for its support and will be unaffected by the insulation and internal finishes.

3.4

I propose the use of ply sheeting is adopted to create a diaphragmed wall, which will assist against racking in the future, otherwise the alternative would be to introduce diagonal members between the posts to create the same effect. Some of the posts can be moved back to the vertical very easily during this work.

3.4

Where some of the timbers have experienced voids as a result of damp or fire, then some further supplementary work would be desirable to ensure that the bases of the timbers offer adequate long term durability.

3.5

The connections between the posts and the replaced roof timbers does not provide any resistance to sway. These connections should be made more rigid by the use of metal plates, whether or not the barn is converted.

3.6

In conclusion, from a structural perspective, there is no reason why the building could not function as a dwelling without any additional structural elements as permitted under Class Q Permitted Development Guidelines.

Yours sincerely

[redacted]

Robert M Wallbank BSc., C.Eng., M.I.C.E.

[redacted]

NB This report is not a full or any other form of survey but is a specialist structural report on the items contained therein. Therefore no responsibility can be accepted for any other defects which are found in the property.

NB This report was commissioned by MSC Planning Consultants on behalf of Mr S Hayes, owner of the above property and a copy of this report may be used by their professional advisors, Building Society, Bank, or Building Insurers. No other person may receive a copy of this report without first obtaining our permission in writing.

NB We have not inspected woodwork or other parts of the property or structure which are covered, unexposed or inaccessible and we are therefore unable to comment whether such parts are free from defect.

TERMS AND CONDITIONS

1. The copyright of our Report remains vested with RWA Consulting Engineers LLP.

2. Our Reports are confidential to our Clients and RWA Consulting Engineers LLP and we do not accept responsibility to third parties to whom our Report, or any part thereof, is made known, without formal agreement beforehand.

3. Our inspection of a property is intended to provide the information set out in either paragraphs (a) or (b) below. Our reports will indicate the exact nature of our brief.
   (a) Specific advice on any structural problems which have been brought to the attention of the Engineer and which may also be the sole basis for commissioning the report. Examples of this are fractures to walls, previous repairs etc, or
   (b) To provide a general overview of the condition of the principal structural elements of the property with a view to advising whether the property is suffering from deficiencies such as subsidence, heave, landslip, structural instability or failure of structural components.

4. The inspection is not a full "Building Survey" as defined by the Royal Institution of Chartered Surveyors. A "Building Survey" deals with many of the non-structural aspects of property condition. Our Structural Survey will not cover items other than structural items and any comments on matters non-structural are for information and may require specialist advice. For example: breach of damp proof course, damp, roof tile conditions, wood boring beetle or rot, drainage, rain water goods, electrics, Planning and Building Regulation compliance are examples of matters not covered in our report. Other than general comments the inspection will not include the testing of any services to the property, nor will it consider the presence of any hazardous materials.

5. Inspections can only be made of those areas which are freely accessible. Unless arrangements have been made beforehand no inspection can be made of the foundations or areas buried beneath the structure or behind cladding, neither can any comment be made upon areas that are obscured by fitted carpets or fixed coverings. In the event that such further inspection is advisable then this will be referred to in the report. However, there is always the possibility that there are hidden defects which cannot reasonably be established from a Structural Engineer's inspection.

6. The report should not be construed as an implied warranty in relation to the structure.

7. Clients should always obtain legal advice on matters involving the sale and purchase of property; our reports do not address legal issues.

8. It must be remembered that the condition of any property is a constantly changing variable. With the passage of time new defects can arise and existing ones worsen. The report should only be taken as a record of the property's condition at the time of the inspection.

PAYMENT TERMS

10. Our quotation fee is for attending site, inspection of property under the conditions as set out above, consideration of findings and reporting thereon. This fee is based on the initial instruction received. Any further involvement required if the property is found to be of a more complex nature, additional site visits and further correspondence, will be charged at our standard hourly rate, which is currently £150.00 plus VAT.

11. Unless otherwise agreed, it is company policy that our structural survey report will not be released until payment has been received in full. Payment of outstanding invoices is expected by return. We will exercise our statutory rights to claim interest and compensation for debt recovery costs under the terms of the late payment legislation if payments are unreasonably delayed.

12. All rates quoted are exclusive of VAT.

13. The financial liability of RWA Consulting Engineers LLP under the terms of these conditions is limited to losses only incurred to the value of the Professional Indemnity Insurance available and in force at the time of this Report.

14. The client shall pay the fees in full without deduction by way of set off, counterclaim, discount, abatement, retention or otherwise.