

DAVID PARTRIDGE LTD

CHARTERED ENGINEER

B.ENG., C.ENG., M.I.C.E.

REPORT ON TWO BARNS,
 SHORNHILL FARM,
 SHORNHILL,
 WITHINGTON
 GL54 4BJ

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CLIENT Mr P O'Sullivan
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1.0 PREAMBLE

The 'site' comprises two linked single storey buildings standing on land gently sloping east to west, on the approximate eastern side of the general complex of farm and residential buildings. The buildings are orientated north to south and for the purposes of this Report are referenced :

Building 1 -- larger structure to the south [Plate A]

Building 2 -- smaller structure to the north [Plate B]

They are surrounded by open ground and because of the gentle ground slope their eastern sides are built into the ground by about 1m.

The buildings have been most recently used for equestrian purposes and, as a consequence, have a structural form of timber and masonry construction under a duo-pitched roof clad with corrugated sheeting.

It is proposed to seek Full Planning Permission for the conversion of the buildings into a single dwelling. The purpose of this document is to appraise the stability and condition of those parts of primary loadbearing structure which form the buildings with the consideration that they should remain serviceable over the minimum anticipated design life of sixty [60] years.

The inspection of the building was made in 1st April, 2022 by the Principle of this Practice, David Partridge B.Eng.[Hons], C.Eng., M.I.C.E. who is also the author of this Report. My experience of this type of scheme extends over thirty five years in Private Practice covering all types of rural buildings.

2.00 STRUCTURAL FORM and CONDITION

The structural form of the buildings is very typical of this age and previous function of equestrian building comprising fabricated timber truss roofs spanning the narrow width supported on solid masonry perimeter walls. There are various internal walls of blockwork masonry and timber studding. The eastern elevation walls of both parts act as masonry retaining structures.

BUILDING 1

ROOF

The roof structure comprises a series of fabricated timber trusses spanning the narrow width of the building. [Plate C]. The truss members are sawn timbers connected to each other with truss plates and bolted joints to create the roof shape with a slightly raised bottom tie to increase the internal ceiling height. [Plate D]. The roof is covered with corrugated sheeting supported on timber purlins spanning between the trusses. The purlins are securely fixed to the trusses and the roof soffit is timber boarded.

The trusses are secured to the tops of the front and rear walls with metal fixings into a timber plate which appears to be screwed or bolted to the top of the masonry.

WALLS

The perimeter walls comprise at least 215mm thick solid blockwork masonry at the eastern elevation [Plates E and F] and 100mm thick solid blockwork masonry with externally projecting masonry piers spaced at fairly equidistance intervals along the other walls – the purpose of the piers is to ‘stiffen’ the general 100mm blockwork. [Plates G and H]. The walls are rendered externally.

The window and door openings are formed with precast concrete lintels over.

FOUNDATIONS and GROUND FLOOR SLAB

The foundations were not exposed [but are commented on in the next Section].

The ground floor slab is concrete and shows no evidence of damage in the form of cracking or vertical displacement.

BUILDING 2

ROOF

The roof has a structural form similar to Building 1 although the existing ceiling prevented a detailed inspection. It is covered with corrugated sheeting.

WALLS

The walls comprise solid blockwork masonry varying in thickness between 100mm and 215mm but without stiffening piers. The masonry extends to about half height with timber studding above. [Plate J]. The walls are clad with profiled metal sheeting.

The window and door openings are formed with precast concrete and, occasionally, timber lintels over.

FOUNDATIONS and GROUND FLOOR SLAB

The foundations were not exposed [but are commented on in the next Section].

The ground floor slab is concrete and shows no evidence of damage in the form of cracking or vertical displacement.

3.00 STABILITY CONSIDERATIONS

BUILDING A

ROOF

The roof structure will comply with current Codes of Practice due to the purlin and truss member sizes.

The roof can be retained and will probably benefit from enhanced fixings to the two side walls in the form of simple metal straps secured internally.

WALLS

The walls are vertical and show no evidence of cracking or bulging which, if present, could suggest foundation movement. There is no obvious penetration of damp through the walls.

The eastern side wall is clearly acting as an adequate retaining structure due to the total absence of damage in it.

The slenderness [height / thickness ratio] of all walls [including those stiffened with external piers] is within the limitation set out in the British Standard Code of Practice for Unreinforced Masonry [BS5628 – Part 1].

The precast concrete lintels are adequate.

FOUNDATIONS and GROUND FLOOR SLAB

The absence of damage in the substantial masonry walls is a clear indication that the foundations are performing satisfactorily. Masonry damage would be a manifestation of foundation disturbance especially as the roof structure is totally sound and will not be exerting any unrestrained loads on the walls such that damage might accrue in them.

The ground floor slab can be retained.

BUILDING B

Similar comments to those offered for Building A apply to this Building without the need for unnecessary repetition.

4.00 CONCLUSIONS

The condition of the primary loadbearing structural elements of both buildings is relatively good.

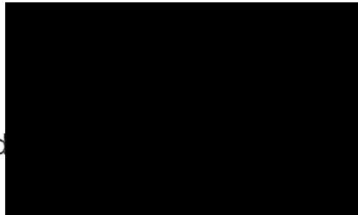
Consideration might be given to locally enhance the fixings of the trusses to the external walls and this can be simply completed internally without removing any of the existing roof cladding which will remain.

The conversion will require the external walls to be thermally insulated and this can be achieved by constructing an additional inner leaf of timber studs to effect a cavity wall. Although unnecessary, this action will significantly enhance the lateral stability of the walls and, at that stage, the opportunity will also be taken to improve the fixing of the trusses to the top of the walls.

The buildings show no evidence of settlement due to failing foundations nor lateral instability due to insufficient rigidity.

It is my conclusion that the building is structurally sound, suitable for and capable of conversion to the proposed use without substantial alteration, extension or re-building, and be serviceable for the design life which is anticipated to be sixty [60] years.

Signed



Dated *8th June, 2022.*

David Partridge Limited

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TWO BARN, SHORNHILL

BUILDING 1



PLATE A – GENERAL VIEW FROM EAST

BUILDING 2



PLATE B -- GENERAL VIEW FROM EAST

BUILDING 1



PLATE C -- ROOF STRUCTURE OF FABRICATED TIMBER TRUSSES



PLATE D -- RAISED TRUSS TIE AND WALL CONNECTION



PLATE E -- EXTERNAL AND INTERNAL WALLS



PLATE F -- EXTERNAL WALL THICKNESS AT EASTERN ELEVATION



PLATE G -- EXTERNAL WALLS



PLATE H -- EXTERNAL STIFFENING PIERS

BUILDING 2



PLATE J -- EASTERN WALL