# RICHARD RHODES & PARTNERS LTD

**CONSULTING STRUCTURAL & CIVIL ENGINEERS** 

PARTY WALL SURVEYORS

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## STRUCTURAL ENGINEER'S REPORT

at

Meadows Farm, Ridge Top Lane. Hayfield, High Peak

Ref. 11995.003

Date: 30 July 2009

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## 1. INTRODUCTION

## 1.1 Client

High Peak Borough Council, Municipal Buildings, Glossop, Derbyshire SK13 8AF

## 1.2 Location of Property

Meadows Farm, Ridge Top Lane, Hayfield, High Peak

## **1.3** Purpose of Report

We have been furnished by High Peak Borough Council with a copy of Planning Application ref HPK/2009/0365 including a structural feasibility report dated May 2009 by WML Consulting.

We have carried out a Structural Engineer's Inspection of the farm buildings at the property and an associated review of the May 2009 Structural Feasibility Report by WML Consulting. The purpose of our report and review is to advise on the WML Report's completeness and content regarding the structural feasibility of converting the barns into domestic living accommodation and to identify in outline any further remedial work likely to be needed.

A marked-up copy of the "Existing Site Layout Plan" ref MEA/02 is enclosed. We inspected Buildings 1 to 5 inclusive but did not inspect the Farmhouse, Store 1 or Store 2 buildings.

## 1.4 Scope of Report

The inspection carried out was visual only and did not include any exploratory investigation of the property. Woodwork and other parts of the structure which were covered or inaccessible were not inspected and we are therefore unable to report that any such part of the property is free from defect. All crack widths and verticality measurements are approximate. Services (such as drains, gas, water and electricity etc.) are not included in the inspection.

All directions given in this report are referenced to points of the compass.

All doors were locked and there was no-one present during our inspection. We were therefore unable to inspect inside the buildings except where noted.

## 1.5 Date of Inspection

28 July 2009.

## 1.6 Description of property

Stone and brick-walled barns of various ages, types of construction and in varying structural condition. Roofs are generally covered in corrugated, asbestos-cement sheeting.

## 2. INSPECTION

We have checked the verticality of walls wherever possible, using a plumb-line. We have not repeated the descriptions in the WML report unless we disagree with them.

#### **Building 1 Inspection**

The stone walls are about 450mm thick. There is no stonework over the main opening in the South wall; the South wall leans out by up to 70mm. The West wall leans outward by up to 50mm. We agree the north ends of the two end walls have suffered significantly from very longstanding settlement.

We were able to inspect internally; the roof height above ground level/floor level reduces from 3m at the front to only 2m at about 4.5m towards the rear.

#### **Building 1 Conclusions**

There is insufficient headroom towards the rear to form the proposed dwelling rooms without raising the roof i.e. increasing the height of the side walls towards the rear (perhaps by as much as 0.5m). The verticality of the side walls (East & West) and the South wall is satisfactory and does not require reconstruction for structural reasons. We agree with the wall **rebuilding** shown in the WML report (and on plan MEA/06) but some new stonework will also be needed over the existing main opening in the South wall (about 0.6m height).

There is no North wall at present (only sheeting) so this wall would be completely new.

A new roof structure will be needed.

#### **Building 2 Inspection**

The East wall is reasonably vertical. The West wall is common to Building 3 and could not be checked for verticality; it is sheeted above Building 3's roof level. The South wall was completely inaccessible.

The North wall is reasonably vertical up to first floor level and then leans inwards by up to 60mm; this wall is about 450-500mm thick.

We were unable to inspect internally.

#### **Building 2 Conclusions**

The verticality of the North wall is structurally adequate, assuming the first floor and new roof structure are properly tied in to the wall; the worst out-of-plumb measurement is less than one sixth of the wall thickness. In our experience with old barns, the (currently inaccessible) South wall probably leans **out** by **about** the same amount as the North wall leans in. We recommend provisionally allowing for rebuilding the upper half of the North wall's gable pike in view of its current invisibility.

A new roof structure and first floor will probably be needed.

The West wall will require a completely new wall above the level of the Building 3 roof (about a 1m height).

#### **Building 3 Inspection**

We checked the verticality of the North wall but were unable to access the (internal) South wall which is shared with Building 5. The two side walls are shared with adjacent buildings and were inaccessible. The WML Report states:

"in particular, the rear(i.e. South) wall of Building 3, at the centre of the main barn, displayed evidence of leaning and distortion". This wall is shared with Building 5.

The North wall is about 550mm thick, and leans outward by up to 80mm.

#### **Building 3 Conclusions**

The maximum lean of the North wall is less than one sixth of the wall thickness and provided the new roof structure is detailed to provide lateral restraint at eaves level, the North wall will not need any structural rebuilding.

Because of the proposed new ridge line over the internal (South) wall, this wall is likely to be raised to the ridge for lateral stability; in view of its reported distortions, we recommend allowing for 50% rebuilding, or possibly for thickening by building an additional, tied leaf.

#### **Building 4 Inspection**

The (brickwork) walls are all reasonably vertical. We were able to inspect inside the west-end room.

#### **Building 4 Conclusions**

The facing brickwork on the West wall is very eroded and we note that this is to be overclad (otherwise it would probably need a complete replacement external leaf of brickwork). The masonry on the North wall is of different types and we note this is to be overclad instead of rebuilt – there would be no structural need to rebuild the North wall.

#### **Building 5 Inspection**

Only the West wall was accessible (and only partially) for inspection; it is stonework and leans outward by up to 90mm over its maximum 3.4m height. The stonework facing looks of poor quality.

#### **Building 5 Conclusions**

Bearing in mind the condition of the small section of the one wall accessible for inspection and its out-of-plumb condition, and allowing for the condition of the other Buildings whose walls are visible, we conservatively recommend allowing for rebuilding 50% of the South, East and West walls (some of which will be tall windows). A new roof structure will probably be needed.

## 3. GENERAL CONCLUSIONS

Lack of access prevented us from inspecting most of the southern elevation of Buildings 2, 3, 4 and 5. We have therefore erred on the side of caution when assessing these walls. If all obstructions were cleared and full access given, a more precise set of conclusions could be given.

Based on our own experience, it is possible to design a solution to stabilize even badly distorted walls using an additional inner leaf of masonry with wind posts and ties. The cost of this can however exceed the cost of demolition and rebuilding.

Lack of headroom only appeared to be critical in Building 1.

There was no visible evidence of rock outcrops in the vicinity; shallow rock would make the excavation of the underground link difficult or prohibitively expensive

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Eur. Ing. Richard Rhodes B Eng. C Eng. MICE MIStructE

For and on behalf of R Rhodes & Partners (Consulting) Ltd

Appended:

Plan MEA/02 Instruction To Proceed Client's Guide to a Structural Engineer's Report

SER.004

#### CLIENT'S GUIDE TO A STRUCTURAL ENGINEER'S REPORT BY R. RHODES & PARTNERS (CONSULTING) LTD

'The Client'	The person signing the Instruction To Proceed.
'The Company'	R Rhodes & Partners (Consulting) Ltd.
'The Property'	The house which the Client has instructed the Company to inspect and report on.

The Report is a written document which describes the results of an inspection of the Property carried out by a Chartered Structural Engineer working for the Company. The Report is prepared on the instructions of the Client and is solely for the use of the Client and their professional advisors (e.g. solicitor, chartered surveyor or estate agent). Liability to third parties for all or any part of the Report is specifically excluded.

The inspection will be visual and will cover only the load-bearing elements of the **Property and only those which are reasonably accessible.** Woodwork and roof coverings will not be inspected and neither will any parts of the Property which are inaccessible or in the ground. Services (such as drains, gas, water and electricity etc.) are not included in the inspection.

The Company will not inspect every square inch of the Property otherwise the fee payable by the Client would have to be substantially bigger. When instructed by the Client, the scope of the inspection will be limited to faults identified by the Client or identified in a previous chartered surveyor's survey, in which case the remainder of the Property will only be briefly inspected and reported on by the Company.

It is not always possible to discover defects which are concealed, the Company's Chartered Structural Engineer will use intuition and experience regarding inaccessible areas but does not possess X-ray vision!

No tests or exploratory investigations will be carried out but an informed opinion will be given in the Report as to whether faults may exist and whether tests should subsequently be carried out to obtain further information. The detailed design of remedial works is not included in the fee.

When the Company is inspecting a Property which is not owned by the Client, the Company must exercise a degree of care to the occupier. If the occupier of the Property refuses to move obstructions or refuses access to any part of the Property, then the Company must abide by his decision and will record the occupier's refusal in the Report.

The Report will be set out in sections: Introduction, Internal Ground Floor, Internal First Floor, Other Floors, Roof Space, External Elevations, Outbuildings (only where particularly requested), Conclusions, Recommendations.

The Report is not an Insurance or a Warranty regarding the condition of the Property; it is a considered professional opinion given by the Company using reasonable skill, care and diligence, based on their experience in such matters.