

STRUCTURAL REPORT

Location	Green Farm, High Lane, Ingbirchworth, Penistone, Sheffield, S36 7GG.
application	Conversion and alterations (including partial demolition) of two separate agricultural buildings to form two dwellings.
client/applicant	Mr J Stafford & Mrs R Crossfield
job number	24/1099
date	March 2025

Ltd
PAUL MATTHEWS ARCHITECTURAL

ARCHITECTURE | PLANNING | DESIGN

Malkin Farm
Brow Lane
Holmfirth
HD9 2RJ
07946872499

paul@paulmatthewsarchitectural.co.uk

www.paulmatthewsarchitectural.co.uk

Company Registration Number: 09898149 - Company Registered in England and Wales

This Structural Report forms part of the planning application for the alteration (including partial demolition) of two separate agricultural buildings to two separate dwellings.

These separate agricultural buildings are identified on the planning application drawings as barn 1 and barn 2. Barn 2 being adjacent to the highway (High Lane) and Barn 1 more North West of the site.

Qualifications of Building Surveyor

I, Paul Matthews, qualified with a Building Surveyors Honours Degree from Sheffield Hallam University in 2003 and became a member of the Association of Building Engineers in March 2011, converting to a Chartered member in 2014 when the association was granted Royal Chartered status by Her Majesty the Queen.

I have worked in both private practice and Local Government since qualification and have built up vast construction industry knowledge and experience.

Paul Matthews Architectural Ltd was formed in 2015.

My overall experience leading to a Chartered Building Engineer has been extensive in all areas of the profession. This includes the restoration and repair of listed buildings, boundary disputes, party wall matters, refurbishment and renovation of commercial, industrial, educational and residential properties, structural alterations, land surveying, extensions, conversions, housing developments, disabled adaptations, agricultural & equine developments, defect diagnosis and prognosis along with scheduled remedial works, building surveys, measured surveys, feasibility studies, schedules of dilapidation and condition.

Date of Inspection Survey

This report is based upon a visual site inspection/site survey on Friday 6th December 2024.

At the time of the survey the weather was dry but cold.

Purpose of Survey

The purpose of the inspection and this report is to comment upon the structural integrity of the existing agricultural buildings, Barn 1 & Barn 2, and to confirm whether they are suitable for conversion into dwellings.

Inspection Type

The inspection was of a visual nature with no opening up carried out.

Description of Buildings

Both agricultural buildings, Barn 1 and Barn 2, are modern portal framed structures.

The buildings are believed to date back to 1993 (Barn 1) & 1973 Barn 2. Barn 1 was extended, almost doubling the size, back in 1998

Both buildings have a duo pitch roof with a traditional agricultural shallow pitch. Barn 1 has a symmetrical roof with a central ridgeline running South East to North West. Barn 2 has a non-symmetrical duo pitch roof with an off-centre ridge, forming a cat slide roof, with the roof apex also running South East to North West.

Barn 2 has a shallow pitch outshot to the South West, presumably a more recent addition to the original agricultural building. This is to be removed as part of the overall proposals.

Both buildings have a fibre cement profiled sheet roof covering, incorporating some translucent roof sheets. The roof covering is supported by traditional timber purlins. A composite panel (insulated sheet roof covering) is proposed. It's important to note a single skin fibre cement cladding weight is likely to be circa 0.16-0.24kN/m whereas a composite panel cladding weight is circa 0.12kN/m². Notwithstanding this, given the exposed location, wind uplift should be considered as part of a more detailed design.

Barn 1 internally is a large open plan layout with central stanchions, where the original rear gable of the barn previously existed.

Barn 2 has 4 distinct bays, all of large proportions, with the Easterly most bay having a lower floor level. Internally, Barn 2 has blockwork, feed barriers and rendered masonry sub-dividing the bays. These do not appear to be structural with the original portal frame skeleton providing the structure of the building.

Both barns have concrete floor slabs. Whilst no destructive investigation has been made given the historical use of livestock and large heavy agricultural machinery, the loadings associated with a domestic use would be significantly less than that of the historical agricultural use. All floor slabs, where visible, appear to be in good condition.

Blockwork and a mixture of cladding (timber, Yorkshire boarding, fibre cement sheeting and profiled metal sheeting) forms the perimeter walls to the barns. Barn 1 has blockwork perimeter wall heights of 1.8m above the concrete slab levels. Barn 2 has varying blockwork wall heights ranging from 1.8m to 2.4m high above the concrete floor slabs.

Some areas of cracking were noted to the blockwork, particularly on Barn 2, but this is considered partly due to a lack of expansion joints given the lengths of blockwork walling. Expansion joints to blockwork walls should be incorporated every 10 meters, Barn 2 has side walls of almost 14meters long and a rear/roadside wall of circa 28.5m long. It was also reported at the time that agricultural vehicle impact within the building has occurred, particularly in Barn 2.

No trial holes or foundation inspections have been carried out but clearly the longevity of both barns demonstrates the foundations are adequate to support the live and dead loadings associated with the agricultural use.

Both subject buildings are served by electricity and have internal water supplies.

Both buildings have clearly been designed and built purposely for agricultural purposes. We understand they have had a variety of uses as the farm has evolved and have both been used to house livestock, machinery and fodder/crops. The buildings have been maintained resulting in the current good condition.

Observations and comments

The portal frame appears in good condition, no defects were noted.

The perimeter concrete block walls show some signs of movement but this is considered to be due to a lack of expansion joints as opposed to structural failure.

The floor slabs are reported 175 thick concrete incorporating mesh reinforcement. It has been reported these were designed to support grain which would be a significant weight on the slabs. The floor slabs to both buildings appear in good condition with no cracking which would indicate a poor sub base or inadequate concrete depth. Large/heavy agricultural machinery and deep bedding of livestock has historically been carried out within these subject buildings for a number of years - No defects noted. Furthermore the proposed domestic loading will be significantly less.

My visual inspection of the walls and structure, to both Barn 1 & Barn 2, confirmed that there is no clear evidence of structural defect or distress sufficient to cause alarm or indicate that the proposed conversion cannot be achieved without excessive rebuilding/structural work.

There is no clear evidence of structural movement or bowing defects to any of the walls. A plumb bob test showed walls to be true and vertical. In my professional opinion, the existing buildings, Barn 1 & Barn 2, are more than adequate to support the weight of the proposed conversion. The external walling of natural stone replaces the existing blockwork with a new timber framed insulated internal wall providing the required cavity and thermal upgrade to comply with the Building Regulations. It is intended this internal thermally insulated timber wall will be built of the existing concrete slab which is more than capable of supporting such loads.

Internal load bearing walls (yet TBC) may require narrow (450mm wide) strip foundations to provide sufficient support, it is recommended this is assessed and addressed at detailed design/the building regulations stage. There is also the opportunity to utilise thermalite blockwork to provide load bearing walls (subject to imposed loads) which will significantly reduce the weight on the existing floor slab.

The roof covering is not traditional for a residential property, given the buildings exposure careful consideration needs to be made with regards to the proposed roof covering (pitch, wind, tile chatter, etc). It is considered appropriate to replace the current fibre cement profiled sheeting roof coverings with a lighter weight materials such as a composite panel (insulated steel profiled product) to form the new roof covering. The existing portal frame structure and timber purlins to both buildings are capable of supporting this.

The existing concrete floor structure has no evidence of structural cracking or subsidence. Given both the buildings most recent uses being agricultural, it is therefore considered more than capable of sustaining the imposed floor loading of private family dwellings.

The proposed works are subject to Building Regulations. Building Regulations approval is required for the proposed works. A plan check and then subsequent inspection and approval of site works by building inspectors is required. This process will ensure that the proposed dwellings will meet current regulations with specific regards to safety, health, welfare and convenience of people using the building. The Building Regulations also promote the conservation of fuel and power, protect and enhance the Environment and promote sustainable development.

Conclusions and Recommendations

My structural inspection of the two agricultural buildings, Barn 1 & Barn 2, has confirmed that they are both in a sound and stable structural condition. In my professional opinion, the existing structures are suitable and adequate to sustain the additional loads from the proposed conversions to form the proposed residential dwellings.

It is recommended the input of an appropriate structural engineer is sought following a planning approval to consult with regards to the new roof covering, specifically with regards to wind uplift.

Limitations

I have not inspected woodwork, damp proof membranes or other parts of the two buildings which are covered, unexposed or inaccessible and therefore I am unable to report that any such part is free from defect.

At this present time I have not conducted any intrusive or destructive testing of the fabric of the property and in particular I cannot confirm that the property is free from asbestos or high alumina cement construction.

This report has been prepared for the sole benefit of Mr. J Stafford & Mrs R Crossfield and Barnsley Metropolitan Borough Council Planning Officers.

The liability of Paul Matthews Architectural Ltd and their employees shall not extend to any third party.

This report should not be passed on to any third party without the express permission of PAUL MATTHEWS ARCHITECTURAL LTD, with whom the copyright remains.

Yours faithfully,

Paul Matthews Bsc (Hons) C.Build E MCABE