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Dr Iqbal

Your Ref:

Oakleigh

Longsight Road

Our Ref:

Oakleigh/WR1

Clayton Le Dale

Date:

10 April 2021

For the attention of Dr. Iqbal

**Structural Condition Report of the Depot Building, Oakleigh, Longsight Road,  
Clayton Le Dale**

**1 Terms of Reference**

This report has been undertaken for Mr Iqbal only and is validated for him, for 6 months from the date of the report.

This report has been prepared solely for the purpose of a planning application under Schedule 2 Part 3 of The Town and Country Planning (General permitted Development) (England) Order 2015 as amended and has been undertaken by means of a visual and geometrical survey with consideration for converting the barn into a domestic property. The inspection was undertaken on 15th September 2020.

**2 Introduction**

The report will determine whether or not the existing building has the structural integrity for conversion with minimal, structural improvement works and whether or not any further investigations are required.

No attempt was made to remove any fixtures and/or fittings, no material composition tests have been carried out and no excavations have been made to determine the existing foundations or any other detail that may be buried.

The report does not represent a full structural assessment and should not be used for any other purpose than for that for which it is intended.

The existing building comprises a mono-pitch, steel-framed barn to the front approximately 18000mm x 8250mm on plan and a number of steel-framed pens to the rear in a continuation of the mono-pitch for an additional 22600mm. The exterior fabric is corrugated, fibre cement/asbestos side sheeting to the gables and rear elevation. The roof sheeting consists of corrugated, fibre cement/asbestos. The front elevation is generally fully open with short, full-length timber cladding down from the eaves, approximately 2000mm. All sheeting and cladding is supported by timber purlins and side rails fixed to steel framing as illustrated by the photographs shown on pages 5 to 9 and by the drawing produced by Chris Astin MCIAT provided under separate cover. The side sheeting approximately spans from the eaves half-way down the rear and gable elevations at which level the wall fabric is made up of concrete blockwork to ground level.

Whilst considering the current, structural condition, I have taken into consideration the potential to convert some part of the existing structure into a domestic dwelling.

### **3 Summary**

#### **3.1 General**

The existing buildings, including the corrugated sheeting, should be subject to an intrusive contamination and asbestos survey by an appropriately qualified specialist to determine whether or not any special measures are needed to remove/contain/encapsulate such material. Removal of asbestos should only be undertaken by an experienced contractor that has membership of the Asbestos Removal Contractors Association (ARCA).

#### **3.2 Barn**

The existing steel frames of the barn, with localised repairs, cleaning, minor bracing (or alternatively inner leaf concrete blockwork shear walls) together with supplementary, minor eaves haunches, should prove suitable for supporting a domestic development in the form of a structural insulated panel system (SIPS).

Such a system for the walls and roof will result in similar loading on the framework as in its current condition.

The existing, rotten/damaged timber purlins and side rails will need to be replaced with galvanised steel units.

Some additional internal walls/framing will be required to give appropriate support to a first floor. A new insulated, reinforced concrete, ground floor will be required to comply with the Building Regulation Approved Document L1A Conservation of Fuel and Power (Please note that this is not a structural requirement).

### **3.3 Pens**

The principal steel structure of the pens is quite fragile with little or no integrity or orthogonal stability. In the current condition the pen structure would be somewhat unstable under high wind loading and/or heavy snow loading and would be subject to excessive deflections. The framework in this area will require substantial fabrication remediation which would be more expensive than full replacement. The pen area is not suitable for conversion and I would advise further, that this area needs to be demolished to make safe.

## **4 Findings**

### **4.1 Barn (see plates 1 to 14)**

The existing building is a steel-framed, structure supporting a corrugated, sheeted roof and side panels down to solid concrete blockwork walling at approximately mid-height. The frames comprise a mono-pitch arrangement falling from the front at a height of 5450mm, to the rear at a height of 3400mm, over a distance of approximately 8250mm. There are five frames at 4500mm centres giving a total width of 18000mm. The front columns are 305 x 127 x 37 UB's, the rear columns are 254 x 146 x 31 UB's. The inclined rafters are historic 200 x 150 UB sections. The two gable frames have intermediate 178 x 102 x 19 UB column supports.

The steel frames have bolted joints that give limited, portalised stability.

The steel frames show general signs of superficial corrosion with some localised more serious rusting, particularly at ground floor level, see plates 13 and 14.

There doesn't appear to be any diagonal roof bracing or side bracing.

Some of the existing timber roof purlins and side rails are in poor condition.

## **4.2 Pens (see plates 15 to 23)**

The structure is essentially a mono-pitch, steel-framed building. There are five frames with four bays laterally and two bays longitudinally. The frames are at the same lateral centres as the barn at 4500mm with the two longitudinal bays span 11000mm and 11600mm. The mono-pitch structure is attached to and supported by the rear columns of the barn at the high end. The roof beams are 178 x 102 x 19 UB's, the middle row of columns are 152 x 89 x 16 UB's and the rear columns are historic 200 x 150 sections. The intermediate columns (Plates 17 – 19, 21 and 22) have been crudely extended and there is very minimal connection integrity to the roof beams.

## **5 Conclusion**

### **5.1 General**

An intrusive contamination/asbestos report will be required prior to redevelopment and this should form part of the pre-construction phase and construction phase health and safety plans with a recommendation that removal/containment should be undertaken by a company approved by and a member of the Asbestos Removal Contractors Association (ARCA).

### **5.2 Barn**

The steel framework to the barn will prove suitable for supporting a domestic property comprising a structurally insulated panel system, with minimal remediation works. These works include blasting, cleaning and treating, together with some minor eaves haunch work and bracing (or alternatively, inner leaf blockwork shear walls) to give skeletal, structural integrity.

All the timber roof purlins and side rails should be replaced new galvanised steel units.

The first floor could be supported by the inner leaf shear walls and additional internal walls constructed on conventional, concrete strip footings, assuming the ground bearing capacity is sufficient at foundation level without any underlying conditions that may result in settlement and/or subsidence at foundation level.

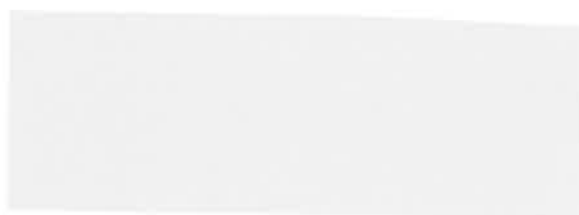
A new insulated, lightly-reinforced, concrete ground floor slab will be required to comply with the conservation of fuel and power, Part L1A of the Building Regulations.

### **5.3 Pens**

The extremely lightweight structure has little or no structural integrity and will be subject to excessive deflections under serviceable wind and snow loading. This is further exacerbated by the open nature of this area which makes the roof vulnerable

to wind suction. Remediation works to strengthen this structure and to provide orthogonal stability would be extensive and relatively expensive. It is my opinion that this structure remains standing because it is in a semi-sheltered location being protected from the predominant south-westerly winds by the barn building. Whether or not this building is rebuilt I would advise that the existing building should be demolished.

Yours Sincerely



W. L. Robinson B.Eng.(Hons.); C.Eng.; M.I.C.E.

# Barn Photographs

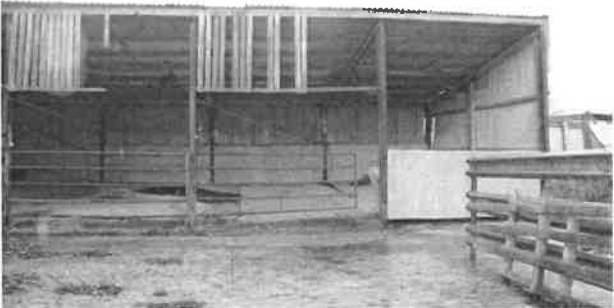


Plate 1 Showing the Front Elevation



Plate 2 Showing the Front Elevation



Plate 3 Showing the North-East Side Elevation



Plate 4 Showing the North-East Side Elevation



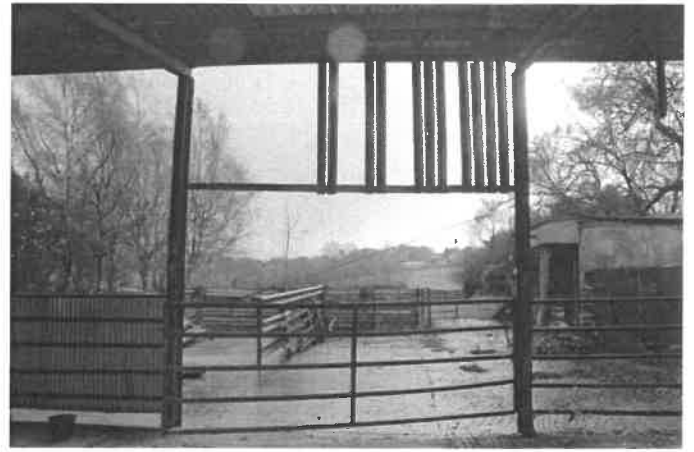
Plate 5 Showing the Internal South-West Elevation



Plate 6 Showing the Internal South-West Elevation and Front Elevation Corner



**Plate 7** Showing the Internal Front Elevation



**Plate 8** Showing the Internal Front Elevation



**Plate 9** Showing the Internal South-East Elevation and Front Elevation Corner



**Plate 10** Showing the Internal South-East Elevation



**Plate 11** Showing the Front Eaves Portal Frame Connection



**Plate 12** Showing the Rear Eaves Portal Frame Connection



**Plate 13** Showing the typical condition of a Steelwork Column at Floor Level



**Plate 14** Showing the typical condition of a Steelwork Column at Floor Level

## Pen Area Photographs



**Plate 15** Showing the Pens adjacent to the rear of the Barn



**Plate 16** Showing the South-East Open Elevation of the Pens



**Plate 17** Showing the internal Pen Area



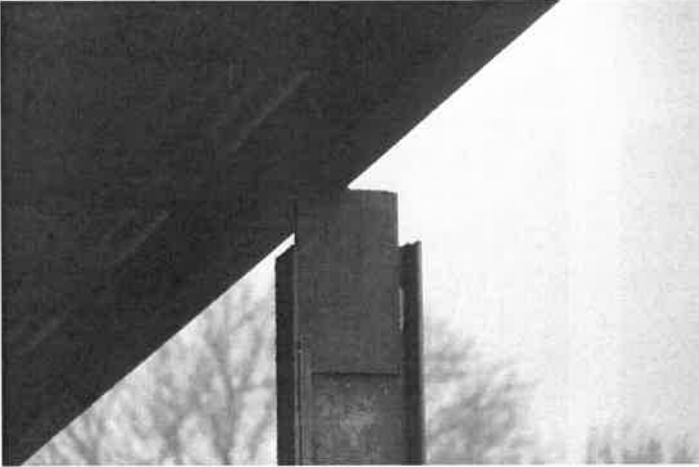
**Plate 18** Showing the internal Pen area



**Plate 19** Showing the internal North-West Pen Elevation and South-West Pen Elevation



**Plate 20** Showing the internal Pen area adjacent to the rear of the Barn



**Plate 21** Showing the intermediate, Column-Beam Connection on the North-East Pen Frame



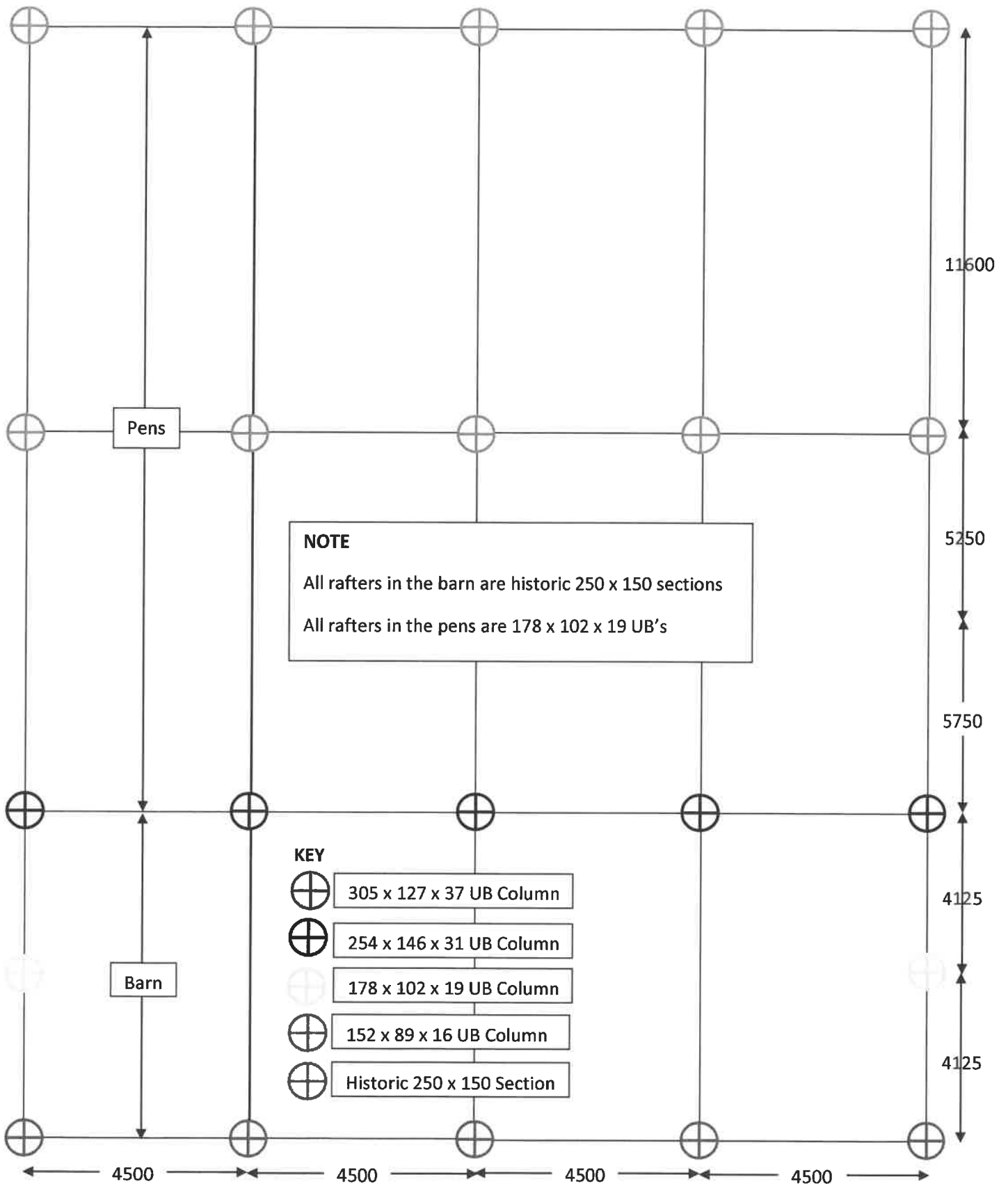
**Plate 22** Showing a typical intermediate, internal, Column-Beam Connection of the Pen



**Plate 23** Showing a typical Column Base in the Pen Area

# Plan Layout of Building

North-West Elevation



South-East Elevation

