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CIVIL - STRUCTURAL - ENVIRONMENTAL

Class Q Barn Survey and Structural Assessment

Barn adjacent to College Farm House,
College Road, Wyverstone, Suffolk IP14 4SD

David Black & Son Ltd.

July 2022



CIVIL - STRUCTURAL - ENVIRONMENTAL - ENGINEERING CONSULTANTS

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For and on behalf of BHA Consulting Ltd				

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1 Introduction

1.1 BHA Consulting Ltd. are instructed to undertake a visual inspection of a barn adjacent to College Farm House, College Road, Wyverstone, Suffolk IP14 4SD. It is proposed that the existing structure be renovated for conversion into residential use comprising five units. We are instructed to report upon the structural condition of the barn and advise upon its suitability for conversion to residential use in connection with a proposed prior approval application. Our inspection and report is therefore limited to consideration of this aspect only.

1.2 We understand that Part 3 Class Q.1(i) of the General Permitted Development Order (hereafter referenced PDO) restricts building operations pursuant to Class Q to:

(i) the installation or replacement of -

(aa) windows, doors, roofs or external walls, or

(bb) water, drainage, electricity, gas or other services,

to the extent reasonably necessary for the building to function as a dwelling/house; and

(ii) partial demolition to the extent reasonably necessary to carry out building operations allowed by para. Q.1(i)(i), above.

1.3 Further guidance on the extent of building works allowed when changing to residential use is provided in the National Planning Policy Guidance (NPPG) where at para. 105 it states:

"Building works are allowed under the change to residential use. The permitted development right under Class Q assumes that the agricultural building is capable of functioning as a dwelling. However, it recognises that for a building to function as a dwelling some building operations which would affect the appearance of the building, which would otherwise require planning permission, should be permitted. This right allows for the installation or replacement of windows, doors, roofs, external walls, water, drainage, electricity, gas or other services to the extent reasonably necessary for the building to function as a dwelling/house; and partial demolition to the extent reasonably necessary to carry out these building operations.

It is not the intention of the permitted development right to include the construction of new structural elements for the building. Therefore it is only where the existing building is structurally strong enough to take the loading which comes with the external works to provide for residential use that the building would be considered to have the permitted development right."

- 1.4 It is the intention of this report to demonstrate that the proposed residential conversion may be executed in compliance with the terms of the GPDO where appropriate.
- 1.5 We have not inspected woodwork or any other areas of the structure that are covered, unexposed or otherwise inaccessible. We are therefore unable to confirm that any such areas of the building are free from defect. Given the nature of the structure, however, this has not precluded a comprehensive assessment of its structural condition and suitability for conversion.
- 1.6 All observations are made using compass point references to align the building, then handings related to the designated front elevation thereafter, where appropriate.
- 1.7 It is important to note that this report does not constitute a comprehensive Building Survey, neither does it constitute a full Structural Survey. This is a report generated from a visual inspection of the premises in response to a specific matter for consideration and no invasive investigations or opening up has been undertaken nor is deemed necessary.
- 1.8 The weather at the time of inspection was bright, dry and cool.
- 1.9 The inspection of the barn floor was inhibited by a quantity of materials and equipment at various locations. This did not, however, prevent a meaningful inspection sufficient to draw representative conclusions on the overall condition of the structure.
- 1.10 All quoted dimensions and sections sizes are approximate unless specifically noted and should not be relied upon.

2 Site Appraisal

Location

2.1 The subject barn is located on land adjacent to College Farm House, College Road, Wyverstone, Suffolk IP14 4SD centred on grid reference TM 03236 66940, as shown outlined red in Figures 2.1 and 2.2, below.



Figure 2.1: Site Location Plan



Figure 2.2: Site Location Plan: Aerial View

3 Description

- 3.1 The subject barn is set in a rural location approximately 1.5km south-west of the small village of Wyverstone and around 10km north of the town of Stowmarket. The barn lies to the south-west side of College Road and occupies a site which is essentially level, with the surrounding land generally laid to arable farmland.
- 3.2 There is an associated residential property located south-east of the barn, together with a small cluster of other residential properties in the vicinity, principally located to the north-east on the opposite side of College Road.
- 3.3 The barn under consideration appears to have been constructed in the 1950's or 1960's, on account of its form and the materials used, and appears to have originally used for livestock, with pens provided for this purpose, although latterly appears to have been used for the storage of general agricultural materials and equipment.
- 3.4 The front elevation of the barn is considered to be that facing east and thus closest to the access yard leading from the public highway. All handings will henceforth be related to this elevation.
- 3.5 The barn comprises facing brickwork load-bearing walls supporting a roof structure formed of timber rafters with intermediate steel post supports, in turn supporting timber sheeting rails and fibre cement corrugated sheeting panels.
- 3.6 The roof is of duo-pitch form with the ridge aligned east to west between gable end walls.
- 3.7 The barn has a span of around 12.0m and comprises twenty bays each of approximately 2.4m wide, making a length of around 48m overall. The roof ridge height is around 3.1m, with a pitch of approximately 17.5 degrees.
- 3.8 The rafters comprise 50x200mm section timbers placed at 2.4m centres, thus defining the bays and stalls. They are supported at approximately mid span by a series of tubular steel posts set at around 3.3m inside the flank walls. The rafters support longitudinally spanning timber sheeting rails comprising 50x150mm sections spaced at approximately 1.4m centres where visible, noting that most of the roof is finished with internal liner sheets, including associated cover and fixing strips.
- 3.9 The stalls are formed by partitions typically constructed in 100mm common brickwork and approximately 1000mm high. The stalls are arranged down each flank of the building with a central access way around 3m wide running along the centre of the building.

- 3.10 The building is provided with a concrete floor slab throughout with the central access way mainly set around 100mm lower than the prevailing floor level, presumably to facilitate the disposal of waste water following the cleaning out of the stalls historically.
- 3.11 A small number of the stalls are configured slightly differently but this is of no consequence to the overall structural layout. Similarly, a number of the internal partitional walls are lower than the stall separating walls and provided with tubular steel railings to maintain the overall height.
- 3.12 Internally a number of timber stud partition walls have been raised to roof level to suit the more recent uses of the building for the general storage of agricultural equipment.
- 3.13 Externally, the gable walls are raised in 215mm thick common brickwork with central door openings to match the central access way enclosed by sliding steel framed doors each end, clad with corrugated steel sheeting.
- 3.14 The gable walls are provided with substantial buttressing brickwork piers to form the door openings and also at mid-length in each side gable wall. Substantial concrete lintels are provided above the respective door openings to support the gable peak brickwork.
- 3.15 There is no provision for the disposal of rainwater from the building roof.
- 3.16 Reference to the online mapping of the British Geological Survey (BGS) suggests the barn is situated on prevailing ground conditions comprising superficial deposits of Lowestoft Formation Diamicton (Boulder Clay), underlain by solid deposits of Crag Group Sand at depth.
- 3.17 Salient photographs of the barn and its surroundings are included as **Appendix A**.
- 3.18 Drawings outlining the proposals for residential conversion are included as **Appendix B**.

4 Observations

- 4.1 The barn is in a generally satisfactory state of repair, with only limited localised evidence of distress. No general issues of any significant structural concern were noted.
- 4.2 Externally, the roof presents a satisfactory alignment with no evidence of significant deflection in any of the supporting structural elements. The roof sheeting is essentially intact and robustly fixed to the underlying structural elements, including the provision of proprietary curved apex panels. The verges and eaves are, however, unfinished.
- 4.3 There is a significant amount of moss growth on the roof sheeting, although we anticipate that an alternative sheeting system will be employed in the proposed residential conversion and the current sheeting therefore removed.
- 4.4 The brickwork flank walls are largely in a satisfactory condition and, where accessible, appear plumb and well aligned. It is noted that much of the right flank wall is covered externally with heavy vegetation growth whilst there is also slight vegetation covering some of the left flank wall.
- 4.5 Some minor cracking is present indicative of thermal related movement, given the lengthy elevations and the lack of provision to accommodate such movement. This is considered to be not structurally significant, however, and requires repair in any event, irrespective of any proposal for residential conversion. Future works should include the remedial provision to accommodate thermal related movement in the brickwork.
- 4.6 To the rear of the left flank wall, an area of the original brickwork, equivalent in length to approximately two thirds of the final bay, has been rebuilt in concrete blockwork. The reason for this work is not clear but there is little to suggest evidence of past foundation related movement.
- 4.7 The brickwork gable walls are also in a satisfactory condition generally. To the rear, a narrow strip has also been rebuilt in concrete blockwork adjoining the right-hand corner, the reason for which is not clear, although there is evidence of very slight lateral distortion in the flank wall brickwork locally, which suggests the corner may have been subject to past slight separation.
- 4.8 To front there is some minor cracking to the right hand corner which requires repair by repointing in any event.
- 4.9 Internally, the principal structural elements appear well aligned and free from significant damage, distortion or distress, where visible, although there is evidence of some slight deflection in some of the timber purlins. This is not considered to be of structural significance, however, and it is noted that any replacement roofing system is likely to impose a reduced load on the roof structure.

- 4.10 Steel elements are typically subject to moderate levels of superficial surface corrosion, although nothing of structural significance. All structural connections appear to be well and robustly formed and remain in a good condition.
- 4.11 Internally, the roof liner sheeting remains in a satisfactory condition generally, albeit with some localised impact and other damage. Superficial scarring and minor damage is also evident to the internal faces of the brickwork walls from past operational impacts.
- 4.12 Much of the above damage is present in the dividing partition walls forming the former animal stalls. These will largely become redundant and therefore be removed as part of the proposed residential conversion and therefore the damage noted is inconsequential.
- 4.13 There is no evidence of differential foundation movement between the various foundations likely to lead to any loss of structural integrity.
- 4.14 A concrete ground bearing floor is provided throughout. This has been robustly formed and remains in a good condition with no evidence of significant cracking or hollow soundings noted where tested, which might otherwise be suggestive of voiding in the floor sub-structure. The edge of the floor slab is visible where the left flank wall is locally missing as noted in para. 4.07. This suggests the slab is 100mm thick, although we suspect the lower central section, previously subject to trafficking by plant and machinery, maybe thicker.

5 Conclusions

- 5.1 On the basis of our inspection, we are satisfied that the barn represents a viable proposition for conversion to residential use without the need for structural intervention in contravention of the Class Q restrictions.
- 5.2 The floor slab appears in a sound condition and will be subject to a significant reduction in imposed load within a residential dwelling. The existing floor slab should therefore be suitable to form a sound base from which to raise partitions and install insulation and floor finishes appropriate to a domestic floor.
- 5.3 The existing foundations appear generally suitable to sustain the loadings currently imposed by the structure, with no evidence to suggest widespread significant past foundation settlement. The proposals to convert the building to habitable use will involve the addition of little appreciable additional load and there is, as a consequence, no reason to believe the foundation system should not continue to perform in an acceptable manner.
- 5.4 Whilst the existing foundations are possibly a little shallow in respect of current standards, they have clearly proved adequate generally over the many years since construction of the barn took place. The prevailing ground conditions are unlikely to give rise to significant or detrimental volume change with variation in moisture content, which can give rise to movement in relatively shallow founded buildings, provided existing vegetation is cleared and no significant vegetation is planted in close proximity to the building in the future.
- 5.5 The building is robustly constructed and is adequately braced and buttressed by the internal partition walls.
- 5.6 The existing structural elements of the roof appear to be performing satisfactorily and are configured to provide support to sheeting panels. The replacement roof covering proposed is profiled metal sheeting and the roof structure will therefore be suitable to support this given it will impose a similar, or potentially lesser load.
- 5.7 The wall construction may be similarly enhanced internally using modern materials.
- 5.8 In summary, the overall condition of the barn structure, together with its performance to date, lead us to believe there is no substantive reason why it cannot be successfully converted to residential use without recourse to structural intervention, other than that which would be required to maintain the integrity of the structure in its current form.

- 5.9 With this in mind, we consider the existing building described herein is in principle structurally strong enough to sustain the loadings from the building operations reasonably necessary to facilitate its conversion to residential use.

Appendix A: Photographs



1. Front external view



2. Right hand external view from front corner



3. Rear external view



4. Left hand external view from rear corner



5. Front internal view



6. Internal view looking towards rear



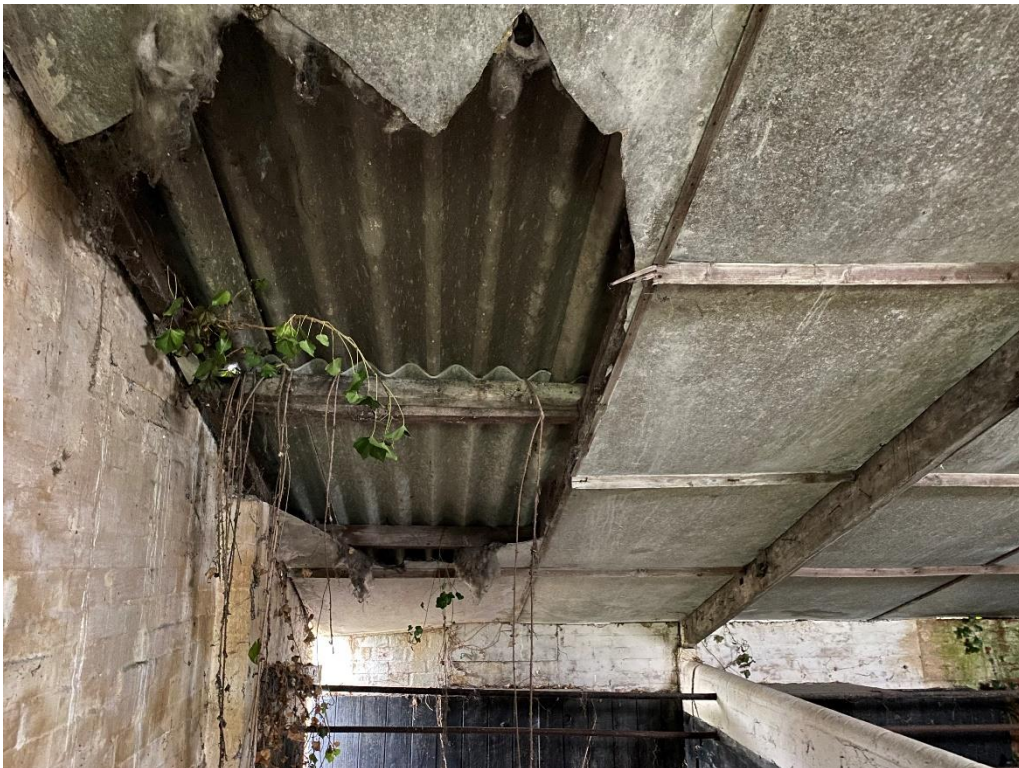
7. Internal view looking towards front



8. Rear internal view

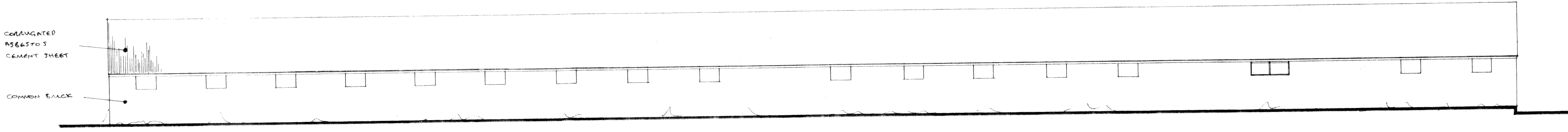


9. Typical stall arrangement

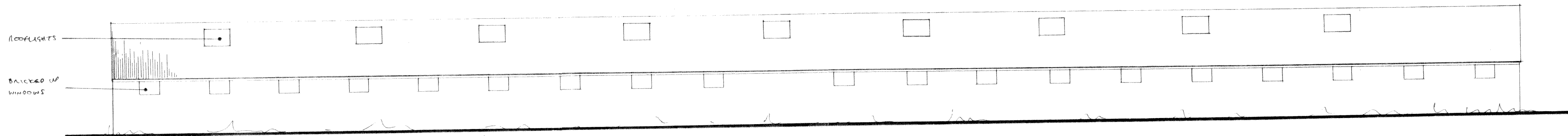


10. Roof construction viewed through damaged liner panel

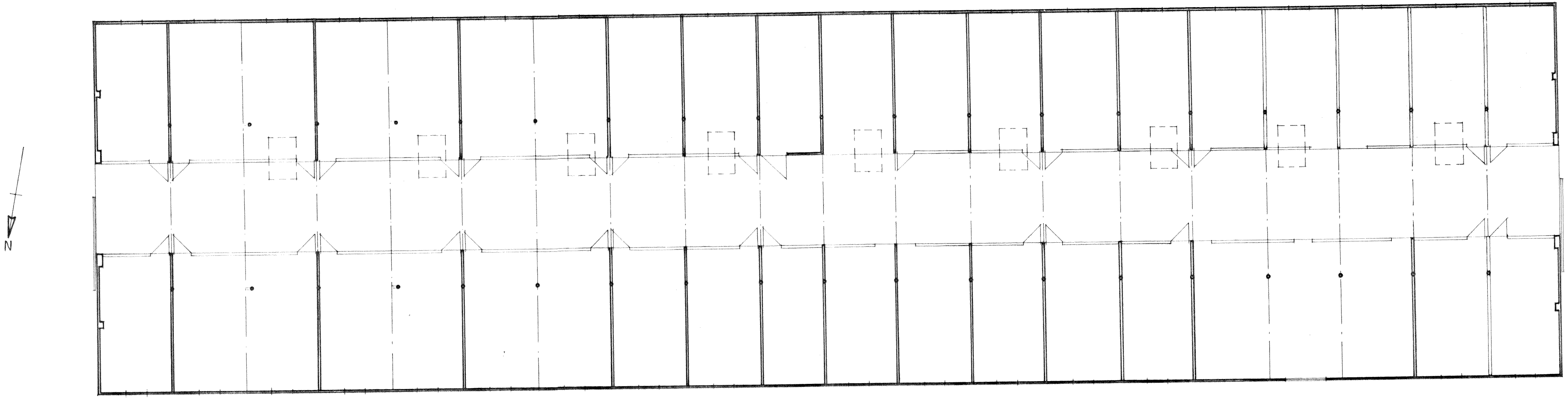
Appendix B: Proposals for Residential Conversion



NORTH ELEVATION

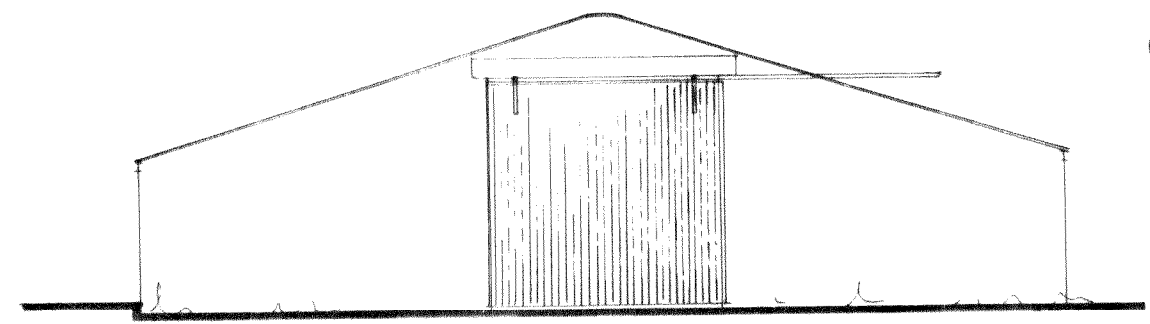
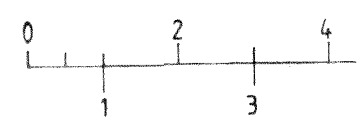


SOUTH ELEVATION

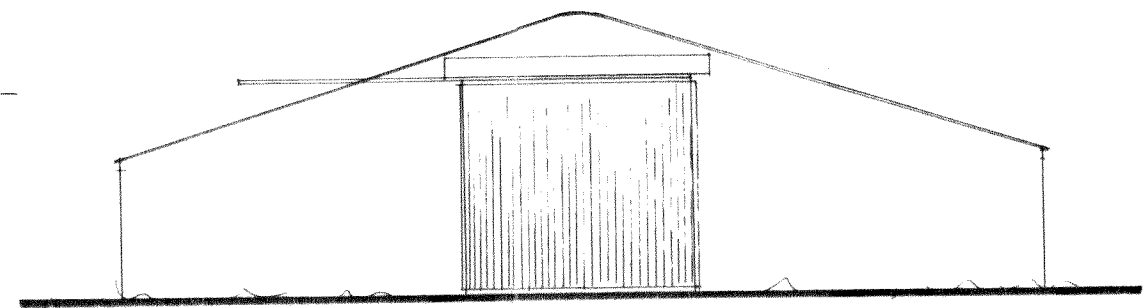


PLAN

Footprint = 595.96m²
Floor Area = 583.48m²



EAST ELEVATION



WEST ELEVATION

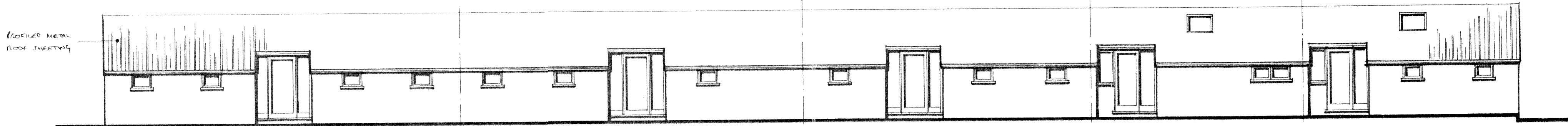
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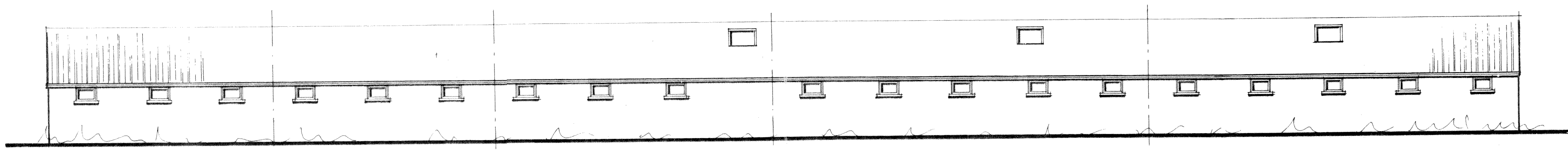
DRAWING
PLANS & ELEVATIONS AS EXISTING.

PROJECT CONVERSION OF AGRICULTURAL BUILDING, ADJACENT COLLEGE FARM HOUSE, COLLEGE ROAD, WYVERSTONE, FOR DAVID BLACK & SON LTD.	DRAWING NO. 1925/01	A
	SCALE 1:100 @ A2	
	DATE APRIL 2022	

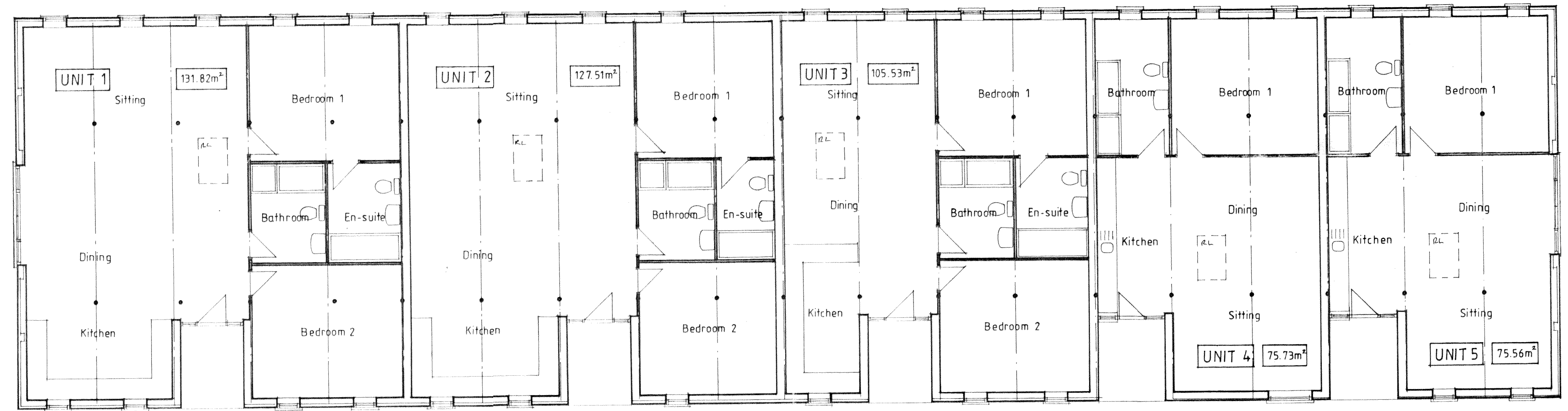
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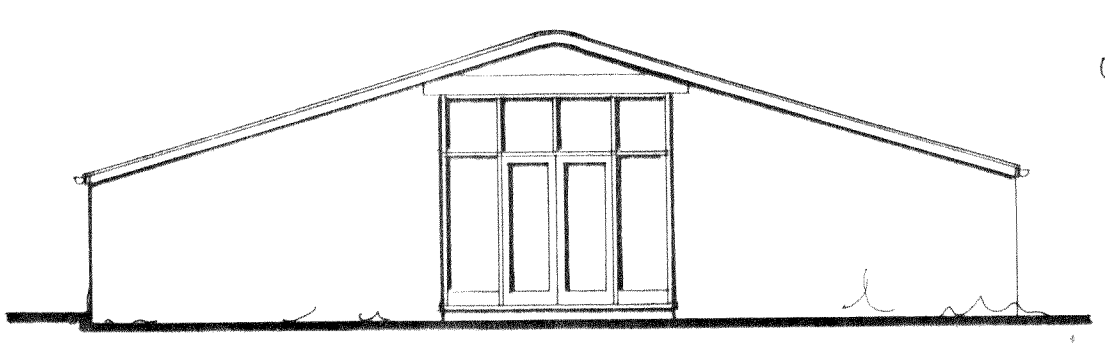
NORTH ELEVATION



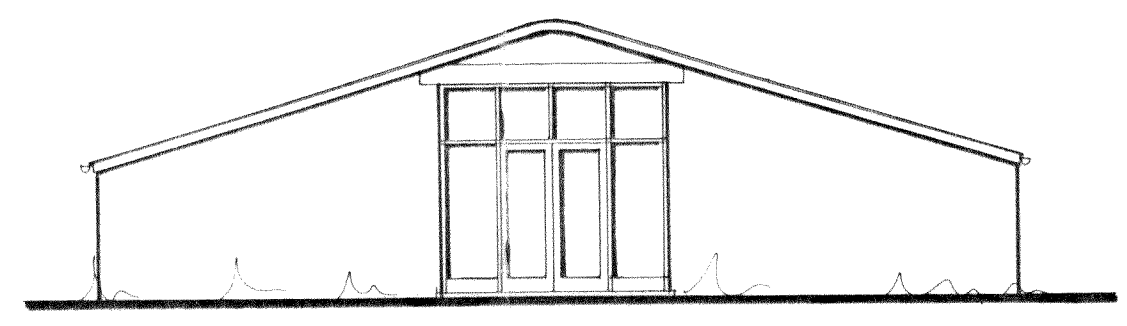
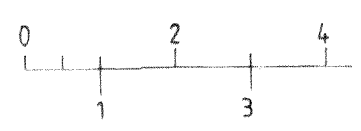
SOUTH ELEVATION



PLAN



EAST ELEVATION



WEST ELEVATION

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DRAWING
 PLAN & ELEVATIONS AS PROPOSED.

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COLLEGE FARM HOUSE

COLLEGE ROAD

UNIT 1

UNIT 2

UNIT 3

UNIT 4

UNIT 5

Car Parking

Car Parking

Car Parking

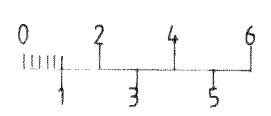
Car Parking

Car Parking

Access

Access

12.225 m Building
11m Curtilage 595.96m² max. including access



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DRAWING
BLOCK PLAN AS PROPOSED.

PROJECT CONVERSION OF AGRICULTURAL BUILDING, ADJACENT COLLEGE FARM HOUSE, COLLEGE ROAD, WYVERSTONE, FOR DAVID BLACK & SON LTD.	DRAWING NO. 1925/03	A
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