

Barn and Stables

Dovehirne Farm

Bourne Road

West Pinchbeck

Visual Structural Inspection and Report

Project No. 4654

October 2017



1.0 Introduction

- 1.01 Further to instructions received from R. Longstaff & Co., Steve Gilman Design Ltd. undertook a visual structural inspection of the Barns and Stables at Dovehirne, West Pinchbeck, PE11 3NQ on the 13th September 2017.
- 1.02 The purpose of the inspection and report was to comment upon the present structural condition to supplement a pending planning application for conversion into living accommodation.
- 1.03 Our report is based only on the day's inspection and no monitoring, testing of materials or further investigations have been undertaken.
- 1.04 We have not commented specifically upon damp, condition of timber, and drains; specialist advice should be sought on these aspects if necessary.
- 1.05 The site comprise three areas, in a "U" shape on plan –
-) Single storey barn to the north.
 -) Two storey barn to the east with lean-to outbuilding.
 -) Single storey stables to the west.

We estimate that the buildings were constructed early 20th Century.

- 1.06 The stables were detached from the north section of barn.
- 1.07 Between the sections of buildings, a timber framed pitched roof covered the crew yard.
- 1.08 There is vehicular access into the site from the south via two stone/gravel driveways to the east and west off Bourne Road.

The appended photographs assist to describe the Barns and Stables and also our observations.

2.0 Building Description

- 2.01 The Barn and Stables were sub-divided by masonry walls into several compartments. The roofs were pitched with gable ends and hipped ends to the northern barn. The roofs were of traditional construction with purlins, primary trussed rafters supporting rafters and covered with either slate tiles and cement particle corrugated sheeting.
- External walls were solid brickwork, ground floors were ground bearing, and first floor was timber joists and boarding.

- 2.02 The Barns and Stables are currently unused; a few small items of storage and equipment were present. The area with corn bins was not surveyed due to restricted access.
- 2.03 The buildings were surrounded by further barns and agricultural land to the north, grass verge and track to the east, grass verge and Bourne Road to the south, and grassed area with detached Farmhouse beyond to the west elevation.
- 2.04 All doors, windows and lintels were timber, sections of rainwater goods were uPVC, cast iron, and cement particle. Gutters were supported off irons.
- 2.05 The site topography was relatively level.

3.0 Ground Conditions

- 3.01 The British geological survey 10-mile map of the area indicates that the underlying solid geology comprises Tidal Flat (clay and silt) superficial deposits overlying Oxford Clay Formation (mudstone).
- 3.02 Whilst published geological information and local knowledge are useful in assessing any site, the precise geotechnical/geological conditions cannot be determined without undertaking such laboratory testing, trial holes and boreholes, as are necessary.

4.0 External Observations

North Elevation

- 4.01 An open lean-to structure adjoined the single storey barn.
- 4.02 Towards the western side and centrally, we noted eroded and minor cracking within the brickwork. The brickwork at eaves level was loose and out of plumb, leaning into the barn.
- 4.03 At low level the brickwork appeared damp.

East Elevation – Photographs 1 & 2

- 4.04 We noted a section of roof slates were missing over the two storey section of Barn.
- 4.05 Ivy was evident to the brickwork, centrally within the elevation.
- 4.06 Eroded brickwork and weathered mortar joints were noted to the right hand side of the barn door. **Photograph 3.**

- 4.07 The brickwork corner at the junction of two storey and single storey was weathered, a cast iron downpipe and hopper were noted. **Photograph 4.**
- 4.08 Between the large door and single door opening, the brickwork was dislodged, cracked and in poor condition. **Photograph 5.**
- 4.09 The single storey lean-to structure was in poor condition. The roof had partly collapsed, with the remaining roof severely distorted and undulating. The timber lintels were severely decayed, and vegetation was evident around the wall plate and brickwork at eaves level.
- 4.10 An open, covered area was formed to the north of the lean-to. This was constructed with a timber corner post and eaves beams supporting a corrugated steel sheeted roof.

South Elevation – Photograph 6

- 4.11 Areas of brickwork were eroded and weathered within the two storey gable between ground and first floor level.
- 4.12 Severe stepped cracking and dislodged brickwork was noted to the right hand side of the window of the lean-to structure. **Photograph 7.**

West Elevation

- 4.13 We noted eroded and weathered mortar joints to the south west corner of the two storey barn around first floor level. **Photograph 8.**
- 4.14 The single storey stables were partially covered with vegetation. **Photographs 9 & 10.**

5.0 Internal Observations

North Barn

- 5.01 The pitched roof comprised several principal rafters with eaves ties supporting purlins and common rafters between. The northern pitch was covered with cement particle corrugated sheeting, and the southern pitch was felted and covered with slate tiles. **Photograph 11.**
- 5.02 The lintel above the single door facing east had dropped, causing brickwork over to crack. **Photograph 12.**
- 5.03 Stepped diagonal cracking at high level was noted within the brickwork to the north east corner.

- 5.04 Facing the crew yard, a central timber post supported timber eaves beams. One side of the opening was partially boarded with timber.
- 5.05 The floor was constructed with concrete; areas were cast with grooves in a square pattern for drainage.
- 5.06 Within the stable facing west, we noted vertical cracking at each internal corner of brickwork. Evidence of the brickwork at eaves leaning is also apparent. **Photographs 13, 14 and 15.**
- 5.07 The roof over the stable was formed with timber rafters and collars supporting purlins. **Photograph 16.**

East Barn

- 5.08 The single storey roof joining onto the north barn was formed with timber purlins spanning between masonry walls to support rafters and cement particle corrugated sheeting. **Photograph 17.**
- 5.09 The floor was constructed with concrete oversite.
- 5.10 We noted loose brickwork over the door opening and cracking to the radial brickwork in the store adjacent the corn bins. **Photograph 18.**
- 5.11 The floor was constructed with laid bricks; the floor and low level brickwork was damp.
- 5.12 The roof over this area was formed with purlins supporting rafters, and cement particle corrugated sheeting.
- 5.13 We noted cracking within the brickwork and arches over the door openings to the area with the timber staircase. **Photograph 19.**
- 5.14 The floor was constructed with concrete oversite.
- 5.15 A series of timber first floor beams supported floor joists overlaid with tongue and groove boarding. We noted a central timber support post below one of the beams and one of the beams had been strengthened with a steel beam either side.
- 5.16 The ground floor below this area was formed with earth and stone rubble.
- 5.17 Facing the west, the external wall was formed with arched openings; one arch had been infilled with masonry. We noted vertical cracking in the brickwork where the arch meets the supporting pier.
- 5.18 We noted damp brickwork with vegetation growing on the brick face due to poor and leaking guttering. **Photograph 20.**

- 5.19 The east elevation external brickwork was damp at low level.
- 5.20 The brickwork forming the stair enclosure was cracked in a stepped diagonal pattern at high level. **Photograph 21.**
- 5.21 The roof over the first floor area was felted and formed with purlins supporting rafters with mid height collars. **Photograph 22.**
- 5.22 Between the stud wall and internal brick gable a timber eaves tie was evident.
- 5.23 We noted cracking and inward rotation of brickwork over the window facing east, situated close to the southern corner. **Photograph 23.**
- 5.24 The roof to the lean to barn was formed with timber beams supporting a prop and line of purlin with rafters, battens and slate tiles over. One of the timber beams was severely decayed and broken, causing the roof structure to partially collapse. **Photographs 24, 25 & 26.**
- 5.25 The floor was constructed with concrete oversite.
- 5.26 The timber lintels over the large openings had failed. **Photograph 27.**
- 5.27 Severe cracking to the brickwork around the south facing window was noted and the brickwork was damp. **Photograph 28.**

West Stables

- 5.28 The northern section of stables, two timber trusses supported purlins and rafters overlaid with steel corrugated roof sheets.
- 5.29 The floor was constructed with concrete oversite.
- 5.30 Within the open section facing east, timber posts supported eaves beams and the scissor roof trusses over the crew yard area.
- 5.31 The roof over the central and southern section of stables were formed with three lines of timber purlins down each slope; the purlins were supported off 9" thick brickwork gable walls. The purlins supported cement particle corrugated roof sheeting.
- 5.32 Over one area the purlins had collapsed and the cement particle gutter was broken. **Photograph 29.**
- 5.33 The floor to these areas was formed with earth and stone rubble.

- 5.34 Between two compartments, a water tank was present and leaking from the overflow was noted. The brickwork at low level local to this area was damp. **Photograph 30.**
- 5.35 Towards the south west corner a damp proof membrane was visible, five brick courses above internal ground floor level.
- 5.36 The roof infill over the crew yard was formed with timber scissor trusses supporting purlins, and steel corrugated roof sheeting. **Photograph 31.**
- 5.37 Towards the north a section of concrete floor slab was constructed and the remaining floor was earth.

6.0 Conclusions & Recommendations

- 6.01 The timber roofs over the lean to barn and stables were in poor condition and we recommend that, as part of the conversion, these should be stripped off and replaced with new timber roof.
- 6.02 We advise that cracked and damaged brickwork to the south gable of the lean-to be partially rebuilt.
- 6.03 The brick archways over the doors to the barn should be strengthened and repaired with a “Helibar” or similar system to form a beam lintel and stitch the cracks.
- 6.04 We recommend that all cracked, split and eroded brickwork be repaired and repointed as part of the proposed conversion works to maintain integrity and weatherproofing.
- 6.05 The adjoining open fronted barn to the north may have caused the rotation of brickwork at eaves level to the north barn and should be supported or strengthened so that no lateral forces are imposed onto this barn wall.
- 6.06 All severe diagonal stepped cracking noted to corners of walls and over openings should be repaired with a “Helibar” or similar crack stitching technique to strengthen.
- 6.07 Any severely eroded bricks to be chopped out and replaced as identified. Weathered mortar joints to be raked out and repointed to make good and weatherproof.
- 6.08 The brick, earth and rubble ground floors should be replaced with new concrete built off compacted stone and damp proof membrane along with insulation to satisfy the current Regulations. Further details will be required and are dependent on finalised Architectural working drawings and specifications.

- 6.09 If existing walls are to be retained as load bearing, the foundations may require to be underpinned to provide adequate depth and allow new insulated floors to be constructed without undermining. Subject to review of trial hole investigations.
- 6.10 We recommend that all timber, if retained, be surveyed by a specialist for decay and infestation and treated or replaced as advised in their report.
- 6.11 Where damp proof membranes were not present, a new injection system should be implemented or new inner skin be introduced.
- 6.12 We assume that the trussed roof which infilled the crew yard will be removed as part of the works, therefore no detailed inspection and observations were undertaken.
- 6.13 It can be concluded that from the visual inspection of the Barns and Stables at Dovehirne Farm, West Pinchbeck, that many of the aspects and defects found are common with many similar structures of this age and usage.
Generally, the external and internal brickwork structures were in fair condition with little attention required to enhance and make good for a habitable dwelling.
It is common for Barn roof structures to be undersized by modern standards and when left unmaintained they often require to be replaced, allowing for new membranes, insulation and plasterboard finishes.
We believe that with careful consideration of repair and strengthening, that the structures are suitable for conversion into living accommodation. Further design works and specifications will need developing with the Architect as part of the proposals to ensure compliance with the Building Regulations and maintain the integrity of the existing structural envelope for the future.



Andrew Foottit I.Eng, A.M.I.Struct.E.

For and on behalf of Steve Gilman Design Ltd

Date: 23rd October 2017

Appendices

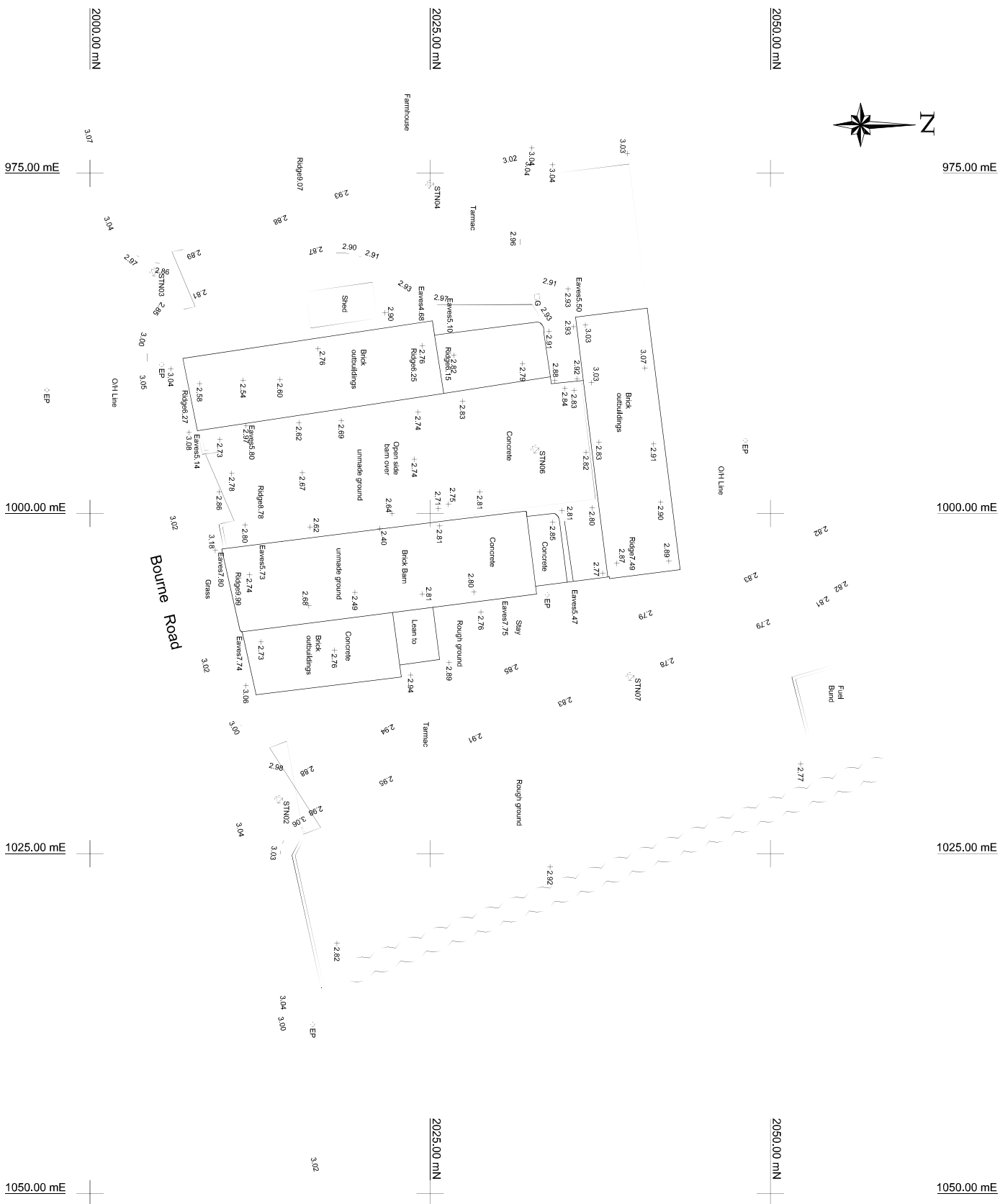
Appendix 1

Drawings

Clive Wicks Associates – 16-2340-P-01 – Topographical Survey

Clive Wicks Associates – 16-2340-P-02 – Existing Floor Plans

Clive Wicks Associates – 16-2340-P-03 – Existing Elevations



Rev.	Details	Date

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Contractors must check all dimensions on Site. Only figured dimensions are to be worked from. Any foundation depths indicated are indicative only and must be in accordance with the consulting engineers design and/or agreed on site with the local authority during excavations. Any discrepancies in the information contained herein must be reported to the Architect before work proceeds.

Drawings to be read with Engineers' calculations; report where applicable.

Note: If drawing details existing structures, we have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

Proposed Barn Conversion at Dovehime Farm, Boume Rd., West Pinchbeck

Drwg.
TOPOGRAPHICAL SURVEY

Scale	Date
1:200 @ A2	Jan 17

Rev. _____

Drg. No. 200010-284-P 01

architects • designers • planning consultants

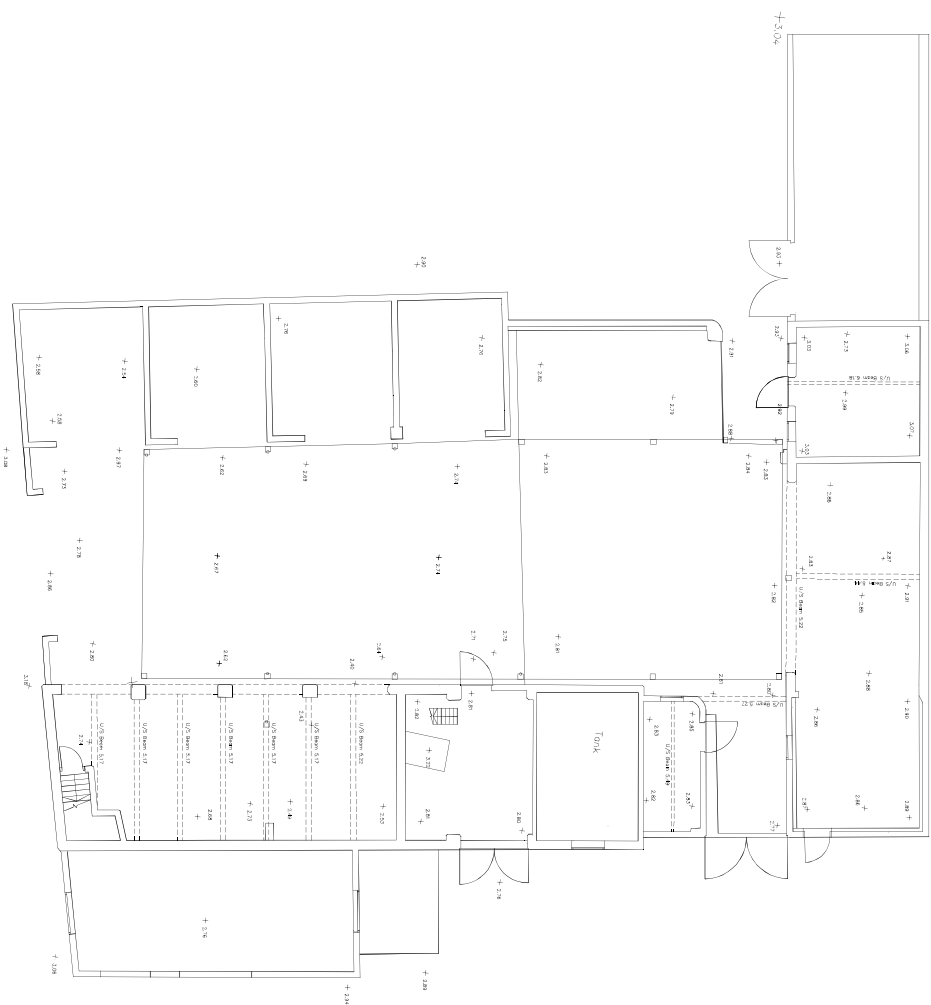
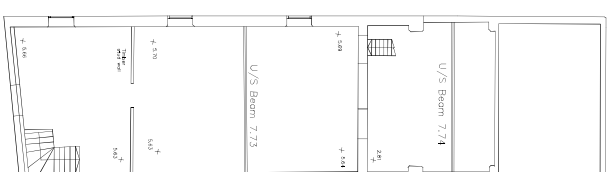
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Journal of Management Inquiry 23(4) 391-407

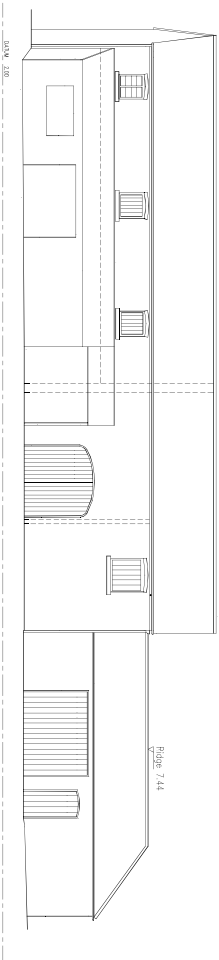
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Introduction

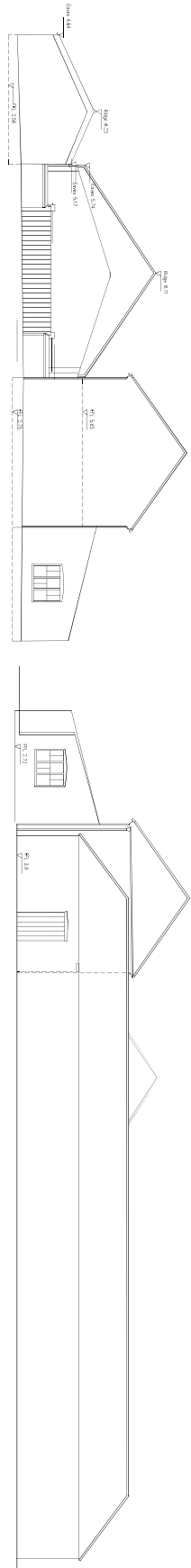
clive wicks associates



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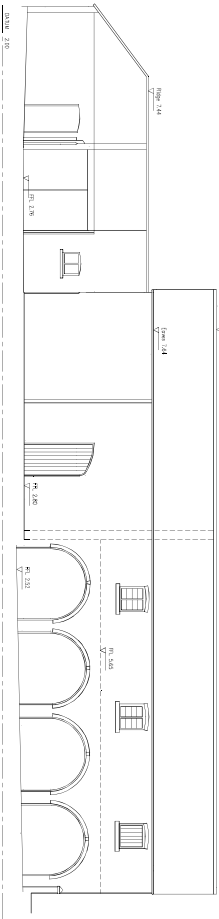


ELEVATION 1

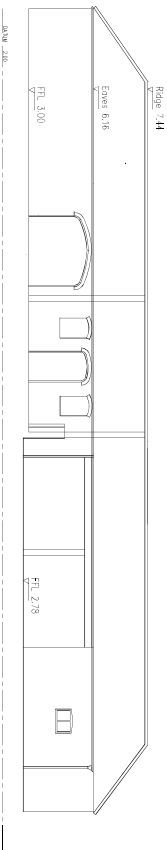


ELEVATION 2

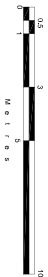
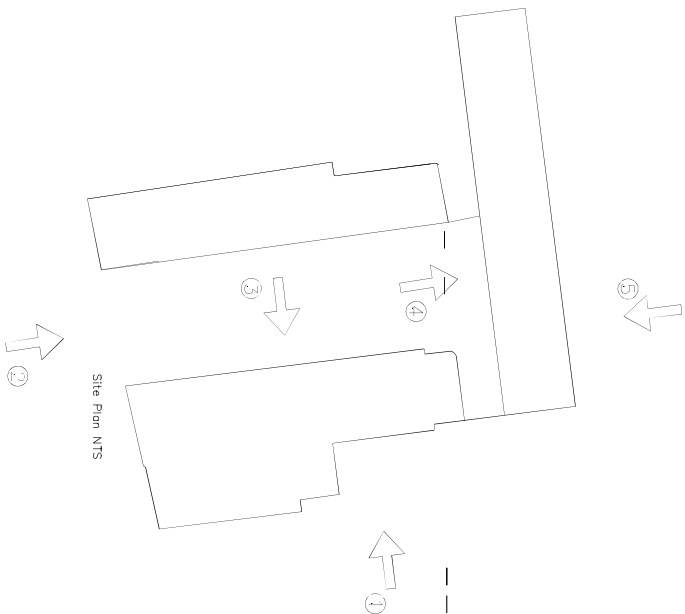
ELEVATION 5



ELEVATION 3



ELEVATION 4



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Project
Proposed Barn Conversion at Dovehouse
Farm, Bourne Rd., West Picheback

Draw	Scale	Date
EXISTING ELEVATIONS	1:100 @ A1	Jan 17
Draw No.	16-2340-P-03	Rev.

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Appendix 2 **Photographs**



Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 6



Photograph 7



Photograph 8



Photograph 9



Photograph 10



Photograph 11



Photograph 12



Photograph 13



Photograph 14



Photograph 15



Photograph 16



Photograph 17



Photograph 18



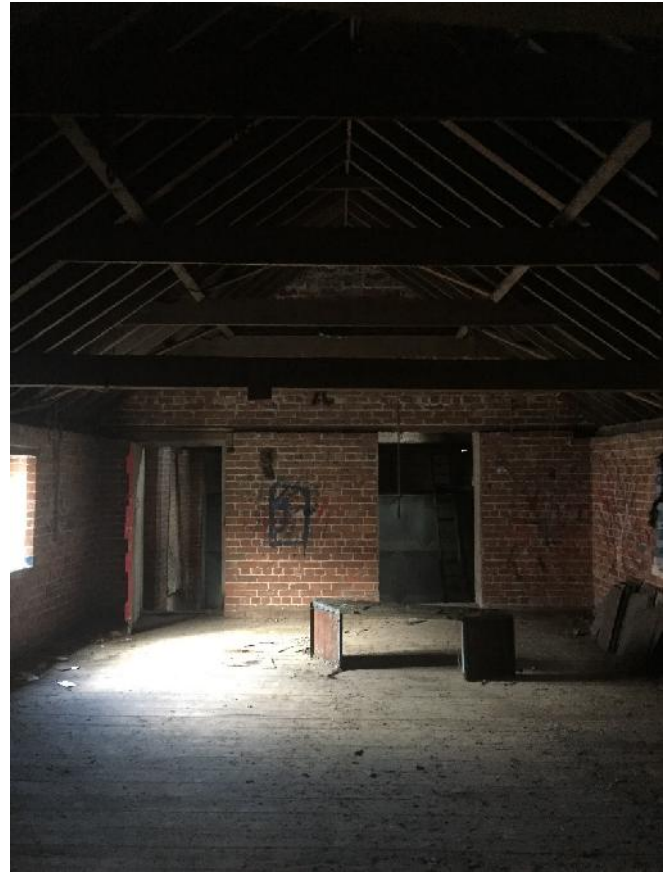
Photograph 19



Photograph 20



Photograph 21



Photograph 22



Photograph 23



Photograph 24



Photograph 25



Photograph 26



Photograph 27



Photograph 28



Photograph 29



Photograph 30



Photograph 31