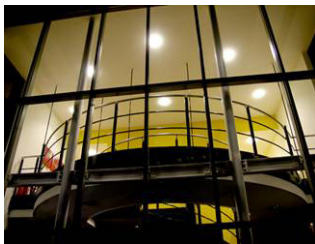


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architecture : engineering : building consultancy



STRUCTURAL INSPECTION
MANOR FARM, ELKERSLEY (PHASE 2)
SOUL ARCHITECTS

JOB NO: 11727/5.0/DF
JULY 2019

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1.0 INTRODUCTION

- 1.1 William Saunders has been instructed by Carl Andrews of Soul Architects to undertake a visual structural inspection of the existing buildings forming part of the Phase 2 development at Manor Farm, Elkersley.
- 1.2 A site plan identifying the location of each individual building is contained in Appendix A and record photographs are contained in Appendix B.
- 1.3 Our inspection took place on Thursday 18th July 2019 and our findings are contained in the remainder of this report.

2.0 INSPECTION

2.1 The building consists of five different structures and their locations are shown on the site plan in Appendix A.

2.2 Building No. 1 (Proposed Future Garage)

2.2.1 This is a single storey stable block 'L' shaped on plan. The roof consists of pantiles on battens and common rafters. There is a single purlin per slope spanning between king post trusses and masonry walls (Photograph 1). There are four trusses in total. The walls are 225mm solid brick.

2.2.2 The following structural defects were noted:-

- a. The whole of the roof structure is leaning towards the North gable end of the building with the apex being approximately 150mm out of plumb (Photograph 2). This has resulted in the North gable wall also being out of plumb by a similar amount.
- b. There is a semi mature Ash tree directly next to the North gable wall (Photograph 3) and there are cracks to the masonry in this location (Photographs 4 and 5).
- c. There is a significant outward bulge to the West facing external wall (Photograph 6). This affects approximately the mid third of the wall.

2.3 Building No. 2 (Future Store)

2.3.1 This small building abuts the South elevation of building No. 1. It is of similar construction to building No. 1 but is in significantly better structural condition with no evidence of undue movement or distress.

2.4 Building No. 3 (Future Unit 1)

2.4.1 This building is a tall barn structure being 4m to eaves. There is a small mezzanine level adjacent to the South facing gable wall.

2.4.2 The roof consists of pantiles on battens and common rafters. There is a single purlin per slope which spans between principle timber frames and the gable walls (Photograph 7). The principal

STRUCTURAL INSPECTION

MANOR FARM, ELKERSLEY (PHASE 2)

timber frames are triangular in shape with a 300mm x 150mm bottom chord at eaves level, 250mm x 150mm rafter sections and a collar member at purlin level.

2.4.3 The mezzanine floor is constructed in timber. The walls are 225mm brick with 1200mm x 112mm piers at the timber roof frame locations.

2.4.4 The following structural defects were noted:-

- a. There is evidence of rot and beetle infestation to some of the roof timbers (Photograph 8).
- b. Many of the roof timbers are irregular in shape (Photograph 9) and undersized (Photograph 10).
- c. To both gable ends the high level masonry on the internal face is poorly bonded and has missing mortar to the joints (Photographs 11 and 12).

2.5 Building No 4 (Future Unit 2 and Part Unit 3)

2.5.1 This building is similar in size and height as building No. 3. The majority of the roof space is underdrawn by a ceiling and hidden from view. The one area that could be accessed revealed common rafters, purlins and principal triangular timber frames.

2.5.2 The walls are 225mm brick with 325mm x 112mm piers at regular centres.

2.5.3 It was noted that the external ground level adjacent to the Northern half of the East facing wall is approximately 700mm higher than the floor level.

2.5.4 The following structural defects were noted:-

- a. The area of roof that could be viewed revealed that many of the timbers are in poor condition with deflected and split purlins and deformation of the principal timber frames (Photographs 13 and 14). It is not possible to state if the hidden areas of the roof are in a similar condition but it would be reasonable to assume that they are.
- b. There is evidence of cracking and movement above the shallow brick arches to door and window openings (Photographs 15 and 16).
- c. There is loose and missing brickwork at low level externally to the NW corner (Photograph 17).
- d. There is loose and deflected brickwork at eaves level over window openings due to the lack of a lintel (Photograph 18).

2.6 Building No 5 (Future Store and Utility Area)

2.6.1 This is a small two storey structure. The roof consists of pantiles and battens on common rafters. There is one purlin per slope spanning between two principal triangular timber frames and the end masonry walls. The walls are 225mm brick and the first floor has timber joists running front to back and a central principal timber floor beam.

2.6.2 The following structural defects were noted:-

- a. The roof timbers are in poor condition due to water ingress where pantiles are missing (Photograph 19).
- b. The first floor timbers are in poor condition again due to water ingress,

2.6.3 It was noted that the external ground level adjacent to the East facing wall is approximately 700mm higher than the floor level.

2.7 The following items are common to all of the buildings.

2.7.1 The lintels are a mixture of shallow brick arches and timber sections.

2.7.2 The ground floors are all ground bearing insitu concrete.

2.7.3 There is no evidence of a DPC.

2.7.4 Where previous alterations have taken place there are unbonded vertical joints to the external brickwork.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Overall the masonry structure to all five buildings is suitable for conversion into dwellings. With the exception of the North and West walls to building No. 1 there is no evidence of movement or distress due to ground conditions. Prior to commencing detailed design for the conversions it will be necessary to excavate trial holes to establish the foundation details for each building and the ground conditions to determine if they are suitable to support the proposed design loads. Depending on the findings there may be a need to undertake underpinning works.

3.2 There are localised structural defects affecting all buildings. Taking each building in turn the following remedial works are required.

3.3 Building No. 1

3.3.1 The roof needs to be replaced due to movement and being out of plumb.

3.3.2 The Ash tree adjacent to the North gable wall needs to be removed. If the subsoil is clay there may be an issue with clay heave. Because the gable wall is out of plumb at high level and there are cracks at low level, it would be prudent to completely rebuild this wall on a new foundation.

3.3.3 The bulged section of the West facing external wall needs to be taken down and rebuilt on a new foundation.

3.4 Building No. 2

3.4.1 There are no specific structural issues with this building.

3.5 Building No. 3

3.5.1 The roof needs to be replaced due to its poor condition and to create sufficient head room for the first floor.

3.5.2 The high level internal faces of the gable walls need pointing.

3.6 Building No. 4

- 3.6.1 The roof needs to be replaced due to its poor condition and to create sufficient head room for the first floor.
- 3.6.2 The raised ground level to the East facing external wall needs addressing either by lowering the level or tanking the wall.
- 3.6.3 The loose and missing brickwork to the NW corner at low level need to be made good.

3.7 Building No. 5

- 3.7.1 The roof and the first floors need to be replaced due to their poor condition.
- 3.7.2 The raised ground level to the East facing external wall needs addressing either by lowering the level or tanking the wall.

3.8 Common to all the buildings the following remedial works are required:-

- 3.8.1 New lintels are required to all existing openings to the masonry walls and any localised cracking above made good.
 - 3.8.2 Where previous alterations have resulted in none bonded vertical joints to the masonry these should be stitched using Helibar repair products.
 - 3.8.3 All external masonry should be repointed.
 - 3.8.4 All masonry walls should have a chemical injected DPC.
 - 3.8.5 All ground floor slabs need to be removed and replaced.
- 3.9 When designing the conversion works the new roofs and first floors need to be anchored to the masonry walls to ensure the lateral stability of the buildings.

4.0 GENERAL

4.1 In preparing this report, 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.

Prepared by:

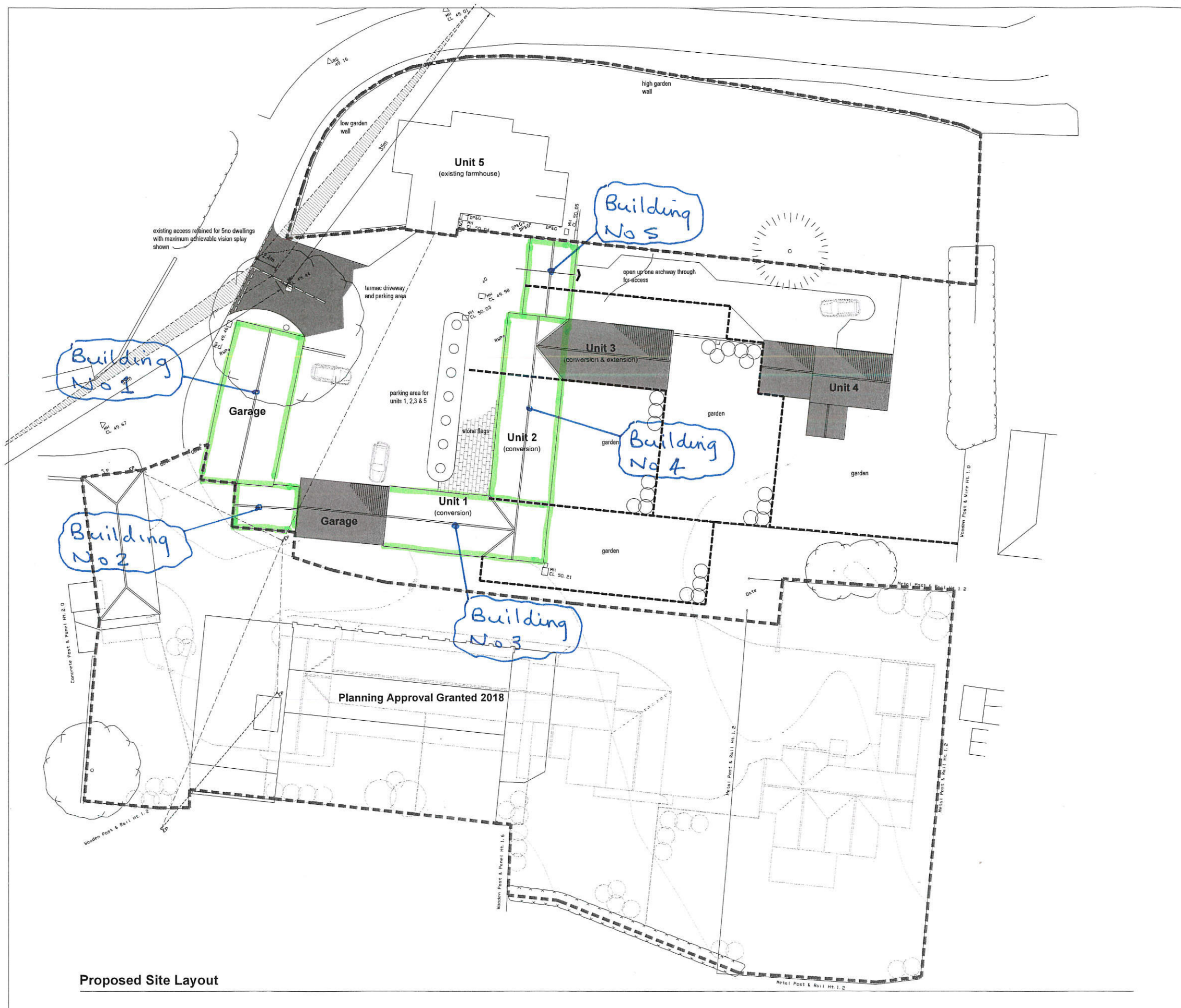
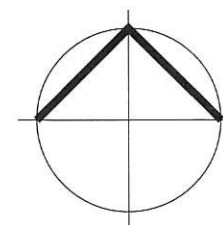
A handwritten signature in black ink, appearing to read 'A.K. Milner', is written over a horizontal dotted line.

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APPENDIX A



Proposed Site Layout

Manor Farm, Elkesley (Phase 2)

REVISION/DATE	DESCRIPTION	SCALE	AT	DATE

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APPENDIX A

Photographs

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 1 – Roof to building No. 1



Photograph No. 2 – Timber truss to building no. 1 out of plumb

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 3 – Ash tree adjacent to the North gable of building no. 1



Photograph No. 4 – Cracking to the North gable wall of building no. 1

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 5 – Cracking to the North gable wall of building no. 1



Photograph No. 6 – Outward bulge to the West wall of building No. 1

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 7 – Internal view of building no. 3



Photograph No 8 – Defective roof timbers to building no. 3

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 9 – Irregular roof timbers to building no. 3



Photograph No. 10 – Undersized rafter to building no. 3

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 11 – Internal view of high level masonry to the gable wall of building no. 3



Photograph No. 12 – Poor bonding and missing mortar to the internal face of the gable wall to building no. 3

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 13 – Deflected and split purlin to building no. 4



Photograph 14 – Bowed member to principal timber roof frame to building no. 4



Photograph No.15 – Masonry movement and cracking over shallow arched opening to building no. 4



Photograph No. 16 – Defective arch springing point to opening in building no. 4

PHOTOGRAPHS

MANOR FARM, ELKERSLEY (PHASE 2)



Photograph No. 17 – Missing and loose low level brickwork to the NW corner of building no. 4



Photograph No. 18 – Loose and deflected brickwork over opening to building no. 4



Photograph No. 19 – Defective roof frame to building no. 5

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