

Mr & Mrs Kenyon

**Barn at Cherry Tree Farm, Chipping Road,  
Chaigley, BB7 3LX**

Structural Condition Survey for Conversion to  
Dwelling



PSC-079

July 2017

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Structural Condition Survey  
Cherry Tree Farm, Chaigley

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# Mr & Mrs Kenyon Structural Condition Survey Cherry Tree Farm, Chaigley

## 1.0 Terms of reference

Paul Snape was appointed by Mr & Mrs Kenyon to carry out a visual structural inspection and produce a structural condition survey report for the existing barn attached to the former farmhouse at Cherry Tree Farm, Chaigley.

## 2.0 Purpose of the survey

It is proposed to convert the barn to form a new dwelling. The proposals are currently being prepared by PGB Architectural Services Ltd and they have provided details of the existing layout which are included in Appendix A, together with the initial proposed layout. The visual structural survey is required to confirm the current condition of the buildings and to assess their suitability for conversion. There are photographic records of the building in Appendix B and these are referenced throughout the report.

The drainage and electrical systems of the building have not been inspected. These will be renewed as part of the proposals and detailed for Building Regulation purposes.

We have not inspected parts of the structure that are covered, unexposed or inaccessible. Hence we are unable to report if such parts of the property are free from defect.

Our inspection was undertaken on 3<sup>rd</sup> July 2017 at which time the weather was fine and sunny.

The survey was undertaken by a Chartered Civil Engineer, Paul Snape BEng (Hons) CEng MICE

## 3.0 Description of Building

The barn is a random stone building with a sheeted/slatted, pitched, timber roof and concrete ground floor. The building has a main traditional barn with a loft, and a single storey leg to the rear. Both sections have roofs supported by traditional trusses, purlins and rafters. The main barn has been re-roofed with asbestos/cement sheeting whilst the single storey section retains a slate roof. The barn is attached to the former farmhouse which has recently been renovated.

## 4.0 External Survey

### Front Elevation (Photos 1 & 19)

This elevation is of random sandstone construction and 450mm thick. There are three existing openings which are to be retained. The wall is in a good condition, plumb with weathered lime mortar pointing. The wall shows no sign of structural movement.

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**Side Elevation (photos 2 to 5)**

This elevation is again of random sandstone 450mm thick. The wall has a two storey section with three existing openings, and a single storey section to the rear with a large door opening and a further window opening. The wall is reasonably plumb over the majority of its length but there is an area to the rear of the main barn, above the window, which leans into the barn (photo 5). This may be associated with some previous movement associated with re-building the adjacent section of rear wall (photos 4 & 7). This section would benefit from re-building when the rear section is also repaired. An allowance of 6m<sup>2</sup> to be re-built should be made for this elevation. The single storey wall is in reasonable condition. It is not proposed to introduce any further openings in this elevation.

**Rear and other side elevation to single storey section (Photos 6 & 9)**

These elevations are 450mm random stone walls and are generally in good condition with weathered pointing. It can be seen from photo 6 that there has been some former movement to one corner of the rear section and close inspection indicates there may have formerly been a door opening here. This will require a small amount of patching or re-building over 1m<sup>2</sup>. There are no existing openings to these elevations and none proposed for the conversion.

**Rear Elevation (photos 7 & 8)**

The rear wall is a 450mm random stone wall. The wall is generally in a reasonable condition but the area to the left of the main barn door opening, above the single storey roof, has been partially re-built (photo 7). Internal inspection shows two large steel beams supporting this (photo 17). This re-build may also be associated with the movement noted on the side elevation. This section will need re-building and allowance of 10m<sup>2</sup> should be made for this. The area of wall where there is a ventilation fan will need infilling. There are 4 openings to this elevation and it is proposed to retain these with no further openings introduced.

**Roof (Photos – External – 1, 3, 8, 9, 18 & 19 & 13, Internal – 11, 12 & 14)**

Both roofs have traditional trusses, purlins and rafters. The roof is in reasonable condition with little sign of movement, rot or infestation. The main barn is covered by cement sheeting which may possibly contain asbestos. The single storey section retains traditional slates. The roof will be re-constructed under the proposals but existing elements may be retained subject to structural checks and treatment for rot/infestation. The cement sheeting will need testing for asbestos and disposed of as required under current Health & Safety Regulations.

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**5.0 Internal Survey**

**Main Barn (Photos 17 & 18)**

The walls to the main barn are generally in good condition but do reflect the damage noted externally to the rear wall above the single storey section and the associated movement to the side elevation. The timbers do not exhibit any obvious sign of rot or infestation.

The existing brick wall within this section is a brick 225mm wall and separates the shippon area from the main barn area as well as carrying the loft above. The proposals retain a wall in this location as well as the introduction of further internal walls which will add to the overall stability of the structure.

**Single Storey Section (Photos 13 to 17)**

The Single storey section has been used as a shippon with stalls for cattle and a concrete floor. The walls to this area are all in good condition with rendering to the lower sections. The original rear wall to the main barn has been removed in the past to form one long room. The steel beams shown on photo 17 were introduced to facilitate this and the wall partially re-built in block above. The movement to the side elevation may be associated with this change.

It is proposed to leave this layout in the proposals but investigation and possible replacement of the existing steel beams may be required. If anything, the beams appear to be oversized.

**6.0 Suitability for Conversion and Method of Construction**

It can be seen from the survey detailed above that this barn is generally in good condition but has one poor section to the rear elevation and side elevation, with another small area of damage/movement to the rear of the single storey. The area identified for re-build is around 17m<sup>2</sup>, which is around 6% of the total area of external walls (270m<sup>2</sup>). Given that this is well below the acceptable limits, it is therefore considered suitable for conversion to a dwelling. When converting barns, it is essential that the construction techniques and sequence are carefully considered.

PGB Architectural have indicated the construction of a masonry inner leaf. This may comprise of a cavity with insulation plus a block inner leaf or a backing block to the stone with a cavity and a further block inner leaf. With this technique, care must be taken as the existing walls may be founded at a shallow depth. Trial holes should be dug to ascertain the actual depth. Ground

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floor levels should be set as high as possible and we would recommend the use of a concrete floor slab with thickened edges along external walls and thickenings under new internal walls. The thickening can be taken down to a similar depth as the existing walls. We would recommend a minimum depth of 400mm for the thickenings. Levels lower than the existing foundations should be avoided and if this is necessary an Engineer should be consulted as underpinning may be required. The new inner leaf (and backing block if used) should be tied to the existing wall with suitable cavity and/or specialist ties.

It is recommended that this new internal skin is in place and the ground and first floor are put in place prior to the roof being removed and reconstructed. This will add stability to the exiting walls.

The architectural layout does not introduce any new openings to the external walls , therefore the integrity of the structure should not be compromised.

Internally, an additional wall across the main barn section is proposed which will add to the stability of the structure. It is recommended that this wall is constructed in blockwork for the full height, rather than stud partition. The remaining walls upstairs could be stud partitions. The existing wall between the main barn and shippon is unlikely to have adequate foundations and would be better replaced with a new wall taken to full height as indicated.

As noted above, the existing beams carrying the rear elevation above the single storey roof should be checked for suitability. This area requires re-construction above and to the section of side elevation which is leaning into the barn. It would be appropriate to replace or re-seat the steel beams with the correct/existing sections sitting on new blockwork walls and padstones. In addition, the section of wall to the rear of the single storey leg should be re-built.

The existing trusses, purlins and rafters appear to be in good condition with little sign of rot or infestation. Any timber retained should be assessed by a timber specialist, with regard to rot and infestation. All retained timber should be treated against rot/infestation and an indication of residual section given for structural purposes. All retained timber to be used structurally should be checked for structural adequacy.

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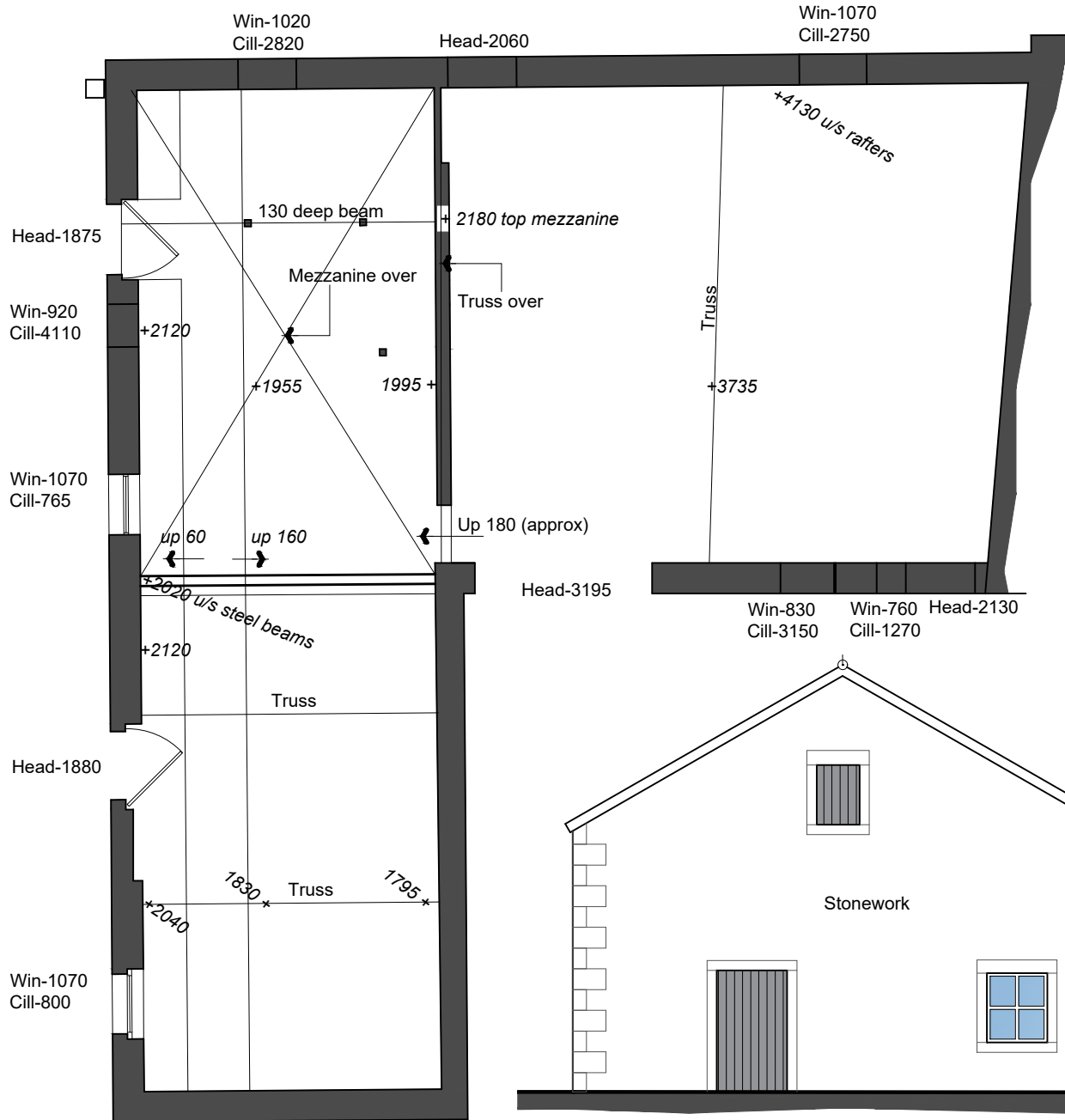
**7.0 Conclusions**

The barn is in a reasonable structural condition, with some requirement for rebuilding of external walls. It is considered suitable for conversion. The construction should follow the guidance set out above and a structural engineer should be consulted with regard to the final layout for Building Regulation compliance.

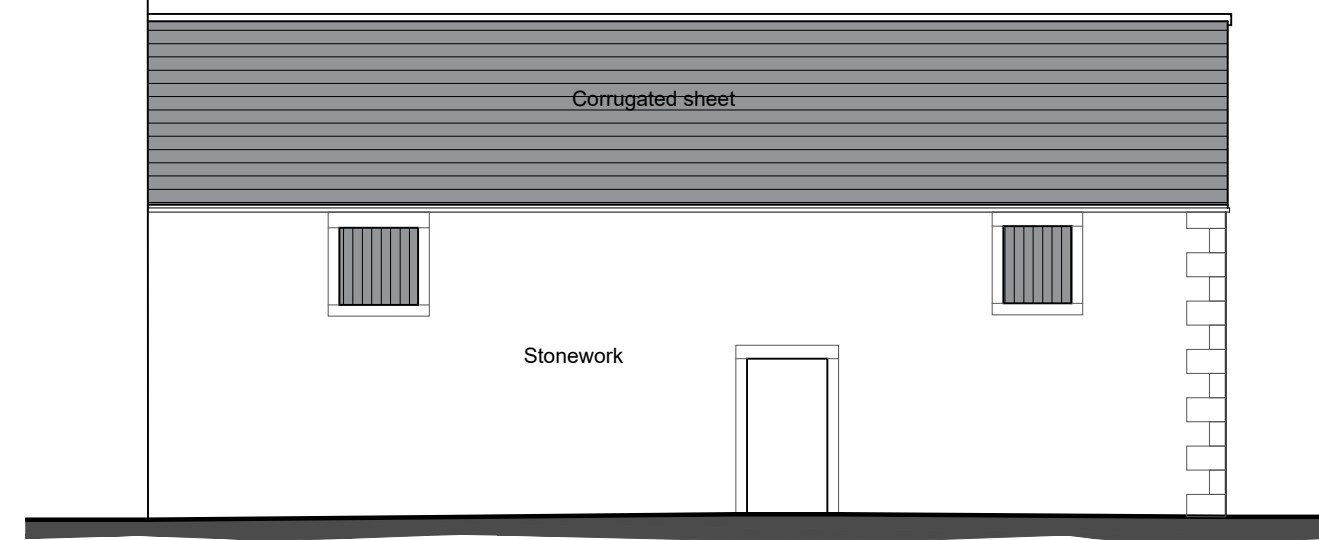
Appendix A  
Drawings



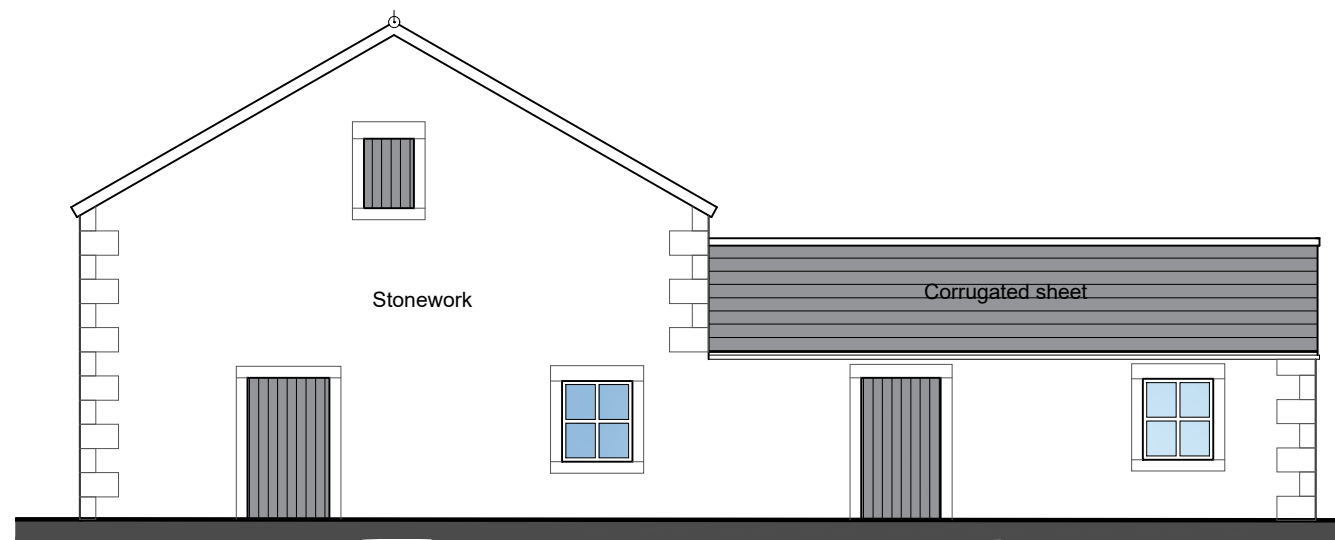
NOTES:  
 1: Do not scale this drawing, use figured dimensions only 2: The Contractor, Sub Contractor or specialist supplier are responsible for confirming site dimensions prior to fabrication 3: Any dimensional discrepancies are to be reported to the Architect immediately



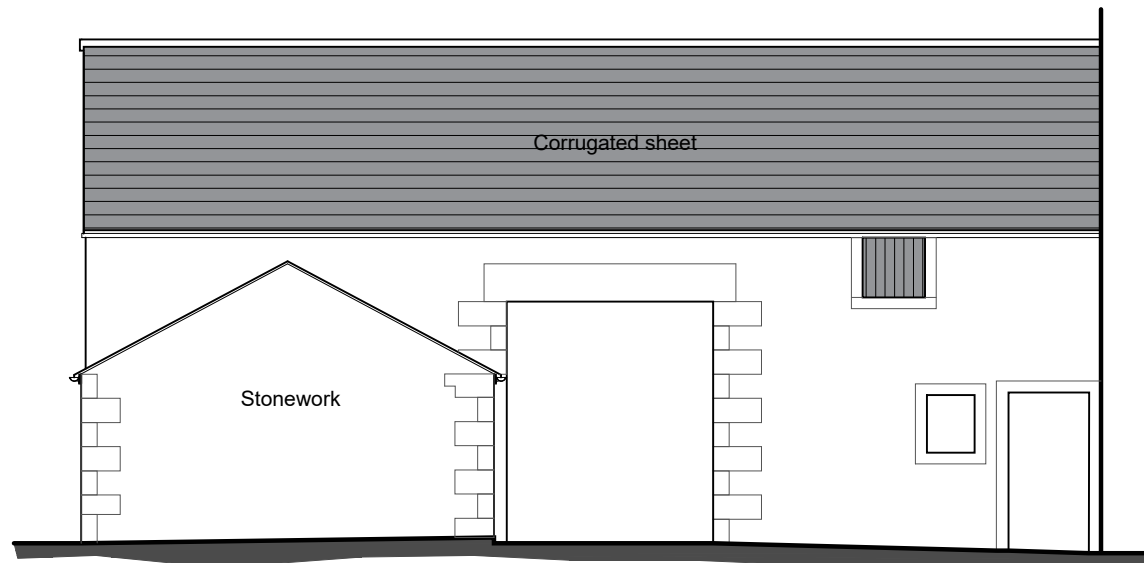
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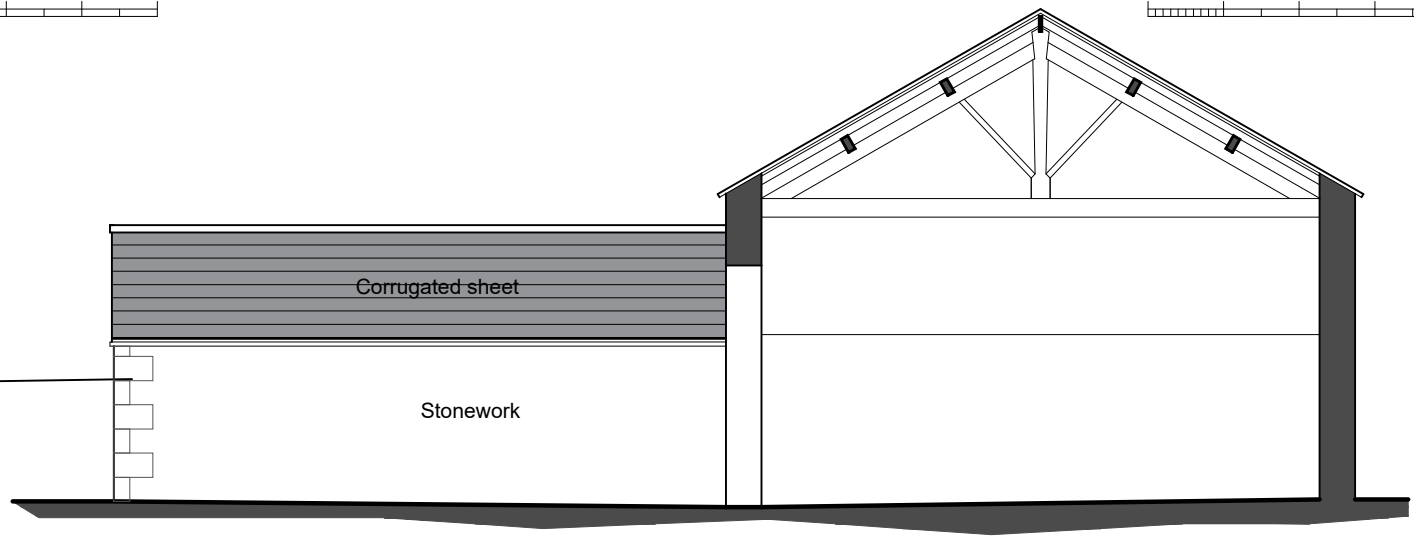
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 0 1 2 3 4 5m



Side Elevation  
 0 1 2 3 4 5m



Rear Elevation  
 0 1 2 3 4 5m



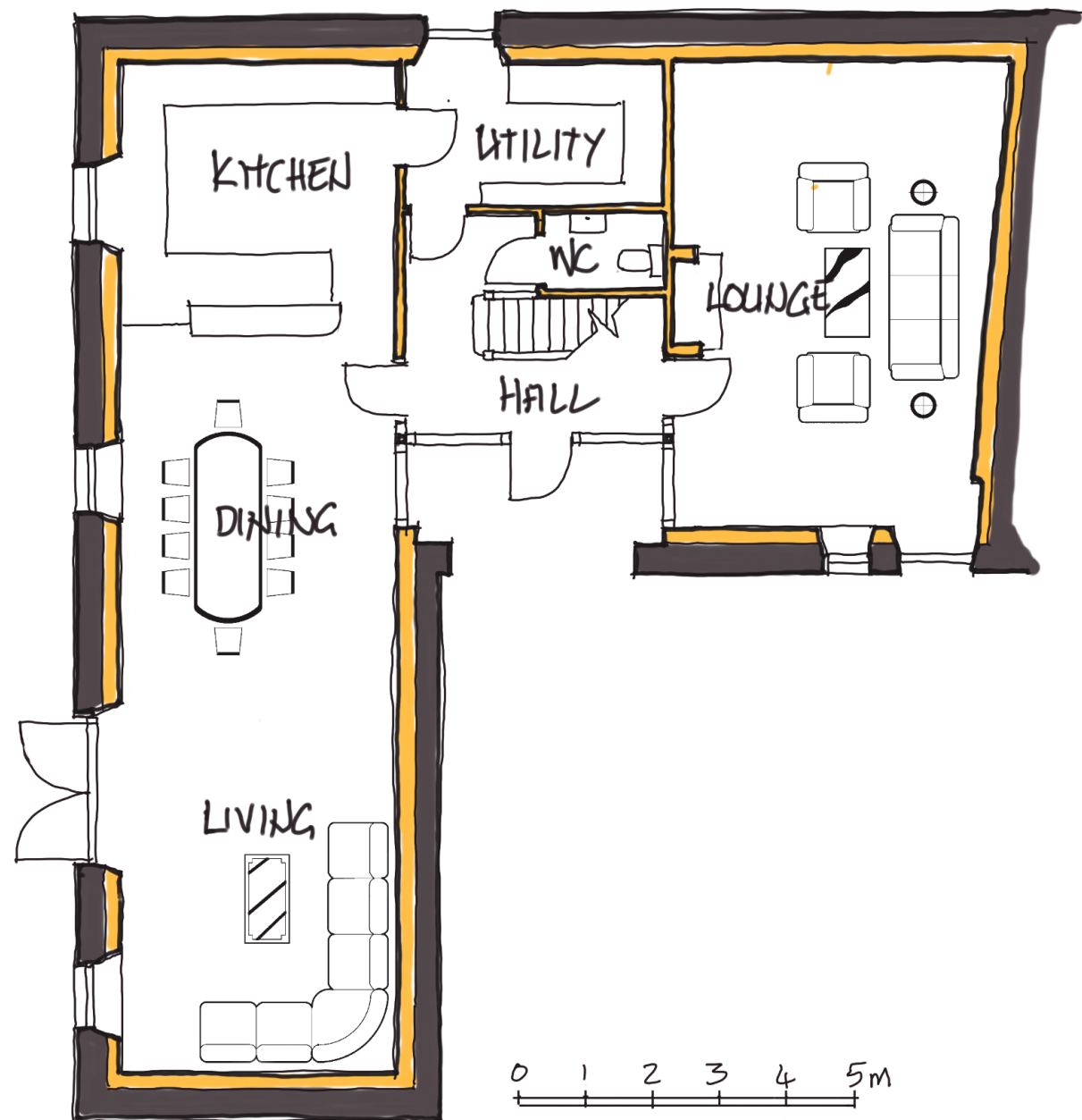
Side Elevation  
 0 1 2 3 4 5m

Cherry Tree Farm  
 Chipping Road Chaigley BB7 3LX  
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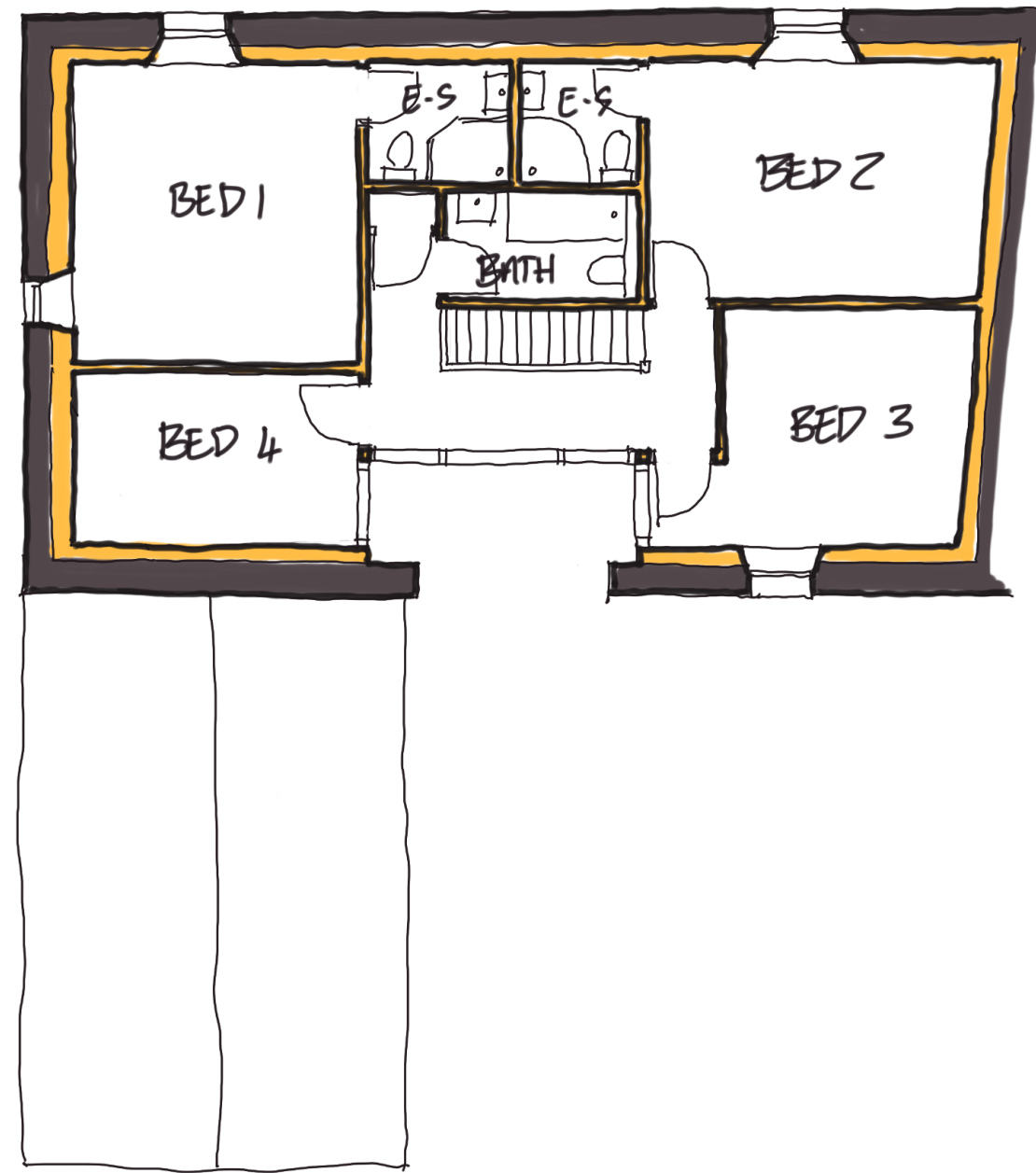
Plans as Existing  
 DATE May 2017

JOB NO. 2965  
 DRAWING NO. 001  
 REVISION .  
 SCALE 1:100





GROUND FLOOR



FIRST FLOOR

Appendix B  
Photographs



Photo 1 - Front elevation



Photo 2 – Side elevation – Main Barn



Photo 3- Side elevation – Single Storey Section



Photo 4 – Side elevation and rear corner



Photo 5 – Side elevation – bow to rear section



Photo 6 – Rear elevation of single storey



Photo 7 – Rear elevation block re-build



Photo 8 – Rear elevation



Photo 9 – Opposite side elevation of single story section



Photo 10 – Main barn internal





Photo 11 – Main barn roof truss



Photo 12 – Main barn roof truss, purlins and rafters



Photo 13 – main barn below below mezzanine



Photo 14 - Single storey internal



Photo 15 - single stoey internal



Photo 16 – main barn below mezzanine



Photo 17 – Double steel beam to rebuilt rear elevation of main barn



Photo 18 – Roof single storey



Photo 19 – Roof and junction with house – front elevation