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STRUCTURAL APPRAISAL REPORT

A1323 rev0

June 2010

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A1323 Huckle Ing Barn, Gisburn

Document Control Sheet

**Structural appraisal report concerning the stability and integrity of the
existing structure and the suitability for renovation**

Job

A1323

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Originator.....RKW.....

Checker.....

Approver.....

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PSA Design Limited

The Old Bank House

6 Berry Lane

Longridge

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1.0 Survey

- 1.0.1 The scope of this Structural Appraisal is to offer a Structural opinion as to the Integrity of the barn structure as existing and also as a suitable refurbishment into a two-storey dwelling. The barn consists of three walls of random limestone, average 570 mm thick, with a lean-to attached to part of the North Elevation, and also a traditional hay barn full height entrance with wing walls to the South Elevation. The roof consists of 4 oak trusses in 5 bays with purlins and spars and carrying a temporary roof covering of cement paste corrugated sheets (partly) and also tiles (partly) The inside floor level (earth) is in two parts, with the West half 600 mm lower than the East half, approximately following Ground Level around the perimeter of the walls.
- 1.0.2 Reference is made in the report to a numbered set of annotated photographs as an attachment to this Structural appraisal.
- 1.0.3 External survey : North Elevation. Photographs One through Four show that the main flank wall of the North Elevation is noted as being vertical, free from bulging with only a limited number of cracks expected in a limestone random rubble wall of a reasonable age. However, it must be noted that the same cannot be said for the limestone random rubble lean-to structure which has parted from the main flank wall. Photographs One and Three show that both gable walls of the structure have parted from the flank wall and that the roof has collapsed. The structure will require a re-build on new foundations of strip concrete (*refer to Section 2.0*). The roof cheek covering must be considered as being

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temporary and that for fit for purpose reasons and for Planning reasons the covering will be completely renewed as tile on new battens on felt on new spars on the existing trusses (which require structural checking - *refer Section 2.0*). The roof drainage is currently none existent and will have to be renewed (*refer to Section 2.0*).

- 1.0.4 External survey : West Gable. Photographs Five and Six note that a spirit level survey showed that the elevation, again of random rubble limestone is vertical and free from any serious bulging. Unusually for barns of this height and nature, there was little evidence of any serious strain cracking to the wall. However, in consideration to the height of the wall and to the fact that the roof loading will be back to a heavier weight of tiles etc., then tying-in to a new First Floor structure and a new inside skin is recommended (*refer to Section 2.0*). It must be noted that there is a working septic tank (*refer to Section 2.0*) in field opposite to the gable, immediately inside the field enclosure. The field is also the property of the client.
- 1.0.5 External survey : South Elevation. The South Elevation flank walls and also entrance wing walls are shown on Photograph Seven. The notes on the Photograph show that the walls (including the wing walls), of random rubble limestone, are generally vertical and free from any serious bulging or strain cracking. Photograph Eight, however, shows that the two timber beams supporting the roof covering over the entrance are not fit for purpose and require replacement (*refer to Section 2.0*).
- 1.0.6 Internal Survey. The earth and concrete Ground Floor of the barn interior is currently not fit for purpose and will require replacement. The replacement with a concrete slab must include the usual perimeter slab thickening to support a new wall inner skin (*refer to Section 2.0*). Photograph Eleven shows that the portion of timber floor existing is in a reasonable condition structurally and may be used in the refurbishment if head height permits and if it can be incorporated in a proposed inner skin (*refer to Section 2.0*). The other section of flooring and dividing wall to the West of the main doorway is not fit for purpose, is not aiding the stability of the structure and may be demolished. Photograph Twelve calls attention to the fact that there is a return on the North Elevation to the party wall between the barn and a farmhouse (renovated) structure.

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- 1.0.7 Internal survey : roof structure. The roof structure comprises of 5 bays of purlins on 4 oak trusses. Two of the trusses (in the West section) have missing members which require replacing as shown on Photographs Eight and Nine (*refer to Section 2.0*). However the internal diagonals of all the trusses need checking for fit for purpose and also the condition of the North end of the Western-most truss requires examination by a timber specialist for insect and fungal attack (*refer to Section 2.0*).

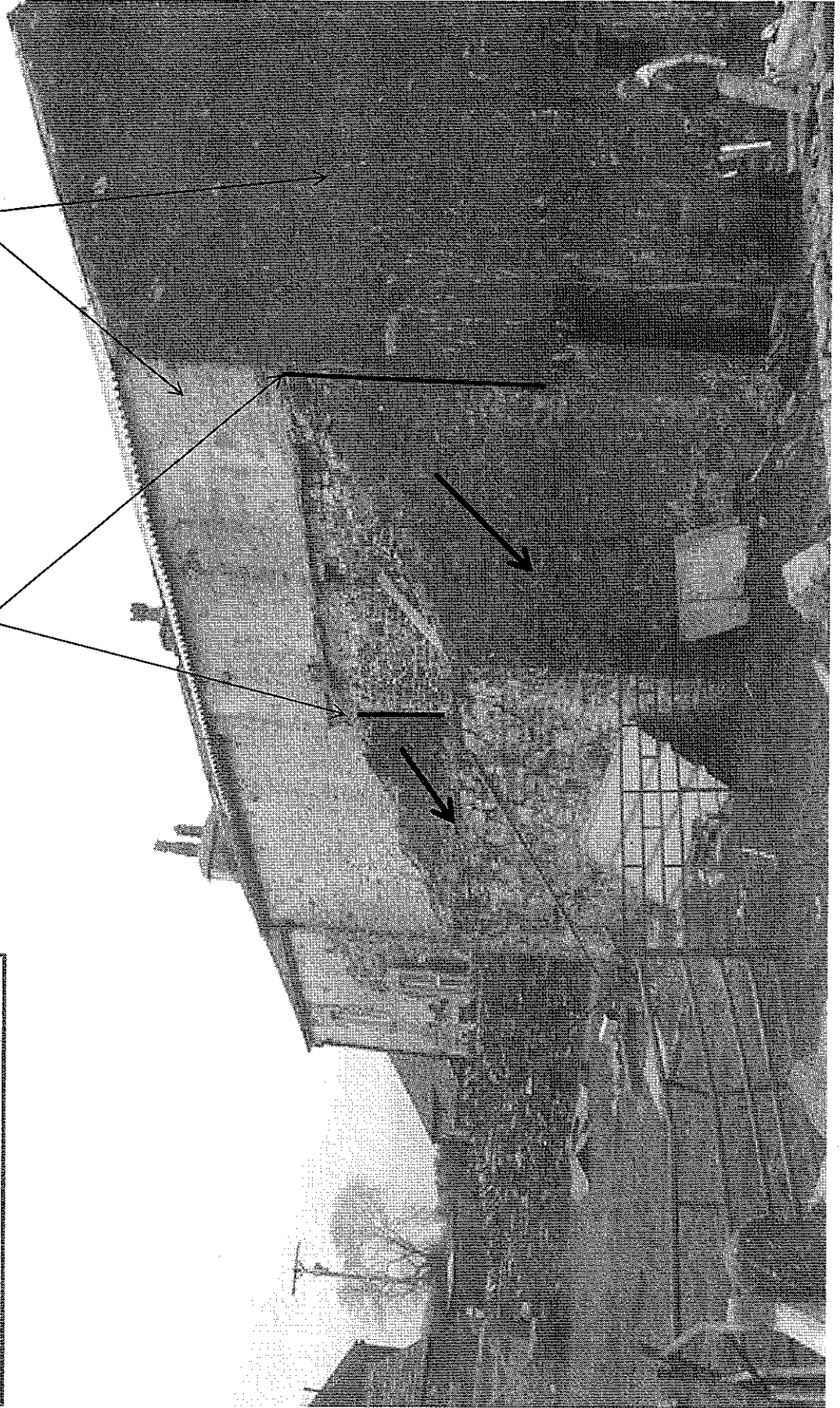
2.0 Summary and further refurbishment work

- 2.0.1 In summary, the barn structure is in reasonable condition for refurbishment, is a stable structure at the present time, and can have an extended design life of 60 years if the following issues are addressed in the refurbishment of the property
- 2.0.4 The shell of the structure to be improved by designing and including a concrete floor slab with a slab thickening to support an inside skin of concrete block-work. The block-work is to be tied to the flank and gable walls with retro-ties. The timber or concrete proposed first floor is to be strapped to the inner skin thus ensuring a mid-height restraint to the existing walls. The rear lean-to to be demolished and if required, a new structure on concrete strip foundations to be built in its place and a new roof with new timber spars attached to an anchored timber wall-plate to support tiles on battens on felt.
- 2.0.3 The existing roof covering to be removed and the existing trusses checked for strength, insect attack and also suitable diagonal pieces re-inserted. The roof covering to be renewed with tiles on new battens on felt on new spars blocked up as required to ensure a straight roof ridge and straight roof cheeks. The timbers over the North main entrance are to be replaced by similar new timbers or by stonework if the front entrance is to be built-up to eaves level. New roof drainage in keeping with the attached re-furbished farmhouse to be incorporated and the drains and septic tank checked for fitness of purpose.

Photograph One showing the North flank wall and roofless lean-to as seen from the North - West

Both gable walls of the lean-to have parted from the main North elevation

Both walls shown are vertical and free from bulging or splitting



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Photograph Two showing North
elevation



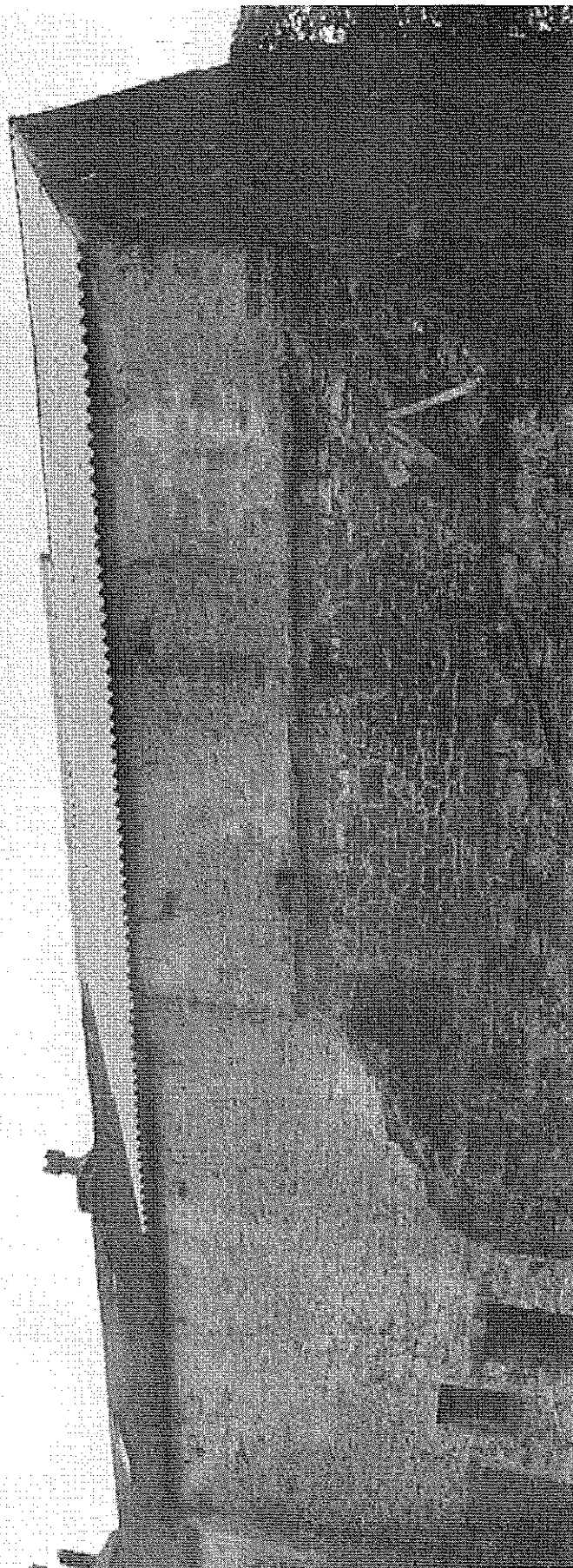
Photograph Three showing the rear roof cheek
mostly covered with cement paste corrugated
boarding

Lean-to walls with latent
defects with a suggestion
in the report that
demolition is preferred

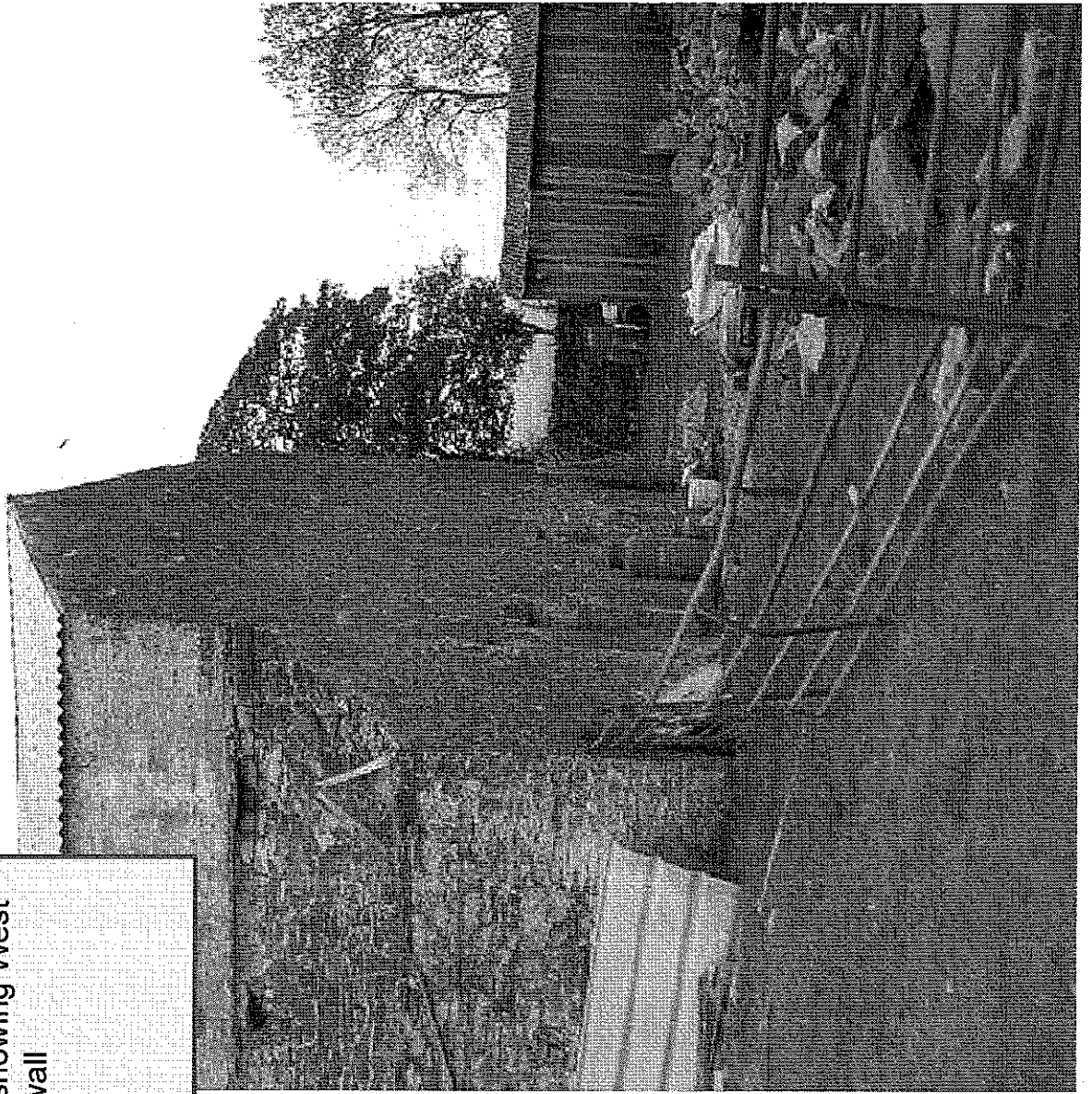


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Photograph Four showing North roof cheek covered in cement paste corrugated boards and partly slate ; all to be replaced by tiles on felt on battens on new spars. Roof drainage non-existent

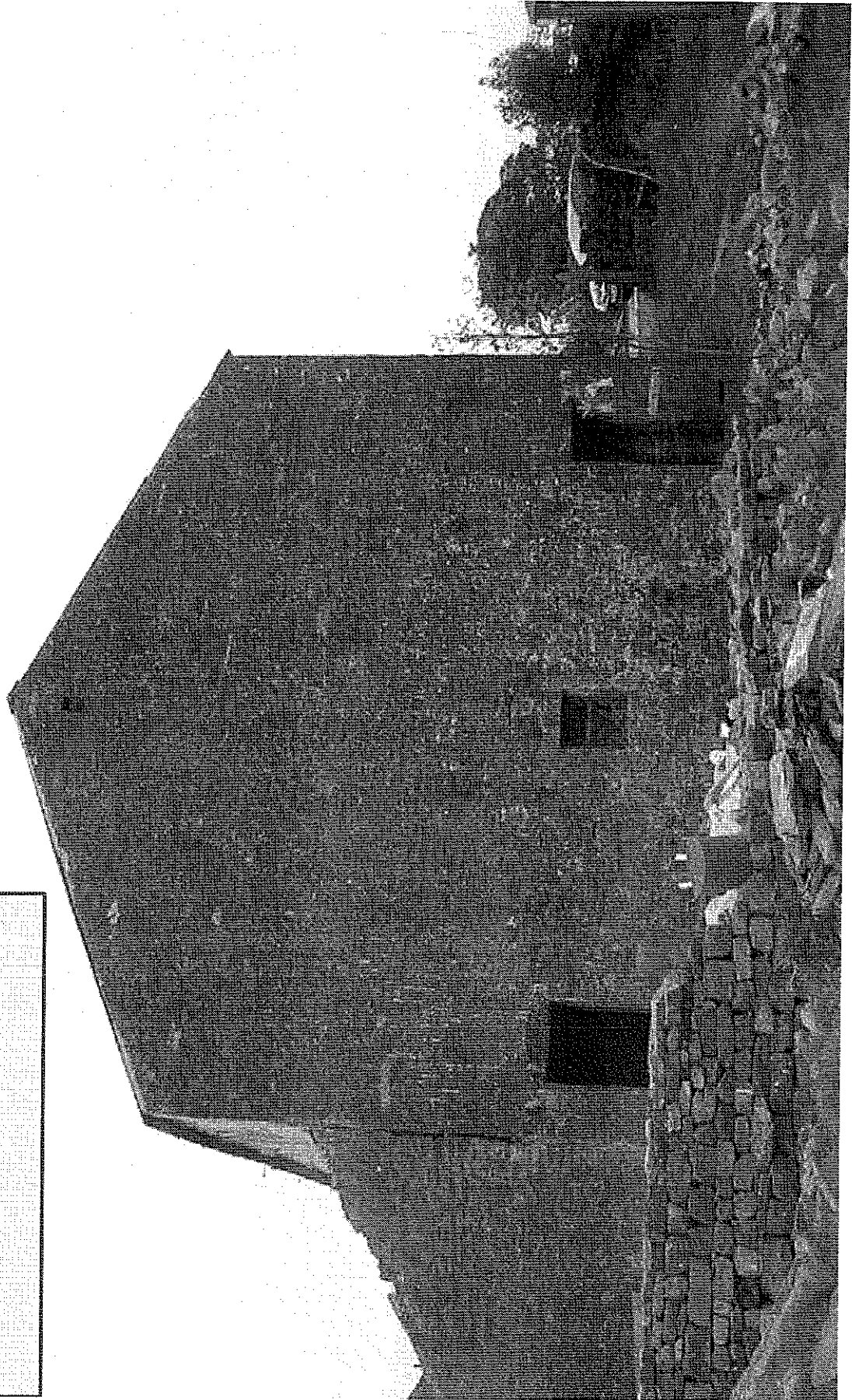


Photograph Five showing West
gable wall



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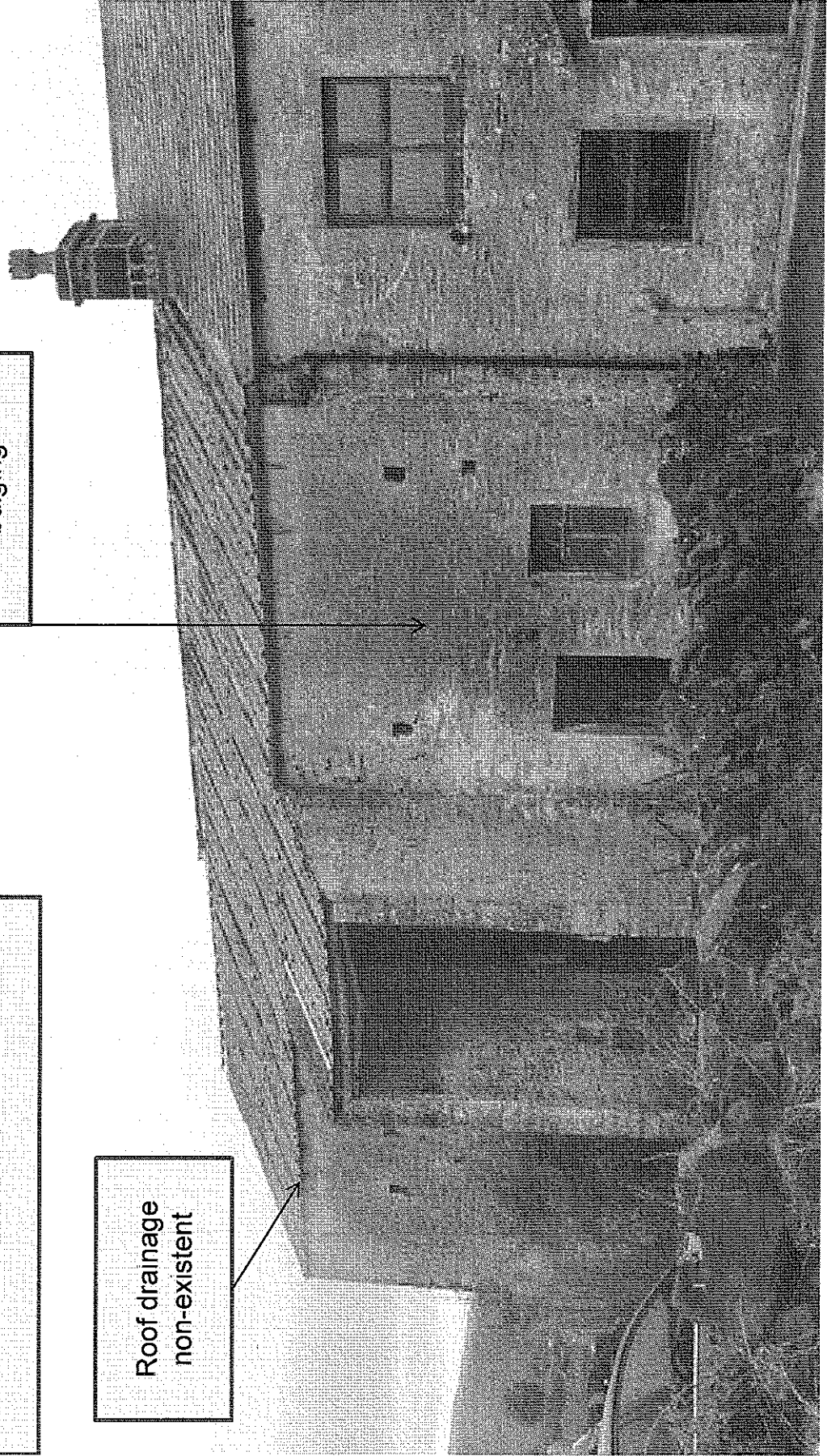
Photograph Six showing West gable wall - all external walls have an average thickness of 570 mm and appear to be in reasonable condition



Photograph Seven showing South
Elevation including traditional full-height
barn doorway : roof completely covered in
cement paste corrugated sheets to be
completely re-covered - see report and
also Photograph Four

Roof drainage
non-existent

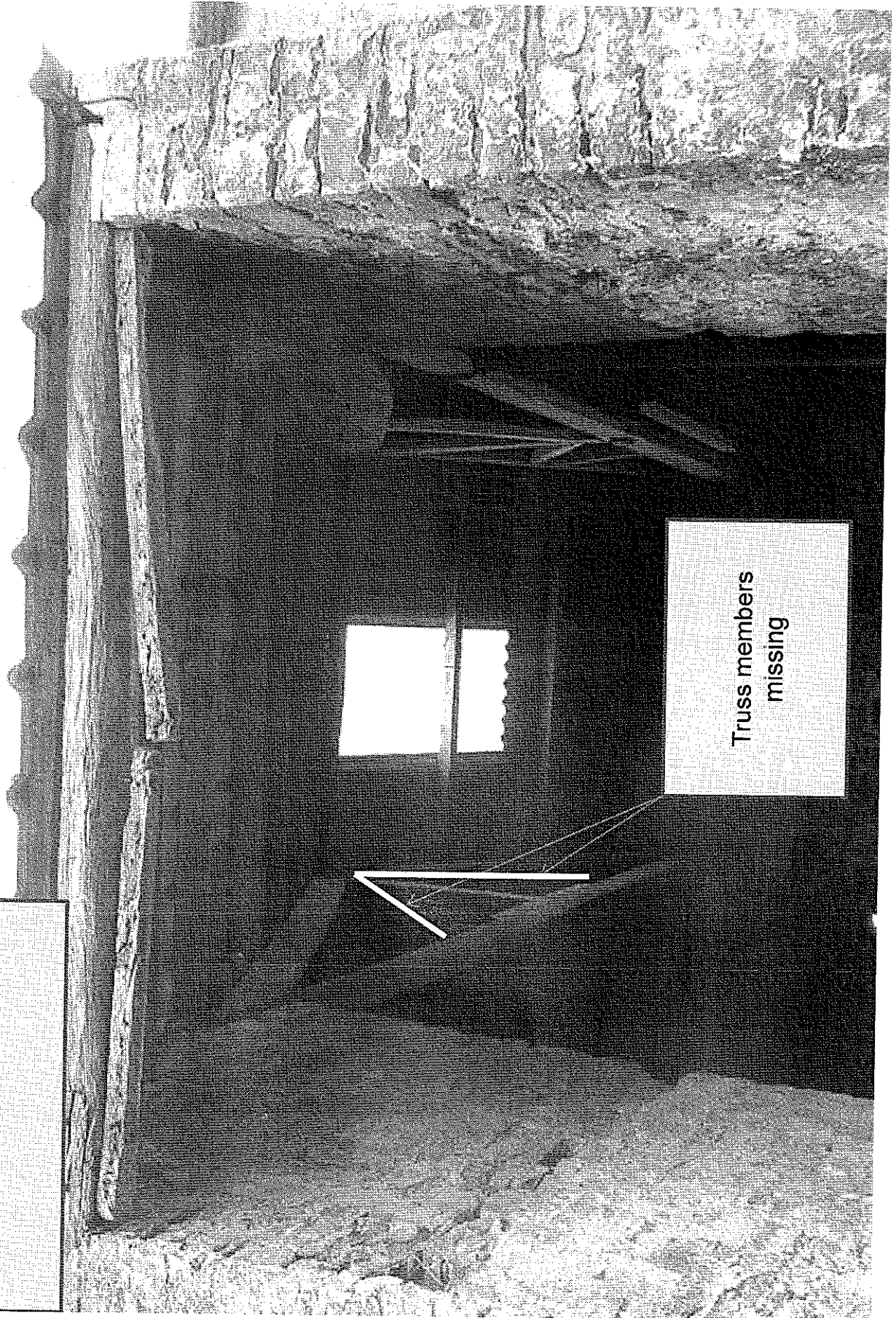
Walls of South
Elevation vertical
and straight with
little evidence of
strain cracking or
bulging



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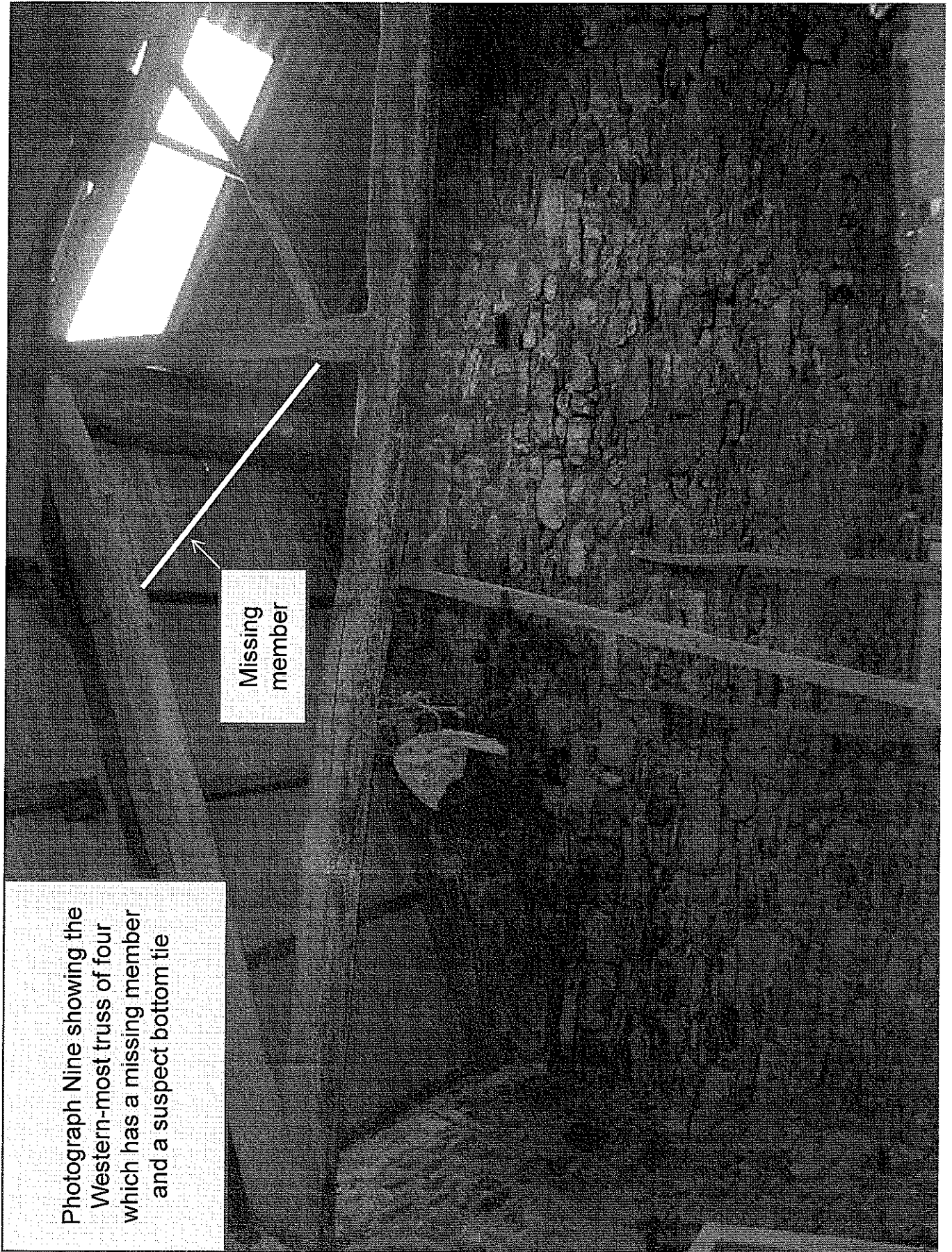
Photograph Eight

Truss members
missing



Photograph Nine showing the Western-most truss of four which has a missing member and a suspect bottom tie

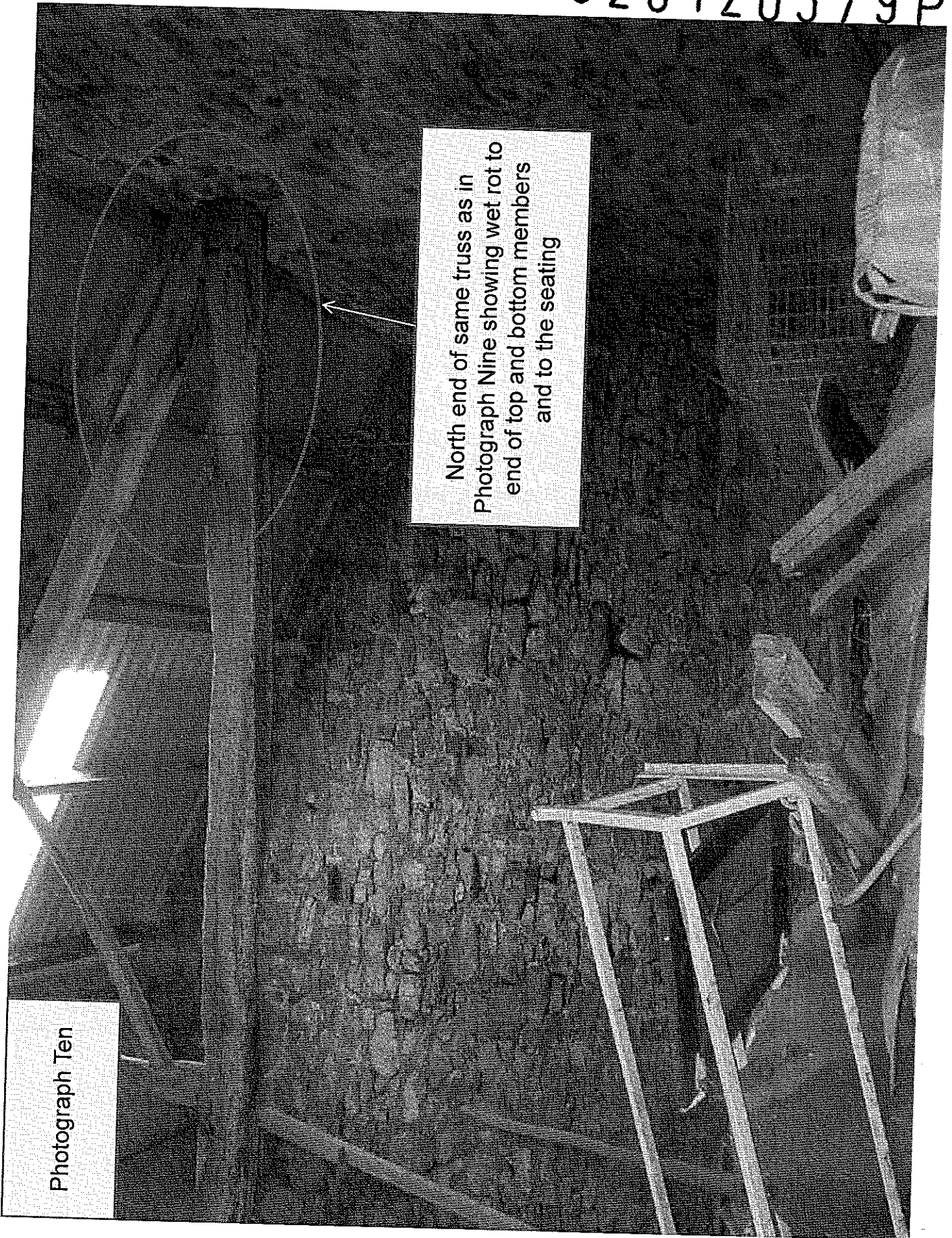
Missing member



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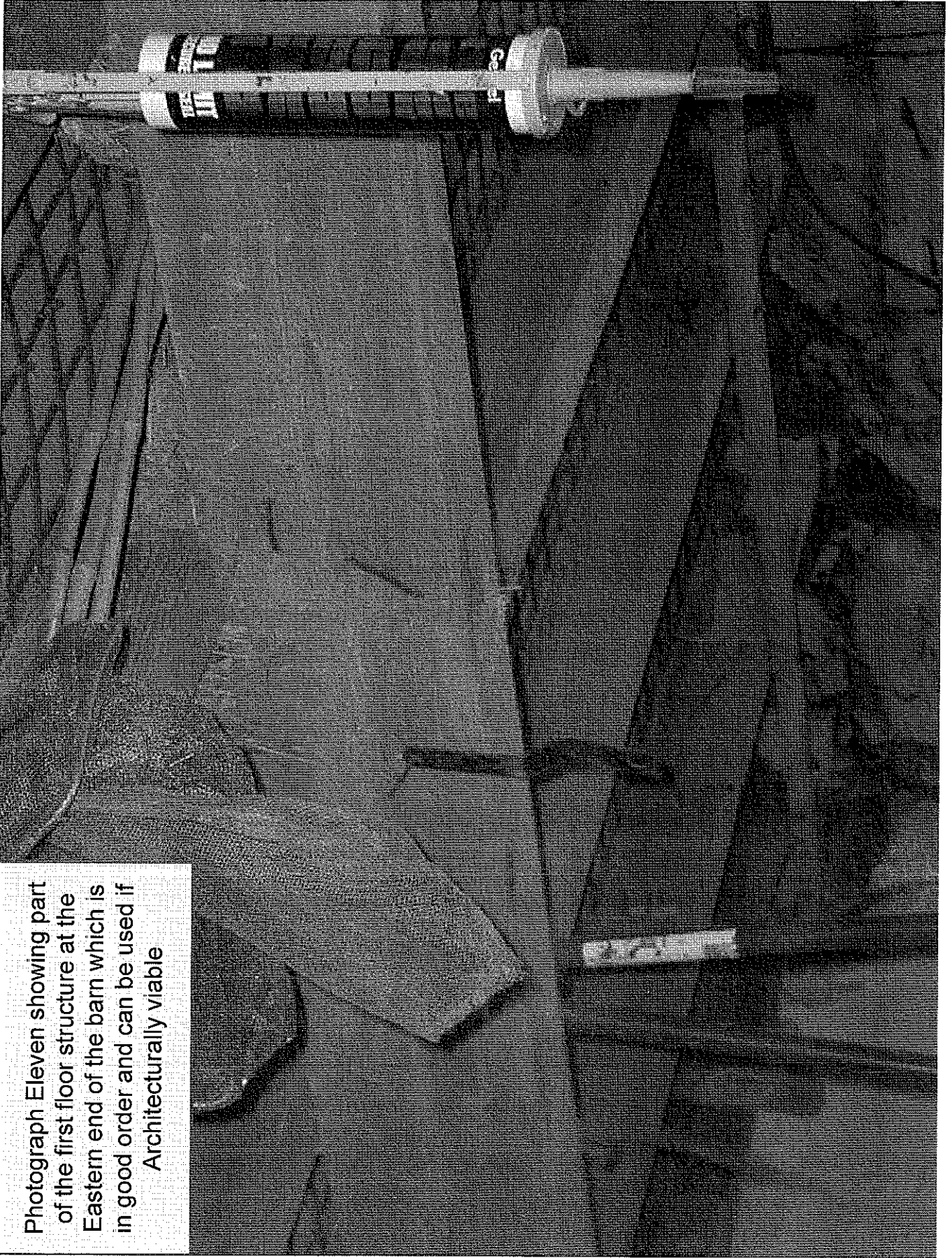
Photograph Ten

North end of same truss as in
Photograph Nine showing wet rot to
end of top and bottom members
and to the seating



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Photograph Eleven showing part
of the first floor structure at the
Eastern end of the barn which is
in good order and can be used if
Architecturally viable



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Approximate
position of wall
return

Party Wall with
farmhouse



Photograph Twelve
showing the North
East corner of the
barn and of the First
Floor Construction