



**SHOWELL FARM
Showell
Chippenham
SN15 2NU**



**STRUCTURAL REPORT
ON
THE CART SHED**

Date of inspection

3rd October 2025

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1. Introduction

We were appointed by Willis & Co. Chartered Town Planners, to report on the structural condition of The Cart Shed building at Showell Farm and its suitability for conversion to residential use.

This report is concerned only with this structural issue, all other aspects of the property are outside our report.

This report is prepared for the use of the above-named Client in connection with a planning submission only and is not to be relied upon by third parties without our specific written authorisation.

No exposing work was carried out. This report is based on a visual inspection.

A site visit was carried out in the morning of Friday 3rd October 2025. Weather conditions were overcast with short spells of light rain.

This report contains photographs of The Cart Shed taken on the day of the inspection.

2. General Description

Showell lies about 3km due south of Chippenham. Showell Farm is located in the southern part of the hamlet, not far from the A350 main road.

The topography is generally level at about 50m Aod in this area. The immediate surrounds are open farmland.

The Cart Shed is located to the rear of the farm, set to the south-west of the large farmhouse.

The Cart Shed is single-storey, approximately 20m long by 7m wide. The ridge line is orientated on an east-west axis.

The 20m long south elevation has an open aspect, with 7Nr. bays created by intermediate timber posts. Each bay is c. 2.6m wide.

3. External Observations

Roof

The roof is duo pitched with bonnet hips at each end. It is finished with overlapping profiled clay tiles. There are matching clay ridge and hip tiles.

The south pitch appears in good condition with no significant sagging or undulations present. There are a few tiles missing from the south verge. There are also a couple of ridge tiles missing from the central part of the roof. There is guttering along this south elevation.

The north pitch again has no significant sagging or undulations present. There are comparatively more tiles missing from this side of the roof, particularly around the central area and the south verge. Again, there is guttering along this north elevation, although a small section is missing at the south end.

Walls

The Cart Shed comprises masonry walls at each end and along the north elevation.

The west gable is a 460mm thick random rubble stone wall. The south end is finished with ashlar quoins. There is a single, high-level window opening in this wall, which is framed with sawn timber. There is a timber lintel above this window. There are a few stones missing from this gable, but overall it appears to be flat, solid and in good condition.

The east gable is a 450mm thick random rubble stone wall. Matching the opposing gable, there are ashlar quoins to finish its southern, front end. There are no windows present in this wall. There is evidence of a former doorway at the north corner which is now infilled with concrete blockwork. The timber lintel has been retained above the blockwork. Similarly, there are a few stones missing from this gable but overall, it appears to be flat, solid and in good condition.

The guttering from the north and south elevations return onto this east gable. The south gutter discharges into a short length of rainwater pipe. The north guttering

terminates into a sloping length of pipe. At both locations, the pipework discharges to ground.

The north rear wall is 470mm overall thickness. It comprises half-brick thick external facing in lime mortar, fronting random rubble stonework. The brickwork has been built in traditional Flemish bond. It is unclear whether snapped headers have been used here or if full bricks have been bonded back into the stonework. There is a 210mm high stone plinth running the full length along the base of this wall. There is a series of high-level narrow vertical slit window openings along this wall. Some of these are finished with brick reveals.

There are a number of semi-mature trees and shrubs planted close to this wall.

Apart from the ends of each gable, there is no masonry on the south elevation. The structure comprises 6Nr. oak posts set onto low-level staddle stones. These modestly weathered 160 x 160mm posts, incorporating flared heads, support a 205 x 175mm deep timber eaves beam. Some of the posts have been strengthened using supplementary timber set alongside. The eaves beam is scarf-jointed at the post positions. The western end of the eaves beam is partially decayed due to missing roof tiles. There are a couple of locations where the roof edge drops along this elevation. This is likely caused by the long-term but slow weathering at the base of the support posts. Overall, the timberwork appears satisfactory here.

4. Internal Observations

Roof

The primary roof structure comprises 6Nr. timber king post trusses aligned with the front posts. These consist of 225x150mm tie beams, 200x90mm principal rafters and 140x130mm king posts. The far end of the tie beams bear onto the north wall, with short timber spreaders used as seatings. At the front, they are housed into the top edge of the eaves beam. Overall, these trusses appear in excellent condition. Locally, Truss 3 has some decay due to missing roof tiles and Truss 4 is missing a rear strut.

The secondary roof structure comprises 90x65mm timber rafters set at an average of 350mm spacing. They are birdsmouthed directly onto the front eaves beam and finished with an open eaves detail. There are 2Nr. rows of 135x80mm canted purlins on each roof pitch. These are overlapped above the truss principal rafters, most likely with a coggled joint. Again, apart from some localised effects of water ingress, all of these secondary roof timbers appear in excellent condition, being straight and showing no indication of suffering from overload or significant deflections.

Walls

Due to the buildings current use as storage, numerous areas of the walls were not accessible for inspection. Therefore, only a limited commentary is provided here.

At a couple of places along the north rear wall, the random rubble stonework appears to have two distinct patterns or styles. The lower two-thirds of the wall exhibit a blend of large and small stonework, set in modestly-sized mortar joints. The upper third portion consists almost exclusively of larger stones in much larger mortar joints. This may indicate represent either repair works or that the roof height was raised at some point.

Some areas of these walls have green algae growth present.

Overall, the inspected walls appear in good overall condition with no sign of significant movement, cracking or major structural defects.

5. Comments & Conclusions

Existing Building

The Cart Shed is a robust building, traditionally built with generously proportioned walls and roof timbers.

The king post trusses are in generally excellent condition with only a few minor repairs necessary for their long-term retention. Similarly, only limited repairs are necessary for the secondary roof timbers.

The roof would benefit from the refitting and/or replacing all damaged, slipped or missing roof tiles. This would maximise the long-term durability of the roof timbers.

Two of the timber posts along the south elevation would benefit from repairs to their lower ends, where they have been subjected to long-term moisture exposure and ingress through the end grain. This repair work could be incorporated into the overall enclosing of this elevation.

Proposed conversion

At the time of this report, we have no details of the proposed conversion of this building. However, it is likely to involve some or all of the following:

- Fully weathertight and insulated roof.
- Insulated ceilings.
- The addition of windows and doors to the north, east and west walls. Internal insulation and dry lining to these walls also.
- New internal dividing walls, either masonry or partitions.
- A combination of glazed screens and timber framing along the front elevation.
- A fully insulated ground floor slab.

The conversion of these buildings can, in our opinion, be carried out without major construction of structural elements.

We will be pleased to answer any questions on this report.

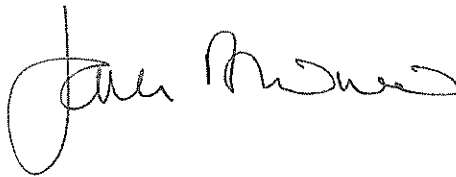
Inspector & Author



Sean J. Shanks BEng

1067/ SJS

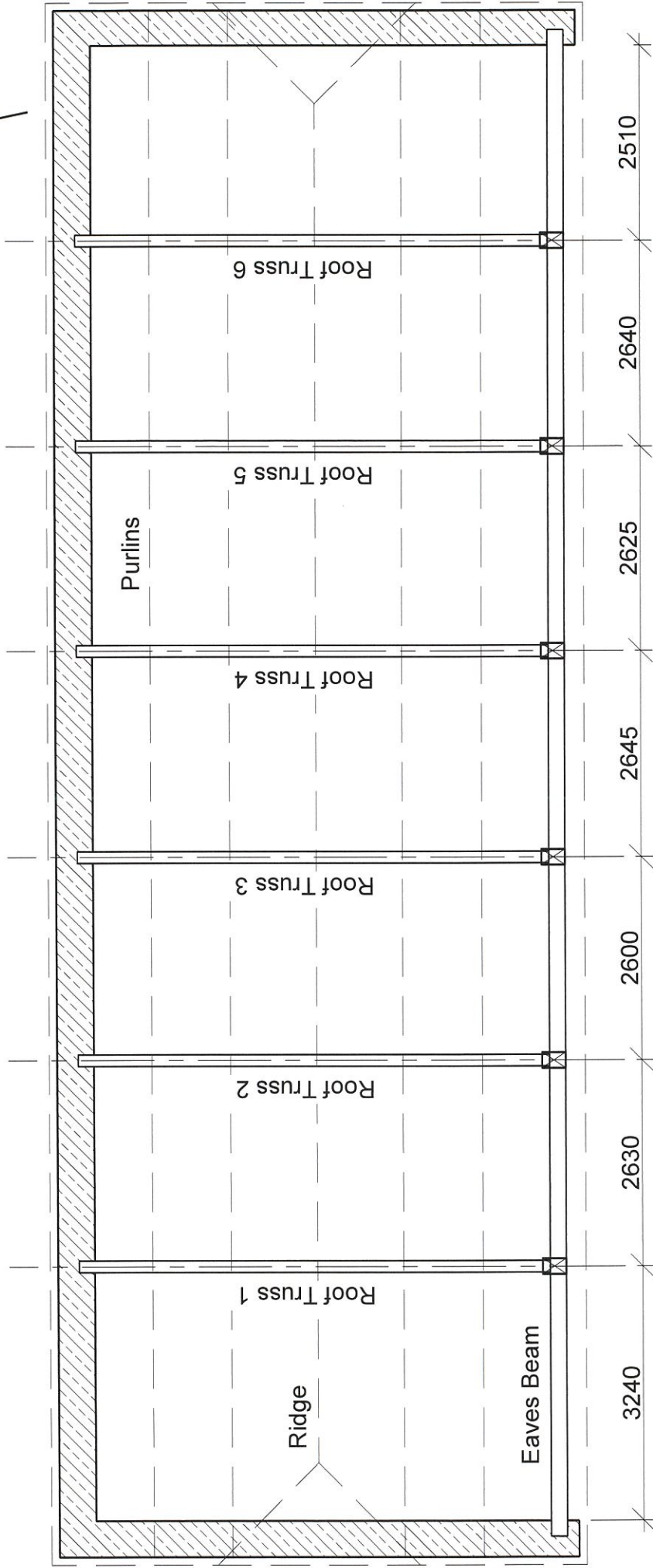
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James Birdwood MA CEng MICE FIStructE

1067/ JGBB

DRAWINGS



Plan on Primary Structure

Scale 1:75

Showell Farm
The Cart Shed
Scale 1:75 on A4
1067/SF/SK01



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PHOTOGRAPHS



1. North Elevation



2. South Elevation



3. East Elevation



4. West Elevation



5. Typical King Post Truss



6. King Post Base Detail



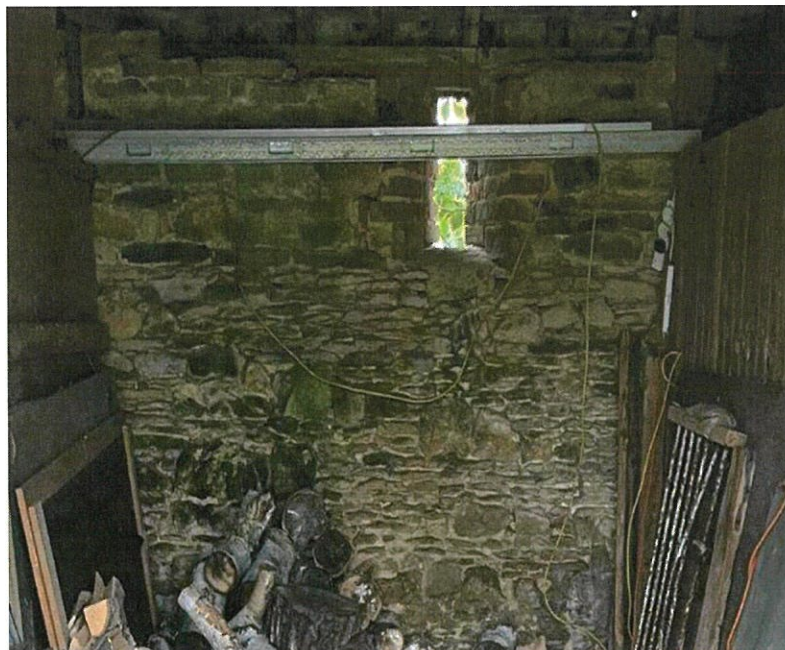
7. Eaves Beam Scarf Joint



8. Timber Post Head Detail



9. Decay at West End of Eaves Beam



10. Internal Face of North Wall

CALCULATIONS

		Dead	Imposed
Width (mm)			
Pitched Roof	Clay Tiles	0.52	
	Battens & Underlay	0.05	
	Insulation	0.02	
	Rafters	0.10	
	Ceiling Finishes	0.16	
		0.85	
	Roof Pitch 37		
	Plan Load	1.06 kN/m ²	0.60 kN/m ²

Common Rafter Design to BS 5268
Project : 1067 Showell Farm

Single span s/s rafter with u/d only.
 Load is unfactored DL + IL as plan load

Rafter Loading & Geometry

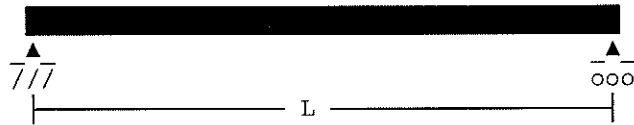
DL = **1.06** kN/m² Spacing = **0.35** m
 IL = **0.60** kN/m²

Horz length of rafter	2.00	m	
Pitch	37.0	deg	
Rafter Length	2.50	m	
Loading	0.58	kN/m	
E timber	C16 8800	N/mm ²	
Softwood Density	580	kg/m ³	
Rafter depth	90	mm	I = 3.95 x10 ⁶ mm ⁴
Rafter width	65	mm	Z = 87.75 x10 ³ mm ³
M _{applied}	0.29	kN.m	
App. stress	3.31	N/mm ²	
Allowable stress	= 1.25x1.134x1.1x5.3		
	= 8.26	N/mm ²	Stress check ok
Defl'n	= 5.5	mm	Deflection check ok
Length x 0.003	= 7.5	mm	
Rafter Weight (plus 20%)	= 0.11	kN/m ²	

EXISTING RAFTERS
 90x65 C16
 350mm CRS
 SATISFACTORY FOR
 PROPOSED ROOF LOAD.

Location: Roof Purlin Capacity Check

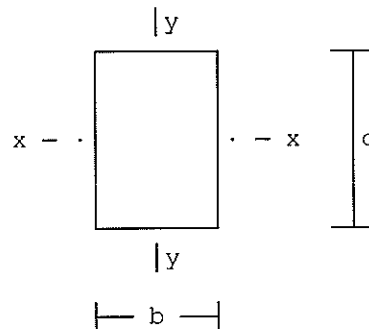
Timber beam to BS5268-2:2002



Simply supported
 beam subjected to
 vertical loads.

Purlin Span & Spacing	L=2.65 m & 1.0 m
DL=1.06 IL=0.6	
Dist. from left support to start	Lau(1)=0 m
Distance from left support to end	Lbu(1)=2.65 m
Dead load (unfactored)	Gku(1)=1.06 kN/m
Imposed load (unfactored)	Qku(1)=0.6 kN/m
Maximum span bending moment	1.4572 kNm
Design shear force	Fve'=2.1995

Section design parameters



Design axial load (+ve comp)	Fa=0 kN
Depth of section	d=135 mm
Width of section	b=80 mm
Eff length for bending about xx	Lex=2650 mm
Eff length for bending about yy	Ley=0 mm
Length of bearing	lb=100 mm
From BS5268-2 Table 18, bearing is	< 75 mm from joist end.
Bearing Modification factor	K4=1.0
Strength class C24 to Table 8.	
Timber service class adopted	tmclass=2
Timber service class modification factor	K2=1 as Table 16.
Duration of loading	K3=1.25
Depth factor	K7=(300/d)^0.11=1.0918
Load-sharing modification factor	K8=1.0
No notches exist at the support	K5=1.0

DESIGN
SUMMARY

Member: 135 mm x 80 mm
Strength class C24 to Table 8.
Moisture service class 2
Bending stress 5.9966 N/mm²
Permissible bending 10.236 N/mm²
Deflection 9.3856 mm
Limiting deflection 7.95 mm
Shear stress 0.30549 N/mm²
Permissible shear 0.8875 N/mm²
Bearing stress 0.27494 N/mm²
Permissible bearing 3 N/mm²

Deflection acceptable

EXISTING PURLINS
135 x 80mm
SATISFACTORY FOR
PROPOSED ROOF LOAD

*** SCALE 7.24 *** Licence 6323 *** Proforma 254 ***