



Our ref: 17163/PC/lc/Reports
By email: (r.gilroy@jonathan-rhind.co.uk)

18th July 2023

Rick Gilroy
Jonathan Rhind Architects
The Old Rectory
Shirwell
Barnstaple
EX31 4JU

Dear Rick

Re: LANCARFFE, BODMIN – STABLE BLOCK



Further to our visit to the property on Thursday 29th June 2023, and our limited inspection of the stable block, together with having reviewed your supporting Planning Application documents, we comment as follows.

The stable block is sited to the west of the main house and is thought to originally to date back to the latter part of C17, or the early part of C18, with later alterations and extensions undertaken in the middle/latter part of C20.

The original principal section of the building is two-storey and faces south east, and has been extended on the northern side over its full length, very probably built off earlier walls in part. To the west of the principal building is a long single-storey building used for storage and probably agricultural purposes, where there is evidence that again, this has been built off earlier walls, probably in the 1950s. Right at the western end of the complex of original agricultural buildings is a further

relatively modern mid C20 building sited against a Cornish bank on its south east side.



Modern barn or garage sited at the western end of the complex.

The buildings lie on a predominantly gently northerly sloping hillside, with internal floor levels generally similar or above external ground level.

The principal roof to the stable building is pitched south east – north west and hipped at each end. The roof is made up of wet-laid diminishing course slate supported on battens, common rafters, purlins and principal A-frame trusses. It is thought that the common rafters, purlins and some repairs to the original trusses probably date back to the 1950s, with the original historic A-frame trusses of oak, with pegged and iron nail connections.



Original primary A frame oak trusses with later purlins & common rafters.

The first floor structure is made up of boarding, nominal 150x25 thick, probably replaced in the 1950s, and supported on the original oak joists which vary in size but nominally 100x200 deep set at 800/900 c/c.



Existing first floor structure with original oak joists spanning the width of the building supporting later boarding.

The current ground floor of the building is predominantly of concrete formation, very possibly overlaying original cobbles or stone paving.

The principal original walls to the building are constructed generally of local random rubble stone, largely built with an earth mortar. The front south east elevation is 'smarter' with the stones more coursed, with granite surrounds to windows and door. Later built stone walls and early alteration works have been built with a lime mortar. Works undertaken in the mid C20 include dense concrete block faced with reclaimed stone, are all built with a cementitious mortar.

The foundations to the original stable block are thought to be limited, and probably include a widening of the substructure stonework bearing onto the intact bearing ground at a relatively shallow depth, probably set slightly deeper on the downhill north west side of the building.

As part of the works in the 1950s, the building was effectively extended on its northwestern side, including a lean-to roof with monopitch trusses supported off blockwork and stone walls. The return blockwork walls to the extension abut original stone walls which may have been part of an original yard or building.

Part of the original north west wall of the building was taken out, below first floor level to form an opening in to the extension. Steel beams and intermediate columns, support the retained stonework over the opening, all of which it is proposed to leave in place.

Original guttering and downpipes serving the building are cast iron, some of which is missing on the north west side.



C20 extension built on to the north west side of the original stables.

The adjoining single-storey barn to the west was effectively rebuilt in the 1950s off original stone walls which may also have been part of an original building or walls forming a yard for the animals. The roof is pitched north west – south east and gabled at each end. The roof is covered with natural slate supported on a truss and purlin roof structure, with the trusses of a collared scissor truss configuration. The rear north western wall of this building includes blockwork with piers, with the piers coinciding with the bearings for the principal trusses supporting the roof.



Truss and purlin roof structure supported on concrete block walls, in turn generally built off earlier stone walls.

The foundations and substructure to the original walls to this building are probably similar to the stable block, including stone substructures founded at a relatively shallow depth.

The adjoining building to the west is thought to have been all built in the mid C20. It includes a mono pitch roof, pitched towards the north west. It is made up of a slate roof covering supported on a truss and purlin roof structure. The principal roof trusses are configured with an extended rafter leg supported off dense concrete block walls, almost certainly founded on concrete foundations.



Monopitch trusses within the modern west barn supporting the roof structure.

Generally, the original stable and later farm buildings are in fair structural condition. The intention is that these buildings will be sympathetically repaired and upgraded to the proposed usage, but with minimum intervention, particularly to the historic fabric.

With respect to the stable block, the truss and purlin roof structure appears to be working reasonably well, but as part of the general maintenance and upgrading of the roof slating and infilling holes etc., it will be important to check the condition of the principal trusses and associated timberwork, including the truss connections, which may need tightening to a degree, together with the quality of the timber bearings which bear off the head of the stone wall. It is possible that some minor rot and deterioration has occurred to the underside of the timber where it is in contact with a damp bearing stone. It may also be found that some minor rafter repairs will be required, particularly local to the eaves, or where there has been longstanding holes in the slating.

The attic floor structure of boarding and joists is quite weak, with the joists being set at 800c/c; however, it is proposed to retain the current usage of light storage and it is not intended to attach a ceiling to the underside of the floor structure, thereby adding more weight and making it more vulnerable to excessive deflections.

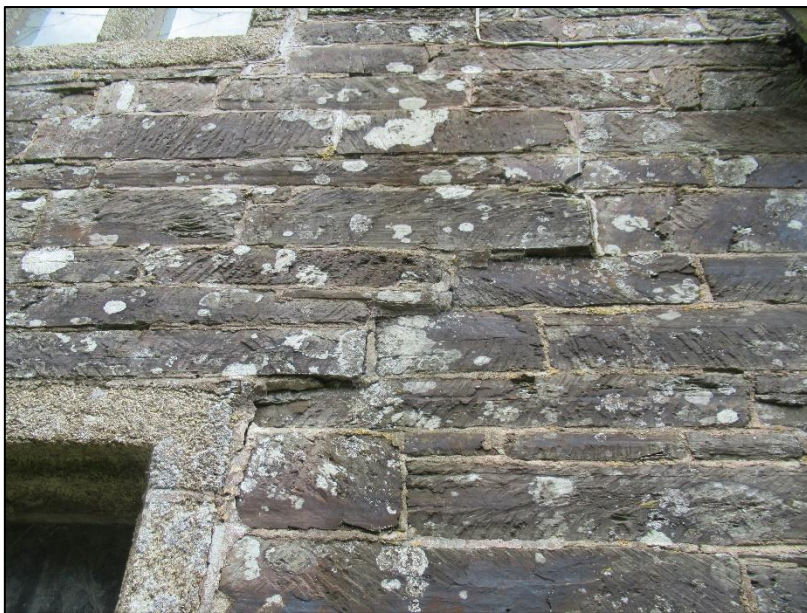
The original principal walls to the stable are quite robust and structurally adequate. However, there is longstanding evidence of some delamination between the inner and outer veneers of stonework on the front south eastern elevation around the windows and over the doorway. Historically a steel tie rod has been added over the eastern window set within the attic floor zone, linking the front and rear walls and curtailed with pattress plates.



Pattress plate set between the eastern windows within the front elevation.

The localised minor movement has been worsened to a degree by open joints and the ingress of water. It is also likely that there is no mechanical connection between the granite window surrounds and the abutting stonework.

Localised repointing and possible rebedding of one or two stones would be recommended, together with potentially adding some remedial stainless steel ties, resin fixed to the back of the inner leaf and built in to the outer leaf. The localised cracking and elements of misshapen wall are not of structural concern, but localised repairs would be prudent as part of the upgrading of the building.



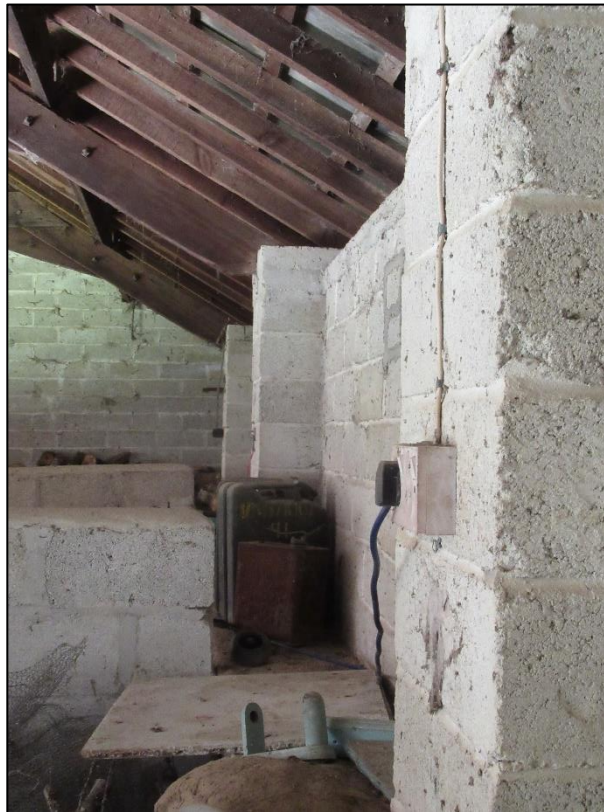
Longstanding delamination and bulging of the stonework over the eastern window within the front elevation

The repair mortar for undertaking remedial works to the random rubble stone should be an approved lime mortar as near compatible with the original as is possible, although as previously outlined, this was largely earth based. The optimum remedial mortar should be a lime and sand mix.

In addition to these works, there are also elements of stonework which are open jointed, with some minor cracking which should be made good with localised repointing undertaken.

There is evidence of slight long-term structural movement associated with the rear north west wall of the central barn, which as outlined, includes concrete blockwork built off an original random rubble stone wall. The principal scissor roof trusses are tied just above eaves and show minimal deflection, but it is evident that the north west wall has rotated outwards slightly, including the lower random rubble stone wall off which the blockwork is built.

The wall and piers are built on the outer edge of the stone wall, resulting in a degree of eccentricity with the loading arrangement onto the stone wall, and it is thought that there has been some marginal transverse differential settlement of the stone wall and its substructure as a result of being on the downhill aspect of the site, shallowly founded poor quality bearing ground, very possibly made worse by inadequate discharge of roof rainwater.



North west wall of middle barn suffering from longstanding marginal differential transverse settlement.

It is thought that this movement probably occurred fairly soon after the blockwork was constructed on top of the wall in C20. It has resulted in reflective cracking where the wall abuts return internal blockwork walls, with noticeable cracking evident.



**Previous strapping introduced to western corner of the barn with previous cracking infilled.
No serious evidence of recent significant movement in this area.**

As part of the upgrading of the building we would recommend that the evident cracking is stitched and repointed, the roof rainwater gutters and downpipes are replaced or upgraded, allowing for the downpipes to be collected in suitable gulleys and discharged at least 5m away from the building.

In addition, the substructure and dwarf wall stonework should be locally repointed where required and open jointed, with the situation subsequently monitored.

The modern western is sited very close to the Cornish bank on the south east side, which is well vegetated and includes quite large trees growing over the building. It would be prudent to allow for an arborist, or similar tree surgeon, to check the trees and possibly coppice them, to ensure that they do not have a detrimental effect on the building.



Trees and Cornish bank very close to south east wall of barn.

In addition, the gap between the bank and the front wall of the building should be kept clear of vegetation with surface water adequately 'channelled' away from the building.

We noted in the later barns that there were a number of the C20 timbers which were suffering from beetle attack. These should be checked and treated.



Live furniture beetle infestation on C20 timbers should be sporadically treated as required.

We hope that the above is helpful and should you have any queries or require any further information from ourselves, please do not hesitate to contact us.

Kind regards

A handwritten signature in black ink, appearing to read 'Paul B Carpenter'. The signature is stylized and written in a cursive script.

Paul B Carpenter
PCA Consulting Engineers