



**Barn 2
Pant Glas Farm
Bryncoch, Neath**

Structural Engineers Report

Job No. 965

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P02 – Report reissued following visit on 26th April 2023. No significant changes.

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1. INSTRUCTION

kPa Consulting Engineers have been appointed to carry out a Full Structural Survey at each of two Barns called Barn 1 and Barn 2 at Pant Glas Farm, Bryncoch, Neath. The contents of this report are in accordance with and subject to the 'kPa Survey Inspection Terms and Conditions' document.

The contents of the report are for the instructing party only, and will not extend to any third party in terms of information contained therein or express liability of this Practice. Similarly, no reproduction of the whole or part of the report is to be undertaken without the written consent of this Practice.

2. CLIENT

Client Details: Mr Johnson
 Pant Glas Farm
 Bryncoch
 Neath
 SA10 7YW

Date of Inspection: 2nd May 2013 and 26th April 2023

3. GENERAL PROPERTY DESCRIPTION

Occupied/unoccupied: Both barns are currently unoccupied but used for storage

Freehold/leasehold: Freehold

Approximate Age of Building: Unknown (Predates 1876)

Barn 2 is a three roomed barn with a dual pitched slate covered roof and of masonry wall construction predominantly of random stone with some infill panels of red brick. The barn is approx. 13m long and 4.5m has a lean-to annex to the south eastern end. There is a small WC of brick construction with cement/asbestos roof. Walls are of stone construction. There are also steps leading up to a disused high level entrance on the North West elevation gable end.



Photo 3.1



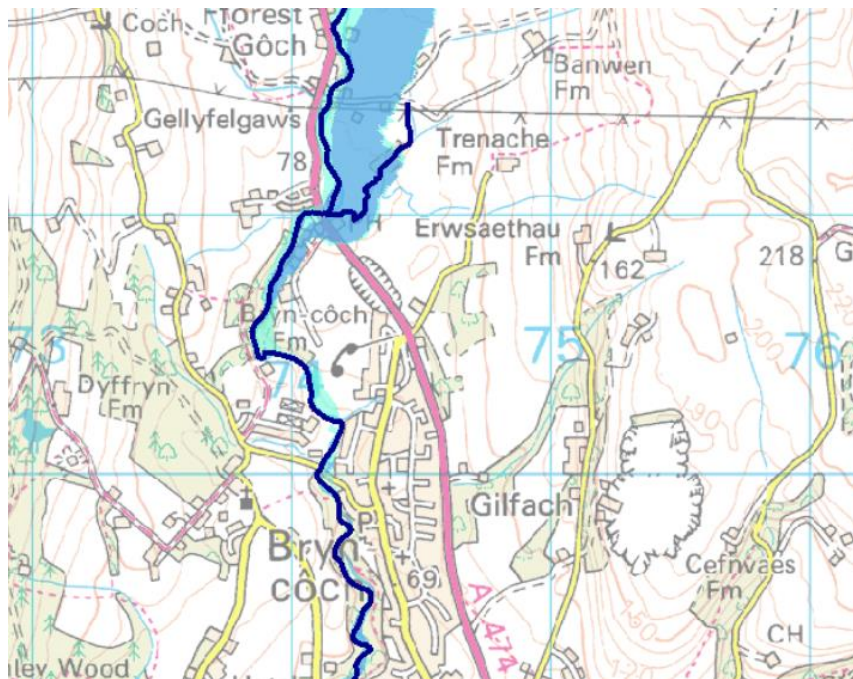
Photo 3.2

4. LOCATION

The site is located to the east of Bryncoch village high which is on the top of a hill high above the Neath Valley.

There is a gentle slope across the site from North to Southeast. The site is at approximately 155m above ordnance datum.

5. FLOODING



Flood Risk Map from Environment Agency

Flood Risk for SA10 7YW

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

There are two different kinds of area shown on the Flood Map. They can be described as follows:

Dark blue ■ shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year;

or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.

Light blue ■ shows the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.

Clear ■ shows the area where flooding from rivers and the sea is very unlikely.

There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year.

The majority of England and Wales falls within this area.

This property outside the flood plains shown on the Environment Agency Flood maps and is therefore very unlikely to flood. The properties are approximately 1m above the lane alongside the property boundary and therefore are very unlikely to flood from local sources.

Note:

The Environment Flood Risk Map only covers flooding from rivers and the sea. Flooding can occur at any time and in any place from sources such as rising ground water levels, burst water mains, road drains, run-off from hillsides, sewer overflows etc.

6. MAIN ROOFS

The main roof is covered in a mix of natural grey and purple slates. These slates appear to be a large size. The slates are capped with a black clay ridge tile. The slates are fixed to treated battens which are in turn fixed to rafters which are supported at wall plate level on a purlin. The purlins are supported on an A-frame truss. There are approx. 4 number trusses spaced at approx. 2m centres along the length of the building.

Timber condition of roof members

Generally the space is well ventilated and most timbers appear to be in reasonable condition for their age. A closer inspection on the north east wall plate level shows that in some areas the wall plate has rotted completely and ends of some of the rafters have rotted through. The principal truss members and purlins appear to be satisfactory.

Slates

The slates appear to be fixed with steel nails which are corroding which have led to some slippage of timber battens and also the fixings for the slates are beginning to corrode and some slates are beginning to corrode. Generally the tiles although old are in reasonable condition. It is recommended that the tiles are removed, battens stripped and the tiles re-used on top of new battens and a breather membrane with new galvanised fixings. At the same time any decayed wall plates should be replaced.

Lean-to

The lean-to two room structure on the south east elevation has a sloping slate mono pitched roof. The slates are fixed to battens and then to rafters. The rafters are supported on one central purlin. Most timbers appear to be in good condition. The rooms are well ventilated. The tiles appear to be in reasonable condition although once again the fixings appear to be beginning to corrode, although this is not as significant as other parts of the main barn.

Where the mono-pitched roof connects to the south east gable wall there is no lead flashing but a stone flashing has been inserted to provide a drip over the top tiles.



Photo 6.1



Photo 6.2

Externally

Externally the ridge line appears to be uneven, this suggests that some timbers might have failed particularly towards the south east end of the main barn see photo 6.3 and 6.4. There are also numerous tiles that have slipped or are uneven. Due to the amount of stored items on the mezzanine level it has not been possible to investigate the timberwork towards the south east end of the barn.



Photo 6.3



Photo 6.4

7. RAINWATER GOODS

There is guttering in black uPVC to the north west elevation with a single downpipe. All appears to be in good condition. To the north east elevation there is similar half round black uPVC with one single downpipe. The single downpipe discharges onto ground level and not into a gully. There are fascia boards to the gable and to the eaves with minimum overhang. These appear to have been replaced at some point in the recent past and are painted with a white gloss finish.



Photo 7.1

8. CHIMNEY STACKS

There are no chimney stacks evident to this building either externally or internally.

9. MAIN EXTERNAL WALLS

The external main walls to the barn are approx. 450mm thick and constructed from random stone local to the area and set into a lime based mortar. The lime based mortar has been re-pointed with ordinary portland cement. There are no signs of cracking or structural distress to the building. However, there is some distortion to the north east elevation wall.

There are three openings to the north east elevation wall. Two of which are garage door size openings and one is a single door. One garage door has a flat stone arch supporting the wall above. The middle garage door opening has two steel channels supporting the masonry above and the single size door has a flat stone arch.

There is an opening in the gable wall at high level to the north west elevation. This was believed to be an access to what might have been a hay loft within the barn at some time in the past. This now has a window with timber lintel.

The alignment of the walls has been checked using a hand held spirit level. Generally the wall to the south west elevation appears to be in good condition, vertical and shows no sign of structural distress. The same is true for the gable walls. The long wall on the north east elevation does show signs of distortion at high level and the wall appears to be leaning away from the building at high level. Upper stonework often becomes loose following thermal movement and distortion and this upper 1/2m of wall should be considered for rebuilding as part of any future refurbishment rebuilt.



Photo 9.1

10. DAMPNESS ISSUES

All rooms of the building appear to be well ventilated. On the day of the survey there is a stiff breeze and the sun is shining so any moisture on the walls is likely to have dissipated. Masonry is difficult to check for dampness with a hand held probe therefore this is not been carried out.

Any conversion should consider tanking the lower half of the walls to prevent rising damp issues from affecting the internal finishes.

At eaves level there has been some moisture ingress which has decayed the rafter ends and wall plate. Once again on the day of the inspection the weather was fine and moisture readings within the timbers were normal.



Photo 10.1



Photo 10.2

11. EXTERNAL JOINERY

The doors and windows to the barn are all of softwood timber. All appear to be generally in sound condition although the base of some of the door frames has begun to decay. The timber fascia boards appear to be in reasonable condition.

12. FLOORS

The floors of the barn are generally ground bearing concrete slabs although the middle section of the main barn currently used as a garage is covered with tarmacadam.

13. WINDOWS AND DOOR LINTELS

See earlier section 9.

14. FOUNDATIONS AND SETTLEMENT

There is no structural damage to indicate that any settlement or movement has occurred. Historically there might have been some movement but this appears to have stopped due to lack of any visible damage to the building.

The foundations have not been exposed but could be expected to be relatively shallow and are likely to be of foundation stone or corbelled stone construction. If the ground floor levels are reduced significantly there could be undermining to these walls which would require underpinning. It is suggested that any refurbishment considers this level as a critical level and no construction takes place below the level of the foundations.

15. CELLARS

This property does not appear to have any cellars or basements below ground and ground floor level.

16. INTERNAL PARTITIONS

Internal partitions are approx. 300mm wide and are of random stone construction and in a lime based mortar.

17. BELOW GROUND DRAINAGE

As already mentioned surface water from the roof is discharged via surface rainwater pipes onto the ground. It flows away to a soft verge or to the courtyard drainage gully. The small roofs to the lean-to and WC have no guttering and discharge to the ground. There is foul drainage to the WC and an incoming water supply. The manhole near the back door of the main house has been lifted but it is not possible to see an incoming drain from the WC area. If this is connected to the main drain it is likely to be a blind connection. The only way to determine the outfall from the toilet is to either carry out a CCTV drainage survey or to seek local knowledge.



Photo 17.1

18. RETAINING WALLS

There are no retaining walls to this property although there is a 1m high bank which leads down to the lane. This slope is considered far enough away not to cause any instability to the rear wall of the barn extension.

19. RECOMMENDATIONS FOR REPAIR

The main recommendation is that the roof is likely to need re-slating and the battens replacing. Any damaged rafters will need to be cut back and replaced along with new timber wall plates.

It is believed that the overall stability of the building is good and therefore all walls can be retained. It is however recommended to rebuild the upper section of the north east wall when incorporating new lintels with any future development. When installing new ground slabs care should be taken to undermine the existing foundations which are likely to be at a shallow level.

Internal walls to the property should not be removed completely as they provide stability to the long external side walls. Any refurbishment will need to consider damp issues and it is likely that tanking will be required between 1-1.5m up the wall.

20. GENERAL EXTENT AND LIMITATION OF SURVEY

The main mezzanine was completely full and there was no access to inspect the roof timbers above the roof level.

Roofs and associated elements: The roof(s) will be inspected externally from ground level (or localised vantage points). Low level roofs could be closely examined with the use of our 4 stage surveyors ladder (vertical reach: 2.80m) Internal inspection will be via adequately sized loft access hatches.

Subsoil conditions & Foundations: No trial pits will be excavated to expose the foundations or localised drainage. We will refer to our local knowledge of the subsoil conditions and speak to Building Control if necessary to understand the regional soil variations. No comment will be made on land contamination (as this is beyond the scope of this report type) and any Solicitors land check will provide only basic search material that may require you to instruct a specialist in the field to comment further in detail.

Below Ground Drainage: Drainage is inspected by lifting manholes where possible to do so and inspecting chambers and visible pipework. An inspection is made of the surrounding areas to try and determine if the property is connected to the public drainage system.

Retaining Walls: Visual inspection only and no opening up of the fabric will be carried out. The structural adequacy of the retaining wall will be based on signs of distress or lean which will be recorded.

Walls: Visual inspection only and no opening up of the fabric will be carried out.

Floors and staircases: Where fully fitted coverings are at the Building we might only be able to look at floor corners by turning back loose coverings. No floor boards will be lifted.

Kitchen Fittings: We do not comment on any Kitchen or Utility fittings.

Sanitary ware/drainage: We carry out visual inspections only of such fittings, and trace visually the flow of waste water from appliances to drains, manholes, and onto the boundary of the property. Wherever possible drain covers will be lifted.

Service Installations: A totally visual inspection only will be effected on all the water, heating, hot water, electrical, and gas installations. No efficiency calculations will be carried out, but where the visual survey highlights potential defects we will guide you to separately instruct a Specialist in the field to attend the property and report in more detail. Nevertheless, notwithstanding the Report findings it is always sensible to instruct Specialist Service Engineers wherever no guarantees or updated Certification is currently available.

Items for the Solicitor: We will not contact Statutory Boards or Local Authorities (with the possible exception of Building Control regarding subsoil conditions) – these matters will need to form part of your legal searches, but your solicitor may need our expertise in possible site specific issues arising from their searches. Other matters your solicitor should include to do:

- we will look for obvious deleterious materials on site but an enquiry should be made by your solicitor of any known products in the building.
- check for ownership of the land, rights of way and ownership of boundaries
- planning and building regulation consents
- mining activity search both past and present
- party wall awards (if applicable)
- guarantees or warranties for any element of the building, or recent work effected
- you are recommended to show sight of the Survey Report to your Solicitor.

Damage: We will take all reasonable care to prevent any damage to a building or structure. Note that if damage has already occurred to an area due to a structural defect and needs to be repaired in any case, further probing may be carried out by the Engineer. Often the possible cause of a problem can be confirmed with only minor further damage which the owner and or potential owner must accept without any recourse to the Engineer.

Proprietary Systems: Often proprietary systems are used within buildings e.g. precast concrete units, and sometimes it is not possible to determine the exact construction of such a system. The Engineer will use reasonable skill and care to determine the appropriateness of such a system for its intended use, and use published tables where appropriate.

Limitation of Survey through Instruction: The Engineer may have been told by the client, the client's solicitors or other advisors of certain information which leads the Engineer to decide that certain part(s) of the building will not need to be inspected, e.g. certain parts of the building will be demolished, or maintenance of certain parts of the building is the responsibility of third parties. Inspection of some of the items may therefore not be relevant. If this is the case, the Engineer will record these provisos prior to carrying out the survey or within the report with appropriate rationale.

Liability: Under normal circumstances, the appropriate standard of care will be the skill and care reasonably to be expected of a competent Engineer performing a survey of the type in question. The client will only look to the employer for recompense (and not to the individual) if there is a finding of negligence.

Dimensional Survey: A structural survey does not cover or record existing dimensions but may make reference to approximate dimensions where deemed appropriate to give an indication of scale.

APPENDIX – Drawings