

**Roof Condition Report
For
Dinas Powys Parish Hall**



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Issued to Dinas Powys Community Council

Cadw Source ID - 26504

Grade II Listed building

Reason for Listing - For its architectural interest as an Arts and Crafts Community Hall retaining nearly all its original features and in a commanding position

Date for listing - 03/05/2002

Description

Built in 1907, opened by Mrs Jenner of Wenvoe Castle. The Architects were Teather and Wilson from Cardiff. The Hall was built as a result of an application by the Parish Council for a loan of £1500.

The structure was built as a Village Hall in Arts and Crafts style. Its walls are rendered with roughcast cement and painted, there is some applied half timbering to the north elevation. The structure has a predominantly Welsh slate roof with deeply overhanging boarded sprocketed eaves, there is a tall rendered lateral stack to the west elevation. A rather large ridge ventilator sits directly over the ridge line, with a terracotta finial to the south. There is an elevated front bay with a porch stepped back to the side, this is attached to a single storey cross gabled office and kitchen range to side. There are lattice casement windows throughout. The gable end facade walls are battered to the sides and the roof extending over in a shallow hip. A black and white string course separates the storeys and side windows flank the bay, 2-lights to first floor and 2 - oculi windows with painted keystone surrounds to ground floor. There is a small gabled half-timbered porch to right set against an office bay which has a multipaned window and is covered with a catslide roof. The west elevation has five battered buttresses separating the large multipaned windows.

Roof Condition

Overall condition external



North Elevation



Figure 1 - A view west at the north roof



Figure 2 - A view east at the north roof

The north elevation has been re-roofed at some stage as there is a different slate (maybe Spanish or Chinese). There are quite a few slipped slates in this area, which are evident in the lead valley, also the lead flashing to the gable has lifted and is exposing the top course of slate.



Figure 3 - Valley between north roof and rear building



Figure 4 - Arial shot of lead valley

Broken and missing slates are quite evident on both elevations either side of the valley, the rear building (fig 4) is showing signs of iron pyrites, there are two types of iron pyrites stable and unstable - unstable pyrites which are only found in cheaper softer slates (Spanish/Chinese/Brazil) tend to break down a lot quicker than stable pyrites. As this section of roof has only been reroofed recently (probably within the last 20 years) it suggests that imported soft slate has been used. To note Welsh slate can sometimes have pyrites within its structure but these are of the stable nature, pyrites do not affect the harder slate (classed as T1 slates). The lead valley that straddles the two roofs is in poor condition.

East Elevation



Figure 5 – Large loose area of slate



Figure 6 - Loose and broken slate

The east elevation has large areas of slate that are unstable, some sections are slipping, broken and are kicking up from the lack of fixing. This elevation is in the worst condition and could cause considerable problems during high winds and should be monitored regularly. The clay ridges all along the apex of the roof are losing their pointing and perhaps even mortar, there are signs that some of the ridges are not originals to the building (2no by ventilation turret), some are also being held together by cement flaunching.



Figure 7 - Large area of loose and unstable slate

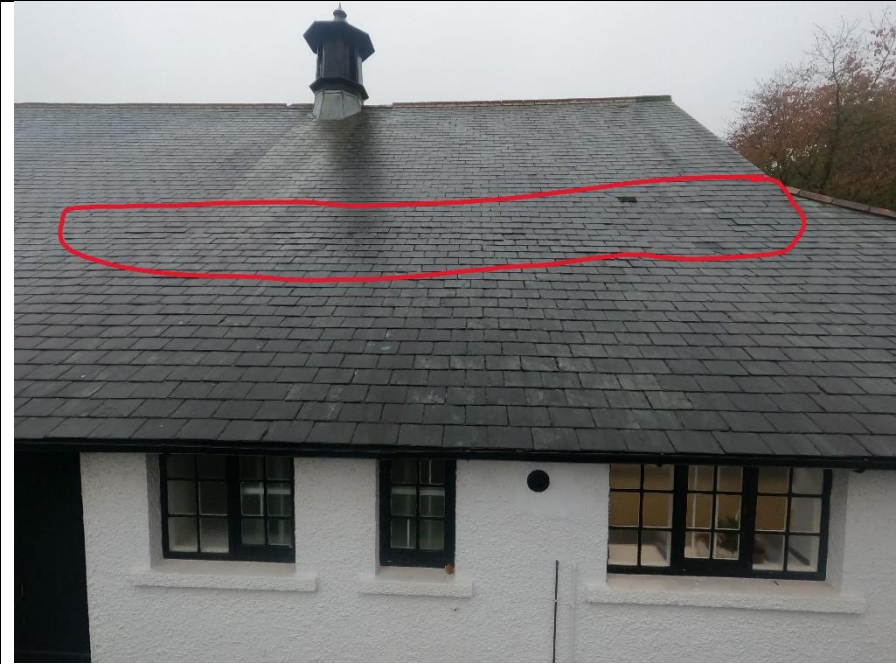


Figure 8 - Large area of unstable and loose slate

The lower section of roof (which seems to line up with the office ridge) has a long thin strip of loose unstable slate this stretches from the south gable (front) to the north gable (rear). The lead valleys to the main office and porch area seem to be in good condition, there is evidence internally that they have been replaced.

South Elevation



Figure 9 - Section of roof over office and porch



Figure 10 - Small hip roof above bay window

The section of roof over the office and porch has quite a few loose and broken slates, the lead doesn't look like it's been replaced and is in poor condition.

The small, hipped roof over the bay window has a row of loose slates right at its base, there are a number of lead tingles (Fixing straps) which are all laying in the wrong direction (Fig 11)



Figure 11 - Lead tangles



Figure 12 - Open hip joints

The slate hip joints are quite wide, open, damaged and could in the future cause a problem, this will only occur when the lead detail underneath the slates breaks down (Fig.27). There are quite a few loose slates either side of the hips, which need attention.

West Elevation



Figure 13 - Loose and/or broken slate



Figure 14 - Slipped and/or broken slate

The West elevation is by far in the best condition, there are a few loose slates (fig 13) towards the rear of the building and around the ventilation turret. There are also a few slipped and broken slates around the chimney and hip. The majority of the roof is laying flat and has no external defects.

Ventilation Turret (Stack)



Figure 15 - Looking east



Figure 16 - Looking west



Figure 17 - Looking south



Figure 18 - Looking north

The ventilation turret is showing signs of deterioration and defects, there seems to have been some remedial work carried out previously (fig 15 different ridges and lead tingles), the slate all around the turret seems to be either broken, slipping or damaged in some way. In fig 15 & 18 you can also see the cement flashing holding the ridges together

Internal

Small attic access (toilets, office and kitchen)



Figure 19 - Above toilets looking south



Figure 20 - Above toilets looking north

To the small attic space above the toilets, office and kitchen there is blown insulation, a lot of loose cabling and pipework. The timber work in the whole area is in remarkable condition.



Figure 21 - Above office



Figure 22 - Above office

There is some water staining on the valley board in Fig 21, you can also see some slate delamination in Fig 22 plus broken slates allowing light into the attic.

In Fig 23 and 24 it is evident that a new breathable membrane (Tyvek) was fitted when this section of roof was re slated, this is quite standard practice and is good for the building. In Fig 23 there is some signs of water damage to one of the jack rafters (white fungus), there is also some slate delamination to the side of the rot.

The whole attic space has signs of delamination to the underside of the slates, this I believe is to do with condensation from the heat generated below hitting the cold surface of the slates.

The nails used to fix the slates are barely visible, as they do not protrude far out from the small undersized battens. What you can see is the tips of the nails have corroded, this defect and the age of the roof isn't surprising.



Figure 23 - North end (re-roof)



Figure 24 - Tyvek breathable membrane to reroofed area

The whole elevation within the attic space was once torched with lime (visible in video) this helped hold and stabilise the slates, plus stopped excessive wind chatter, but allowed air flow throughout.

Note – Please watch video footage for this area.

Large roof space (Main hall)



Figure 25 - Looking north



Figure 26 - Delaminating slates at ridge



Figure 27 - Water ingress at hip (See fig 12)



Figure 28 - Air Box looking south



Figure 29 - Crows nests in air box vent



Figure 30 - Wall paper on air box vent



Figure 31 - Slate delamination & timber rot at ridge



Figure 32 - Slate delamination



Figure 33 - Water ingress to west side of vent box



Figure 34 - Water ingress below vent box

Note – Please watch video footage for this area.

The roof over the main hall is also suffering from nail fatigue and slate delamination (Fig. 26, 31 & 32) there is also a small amount of timber rot to the small hip (front) and along the length of the roofs ridge, otherwise the timber work is in remarkable condition for its age. There is some water ingress around the air box vent (Fig 33 & 34) this is predominantly to the west side, where you can see the defects in the roof in Fig. 15. The vent box is also fully packed with twigs, moss and other foliage from the crows nesting in the turret, this is preventing airflow throughout the attic and exacerbating the problems.

There is blown insulation throughout the attic hindering access for maintenance, there are no walk boards and travelling through the roof space is very difficult and not recommended.

Blown insulation does improve your R-Value, but can reduce the amount of natural ventilation that occurs in the building (it blocks vent holes in and around the eaves, where natural ventilation takes place). This can lead to an increase in humidity levels, which can cause damp and delamination of slates.

Conclusions

As mentioned throughout this report, my videos and my initial visual inspection, I believe the hall is suffering from nail fatigue, which is why you are having slates slipping off the roof, and leaks in various places. There is also the problem of slate delamination caused by condensation, this generally happens where there is restricted airflow (blown insulation blocking natural air ventilation), the slate simply goes soft. The timber structure throughout is in remarkable condition for its age, there is slight rot at the ridge and hip of the main hall and some minor damage in other isolated areas. The lead work to the majority of the building will need to be replaced when the main roof is re-slatted, perhaps look at the detail on the hip above the bay window (Front). The rear roof that's recently been re-slatted should also be revisited as there are many defective broken/slipped slates, the lead valley looks to be coming to the end of its time, also the lead flashing detail to the gable needs amending. The ridges (inc hip ridges) will all need to be carefully removed and re-bedded whilst the main reroofing project is undertaken. The air vent that sits on top of the main hall roof will need to be repaired, new lead flashings and cleaned out, perhaps installation of some chicken wire to stop the crow accessing the turret.

Recommendations

I recommend that you re-roof the whole of the main hall including the office and porch, install new lead flashings to BS standards, repair and clean out the air vent box.

Slate – when I was on-site, I thought the slate was Penrhyn Blue but after looking at my drone footage, I now believe the slate to be Pembrokeshire greens (which explains why they are going soft, as Pembrokeshire slate was notorious for lasting only 100+ years, where Penryn slate would last at least 200+ years), if you work on a salvage rate of 50% of the square area of the roof, and we look at good quality salvaged slate, then the budget cost will be considerably less.

Quote from slate site- *“The new buildings of the University College of Wales, Bangor in 1907 were to be roofed with green slate. Since the green slate quarries of Dyffryn Nantlle were not in production green Pembrokeshire slate was used; a decision that was not popular in the Bethesda area at the time! By the 1920's and 1930's the blue-grey slate was regarded as being unfashionable by architects and Davies Bros of Porthmadog was supplying Pembrokeshire Green to builders of the area. Indeed, the green slate quarries of Dyffryn Nantlle were in production by 1910 to meet the increased demand. The Gilfach Quarry to the east of the River Cleddau produced green slate for roofing purposes until 1987”* – these dates would fit well in with the date the hall was built..

Very rough costs for a re-roof

Scaffolding cost – 300m² @ £30 per m² = £9,000.00

Re-roofing at 50% replacement – area 370m² @ £300 per m² = £111,000.00 (new Welsh slate)

Listed Building Consent – £1500.00

Bat report – £1200.00

Architectural drawings - £2500.00 (total guestimate)

Schedule and specification of work - £1200.00

All costs above are plus VAT