

J And S O Hara
Chartered Engineering

Doocastle,
Ballymote,
Co Sligo,
☎086 (8523497)
Fax 086 5 8523497
✉E-mail jandsoharaeng@gmail.com

Date 15th March 2019

Survey Report

Ref: St Kevin's Church – Keash, Ballymote, Co Sligo.
(Hereinafter referred to as the Property)

This Report relates to a request for a roof condition inspection report on St Kevin's Church Keash.

J & S O Hara
Chartered Engineering,
Doocastle,
Ballymote,
Co Sligo
jandsoharaeng@gmail.com

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1 **QUALIFICATIONS OF J & S O HARA CHARTERED ENGINEERING AND OF JAMES O HARA IN PARTICULAR TO ASSESS THE PROPERTY:**

James O Hara is a Qualified Chartered Civil Engineer BEng Hons since 1991 having received his chartered status in 1995 and was awarded the title CENG MIEI EUR ING(Chartered Engineer, Member of Institution of Engineers Ireland) by the Institute of Engineers of Ireland.

Experience which qualifies James O Hara to comment on defects noted at the property and to produce a defects report includes involvement in a variety of projects both Public and Private on Civil Engineering and Residential and Building projects where a high standard of finish is required, inspecting a range of Public and Private residential properties, contract administration for various major Public and Private construction projects including several church roof design and reconstructions and the production of defects reports together with 28 years of Post graduate experience in the construction Industry.

2 INTRODUCTION:

James O Hara carried out a survey on an existing Church at Keash, Co Sligo at the request of Fr Gabriel Murphy on 14th Feb 2019

2.1

Instructions are as follows:

- 1) To inspect the roof structure of St Kevins Church.
- 2) To prepare a report in relation to findings observed in the roof in relation to its condition.
- 3) Recommend an option for the stabilisation and longevity of the roof structure.

2.2 Site inspection

The roof was inspected on 15th March 2019.

3 REVIEW OF DOCUMENTS:

No Documents in relation to the church were supplied and the report is based on a visual inspection only in relation to In-situ works.

4 Report:

Survey and existing condition

A detailed examination of the existing St Kevin's Church Building and Roof Structure was carried out during the month of March 2019. The church was built circa 1809.

The following was noted from the survey.

The existing slates are natural slates from the Penrhyn Quarry in northwest Wales known as blue Bangor slates. The slates and roof structure has been insitu for 210 years with some renovation and repair works carried out in 1979, though the main roof structure was unaltered and is as it was since it was first constructed.

The slates rest on 50 mm x 25mm battens untreated on slater's felt most likely installed at the last renovation works in 1979 (40 years ago).

The rafters are 38mm x 128mm rafters and supported by a wall plate 75mm x 115mm and 105mm x 175mm Purlin at midspan in turn supported by kingpost trusses places at 2250mm crs.

Originally the ceiling was vaulted and the underside of the rafters was boarded. This was changed at some point in the recent past to a flat gypsum slabled and skimmed ceiling at a level just under the cross string of the kingpost trusses.

From examination of the roof external I note that Slates have become dislodged at various locations around the roof and I note that 2 have recently fallen to the ground from near the apex of the roof. While there are two areas to the rear of the roof where slates are in imminent danger of falling to the footpath below. This side of the church should be sealed off to the public until repairs have been carried out.

The fact that slates are falling from the roof at this stage would indicate that there is a health and safety issue here and it is impossible for an Engineer to indicate specifically which individual slates and how many are at risk from falling to the footpath.

It would be a logical assumption that this is the beginning of a series of slate failures as generally when one or two slates break away more follow particularly during and after wind events when age related fracture weaknesses propagate throughout the slates from nail noles , especially when they were previously disturbed and re-seated.

The general condition of the slates on the roof and an examination of the slates that have already fallen indicate this is the case. At 210 years old this is to be expected.

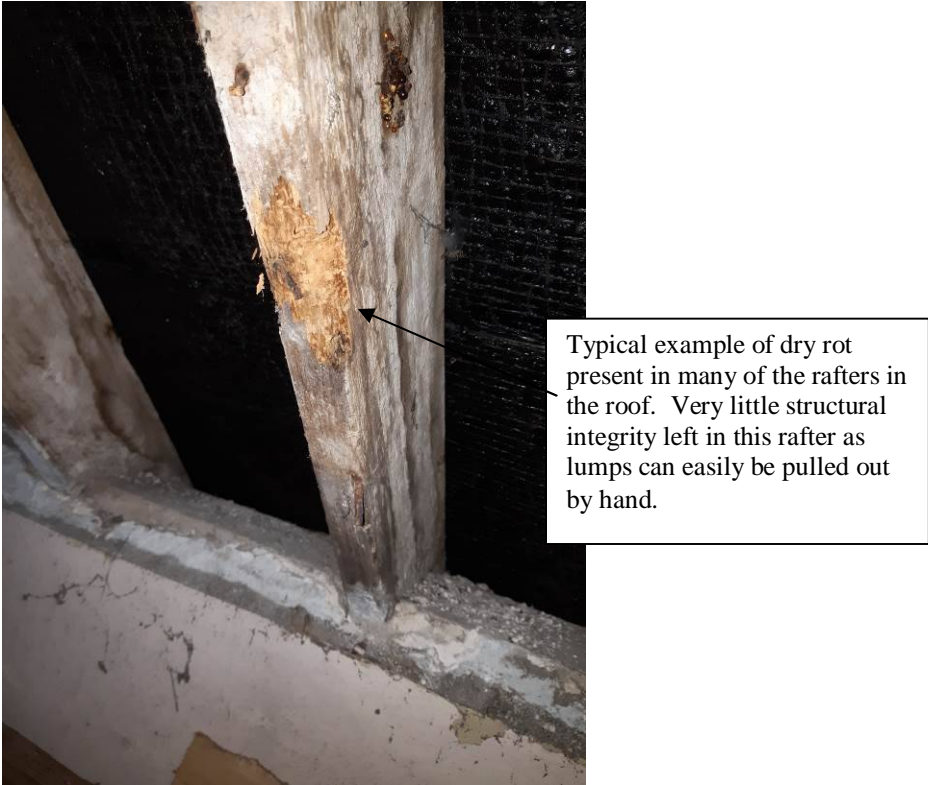


There are several locations where rainwater is leaking through the roof particularly at the valley locations. From inside the roof structure daylight can be seen in 4 locations.



The rafters have been repaired in a few locations – again probably at the last renovation works. I note that there is a considerable extent dry rot near the base of the common rafters to the extent where lumps can be pulled out of the rafters by hand with little effort. The timberwork throughout the roof was found to have a heavy infestation of

woodworm (*Anobium punctatum*) with approx 20 % of roof members have been structurally undermined and will have to be removed and replaced by similar timber.



The Kingpost trusses and Purlin were stripped of paint with a layer of the outer surface hacked off. This was probably done to facilitate protim treatment for woodworm at the last renovation.

There is evidence of recent woodworm attack in the trusses. These trusses will need to be treated again with a strong application of wood preservative. The trusses and Purlins are largely intact and generally structurally sound save for a limited area where some steel plating would need to be carried out along with the replacement of support struts in 3 of the trusses where these struts have weakened due to woodworm activity over the years.

The Joint where the crossing kingpost trusses meet at the centre of the church will need to be plated and bolted for structural soundness going forward.



Where the purlins are supported on the gable walls the ends of these purlins will need to be exposed, treated and covered in damp proof membrane to prevent further decay.

The state of the supporting woodwork in general i.e. the kingpost trusses and Purlins is reasonable and has 90% of structural integrity intact and are salvageable with some plating, localised replacement of struts and treatment with strong wood preservative..

However the rafters and slate work is a different story. These are beyond reasonable repair and have a relatively short lifespan left I would say 3 to 5 years at best.

The stage has been reached where slates are breaking away from fastenings and are sliding from the roof to the ground below. This will become more frequent in the short term.





The photo above shows the underside of the valley where leaks regularly occur. The timber here is in an advanced state of Decay. Previous repairs show the extent to which the rafters had to be cut back. A similar process would have to be carried out on many of the rafters along the wallplate level of the roof.

The Flat roof area of the church which form a small area of the total roof area is also at the end of their useful life and is allowing rainwater to penetrate to the inside and starting to cause damage to the internal plasterwork.

5.0 Conclusion

The only practical option I see here from an economic and structural point of view would be to remove the slates ,roof covering, battens and rafters. Treat and repair the Kingpost trusses where required.

Rebuild the roof carcasse with new pressure treated rafters, ridge board, battens wall plate and roofing membrane. Put on a new cedar fascia. Treat, plate and repair the kingpost trusses. Re seat the gutters and rebuild the fascia backing.

Re slate with a quality natural slate. Re-using the existing slates would not be feasible as when disturbed the slates form micro cracks which cannot be seen during the re-slating process and would lead to a shorter lifespan than a new unstressed natural slate.

I calculate that there is 438 square meters of roof surface area.

The alternative is to continue doing repairs for the next few years involving scaffolding

the works and associated costs at €5000 per repair, and then ultimately having to reroof the building which would need to be carried out regardless in the next few years anyway. Any finances spent on the roof at this stage in terms of repairs is only of a temporary nature while the Main truss support structure continues to decay.

Signed

A handwritten signature in black ink that reads "James O Hara". The signature is written in a cursive style with a large 'J' and 'H'.

**James O Hara Chartered Civil Engineer
BEng MIEI Eur Ing CEng**
