



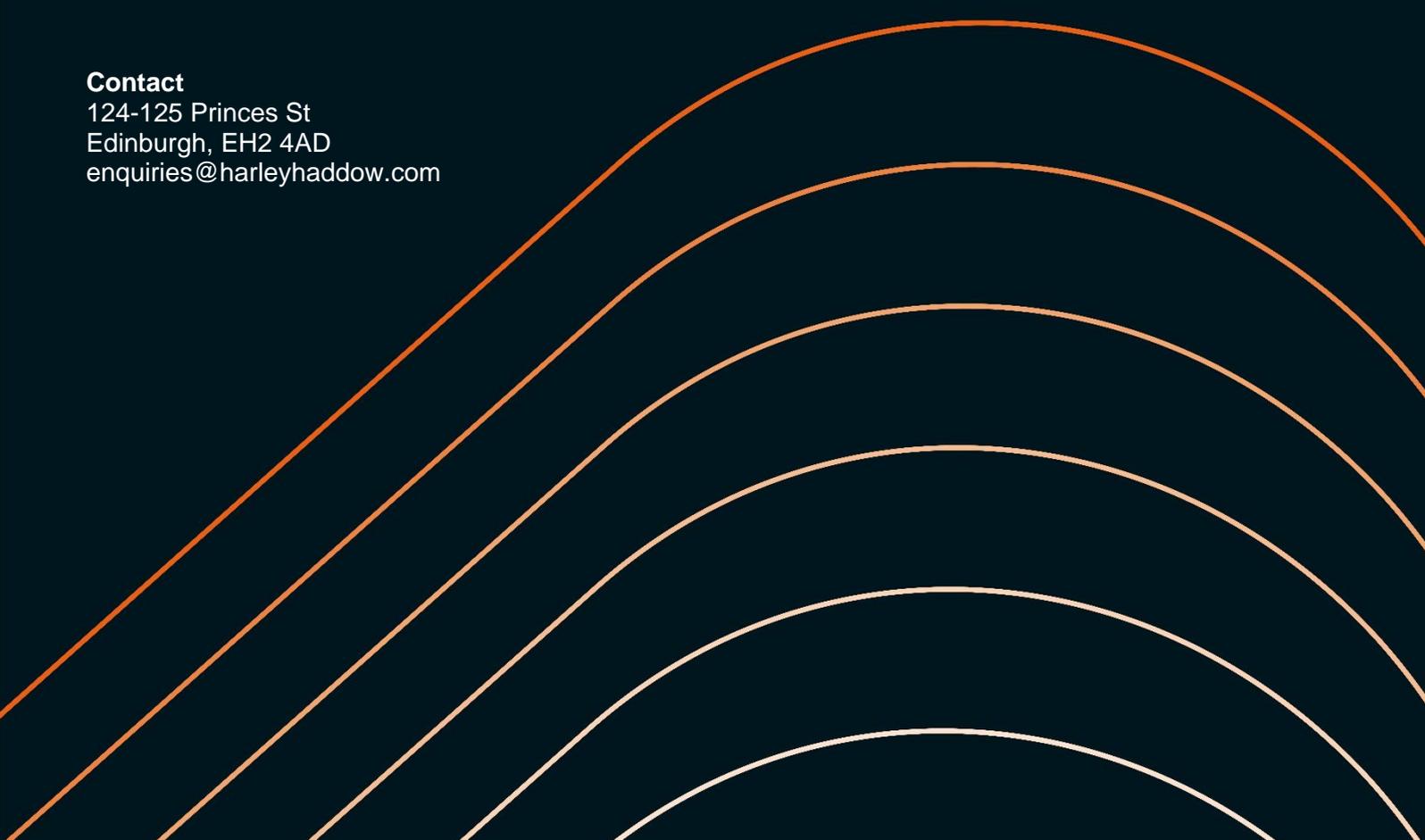
Scolpaig Farmhouse, Outbuildings and Scolpaig Tower

Structural Commentary

September 2022

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Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
00	Sept 2022	Structural Commentary	CJT	CC
01	Feb 2023	Tower Commentary amended	CJT	CC
02	Oct 2024	Update following Sept 24 site visit	CJT	CC

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1.0 Introduction

Harley Haddow was appointed by Fraser Architecture to undertake a visual assessment of Scolpaig Farm and associated ancillary buildings, North Uist together with that of Scolpaig Tower, a 'folly' that lies to the farm's immediate south-east and within the confines of Loch Scolpaig.

The following is limited to a visual assessment only and no attempt has been made to confirm our comments and recommendations within by invasive surveys or subsequent structural calculations. Matters, where felt necessary, as regards asbestos and rot or damp are outwith both this report's scope and our expertise and specialists should be sought for comment.

No archive drawings were made available for review.

2.0 Survey

The survey was conducted in conjunction with Fraser Architecture on 30 August 2022, the weather being dry and fair.

The survey is essentially in three parts, these being as follows:

- i. Scolpaig Farm outbuildings – visual assessment only, this both externally and internally and where possible.
- ii. Scolpaig Farm – visual inspection of the perimeter only.
- iii. Scolpaig Tower – visual assessment from loch side only, given the compromised access arrangements, with subsequent photographic/video survey undertaken separately by Fraser Architecture.

A subsequent site visit was undertaken in September 2024.

3.0 Condition Commentary

Scolpaig Farm Outbuildings

Figure 1 below shows these buildings and annotated for reference.



Figure 1: Annotated location plan showing Scolpaig Farm, Outbuildings and Tower

With reference to the above Figure 1 we would comment as follows:

Scolpaig Farm Outbuildings

Building A

Wall outlines only remaining with these walls some 0.3m – 1.40m above ground level or thereby. Wall remnant on west side in retention to some 1.0m due, likely, to wind-blown sands. North gable remnant protruding slightly higher. Stone walls where found are mostly open jointed though some evidence of buttery type mortar. Particularly at higher levels stonework is generally loose throughout.

Building B

Building to (west) is a small building, generally only in wall outline, similar in condition to that of building “A” as noted previously. Height above ground is some 1.0m – 1.40m or thereby.

Stonework is generally loose and open jointed with a “lean” generally to all elevations.

Building B (east) is a more substantial byre construction with walls relatively intact to eaves level and gable spandrels still in place.

The stonework here, as is common throughout, is uncoursed, undressed stonework with stone snecking and thick buttery mortar. However, over many areas the walls are for the most part open jointed, this particularly evident to internal elevations.

In September 2022 we noted that:

'The roof structure has for the most part collapsed into the building footprint, leaving timber and, what appears, asbestos sheeting lying on the ground. The wall heads, though with some concrete slurry protection, are therefore exposed to the elements.

With the roof now collapsed the high gable walls are unrestrained and we would suggest that there is also a lean on the east spandrel.

We would consider this building to be in immediate danger and would recommend that, at the very least, an effort is made to fence off and place 'keep-out dangerous building' signs to warn the public and any operatives.'

Our inspection of Building B in September 2024 has found that the roof has now wholly been removed, so too part of the cross walling, perimeter door and timber lintolling, this exacerbating further an already compromised structure.

Notwithstanding that the floor debris has been cleared, we remain concerned as regards the building stability, in particular of the gables and are of the opinion that the lean has worsened over the previous 2 years. We would recommend that the spandrel panels be taken to down to wall head level at least and, as noted previously, the building fenced off to the public with dangerous building notices placed as necessary.

Building C

This building is a substantial single store stone masonry byre, with the stonework generally being undressed, uncoursed masonry with thick buttery mortar infilling though over large areas, particularly on the north gable, significant mortar loss is noted. Some wall areas here also been fully rendered over.

A relatively new lightweight corrugated steel roof is supported off new timber trusses and purlins. These trusses are seated on a timber wall plate and tied down with proprietary holding down straps, these often fixed to concrete finished inner wall face or new blockwork infill.

However, we would comment that some construction detailing is not considered best practice i.e. truss end seated on wall plate over a door opening without supporting lintol below and lack of truss restraint tying to the predominantly open jointed spandrel north gable.

Generally, we would consider the building to be in a relatively satisfactory condition.

Building D

This is also a single storey byre running approximately south-west / north-east, with the southern elevation partly in retention, this likely again due to wind-blown sands, to a depth of some 1.0m.

The structure is of undressed, uncoursed masonry, with large stones snecked with smaller stone pins. Buttery mortar bedding is noted throughout though many beds have suffered significant mortar loss.

Internally moss staining is noted throughout all elevations and timber safe lintols appear rotted. Spandrel panels in particular appear to be set within friable and loose mortar.

Timber trusses, which appear relatively new in comparison to the byre wall construction, are in a satisfactory condition and are seated on, what appears, a slurry concrete wall head, with alternate trusses fixed down with steel “bootlace” ties, these somewhat corroded though embedded into the wall structure below and plugged-in place with mortar. Trusses support (likely) cement asbestos sheeting which appear somewhat loose, fixings missing and particularly to the east gable appear to have peeled away from the gable.

In September 2022 Harley Haddow noted:

‘The east gable also exhibits a significant lean towards building C. Cracking is noted to the crosswall perimeter elevations at the gable and to the window opening on this gable, confirming that this movement has occurred and is likely ongoing. Furthermore masonry is often open jointed particularly at the gable spandrel as noted.’

We would now (September 2024) consider that the east spandrel has further moved (or leaned) outwards since our last visit as we had suggested it would. We also noted some additional movement in the corrugated sheets along their length though particularly at the east gable. To that end it may be considered appropriate, unless fenced off to the public, that the roof is removed to wall head level and the spandrel panel is dropped to same. This can be observed in Photographs A and B below.



Photograph A: Building D – East Spandrel (September 2022)



Photograph B: Building D – East Spandrel (September 2024)

Building E

Forming the outbuilding's northern edge are the remnants of stone boundary walling, raised slightly above the surrounding ground level. The stonework is loose and is simply now a collection of rubbleworks delineating historical wall lines.

Scolpaig Farmhouse

The farmhouse is a substantial two store property, subject to historic extensions and with a single storey byre built to its south-west gable.

The byre, similar to those noted forming the outbuildings, comprises large stone masonry units with stone snecking in an often-friable mortar bedding and locally to the north elevation also with a render wash.

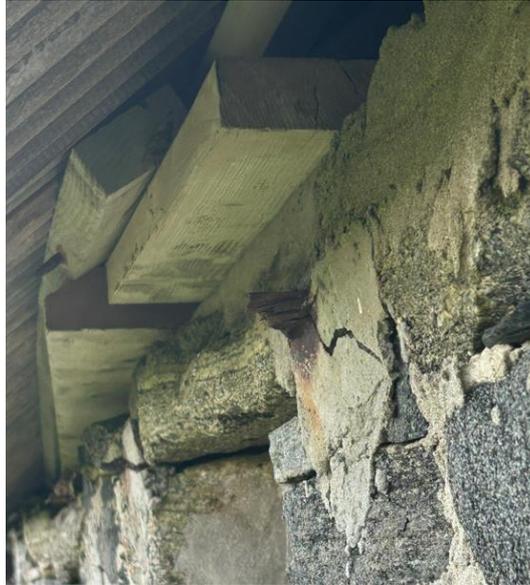
The roof is of corrugated, possibly asbestos, sheeting off, we would assume, timber roof trusses.

We had previously stated following our visit in September 2022 that:

'Locally the byre is bulging along the south elevation, not helped by the loss of rainwater goods. Stones are loose with extensive mortar loss and in some cases, open jointed.'

'Furthermore, there is a significant drop in the roof's ridge line, this toward the farmhouse, suggesting trusses have locally failed, perhaps not helped either by the lean outwards of the wall.'

Given the byres' condition as recently inspected we would refer you to Photographs C – G incl. with brief commentary.



Photograph C: Byre – North Wall (September 2024)

Given the drop of the roof ridge, it is likely that the rafter feet have slipped laterally pushing the wall head timbers off their support. This has also resulted in lateral movement or a lean / bulge of the north wall.



Photograph D: Byre – West Gable (September 2024)

There is significant mortar loss of stonework at the north / west corner and a suggested rotation at its base. Movement appears to be ongoing.



Photograph E: Byre at Farmhouse (September 2022)



Photograph F: Byre at Farmhouse (September 2024)

Our opinion is that there has been movement at the farmhouse spandrel since September 2022, this being evidenced by the cracking to the chimney having widened slightly.



Photograph G: Sheetings fixings to Byre (September 2024)

Notwithstanding the comments above as regards the rotation, bulging and movement of the walls, we would also note that the sheeting and associated fixings is also undergoing significant deterioration, Photograph G being somewhat typical.

Given the above comments and the worsening structural condition of the byre and its danger to the public then serious consideration should be given to removing the roof structure and relieving the lateral forces acting on the wall head. This would also require, somewhat beneficially, the removal of the loose corrugated sheeting.

The farmhouse itself consists a mixture of undressed, uncoursed and dressed, coursed stonework, with the north east gable (facing Scolpaig Tower) cement rendered. The roof is slated, this likely off timber trusses.

We would consider the building is now in a worsening condition, based purely on a visual perimeter only survey, though would make these specific points:

- Gable to the south elevation suggests possible cracking likely following the flue line. Possible failures of stone feathers and water ingress, with mortar loss over some 30% of the area. Possible lean also of the gable spandrel.
- Slight lean of chimney on north-east gable. Perhaps given that this gable has been rendered, this had covered significant loss of stone/mortar section.
- Large areas of slates and sarking are missing and the interior is open to the elements. We noted that on the south elevation extension that the 1st floor appears to have collapsed onto the ground floor. There is evidence of ongoing failure and likely rotting of the timbers
- To the south gable the stone is crumbling and the copes damaged and likely lose.

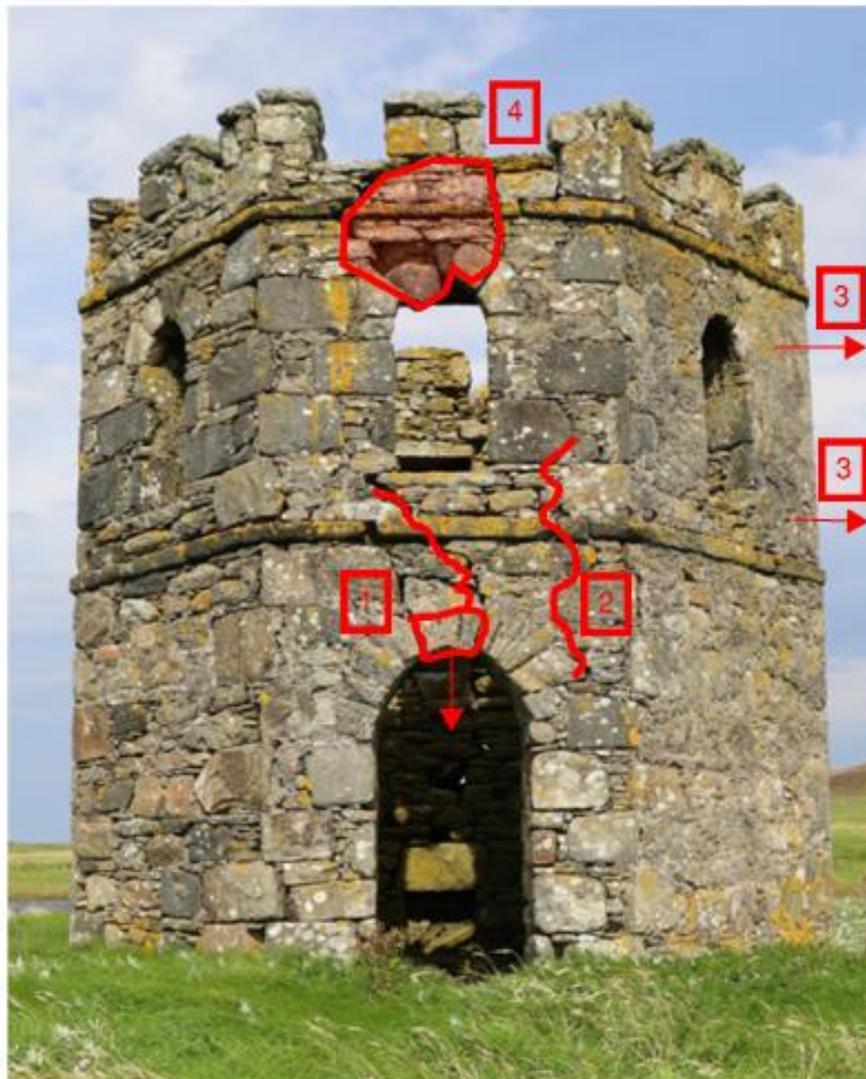
- To the south gable and the immediate perimeter cross walls there are clear signs of vertical cracking suggesting movement / rotation of the gable. There is evidence of historic repair with the cracking now reactivated indicating that movement is ongoing.

Given the above we would recommend that entry into the Farmhouse is prohibited and that warning notes identifying this as a dangerous building are made prominent.

Scolpaig Tower

Scolpaig Tower is recorded in the description of the Scheduled Monument SM7640, Dun Scolpaig, dun (site of) and tower. The Details can be found on the Historic Environment Scotland Web Site. <https://www.historicenvironment.scot/>

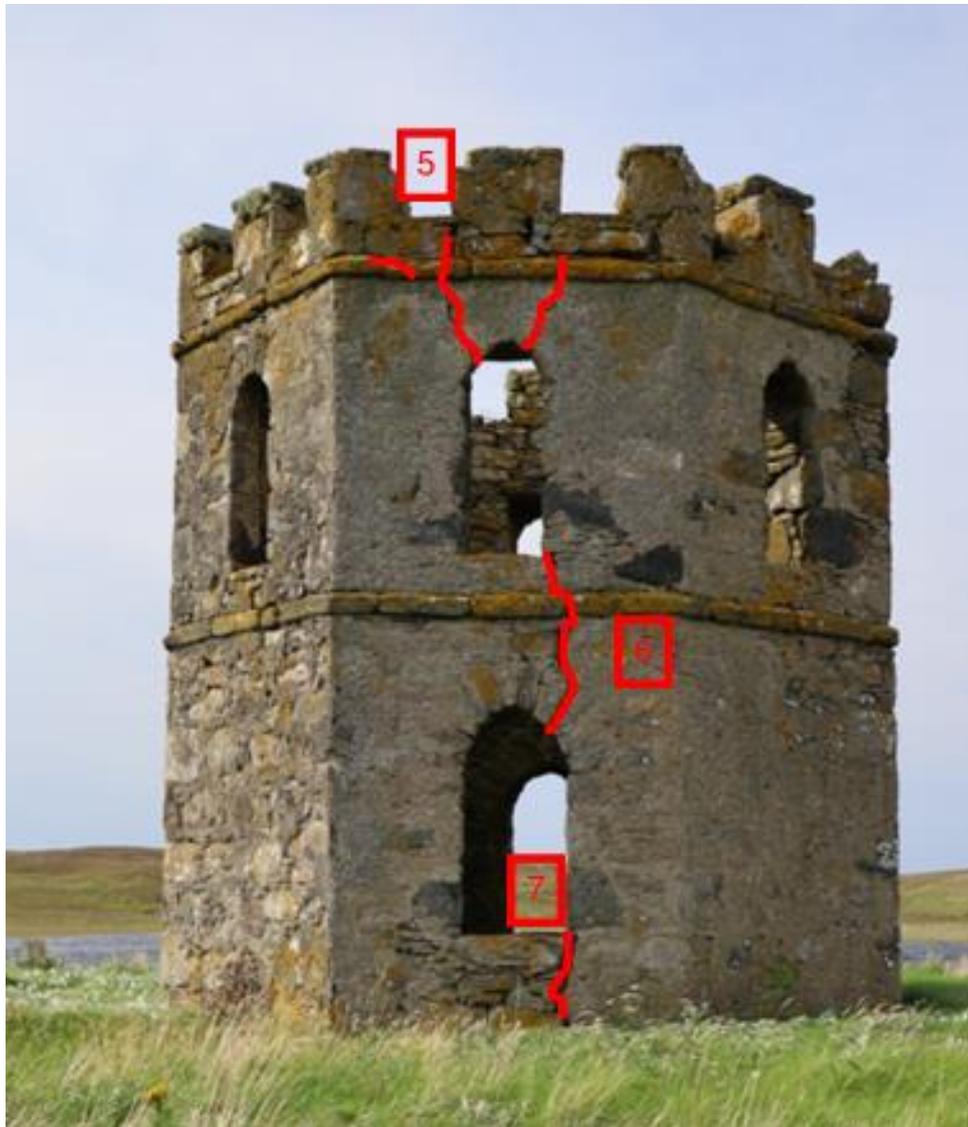
In brief the tower is octagonal on plan though the interior is circular. Walls, some 0.65-0.85m thick, are partly coursed and dressed stonework with the tower crenelated at its head. Arch openings are at each octagonal face at high level though at three faces at lower level. Annotated photographs of the main elevations show this:



1. Arch keystone dislodged and significant crack rising to string stonework.
2. Separation cracking in stonework.

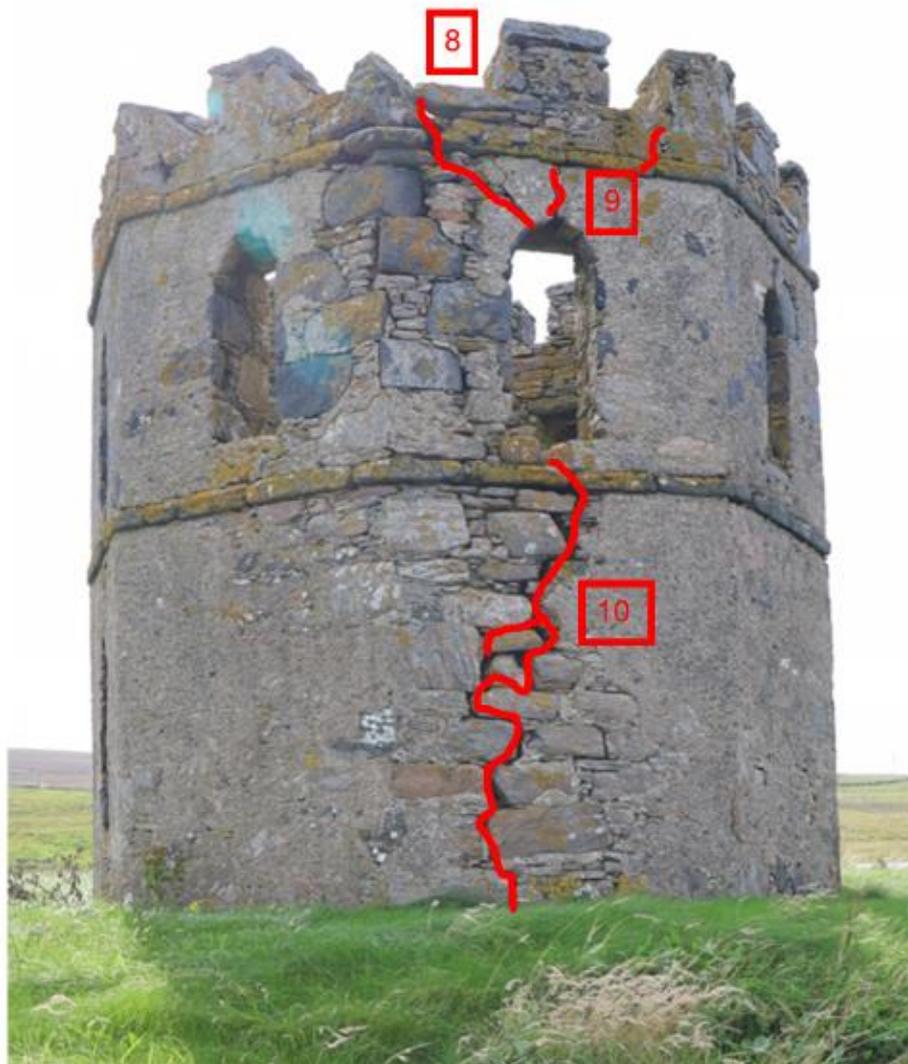
3. *Outward lean of the tower to the east.*
4. *Keystones and adjacent voussoirs missing.*

Fig 2: Annotated view on south elevation



5. *Large diagonal cracking likely around arch key stone as this has dropped.*
6. *Significant open crack between arch below end sill.*
7. *Significant open crack at sill to ground level.*

Figure 3: Annotated view on elevation



8. *Opening crack from keystone to tower head. Stonework clearly open jointed.*
9. *Open crack around keystone.*
10. *Significant open crack/joints through stonework from sill to ground level.*

Figure 4: Annotated view on north elevation

We would also make the following general comments regarding the tower's condition:

- Substantial mortar loss throughout, significant open jointing and loose stonework. This is particularly evident to the crenelated battlements.

Given the above and the condition of the structure we would note our immediate concern, having little comfort in the present structural integrity of the tower, we would recommend that access for the public be prohibited.

Furthermore, given the somewhat parlous state of the structure we would also comment that it is likely extremely sensitive to loads, such as wind or otherwise, that could lead to a full or partial collapse. This without warning.

4.0 Recommendations for Repair and Future Works

Given the above and based on our visual assessment we would suggest the following works for the building as outlined.

Building A

Given condition take down wall remnants as necessary and regrade.

Building B

For small building, given condition take down wall remnants fully to ground level.

For the larger building, given its condition we would also recommend that this be taken down, at least the gable spandrels, to wall head level. As noted earlier, fencing and dangerous building notices to prohibit access should be progressed as soon as possible.

Given the roof sheet construction some asbestos assessment and specialist disposal may also be necessary.

Building C

Some attempt should be made to repair elements which are clearly not best practice i.e. repoint open and poorly filled mortar joints, install missing support window lintols and apply gable restraint straps. Thereafter we would recommend a monitoring regime.

Building D

We would recommend that the ground to the walls in retention along the south elevation and west gable be regraded to remove any adverse loading and limit water ingress.

Given the worsening (as evidenced over 2 years) condition of the east gable, particularly its location opposite the 'in-use' gable on Building C, then we would recommend that this be taken down as early as possible. Furthermore, with the gable removed, the integrity of the bootlace tie straps somewhat compromised, the rotting to the timber purlins and poor fixity of the asbestos sheets we would also recommend that the roof therefore also be removed at the same time. Both these elements are a public safety matter.

Building E

No action

Scolpaig Farmhouse

Unfortunately access into the byre during the site visit could not be made to assess the condition internally. That notwithstanding the rear wall failure, push out of wall plates and drop in ridge line suggests significant structural distress.

Given this and whilst the byre is not in use it may, in the short term and as a matter of public safety, be the most economically viable option to remove the roof structure and relieve applied loads.

The farmhouse, where observed, is in a worsening condition overall particularly to the gables and gable flue lines as noted. However, we would reiterate our concern as regards the likely extensive and long standing matters around water ingress to the building and the significant deterioration of the structural elements.

Whilst we would recommend, at the very least, a monitoring regime by implemented, some attempt should be made to installing/repairing or generally making good the roof rainwater goods, guttering and drainpipes though this to be fair is somewhat moot given the extensive slate and sarking loss and the collapse of floors internally. Dangerous Building notices should be made prominent and if possible, all areas fenced off against trespass.

Scolpaig Tower

Any works associated with repairing, making good and / or stabilising Scolpaig Tower has to be set against the Iron Age dun or broch which it sits atop together with the structure's sensitivity to movement, loading and vibration. Any works, particularly within the ground, are therefore highly sensitive.

We had noted previously our concern as regards the tower's existing condition and possible access for the public. We would recommend, at the very least, that the tower is therefore appropriately fenced off and / or signs erected stating 'dangerous building: keep out.' These should be located both on the tower's islet and perhaps at the causeway to deter the casual visitor.

With regards stabilising the structure, the broad failure is that the building is locally settling generally to its east. As it does, it 'pulls' the masonry work with it and at areas of structural weakness (comparative to unpunctured masonry panels), such as around openings then clear 'break lines' follow. Therefore, bonding between arch ring voussoirs open, these stones drop and large cracks propagate from these points. This is worsened by a lack of lime mortar bonding throughout the masonry and possibly the lack of lime wash render that originally dressed the tower, providing that supplemental bind.

Going forward it may be necessary to consider the structural requirements set against the now, immediate stabilise and prevent further distress and then the longer term where a permanent, fit and forget repair can be affected.

As noted, immediate is the signage and fencing.

Second is to address the worsening condition of the tower. To that end we would suggest that it is scaffolded, that timber propping say is placed in all openings to hold all stonework (particularly the arch ring voussoirs) in place, and that any loose stonework at the tower head taken down, obviously only after appropriate recording and stone numbering is undertaken.

To this, and perhaps the most complex element of works, would be an attempt to stabilise the tower, at least in the short term. Previous reports had suggested buttressing and / or underpinning. If we can discount traditional mass concrete underpinning, given the dun that sits below the tower and the complex and high sensitive archaeological requirements, then some degree of shoring or buttressing may be appropriate. Mass brick buttressing or similar, given the foundation requirements or general visual impact, perhaps is not an appropriate solution and instead an appropriately designed steel shoring system be put in place, with limited foundation works.

This may give some breathing space to allow a long-term remediation scheme to be developed.

With regards the stabilisation here we would consider that there are two options.

- Carefully detail, annotate, record and take-down the tower methodically all under the direction of a suitably qualified conservation architect and archaeologist.
- In conjunction with any archaeological investigations to the below lying broch, insert a minimum impact ground screw / piling system (or highly localised discrete mass concrete pads), these positioned as necessary to suit the underlying conditions. Tie at their heads with a suitable reinforced concrete ground beam.
- Re-build tower off new foundation system, this fully with a lime mortar bed and lime mortar render binding wash. We would also suggest pinning the crenelated tower stones.

An alternative solution that may offer some longevity could include the following:

- Scaffold tower and remove any loose stonework.
- Locally underpin to the east extension either by piling or mass concrete.
- Wraggle in at corners malleable steel reinforcing bars (a suitable Helifix system) into the bed joints. Alternatively (or for that matter in conjunction with) install steel strapping at corners or as a band full circumference of the tower both internally and externally. These say at 1.0m ctrs vertically.
- Rebuild set aside stonework and those required around openings, where the structure has opened, as necessary. All in lime mortar bedding and with lime wash render bind.

Whilst the above offer some way forward as regards the tower stabilisation works we would note our concern as regards site operatives undertaking these works. Our view is that the tower is highly sensitive, either to wind loads or perhaps even vibration from running traffic or even, say, operatives setting up a scaffolding frame. It may be that the *only* way to ensure longevity of the tower whilst minimising risk to those operatives charged with the work is to take down the tower, by hand.

Appendix A

Photographs



Photograph 1 – Building A: typical condition



Photograph 2 – Building A: note retention and general stone condition



Photograph 3 – Building A: corner with generally loose stone



Photograph 4 – Building A: corner with suggested "lean"



Photograph 5 – Building B: wall remnants, note high and loose stones



Photograph 6 – Building B: corner with loose stones



Photograph 7 – Building B: Note wall condition and roof collapse



Photograph 8 – Building B: Roof remnant and tiles within footprint



Photograph 9 – Building B: Unrestrained gable and unprotected wall head



Photograph 10 – Building B: suggested lean at gable



Photograph 11 – Building C: north-east gable



Photograph 12 – Building C: south-east elevation



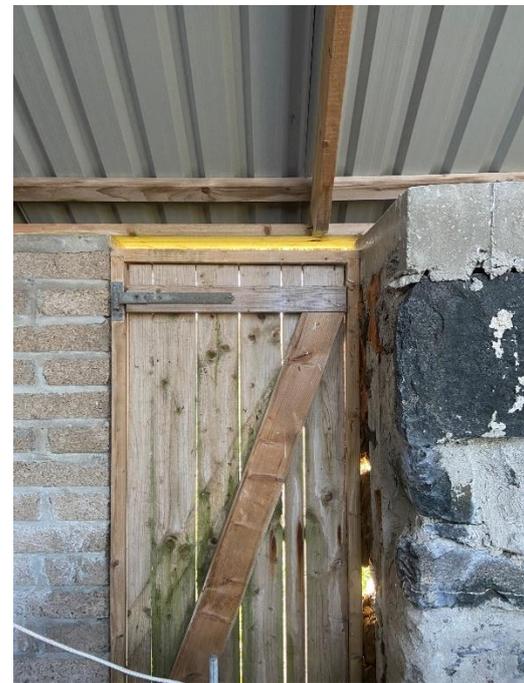
Photograph 13 – Building C and D: gable elevations



Photograph 14 – Building C: Internal view of byre



Photograph 15 – Building C: trusses tied down to concrete infill wall



Photograph 16 – Building C: truss end onto wall head with no supporting lintol under



Photograph 17 – Building A: South west elevation



Photograph 18 – Building D: possible roof separation at gable



Photograph 19 – Building D: Internal view to gable (note relatively new timber and relatively open jointed masonry)



Photograph 20 – Building D: Bootlace tie straps pocketed into wall



Photograph 21 – Building D: internal layout



Photograph 22 – Building D: Note condition of safe lintols



Photograph 23 – Building E: typical wall remnants



Photograph 24 – Farmhouse and adjacent byre



Photograph 25 – Note dip in byre roof and large crack in chimney flue



Photograph 26 – Byre's exposed gable



Photograph 27 – Byre's south-west elevation



Photograph 28 – Note cement flashings dropped from farmhouse gable



Photograph 29 – Farmhouse north west gable/elevation



Photograph 30 – Farmhouse south west gable (note condition of gable flue line)



Photograph 31 – Farmhouse: south east gable and elevation (note render finish)



Photograph 32 – South east gable chimney



Photograph 33 – Scolpaig Tower: south and east elevation



Photograph 34 – Tower: east and west elevations



Photograph 35 – Tower: north elevation



Photograph 36 – Significant cracking, lean and stone displacement to north elevation



Photograph 37 – Cracking at keystones(note significant mortar loss particularly at high level)



Photograph 38 – Arch key stones lost at both lower and upper openings



Photograph 39 – Typical key stone displacement



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