Conservation Architect's Report

on

Rahara Medieval Church, Co. Roscommon.

Prepared by

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on behalf of

Roscommon County Council

Comhairle Contae Ros Comáin
Roscommon County Council

An Chomhairle Oidhreachta
The Heritage Council

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1. INTRODUCTION / OVERVIEW

This report has been prepared on behalf of Roscommon County Council to record the condition of the ruins of the Medieval Church at Rahara, Co. Roscommon. The church, which is mentioned in ecclesiastical records from the early-fourteenth century, is a structure of architectural, artistic, archaeological, and historical significance. The church ruin is currently heavily overgrown with vegetation and is in a fragile condition. The north-east corner of the ruin is currently unstable, with some stone having collapsed outwards from the corner. The upper part of the east gable has an outward lean of at least 300mm off-plumb. The condition of the church ruin, as set out in this report, was recorded during a visual inspection by the author on 2nd September 2020. The recommendations contained in this report are informed by the guidance contained in *'Ruins – The Conservation and Repair of Masonry Ruins*' (2010, Department of Culture, Heritage and Gaeltacht Advice series).

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Fig. 1 Aerial view of Rahara, showing location of Medieval Church

2. HISTORICAL BACKGROUND

Rahara takes its name from Ráth Aradh, meaning "Fort of Aradh") is located approximately two miles to the north of the village of Curraghboy, between Athlone and Athleague. The parish church of Rahara dates from at least the thirteenth century and is listed as Rathfard in the ecclesiastical taxation of Elphin in 1306[1]. The church is notable for having a carved head (RO045-077004-) on the northwest corner of the ruin and for a Sheela-na-gig, which is now part of the collection at Roscommon County Museum[2]. The church ruin is located within a rectangular graveyard, which has been extended with a modern graveyard to its south (Fig. 1).

Fig. 2 First Edition Ordnance Survey Map of 1837-42, showing Rahara Church

[1] Details of the evolution of the site as an important ecclesiastic centre are reproduced from the National Monuments scope note (ref. RO045-077001-) on the NIAH website.
[2] National Monuments scope note (ref. RO045-077005-) on the NIAH website.

The church is shown on the first edition Ordnance Survey map of 1837-42, to the east of Rahara House, below which the feint outline of a ring fort can be seen. The boundary line of the historic graveyard are clearly shown on this map.

Fig. 3 View towards ruin of Rahara Church, with modern cemetery (to the south) in the foreground.

3. DESCRIPTION OF RAHARA MEDIEVAL CHURCH

The church ruin is rectangular in shape, measuring approximately 16.3 metres (east to west) and 8.4 metres (north to south). The walls are of roughly-coursed limestone rubble. The north wall is substantially intact and includes a pointed-arch doorway with cut limestone head *(Fig. 4),* towards its west end. The east gable is also substantially intact but is leaning outwards at its upper level. The relatively intact survival of the masonry on the north slope of this gable gives a good indication of the slope and height of the roof of the church *(Fig. 5).* The outer stones on the north-east corner of the gable are missing. The east gable includes the remains of a cut stone surround of a lancet window, which has been infilled with well-crafted engraved stone memorial plaques on the interior and exterior *(Fig. 6).*

Fig. 4 Pointed arch door with cut limestone head on north exterior face of Rahara Church. The cut stone surround below this arch is missing.

Fig. 5 Exterior face of east gable

Fig. 6 Detail of cut stone embrasure to lancet window on exterior face of east gable.

The north-west corner of the ruin is heavily overgrown with ivy *(Fig. 7)* and was not fully visible. This west gable wall drops in height from 4 metres, approximately 2.5 metres from this corner, to circa 1.4 metres. This lower wall appears to have been at least partly rebuilt and has a twentieth century cement-based render on part of its internal face. The cut stone quoins of the north-west corner include a carved head, which was not visible due to the heavy ivy growth.

Fig. 7 Exterior face of west gable wall.

The south wall of the church ruin does not survive above ground level. The below-ground remains of this wall survive as a raised ridge, with some visible stones – within the ridge, but also sitting loose on the line of the wall. There are a number of graves within the church ruin and immediately abutting the perimeter walls.

4. CONDITION

The surviving structure of Rahara Medieval Church has been without a roof and exposed to the elements for many years. The surviving walls comprise limestone rubble with cut stone architectural features. The east gable appears to be quite unstable, with a pronounced outward lean and missing masonry from the corner. There is established ivy growth on and around the ruined structure, some of which is embedded into the wall. The open gaps in the stone rubble along the top of the wall have allowed water to drain through the stone rubble. This has caused much of the aggregate to leach out of the structure, leaving substantial voids which have weakened the core of the wall. Urgent action is required to kill off and carefully remove the vegetation, to

consolidate the wall, and to provide a rounded haunch to encourage water runoff from the top of the wall. The following issues were noted:

a) Missing stone from north-east corner
There is a substantial area of missing stone on the exterior face of the north-east corner of the church. The missing area of stone is approximately 2.5 metres high and extends c.500mm in both directions from the corner. It is possible that the outward movement of the east gable (see b) below) may have contributed to the failure of the masonry in this corner. There are dead ivy branches at the top of the wall, which appear to have been cut of close to the root. The core of the wall is exposed at this corner. The stone around the perimeter of this missing corner appears to be unstable and there is potential for the corner to unravel further.

Fig. 8 Missing stone on north-east corner

b) Outward lean of east gable wall
The east gable is off-plumb, with the uppermost part of the masonry leaning outwards by at least 300mm. This outward movement in the wall appears to have contributed to the loss of masonry at the north-east corner of the ruin (see a) above). It is not possible to determine from a single inspection whether the movement in the wall is actively deteriorating. The extent of this outward lean is such that the gable must be regarded as unstable and at potential risk of collapse. There are dead ivy branches at the top of the wall, which appear to have been cut of close to the root.

Fig. 9 Outward lean on east gable wall of Rahara Church. The dislodgement of stones at the corner appears to be linked to the movement in this wall.

c) Loose stone at base of east gable wall

There are open joints without visible mortar at the base of the exterior face of the east gable (Fig. 10). These deep open joints appear to be linked to the loss of aggregate from the core of the wall. There is a gap at the base of the external face of the wall (c.500 x 500mm) approximately 1 metre in from the corner, which has been filled with loose stone that is not bedded in mortar. The missing masonry and open gaps are contributing to the lack of stability in this wall.

Fig. 10 Deep open joints in the stone rubble at the base of the east gable (exterior face)

Fig. 11 Substantial gap at base of east gable (exterior face) that has been filled with loose stone.

d) Extensive ivy growth at north-west corner

There is a substantial cluster of mature ivy, which completely obscure the interior and exterior face of the wall at the north-west corner *(Fig. 12 & 13).* It was not possible to visually inspect the face of the wall in this corner on the date of inspection and it is not possible to comment on the condition of the stone.

Fig. 12 Ivy growth on north wall (exterior face) at north-west corner

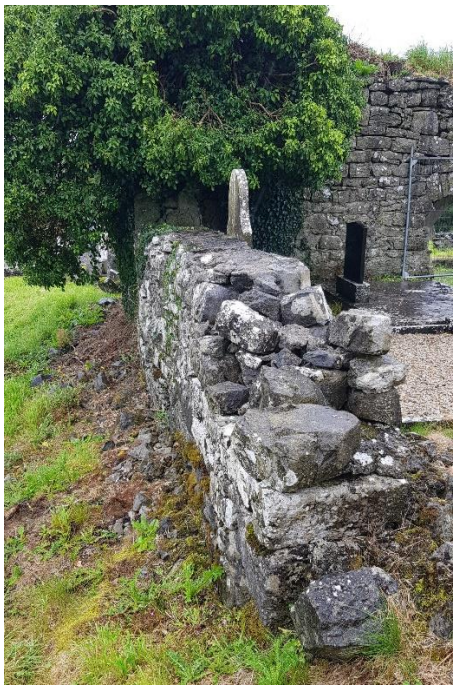

Fig. 13 View from south-west corner looking towards north-west corner, which is heavily overgrown with ivy.

e) Pointed arch opening on south wall

The cut stone surround to the pointed-arch opening on the north external wall is an important survival . The cut stone reveals beneath the arch do not survive. The masonry rubble reveal to the inside of the arch is in poor condition, with missing stone on both sides *(Fig. 14 & 15).* The stone rubble inner arch is not adequately supported. It is possible to see through the wall at the gaps between the stones at the head of the arch. The stone arch is not stable and consolidation is urgently required to the reveals. Protective fencing is in place to prevent public access to the arch.

Fig. 14 West reveal of arched opening

Fig. 15 East reveal of arched opening

f) Top of walls

With the exception of the west wall, which has been partly re-built, the tops of the walls are not finished with a haunch or capping. There are open gaps in the stone rubble along the top of the wall, which have allowed water to drain through the stone rubble. This has caused much of the aggregate to leach out of the wall, leaving substantial voids which have weakened the core of the wall. If left unchecked, the root systems of the embedded vegetation will extend into the voids within the core, causing a further weakening and deterioration of the ruin. The use of a hard cementitious mortar in local twentieth century repairs is contributing to the instability at the top of the wall.

Fig. 16 Open gaps along the top of a truncated section of wall at the south gable. The individual stones at the top of the wall have been re-bedded in a cement mortar (during the twentieth century), which is significantly harder than the historic masonry and is contributing to instability in the wall.

g) Vegetation growth

The open gaps and absence of a haunch at the top of the wall has facilitated the growth of vegetation from the top of the walls of the church ruin. Much of this growth comprises woody vegetation. During the course of my inspection I noted ivy, whitethorn and buddleia at the top of the ruin. These plants can grow to be relatively large with substantial root systems embedded into the wall. There is evidence of recent efforts to cut back some of the ivy growing in and over the ruin. This approach may not kill the plant and can cause the embedded roots to expand, which can further weaken the wall.

Fig. 17 Interior of Rahara Church looking towards north-east corner. There is dead ivy on the east gable and on the north wall (foreground, with cut branches)

h) Missing mortar and gaps in stone walls

There are large open joints throughout most of the stone rubble on both the interior and exterior faces of the wall. This is not unusual and would be fairly typical for a ruin of this date (at least thirteenth century). These gaps in the mortar are an indicator that much of the core of the walls is likely to have been washed out as a result of ongoing water penetration through the ruin over many years. While it may not be necessary (or desirable) to re-point every open joint in the ruin, particular attention should be paid to those parts of the structure where there is missing stone and/or a visible lack of stability – such as the north-east corner (item a) above; the base of the east gable (item c) above; and the reveals of the pointed-arched opening on the south wall (item e). During the course of my inspection, I noted significant gap in the stone rubble coinciding with the change in height of the west external wall. It is likely that other areas of unstable masonry will come to light as work to remove embedded vegetation proceeds.

i) Below ground remains of south wall

The surviving below ground remains of the south external wall are likely to be relatively undisturbed and do not give cause for concern. There are a number of loose stones along the top and on both sides of the wall line. It is likely that these are stones that have detached and rolled away for the wall.

Fig. 18 Loose stones along line of south wall of church ruin.

j) Damaged and broken grave markers

There are headstones and grave markers dating back at least two centuries within the footprint of the Medieval church. Some of these headstones are in poor repair and at least one fine nineteenth century headstone has fallen over. There are relatively large cut stone pieces lying on the ground within the ruin. It is not clear if these are fragments of headstones and grave markers, or if they have been displaced from the walls of the ruin.

Fig. 19 Fragment of cut stone

Fig.20 Cut stone fragment on line of south wall

5. RECOMMENDATIONS

Rahara Church is a structure of considerable architectural, artistic, historical, and social significance, located on a site of rich archaeological and ecclesiastical interest dating back to the thirteenth century. The church ruin is at particular risk due to the effects of water ingress through the top of the walls, the leaching of aggregate and mortar from the core around the inner core, and the impact of embedded root systems growing within the stone rubble structure. The outward lean of the east gable, coupled with a significant area of missing masonry at the north-east corner of the ruin, is a particular cause for concern. The killing and cutting back of vegetation, to be carried out without the removal of embedded branches and roots, is an important first step to facilitate the repair and consolidation of the church ruin. Thereafter, an urgent programme of stone repair and reconstruction is required. The works described below should be carried out under the direction of a RIAI Grade 1 Conservation Architect.

The following actions are recommended in order of priority. These should be carried out following the specification and methodology noted below.

a) Health and safety

The east gable of Rahara Church, together with the area around the north-east corner, is at particular risk of falling masonry. It is recommended that a temporary fence is erected on both sides of the east gable and north-east corner, to protect members of the public visiting the graveyard pending the carrying out of works to consolidate the masonry. This area should be omitted from the biocide treatment of vegetation, unless this treatment is carried out in tandem with the repair and consolidation of the masonry with adequate temporary support works in place.

b) Treatment of embedded woody vegetation

The biocide treatment of this vegetation should be carefully targeted on killing the plant from the root upwards. This method involves the application of a biocide treatment under the bark close to the root of the plant. This approach differs from the more-commonly used application of a biocide treatment to the leaves, which will kill the foliage but cause the living plant to retreat into the root system. This can result in expansion of the roots, which can in turn destabilise the ruined structure. The slow and gradual process of killing back the plant will take several months and avoids any expansion or shrinkage of the root system. The approach involves the peeling back of a section of the bark about 50mm high to expose the substrate. A biocide (roundup or similar) is applied in paste form to the open section of the trunk and is then sealed with clingfilm and duct tape. The optimal time to carry out this treatment is in the spring, with allowance for 2-3 repeated applications on each trunk/branch at monthly intervals heading into the summer.

Under the above approach, the biocide travels with chlorophyll from the site of the treatment downwards into the root system, which will slowly die without swelling or expansion of the embedded roots or branches. This method of treatment and wrapping of the base of each plant will only be possible where the full circumference of the branches are projecting from the wall and accessible. In locations where thick ivy branches are attached to the stone rubble and cannot be pulled outwards without the risk of damage to the wall, the branches may be cut and biocide plugs inserted into drillholes at the base of the plant.

Once the initial biocide treatment has been active for a number of weeks, the treatment can be augmented by the surface application of a selected biocide spray that is suitable for the control of a wide range of deep-rooted perennial and woody weeds on non-crop land. This biocide spray should be mixed with a temporary dye that will temporarily mark the treated foliage for 3-4 days. The use of this dye will minimise the risk of missed areas or overapplication.

Once the biocide treatment is successful and fully complete, all dead vegetation growth should be left in situ pending work commencing on the consolidation and re-pointing of the wall (see b) below).

c) Biocide treatment of grassy and non-woody vegetation

Once the treatment of the more established and woody vegetation has taken affect, the walls of the church should be spray-treated with a non-selective persistent herbicide. It may be necessary to

carry out multiple treatments, including an application into any mortar joints that are open or have been raked out to ensure maximum effectiveness of the treatment.

d) Temporary works to east gable

Temporary works will be required to provide support while consolidation and repair work is being carried out to the east gable and the north-east corner of the church. The design of these temporary works should be prepared by a civil structural engineer, with experience of working on monuments and ruins, and should be subject to review and agreement with the project conservation architect. The temporary works design should facilitate the erection of a solid and secure scaffolding on both sides of the gable with a sufficiently-wide working platform to facilitate partial dismantling and reconstruction of the upper part of the wall.

e) Consolidation and reconstruction of north-east corner

The consolidation and repair of the north-east corner should be carried out prior to any works to address the outward lean at the top of the east gable. These works will reinstate and consolidate the structural connection between the east gable and the north wall of the church, and will optimise the structural integrity of the ruin prior to the works to the vulnerable gable. The reconstruction of the corner should be carried out using the salvaged limestone from the site. The replacement stone should be selected to fit with the configuration of the stone in the corner, with particular emphasis on the inclusion of longer stones to reinforce the corner of the ruin. The replacement stone should be bedded in lime mortar to the specification noted below. The core of the wall (i.e. between the inner face and the reconstructed outer face) should be filled with a compacted dry mix of medium-size limestone gravel, sand and lime. Allowance should be made for the use of helical flexible stainless steel reinforcement bars and stainless steel ties, to act a stitch reinforcement - both between the retained inner leaf and the reconstructed outer corner; and to provide reinforcement to the masonry around the corner. This reinforcement should comprise a series of stitched connections in multiple locations. The introduction of more invasive structural supports would be harmful to the integrity of the structure and is not recommended. Where there are wide joints or gaps between the stones, these should be packed at with smaller stone gallets (flat stones) and pins (pointed stones). The stability of the east gable should be regularly monitored throughout this work.

f) Works to address outward lean of east gable

The outward lean of the east gable will require significant work. The introduction of buttresses or permanent supports on the east side of the gable is not a viable option as this would dramatically alter the appearance of the ruin and would interfere with the relatively recent graves at the exterior base of the wall. For this reason, the preferred option would be to carefully dismantle and reconstruct the upper part of the gable, to a depth of about 1.5 metres from the apex. This will require the numbering of each stone and the preparation of a detailed drawing of the gable from both sides, which should capture the slope of the wall and the location of the stones. The dismantled stone should be numbered with chalk (or similar removeable marking) and stored on the scaffolding platform to minimise double-handling. The reconstruction of the stone should focus on correcting the outward lean so that the upper part of the wall is plumb and to relocate the centre of gravity of the wall so that the risk of collapse is greatly reduced. As part of this work it will be necessary to consolidate the base of the wall, where there are a large number of gaps and open joints. In particular, the gap at the base of the wall which has been filled with loose stone, will need to be consolidated with stone bedded in lime mortar. Once the stone on the gable has been re-pointed, a lime-based liquid grout, to the specification noted below, should be slowly introduced to the wall – to fill and consolidate any gaps in the wall. A rounded haunch should be formed at the top of the gable (to specification) to facilitate water run-off from the ruin.

g) Consolidation and repair of pointed arch opening on north wall

The loose and missing masonry around the reveal and head on the interior of the wall should be consolidated and reconstructed using stone rubble, to be salvaged from the site where possible, bedded in lime mortar (to the specification noted below). The reinstatement of the missing reveals under the internal flat arch is urgently required to ensure the structural integrity of the opening. The

exterior face of the opening should be reinstated through the introduction of replacement cut limestone underneath the intact cut stone arched head.

h) Removal of embedded vegetation

The removal of embedded vegetation should only take place once the particularly vulnerable parts of the structure have been consolidated and stabilised – the east gable, north-east corner, and the reveals of the pointed arched opening on the south wall. The removal of embedded vegetation should be carried out by experienced stone masons in tandem with the repair and consolidation of the wall and in close consultation with the project conservation architect.

i) Consolidation and mortar pointing generally

There are open joints throughout most of the exterior and interior faces of the ruin. Most of the joints have been missing mortar for a considerable period of time. It is unlikely to be impractical to fully re-point every last gap or joint in the wall. The focus should be on prioritising the re-pointing and consolidation of the stonework in locations where the wall appears to be unstable (i.e. the east gable, north-east corner, and the reveals of the pointed arched opening on the south wall). Other areas of locally unstable masonry will be identified during the removal of embedded vegetation and should also be consolidated and repointed. In these locations, the open joints should then be pointed to the specification noted at j) below. Where there are wide joints or gaps between the stones, these should be packed at with smaller stone gallets (flat stones) and pins (pointed stones). Allowance should be made for the introduction of helical flexible stainless steel reinforcement bars and/or stainless steel ties in consultation with the conservation architect. Allowance should be made for the introduction of a lime-based liquid grout (see j) below) to fill out any voids in sections of the wall that are identified as being particularly fragile.

j) Consolidation of stone walls – mortar pointing and liquid grout

The new bedding and re-pointing mortars to the rubble masonry should consist of a fine to medium-grained lime-based mortar mix, formulated for stone rubble fabric in a moderately exposed location, in a moderate to severe environment. Sands will be local, and primarily consist of local limestone. The sand used will comply with current standards including BS 1200, BS 882, BS 1200:1976, BS 4551-1:1998, BS EN 998-2:2002, and the European normative references EN 1015-1. All works will be carried out complying with BS 7913:1998 Guide to the Principles of the Conservation of Historic Buildings. The proposed lime mortar will comprise a mix of 2.5 parts aggregate to 1 part NHL3.5 lime. The work is to be carried out by operatives skilled in the use of lime mortars. The relevant contractor should provide details of the proposed operatives who will carry out the lime mortar repairs together with evidence of their previous experience on similar projects to the satisfaction of the conservation architect. The mortar pointing should have a brushed finish, to expose the grit within the mortar, and should be slightly recessed in the joint. A trial sample will be carried out at the outset to facilitate agreement on the work methods and finish with the conservation architect. *(Note: Portland cement-based mortars will NOT be used for any repair or re-pointing works, even where those repairs will be hidden from view or concealed within the fabric of the wall). The contractor will provide the conservation architect (on request) with samples of the lime mortar for testing. This will comprise petrographic analysis, be carried out by a specialist stone and historic mortars consultant. The purpose is to ascertain that the specified mix has been followed - the correct naturally hydraulic lime has been used; the aggregate is as specified; the proportions of the mix are correct; and no cement or other non-specified additives have been used).*

The works to consolidate the stone rubble walls should include for grouting and deep tamping of existing open and dry joints, and voids revealed during removal of the flowering plants and failed stones. The grouting material will be lime-based with a suspension aid (such as bentonite). It is important that the final strength of the grout should not exceed that of the limestone masonry, that be similar in permeability, low in shrinkage and have a good flow rate for effective penetration. Prior to appointment, the contractor shall provide a written methodology and specification for the grout to include the proposed lime (hydraulic or non-hydraulic) and details of the suspension aid for agreement with the Conservation Architect.

k) Limecrete haunch to the top of the wall

The wall tops of the church ruin will be subjected to water penetration and weathering stresses far in excess of those experienced by the wall face, and a different mortar formulation for haunching will be required. All vegetation and any existing wall top haunching should be removed prior to application of the new haunching. It should be noted that one of the most common problems with past cement-rich haunching is deterioration of the original work immediately below it; and the failure of new haunchings is often due not to incorrect formulation or poor workmanship, but the poor condition of the wall-core substrate. On removal of the vegetation and any past haunching, it is crucial to consolidate the wall-core at the wall top prior to applying a new haunching21. The new haunching should be a natural hydraulic mortar (NHL 3.5). The limestone used to build the wall is a durable limestone and NHL 5 would bond with this stone. However, NHL 5 is stronger, less elastic and less permeable than a NHL 3.5, and while durable, should be expected to be less able to cope with any future wall movement or failure(s) within the original weathered material in the wall core. For this reason NHL 3.5 is preferred. The recommended mix of for the haunching is NHL 3.5: Sand aggregate in the **ratio 1:2½.** The sand aggregate should be sharp, coarse limestone sand (10mm down, gauged with a fraction of fine limestone aggregate to improve workability).

l) Recovery and presentation of loose stone along line of south wall and elsewhere within the ruin

The grass and weed ground cover within the church ruin is to be treated with a herbicide. Once the vegetation cover has died back, any cut stone fragments are to be photographed, identified by number, inventorised, and safely stored. The stone fragment pieces that go together to form an identifiable plaque or memorial stone are to be labelled and retained. Any decision in relation to the storage or reassembly and presentation of these stones shall be taken in consultation with the National Monument Service.

The killing back of the ground vegetation will facilitate further investigation of any above ground fabric along the line of the south external wall of the church. Where the top of this wall is visible, it should be consolidated with a limecrete haunch and any loose rubble in the vicinity should be bedded onto the top of the wall. The potential for the wall to form a trip hazard should be assessed in conjunction with Roscommon County Council, along with the potential to introduce soil covering as protection over the top of the wall line.

m) Treatment of sapling trees around the perimeter of the church ruin

There are a number of sapling trees growing against the ruin. These have potential to cause damage to the footing and substructure of the walls if they are allowed to grow to maturity. Each individual branch of each sapling is to be treated using the approach outlined under a) above. This involves the peeling back of a section of the bark about 50mm high to expose the substrate. A biocide (roundup or similar) is applied in paste form to the open section of the trunk and is then sealed with clingfilm and duct tape. The optimal time to carry out this treatment is in the spring, with allowance for 2-3 repeated applications on each trunk/branch at monthly intervals heading into the summer.

6. BIBLIOGRAPHY

- Ruins – The Conservation and Repair of Masonry Ruins (2010, Department of Culture, Heritage and Gaeltacht *Advice* series)

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APPENDIX A

ADDITIONAL PHOTOGRAPHS OF RAHARA CHURCH

2nd SEPTEMBER 2020

Fig. A1 View of Rahara Church from south-east

Fig. A2 Exterior face of east gable

Fig. A3 Exterior face of north wall of Rahara Church

Fig. A4 Detail of stone rubble exterior face of north wall

Fig. A5 Detail of pointed arched opening on exterior face of north wall of church

Fig. A6 Detail of exterior face of west wall of Rahara Church

Fig. A7 Interior face of west external wall of church ruin

Fig. A8 Interior of church ruin at north-west corner

Fig. A9 Interior face of north wall at pointed arched opening

Fig. A10 Interior of church ruin, looking towards east gable