

Historic Scotland

Properties in Care

Minor Archaeological Works

2007

Newark Castle

HS Index No: 90230

Job No. HSCO-90230-2007-01

Archaeological monitoring
March 2007



May 2007
Kirkdale Archaeology

Site Newark Castle
N.G.R NS 3281 7452
Project Description Archaeological monitoring

Contents

1.0 Introduction	1
2.0 Method	1
3.0 Description	2
4.0 Conclusion	10
5.0 Further Work	12
A1.0 Appendix 1: List of contexts	14
A2.0 Appendix 2: List of drawings	21
A3.0 Appendix 3: List of photographs	22
A4.0 Appendix 4: List of Finds	26
A5.0 Appendix 5: List of Sample	27
A6.0 Appendix 6: The Roofs at Newark Castle – A Preliminary Assessment by Thorston Hanke	28
A7.0 Appendix 8: Annotated plan	34

1.0 INTRODUCTION

Under the terms of its call-off contract with Historic Scotland, Kirkdale Archaeology was asked to undertake a short period of archaeological monitoring at Newark Castle, Port Glasgow during the removal of a number of internal panels of masonry from above wall head of the N and S elevations in the Gallery of the N range in order to examine the condition of the base of the roof timbers behind the panels. The work was carried out by MCU Staff between the 28/02/07 and 08/03/07.

2.0 METHOD

The archaeological recording carried out during this intervention was in direct response to the targeted areas of investigation in the N and S elevations of the Gallery and therefore does not represent a full and comprehensive Standing Building Recording (SBR) survey of the Gallery elevations or roof at Newark Castle. However the recording system was designed in such a way that it could be expanded into a full SBR survey of the Gallery at a later time if this proves necessary.

The space referred to as the Gallery within this report was defined by the area covered by the main roof of the N range, Trusses 001 – 018. The interpreted internal divisions within the Gallery, represented by MDF partitions, were not taken into account since the original partitions no longer survive. The E and W chambers of the N range were considered out with the Gallery since they each have a separate purlin roof. This arbitrary decision may be reversed later if required, since no recording took place within the E and W chambers during this intervention.

The floor, the roof and each elevation of the Gallery was assigned a number to prefix the context (see below) to identify the position of contexts within the space. Several contexts were recorded on the N and S elevations, (**Gallery.1.** and **Gallery.2.**). The main roof elements, (**Gallery.6.**) were also numbered in preparation for the dendrochronological work to ensure that the archaeological recording and the dendrochronological results will be compatible.

N elevation	Gallery.1.
E elevation	Gallery.2.
S elevation	Gallery.3.
W elevation	Gallery.4.
Floor	Gallery.5.
Roof	Gallery.6.

This has resulted in some double numbering since the rafter of an A frame is assigned a number as part of the roof and also where it touches the elevation but a cross reference of all double numbers is provided in the context list for the roof, **Appendix 1**.

Since no internal elevation drawings of the N range exist the major context numbers have been marked on a key plan **Appendix 8** of the gallery space and digital photography was used to record the intervention and features revealed within the N and S walls.

3.0 DESCRIPTION

Work began along the S elevation with the removal of 14 panels of masonry **Gallery.3.001-Gallery.3.014** from between the ashlar timbers **Gallery.3.015-Gallery.3.024**, **Gallery.3.075** and **Gallery.3.077** of A frames **Gallery.6.001**, **Gallery.6.002**, **Gallery.6.005**, **Gallery.6.006**, **Gallery.6.009**, **Gallery.6.010**, **Gallery.6.013**, **Gallery.6.014**, **Gallery.6.017**, **Gallery.6.018**, rafter **Gallery.3.078** and **Gallery.3.089**.

Panels **Gallery.3.001-Gallery.3.014** were not load bearing, though they may have prevented lateral movement of the ashlar timbers, the primary function of the panels was probably insulation and aesthetics. The semi-coursed grey sandstone rubble panels were built directly on to the wall head of the S elevation and were clearly a different build from the larger coursed red and grey sandstone rubble build of the wall below, **Gallery.3.069**, **Gallery.3.070**, **Gallery.3.071**, **Gallery.3.072** and **Gallery.3.073**.

The panels were numbered from W to E by MCU staff and the individual stones within the panels were marked to enable reconstruction. The panels were removed one by one and the marked stones were stored in rubble sacks marked with the number of the panel. Mortar and small debris was disposed of but a number of mortar samples were taken from the panels. In all cases the mortar was cream lime mortar, though the consistency did vary, for example **Gallery.3.014** lime mortar was very crumbly and powdery whereas **Gallery.3.011** was fairly hard. Generally the panels were 1 to 2 courses deep. There were 4 tell tales within the pointing of panels **Gallery.3.001**, **Gallery.3.004**, **Gallery.3.005** and **Gallery.3.013** probably from the early 20th Century confirming concerns about the stability of the roof at this time. Three of the tell tales **Gallery.3.065**, **Gallery.3.066** and **Gallery.3.067** were retained as small finds.

Where a panel was removed between an ashlar and a window bay as was the case with panels **Gallery.3.003**, **Gallery.3.004**, **Gallery.3.006**, **Gallery.3.007**, **Gallery.3.009**, **Gallery.3.010** and **Gallery.3.012**, the difference between the lower and upper window reveals was highlighted. The lower section of each reveal consisted of 'normal' sandstone quoins but the upper section of the reveal, in each case 4 courses high, consisted of a 'veneer' of sandstone intended to present the illusion of a full solid window bay where in fact the wall head ends halfway up the window because it is a dormer. These 'veneer' reveals are important because they indicate that there were always panels of masonry between the ashlars, though the recently removed panels are most likely not the originals. This contrasts with the similar roof above the Gatehouse in which there are no masonry panels between the ashlars. Evidence that the upper window reveals are not a later addition can be seen on lower window reveal **Gallery.3.044** in which the top quoin of the lower reveal is shaped to form the bottom 'veneer' of the upper window reveal.

Once the panels were removed it was possible to examine the base of the roof timbers on the wall head behind the panels. A full description of all the features revealed during the intervention including dimensions, condition and fixtures was recorded on contexts sheets, the descriptions below are not as detailed as the paper record but are intended to highlight the main observations and support the interpretations made during the intervention.

The W most timber revealed to the W of panel **Gallery.3.001** is rafter **Gallery.3.078**, behind ashlar **Gallery.3.075**. This rafter and ashlar lie to the W of A frame **Gallery.6.001** and are in fact part of the W chamber purlin roof since they do not form a full A frame having no equivalent timbers to the N. The ashlar timber **Gallery.3.075** sits on top of sandstone block **Gallery.3.076**, a distinctive stone that may have been reused for the purpose of supporting the ashlar. The horizontal brace that would have once joined the base of rafter **Gallery.3.078** to the base of ashlar **Gallery.3.077** was missing, probably removed because it was rotten, and the base of the rafter was sawn off in order to insert sawn block of wood **Gallery.3.107**, probably an early 20th Century intervention. It is likely that this alteration to the bottom of the rafter removed the tenon which would have joined it to the original horizontal timber. It was not possible to feel a mortice in the base of ashlar **Gallery.3.075** because of some remaining panel **Gallery.3.001**. Attached to the E side of rafter **Gallery.3.078** there was a 20th Century sawn pine sarking support **Gallery.3.106** the position of which was unusual in that it was not aligned with the rafter and the sarking but was vertical.

A frame **Gallery.6.001**: Rafter **Gallery.3.079** and ashlar **Gallery.3.015** were

revealed behind panel **Gallery.3.001** and **Gallery.3.002**. The horizontal brace that would have once joined the base of rafter **Gallery.3.079** to the base of ashlar **Gallery.3.015** is missing, probably removed because it was rotten, and the base of the rafter was sawn off in order to insert sawn block of wood **Gallery.3.108**, probably an early 20th Century intervention. It is likely that this alteration to the bottom of the rafter removed the tenon which would have joined it to the original horizontal timber. Rather than sitting directly on top of the wall head Ashlar **Gallery.3.015** sits on top of a small wedge of wood. There is also no mortice at the base of ashlar **Gallery.3.015**. It appears that the base of the ashlar has been sawn off, blocking **Gallery.3.001** and **Gallery.3.002** built up underneath it and the wedge of wood driven in to secure the ashlar. The wedge does not look modern and may be reused wood from the base of the ashlar. There is no question that the entire ashlar has been replaced since the mortice and tenon joint with the rafter is original. This alteration provides evidence that the recently removed panels were not original. Attached to the E side of rafter **Gallery.3.079** there is a 20th Century sawn pine sarking support **Gallery.3.105** the position of which is unusual in that it is not aligned with the rafter and the sarking but is vertical.

A frame **Gallery.6.002**: Rafter **Gallery.3.080** and Ashlar **Gallery.3.016** were revealed behind panel **Gallery.3.002** and **Gallery.3.003**. Very similar to A frame **Gallery.6.001**. The horizontal brace that would have once joined the base of rafter **Gallery.3.080** to the base of ashlar **Gallery.3.016** is missing, probably removed because it was rotten, and the base of the rafter was sawn off in order to insert sawn block of wood **Gallery.3.109**, probably an early 20th Century intervention. It is likely that this alteration to the bottom of the rafter removed the tenon which would have joined it to the original horizontal timber. Rather than sitting directly on top of the wall head Ashlar **Gallery.3.015** sits on top of a small wedge of wood. There is also no mortice at the base of ashlar **Gallery.3.016**. It appears that the base of the ashlar has been sawn off, blocking **Gallery.3.002** and **Gallery.3.003** built up underneath it and the wedge of wood driven in to secure the ashlar. The wedge does not look modern and may be reused wood from the base of the ashlar. There is no question that the entire ashlar has been replaced since the mortice and tenon joint with the rafter is original. This alteration provides evidence that the sandstone rubble panels were not original. Attached to the W side of rafter **Gallery.3.080** there is a 20th Century sawn pine sarking support **Gallery.3.104** the position of which is unusual in that it is not aligned with the rafter and the sarking but is vertical. To the E of rafter **Gallery.3.080** there is a subsidiary rafter **Gallery.3.103** associated with the dormer roof over the dormer window.

A frame **Gallery.6.005**: Rafter **Gallery.3.081**, ashlar **Gallery.3.017** and horizontal brace **Gallery.3.090** were revealed behind panel **Gallery.3.004** and **Gallery.3.005**. The horizontal brace is extremely rotten to the S exposing the tenon at the bottom of rafter **Gallery.3.081** and effectively leaving the rafter 'floating' above the wallhead supported only by ashlar **Gallery.3.017**. The horizontal brace is still attached to the base of the ashlar with a mortice and tenon joint. The ashlar has been cut at the base, most likely during the construction of the roof, to fit a step in the wall head created by the top quoin of window reveal **Gallery.3.030**. Attached to the E side of rafter **Gallery.3.081** there is a 20th Century sawn pine sarking support **Gallery.3.093** aligned with the rafter and sarking.

A frame **Gallery.6.006**: Rafter **Gallery.3.082**, ashlar **Galley.3.018** and horizontal brace **Gallery.3.091** were revealed behind panel **Gallery.3.005** and **Gallery.3.006**. The horizontal brace is fairly rotten, exposing a little of the tenon at the bottom of rafter **Gallery.3.082** and leaving it poorly supported. Attached to the W side of rafter **Gallery.3.082** there is a 20th Century sawn pine sarking support **Gallery.3.094** aligned with the rafter and sarking. To the E of the rafter there is a subsidiary rafter **Gallery.3.101** and sarking support **Gallery.3.102** associated with the dormer roof over the dormer window.

A frame **Gallery.6.009**: Rafter **Gallery.3.083**, ashlar **Gallery.3.019** and horizontal brace **Gallery.3.092** were revealed behind panel **Gallery.3.007** and **Gallery.3.008**. The horizontal brace is very rotten, exposing the tenon at the bottom of rafter **Gallery.3.083** and leaving it supported only by ashlar **Gallery.3.019**. Attached to the W side of rafter **Gallery.3.083** there is a 20th Century sawn pine sarking support **Gallery.3.095** aligned with the rafter and sarking.

A frame **Gallery.6.010**: Rafter **Gallery.3.084** and ashlar **Gallery.3.020** were revealed behind panel **Gallery.3.008** and **Gallery.3.009**. The horizontal brace is missing exposing the tenon at the bottom of rafter **Gallery.3.084** and leaving it supported only by ashlar **Gallery.3.020**. There is a mortice in the base of the ashlar where it would have connected to the missing horizontal brace. There is no sarking support attached to the rafter. To the E of the rafter there is a subsidiary rafter **Gallery.3.100** associated with the dormer roof over the dormer window.

The base of A frames **Gallery.6.005**, **Gallery.6.006**, **Gallery.6.009** and **Gallery.6.010** provide no evidence that the panels **Gallery.3.004**, **Gallery.3.005**, and **Gallery.3.006** have been replaced but it is likely that all 14 panels are part of the

programme of work given the similar character of the build and mortar.

A frame **Gallery.6.013**: Rafter **Gallery.3.085** and ashlar **Gallery.3.021** were revealed behind panel **Gallery.3.010** and **Gallery.3.011**. The rafter is a 20th Century replacement probably dating to 1917, it is marked on plan 195/230/24 as a modern rafter. It is bolted to the original rafter further up in the roof. The modern rafter sits directly on the wall head. The ashlar timber is also a replacement and though the timber looks reused it is not a reused original ashlar as the dimensions are dissimilar to the other ashlar timbers and there is no evidence of a mortice and tenon joint at the top or bottom of the ashlar. It has been nailed on to rafter **Gallery.3.085** which has been cut at this point to accommodate the awkward joint. This shows that ashlar **Gallery.3.021** serves no structural function in the roof and is purely an attempt to reconstruct base of the A frame. Panel **Gallery.3.010** and **Gallery.3.011** were then built up underneath the ashlar and a wooden block was positioned under the ashlar. This provides evidence that panel **Gallery.3.010**, **Gallery.3.011** and possibly all 14 panels were built in 1917.

A frame **Gallery.6.014**: Rafter **Gallery.3.086** and ashlar **Gallery.3.022** were revealed behind panel **Gallery.3.011** and **Gallery.3.012**. The horizontal brace that would have once joined the base of rafter **Gallery.3.079** to the base of ashlar **Gallery.3.015** is missing, probably removed because it was rotten, and the base of the rafter was sawn off in order to insert sawn block of wood **Gallery.3.097**, probably an early 20th Century intervention. It is likely that this alteration to the bottom of the rafter removed the tenon which would have joined it to the original horizontal timber. Rather than sitting directly on top of the wall head Ashlar **Gallery.3.022** sits on top of a small wedge of wood. There is also no mortice at the base of ashlar **Gallery.3.022**. It appears that the base of the ashlar has been sawn off, blocking **Gallery.3.011** and **Gallery.3.012** built up underneath it and the wedge of wood driven in to secure the ashlar. The wedge does not look modern and may be reused wood from the base of the ashlar. There is no question that the entire ashlar has been replaced since the mortice and tenon joint with the rafter is original. This alteration provides evidence that the recently removed panels were not original and since panel **Gallery.3.011** was most likely constructed in 1917 it follows that panel **Gallery.3.012** was most likely constructed at this time too. Attached to the W side of rafter **Gallery.3.079** there is a 20th Century sawn pine sarking support **Gallery.3.096** aligned with the rafter and sarking. To the E of the rafter there is a subsidiary rafter **Gallery.3.098**

and sarking support **Gallery.3.099** associated with the dormer roof over the dormer window.

A frame **Gallery.3.017**: Rafter **Gallery.3.087** and ashlar **Gallery.3.023** were revealed behind panel **Gallery.3.013**. The horizontal brace is missing, exposing the tenon at the base of the rafter and leaving it supported only by ashlar **Gallery.3.023**. There is a mortice in the base of the ashlar where it would have connected to the missing horizontal brace. Attached to the E side of rafter **Gallery.3.087** there is a 20th Century sawn pine sarking support **Gallery.3.115** aligned with the rafter and sarking.

A frame **Gallery.3.018**: Rafter **Gallery.3.088**, ashlar **Gallery.3.024** and horizontal brace **Gallery.3.113** were revealed behind panel **Gallery.3.013** and **Gallery.3.014**. All the timbers appeared to be in a good condition, probably due to the protected position of the S side of A frame **Gallery.3.018** in the corner of the roof join between the N and the E range. Attached to the E side of rafter **Gallery.3.088** there is a 20th Century sawn pine sarking support **Gallery.3.116** aligned with the rafter and sarking. The ashlar post was protected from the blocking on either side by slates, a feature which was also noted on ashlar **Gallery.3.077** and on some of the rafters of the N elevation.

The E most timber revealed to the W of panel **Gallery.3.014** is rafter **Gallery.3.089**, behind ashlar **Gallery.3.077**. This rafter and ashlar lie to the E of A frame **Gallery.6.018** and may part of the E chamber purlin roof since they do not appear to form a full A frame having no visible equivalent timbers to the N. Rafter **Gallery.3.089**, ashlar **Gallery.3.077** and horizontal brace **Gallery.3.114** were revealed behind panel **Gallery.3.014**. All the timbers appeared to be in a good condition, probably due to the protected position of rafter **Gallery.3.089** in the corner of the roof join between the N and the E range. Attached to the E side of rafter **Gallery.3.088** there is a 20th Century sawn pine sarking support **Gallery.3.118** aligned with the rafter and sarking. The ashlar post was protected from the blocking on the E side by slates, a feature which was also noted on ashlar **Gallery.3.024** and on some of the rafters of the N elevation.

This concluded the work on the S elevation. The intervention on the N elevation was less comprehensive than that on the S since the N wall is thicker than the S and the entire base of A frames **Gallery.6.001-Gallery.6.018** is subsumed within the wall so there are no ashlar visible in the N wall (with the exception of those visible in the turrets of the N elevation). Since there are no ashlar in the N wall there is not the

same system of panels above the wall head. Instead there are a number of features including two chimney breasts, the E and W window reveals of two windows, and masonry panels above the entrance to the E and W turrets and the central turret stair. Only four small areas of masonry were removed from the N elevation, as with the S elevation a full description of the all the features revealed during the intervention including dimensions, condition and fixtures was recorded on context sheets, the descriptions below are not as detailed as the paper record but are intended to highlight the main observations and support the interpretations made during the intervention.

The first section of masonry removed from the N elevation was 450mm wide by 400mm high section from the top of roughly coursed sandstone rubble masonry **Gallery.1.001** to the W of window recess **Gallery.1.030**. The masonry was 1 to 2 courses deep pointed with 20th Century concrete and bonded with lime mortar. A sample of mortar was taken. It is not clear whether this masonry was original or replaced. Slates were visible on the underside of the rafters protecting the wood from **Gallery.1.001** similar to those seen in panels **Gallery.3.013** and **Gallery.3.014**. Behind **Gallery.1.001** there is a void down to the wall head which was not clearly visible because it was obscured by detritus **Gallery.1.043**.

A frame **Gallery.6.001**: Rafter **Gallery.1.012** and ashlar **Gallery.1.039** were partially revealed behind masonry **Gallery.1.001**. The visible timber is slightly rotted but it is not possible to see the condition of the W side or base of the timber or to determine whether there is a horizontal brace between the rafter and the ashlar. Attached to the E side of rafter **Gallery.1.012** is a 20th Century sawn sarking support.

A frame **Gallery.6.002**: Rafter **Gallery.1.013** and ashlar **Gallery.1.042** were also partially revealed behind masonry **Gallery.1.001**. The visible timber appeared to be fair but it is not possible to see the condition of the E side or base of the timber or to determine whether there is a horizontal brace between the rafter and the ashlar. No sarking support is visible on the W facing side of the timber but there may be one attached to the E side.

The second section of masonry removed from the N elevation was a very small triangular area between two sandstone blocks 200mm high by 200mm at its widest point at the top of the E window reveal **Gallery.1.003** of the W window recess **Gallery.1.030**. The material removed from this area was mainly 20th Century concrete pointing, but behind this some small fragments of sandstone, and some

slate was removed. This revealed a hard brown mortar. A sample of mortar was taken.

A frame **Gallery.6.005**: Rafter **Gallery.1.016** was partially revealed behind masonry **Gallery.1.003**. Only a small section of the W side of rafter **Gallery.1.016** was revealed, no ashlar or horizontal brace was visible but these presumably exist further inside the wall. A small cut was noted on the W side of the rafter which appears to be a false start for a mortice, a true mortice exists slightly further up for trimmer **Gallery.1.032** above chimney breast **Gallery.1.005**.

The third section of masonry removed from the N elevation was 630mm wide by up to 400mm deep from the W end of a grey sandstone rubble build **Gallery.1.007** bonded with concrete, probably early 20th Century. This strip of build runs between A frames **Gallery.6.007** and **Gallery.6.012** above the entrance to the central stair turret. This modern build is interesting because it lacks the 'pocket' features which are visible on some of the original build along the top of the wall under certain rafters. There is one beneath A frame **Gallery.6.003** on W window reveal **Gallery.1.002**, one beneath A frame **Gallery.6.007** on the E chimney quoins **Gallery.1.006** and two beneath A frames **Gallery.6.012** and **Gallery.6.013** in chimney breast masonry **Gallery.1.008**. Since grey sandstone rubble build **Gallery.1.007** does not contain the pockets it is likely that they were out of use by the early 20th Century but a pre 1912 elevation and cross section of the castle 195/230/4 indicates that they were used to support timbers attached to the lower tie beams of the roof.

A frame **Gallery.6.007**: Rafter **Gallery.1.018** and ashlar **Gallery.1.044** were revealed behind masonry **Gallery.1.007**. Both timbers were in a poor condition, visibly rotten. It was not possible to see the base of the timbers or a horizontal brace because the wall head was hidden by detritus **Gallery.1.048**. Attached to the E side of Rafter **Gallery.6.018** was 20th Century sarking support **Gallery.3.045**.

A frame **Gallery.6.008**: Rafter **Gallery.1.019**, ashlar **Gallery.1.049** and horizontal brace **Gallery.1.059** were revealed behind masonry **Gallery.1.007**. There was a slate pinner built into the concrete of blocking **Gallery.1.007** to protect the rafter. The timbers appear to be in good condition. In this case it is possible see to the horizontal brace because it is visible in the wall of the turret stair below. There is a series of 20th Century sarking supports on the W side of rafter **Gallery.1.019**, **Gallery.1.050**-**Gallery.1.051**. These may be necessary because of an external join in the sarking over the turret roof.

The fourth section of masonry removed from the N elevation was also 630mm wide

by up to 400mm deep from the E end of grey sandstone rubble build **Gallery.1.007**.

A frame **Gallery.6.011**: Rafter **Gallery.1.022** ashlar **Gallery.1.060** and horizontal brace **Gallery.1.066** were revealed behind the E end of grey sandstone rubble build **Gallery.1.007**. In this case it is possible to see the horizontal brace because it is visible in the wall of the turret stair below, it is not visible from above because the wall head is covered by detritus **Gallery.1.065**. The timbers appear to be in good condition. There were slate pinnars built into the concrete of blocking **Gallery.1.007** to the E, W and underside of rafter **Gallery.1.022** to protect the timber.

The W side of a small subsidiary rafter **Gallery.1.062** was also revealed behind the E end of grey sandstone rubble build **Gallery.1.007**. This rafter obscured the W side of A frame **Gallery.6.012**; rafter **Gallery.1.023** from site. The subsidiary rafter is crudely jointed with a mortice and tenon joint into a horizontal timber **Gallery.1.063**, which runs between A frame **Gallery.1.011** and **Gallery.2.012** approximately 0.50m above rubble build **Gallery.1.007**. The horizontal timber is crudely jointed in to the A frames with mortice and tenon joints. The purpose of this subsidiary rafter and brace is probably to support a join between sarking boards occurring between the rafters. It is not possible to say whether **Gallery.1.062** and **Gallery.1.063** are original features of the 1590 roof, technically they should be since it should not have been possible to add mortice and tenon joints between the rafters once the roof was in place, however the joints are very crude compared with the tight joints elsewhere in the roof and it may have been possible to manoeuvre the timber in to place after the roof was built.

This concluded the work on the N elevation.

4.0 CONCLUSION

The panels of masonry removed from the S elevation of the Gallery were most likely early 20th Century replacement. This is certainly the case for panels **Gallery.3.010**, **Gallery.3.011** built around the base of A frame **Gallery.6.013** the rafter of which **Gallery.3.085** was replaced in 1917. It is also possible to say that panels **Gallery.3.001**, **Gallery.3.002**, **Gallery.3.003**, and **Gallery.3.012** have been replaced at some time because of the alteration to the base of the ashlar posts of A frame **Gallery.6.001**, **Gallery.6.002** and **Gallery.6.014**. There is no direct evidence that the remaining panels of masonry **Gallery.3.004**, **Gallery.3.005**, **Gallery.3.006**,

Gallery.3.007, Gallery.3.008, Gallery.3.009, Gallery.3.013 and Gallery.3.014 have been replaced other than the similarity to the replaced panels in terms of stone type, build and mortar. However it is an oddity that the base of the A frames behind these panels, **Gallery.6.005, Gallery.6.006, Gallery.6.009, Gallery.6.010 and Gallery.6.013** are badly rotten and no intervention such as that taken behind the definitely replaced panels, to remove the base of the rafters and support them with a sawn block, has been taken in these cases.

It is clear that the condition of the timbers is worst where they are close to the reveal of window apertures. Those protected in the corner of the N and E range, the S side of A frame **Gallery.3.018** and E rafter **Gallery.3.089** are in good condition. This is partly because birds have gained access to the void behind the panels beside the window reveals and have nested between the horizontal brace timbers, contributing to the rot. The condition of the timbers on the N elevation of the Gallery is less clear since fewer were revealed however many A frames **Gallery.6.003, Gallery.6.004, Gallery.6.006, Gallery.6.009, Gallery.6.010, Gallery.6.013, Gallery.6.015, Gallery.6.016 and Gallery.6.017** are trimmed above the wall head because of features such as turrets, chimneys and windows. Other than some woodworm the trimmed rafters appear to be in good condition because they have been protected within the building. This is also the case with A frames **Gallery.6.008 and Gallery.6.011** which end within the central stair turret. It was not possible to see the very base of the remaining A frames, **Gallery.6.001, Gallery.6.002, Gallery.6.005, Gallery.6.007, Gallery.6.012, Gallery.6.014 and Gallery.6.017** within the N elevation because some were not revealed and those that were partially revealed were obscured at the base by detritus on the wallhead.

In all cases on the N and S elevation the sarking revealed behind the panels of masonry removed was the most recent 20th Century sawn pine sarking **Gallery.3.110 and Gallery.1.058** which also covers the majority of the apex section of the main roof. This sarking revealed behind the walls was accompanied by a range of 20th Century sarking supports attached to the sides of the rafters of the A frames. No older sarking supports were seen. The attachment of the new sarking can not be accurately dated since this could have occurred from the outside with no disturbance to the internal masonry however a few pieces of scrunched up newspaper were recovered from above the dormer roof **Gallery.6.102** of the W window bay **Gallery.1.030** on the N elevation, probably placed there as a crude insulation, dated to November 27th 1977. It is possible that this dates the 20th Century sarking above all the dormer windows and possibly dates the most recent sarking on the main roof.

Peg sarking **Gallery.3.112 and Gallery.1.057** survives on the mid level of both the N

and S elevations of the main roof; only one board is visible on the S elevation. Anne Crone identified the peg sarking as pine, which if original would be unusual in a 1590 roof with oak sarking being more common at this time. This may indicate that the peg sarking is not original; however it remains the oldest on the Gallery roof with the possible exception of one board trapped within the masonry of the E reveal **Gallery.1.010** of the E window recess **Gallery.1.031** on the N elevation. Only the very edge of this board is visible in the reveal, it is not definite that this board is a trapped 1590 sarking board since the masonry at the top of the window reveal may have been rebuilt.

A third type of sarking was identified on the S elevation only, this was a rough sawn pine sarking **Gallery.3.111** with some white staining, occurring at mid level in the main roof, which may be older than 20th Century sarking **Gallery.3.110**. However this is not certain and it may only represent different timber or scavenged timber available at this time.

5.0 FURTHER WORK

As stated at the start of this report, the work carried out during this intervention can in no way represent a full survey of the Gallery roof. There are several features left unrecorded, the most important of which is the vast quantity of reused timber used in the 1590 roof. Evidence of reuse is seen in redundant mortice holes and peg holes on the lower and upper tie beams, old numbering systems used in a previous roof system, old nails and nail holes, and swathes of peg holes along the base of some rafters and tie beams either from a ceiling in a previous roof structure or from sarking on the exterior of a previous roof structure. Reused timbers are also seen in the circular turret roof and the purlin roofs over the E and W chambers. A total survey of the N range roof, including the roof over the Gallery, the E and W chamber and the turret roofs, in conjunction with a programme of dendrochronological dating could provide data that would enable the reconstruction of the original roof from where the timbers came. Existing survey cross-sections of the A frames **Gallery.6.001-Gallery.6.018** could be used to mark the position of features indicating reuse, along with a detailed context description and measurements of features on the timber. Similar work could be carried out for the purlin roofs and turret roofs.

Further detailed recording of the sarking may reveal subtler phasing than that discussed above; possibly even dendrochronological dating of the peg sarking if a suitable sample can be located.

The understanding of the N range roof would also benefit from a SBR survey of the

interior walls in the Gallery, E and W chambers. A full record of features such as the pockets noted on the N elevation would add to understanding of the 1590 roof since the timbers suggested by these pockets have been removed. It is also clear that the lower tie beams were at some point used as a floor because of features such as windows and a fireplace in the E and W elevations of the Gallery above the level of the tie beams, though it is not clear if the purlin roof ties of the E and W chambers were used in the same way.

Gallery North Elevation

Context	Description
Gallery.1.001	Grey sandstone build between rafters Gallery.1.012 and Gallery.1.013 (A frames "001" and "002").
Gallery.1.002	W quoins of W window recess Gallery.1.030 .
Gallery.1.003	E quoins of E window recess Gallery.1.030 / W quoins of chimney breast Gallery.1.005 .
Gallery.1.004	Top two grey sandstone quoins of the E quoins of the E window recess/W quoins of the chimney breast under rafter Gallery.1.016 (A frame "005") out of alignment with all the quoin stones below.
Gallery.1.005	Coursed red and grey sandstone masonry of the W chimney breast.
Gallery.1.006	E quoins of the W chimney breast.
Gallery.1.007	Strip of grey sandstone rubble blocking between rafters Gallery.1.018 and Gallery.1.023 (A frames "007" and "012").
Gallery.1.008	Coursed red sandstone masonry of the E chimney breast.
Gallery.1.009	W quoins of the E window recess.
Gallery.1.010	Grey sandstone rubble blocking above the E quoins Gallery.1.011 of the E window recess Gallery.1.031
Gallery.1.011	Red sandstone E quoins of the E window recess Gallery.1.031
Gallery.1.012	N rafter of A frame "001"
Gallery.1.013	N rafter of A frame "002"
Gallery.1.014	N rafter of A frame "003"
Gallery.1.015	N rafter of A frame "004"
Gallery.1.016	N rafter of A frame "005"
Gallery.1.017	N rafter of A frame "006"
Gallery.1.018	N rafter of A frame "007"
Gallery.1.019	N rafter of A frame "008"
Gallery.1.020	N rafter of A frame "009"
Gallery.1.021	N rafter of A frame "010"
Gallery.1.022	N rafter of A frame "011"
Gallery.1.023	N rafter of A frame "012"
Gallery.1.024	N rafter of A frame "013"
Gallery.1.025	N rafter of A frame "014"
Gallery.1.026	N rafter of A frame "015"
Gallery.1.027	N rafter of A frame "016"
Gallery.1.028	N rafter of A frame "017"
Gallery.1.029	N rafter of A frame "018"
Gallery.1.030	W window bay.
Gallery.1.031	E window bay.
Gallery.1.032	Trimmer above window bay Gallery.1.030 trimming rafters Gallery.1.014 and Gallery.1.015 (A frame "003" and "004").
Gallery.1.033	Trimmer above chimney breast Gallery.1.005 trimming rafter Gallery.1.017 (A frame "006").
Gallery.1.034	Trimmer above rubble build Gallery.1.007 - over the spiral stair turret - trimming rafters Gallery.1.020 and Gallery.1.021 (A frame "009" and "010").
Gallery.1.035	Trimmer above chimney breast Gallery.1.008 trimming rafter Gallery.2.024 (A frame "013")
Gallery.1.036	Trimmer above E window bay Gallery.1.031 trimming rafters Gallery.1.027 and Gallery.1.028 (A frames "016" and "017")
Gallery.1.037	Trimmer above rubble build Gallery.1.010 - above the E turret - trimming rafter Gallery.1.029 (A frame "018").
Gallery.1.038	20 th Century sawn pine sarking with nails, similar to Gallery.3.110 on the S elevation.
Gallery.1.039	Ashlar post attached to rafter Gallery.1.012 (A frame "001")
Gallery.1.040	Sawn wood sarking support attached to rafter Gallery.1.012 (A frame "001").
Gallery.1.041	UNUSED NUMBER
Gallery.1.042	Ashlar post attached to rafter Gallery.1.013 (A frame "002")
Gallery.1.043	Lime mortar and rubble detritus behind build Gallery.1.001 on the wall head.
Gallery.1.044	Ashlar post attached to rafter Gallery.1.018 (A frame "007")
Gallery.1.045	Sarking support attached to the E side of rafter Gallery.1.018 (A frame "007").
Gallery.1.046	Sarking support attached to the E side of sarking support Gallery.1.045

Context	Description
Gallery.1.047	Modern brace between sarking Gallery.1.038 and detritus Gallery.1.048
Gallery.1.048	Rubble, wood and mortar detritus behind build Gallery.1.007 between rafters Gallery.1.018 and Gallery.1.019 (A frames "007" and "008") on the wall head.
Gallery.1.049	Ashlar post attached to rafter Gallery.1.019 (A frame "008").
Gallery.1.050	Sawn pine sarking support on W side of rafter Gallery.1.019 (A frame "008").
Gallery.1.051	One of two sawn pine sarking supports on the W side of Gallery.1.050
Gallery.1.052	Two of two sawn pine sarking supports on the W side of Gallery.1.050
Gallery.1.053	One of two small pine strips on W side of Gallery.1.052
Gallery.1.054	Two of two small pine strips on W side of Gallery.1.052
Gallery.1.055	Small pine strip of W side of Gallery.1.053 and Gallery.1.054
Gallery.1.056	Pine brace between pine strip Gallery.1.054 and detritus Gallery.1.048
Gallery.1.057	Peg sarking, pine, similar to Gallery.3.112 on the S elevation.
Gallery.1.058	UNUSED NUMBER
Gallery.1.059	Horizontal brace under rafter Gallery.1.019 (A frame "008") visible in the W side of the stair turret.
Gallery.1.060	Ashlar post attached to rafter Gallery.1.022 (A frame "011")
Gallery.1.061	Slanting sarking support attached to the E side of rafter Gallery.1.022 (A frame "011").
Gallery.1.062	Small subsidiary rafter attached to the W side of Gallery.1.022 (A frame "012").
Gallery.1.063	Small timber brace at the top of Galler.1.062 roughly mortice and tenon jointed into rafters Gallery.1.022 and Gallery.1.023 (A frames "011" and "012").
Gallery.1.064	Sarking support timber attached to the W side of Gallery.1.062
Gallery.1.065	Detritus of mortar, stones and wood behind Gallery.1.007 between rafters Gallery.1.022 and Gallery.1.023 (A frames "011" and "12") on the wall head.
Gallery.1.066	Horizontal brace under rafter Gallery.1.022 (A frame "011") visible in the E side of the stair turret.

Gallery South Elevation

Context	Description
Gallery.3.001	Roughly coursed sandstone rubble blocking to the W of ashlar Gallery.3.015 (A frame "001").
Gallery.3.002	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.015 and Gallery.3.016 (A frames "001" and "002").
Gallery.3.003	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.016 (A frame "002") and upper window reveal Gallery.3.057 of window recess Gallery.3.025
Gallery.3.004	Roughly coursed sandstone rubble blocking between upper window reveal Gallery.3.058 of window recess Gallery.3.025 and ashlar Gallery.3.017 (A frame "005").
Gallery.3.005	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.017 and Gallery.3.018 (A frames "005" and "006").
Gallery.3.006	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.018 (A frame "006") and upper window reveal Gallery.3.059 of window recess Gallery.3.026
Gallery.3.007	Roughly coursed sandstone rubble blocking between upper window reveal Gallery.3.060 of window recess Gallery.3.026 and ashlar Gallery.3.019 (A frame "009").
Gallery.3.008	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.019 and Gallery.3.020 (A frames "009" and "010").
Gallery.3.009	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.020 (A frame "010") and upper window reveal Gallery.3.061 of window recess Gallery.3.027
Gallery.3.010	Roughly coursed sandstone rubble blocking between upper window reveal Gallery.3.062 of window recess Gallery.3.027 and ashlar Gallery.3.021 (A frame "013").
Gallery.3.011	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.021 and Gallery.3.022 (A frames "013" and "014").
Gallery.3.012	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.022 (A frame "014") and upper window reveal Gallery.3.063 of window recess Gallery.3.028
Gallery.3.013	Roughly coursed sandstone rubble blocking between ashlar Gallery.3.023 and Gallery.3.024 (A frames "017" and "018").

Context	Description
Gallery.3.014	Roughly coursed sandstone rubble blocking to the E of ashlar Gallery.3.024 (A frame "018").
Gallery.3.015	Ashlar attached to rafter Gallery.3.079 (A frame "001")
Gallery.3.016	Ashlar attached to rafter Gallery.3.080 (A frame "002")
Gallery.3.017	Ashlar attached to rafter Gallery.3.081 (A frame "005")
Gallery.3.018	Ashlar attached to rafter Gallery.3.082 (A frame "006")
Gallery.3.019	Ashlar attached to rafter Gallery.3.083 (A frame "009")
Gallery.3.020	Ashlar attached to rafter Gallery.3.084 (A frame "010")
Gallery.3.021	Ashlar attached to rafter Gallery.3.085 (A frame "013")
Gallery.3.022	Ashlar attached to rafter Gallery.3.086 (A frame "014")
Gallery.3.023	Ashlar attached to rafter Gallery.3.087 (A frame "017")
Gallery.3.024	Ashlar attached to rafter Gallery.3.088 (A frame "018")
Gallery.3.025	W window recess.
Gallery.3.026	W central window recess.
Gallery.3.027	E central window recess.
Gallery.3.028	E window recess.
Gallery.3.029	W quoins of window recess Gallery.3.025
Gallery.3.030	E quoins of window recess Gallery.3.025
Gallery.3.031	Uncoursed sandstone rubble window back of window recess Gallery.3.025
Gallery.3.032	Lintel above window aperture Gallery.3.034
Gallery.3.033	Sill below window aperture Gallery.3.034
Gallery.3.034	Window aperture in window recess Gallery.3.025
Gallery.3.035	Window in aperture Gallery.3.034
Gallery.3.036	W quoins of window recess Gallery.3.026
Gallery.3.037	E quoins of window recess Gallery.3.026
Gallery.3.038	Uncoursed sandstone rubble window back of window recess Gallery.3.026
Gallery.3.039	Lintel above window aperture Gallery.3.041
Gallery.3.040	Sill below window aperture Gallery.3.041
Gallery.3.041	Window aperture in window recess Gallery.3.026
Gallery.3.042	Window in aperture Gallery.3.041
Gallery.3.043	W quoins of window recess Gallery.3.027
Gallery.3.044	E quoins of window recess Gallery.3.027
Gallery.3.045	Uncoursed sandstone rubble window back of window recess Gallery.3.027
Gallery.3.046	Lintel above window aperture Gallery.3.048
Gallery.3.047	Sill below window aperture Gallery.3.048
Gallery.3.048	Window aperture in window recess Gallery.3.027
Gallery.3.049	Window in aperture Gallery.3.048
Gallery.3.050	W quoins of window recess Gallery.3.028
Gallery.3.051	E quoins of window recess Gallery.3.028
Gallery.3.052	Uncoursed sandstone rubble window back of window recess Gallery.3.028
Gallery.3.053	Lintel above window aperture Gallery.3.055
Gallery.3.054	Sill below window aperture Gallery.3.055
Gallery.3.055	Window aperture in window recess Gallery.3.028
Gallery.3.056	Window in aperture Gallery.3.055
Gallery.3.057	Upper section "shell" of window margin Gallery.3.029
Gallery.3.058	Upper section "shell" of window margin Gallery.3.030
Gallery.3.059	Upper section "shell" of window margin Gallery.3.036
Gallery.3.060	Upper section "shell" of window margin Gallery.3.037
Gallery.3.061	Upper section "shell" of window margin Gallery.3.043
Gallery.3.062	Upper section "shell" of window margin Gallery.3.044
Gallery.3.063	Upper section "shell" of window margin Gallery.3.050
Gallery.3.064	Upper section "shell" of window margin Gallery.3.051
Gallery.3.065	Tell tale between sandstone rubble blocking Gallery.3.005 and ashlar Gallery.3.018
Gallery.3.066	Tell tale between sandstone rubble blocking Gallery.3.004 and ashlar Gallery.3.017
Gallery.3.067	Tell tale between sandstone rubble blocking Gallery.3.001 and ashlar Gallery.3.015
Gallery.3.068	Fossilised NE corner of 1500 gate house.
Gallery.3.069	Semi-coursed sandstone rubble build of wall to W of window recess Gallery.3.025
Gallery.3.070	Coursed sandstone rubble build of wall between window recess Gallery.3.025 and Gallery.3.026
Gallery.3.071	Coursed sandstone rubble/semi-ashlar build of wall between window recess Gallery.3.026 and Gallery.3.027
Gallery.3.072	Semi-coursed sandstone rubble build of wall between window recess

Context	Description
	Gallery.3.027 and Gallery.3.028
Gallery.3.073	Coursed sandstone rubble build of wall to E of window recess Gallery.3.028
Gallery.3.074	Tell tale between rubble blocking Gallery.3.013 and ashlar Gallery.3.024
Gallery.3.075	Ashlar to W of rubble blocking Gallery.3.001 (really part of the W chamber purlin roof) attached to rafter Gallery.3.078 .
Gallery.3.076	Rectangular block of sandstone on which Gallery.3.075 is supported.
Gallery.3.077	Ashlar to E of rubble blocking Gallery.3.014 (really part of the E chamber purlin roof) attached to rafter Gallery.3.089
Gallery.3.078	W rafter (really part of the W chamber purlin roof).
Gallery.3.079	S rafter of A frame "001" attached to ashlar Gallery.3.015
Gallery.3.080	S rafter of A frame "002" attached to ashlar Gallery.3.016
Gallery.3.081	S rafter of A frame "005" attached to ashlar Gallery.3.017
Gallery.3.082	S rafter of A frame "006" attached to ashlar Gallery.3.018
Gallery.3.083	S rafter of A frame "009" attached to ashlar Gallery.3.019
Gallery.3.084	S rafter of A frame "010" attached to ashlar Gallery.3.020
Gallery.3.085	S rafter of A frame "013" attached to ashlar Gallery.3.021
Gallery.3.086	S rafter of A frame "014" attached to ashlar Gallery.3.022
Gallery.3.087	S rafter of A frame "017" attached to ashlar Gallery.3.023
Gallery.3.088	S rafter of A frame "018" attached to ashlar Gallery.3.024
Gallery.3.089	E rafter (really part of the E chamber purlin roof).
Gallery.3.090	Horizontal brace connecting rafter Gallery.3.081 to ashlar Gallery.3.017 (A frame "005").
Gallery.3.091	Horizontal brace connecting rafter Gallery.3.082 to ashlar Gallery.3.018 (A frame "006").
Gallery.3.092	Horizontal brace connecting rafter Gallery.3.083 to ashlar Gallery.3.019 (A frame "009").
Gallery.3.093	Modern sawn sarking support attached to the E side of rafter Gallery.3.081 (A frame "005")
Gallery.3.094	Modern sawn sarking support attached to the W side of rafter Gallery.3.082 (A frame "006")
Gallery.3.095	Modern sawn sarking support attached to the E side of rafter Gallery.3.083 (A frame "009")
Gallery.3.096	Modern sawn sarking support attached to the W side of rafter Gallery.3.086 (A frame "014")
Gallery.3.097	Short, sawn block of wood supporting base of rafter Gallery.3.086 (A frame "014").
Gallery.3.098	Modern sawn subsidiary rafter to the E of rafter Gallery.3.086 related to the dormer roof above window recess Gallery.3.028
Gallery.3.099	Modern sawn sarking support attached to the W side of subsidiary rafter Gallery.3.098
Gallery.3.100	Modern sawn subsidiary rafter to the E of rafter Gallery.3.084 related to the dormer roof above window recess Gallery.3.027
Gallery.3.101	Subsidiary rafter to the E of rafter Gallery.3.082 related to the dormer roof above window recess Gallery.3.026
Gallery.3.102	Modern sawn sarking support attached to the W side of subsidiary rafter Gallery.3.101
Gallery.3.103	Subsidiary rafter to the E of rafter Gallery.3.080 related to the dormer roof above window recess Gallery.3.025
Gallery.3.104	Modern sawn upright attached to the W side of rafter Gallery.3.080 related to sarking (A frame "002")
Gallery.3.105	Modern sawn upright attached to the E side of rafter Gallery.3.079 related to sarking (A frame "001").
Gallery.3.106	Modern sawn upright attached to the E side of rafter Gallery.3.078 related to sarking (really part of the W chamber purlin roof).
Gallery.3.107	Short, sawn block of wood supporting base of rafter Gallery.3.078 (really part of the W chamber purlin roof).
Gallery.3.108	Short, sawn block of wood supporting base of rafter Gallery.3.079 (A frame "001").
Gallery.3.109	Short, sawn block of wood supporting base of rafter Gallery.3.080 (A frame "002").
Gallery.3.110	20 th Century, sawn pine sarking with nails, similar to Gallery.1.038 on the S elevation.
Gallery.3.111	Rough sawn pine sarking with nails
Gallery.3.112	Peg sarking, pine, similar to Gallery.1.057 on the N elevation.
Gallery.3.113	Horizontal brace connecting rafter Gallery.3.088 to ashlar Gallery.3.024 (A frame "018").
Gallery.3.114	Horizontal brace connecting rafter Gallery.3.089 to ashlar Gallery.3.077 (really part of the E chamber purlin roof).

Context	Description
Gallery.3.115	Modern sawn sarking support attached to the E side of rafter Gallery.3.087 (A frame "017").
Gallery.3.116	Modern sawn sarking support attached to the E side of rafter Gallery.3.088 (A frame "018").
Gallery.3.117	UNUSED NUMBER
Gallery.3.118	Modern sawn sarking support attached to the E side of rafter Gallery.3.089 (really part of the E chamber purlin roof).

Gallery Roof

Context	Description	N elevation	S elevation
Gallery.6.001	W most A frame "001"		
Gallery.6.002	A frame "002"		
Gallery.6.003	A frame "003"		
Gallery.6.004	A frame "004"		
Gallery.6.005	A frame "005"		
Gallery.6.006	A frame "006"		
Gallery.6.007	A frame "007"		
Gallery.6.008	A frame "008"		
Gallery.6.009	A frame "009"		
Gallery.6.010	A frame "010"		
Gallery.6.011	A frame "011"		
Gallery.6.012	A frame "012"		
Gallery.6.013	A frame "013"		
Gallery.6.014	A frame "014"		
Gallery.6.015	A frame "015"		
Gallery.6.016	A frame "016"		
Gallery.6.017	A frame "017"		
Gallery.6.018	E most A frame "018"		
Gallery.6.019	N rafter of A frame Gallery.6.001	Gallery.1.012	
Gallery.6.020	S rafter of A frame Gallery.6.001		Gallery.3.079
Gallery.6.021	Upper tie of A frame Gallery.6.001		
Gallery.6.022	Lower tie of A frame Gallery.6.001		
Gallery.6.023	N rafter of A frame Gallery.6.002	Gallery.1.013	
Gallery.6.024	S rafter of A frame Gallery.6.002		Gallery.3.080
Gallery.6.025	Upper tie of A frame Gallery.6.002		
Gallery.6.026	Lower tie of A frame Gallery.6.002		
Gallery.6.027	N rafter of A frame Gallery.6.003	Gallery.1.014	
Gallery.6.028	S rafter of A frame Gallery.6.003		
Gallery.6.029	Upper tie of A frame Gallery.6.003		
Gallery.6.030	Lower tie of A frame Gallery.6.003		
Gallery.6.031	N rafter of A frame Gallery.6.004	Gallery.1.015	
Gallery.6.032	S rafter of A frame Gallery.6.004		
Gallery.6.033	Upper tie of A frame Gallery.6.004		
Gallery.6.034	Lower tie of A frame Gallery.6.004		
Gallery.6.035	N rafter of A frame Gallery.6.005	Gallery.1.016	
Gallery.6.036	S rafter of A frame Gallery.6.005		Gallery.3.081
Gallery.6.037	Upper tie of A frame Gallery.6.005		
Gallery.6.038	Lower tie of A frame Gallery.6.005		
Gallery.6.039	N rafter of A frame Gallery.6.006	Gallery.1.017	
Gallery.6.040	S rafter of A frame Gallery.6.006		Gallery.3.082
Gallery.6.041	Upper tie of A frame Gallery.6.006		
Gallery.6.042	Lower tie of A frame Gallery.6.006		
Gallery.6.043	N rafter of A frame Gallery.6.007	Gallery.1.018	
Gallery.6.044	S rafter of A frame Gallery.6.007		
Gallery.6.045	Upper tie of A frame Gallery.6.007		
Gallery.6.046	Lower tie of A frame Gallery.6.007		
Gallery.6.047	N rafter of A frame Gallery.6.008	Gallery.1.019	
Gallery.6.048	S rafter of A frame Gallery.6.008		
Gallery.6.049	Upper tie of A frame Gallery.6.008		
Gallery.6.050	Lower tie of A frame Gallery.6.008		
Gallery.6.051	N rafter of A frame Gallery.6.009	Gallery.1.020	
Gallery.6.052	S rafter of A frame Gallery.6.009		Gallery.3.083
Gallery.6.053	Upper tie of A frame Gallery.6.009		

Context	Description	N elevation	S elevation
Gallery.6.001	W most A frame "001"		
Gallery.6.054	Lower tie of A frame Gallery.6.009		
Gallery.6.055	N rafter of A frame Gallery.6.010	Gallery.1.021	
Gallery.6.056	S rafter of A frame Gallery.6.010		Gallery.3.084
Gallery.6.057	Upper tie of A frame Gallery.6.010		
Gallery.6.058	Lower tie of A frame Gallery.6.010		
Gallery.6.059	N rafter of A frame Gallery.6.011	Gallery.1.022	
Gallery.6.060	S rafter of A frame Gallery.6.011		
Gallery.6.061	Upper tie of A frame Gallery.6.011		
Gallery.6.062	Lower tie of A frame Gallery.6.011		
Gallery.6.063	N rafter of A frame Gallery.6.012	Gallery.1.023	
Gallery.6.064	S rafter of A frame Gallery.6.012		
Gallery.6.065	Upper tie of A frame Gallery.6.012		
Gallery.6.066	Lower tie of A frame Gallery.6.012		
Gallery.6.067	N rafter of A frame Gallery.6.013	Gallery.1.024	
Gallery.6.068	S rafter of A frame Gallery.6.013 (truncated)		
Gallery.6.069	S rafter of A frame Gallery.6.013 (1917)		Gallery.3.085
Gallery.6.070	Upper tie of A frame Gallery.6.013		
Gallery.6.071	Lower tie of A frame Gallery.6.013		
Gallery.6.072	N rafter of A frame Gallery.6.014	Gallery.1.025	
Gallery.6.073	S rafter of A frame Gallery.6.014		Gallery.3.086
Gallery.6.074	Upper tie of A frame Gallery.6.014		
Gallery.6.075	Lower tie of A frame Gallery.6.014		
Gallery.6.076	N rafter of A frame Gallery.6.015	Gallery.1.026	
Gallery.6.077	S rafter of A frame Gallery.6.015		
Gallery.6.078	Upper tie of A frame Gallery.6.015		
Gallery.6.079	Lower tie of A frame Gallery.6.015		
Gallery.6.080	N rafter of A frame Gallery.6.016	Gallery.1.027	
Gallery.6.081	S rafter of A frame Gallery.6.016		
Gallery.6.082	Upper tie of A frame Gallery.6.016		
Gallery.6.083	Lower tie of A frame Gallery.6.016		
Gallery.6.084	N rafter of A frame Gallery.6.017	Gallery.1.028	
Gallery.6.085	S rafter of A frame Gallery.6.017		Gallery.3.087
Gallery.6.086	Upper tie of A frame Gallery.6.017		
Gallery.6.087	Lower tie of A frame Gallery.6.017		
Gallery.6.088	N rafter of A frame Gallery.6.018	Gallery.1.029	
Gallery.6.089	S rafter of A frame Gallery.6.018		Gallery.3.088
Gallery.6.090	Upper tie of A frame Gallery.6.018		
Gallery.6.091	Lower tie of A frame Gallery.6.018		
Gallery.6.092	N trimmer under A frames Gallery.6.003 and Gallery.6.004 (Window)	Gallery.1.032	
Gallery.6.093	S trimmer under A frames Gallery.6.003 and Gallery.6.004 (Window)		
Gallery.6.094	N trimmer under A frame Gallery.6.006 (Chimney)	Gallery.1.033	
Gallery.6.095	S trimmer under A frame Gallery.6.007 and Gallery.6.008 (Window)		
Gallery.6.096	N trimmer under A frames Gallery.6.009 and Gallery.6.010 (Stair turret)	Gallery.1.034	
Gallery.6.097	S trimmer under A frames Gallery.6.011 and Gallery.6.012 (Window)		
Gallery.6.098	N trimmer under A frame Gallery.6.013 (Chimney)	Gallery.1.035	
Gallery.6.099	N trimmer under A frames Gallery.6.015 and Gallery.6.016 (Window)	Gallery.1.036	
Gallery.6.100	S trimmer under A frames Gallery.6.015 and Gallery.6.016 (Window)		
Gallery.6.101	N trimmer under A frame Gallery.6.018 (turret)	Gallery.1.037	
Gallery.6.102	Dormer roof over W most window in the N elevation of the gallery.		
Gallery.6.103	Dormer roof over E most window in the N elevation of the gallery.		
Gallery.6.104	Dormer roof over E most window in the S elevation of the gallery.		
Gallery.6.105	Dormer roof over E central window in the S elevation of the gallery.		
Gallery.6.106	Dormer roof over W central window in the S		

Context	Description	N elevation	S elevation
Gallery.6.001	W most A frame "001" elevation of the gallery.		
Gallery.6.107	Dormer roof over W most window in the S elevation of the gallery.		
Gallery.6.108	S ashlar post under A frame Gallery.6.001		Gallery.3.015
Gallery.6.109	S ashlar post under A frame Gallery.6.002		Gallery.3.016
Gallery.6.110	S ashlar post under A frame Gallery.6.005		Gallery.3.017
Gallery.6.111	S ashlar post under A frame Gallery.6.006		Gallery.3.018
Gallery.6.112	S ashlar post under A frame Gallery.6.009		Gallery.3.019
Gallery.6.113	S ashlar post under A frame Gallery.6.010		Gallery.3.020
Gallery.6.114	S ashlar post under A frame Gallery.6.013		Gallery.3.021
Gallery.6.115	S ashlar post under A frame Gallery.6.014		Gallery.3.022
Gallery.6.116	S ashlar post under A frame Gallery.6.017		Gallery.3.023
Gallery.6.117	S ashlar post under A frame Gallery.6.018		Gallery.3.024
Gallery.6.118	N ashlar post under A frame Gallery.6.001	Gallery.1.039	
Gallery.6.119	N ashlar post under A frame Gallery.6.002	Gallery.1.042	
Gallery.6.120	N ashlar post under A frame Gallery.6.007	Gallery.1.044	
Gallery.6.121	N ashlar post under A frame Gallery.6.008	Gallery.1.049	
Gallery.6.122	N ashlar post under A frame Gallery.6.011	Gallery.1.060	
Gallery.6.123	N sarking, possibly original, pine boards with wooden pegs.	Gallery.1.057	
Gallery.6.124	N sarking, 20 th Century pine boards with nails.	Gallery.7.058	
Gallery.6.125	S sarking, possibly original, pine boards with wooden pegs (1 board visible to E of gallery roof).		Gallery.3.112
Gallery.6.126	S sarking, replaced, rough sawn pine boards with nails.		Gallery.3.111
Gallery.6.127	S sarking, 20 th Century pine boards with nails.		Gallery.3.110

A2.0 APPENDIX 2: LIST OF DRAWINGS

No	Ref	Type	Description	Scale	Date
1	N/A	Plan	Annotated key plan of trusses	NTS	April 2007
2*	195/230/3	Elevation and cross section	S Elevation towards Courtyard Section on AB	Scale marked on plan	Pre 1912
3*	195/230/4	Elevation and cross section	W Elevation to Courtyard Section on CD	Scale marked on plan	Pre 1912
5*	195/230/23	Detail	Lead rain water pipes and gutter, H.M. office of works	2" to 1 foot	1912
6*	195/230/24	Plan, cross section and detail	Proposed repairs to the roof of dancing hall.	Scale marked on plan	Feb 1917
7*	195/230/24 copy	Plan, cross section and detail	Proposed repairs to the roof of dancing hall.	Scale marked on plan	Feb 1917
8*	195/230/40	Cross section	Proposed strengthening steelwork in the roof over hall.	Scale marked on plan	Feb 1928
9*	195/230/41	Cross section and plan	Details of certain trusses in hall.	Scale marked on plan	Feb 1928

* Paper drawing used to interpret the date of certain features in the roof, N and S elevations of the Gallery. Digital copy not included with this report.

A3.0 APPENDIX 3: List of photographs

DCSN	Description	From	Date
2196	S Wall. Rubble blocking Gallery.3.001 to W of A frame "001"	N	28/02/07
2197	S Wall. Rubble blocking Gallery.3.001 to W of A frame "001"	N	28/02/07
2200	S Wall. Rubble blocking Gallery.3.002 between A frames "001" and "002"	N	28/02/07
2201	S Wall. Rubble blocking Gallery.3.002 between A frames "001" and "002"	N	28/02/07
2202	S Wall. Rubble blocking Gallery.3.005 between A frames "005" and "006"	N	28/02/07
2204	S Wall. Rubble blocking Gallery.3.005 between A frames "005" and "006"	N	28/02/07
2205	S Wall. Rubble blocking Gallery.3.008 between A frames "009" and "010"	N	28/02/07
2206	S Wall. Rubble blocking Gallery.3.008 between A frames "009" and "010"	N	28/02/07
2207	S Wall. Rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2208	S Wall. Rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2209	S Wall. Rubble blocking Gallery.3.013 between A frames "017" and "018"	N	28/02/07
2210	S Wall. Rubble blocking Gallery.3.013 between A frames "017" and "018"	N	28/02/07
2211	S Wall. Rubble blocking Gallery.3.014 to E of A frame "018"	N	28/02/07
2212	S Wall. Rubble blocking Gallery.3.014 to E of A frame "018"	N	28/02/07
2215	S Wall. Wall build Gallery.3.073 below A frames "017" and "018"	N	28/02/07
2216	S Wall. Wall build Gallery.3.073 below A frames "017" and "018"	N	28/02/07
2217	S Wall. Window bay Gallery.3.028 between A frames "017" and "014"	N	28/02/07
2218	S Wall. Window bay Gallery.3.028 between A frames "017" and "014"	N	28/02/07
2219	S Wall. Wall build Gallery.3.072 below A frames "013" and "014"	N	28/02/07
2220	S Wall. Wall build Gallery.3.072 below A frames "013" and "014"	N	28/02/07
2221	S Wall. Window bay Gallery.3.027 between A frames "013" and "010"	N	28/02/07
2223	S Wall. Window bay Gallery.3.027 between A frames "013" and "010"	N	28/02/07
2224	S Wall. Wall build Gallery.3.071 below A frames "009" and "010"	N	28/02/07
2225	S Wall. Wall build Gallery.3.071 below A frames "009" and "010"	N	28/02/07
2226	S Wall. Window bay Gallery.3.026 between A frames "009" and "006"	N	28/02/07
2227	S Wall. Window bay Gallery.3.026 between A frames "009" and "006"	N	28/02/07
2228	S Wall. Wall build Gallery.3.070 below A frames "005" and "006"	N	28/02/07
2229	S Wall. Wall build Gallery.3.070 below A frames "005" and "006"	N	28/02/07
2230	S Wall. Window bay Gallery.3.025 between A frames "005" and "002"	N	28/02/07
2231	S Wall. Window bay Gallery.3.025 between A frames "005" and "002"	N	28/02/07
2232	S Wall. Wall build Gallery.3.069 below A frames "001" and "002"	N	28/02/07
2233	S Wall. Wall build Gallery.3.069 below A frames "001" and "002"	N	28/02/07
2234	S Wall. Wall build Gallery.3.068 to W of A frame "001"	N	28/02/07
2235	S Wall. Wall build Gallery.3.068 to W of A frame "001"	N	28/02/07
2236	S Wall. Removal of rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2237	S Wall. Removal of rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2238	S Wall. Removal of rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2240	S Wall. Removal of rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2241	S Wall. Removal of rubble blocking Gallery.3.008 between A frames "009" and "010"	N	28/02/07

DCSN	Description	From	Date
2242	S Wall. Removal of rubble blocking Gallery.3.008 between A frames "009" and "010"	N	28/02/07
2243	S Wall. A frames "003" and "004" above window bay	N	28/02/07
2244	S Wall. A frames "007" and "008" above window bay	N	28/02/07
2245	S Wall. A frames "011" and "012" above window bay	N	28/02/07
2246	S Wall. A frames "015" and "016" above window bay	N	28/02/07
2248	S Wall. Removal of rubble blocking Gallery.3.008 between A frames "009" and "010"	N	28/02/07
2249	S Wall. Removal of rubble blocking Gallery.3.011 between A frames "013" and "014"	N	28/02/07
2250	S Wall. Working shot	NW	28/02/07
2251	S Wall. Working shot	NW	28/02/07
2252	S Wall. Working shot	W	28/02/07
2253	S Wall. Panel Gallery.3.010 , Gallery.3.011 and Gallery.3.012 removed from between A frames "013" and "014"	N	28/02/07
2254	S Wall. Panel Gallery.3.010 , Gallery.3.011 and Gallery.3.012 removed from between A frames "013" and "014"	N	28/02/07
2255	S Wall. Panel Gallery.3.010 , Gallery.3.011 and Gallery.3.012 removed from between A frames "013" and "014"	N	28/02/07
2256	S Wall. Panel Gallery.3.007 , Gallery.3.008 and Gallery.3.009 removed from between A frames "009" and "010"	N	28/02/07
2257	S Wall. Detail of horizontal brace Gallery.3.092 behind ashlar post of A frame "009"	NE	28/02/07
2258	N wall. Rubble blocking Gallery.1.007 removed from between A frames "007" and "008"	S	28/02/07
2260	N wall. Rubble blocking Gallery.1.007 removed from between A frames "007" and "008"	S	28/02/07
2262	S Wall. Working shot showing removal of rubble blocking Gallery.3.005	NE	02/03/07
2263	S Wall. Working shot showing removal of rubble blocking Gallery.3.005	NE	02/03/07
2264	N wall. Working shot showing the removal of rubble build Gallery.1.001 between A frames "001" and "002"	S	02/03/07
2265	S wall. Ashlar timber Gallery.3.077 showing slate pinners.	NW	02/03/07
2266	S wall. Ashlar timber Gallery.3.024 showing bracket and tell tale Gallery.3.074	N	02/03/07
2267	S wall. General shot showing rubble blocking Gallery.3.010 , Gallery.3.011 and Gallery.3.012 removed – also showing Gallery.3.096-Gallery.3.099	N	02/03/07
2268	S Wall. General shot showing rubble blocking Gallery.3.007 , Gallery.3.008 and Gallery.3.009 removed – also showing Gallery.3.095 and Gallery.3.096 .	N	02/03/07
2269	S wall. General shot of horizontal brace Gallery.3.092 joining Gallery.3.019 and Gallery.3.083 .	NE	02/03/07
2270	S Wall. General shot showing Gallery.3.020 and Gallery.3.084	NW	02/03/07
2271	S Wall. General shot showing Gallery.3.097 at base of Gallery.3.086 behind ashlar Gallery.3.022	NW	02/03/07
2272	S Wall. General shot showing Gallery.3.085 cut to join Gallery.3.021	NE	02/03/07
2273	S Wall. General shot showing Gallery.3.004 , Gallery.3.005 and Gallery.3.006 removed – also showing Gallery.3.093 , Gallery.3.094 , Gallery.3.101 and Gallery.3.102	N	02/03/07
2274	S Wall. General shot showing horizontal brace Gallery.3.091 joining Gallery.3.018 and Gallery.3.082	NW	02/03/07
2275	S Wall. General shot showing horizontal brace Gallery.3.090 joining Gallery.3.017 and Gallery.3.081	NE	02/03/07
2276	S Wall. Detail of ashlar Gallery.3.021 where it joins to rafter Gallery.3.085	/	02/03/07
2277	S Wall. Detail of wooden pad beneath ashlar Gallery.3.022	NW	02/03/07
2278	S Wall. General shot showing removal of rubble blocking Gallery.3.014	N	02/03/07
2279	S Wall. Wooden block Gallery.3.097 at base of rafter Gallery.3.086	NW	02/03/07
2281	S Wall. Cocoon to E of rafter Gallery.3.086	NW	02/03/07

DCSN	Description	From	Date
2282	S Wall. Shot showing missing horizontal brace with redundant tenon at the base of Gallery.3.084	N	02/03/07
2284	S Wall. Horizontal brace Gallery.3.092 joining Gallery.3.019 and Gallery.3.083	N	02/03/07
2285	S Wall. Horizontal brace Gallery.3.091 joining Gallery.3.018 and Gallery.3.082	N	02/03/07
2286	S Wall. Horizontal brace Gallery.3.090 joining Gallery.3.017 and Gallery.3.081	NE	02/03/07
2287	S Wall. Cut/Step in wall head of wall build Gallery.3.070	N	02/03/07
2288	S Wall. Example of upper window reveal sandstone "shell/veneer" forming dormer – this example is Gallery.3.066	N	02/03/07
2289	S Wall. General shot of rubble blocking Gallery.3.001 removed.	N	02/03/07
2290	S Wall. General shot of rubble blocking Gallery.3.002 and Gallery.3.003 removed – also showing Gallery.3.104 and Gallery.3.105	N	02/03/07
2291	S Wall. Pigeon egg to E of rafter Gallery.3.078	N	02/03/07
2292	S Wall. Support block Gallery.3.107 under rafter Gallery.3.079	NE	02/03/07
2293	S Wall. Support block Gallery.3.108 under rafter Gallery.3.079	NW	02/03/07
2294	S Wall. Support block Gallery.3.109 under rafter Gallery.3.080 .	NW	02/03/07
2295	S Wall. Support block Gallery.3.109 under rafter Gallery.3.080 .	NW	02/03/07
2296	S Wall. Looking W behind unexcavated blocking to W of Gallery.3.001 showing depth of blocking and space behind it.	E	02/03/07
2299	S Wall. Sarking Gallery.3.110 demonstrating that colour change is due to finishing from the inside.	N	05/03/07
2300	S Wall. Sarking Gallery.3.111	N	05/03/07
2301	S Wall. General shot of rubble blocking Gallery.3.013 and Gallery.3.014 removed.	N	06/03/07
2302	S Wall. Horizontal brace Gallery.3.114 , ashlar Gallery.3.077 and rafter Gallery.3.089 .	NW	06/03/07
2303	S Wall. Horizontal brace Gallery.3.113 , ashlar Gallery.3.024 and rafter Gallery.3.088 – also showing Gallery.3.116	N	06/03/07
2304	S Wall. Ashlar Gallery.3.023 and rafter Gallery.3.087 showing horizontal brace missing – also showing Gallery.3.115	NE	06/03/07
2306	S Wall. Evidence that upper window margin Gallery.3.062 is original.	N	06/03/07
2307	S Wall. Mortice and tenon joint between ashlar Gallery.3.018 and horizontal brace Gallery.3.091	W	06/03/07
2308	S Wall. Mortice and tenon joint between ashlar Gallery.3.017 and horizontal brace Gallery.3.090	E	06/03/07
2309	S Wall. Residual blocking of panel Gallery.3.011 from alteration to ashlar Gallery.3.022	NW	06/03/07
2310	S Wall. Replaced ashlar Gallery.3.021 and replaced rafter Gallery.3.085	N	06/03/07
2311	N Wall. Removal of part of rubble blocking Gallery.1.007 between A frames "011" and "012"	S	06/03/07
2312	N Wall. Masonry Gallery.1.001	S	06/03/07
2313	N Wall. Masonry Gallery.1.004 showing cement patch to be removed.	SW	06/03/07
2314	N Wall. Rubble build Gallery.1.007 between A frames "007" and "008"	SW	06/03/07
2315	N Wall. Site of a proposed drill hole under A frame "014"	S	06/03/07
2318	N Wall. Example of tight fitting joint between a rafter a tie beam.	E	08/03/07
2319	N Wall. Example of tight fitting joint between a rafter a tie beam with scale.	E	08/03/07
2320	N Wall. Excavated section of masonry Gallery.1.001	S	08/03/07
2321	N Wall. Rafter Gallery.1.012 , ashlar Gallery.1.039 , sarking support Gallery.1.040 and sarking Gallery.1.038	SE	08/03/07
2322	N Wall. General shot showing view into excavated area of Gallery.1.001	S	08/03/07
2324	N Wall. Rafter Gallery.1.013 and ashlar Gallery.1.042	SW	08/03/07
2325	N Wall. The slate packing around ashlar Gallery.1.042	SW	08/03/07
2327	N Wall. Rafter Gallery.1.016 , masonry Gallery.1.003 and trimmer Gallery.1.032 .	W	08/03/07
2328	N Wall. Rafter Gallery.1.016 , masonry Gallery.1.003 and	W	08/03/07

DCSN	Description	From	Date
	trimmer Gallery.1.032 .		
2329	N Wall. Rafter Gallery.1.016 , masonry Gallery.1.003 and trimmer Gallery.1.032 without scale.	W	08/03/07
2330	N Wall. Join between Gallery.1.003 and Gallery.1.004	S	08/03/07
2331	N Wall. Join between Gallery.1.003 and Gallery.1.004	S	08/03/07
2332	N Wall. Join between Gallery.1.003 and Gallery.1.004	S	08/03/07
2333	N Wall. Removed section of rubble build Gallery.1.007	S	08/03/07
2334	N Wall. Join between E margin of chimney breast Gallery.1.006 and rubble build Gallery.1.007	SE	08/03/07
2335	N Wall. Sarking Gallery.1.038 and Gallery.1.057	S	08/03/07
2336	N Wall. Detail of peg sarking Gallery.1.057	S	08/03/07
2337	N Wall. General view behind removed rubble build Gallery.1.007 between rafters Gallery.1.018 and Gallery.1.019	S	08/03/07
2338	N Wall. Sarking supports Gallery.1.045 and Gallery.1.046 on rotten rafter Gallery.1.018	SE	08/03/07
2340	N Wall. Rotten rafter Gallery.1.018 and ashlar Gallery.1.044 behind sarking supports Gallery.1.045 and Gallery.1.046	E	08/03/07
2341	N Wall. Sarking supports on rafter Gallery.1.019	SW	08/03/07
2342	N Wall. Rafter Gallery.1.019 and ashlar Gallery.1.049	SW	08/03/07
2343	N Wall. The base of rafter Gallery.1.019 , and horizontal brace Gallery.1.059 in the wall of the spiral stair turret.	E	08/03/07
2344	N Wall. Detail of slate pinner between Gallery.1.019 and rubble build Gallery.1.007 to protect the timber.	S	08/03/07
2345	N Wall. General shot of the E hole excavated in rubble build Gallery.1.007 between rafters Gallery.1.022 and Gallery.1.023 also showing Gallery.1.008	SW	08/03/07
2346	N Wall. General shot inside the E hole in rubble build Gallery.1.007 between rafters Gallery.1.022 and Gallery.1.023	S	08/03/07
2347	N Wall. Subsidiary rafter and brace Gallery.1.062 and join in sarking.	S	08/03/07
2348	N Wall. Subsidiary rafter and brace Gallery.1.062	SE	08/03/07
2349	N Wall. General shot showing sarking supports Gallery.1.061 and Gallery.1.064	S	08/03/07
2351	N Wall. Example of a pocket for a "missing" timber under rafter Gallery.1.023	S	08/03/07
2352	N Wall. Example of a pocket for a "missing" timber under rafter Gallery.1.023	SE	08/03/07
2353	N Wall. Example of a pocket for a "missing" timber under rafter Gallery.1.024	S	08/03/07
2354	N Wall. N Wall. The base of rafter Gallery.1.022 , and horizontal brace Gallery.1.066 in the wall of the spiral stair turret.	W	08/03/07

A4.0 APPENDIX 4: List of finds

Bag No	Description	Context	Quantity
1210-001	Newspaper dated November 27 th 1977	Gallery.6.102	1
1210-002	Tell Tale	Gallery.3.067	1
1210-003	Tell Tale	Gallery.3.066	1
1210-004	Fe object	Gallery.3.014	1
1210-005	Tell Tale	Gallery.3.065	1
1210-006	Coin, one pence 1936	Gallery.6.058	1
1210-007	Coin, one pence 1919	Gallery.6.075	1

A5.0 APPENDIX 5: List of samples

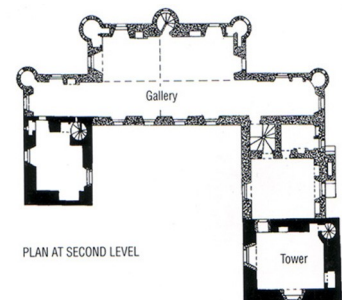
Bag No	Description	Context	Quantity	Sample No
1210-008	Mortar Sample	Gallery.3.011	1/1	1
1210-009	Mortar Sample	Gallery.3.008	1/1	2
1210-010	Mortar Sample	Gallery.3.005	1/1	3
1210-011	Mortar Sample	Gallery.3.002	1/1	4
1210-012	Mortar Sample	Gallery.3.014	1/1	5
1210-013	Mortar Sample	Gallery.3.006	1/1	6
1210-014	Mortar Sample	Gallery.1.001	1/1	7
1210-015	Mortar Sample	Gallery.1.003	1/1	8
1210-016	Mortar Sample	Gallery.1.007	1/1	9

A6.0 APPENDIX 6: THE ROOFS AT NEWARK CASTLE: A PRELIMINARY ASSESSMENT BY THORSTON HANKE DIPL. ING. (FH), MPHIL

A6.1	THE ROOFS AT NEWARK CASTLE: A PRELIMINARY ASSESSMENT	28
A6.2	Newark Castle: catalogue	31
A6.3	Quoted literature	32
A6.4	Picture credits	33

A6.1 The roofs at Newark Castle: a preliminary assessment

Newark Castle is a fine residential building that overlooks the Firth of Clyde some 20 miles west of Glasgow. Attractively blending medieval and Renaissance features,¹ Newark provides an excellent example of the 'Scottish Chateau', as Charles McKean has named these stately houses in which an emphasis on fortification had already given way to more light-hearted aspects of architecture.² Such buildings became popular in Scotland during and after the reign of James IV. Newark Castle shows the underlying architectural and social development of this time in a characteristic way. Its U-shaped floorplans, the generous and regular employment of large apertures, the application of proto-classical detailing around windows and doors, as well as the symmetrical lay-out of its northern elevation, are indicative of a lifestyle that can only be understood in the wider context of the European Renaissance.



Plates 1 and 2
Floorplan and south view of
Newark Castle.

¹ Erected from the late 15th century onwards, Newark Castle saw its most significant alteration between 1597 and 1599 when Sir Patrick Maxwell connected a tall rectangular tower and a gatehouse by a northern range. For additional details on the historical development, see Tabraham (1996), pp. 4-8.

² For the definition of the term 'Scottish Chateau', see McKean (2001), pp. v-vi.

Newark Castle also displays a rich roof architecture. It comprises rafter single roofs of different typology, purlin roofs, circular turrets, flat roofs, remains of lean-to roofs, and, if we expand our attention to the adjacent dovecot, even solid stone structures. Thus Newark offers an excellent opportunity to observe almost all important early Scottish roof-types in great detail, and its analysis would considerably affect our knowledge on historic Scottish roof-construction, as well as on early Scottish building trades. The analysis of historic roofs often reveals data that makes it possible to trace the individual history of buildings.³ Important in this aspect is not only the application of dendrochronology but also the full archaeological investigation of roof-timbers and fixings, such as nails, pegs and screws. The inspection of these items certainly provides a far-reaching insight into the construction process and almost always discloses the tools used. Moreover, roof timbers often provide an important primary source for the understanding of historic trade patterns.⁴ Early roofs are for these reasons a valuable source of the work conditions of craftsmen – a social group that hardly left any written records at all – and often indicative of the underlying economic conditions that inevitably impacted the evolution of architectural culture.

Large parts of Newark Castle had been erected in the transition period when Scottish architecture discarded late medieval features in favour of Renaissance details. The roof covering the north range reflects this development and shows a rare structural composition characterised by the use of purlins within a predominately common rafter structure. Thus this roof, which is fully accessible, offers a glimpse into a time when Scottish architecture underwent significant alterations – it is, in fact, one of the earliest original roofs showing straight intersection lines.⁵ It should be understood that the extant roofs at Newark Castle belong to different construction stages. Displaying a variety of tool- and assembly marks, the roofs are of great value for tracking down the construction history of Newark Castle. Most of them were erected between c.1500 and c.1600 and thus take a prominent position among the oldest original roof structures of Scotland.⁶ Equally important is the fact that all individual roofs at Newark display a full sequence of assembly marks and, at least partially, still possess their original sarking boards.

³ Two very important Scottish examples are Darnaway Castle and 64-74 High Street, Brechin, where the analysis of structural timber offered conclusive evidence on dating issues. For Darnaway Castle, see Stell/Baillie (1993); for Brechin, see Crone/Grieve/Moore/Peddyman (2004).

⁴ In particular, this applies for Scotland where timber import was common from the late Middle Ages onwards. See for instance Balfour Paul (1900), p. 82.

⁵ Geoffrey Stell has remarked on this problem, pointing out that early Scottish roof construction usually employed the walls of gables or towers to meet individual roof compartments. See Stell (1992), pp. 79-80.

⁶ Few Scottish roofs have received full historical investigation. Apart from the open roof at the Great Hall at Darnaway Castle, these are the rafter single roofs at Alloa Tower and 64-74 High Street, Brechin. For Darnaway, see Stell/Baillie (1993), pp. 163-79; for Alloa Tower, see Ruddock (1995); for Brechin, see Crone/Grieve/Moore/Peddyman (2004).

In particular, the existence of original sarking boards makes Newark Castle almost unique among the extant historic roofs of Scotland and underlines its considerable value.⁷ There are several other interesting aspects to be observed at Newark – pit-sawn collarbeams, marks of unusual nature and unaccounted sockets in the northern wall of the north range – which still await scholarly investigation. From a technical point of view, the roof at Newark suffers serious structural problems over the north range. Its in-depth analysis would offer a valuable insight into its exact structural behaviour and therefore provide the basic material to be used in the repair of this important roof structure.

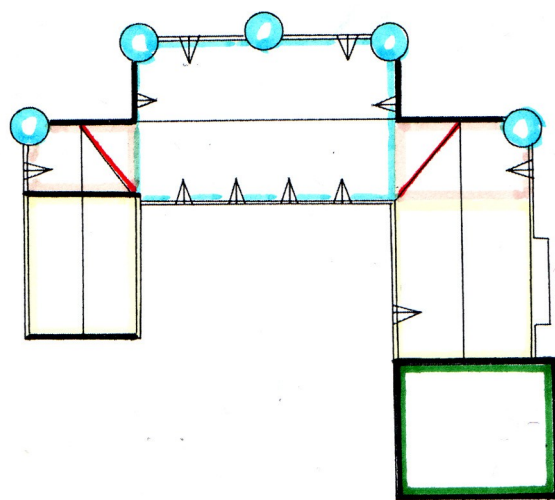


Plate 3
The typology of roofs at Newark Castle.

- Key**
- Single collared rafter single roof ○
 - Double collared rafter single roof ●
 - Purlin roof ◐
 - Flat roof ●
 - Cone-shaped roof ●
 - Raised gable-walls ●
 - Straight intersection lines ●

A comprehensive archaeological analysis of the extant roofs at Newark Castle would, apart from the discussion of typological and stylistic aspects, also offer indispensable data on construction details, distortion patterns and the physical condition of materials.⁸ Thus it would contribute an important chapter in the history of Scottish architecture and Scottish engineering.

⁷ The nature of sarking boards is entirely uncharted and has not yet aroused scholarly attention.

⁸ For the potential of exact true-to-scale surveys as a tool of archaeologists, historians and structural engineers, see Schuller (2002), pp. 7-40.

A6.2. Newark Castle: catalogue

Erection of tower and gatehouse in late C15, extension of tower and erection of n-range c.1597.⁹

A-framed single-collared rafter single roofs at gatehouse and e-range. Double-collared open rafter single roof at n-range. Flat roof at tower. Raised gables at gatehouse, straight intersection line at conjunctions of n/e-range and n/w-range, slates.

Free roof span: 6.20 m (n-range),

4.14 m (gatehouse), c.5.06 m (e-range).

Unbuttressed lateral walls, no windows at gatehouse and e-range, semi-diaphanous walls at n-range.

Location: Renfrewshire

Patron: George Maxwell, Patrick Maxwell.

Architect: Unknown

Craftsmen: Unknown



Plate 4

Purlin roof in the north range.



Plate 5

Pit-sawn collarbeam in the roof of the east-range.



Plate 6

Original sarking-boards at the north-range.



Plate 7

Unusual marks at a collarbeam at the north range.

A6.3 Quoted Literature

⁹ Information on dates and patrons compiled from Tabraham (1996), pp. 4-6.

Balfour Paul, J. (ed.), *Accounts of the Lord High Treasurer of Scotland*, Vol. 2, Edinburgh 1900.

Crone, A., Grieve, N., Moore, K. and Perry, D.R., 'Investigations into an early timber-frame roof in Brechin, Angus', in: *Tayside and Fife Archaeological Journal*, Vol. 10, Perth 2004, pp. 152-65.

McKean, C., *The Scottish Chateau: The Country House of Renaissance Scotland*, Gloucestershire 2001.

Ruddock, T., 'Repair of two important early Scottish Roof Structures', in: *Proceedings of the Institution of Civil Engineers*, Vol. 110, 1995, pp. 296-307.

Schuller, M., *Building Archaeology*, Munich 2002.

Stell, G., 'A Note on Medieval Timber Flooring and Roofing', in: Ritches, A. and Stell, G. (eds.), *Materials and Traditions in Scottish Buildings: Essays in Memory of Sonia Hackett*, Edinburgh 1992, pp. 75-80.

Stell, G. und Baillie, M., 'The Great Hall and Roof of Darnaway Castle, Moray', in: Sellar, W.D.H. (ed.), *Moray: Province and People*, Edinburgh 1993, pp. 163-179.

Tabraham, C., *Newark Castle*, Edinburgh 1996.

A6.4 Picture Credits

Plate 1 RCAHMS, DO7434.

Plate 2 Tabraham (1996), p. 25.

Plate 3 Thorsten Hanke after Tabraham (1996), p. 25.

Plate 4 Thorsten Hanke.

Plate 5 Thorsten Hanke.

Plate 6 Thorsten Hanke.

Plate 7 Thorsten Hanke.

A7.0 APPENDIX 7: ANNOTATED PLAN OF NEWARK CASTLE ROOF, NTS

