



# **Goodrich Castle Solar Arch Pier Capital and Remedial Work Herefordshire**

*Historical Conservation and Building Recording*



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The Solar Arch and Pier Capital

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# GOODRICH CASTLE SOLAR ARCH PIER CAPITAL AND REMEDIAL WORK

NGR SO 577 199

*Historical Conservation and Building Recording*

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**October, 2008**

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## **1 Summary**

English Heritage commissioned Archaeological Investigations Ltd to produce detailed moulding profiles of the Solar pier capital and the voussoirs at Goodrich Castle, Herefordshire, in order for remedial works to be conducted on the rapidly decaying stonework.

The profiles of the capital and the voussoirs and information from the documentary evidence were integrated with expert knowledge of historical stone masonry to create the final reconstruction designs for the Solar Arch pier capital and the replacement voussoirs. These profiles were then used by stone masons to carve the reconstructions used in the remedial works.

The work was carried out in October and November 2006.

## **2 Introduction**

English Heritage commissioned Archaeological Investigations Ltd to produce detailed moulding profiles of the Solar Arch Pier Capital and the voussoirs at Goodrich Castle, Herefordshire, in order for remedial works to be conducted on the rapidly decaying stonework.

The work involved documentary research and a detailed photographic survey of the pier capital and Solar Arch voussoirs. The capital and voussoirs were also subject to a detailed measured survey with a Total Station enabling the creation of profiles and cross-sections.

The information gained from these detailed surveys was sent to the stone masons for accurate reconstructions to be created for use in the remedial works.

## **3 Historical and archaeological background (After HAS 73)**

Goodrich Castle occupies a key position overlooking the Wye Valley to the south of Ross-on-Wye and is one of the largest and best preserved of the many castles in the boarder area between England and Wales (Figure 1).

Goodrich Castle is thought to have taken its name from Godric Mappestone who held the lands in this region at time of the Domesday Survey of 1086. Goodrich Castle is not mentioned in the survey but one reference to a Godric's Castle has been dated to c. 1095 and there are other references to it in 1144 and 1146.

It remained a defensive stronghold and was constantly redeveloped from the early Norman period right up until the mid 17<sup>th</sup> century when it was slighted following a long siege in 1646 by the Parliamentary forces. The keep is generally regarded as being the oldest upstanding structure dating to the mid 12<sup>th</sup> century and usually to around the 1160's (RCHN, 74; Pevsner, 1963, 137).

After several centuries of dereliction the ministry of works carried out considerable repair works in the 1920's and 1930's. It later passed into the hands of English Heritage in 1984 and they have continued this program of consolidation and improvement.

Quite a lot of archaeological work has been carried out at Goodrich Castle by Archaeological Investigations. Most of this work was carried out in the early to mid 1980's (a detailed survey of the keep was also carried out in 1990 (HAS 73). The most recent work was 2004 when English Heritage commissioned Archaeological Investigations Ltd to produce enhanced elevation drawings of the North Range, Solar Arch (HAS 639) (Figure 9).

## **4 Aims and objectives**

The Aims and objectives of this project were to create a record of Solar Pier Capital and the Solar Arch voussoirs before they were completely lost to erosion in order for a historically accurate reproduction to be created for the remedial works on the Solar Arch.

## **5 Methodology**

Documentary research was undertaken for North Range and the Solar Arch involving the use of old records and photographs. The architectural moulding and voussoirs were recorded. Dr R Morris of Warwick was consulted in order to best ascertain the original shape of the pier capital.

The Solar Arch pier capital and voussoirs were photographed in detail using 35mm colour and black and white film and a digital camera.

1:1 profiles were taken of the solar pier capital and of the surviving voussoirs using a TCR1105R Total Station and a profiling tool.

## **6 Results**

Digital and hand drawn profiles were produced from the data collected from the TCR1105R Total Station and the use of the profiling tool. Templates were created for the mouldings and the voussoirs. The profiles of the capital and the voussoirs and information from the documentary evidence were integrated with expert knowledge of historical stone masonry to create the final reconstruction designs for the Solar Arch pier capital and the replacement voussoirs. These profiles were then supplied in CAD format and used as templates by stone masons to carve the reconstructions used in the remedial works.

## **7 Discussion**

The majority of the castle is constructed from local Red Sandstone and this is the material used in the construction of the North Range and the Solar Arch. The capital appeared to be slightly more yellow in colour. This may suggest that the capital stone was sourced from outside the local region or it may just have been cut from a lighter vein in the local sandstone.

Over the centuries, as the castle fell out of use, the North Range became exposed to the external elements and was subject to weathering, deterioration and decay. Areas of the North Range had previously been consolidated with scotch mortar during the early 20<sup>th</sup> century. This is likely to have contributed to the deterioration of the stone work. Due to the hardness of the mortar, moisture is trapped in the individual stones causing the face to crack off in extreme temperature changes (HAS 639).

The Solar Arch pier capital was originally designed to be an internal architectural feature situated on a central pier supporting two two-centred arches in the Solar on the NW of Goodrich Castle. The voussoirs were very badly damaged or eroded and many were missing.

Although sandstone is a particularly durable stone and fairly resistant to weathering, the pier capital, with its complex design of projecting moulded components, was very severely eroded and it became impossible to distinguish the original features and details of this moulding (Plate 3). This provided a considerable challenge when determining the original profile of the capital. A vast number of illustrations and photographs, as well as the Royal Commissions Survey of Goodrich, 1930, were consulted in an attempt to best ascertain the original design of the capital thus allowing a more accurate reconstruction to be created.

## **7.1 Illustrated Evidence**

One of the earliest illustrations by J Bonnor in 1799 (Fig 2) shows the overgrown North Range, the Arches, the supporting pier and the capital. Although it is impossible to distinguish the features of the capital, the sketch, possibly some what stylised, implies that it was in good condition in the late 18<sup>th</sup> century.

Goodrich Castle appears to have caught the imagination of artists in the early 19<sup>th</sup> century as there are quite a few illustrations, sketches and engravings of the North Range from this period. A sketch by Rev. C. Turnor published in 1811 shows the Solar Arch and walls of the North Range but the detail of the capital is again lacking (Fig 3.). More artistic renderings of the Solar Arch and North Range prevail throughout this period, such as those published by Thomas McLean in 1822 (Fig 4) and by J.S Prout in 1832 (Fig 5). An engraving dating from circa 1840 is the one of the first to show the pier capital in any real detail. It clearly depicts the capital in good condition with four projecting components (Fig 6).

## **7.2 Photographic Evidence**

A photograph from 1868 (Plate 1) confirms that there were indeed four projecting components on the capital moulding. These components, looking from top to bottom on the capital are the abacus, bell upper, bell lower and necking. This picture clearly shows the effects of erosion on the capital as there are visible vertical face fractures on the bell upper and the bell lower (Plate 2). Erosion continued to be highly detrimental to the condition of the pier capital through to its replacement in December 2006.

A number of photographs from the late 1920s and early 1930s showing the North Range and the Solar Arch were also studied in an attempt to elucidate the design features of the pier capital. One photograph obtained from the Ministry Of Works taken in 1925 (Plate 4) shows a very overgrown North Range. The general profile of the pier capital was visible but detailed features were not. Some of the photos by taken by B.C Clayton circa 1928, (Plates 5a and 5b), and for RCHME in 1930 (Plate 6) gave a clearer impression of the Capital's profile. When one of the photographs by Clayton was enlarged some more design detail was visible but the effects of erosion were again all too apparent (Plate 5c).

## **7.3 Solar Arch Capital Design**

The photographic evidence was sufficient enough for Dr Morris to discern the multiple sub- divisions of the four projecting moulded components, the abacus, upper bell, lower bell and necking. In combination with this he was able to draw upon his considerable knowledge of capitals used in the same period and the same geographic location, such as Hereford Cathedral and Tintern Abbey (likely to have involved the same masons), to advise on the design of the capital. He provided a scale profile illustration of his proposed capital design which included his alternatives for the moulding (Fig 7). Below is a summary of his notes on the design features of the capital mouldings.



He suggested that the abacus should be roll and fillet. Unfortunately fillets are not very good on external work. They present possible frost problems as they do not shed water very well. This form could be slightly amended to form a slope by the mason. Dr Morris also noted that there were precedents for a scroll or a keel, which do shed water better. Below the main moulding almost all examples of capitals from this period have a bead, fillet and quarter-hollow.

The upper bell moulding appeared to be subdivided into three horizontal projecting bands. From comparisons he concluded that the most popular design was a large bead at the top with a demi-roll-and-fillet below.

The lower bell moulding appeared to be sub-divided into two so it was suggested that a demi-roll-and-fillet, almost invariably used in the comparative examples, be used.

The necking was divided into two sections, with a roll-and-fillet, with a very small fillet being employed. Again there were precedents for a scroll or a keel design. Dr Morris suggested that the same type design be used for both the abacus and necking.

Archaeological Investigations created a number of profile designs incorporating these proposals and after discussions with all involved parties a final design of the moulding was agreed upon (Fig 8). This design favoured using a scroll on the abacus and the necking, rather than the roll and fillet simply because this design is more resistant to erosion in the external environment. The upper and lower bell remained as Dr Morris suggested.

These profiles were used by the stone masons to carve out the new capital and voussoirs, which are now incorporated in the remedial works (fig 9).

## **7.4 Voussoirs**

A composite profile was created for the voussoirs as none of the originals survived intact. This profile was sent to Dr Morris. He concurred with their form and stated that the type of moulding agreed with those in use at Tintern and especially at Hereford in the 1260-90s.

## **8 Conclusion**

The profiles created by Archaeological Investigations with advice from Dr R Morris were used in the reconstructions of the Solar Arch pier capital and the voussoirs. They are now a permanent fixture in the North Range of Goodrich Castle.

## **9 Site archive**

The primary archive will be deposited with Hereford City Museum and will consist of the following:

- Written records made on-site
- Profiles: both hand drawn and digital.
- Digital photographs
- 35mm black and white and 35mm colour photographs

- A copy of this report (a digital copy of this report will also be submitted to the Archaeology data Service [ADS] for on-line storage).

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Figures

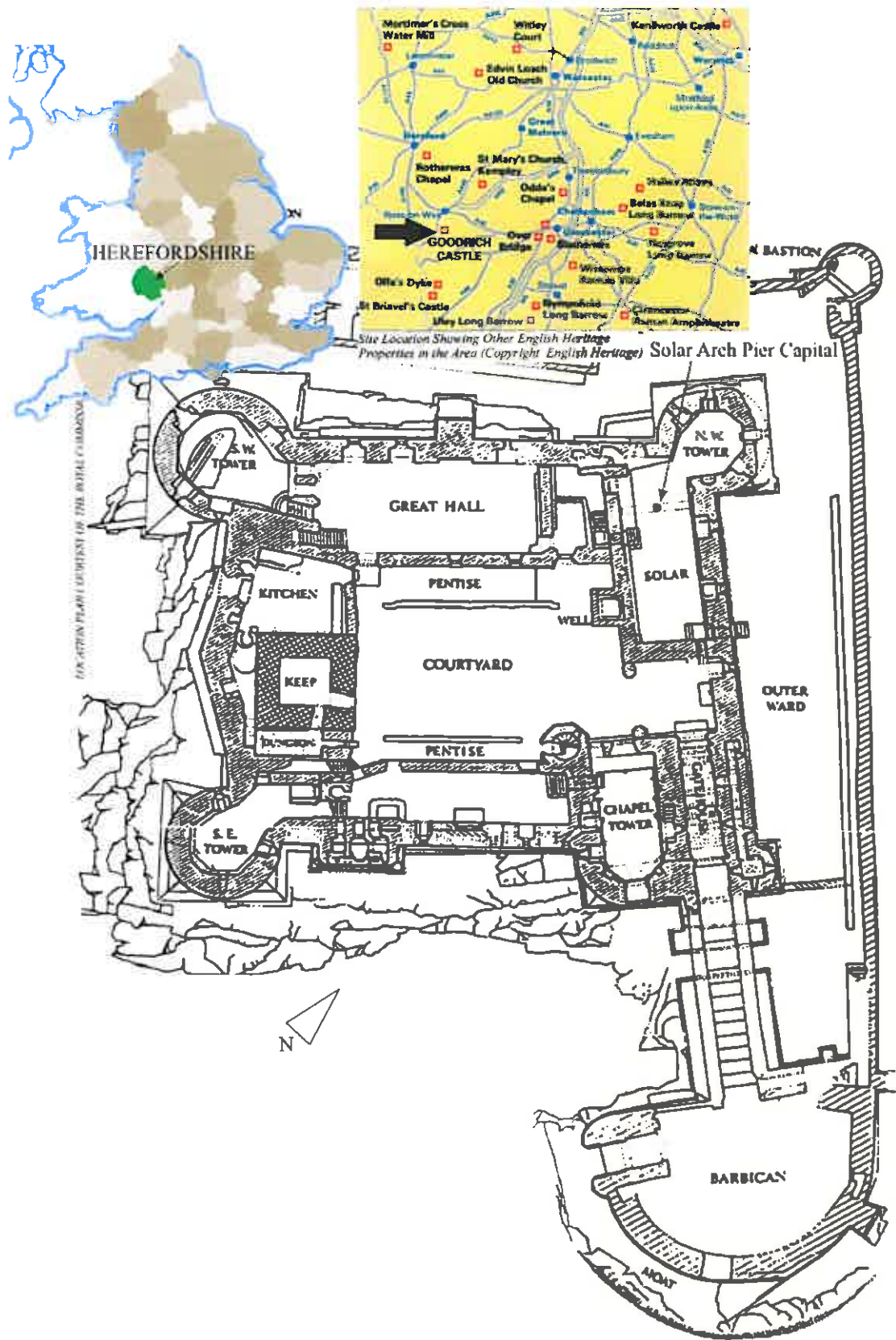


Figure 1. Site Location





**PART OF THE CHAPEL , GOODRICH CASTLE.**

Figure 3. Rev. C Turner's sketch of the Solar Arch showing some detail on the capital



**INTERIOR OF GOODRICH CASTLE.**

*London. Published by Thomas McLean, 16, Pall Mall, 1822.*

Figure 4. An Artists rendering of the Solar Arch. Published by Thomas Mc Lean, 1822



Figure 5. An 1832 engraving of the Solar Arch and the North Range



GOODRICH CASTLE and COURT.

*J. B. St. John, Engraver*

Figure 6. An engraving of 'Goodrich Castle and Court' in 1840(?) showing a four component moulded capital



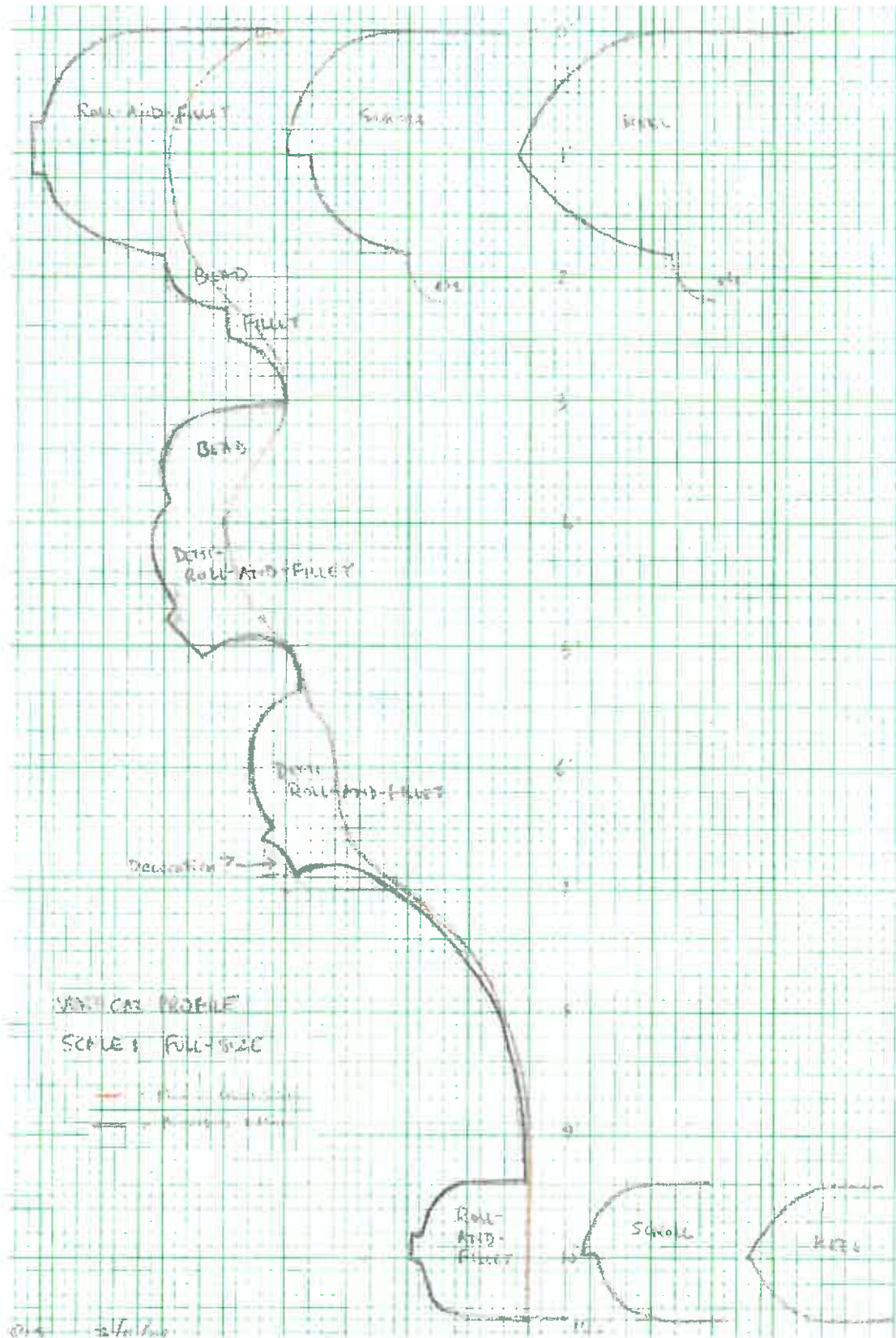


Figure 7. Dr R. Morris' suggested reconstruction with design alternatives over the surviving maximum profile

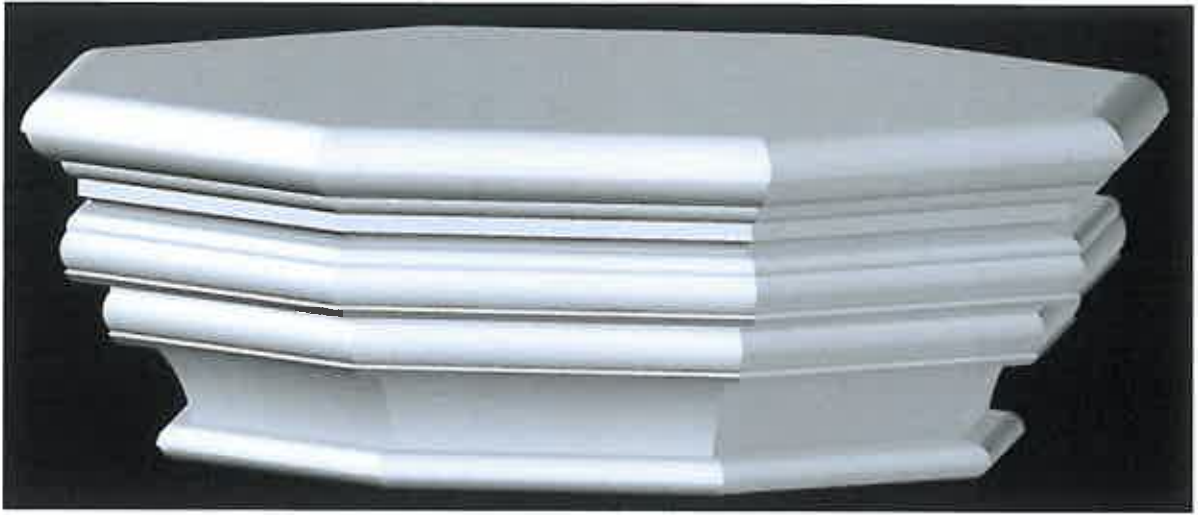


Figure 8. Goodrich Castle. Final design Solar Arch Pier Capital

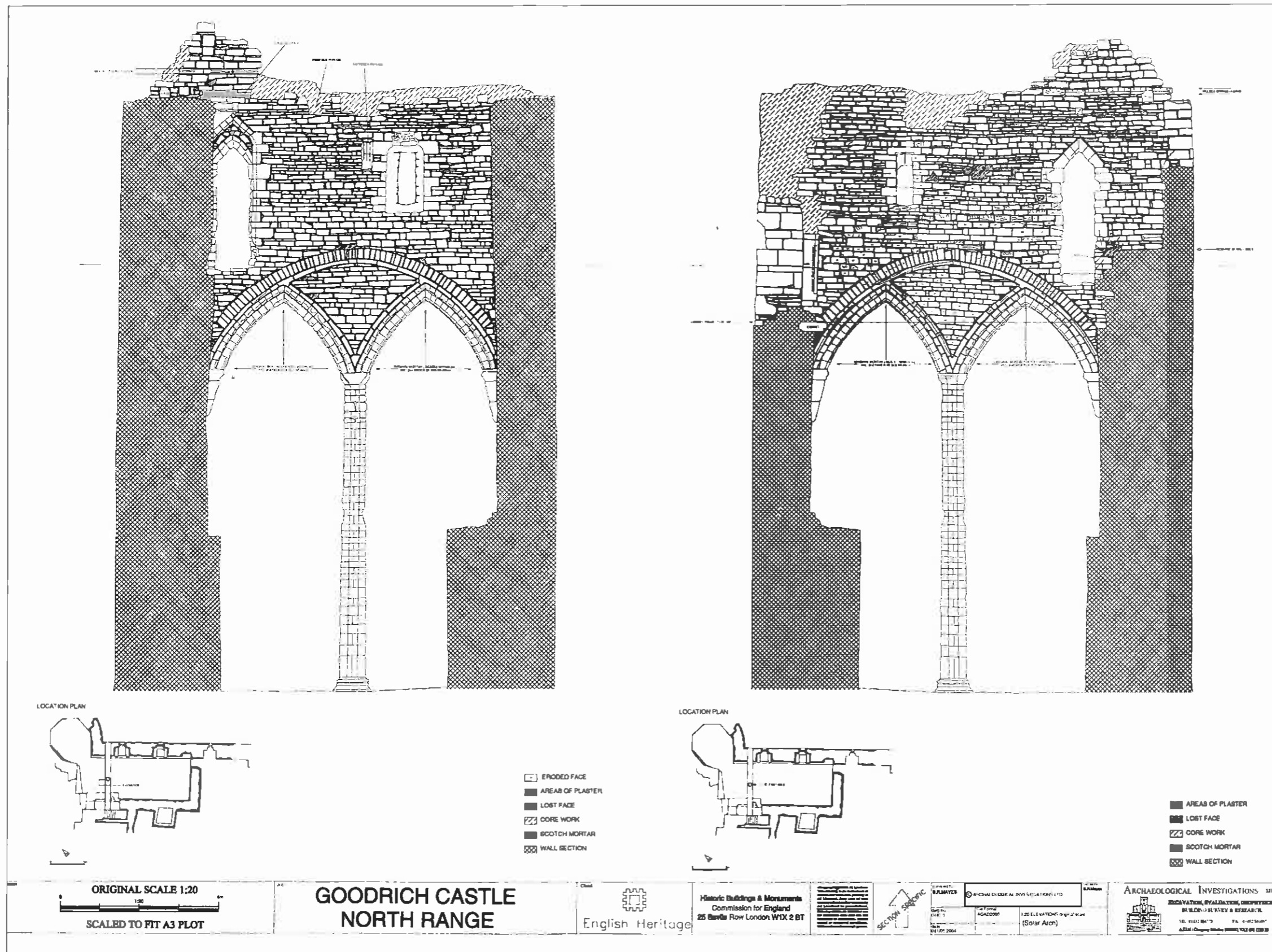


Figure 9. Elevations of North Range wall

## Plates



Plate 1. A photograph from c.1668 by Captian George Bankhart showing an overgrown North Range and Solar Arch in the Background.  
(Photograph courtesy of George Eastman House. Ex collection A E Marshall)



Plate 2. Enlargement of the capital from the c. 1868 photograph with added description of the four moulded components. The effects of erosion are clearly visible on the upper and lower Bell. (Photograph courtesy of George Eastman House. Ex collection A E Marshall)



Plate 3. The effects of erosion on the pier capital



Plate 4. Photograph of a much overgrown North Range c.1925. (Photograph Courtesy of Ministry Of Works)

Two views of the Solar Arch showing the pier capital. B. C Clayton, Circa 1928.



Plate 5a.

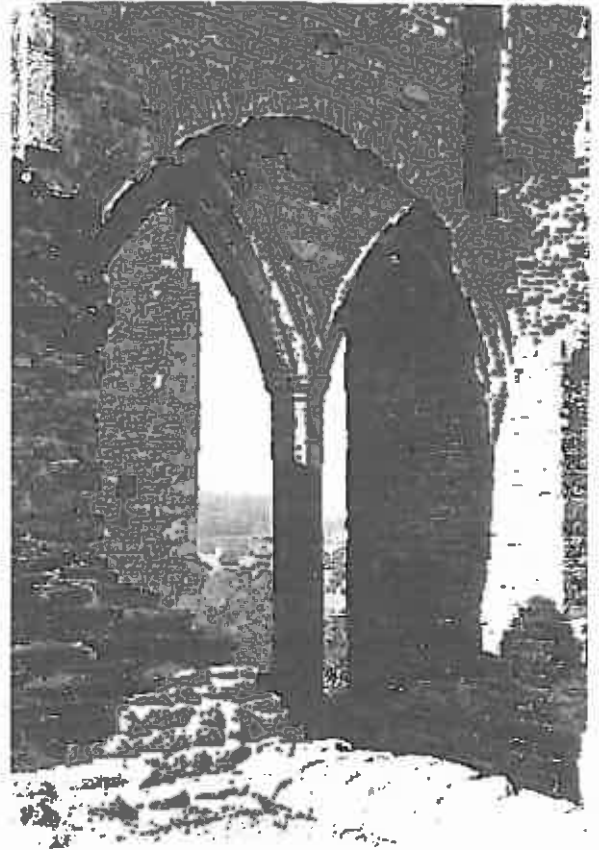


Plate 5b.



Plate 5c. Enlargement of capital from plate 5b

(Photographs courtesy of English Heritage NMR)



Plate 6. The North Range and Solar Arch. 1930. (Photography courtesy of English Heritage NMR)





Plate 7. The Solar Arch after remedial works



Plate 8. The new Solar Arch pier capital



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