

Rathfarnham Castle Excavation 2018 Stratigraphic Report



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Section 1 Introduction

The archaeological work described in this report was carried out as part of a project by the Office of Public Works to refurbish four rooms at basement level at Rathfarnham Castle, and other repair works (planning permission ref SD17A/0093, Final grant 26/06/2017 and extension to Ministerial Consent no. C562 dated 30th June 2017).

The four rooms that were refurbished are: the larger western (B8) and smaller eastern (B7) basement rooms lying to the north of the castle's east-west spine wall; the room forming the basement level of the northeastern flanker tower (B10), and the basement level of the late 18th century bow extension abutting the east of the castle (B6). The OPW Architects have labelled these four rooms B6, B7, B8 and B10, and this nomenclature is used in this report. These four rooms are shown in red in the image to the right.

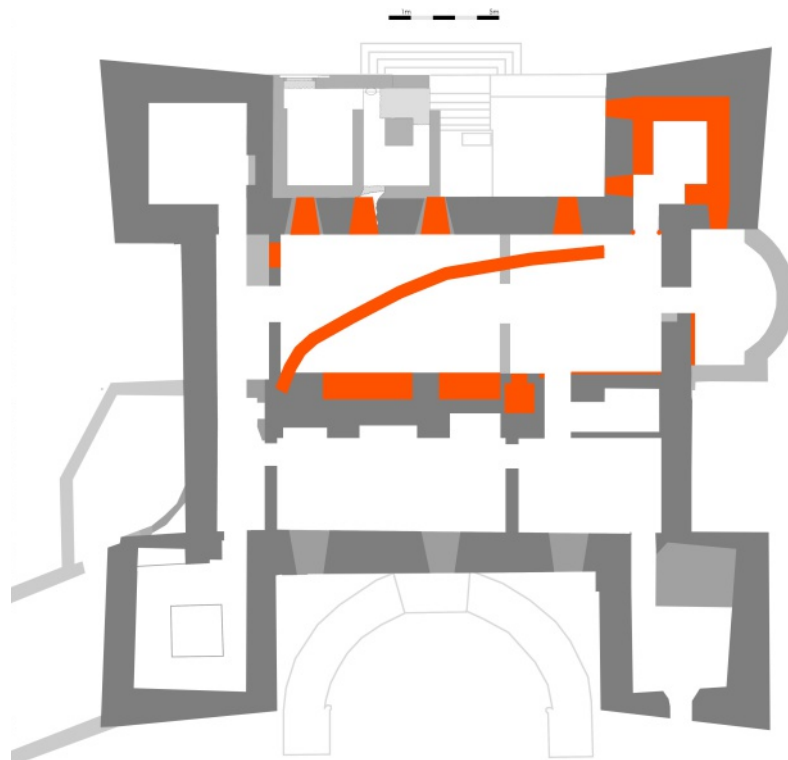
Maintenance and repair works were also carried out to the entrance portico paving and underlying vaults.

A programme of archaeological testing (Giacometti 2018) conducted in January 2018 prior to the restoration works identified archaeological material and informed the archaeological monitoring strategy described herein. The results of the January investigations are incorporated into this report. Earlier programmes of archaeological investigation were conducted in the basement during 2014 and 2015 (Giacometti 2015), and 2016 (Giacometti 2016). The 2018 findings build on the

archaeological narrative established by the earlier seasons of work, and further articulate the sequence of use and alteration of the castle basement from the sixteenth to the eighteenth century.

Several notable features were discovered during the 2018 season of archaeological work at the castle. One of the highlights was the identification and preservation of probable 16th century earth mortar plaster and exterior harling. Also of great interest was the recording of a suite of 16th century fireplaces and a bake-oven. Excavation through the 18th century floor exposed parts of the 16th century floor, part of the fireplace hearths, and the original course of the castle drain.

Key findings at Rathfarnham Castle in 2018, in orange



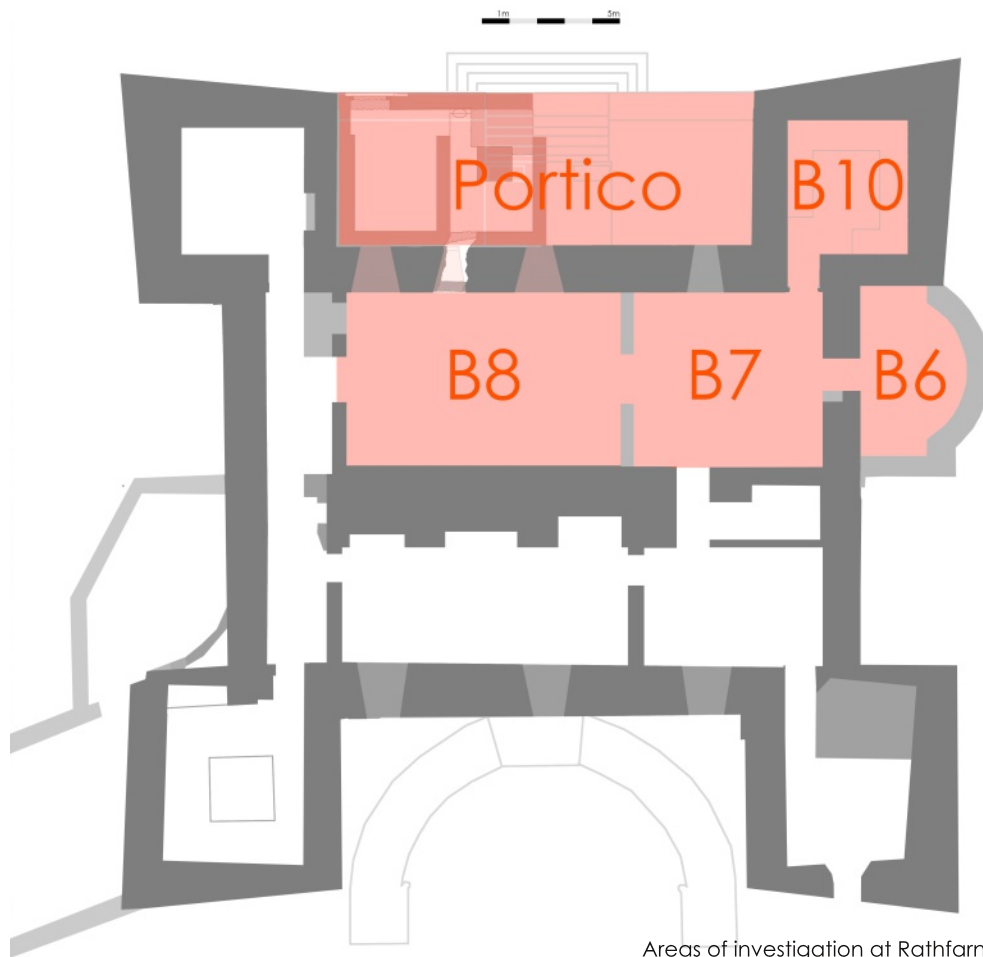
Section 2 The Plaster

Introduction

The cleaning and repair of plaster in rooms B6, B7, B8 and B10 was carried out under archaeological supervision during July and August 2018. While the overall original construction techniques and materials of the barrel vaults of Rooms B7, B8 and B10 are extremely similar, the surviving plaster used to coat the walls and ceilings of these three spaces shows considerable variation. Much of this variation appears to reflect the different uses to which the three spaces were put following the

early 18th century renovations of the castle basement, and successive episodes of alteration and repair.

At least four separate types of plaster (A-D) were identifiable, together with a number of additional surface treatments (F), which were consistent with the intermittent application of additional layers of lime- or white-wash and/or distemper to the room surfaces over the centuries. A possible fragment of surviving 16th century exterior harling (E) was identified in room B6.



Areas of investigation at Rathfarnham Castle in 2018

Plaster type A: earth plaster

The earliest plaster identified in the basement comprised a layer of brownish-yellow clay or loam to which chopped small twigs and straw had been added as a binder. Surviving fragments indicate that this earth plaster had been pressed into the voids, cavities and irregularities of the rough limestone masonry of walls and vaulted ceilings. Consequently, surviving plaster fragments which fell or were removed from the walls during the cleaning process varied in thickness from 10mm to more than 50mm in thickness, depending on the depth of the voids into which the plaster had been pushed. Surviving plaster fragments also indicated that, after application, the overall surface of the earth plaster was smoothed before being used as the base layer for a thin skim of white lime and dark coloured hair (possibly cattle/horse) plaster that varied in thickness from one or two millimetres to 10mm. Mortar analysis of samples from Rooms B7 and B10 further suggested that this white plaster outer layer may have been applied as a thick lime wash, rather than as a trowelled-on plaster layer.

Surviving fragments of this plaster were identified in all three basement rooms on walls, ceilings and window embrasures, as well as within the gun-loops in B10, and in areas of the wall exposed in archaeological test-pits. This indicates that it was originally applied to all of the interior masonry surfaces of the late-Tudor castle basement. This consistent overall coat, the likelihood that the 16th century masons intended to plaster over the relatively crude limestone masonry of the original walls and ceilings (see detailed discussion below) and the fact that no other plaster underlies it, all imply that the earth layer was applied shortly after the castle was completed in the 1580s. This suggested early date for the clay plaster and associated lime skim is further supported by the fact that it is visible in section running behind features of later date that were built up against the basement walls. These later features include the stacked brick cubbyholes that line the eastern wall of the flanker tower (B10), the subdividing partition wall that separated rooms B7 and B8, the infill walls that were used to convert the later 16th century gun-loops in the



Section through fragment of earth mortar plaster



Lime outer layer of earth mortar plaster showing hair



Close-up of earth showing twigs and straw



Earth mortar plaster in situ on south wall of B10

Earth mortar plaster in situ on north wall between B7 and B8, surviving behind the wall dividing the two rooms



flanker towers into cupboards or small storage alcoves, and the existing paved stone floor, all of which are probably of early 18th century date based on construction techniques and stratigraphic relationships to dated features. This plaster was also identified below the existing basement floor in the test-pits exposing pre-18th century levels.

The suggested early date for this earth plaster is also supported by the fact that it most closely resembles the daub or loam plaster layers that were used to provide smooth surfaces on medieval and later medieval wattle and timber-frame walls throughout much of northern Europe. This technique was well-known in Ireland, and Irish examples roughly contemporaneous with the construction of Rathfarnham have been identified at locations as far apart as Dublin, Waterford and Barryscourt, Co. Cork (Pollock 2007). Preliminary research has identified few comparable surviving examples in Irish castles and towerhouses. Daub or cob plaster was used in Irish lower-status clay or stone buildings and vernacular houses up until the 19th or early twentieth centuries (e.g. Evans 1967, 68-9; Irish Folklore Commission Schools Manuscripts, Vol. 259, 111-114). However, in contrast to the Irish situation, the use of clay or loam plaster plus a surface lime layer is known from higher-status 16th century English contexts. These contexts could be of a very socially elevated nature, as demonstrated by references to the use of loam plaster in some of the task-work books of the English Royal Works in the later decades of the 16th century (Gapper n.d., online thesis, Chapter 1: Materials and their uses, subsection (iii), 'Loam'). For example, in 1609-10, the account of Richard Browne's task-work in three rooms at Somerset House included *'fillinge upp with lome between the Joiste ... the saide Lome being laide vj inches thicke'*. Although most of these references to the use of loam plaster indicate that it was used on timber or wicker surfaces, Gapper notes that *'it could still be used to render external brick walls and to create internal partition walls, such as those of the new brick building that was constructed in Fig Tree Court, Inner Temple, [London,] in 1622'*.

Although its use in lower status buildings may have continued into the 19th and 20th centuries in Britain as well as in Ireland and elsewhere,



The largest surviving section of the earth mortar plaster, in situ on the north wall of B7

Gapper notes that *'loam gradually disappears from the task work entries [of the royal building works accounts] after 1603.'* This coincided with the decreasing popularity of timber-frame buildings among the higher echelons of English society, and the increasing use of brick and stone as fashionable building materials. Given the relatively humble status of the basement rooms at Rathfarnham and, until the earlier 18th century, their function as part of the castle kitchens, it is unlikely that they - by contrast with the public reception rooms and family bedrooms on the floors above - would have been significantly impacted by changes in architectural fashions among the élite house-owners of Britain. It is possible, however, that the workmen employed by Archbishop Loftus in the construction of the castle might have been aware of such changes, as their employer was wealthy, court-connected and charged with importing English manners and customs into Ireland. Thus, it might be surmised that the use

of loam as a render is likely to have died out in Rathfarnham at roughly the same time as its decline in high status British buildings. This would further support a later 16th century date for the plaster and for its application soon after the castle was completed in the 1580s.

The earth plaster layer at Rathfarnham is of interest not only due to its probable late 16th century date, but also due to its presence and survival at the castle. In Ireland, as a general rule, in higher status buildings, *'Historic renders consist primarily of a mixture of lime and sand for the undercoat and a crushed aggregate containing coarse sand, washed gravel or stone chipping mixed with slaked lime for the top coat'* (Farrelly 2007, 235). Moreover, where the plaster of vaulted surfaces has survived in Irish contexts, it is frequently marked with traces of wicker centring, which - unlike heavier timber centring - could be left in place after the construction works were completed (e.g. at Listowel Castle; Rourke



Blocked 16th century window in north wall of castle (Room B8) identified in 2016. Note type A earth plaster over stone window frame on right of embrasure

2007). Thus the imprints of wicker are often to be seen on the lime mortar/plaster surfaces of surviving castle and towerhouse vaults (e.g. at Dowth Manor, Co. Meath; Stout 2007; gate arch of Kells Priory, Co. Kilkenny), or in rarer instances, the wicker itself has survived (e.g. Listowel Castle; Rourke 2007; or the ceiling of the western tower of Kilkenny Castle). Surviving wicker from wicker-centred vaulting also survives below the plaster at Crowmell's Fort, a coach-house at Rathfarnham Castle, and was dated to between the mid-15th to the mid-17th century by AMS (95% probability; Collins A. pers. comm. 2018).

The earth plaster layer at Rathfarnham is therefore somewhat anomalous in terms of materials used in high-status Irish buildings in general and in terms of its application to a curved, vaulted surface in particular. As a result, it is of elevated archaeological interest, as it may be a rare survival of a lost Irish castle-building tradition, enduring where other examples were destroyed by weathering, water ingress or the

Earth mortar plaster in gunloop at Bagenal's Castle in Newry, Co. Down, constructed in c. 1568-1569



structural failure of the plaster due to its relatively low tensile strength. For example, patches of a potentially similar earth-based plaster are visible near the base of the exposed walls of the structure immediately to the south of the Prior's Tower at Kells Priory, Co. Kilkenny, though these may reflect activities associated with the use of parts of the site as a farm in the 17th to 19th centuries (Condit 2014). More directly comparable, however, is an extremely similar plaster identified by the author in one of the gun-loops of Bagenal's Castle in Newry, Co. Down. This building, which dates to c. 1568-1569, was constructed by Englishman Nicholas Bagenal for his own use and as part of the overall fortification of the nascent town of Newry (Newry Mourne and Down District Council n.d.).

Given that Archbishop Loftus is surmised to have employed English craftsmen and materials during the construction of the castle (for example in the yellow sandstone fireplaces) and that this was a common practice among late-Tudor English settlers (e.g. Loeber 1979, 52, 53, 54-55), it is also possible that the earth plaster at Rathfarnham is the work of an English plasterer or plasterers, who employed techniques not generally used on masonry walls in Irish higher status buildings. Equally, it may reflect the fact that, as far as interior plasterwork was concerned, the primary focus at Rathfarnham (and perhaps also in Newry) was on rendering timber frame partitions and other walls in the upper parts of the castle, with the plastering of the service spaces in the castle basement being undertaken almost as an afterthought. Consequently, materials and techniques more suited to rendering wattle and timber frame walls rather than masonry surfaces and overhead vaults may have been used in the basement, perhaps to save time, money, or both.

Conservation of plaster type A in Room B10

Prior to the restoration works, the type A plaster on the west and north walls and lower parts of the vault of Room B10 had mostly fallen off, and the parts which remained were detached from their substrate and very loose. This was primarily due to the dampness of the room. A gentle brushing during initial

conservation works resulted in further loss of the earth plaster. The remaining patches along the west wall, the upper level of the east wall, and below sill level on the north wall, were removed. Badly damaged remains of Type A plaster survives on part of the north wall (above sill level), the south wall, and in very small patches behind the 20th century stacked brick cubbyholes along the east wall, although much of this latter section was lost upon brushing down.

Despite the poor condition of the type A plaster on the south wall, it was fully retained within the refurbished space of Room B10. A stainless steel guardrail 900mm high, was fixed into the floor and set out from the wall, in order to protect the earth plaster from visitor contact and to protect visitors from any loose material or debris. The earth render surviving behind the stacked brick cubbyholes and within the gun loops are being retained with no additional intervention.

Conservation of plaster type A in Room B7

Room B7 had the largest surviving area of type A plaster. As with Room B10, large areas of plaster were bowed and bulging, having become completely detached from their substrate, and additional debris had become seated behind them within these voids. Initial examination and brushing down of this render, especially on the north side and much of the vault, and to the west of the door, resulted in the near total detachment of the plaster from the wall and vault. Due to the voids behind the plaster, it was not possible to remove small parts of plaster and leave adjoining areas intact. As a result, the type A plaster was removed from the north wall, from one end of the south wall, and from large areas of the vault.

An area of type A plaster to the south of the opening in the east wall, sandwiched between newer render, and the side wall, was sound and in good condition. This was brushed down and retained, with a new limewash finish.

The Office of Public Works investigated a number of solutions for retention and conservation of the remaining portion of earth plaster on part of the south wall and the vault.



4mm stainless steel restraint fixing into clay/loam plaster



Conservation of clay/loam plaster in room B7



Conserved clay/loam plaster in room B7

As with the other areas of the surviving type A plaster, it was badly delaminated from its substrate, and very unstable, especially on the vault surface, and there was concern that it might detach from the vault and present a potential threat to staff and visitors. The proposed introduction of heating into the room, which will alter the existing room conditions and potentially cause further shrinkage of the plaster and further separation from substrate, was an additional challenge.

Consolidation by injection of grout was not considered to be a viable option, as the hollows behind the render were very large, making it difficult to control volumes of grout, and potentially increasing the deadweight, to the extent that the existing remaining clay render would detach. Before injection of grout the voids behind the plaster, and any debris therein, would have needed to be flushed out. This flushing process carried a risk of increasing the delamination between the render and the substrate, causing it to detach. Instead, the Office of Public Works carried out a trial using 4mm stainless steel restraint fixings drilled into the substrate, with the head of the screw supported by a stainless steel washer. This was successful, although the plaster specialist advised that the washer be located on the finished face rather than countersunk, due to the extremely friable nature of the clay plaster. These fixings were placed at a 400mm grid across the surviving plaster, and the stainless steel washers painted white to match the surrounding (new) lime wash. The locations where type A plaster was removed or lost from the walls and ceilings of room B7, have been left unplastered, with a limewash applied directly to the masonry surface. This allows clear delineation to be made between the surviving clay plaster and adjoining surfaces, and highlights the conservation of the plaster.

A sample of the type A plaster has been retained (by the author, on behalf of the OPW and National Monuments Service). This will be kept safely on site in Rathfarnham Castle, and made available for future study, if required. The Office of Public Works has created a set of record drawings show the initial extent of the earth render, areas where it fell off or was

removed, and areas where it was retained, to supplement the archaeological drawings included in this report.

Plaster Type B: lime-based plaster

The second type of plaster identifiable in the basement of Rathfarnham Castle was visible in Rooms B7 and B10. It occurred in patches of irregular size and location and was a fine-grained, hard white lime-based render that, in most instances, had been given one or more coats of white- or lime-wash. No hair was visible in the sections of recovered fragments. It was identified in Room B7, for example at the base of the embrasure of the blocked window, and in Room B10 for example above the doorway, in the remodelled southern gunloop, and in three to four small patches to the east of the door. In all instances, this plaster did not occur as a single continuous wall finish, but as a means of covering masonry that had been exposed by the failure of the earlier clay/loam Type A plaster (e.g. base of wall in southeastern corner of Room B7) or by changes to the shape and fabric of walls and doors as part of the building alteration programmes of the 18th century.

A very similar finish, consisting of a white- or lime-wash painted directly onto exposed masonry where patches of the probable 16th century plaster had fallen or been knocked off by early 18th century alterations (e.g. the outer parts of the cheeks of the embrasure of the blocked window or the area at the base of the wall in the southeast corner of Room B7) has been classified as 'Plaster' type F (see below). It is possible that the similarities between the two different finishes (B and F) is the result of the application of the thicker of the two (B) as a lime-wash skim of 7-8mm thick, rather than as a plaster per se.

It is of potential relevance that in some areas - notably the area above the door and three or four smaller patches to the east of the door jambs in Room B10 - the plaster bears a strong resemblance to the mortar used to bond the probable early 18th century brick insertions that were visible in Rooms B7 and B10 (viz. the upper jambs (B7) and flanks of the doorway

into the flanker tower (B10), the patch of brickwork on the ceiling of the smaller room (B7) adjacent to the subdividing wall). Given the relatively poor quality and ad hoc nature of these brick insertions, it is possible that the



Type B lime plaster, or early 18th century date, identified at base of window embrasure in B7 (above) and directly above wooden lintel in doorway of B10 (below)





Plaster type C, 18th century lime and aggregate plaster, above springer line in Room B8. The vertical lines of former coal bunkers can be made out below the fireplace voussoirs

plaster in these areas represents patches of mortar used to fill gaps where the probable 16th century plaster had fallen off the walls during the building alterations of the early 18th century.

Plaster type C: lime plaster

The third major plaster type observable in the basement of Rathfarnham Castle occurred primarily in the larger, western of the two main basement rooms (B8). It was a hard, relatively fine-grained un-haired plaster with probable limestone inclusions that varied in size from approximately 1mm to 7mm in diameter. It covered the entirety of the vaulted ceiling of B8, ending in a straight line that followed the approximate springer line of the vault, and was similar, if not identical to the plaster covering the eastern (B7) surface of the subdividing wall between Rooms B8 and B7. In both rooms the

plaster was a slightly reddish or yellowish colour, however this is distinct from the ochre-coloured paint that covered the western wall and patches of the south wall of Room B7.

In general, the surface of plaster type C was smooth and in relatively good condition, without significant cracks or holes. By examining the edge of the plaster at the vault springer-line in Room B8, it was possible to observe that, here at least, the plaster was composed of two layers of approximately 7mm thickness each, which in turn had been applied on top of the original probable later 16th century clay render. While it is possible that these two layers represent two separate episodes of plastering carried out at different times, the similarity between the fabrics of the two layers equally suggests that they may have been applied at approximately the same time with the

aim of securing and reinforcing the underlying clay/loam plaster. However, unlike the early layer, the lime-plaster covering the vault stops at the surface of the subdividing wall between Rooms B7 and B8, indicating that it was applied after this wall had been constructed. Moreover, the pattern of staining on the masonry wall surface below the bottom line of the plaster, together with the configuration of the plaster in the southeastern corner of the room, suggested that, before the plaster was applied, a series of probable timber coal bunkers were constructed along the northern and southern walls of the room (Giacometti 2016, 3-4). The bottom edge of the plaster was then brought down to meet the upper timber bar at the back of these bunkers, and it flared slightly outwards where plaster met wood. When the bunkers were removed, this slightly thickened bottom edge was visible as a slight projecting lip along the plaster's bottom edge.

An examination of the plaster revealed that much of its reddish or brownish hue was due to

the presence of what looked like small patches of rust-coloured discoloration over much of its surface. While clay-based pigments, including iron-oxides, are known to have been added to lime plasters from at least medieval times in order to produce colours ranging in tone from yellow to reddish-brown (and see Gapper n.d., Chapter 1) it remains possible that the brownish colour of the Rathfarnham plaster is due to discolouration from impurities in the lime used to manufacture it. In this context, it is of potential relevance that iron and sulphur are two of the main impurities associated with using coal (rather than wood) when producing quicklime for use in building plasters (Krukowski 2006, 536). Given that the storage of large coal quantities of coal within the castle provided a large part of the impetus for the alteration of the basement as a whole in the 18th century, and that burning lime on site for use in domestic plastering and whitewashing was common in the 18th and 19th centuries, it is not implausible to suggest that the plaster on the vault of Room B8 may have been

Plaster type C, 18th century lime and aggregate plaster, in Room B8. The plaster is later than the former coal bunkers, whose outlines can be identified in the walls





Plaster type D, late 18th century plaster, in Room B6, showing reddish hair inclusions

manufactured on the castle grounds using coal as a fuel. This also accords well with the fact that while burning wood produced the best quality quicklime, the accelerated production and exportation of English coal to Ireland from the 1740s onwards meant that coal was increasingly used as a domestic and industrial fuel in eighteenth century Dublin and in other major urban centres (Ashton and Sykes 1964, 226-8). The relatively high level of impurities in the plaster is also consistent with Room B8's low status as a service space, and the probability that durability, strength and cheapness, rather than any aesthetic considerations were likely to have determined the choice of plaster used to coat its walls and ceiling.

Conservation of plaster type C in Room B8

The type C plaster in Room B8 was in bad condition along the west wall, and below the springing line of the vault along the north and south walls. It was crumbling, and had become detached from the wall in most places. Plaster was carefully removed in the damaged areas, up to a height of c. 1.10m. The plaster above this line and on the vaults was in good enough condition to retain, and it was brushed off and washed down to receive a new lime wash finish. The exposed walls were re-rendered in a new lime render, its composition based on the mortar analysis in order to be compatible with the existing render. Along the south long wall,

removal of the render exposed two masonry arches of 16th century fireplaces. The voissiors were left exposed, and the opening below was lime-washed, to fully expose the features.

Plaster type D: lime plaster

The plaster in room B6 (the basement of the later 18th century bow extension) was in much better condition than that of the basement rooms, probably due to the nature of the plaster itself and the limited uses to which this space is likely to have been put over the centuries. On the short northern and southern walls of the bow, and on the curved eastern wall (within which are set three curved Georgian timber sash windows with granite external sills and with a surviving internal timber window-board on the northernmost window), the plaster surfaces comprise a layer of hard, fine-grained lime plaster with hair inclusions. In one area, under the bottom right corner of the middle window, a large dark-russet tuft of this hair was visible, and was observed to be similar in colour to the coats of modern Hereford cattle. Other tufts of a lighter blondish red were also observed. Specialist mortar analysis suggested goat or horse hair.

All of the plasterwork of these three walls and ceiling was largely free from significant cracks or other surface signs of damage, and the removal of the windows for repair and refurbishment of the frames has had little or no perceptible impact upon it.

The top half of the western wall and the ceiling were white in colour, and nail holes demonstrated the fixing of cupboards of relatively late date against the wall of the room. Unlike the other walls of the bow, the surface of the western wall was characterised by a soft, powdery texture, consistent with the application of multiple layers of lime- or whitewash. On the upper part of the wall, to the south of the opening leading into B7, the layers of whitewash and paint, which had a combined average thickness of 3mm, were starting to crack and lift away from the plaster surface beneath. The surface of the wall in general was also characterised by gently rounded, shallow undulations, consistent with the application of



Close-up of late 16th century harling (plaster type E) in B6 plaster over an uneven subsurface, such as that



Possible late 16th century harling (plaster type E) in former external wall of castle, in Room B6

of a roughly-dressed masonry wall.

Conservation of type D plaster in room B6

The render in this room was generally in good condition, with only small areas hollow, or blown, and detached from the walls (c.1sqm). These damaged areas were gently removed, taking care not to remove adjacent sound plaster, and infilled with new lime render. All surfaces were lime-washed.

Plaster type E: harling

As part of the renovation of the bow extension, the upper part of the plaster to the south of the opening in the western bow wall proved to be loose and in danger of falling. Consequently, it was decided to remove the plaster from the entire southern part of the wall surface. When this was completed, the outer surface of the 1580s eastern castle wall was exposed. The fabric of this wall proved to be of roughly coursed and roughly dressed limestone and lime mortar construction. Traces of possible original 16th century harling were visible as a relatively thin layer of rough cast lime plaster with limestone inclusions varying in size from 2mm to 12mm in width, on the exterior face of the exposed castle wall. This extended down below the existing tile floor, thus clearly pre-dated the late 18th century extension.

The northern wall of the castle was exposed during a programme of works in 2016 (Giacometti 2016), and both sections of the castle wall were similar. A 10mm thick layer of off-white un-haired lime-based harling or rough-cast render was identified at the junction between the exterior of the northern wall and the brick wall of an 18th century coal cellar built up against it (below the portico). It was fairly brittle, with gravel inclusions (max 3mm) and no clay component. In 2016 this small fragment of exterior lime could not be positively identified as late Tudor harling. However, with the identification of the second larger patch of harling identified during 2018 in the bow extension, the two sections of harling can be positively identified and compared. Both patches of possible harling (north wall and east wall of castle) are consistent with traditional medieval and early-modern descriptions of

harling (i.e. external roughcast render), similar to fine-grained pebble-dash (Farrelly 2007; O’Keefe 2007)

The fragments of plaster identified in the bow were noticeably yellower in colour than that of the exposed plaster on the outer face of the north wall. While this may reflect a higher percentage of sand, or a different batch of lime used in manufacturing the plaster, it remains possible that all or most of the original plaster was removed during the construction of the bow, and that the apparent rough cast layer was applied in the later 18th century as a base for the lime and hair plaster layer. This 18th century layer appears to have been applied in two coats, and had an average thickness of c. 50mm. It covered the whole of the western bow wall, including the protruding ‘shelf’ and thickened wall base.

Plaster type F: lime-wash/paint

The entirety of the basement was at various times given one or more coats of whitewash, lime-wash or white paint, and these coats were applied over all of the three plaster types identified within rooms B7, B8 and B10, as well as in the eastern bow extension (B6). However, in some cases this lime wash or white paint was applied directly to the masonry wall. This was apparent in the areas of the wall surfaces of Rooms B7 and B10. In the smaller of the two basement rooms (B7), these were generally patches of wall where the 16th century plaster had fallen off or been removed, and where the exposed masonry had been white- or lime-washed over without the application of any other plaster layer.

It is probable that these applications occurred at different times over the centuries, and that each of the basement rooms may have received separate treatments, depending on the build-up of dirt on their respective surfaces, and on alterations to their uses and fabric.

While most of the layers of paint visible on the walls and in the sections of plaster fragments were white - consistent with the common use of whitewash and lime-washes in Irish lower

status spaces of all sorts in the 18th to 20th centuries (e.g. Evans 1967, 61; O’Reilly 2011, 202, 210) - two other paint colours were identified in the basement.

The first is a pale turquoise blue paint or distemper, applied directly over the Type D plaster in Room B6 on the north, south and east walls, plus the lower part of the western wall. Traces of the same paint were also identifiable in some of the surviving plaster fragments from the southern wall and ceiling of the adjacent smaller basement room (B7). This paint was subsequently painted over with another layer of whitewash or thin lime-wash. The presence of the probable 19th or 20th century turquoise paint in particular is of interest, as it links the bow and the smaller of the basement rooms together in terms of possible use and circulation patterns, and further emphasizes the different ways in which the western and eastern halves of the basement functioned into the 20th century.

The second is an ochre paint, which the conservation plasterers positively identified as paint based on their inability to lime-wash over it. This was identified on the western wall and lower parts of the northern wall of Room B7. A cream-coloured paint identified in Room B6, applied over the turquoise paint, may be the same finish, in which case the ochre paint can be approximately dated to the 20th century on stratigraphic grounds.

Plaster type F: ochre paint finish of 20th century date on the west wall of Room B7



Section 3 Exposed features

General wall surfaces

The southern wall faces of both rooms B8 and B7 are formed by the northern surface of the east-west spine wall, and were exposed following the removal of the plaster. This wall, which rises the full height of the castle, is a major structural element and contains a series of fireplaces and flues within its thickness, as well as a service stairs at its eastern end. The wall is approximately 3m thick and, where the original masonry was exposed, is constructed of roughly coursed lime-stone masonry bonded with a lime mortar. The limestone used in the construction of this wall ranges in colour from a dusty, bluish-grey to a dark charcoal grey, and has a fine close grain that superficially resembles the ‘calp’ limestone that underlies much of Dublin city and south county (e.g. Marchant and Sevastopolou 1980, 195-6) and that was used locally in buildings and walls from the middle ages into the 19th and early 20th centuries.

Against this backdrop, it is of interest that, although red brick and brick fragments were identifiable in later masonry used to patch holes and to fill in openings (such as those of the fireplaces, bake oven and windows), there was no evidence of the use of granite in the original wall construction or in earlier 18th century contexts within the basement, despite Rathfarnham’s proximity to the granite beds of the Wicklow hills. This is in contrast to the relatively frequent use of granite as a later 18th century building material at the castle, where it was used to pave and face the north portico, and to form the sills, lintels and bake oven of the new southwestern kitchen wing. Given the historically-recorded hostility between Archbishop Adam Loftus and the south Wicklow clans in the later 16th and early 17th centuries, it is possible that the choice of limestone as a building material not only

reflected its greater workability, but also the limited supply options, poorly-developed quarry network and Dublin-centric outlook of the late Tudor builders and occupants of Rathfarnham. While it is possible that some or all of the stone used to build the castle was quarried locally, it is also possible that it was transported by road or, less plausibly, by river from larger limestone quarries such as those situated along the Liffey in Lucan and Palmerstown to the northwest (*ibid.*, 198).

The same roughly-coursed limestone and lime mortar construction is visible where plaster has been removed from the interior surfaces of the original outer northern wall of the castle. This wall forms the northern wall of both basement rooms (Rooms B8 and B7). All four walls of the flanker tower (B10) are also of a similar original later 16th century construction, as is the eastern wall of the smaller basement room (Room B7), with the exception of the recent concrete-block masonry inserted on either side of the opening that allows access from the later 18th century bow (Room B6) into Room B7.

Although of probable early 18th century date (Giacometti 2018, 1, 10) and although considerably narrower than the 16th century castle walls, the wall subdividing the two basement rooms from each other is also of limestone and lime mortar construction and has an average width of 0.5m. The new opening made in 2018 between the two basement rooms (*ibid.*, 10), and the exposed cut sections that form its jambs, also showed that the limestone masonry construction comprised two roughly dressed and squared outer leaves with the space between them filled in with random rubble set in a loose slurry of lime mortar and aggregate.

The same building method was also used in the construction of the western wall of Room B8, which is almost certainly of 16th century date.



16th century wall surface in Rathfarnham Castle basement. This is the north wall of Room B7

This wall was of approximately the same width (c. 0.55m), but showed more evidence of alteration and disturbance; a blocked doorway with an arched brick opening was visible to the north of the new opening, while a sub-circular disturbed area approximately 0.5m in diameter was visible close to the base of the wall to the south of the new ope.

This consistent use of limestone and lime mortar in the construction of walls at Rathfarnham over several centuries suggests a continuity with wider Irish building practices in Dublin and further afield. The 18th century use of brick to fill smaller spaces and to patch masonry where some degree of precision was required (e.g. the jambs of the doorway into the northeast flanker) also suggests that, although brick was readily available and familiar to the castle's masons (brick being produced in the wider Rathfarnham area into the 20th century;

Roundtree 2007, 67), limestone is likely to have remained the cheapest and most efficient option when it came to constructing larger expanses of masonry.

General ceiling surfaces

The ceilings of both the basement rooms and of the flanker tower were formed by the construction of roughly-coursed limestone vaults. Ian Wolfe, Conservation Engineer with the Office of Public Works, has pointed out that the construction technique is a corbelled vault, rather than a true barrel vault, and that it has not been formed from cut stones in a keystone shape. In the case of the basement rooms, the long axis of the vault ran east west, parallel to the spine wall, while the long axis of the flanker tower vault (Room B10) ran north-south. When a hole was opened at the top of

the subdividing wall between Rooms B7 and B8 to facilitate the insertion of electrical and other services, it was possible to see that the stones of the vault ran in uninterrupted east-west courses from one side of the wall to the other. This supports the conclusion, drawn by from earlier excavations (Giacometti 2018, 1), that the two basement rooms originally formed part of one large space, and that the partition wall is a later insertion.

Where exposed by the removal of plaster in both basement rooms, the vault stones were seen to have had varying lengths (running E-W parallel to the long axis of the basement spaces) and widths (built into the thickness of the vault and visible in the embrasure of the blocked window ope in B7), but a consistent average vertical height (north-south) of approximately 0.15m; they were generally angular in profile. This suggests that when quarrying the stone for

the vaults, some care was taken to split the limestone beds at consistent intervals, in order to produce more-or-less standard courses. However, by contrast, the relatively sloppy and inconsistent application of the lime mortar used to bond these courses suggests that the masons building the vault had relatively little interest in producing a high quality surface finish and that speed may have been a more important factor in the overall construction of the vault than aesthetic considerations. The survival of large patches of probable late 16th century (type A) plaster on the vault in the smaller basement room (B7; see below) reinforces this suggestion, as it shows that, from the outset, the castle masons intended to hide any deficiencies in the vault construction behind a layer of plaster. A similar pattern was observable in the northeast tower (Room B10), where the smaller vault was of almost identical construction and shows traces of possible original ceiling plaster.

16th century vault surface in Rathfarnham Castle basement. This is the vault of Room B7



Bake oven (Room B7)

Prior to the 2018 remedial plaster works, a partially-visible feature in the southern wall of B7 had been erroneously identified as either a well (Hayden pers. com. 2014) or part of a fireplace (Giacometti 2015, 2016, 2018). Following the removal of the plaster in 2018 the feature was reinterpreted as a bake oven.

The feature is situated in the southwestern corner of Room B7 immediately adjacent to the wall dividing B7 from B8. The removal of plaster revealed a relatively small arched opening, defined by a large limestone lintel above, and by three roughly dressed limestone quoins, which formed its eastern side. The top of the opening was situated 840mm above the 18th century stone floor (100.87m OD) and the opening measured 710mm in width. The bottom of these stones did not continue below the surface of the early 18th century flag floor beneath, as demonstrated by a test-pit (Giacometti 2018). The western quoins and the west end of the lintel were obscured by the subdividing wall, which had been built so that its eastern surface was almost flush with the straight western edge of the opening, i.e. the wall was built as close to the side of the opening as possible, without actually blocking it. The shallow arch that defined the upper edge of this opening had been created by carving an elongated c-shaped strip out of the long side of a sub-rectangular stone that had originally measured approximately 1.4m long by 0.5m high. The stone of both quoins and lintel were of a dusty bluish-grey limestone, with some apparent soot staining, and were consistent in colour, texture and construction with the limestone masonry of the later 16th century spine wall into which they were set; it is likely that this feature was constructed at the same time as the wall.

The masonry used to infill the opening of this feature was visibly different from that of the original fabric, however, and comprised two different types, each of which probably represented separate alteration episodes. In the upper arched part of the opening, five roughly laid courses of brick and mortar had been used as infill, while below this, extending for a



Bake oven, following restoration works

Bake oven during restoration works. The upper half of the oven cavity infill has been repaired re-using the same brick, but with new lime mortar





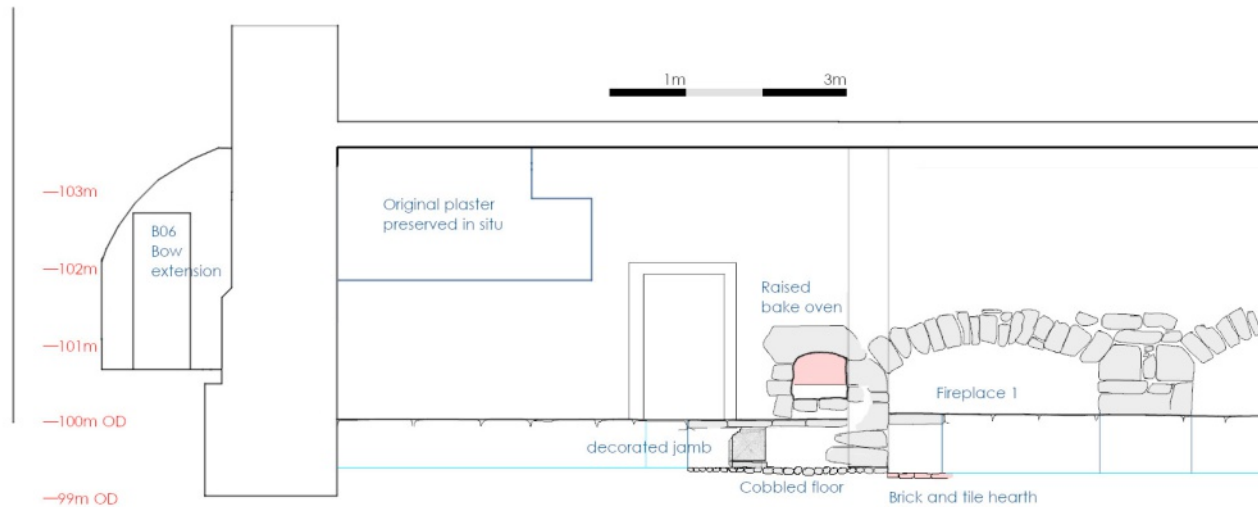
View into bake oven during restoration works, after damaged brick infill was temporarily removed. Visible is a brick oven dome, partially backfilled with demolition rubble, and numerous late 19th or 20th century glass bottles. These were left in situ

further approximate 45cm, was an area of uncoursed limestone rubble with some brick fragments, bonded with an off-white, hard lime mortar, down to the level of the 18th century paved floor. Although very similar in fabric to that of the spine wall, the stones used in this fill were generally smaller in size than those of the wall itself, and the mortar in which they were set had been applied much more lavishly than those of the wall, to the point that it was often difficult to make out the shape and size of individual stones. It is of interest that an almost identical masonry was also used to infill the lower half of the doorway in the southern wall of the northwest tower, which was partially blocked, probably in the 18th century (Giacometti 2015, 18).

A number of loose bricks in the upper part of the fill were temporarily removed and replaced to consolidate the wall. This revealed the rounded dome of a red brick bake oven - with an approximate inner diameter of 1.1m - set

into a possibly sub-rectangular cavity within the spine wall. The bricks used to construct this dome varied in colour from a dark red to a dark greyish brown, consistent with having been burnt during the operation of the oven. Unlike the similar dome of the bake oven in the later 18th century southwestern kitchen wing - which is visible in the current castle tea-rooms and which has an inner surface formed by the header faces of the bricks used to build it - the construction of the basement dome was not characterised by a regular bond pattern. Instead both brick header and stretcher faces were visible in the various courses, while the greyish-white mortar used to bond the bricks was relatively sloppily applied. In this context, it is worth noting that similar characteristics define the brickwork of the upper jambs and flanks of the doorway into the northeast tower (see below), and it is possible that both these and the bake oven dome may have been constructed at roughly the same time, or even by the same bricklayer, during the early 18th century.

Elevation of south wall of Room B7 (centre) and B8 (right) showing location of bake oven and other 16th century features



Also visible when the brick infill was removed was a hole which had been punched through the upper portion of the dome adjacent to the opening. Through this, it was possible to see that the interior of the dome was partially filled with the collapsed brick and mortar from the hole, together with some possible ash and a white mortar-like substance. On top of this fill lay the remains of at least seven cylindrical dark-green glass wine bottles of later 19th or early 20th century date, of which all but three were partially smashed. The presence of these bottles and their position on top of collapsed material from the roof of the dome suggests that, at some point in the later 19th or early 20th century, the opening on the surface of the wall in B7 was visible or became visible and was investigated by removing the upper part of the masonry infill. The hole in the dome was probably made in order to see what was inside it, and after examination, it was considered insignificant enough that rubbish in the form of bottles were discarded inside it before the opening was blocked up again. The bottles were left within the cavity and were not collected by the archaeologist.

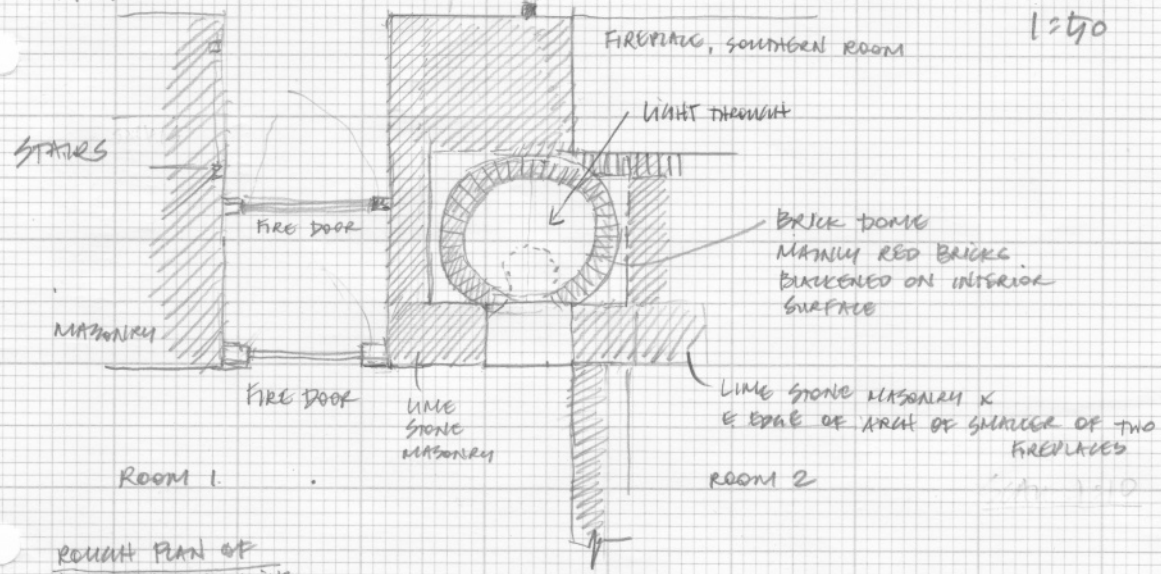
The tight fit of the dome within the original wall cavity meant that it was difficult to establish the cavity's shape and the exact location of any potential original flue. It is possible, however, that the cavity was sub-rectangular and that, as

constructed, a relatively small rectangular flue rose upwards from a point approximately 0.5m from the outer surface of the wall. While several bake ovens of similar date (such as the ovoid example in the Dowth Manor towerhouse, Co. Meath; Stout 2007) had corbelled roofs, rather than the probable straight sides and roof of the Rathfarnham example, the relative location of the cavity adjacent to the larger fireplaces in Room B8 is consistent with its original use as a bake oven. At the time of inspection, a chink of light was observed penetrating the rear wall of the dome. This suggested that at least part of the dome was not contained within the full thickness of the spine wall. By measuring the profile of the spine wall, it was possible to determine that the southwestern portion of the dome backed onto the corner of the large easternmost fireplace in the current public reception room in the southern basement. The back of this fireplace is partly composed of crude, whitewashed brickwork and patches of un-coursed stone masonry and, consequently, it is likely that the light was penetrating the dome through a gap in the masonry where the mortar was missing.

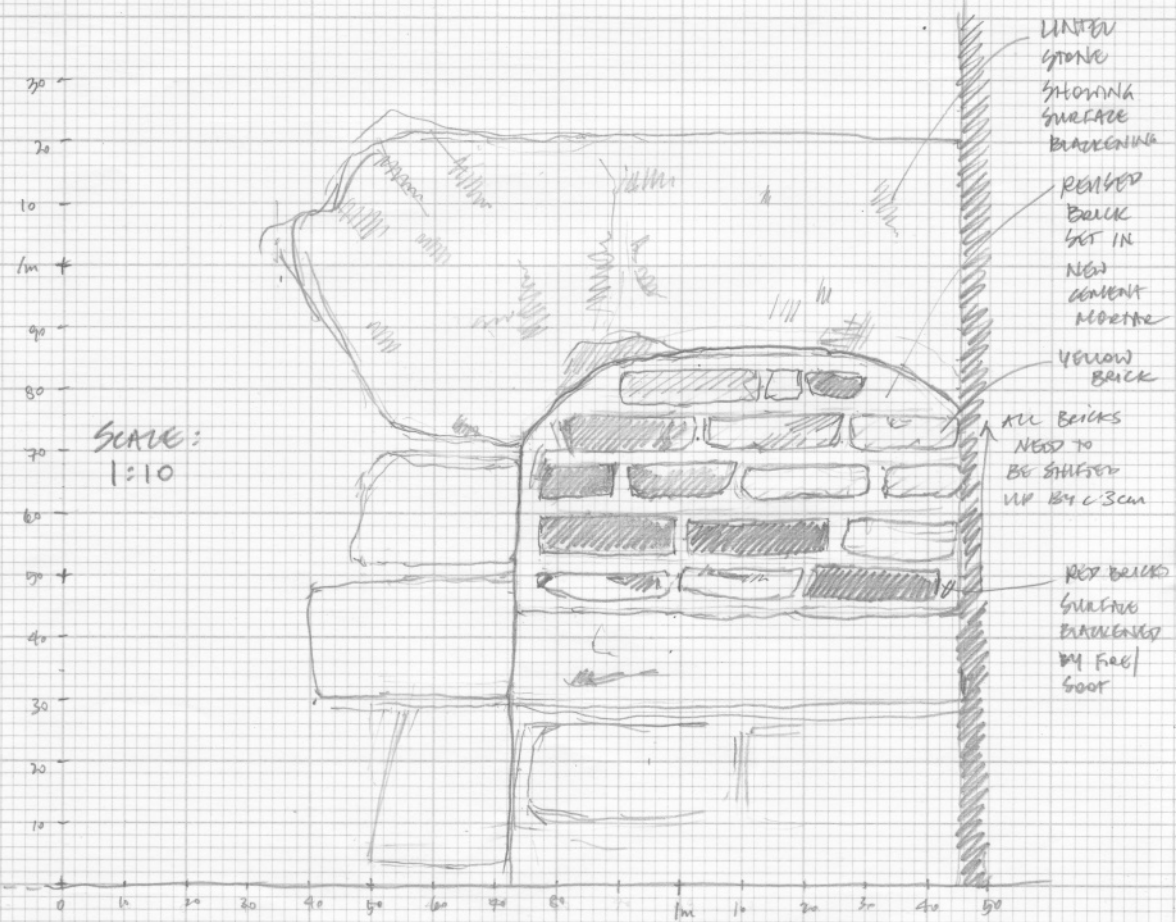
As the dome was partly filled, and as the bottom courses of the brick infill were not removed from the oven opening in Room B7, it was not possible to determine where the mouth of the brick dome originally was. While the

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four
 AMDE'S ROOM SCALE:
 1:50



ROUGH PLAN OF
BAKE OVEN RELATIVE
TO FIREPLACE IN SOUTHWESTERN
AMDE'S ROOM
 DIMENSIONS APPROXIMATE ONLY



SCALE:
 1:10

SOUTH-FACING ELEVATION OF BAKE OVEN, RASHEARUHAM CAVE, BASINMENT

original late 16th century bake oven cavity would have been accessed from the northern basement, and while it may have continued to be used after the two larger fireplaces were filled in, it is also possible that instead the brick oven was accessed from the fireplace in the southern basement. As O'Reilly (2011, 208) observes, in the quarter century on either side of 1700 *Built-in wall ovens for bread, found in some houses in Leinster, east Munster and south Ulster [...] were set into masonry at the angle between the hearth and the back wall of the kitchen at about a metre above the floor, and had a metal or wooden door*. Although this trend was primarily observed in vernacular architecture, the dates of this phenomenon broadly accord with the proposed 1720-1740 date for the conversion of the southern basement into the kitchens and the remodelling of the old northern kitchens as coal and other storage spaces. The relative location of the oven in the southeastern corner of the fireplace on the southern side of the wall, plus the greater depth of this fireplace when compared with the two others to the west of it also suggest that it may have been accessed from the south rather than from the north.

Against this backdrop, it is of interest to consider the proximity of the subdividing wall between Rooms B7 and B8 to the edge of the original 1580s oven cavity, as the face of the wall was placed as close as possible to the edge of the original bake-oven cavity without actually blocking it (as noted above). While this may be coincidental, it is possible that the subdividing wall was positioned to allow the continued use of the bake oven in the northern basement after the fireplaces to the west were blocked up, perhaps while the much larger oven in the southeast tower was being converted. Alternatively, it may have been left open in order to make it easier to build the brick dome which, as a result, would have been accessible from both sides during construction. It is also worth noting that the subdividing wall in the basement runs along approximately the same line as the wall that separates the entrance hall from the dining room on the ground floor above. The basement wall may, therefore, have a structural role in transferring the load from the wall above to the ground beneath the castle. If this is the case, the potential role of the bake

oven in determining the location of the subdividing wall may reflect a rare instance where the relatively humble service spaces of a grand house may have dictated the configuration of the living spaces above.

Door into northeast tower

In the northeastern corner of Room B7, a door opening 1.08m wide allows access to the northeast tower of the castle (Room B10). A modern timber door, and older timber frame, were temporarily removed during the work as they had woodworm. Following the repair works to the jambs, the historic frame was replaced in situ.

The sides of the doorway are formed by chamfered jambs that are set flush with the northern face of Room B7. These jambs are composed of smoothly-dressed limestone quoins that extend upwards from the 18th century flag floor surface to a point approximately 1.1m-1.2m above it. These jambs are similar to jambs identified in the other 16th century doorways in the basement (Giacometti 2015, 2016, 2018) and are almost certainly original features of the castle. Above this point, both jambs are of a bright orange-red brick, set in relatively thick (c. 25mm) mortar joints. The overall dimensions of the bricks used (220mm by 100mm by 60mm) are consistent with those manufactured in the eighteenth century (Roundtree 2007, 63), and their relatively rough outer surfaces are further consistent with having been manufactured using timber moulds before air drying and firing (ibid., 66).

The profile of the brick conforms to the chamfer line of the limestone quoins below and the chamfered brick upper parts of the jambs extend upwards for approximately eight courses to a point 1.88m above the floor level. At this point the heads of the jambs met a rough lintel formed by a layer of approximately ten re-used small sub-rectangular timbers, placed side by side across the door opening. Three or four of these small timbers were missing, and the surviving examples were in relatively poor condition. Upon them sat a layer of lime and aggregate plaster, and above this a layer of



Doorway into northeast tower (B10) showing 16th century stone surmounted by 18th century brick jambs

Detail of doorway



Detail of 16th century stone jamb dressing

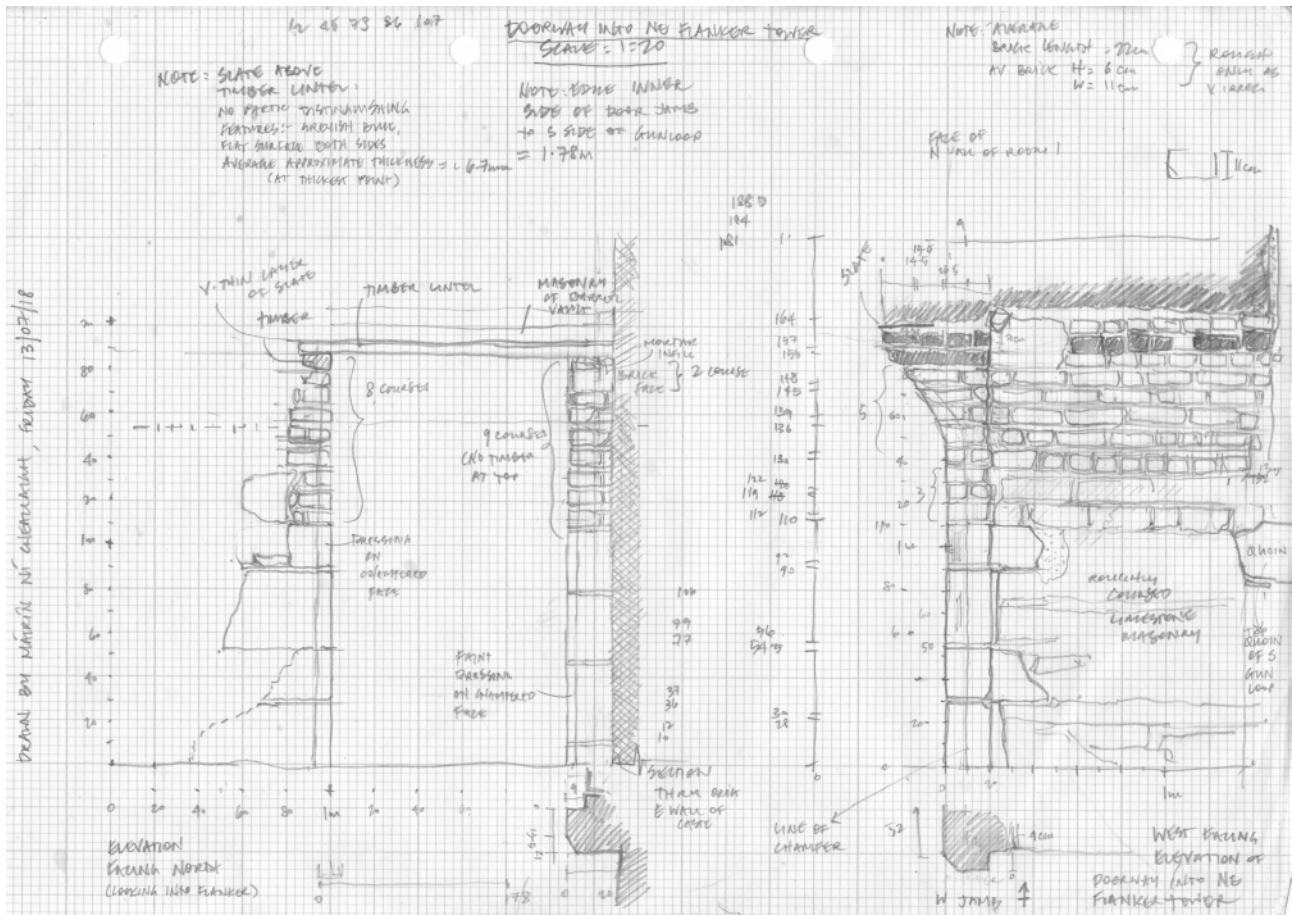


roughly-laid bricks and mortar, which sloppily filled in the uneven gap between the lintel and the limestone masonry of the wall above.

A further thin layer, comprised of fragments of roofing slate, laid flat and with an average thickness of 2-4mm was also visible at the front of the lintel (on the northern wall face of Room B7), and may have been used as a bedding for the mortar and brick layer, or to protect the upper surface of the lintel timbers from the mortar above. The top of the door opening cut into the curve of the barrel vault of Room B7, and the upper parts of the brick jamb sections were constructed so that the jambs curved gently outwards, following the curve of the vault. Behind the jambs, the vertical surfaces of both sides of the entryway into the tower through the thickness of the castle wall showed a similar division between roughly coursed limestone masonry below, and brick masonry above. The join between the two



Doorway into northeast tower (B10), with monitoring notes below



masonry types occurred at approximately the same level as the join between stone quoins and brick courses in the jambs.

The continuous, regular profile of the chamfer as it travelled from stone to brick, plus the smooth way in which the chamfer tapered off to a point where the jambs met the curve of the ceiling vault suggested that the bricks were built up with protruding right angled corners, which were then hammered or dressed to conform to the profile of the stone below. This is supported by the fact that, when the plaster was cleaned back from the jambs, the uncovered chamfered surfaces of the bricks looked abraded, consistent with having been hammered or chiselled to create the chamfer, rather than having been cast in a specially-built mould.

Despite the relative care that had been taken to

chamfer the brick of the jambs to match that of the stone quoins below, the upper, brick surfaces of the entrance-way were relatively crudely constructed; the stretcher and header faces of the bricks of each course were laid without any attempt to create a regular pattern, so that some courses comprised only the stretcher faces of the bricks (where the long axes of bricks were laid parallel to the long wall axis), some only headers (long axes of bricks laid at right angles to wall face, with ends exposed) and some by a random mixture of the two. The rough and ready nature of the construction techniques used implied that, from the outset, the masons intended that both sides of the entranceway, and probably also the lintel, would be plastered. This is consistent with the presence of a relatively hard, fine-grained lime plaster that resembled the mortar of the brick construction on the inner surfaces of the doorway.

Blocked window of Room B7, following conservation



It is unclear, however, whether the original builders intended to plaster over the door jambs, or whether they intended that these should receive one or more coats of lime- or whitewash instead. In either case, the care with which the brick upper parts of the jambs were shaped to conform to the stone lower parts suggests that the jambs would have been visible to those using the basement. If this were the case, it seems unlikely that they would have been covered over by a timber doorframe. No evidence of any other features such as swivel cups/stones, or a hole for a bar were visible adjacent to the jambs nor did the jambs themselves show any evidence of such features. The existing timber doorframe may therefore have been a 19th century or later addition.

Blocked window (Room B7)

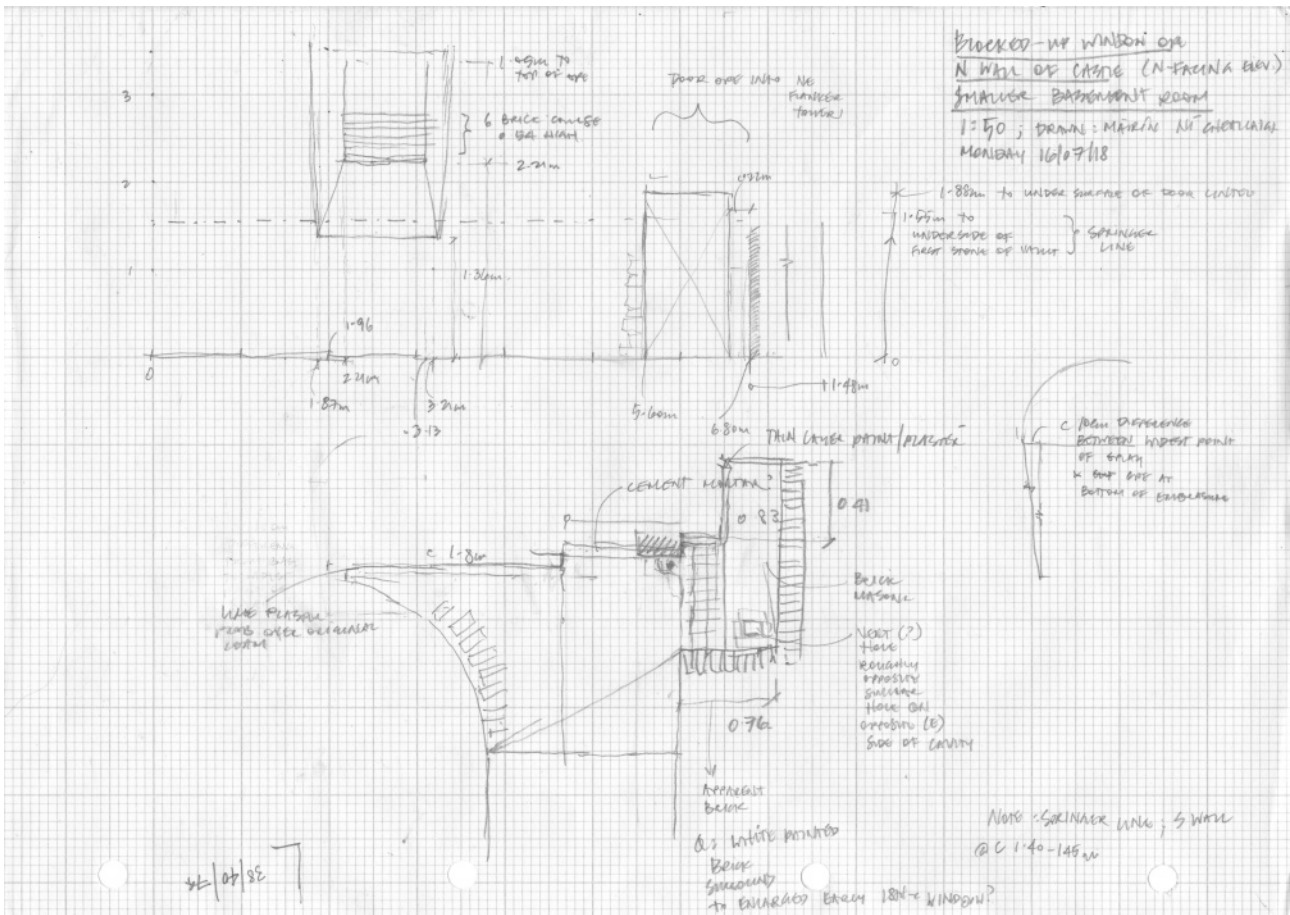
A blocked rectangular window is set into the northern wall of Room B7. It is set within a rectangular embrasure, the bottom edge of which was 1.36m above the 18th century paved floor of the room. The base of the opening itself lay c. 2.21m above the floor surface, and it measured 1.05m high by 0.74m wide. On the cheeks of the embrasure, extending outwards from the jambs of the window opening,

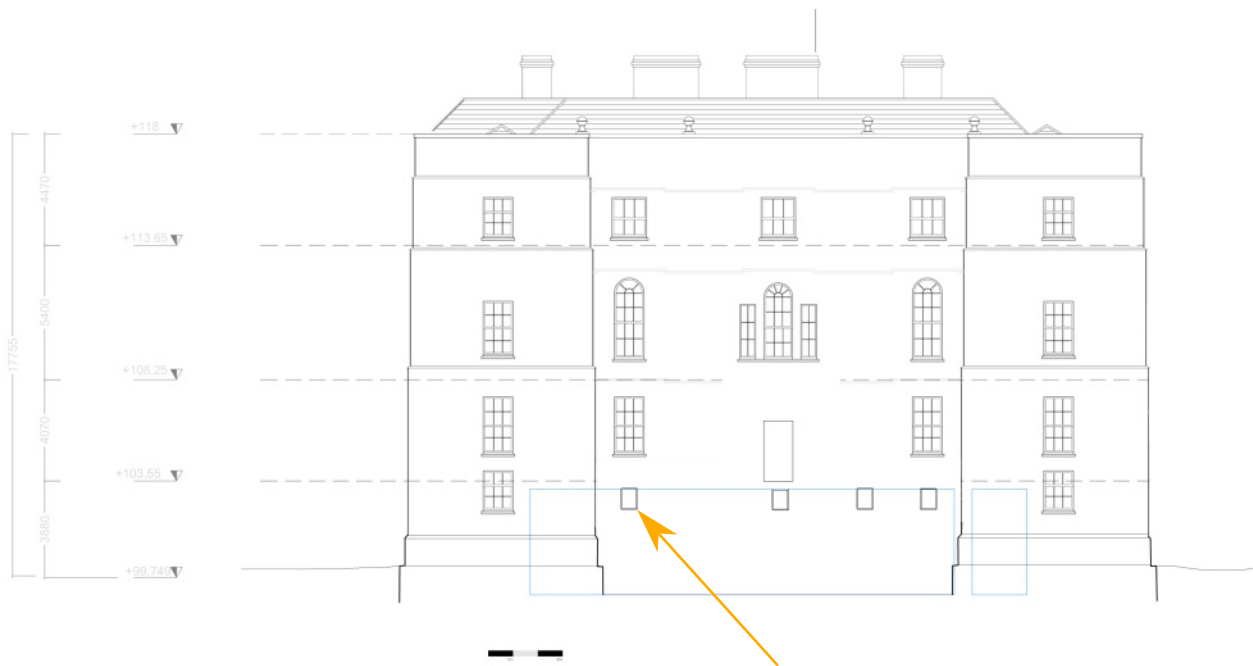
fragments of the probable later 16th century clay plaster adhered to the masonry, indicating that the embrasure had originally contained an earlier window of approximately the same width. The upper and lower sides of the window showed signs of considerable disturbance, however, and no fragments of any original stone window jambs (such as those surviving within the cut leading to the northwestern coal cellar in Room B8) were identifiable. By examining the walls of the embrasure, however, it was possible to observe a line of hacked away masonry that extended horizontally from the base of the window opening for a distance of 0.85m, before dipping down to meet the bottom edge of the embrasure. This line almost certainly reflected the original profile of the 16th century embrasure. The presence of a hard lime-based white- or lime-washed plaster on both the upper and lower surfaces of the current embrasure implies that the alteration of the embrasure

profile most likely occurred in the 18th century, perhaps as part of the general reorganization of the castle kitchens and basement spaces.

Prior to the 2018 conservation works, the bottom part of the window opening was filled with six red-brick and mortar courses, above which was a void, which was fully exposed when loose masonry infill was removed as part of the plaster removal process. Approximately 100mm below the top of the window, which in turn lay just below the upper edge of the embrasure, the opening was braced by a horizontal iron bar, the ends of which had been set into two patches of roughly smoothed and white-painted lime mortar. The plaster of the upper surface of the embrasure came to an abrupt end at approximately the same point at which the original horizontal 16th century embrasure profile kinked downwards (i.e. at a point 850mm from the window opening). The top of the window itself was formed by a

Archaeological monitoring notes on the blocked window in Room B7





North-facing elevation of front of Rathfarnham Castle. An outline of the floor and ceiling of the basement is shown in blue. The four blocked 16th century basement windows are depicted, and the orange arrow points to the window in Room B7. Note the asymmetry of the basement fenestration - there was never a fifth window second from left

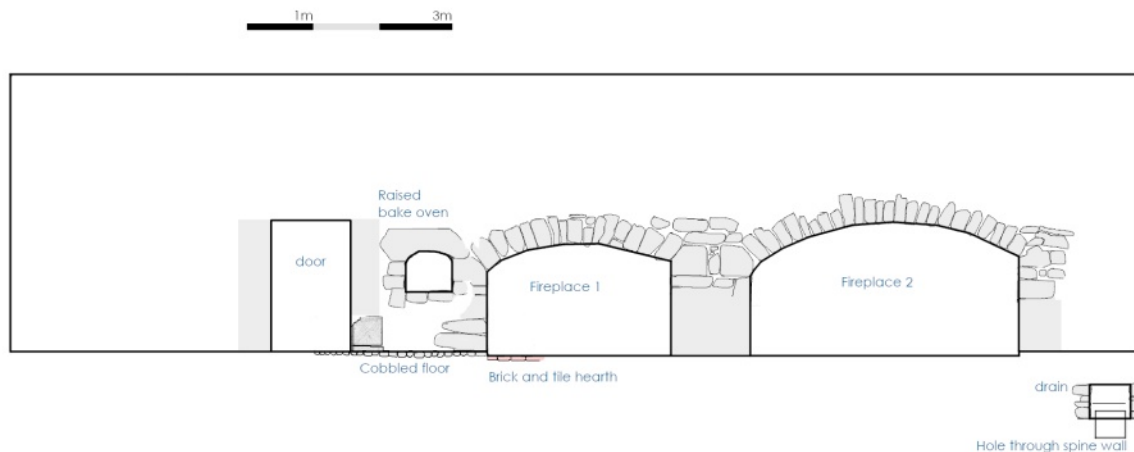
dressed, grey rectangular stone that had an approximate width of 40mm. This is considerably thicker than the stone head of the blocked window in Room B8, and it is likely that this stone was the original lintel of the 1580s window opening, and that the stone frame of the window would have been set below and against it. Between the edge of this lintel and the edge of the embrasure plaster, and at a slightly higher level than the surface of the embrasure plaster was an area of white, fine grained probable lime mortar.

Behind the outer surface of the window was a cavity, the back, sides and base of which were of mortar-bonded red brick. The cavity extended for 760mm from the original surface of the northern wall of the castle, and is likely to have been built into the back wall of the later 18th century coal cellars that lie beneath the eastern part of the north portico. The cavity was larger than the window opening, and extended 40mm to the west of the western side of the window, a further 20mm to the east, and 40mm above the bottom edge of the lintel. On each of the side walls of the cavity, close to its base (at a height of c. 10mm), was a small rectangular opening. Each of these two openings were approximately 110mm-120mm

wide and 60mm-70mm high (roughly the dimensions of a single brick) and both formed the mouths of holes that extended for some distance into the adjacent masonry. Neither of the two holes showed any evidence that they had ever been lined with either timber or metal. Although their purpose is unclear it is possible they may have functioned as vents of some sort. It is also worth noting that they are nearly identical in construction and fabric to the inadequate rectangular brick drains that were built to channel water away from the surface of the portico and they may have been intended to serve some sort of drainage function.

Fireplace arches (B8)

When plaster was removed from the surface of the southern wall of the larger basement room (B8) at a point just below the springer line of the vault, two relatively flat limestone-masonry arches, comprising roughly dressed, dark charcoal grey voussoirs were exposed. The smaller eastern arch was c. 2.85m wide, while the larger arch had an overall width of 4.05m. The underside of the eastern arch rose from a point approximately 750mm above the 18th century floor surface to a maximum height of



880mm at its centre before arcing gently downwards again. The larger western arch rose from a similar height at 750mm above ground level, to a maximum height of 1.18m, the greater height here reflecting the arch's greater overall width. The OD levels on the underside of the arches was at 101.19m for the eastern arch and 101.28m for the western arch.

The visible part of the eastern arch comprised sixteen voussoirs, each of which had an average approximate width of between 0.15m to 0.2m. The average width of the mortar-filled joints between them was c. 20mm at the underside of the arch expanding to between 30mm and 50mm at the top of the arch. The 24 voussoirs of the western arch were broadly identical in size and relative positioning to those of the west, and this - together with the almost identical roughly square 500mm by 500mm springer stones of both arches - suggests that both were constructed at the same time, and in direct relation to each other. The keystone of the western arch protruded 50mm beyond the wall surface, and it may at one time have been decorated.

Given the heavy disturbance of the original plaster immediately above the arches, however, it is unclear whether or not these voussoirs were originally rendered over to create a single smooth surface continuous with that of the rest of the wall, whether they may have been given a coat of lime- or white-wash, or whether they were left exposed. If the latter, their dark-grey

colour would have contrasted with the overall off-white of the 1580s plaster, in the process emphasizing the presence and contours of the fireplaces/ovens. However, the irregular upper edge of the voussoirs of both arches and the lack of elaborate keystones or other decorative details suggest that both arches may have been treated in much the same way as the masonry surrounding them. It is also likely that the use of the fireplaces would have resulted in considerable soot and smoke staining of both the arches and of the walls immediately above them, and it is possible that the entire wall was given one or more coats of lime- or white-wash while the fireplaces were in active use. No plaster was identified in the lower part of the arch opening below the 18th century floor, in contrast to elsewhere in rooms B7 and B8, demonstrated that by the early 18th century there was no plaster on the fireplace voussoirs, and supporting the idea that these were not rendered over.

The masonry of these arches was consistent with that of the wall above them, where visible, and also with the overall limestone masonry of the basement rooms, as described above. The springer stone at the eastern edge of the smaller, eastern arch was obscured by the presence of the subdividing wall between Rooms B7 and B8, and the presence of probable 16th century clay plaster was observed in the join between the subdividing wall and the southern wall face of B7. This suggests that both arches were part of the original structure



Fireplace arches in Room B8 south wall following conservation

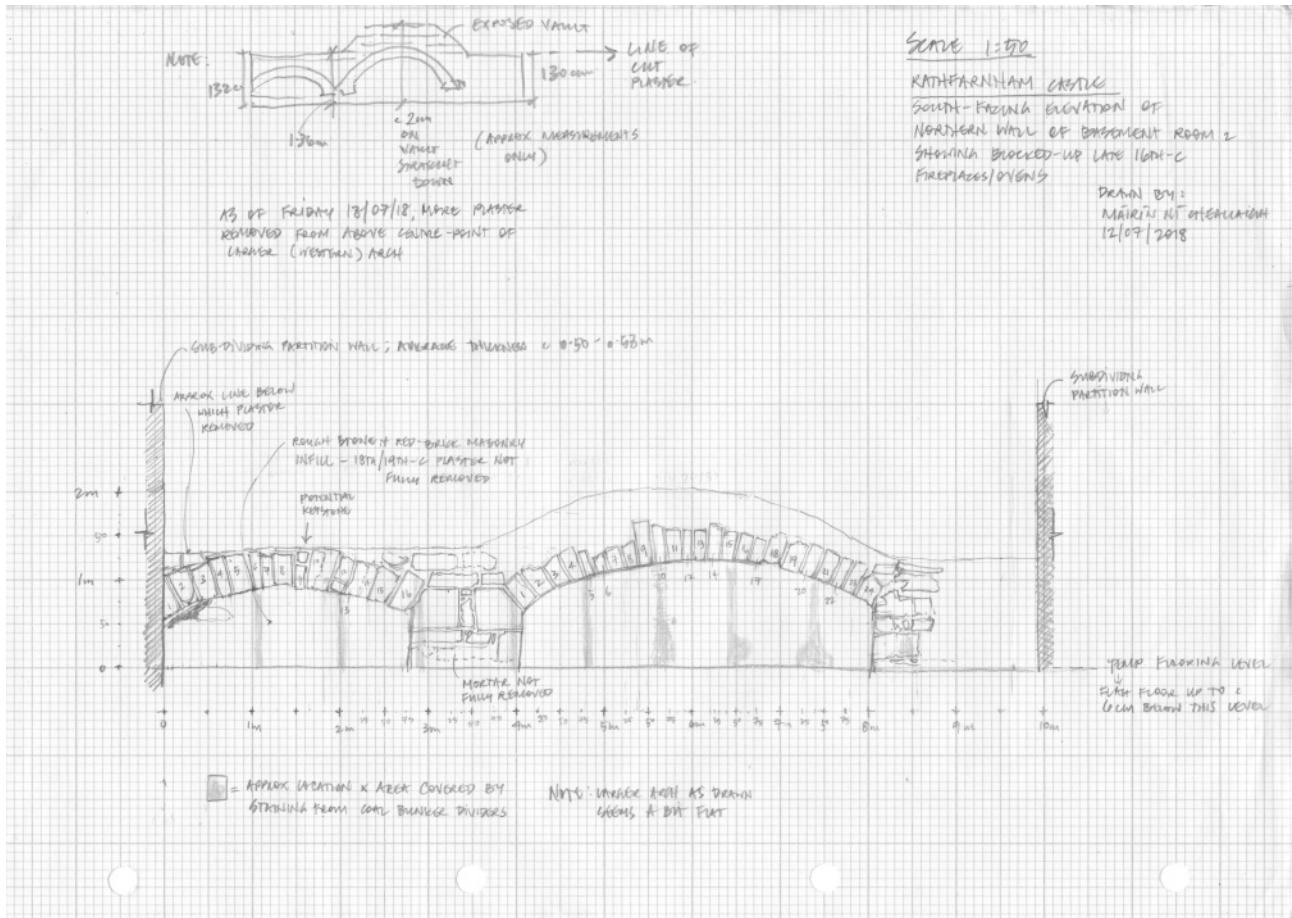
of the 16th century castle, and that they predate the erection of the subdividing probable early 18th century wall. Under each of the visible springer blocks was a line of apparent quoins stones that formed a vertical linear join with the

Fireplace arches in Room B8 south wall prior to conservation. Note the dark-coloured vertical lines running along the wall and vaults, which represent the former coal bunkers



masonry infill under the arches. These vertical joins continued below the line of the 18th century flooring, down to the 16th century floor level.

Unlike the roughly dressed limestone masonry above the arches, the stonework under the arches and between the quoins, infilling the fireplaces, was characterised by the use of stones of generally smaller size than those above them, by the use of a whitish lime mortar as a filler as well as a bonder, and by the presence of fragments of red brick. When the plaster was cleaned back from the arches, it was noted that several stones immediately under the bottom edge of the voussoirs at the extreme eastern edge of the smaller (eastern) arch were loose. These were temporarily removed, leaving a hole through which it was possible to see the edge of a partially infilled void extending behind the masonry infill. An archaeological test-pit along the side of the fireplace fill wall



Monitoring notes on fireplaces

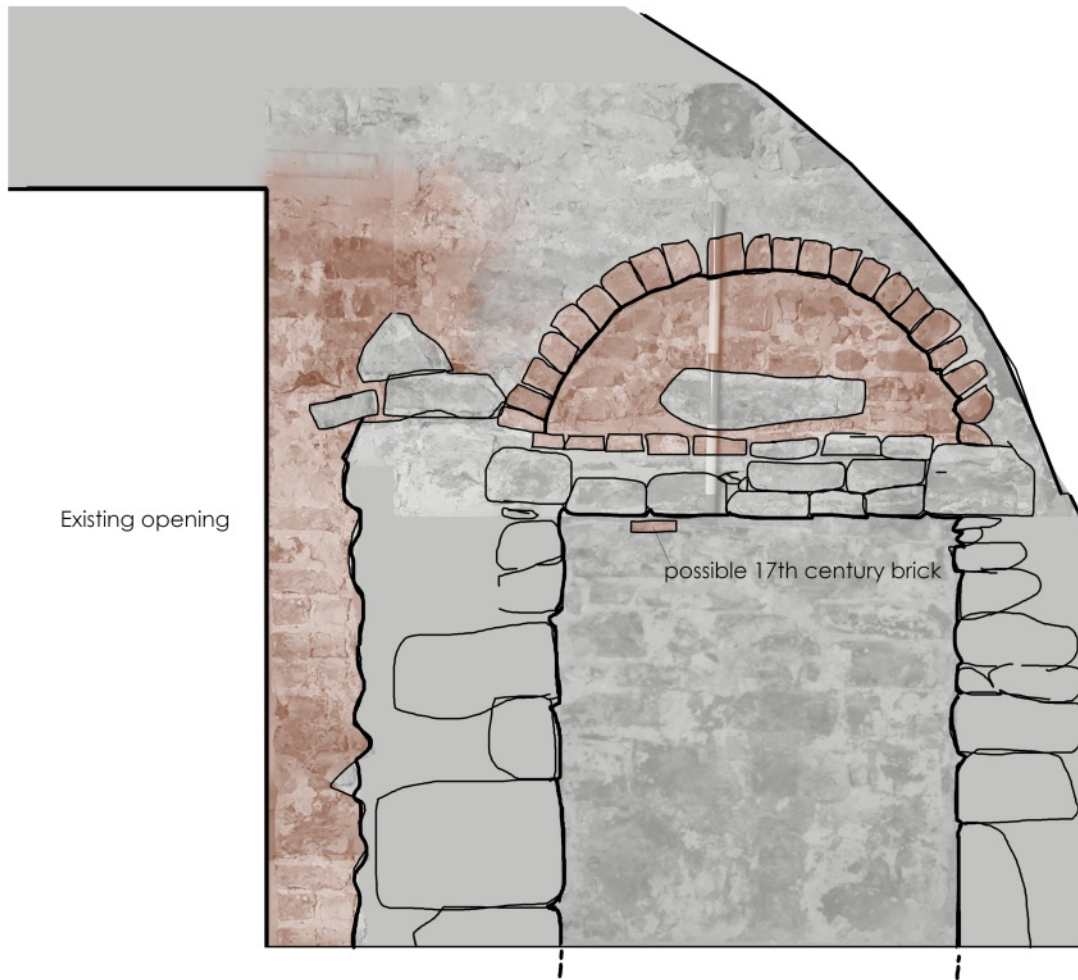
demonstrated it extended below the 18th century floor (and thus predated it) and sat directly on a 250mm thick layer of red brick, masonry and mortar demolition rubble that extended into the fireplace, and in turn sat on the hearth. This suggests that the fireplaces were filled in (with rubble) and then crudely blocked off immediately prior to the raising of the floor level in c. 1720-1740.

Taken together, the evidence implies that both arches were built in the 1580s to bridge the openings of fairly substantial kitchen fireplaces or ovens, the flues of which - like those of the rooms on the floors above - ran upwards through the thickness of the massive east-west spine wall. It is further suggested that the bake oven in the southwestern corner of Room B7 (see above) was also related to the two arches and that together, the three features allowed the castle cooks to simultaneously produce a range of different foods using a variety of cooking methods.

Blocked doorway in western wall

The western wall of Room B8, which prior to the 2018 works had been assumed to date to the early 18th century, is in fact pre-1720s in date, judging from the fact that its lower courses were exposed below the existing stone floor. The current centrally-located doorway has been either widened or inserted at a later date, and the existing jambs are formed by red brick of c. 18th century or 19th century date. This wall is 500mm thick.

An earlier opening, possibly a doorway, was identified to the north of the existing entrance. It measured 1.13m in width, and was set 370mm from the north wall and 830mm north of the existing entrance. Two phases of this opening were identified, both blocked. The first phase comprises plain dressed stone jambs rising up to between 1.14m-1.22m [c. 101.31m OD] from the 18th century floor. The limestone jamb stones were not chamfered or dressed like



Rathfarnham Castle E4468 Giacometti 19/07/2018
West wall of room B8 showing blocked 16th
century door(?) with later phase brick arch above



Blocked doorway in western wall of Room B8

the other 16th century doorways, suggesting it may not be original, or else may not have been a doorway. A slight recess in the masonry wall either side of the upper surviving jamb on either side of the door suggests the possibility that a former lintel was removed at some point. It is notable that the fragment of possible 17th century red brick was located at the same height as the possible removed lintel. The height of this lintel, which is far too low for a doorway into the room currently, suggests it relates to the lower floor level c. 700mm below. This early phase of the opening is lined internally with a

thin lime plaster, which is different from the type A clay plaster identified in other 16th century features. This lower portion of the doorway was infilled with stone and very thin (c. 40mm thick) fragments of tile or red brick of possible 17th century date (which were left in situ).

The opening was subsequently raised by a red brick arch to a height of 1.86m [101.95m OD] above the 18th century floor. This upper raised opening was also blocked in the upper part by three courses of red brick above three courses



Blocked doorway in western wall of Room B8



Window of northeast tower (Room B10) from exterior, following removal of Georgian sash window. Note curving ceiling vault on interior of window

of stone, in contrast to the rubble wall filling the lower part of the opening. This raising is likely to have occurred in c. 1720-1740 following the raising of the floor. The difference in blocking technique in the upper and lower part of the opening is interesting, and the reasons for it are not obvious.

Altered window of tower

The current window in the northern wall of the northeast tower (Room B10) is of probable later 18th century date, and it is unlikely that any traces of a possible earlier window in this location survive. However, when the Georgian sash window was removed for restoration, it was possible to see the edge of the curving ceiling vault of the basement room through the

upper part of the window. The edge of the curve abutted the window and had been given a coat of fine-grained lime plaster. This implies that part of the wall adjacent to the vault was cut away in order to accommodate the 18th century window. While a window may have been inserted at this location for reasons of overall symmetry as well as to allow light into the tower, it is possible that the Georgian window replaced a smaller, narrower 16th or early 17th century example. By examining the relative positions of the surviving window fragments in the blocked embrasures in Rooms B8 and B7, it is possible to conclude that the lintel of any earlier window in the north wall of the tower would probably have been positioned at or just under the surface of the vault.



Northern gunloop in tower B10, showing process of removal of brick infill



Northern gunloop in tower B10, showing survival of type A clay/loam plaster



Northern gunloop in tower B10, showing circular gunloop filled with clay in the back of the loop

Gun loops (Room B10)

The gunloops in the northeastern flanker tower were further investigated in this phase of work, building on an initial assessment during an earlier phase of archaeological work (Giacometti 2015). Two gunloops are located in the western wall of the tower basement, of which the southern loop was open and the northern loop blocked. A third was suspected in the south wall, concealed behind the brick shelves.

The loops on the west wall comprise two rectangular embrasures set in the wall set 0.41m above the brick floor level, that each narrowed to a sub-circular gun loop. The southern of the two embrasures measured 1.04m wide by 0.71m high, and was constructed c. 0.32m from the southwestern corner of the room. A distance of 2.46m separated the northern edge of the first embrasure from the southern edge of the second, while the northern edge of this second embrasure was built up against the northern wall of the flanker tower. The northern embrasure measured 1.08m wide and 660mm high. Following the removal of plaster from the western wall, the edges of both embrasures were revealed as defined by large roughly-dressed rectangular limestone blocks that were generally larger than the stones forming the masonry surface of the wall in which they were set. In the case of the northern of the two features, its upper edge was formed by a single, very large rectangular stone that acted as a lintel over the embrasure opening.

Both embrasures narrowed along 1.05m in length to a point 190mm wide and 580mm high in the west. The gunloop was set centrally into the rear of the opening, and comprised a dressed fragment of black limestone in which a circular hole 175mm was cut. In the northern loop, this circular cavity was filled by hard-packed clay with fragments of red brick, which was not excavated. The circular cavity on the southern gunloop was open and measured 200mm deep, and was formed by two stones.

In the southern of the two features, the back of the embrasure (containing the gun loop) was blocked off by building a false back made of

bricks (one brick thick) a short distance in front of the round loop opening. The entire embrasure was then plastered over with a hard, fine-grained lime mortar to create a storage alcove. When this false back was broken down, areas of 16th century clay/loam plaster with a surface lime plaster coating were identified on all four surfaces of the embrasure behind it. In the northern gunloop, the entire loop had been blocked by a red brick wall flush with the wall surface. This wall was removed revealing the gun loop cavity, which was filled with a small amount of brick construction rubble and no artefacts. The northern loop retained a much larger area of possible 16th century plasterwork (see type A plaster above in Section 2).

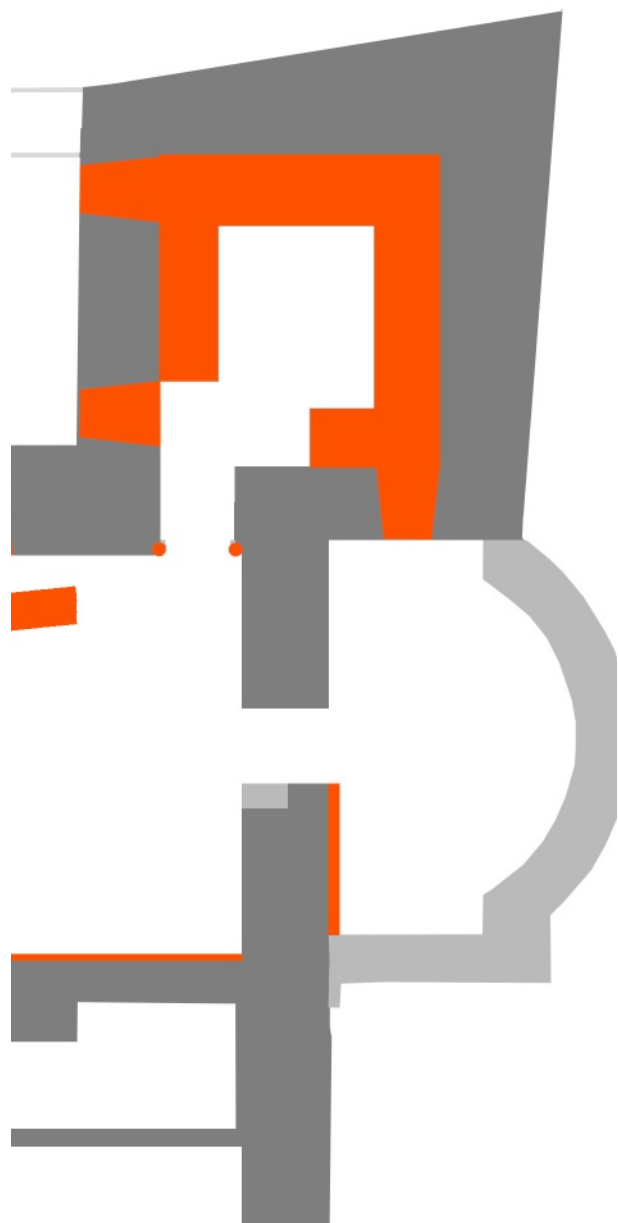
The removal of plaster on the southern wall of the flanker tower exposed two quoin stones of a third loop, facing south. This loop is concealed by the brick stacks, but its existence is now confirmed.

Brick floor of room B10

The cleaning of the floor of the northwestern flanker tower (Room B10) exposed its construction and an earlier feature. The central portion of the flanker floor comprises red brick laid directly on a sand layer 310mm in thickness, which overlay an unexcavated layer of rubble. This floor and the sand layer abutted the brick footings of a feature lining the four walls of the flanker. This feature measured 900mm-1006mm wide and appeared to represent the base of a demolished brick shelving or storage unit. The feature respected the southern gunloop in the west wall, in that it terminated in line with the northern side of the opening. This gunloop (unlike the northern blocked loop) had been replastered into a shelf in the c. 18th century. The demolished shelving unit predated the existing brick shelves on the east wall, as demonstrated by a line of footings running under them. The brick footing extended down 310mm below the existing ground level and was constructed directly onto the underlying rubble layer. Although they predate the brick floor in the centre of the room, these two features could potentially be broadly contemporary.



Brick floor in tower B10 following conservation, showing footing of earlier shelves in left of image



Extract from Rathfarnham Castle basement plan, showing shape of earlier shelves in the northeast tower B10 in orange

Section 4 Underfloor Excavations

The drain (Rooms B7 & B8)

In January 2018 a manhole under the floor leading to a subfloor drain was identified during investigative works (Giacometti 2018). It was hypothesised that this drain connected to the 16th century drain excavated during 2014 in the southwestern flanker (Giacometti 2014).

The manhole was situated in the southwest corner of basement Room B8, 300mm from the spine wall of the castle and 400mm from the west wall of the room. It had been concealed below paving stones of the floor. Previous archaeological work has demonstrated that this flagged floor was laid between 1720 and 1740 approximately 700mm above the 16th century floor. The manhole was constructed in red brick bonded with a cementous mortar of probably 19th or early 20th century date, and the square shaft measured 300mm by 350mm internally, and descended 750mm in depth (six courses) to the roof of the drain. The bricks of the manhole were laid directly on the lintels of the drain, which had a gap for the manhole.

An excavation pit measuring 1.60-1.90m by 1.73m across was opened up around the manhole, flush with the southwest corner of the room, and was excavated down to the base of the manhole at 750mm in depth. The fill around the manhole was similar to the fill elsewhere under the floor, however it had obviously been disturbed in the late 19th century or 20th century (for the construction of the brick manhole) and contained some late (19th century) pottery. The original 16th century floor of the castle was not present in this location, due to 18th and 19th century interventions. At a depth of c. 750mm a large fragment of brick demolition rubble with mortar of probable 18th century date was identified at the edge of the excavation pit, tucked against the west wall of the basement room (B8). This is likely to

represent an 18th century manhole or upper drain repair element, replaced and cast aside during the early 19th century.

The upper part of the drain was exposed in the excavation pit. It ran southwest to northeast and was covered in large rectangular limestone lintels, which were situated 600-700mm below the 18th century floor (99.48-99.38m OD). The lintels were very large, with one measuring 800mm by 600mm across, and 100mm in thickness, and another narrower lintel measuring 930mm in length. One lintel was also identified ex-situ to the side of the drain: undoubtedly this lintel was removed and cast aside during the construction of the manhole. The large size of the lintels, and their similarity with the lintels excavated in undisturbed parts of the drain in the southwest flanker tower (Giacometti 2015) suggest these were the original late 16th century drain lintel stones, which had been re-used during 18th century and later drain repair.

The lintels sat directly on top of the drain walls, forming a squared roof to the drain around the manhole. Below the lintel, two phases of drain construction were identified. The lower and earlier phase was of limestone construction stained a black colour with two straight walls. The base was filled with a thick (c. 200mm) layer of black silt under which was a flat base of either packed clay or stone. The floor of the drain was situated 970mm from the top of underside of the drain lintel (at 98.36m OD). The masonry construction of the drain measured 600mm in width and 500mm in height internally. Above this were two to three courses (200-300mm) of red brick stained a black colour, which was in turn overlaid by the lintels. A small amount (c. 200mm deep) of water was present in the drain, and did not appear to be moving. When this was pumped out, it remained dry for the day, but had refilled by the



Drain running under Room B8. The masonry lower courses can be dated to c. 1583, while the red brick vault above is dated to a phase of repair in 1720-1740

following day. Water appeared to refill from the south, however this was never established with certainty.

To the southwest of the excavation pit, the drain deepened and continued through the spine wall in a smaller narrower opening measuring c. 300mm by 300mm internally. This part of the drain was entirely of masonry construction and was almost certainly original to the castle construction, i.e. late 16th century in date. The level of the base of the drain running under spine wall was 98.11m OD. This deeper part of the drain was always filled with water and it was not possible to pump it out.

To the northeast, the drain curved gently and continued below the floor. The lintelled roof did not extend to the northeast, however, and instead was restricted only to the area of the manhole. Instead, the drain roof past this point comprised a red brick arch. The fact that the area of the drain in the southwest of Room B8 is the only extensive area to have been lintelled,

suggests that it had intentionally been made accessible to deal with recurring drainage issues. These presumably relate to the sunken passage of the drain through the spine wall, which is very unusual and may not have been entirely effective.

A cavity was observed in the west wall of room B8 just north of the manhole. Whilst this cavity may represent collapse, it may also represent a former minor fork in the drain from a second branch running to the west, which was either originally part of the drain and blocked up in the 18th century, or else added in an ad-hoc manner to the pre-existing drain in the 18th or 19th century. The presence of this cavity may further explain the lintelled drain cover in this location and the manhole.

A CCTV survey of the well was carried out by John Hurt Environmental Drain Services. The survey established that the drain continued for 3m through the spine wall to the south before coming to a blockage. To the northeast, the

survey established that the drain curved to the east and then continued eastwards for 14.6m before reaching a blockage. This blockage corresponds with an area of 20th century concrete flooring repair. The CCTV survey of the eastern length of drain demonstrated that the drain was a consistent shape and size: a masonry lower section, brick upper section, and a brick arch roof, with no branching. The roof arch was broken in two locations, each covered by large stone lintels. The first was a small section at a distance of 8.2m from the manhole. The second was a larger section at 11.3m from the manhole. The second section corresponds with another area of 20th century concrete flooring repair in Room B7.

Discussion of drain

Multiple phases of drain construction and repair have been identified. The earliest of these is a masonry-built drain roofed (in the few places it survives) with large limestone lintels. In 2014 a similar drain was identified in the southwest flanker, branching north and north-east into the main castle block, with a base at a level of 97.80m OD. The drain was carried through the west and north walls of the flanker tower and was clearly contemporary with the construction of the castle foundations in c. 1583. Parts of the same drain identified in 2018 in room B8, with a base at 98.38m and 98.11m OD, is identical in construction, and is carried through the spine wall of the castle, again demonstrating contemporaneous construction in c. 1583. A masonry drain identified outside the east of the castle in 2014 (Drain 4 in Giacometti 2015, 27) is identical in construction and may represent the same drain (with a base here at 98.50m), however this part cut part of the castle's foundation, probably indicating a later date.

Based on the levels and locations of the existing drain, together with evidence for the route of the 18th century drain, and 19th century manholes, it is possible to tentatively reconstruct the original route of the 16th century drain. Three branches appear to have led from the northwest, northeast and southeast towers, all running south and west and converging near the doorway of the southwest tower. From there, the conjoined drain ran into



Masonry drain vault as it runs under the spine wall to the castle. this part of the drain dates to 1583

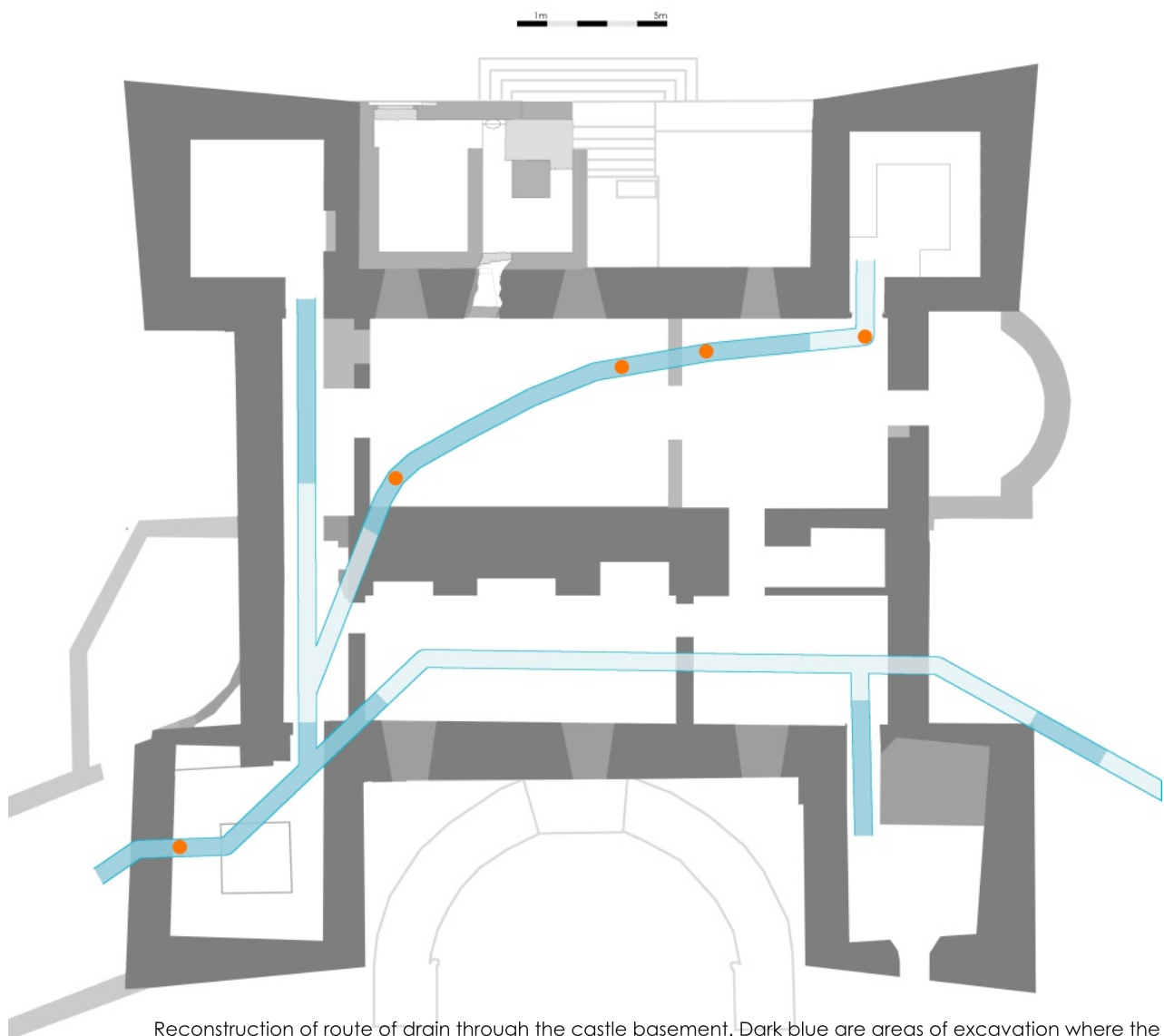


19th century drain manhole. This replaced an earlier (18th century) brick manhole, part of which was identified in the fill to the right of the image

the latrine pit, then exited the castle to the west. One of these branches must have been fed by an external source of water, as the drain exit in the southwest tower flowed consistently. The constant flow of water channelled along the drain and into the base of the latrine pit would have kept it clean without requiring cleaning by hand, and represents a relatively sophisticated plumbing system for a late 16th century Irish fortified house. Basic plumbing of this type is in use in Britain since at least Roman times. Adam Loftus may have had the idea of incorporating a plumbing system in the castle from John Harington, a contemporary at Queen Elizabeth's court, who is credited with the invention of the flushing toilet and installed a more sophisticated version at his castle in Kelston at about the same time.

An extensive phase of drain repair took place in c. 1720s. By that time the latrine pit and drain exit had become completely blocked, which would have led to flooding in the basement. This was presumably the impetus behind the raising of the basement floor by c. 700mm between 1720 and 1740. A pit dug into the underlying natural clay under the 16th century floor in the southwest tower was interpreted as an attempt to identify the route of the original castle drain in the early 18th century (Giacometti 2015, 73). This attempt failed, because the builders had not taken into account the sharp-angled turn of the drain in this location, however the route of the drain was eventually identified and an extensive phase of early 18th century repair has been identified in almost

every excavated portion of the drain. This took the form of the raising of the drain using brick and the replacement of the original stone lintel roof with a brick arch. The original stone lintels appear to have been retained for use in key locations where the drain was susceptible to block such as branching points, curves, and steep changes of slope. Two early 18th century brick-built manholes were identified by excavation: one in the southwest tower at the drain exit in 2014, and one in the southwest of Room B8 described above. The latter was completely removed and replaced by a 19th century manhole, also described above, however the demolished rubble fragments of the original manhole shaft were identified under the floor mixed with demolition rubble.



Reconstruction of route of drain through the castle basement. Dark blue are areas of excavation where the drain was identified; pale blue are estimations; and orange represents 18th or 19th century drain manholes

Excavation Pit 1

Pit 1 was situated in the southeast corner of B8, flush with the southern and eastern walls. It was archaeologically excavated to allow for a service cable from room B7. The pit was rectangular in shape and measured 1.24m north-south by 700mm east-west. The 18th century paved stone floor (upper surface at 100.10m OD) was temporarily lifted. Below this was a loose deposit of greyish-brown silty-sand 740mm thick with inclusions of animal bone, handmade red-brick, mortar, bottle glass, tin-glazed wall-tile and lead fragments.

In the southern half of the pit a floor surface of rounded limestone cobbles was encountered at 99.36m OD. The cobbles were retained to the south by a kerb made of sub-rectangular limestone cobbles arranged end-to-end in a line east-west 630mm from the southern wall.

In the northern half of the pit, a surface of red earthenware tiles and handmade red brick formed a hearth. The hearth measured 630mm from the southern wall to the kerb, and was recessed 400mm below the cobbled floor to the north (at 99.40m OD). The floor tiles measured 230mm in length, and although their width could not be recorded as they extended outside of the pit, two of them appeared to be square, while a third appeared to have been cut into two and thus measured only 130mm in width. The red brick was handmade, crudely laid, and measured c. 110mm by 230mm by 70mm.

The cobbled floor, kerb, and hearth were all covered by a 15mm-thick layer of fine black silt, similar to coal dust or decayed organic material. The test pit exposed the lower sections of the southern and eastern walls. The eastern wall was unplastered below the level of the 18th floor. It was constructed directly over the layer of fine black silt that covered the cobbles and hearth. A hole was created through this wall adjacent to the southern wall in order to pass a service cable through.

The southern wall, which is the spine wall of Rathfarnham Castle, has an in-filled arch feature interpreted as a fireplace arch (see discussion above). The springer and eastern side of the

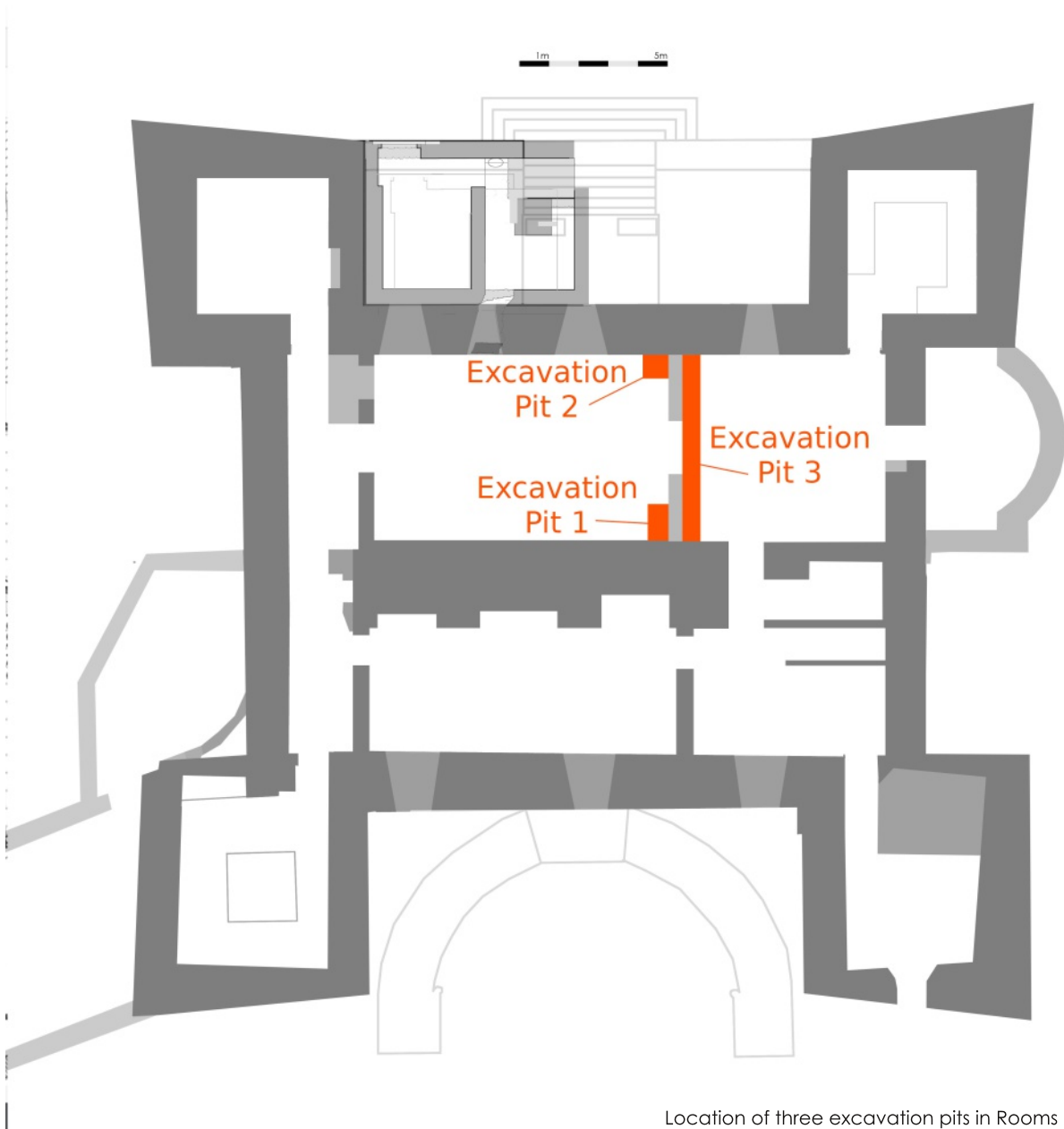


Excavation pit 1 showing fireplace hearth, photograph facing southeast



arch was identified one the hole had been created through the eastern wall. It was identical to the western side of the second fireplace, comprising large dressed limestone quoins without chamfer 1.3m in total height. No plaster was identified on these. The base of the lowest stone was not exposed however it almost certainly extended below the level of the hearth and cobbled floor.

The stonework infilling the fireplace arches was characterised by the use of stones of generally smaller size than those above them, by the use of a whitish lime mortar as a filler as well as a bonder, and by the presence of fragments of red brick. This is in contrast to the stonework elsewhere on the spine wall. The test-pit exposed more of this stonework, which remained consistent below the 18th century stone floor. The base of the wall sat on a



Location of three excavation pits in Rooms B7 and B8

250mm thick layer of demolition rubble at 99.65m OD. This rubble was extremely loose, identical to the general fill under the 18th century floor, and extended under the wall blocking the fireplace and into the infilled fireplace. As the same rubble abuts the eastern wall, a stratigraphic relationship between the construction of the eastern wall and the blocking of the fireplaces can be established: the former predates the latter. Furthermore, the blocking of the fireplaces must have coincided exactly with the raising of the floor to its 18th century levels, which has been dated elsewhere (Giacometti 2015) to 1720-1740.

Another point of interest is the proximity of the eastern wall to the edge of the original 1580s fireplace, as the wall was placed exactly in the line with the edge of the feature and did not block it. The opposite face of the wall has an identical relationship with the oven. As the fireplace was open at the time the wall was constructed, this location would have been the easiest place to build a north-south wall dividing the northern basement into two, as it would be fully supported on either side by the main walls of the castle.

Excavation Pit 2

Pit 2 was situated in the northeast corner of B8, flush with the northern and eastern walls. It was archaeologically excavated to allow for a service cable from room B7. The pit was square in shape and measured 870mm north-south by 800mm east-west. The 18th century paved stone floor (upper surface at 100.10m OD) was temporarily lifted. Below this was a loose deposit of greyish-brown silty-sand 740mm thick with inclusions of animal bone, handmade red-brick, mortar, bottle glass, tin-glazed wall-tile and lead fragments.

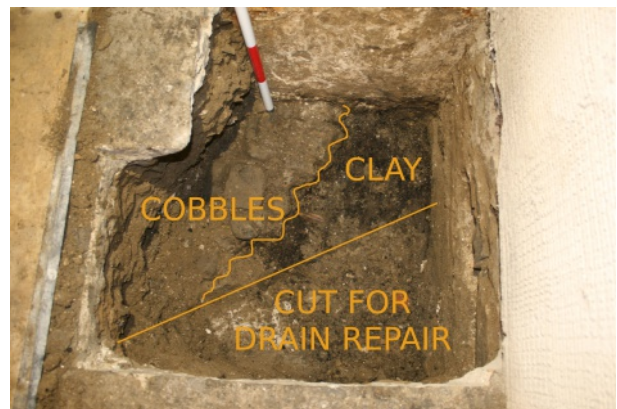
In the northwest corner of the pit a floor surface of rounded limestone cobbles was encountered at 99.47m OD. The cobbles were absent in the northeast corner, most likely removed prior to the construction of the eastern wall. A thick layer of charcoal-rich green clay was identified in the northwest corner at 99.35m, just below the level of the cobbles. It was unclear if this material extended under the cobbles, or if instead it is a layer of trample associated with the construction of the eastern wall post-dating the removal of this section of cobbles.

The line of a cut was identified in the southern half of the pit, 670mm-350mm from north wall, by a straight line running diagonally through the test-pit northeast-southwest. This appeared to cut through the cobbles, and was filled by a greyish-brown silty-sand. It is also possible that the cobbles had always been absent here, and that the cut was through a set of lintels overlying the cobbles. Either way, the fill of the cut relates to the early 18th century repair of the 16th century drain.

Type A plaster (i.e. clay/loam render skimmed with lime, refer Section 2 above) was identified along the northern wall, and extended down to the top of the cobbles. The render was also identified behind the eastern face of the north-south wall. This face of the wall was not plastered below the 18th century floor level. This evidence further reinforces the proposed pre-1700 date for the type A plaster and the proposed post-1700 date for the eastern wall.



Excavation pit 2 showing cobbles and cut of drain, photograph facing north



An unusual horizontal slot was identified built into the eastern face of the north-south wall. This ran southwards from a point 390mm from the north wall, extending beyond the limits of the trench. The slot was 100mm wide and the top of the slot was at 99.80m (300mm below the 18th century floor surface). It measured at least 280mm deep, and most likely held a timber, which has since rotted away. An identical slot was identified in the opposite face of the wall (refer Pit 3 below). The position of this feature correlates with the location of the drain running under the floor at this point. As the slot extends some distance either side of the drain, it most likely represents a timber scaffolding or supporting structure built around the drain during the initial construction of the wall, in order to protect the drain from collapsing. Three red bricks built into the wall directly north of the slot demonstrate this

feature was carefully created as part of the initial construction of the wall, and is not a later insertion. This feature therefore provides evidence that the eastern wall was constructed after the drain had been culverted with red brick, an event dated elsewhere (Giacometti 2015) to 1720-1740.

Excavation Pit 3

Pit 3 was situated in the west end of Room B7, and was a north-south running trench running from the north wall to the south wall, up against the western wall. It was archaeologically excavated to allow for a service cable. The trench measured 610mm wide and 6.24m long. The 18th century paved stone floor (upper surface at 100.02m OD) was temporarily lifted. Below this was a loose deposit of greyish-brown silty-sand 570-630mm thick with inclusions of animal bone, handmade red-brick, mortar, bottle glass, tin-glazed wall-tile and lead fragments.

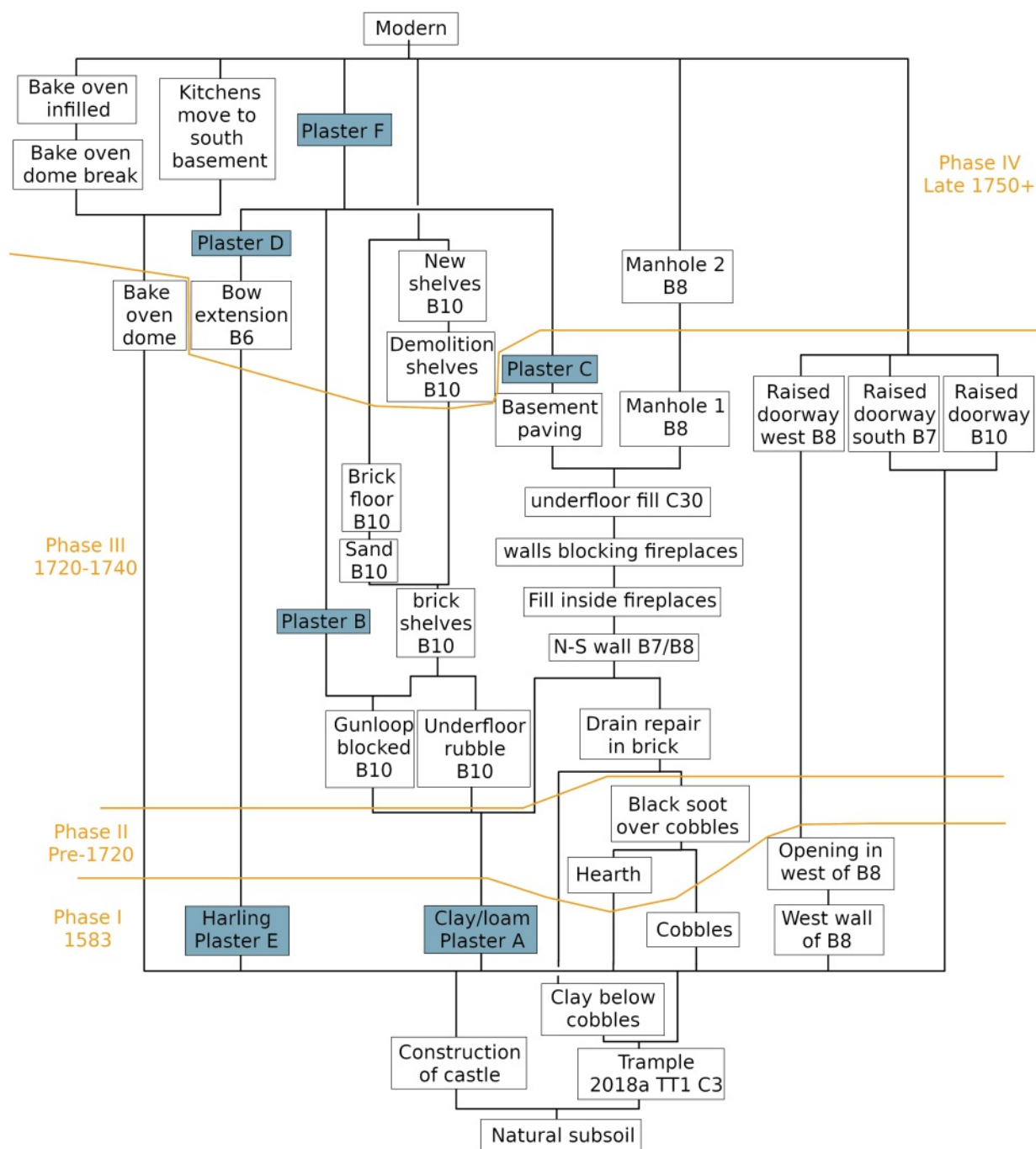
In the centre and southern half of the trench a floor surface of rounded limestone cobbles was encountered at c. 99.40m OD. The cobbled surface sloped evenly downwards from north to south (from 99.43m OD at the northern edge to 99.38m OD at the southern wall).

In the northern part of the trench, 1.10m from the northern wall, the cobbled floor was cut by a drain. The cut was also visible on the northern side of the drain 390mm from the wall, however there were no cobbles here, and instead the cut was through a thick layer of charcoal-rich green clay at 99.29m OD, which is below the level of the cobbles. This layer was also identified in Pit 2, and is either a layer predating the cobbled surface, or a trample deposit associated with the 18th century renovations following the removal of part of the cobbled floor. The cut was filled by a greyish-brown silty-sand, which covered the crown of red-brick arched culvert of the drain. The level on the highest point on the drain crown was 99.31m. The drain was oriented ENEE-WSWW, and appeared to be running directly towards the doorway of the northeast flanker.



Excavation pit 3 showing cobbled floor





2018 stratigraphic matrix

The stratigraphic matrix displays each individual event or discrete context in stratigraphic relationship with each other; thus earlier features are located lower on the matrix than later features. The 2018 matrix is unusually tight (i.e. tall and narrow) due to the central position - both stratigraphically and locationally - of the north-south running wall dividing rooms B7 and B8.

The six plaster types identified in 2018 are depicted in blue on the above matrix.

'Trample layer 2018a TT1 C3', in the bottom right of the matrix, refers to the layer of mixed material below the disturbed floor level identified in a test-trench (1) in January 2018, not described in this report (refer instead Giacometti 2018). This layer is probably contemporary with the initial construction of the castle in 1583.

'Underfloor fill C30' in the centre of the matrix refers to the c. 700mm thick layer of demolition rubble under the existing basement floor of the castle. Animal bone, tile and pottery from this layer were retained and analysed, refer specialist reports in the Appendices.

An unusual horizontal slot was identified built into the western north-south wall. This ran southwards from a point 440mm from the north wall, extending to a point 2m from the north wall. The slot was 40mm wide and the top of the slot was at 99.72m (300mm below the 18th century floor surface). It measured at least 380mm deep, and most likely held a timber, which has since rotted away. An identical slot was identified in the opposite face of the wall (refer Pit 2). As noted above, this feature is most likely part of a timber scaffolding or supporting structure built around the drain during the initial construction of the wall, in order to protect the drain from collapsing, and dates the north-south running wall between rooms B7 and B8 to the same period as the brick drain culvert, c. 1720-1740.

Portico

The portico is the exterior raised entrance platform outside the front (north) of Rathfarnham Castle. Maintenance works to the portico were carried out in order to repair the drains below it, which were not working properly and were contributing to dampness in the basement. The floor slabs were recorded, numbered and temporarily lifted, and the earth below was excavated down to expose the roof of two brick coal cellar arches and several walls and drains.

The square stone granite slabs measured c. 610mm across and 70mm-100mm thick, and were set in a diamond layout. The slabs extended beneath the parapet wall and below the 18th century lion sculpture plinth. They were generally laid directly on a thin layer of dark brown organic silty clay, however where they were laid over brick support walls, they were laid on a thin layer of mortar. Below the dark brown silty clay was layer c. 220mm-550mm thick of red brick, mortar and sand demolition rubble sitting directly over the crown of the cellar arch. This probably represents the original bedding material, and the thin organic layer is likely to have formed from later root or earthworm action.

Three east-west running red-brick supporting



Excavation pit 3 showing slot in dividing wall



Excavation pit 3 showing brick crown of drain culvert cut through cobbled floor



Excavation of portico showing layers below paving stones



Excavation of portico showing brick crown of coal cellar vault, brick walls constructed over cellar vault, and drains



Detail of portico drains showing brick lining and stone cap



Detail of portico drain outlet below parapet

walls were exposed under the slabs and over the cellar crowns. These were crudely constructed, bonded with mortar, and measured 21-24mm (two brick widths) wide. They abutted the original flanker walls to the east and west. In general they were built up to the height of the top of the crown. Their function was most likely to to subdivide the area for fill, in order that the vaults would be evenly loaded while the fill was taking place (Ian Wolfe pers.com. 2018). The northeastern wall was one course lower than the top of the cellar crown, possibly due to a loss of one course of brick at some point.

Four drains ran north-south across the portico. These were constructed from red brick directly over the cellar crown and were capped by thick flat slabs of degraded limestone. The four drains varied considerably in internal dimension, from 200mm in width to 500mm in width, and measured approximately 200mm in depth vertically. The drains abutted the southernmost brick wall, and this point marked the beginning of the drains and the highest point of the drain bases. Each drain then ran northward, through holes in the central and northern brick walls, both of

which were constructed over the drain, and into vertical drain holes at the northern edge of the portico near the parapet. The existing vertical drain holes are clearly later interventions, post-dating the initial construction of the drains, cellars and portico. However, it was not clear whether the drains originally led into a vertical cavity built into the parapet, or else into an earlier set of vertical holes just south of the parapet that have now been replaced by the existing holes.

As noted in a previous phase of works (Giacometti 2016) the north-facing façade of the portico is faced with granite incorporating the voussoirs of two blocked door openings. The façade comprises three elements. The uppermost element is the parapet wall, composed of balustrades between rectangular dressed blocks, with a capping on top. This parapet is constructed of pale off-white hard limestone with numerous fossilised shells, and is identical in material to the columns. The second element, 1.14m high in total, comprises four courses of mid-grey granite thin slabs with chamfered corners. The lowest course of these is subdivided into the voussoirs of a doorway at the western and eastern end of the portico. These voussoirs were also identified from inside the coal cellar in 2016, and they coincide with the original doorway into the coal cellars. The third element comprises large upright slabs of pale-grey granite measuring c. 550-600mm wide and c. 740-830mm tall. These slabs project 90mm out from the central element, and they rest on the ground and partially on the lowest course of granite steps.

Two window lights were constructed in brick around the two outer basement windows in the north wall. These were built out of red brick, unplastered, bonded with a very hard cement-based mortar, and measured 1.27m long and 300mm wide from the wall (also extending into the wall a further 250mm). The western light was filled by mortar-rich rubble with occasional red brick; and the eastern light was empty. The eastern window light reached a depth of c. 690mm from top of the slabs of the portico, after which the excavation was halted due to accessibility. Two drains were identified on the east and west sides of the window light, near



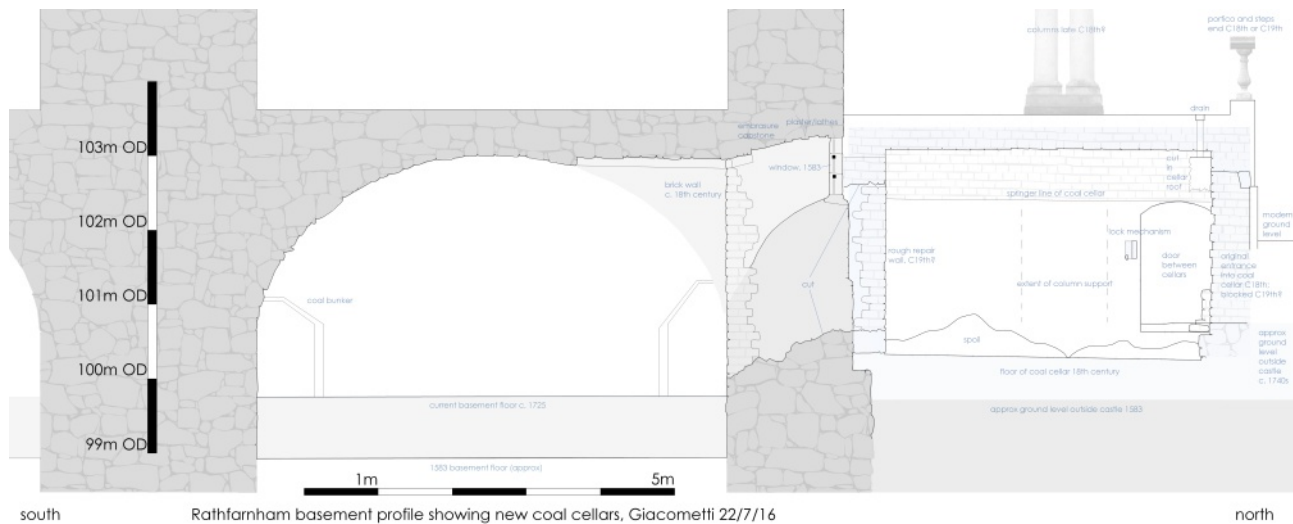
Three elements of portico facade



Voussoirs at entrance to former coal cellar



Light-well at 16th century window



Profile of coal cellars, portico and basement based on 2016 excavations. The 2018 excavation slightly refined the dating of the phases of the entrance portico

the base of the light. These were approximately square 150mm high and 150mm across, lined by brick and capped with limestone. They are situated at the same level as the four drains built on top of the coal cellar (c. 103m OD), and almost certainly feed into these in order to carry water away from the window light and basement, northwards to the edge of the portico. This would indicate that the window lights were constructed at the same time as the coal cellars, which is likely. However, the drain holes feeding out from the window lights are not situated at the base of the light, which is unusual if their primary function is for draining water, so it is possible more than one phase is present here, or else that the holes also functioned as vents.

The north face of the 16th century castle wall was visible through the eastern window light. This comprised a large stone lintel - most likely original 16th century - over a cavity measuring c. 740m wide and c. 1.05m high. No harling was identified, and this face of the original wall had been much altered in the post-medieval period and was rendered heavily in the 18th century or later. The cavity was blocked with heavily-rendered red brick; and the upper part of the cavity was blocked up in 2018 from the inside. Either side of the cavity was built up in red brick, forming window jambs, but further down a ragged masonry line from a cut formed the edges of the cavity, as recorded from the inside. This cavity would have originally held a 16th

century mullioned window identical to the window identified in Room B8 in a previous season of work (Giacometti 2016) which would have measured 500mm wide and 780mm high internally.

The 2016 excavation (Giacometti *ibid.*) of the coal cellars under the portico provided evidence for the dating of a number of the portico features, namely the portico, columns and steps.

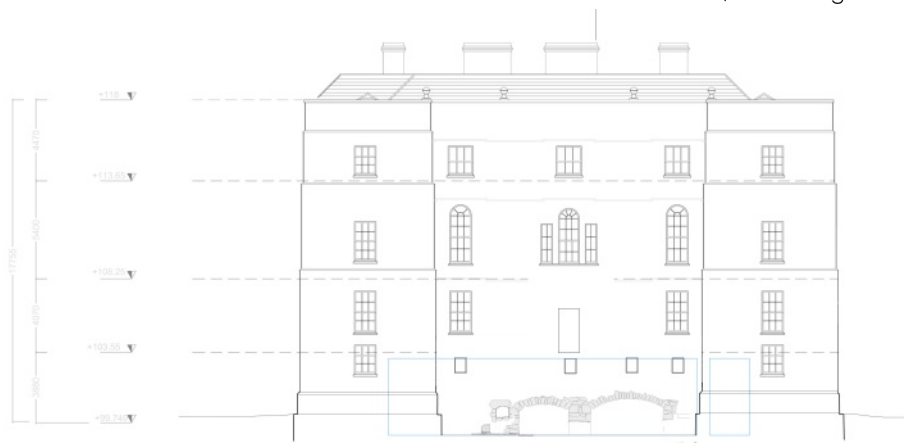
Stratigraphically, the construction of the four cellars below the portico blocked four 16th century windows in the north basement, which suggests that the basement was reconfigured when the cellars were constructed. The 2014 excavations demonstrated that a major alteration to the basement took place in the early 18th century (c. 1720s) whereby the fireplaces in the north room were blocked, the floors were raised, and the main kitchen moved to the southern side of the basement. In addition to blocking the windows, the cellars also probably blocked the as-yet unidentified 16th century main access into the house, which is likely to have been in this location due to the asymmetry of the basement fenestration, which in turn implies a side-access stair up to the main floor. Judith Carroll identified evidence for a new entrance constructed in the 18th century in 1993 (License E351), which is likely to have replaced the original entrance, and thus is probably contemporary with the construction of the coal cellars. These two factors suggest



Northern elevation
existing

1
PP-06

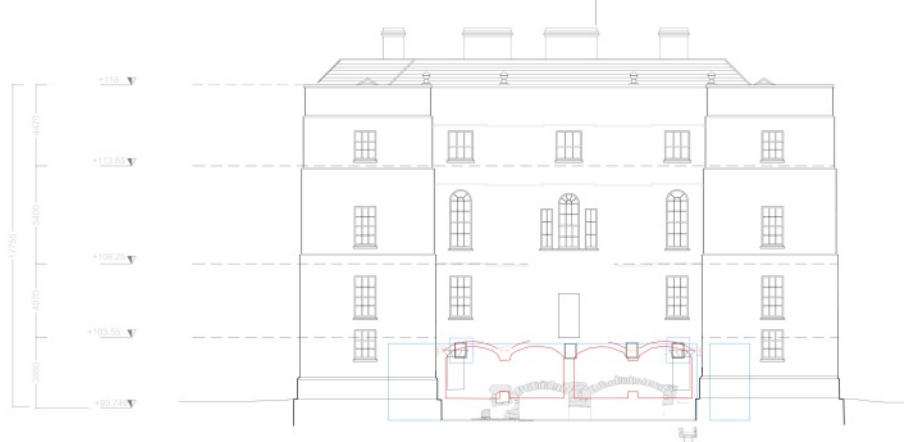
Existing north-facing facade of Rathfarnham Castle, showing 18th century features below portico. Coal cellars in red, drains in red, window lights in blue, entrances into cellars in black



Northern elevation
existing

1
PP-06

This reconstruction emphasises 16th century features, such as the fireplaces and bake oven in the spine wall, the underfloor drain (lower right), a doorjamb (lower left), and uneven 16th century lower fenestration. Basement floor and ceiling outlined in blue. Lower tiers of flanker towers shown based in 2014 excavations



Northern elevation
existing

1
PP-06

Combined elevation of the two above images, to show relationship between coal cellars (red) and 16th century features

the cellars were constructed in the 18th century, most likely early 18th century.

A thick deposit of coal dust within the cellars confirmed their function, and use, during the 18th century. These cellars were not accessible from inside the house, and were instead accessed from outside only, probably from below the contemporary 18th century entrance. This entrance was identified c. 5m to the north of the existing portico (Carroll E341, excavations.ie ref. 1993:100; see also Giacometti 2015, 6, 23). It comprised the thick wall of a truncated platform 11m wide, faced with stone to the north, extending 1.3m in depth into the ground, and broken to the south. It had been accessed by two sets of masonry steps set at angles to the northeast and northwest. The earlier portico then extended north and measured 160m², incorporating the existing portico, which is almost exactly half its size. Alternatively this entrance may have been taller, and resembled the rear entrance at Portumna House, which also has a projecting entrance with two angled staircases.

The columns on the existing portico were placed at a later date, as demonstrated by a large square supporting foundation constructed in one of the coal cellars directly under the columns. The construction of the support involved the partial blocking of two of the least-accessible cellars (the two central ones of the four). These two coal cellars do not appear to have been used after this date, judging from the absence of coal dust on the support column. This suggests a major phase of reconfiguration of the entrance, and the author has previously hypothesised that the columns may date to the extensive Loftus remodelling of the house in the c. 1770s. Since two of the coal cellars were abandoned at this date, a new coal cellar may have been constructed in the northwest flanker to replace them. It seems likely that the two outer cellars under the portico remained in use at this time. The two lion statues and the baluster parapet are also likely to date to this phase, however they may not be in their original positions (indeed the lions have almost certainly been moved).

At a later point the entrance was remodelled

once again and the current granite-faced stepped entrance was constructed. This phase of works involved the demolition of part of the cellars and the construction of a new set of supports inside the two central coal cellars, abutting the support for the pillars. This is the most likely time for the reduction of the size of the entrance portico to its current c. 80m² extent. The façade of the portico appears to have been initially covered by the mid-grey granite cladding, which incorporated voussoirs suggesting the two outer coal cellars under the portico remained in use. This phase must have been completed prior to 1864-5, when an Ordnance Survey map (OS 1:2,500 scale) depicts the current portico extent. The mortar used in this phase is cement-based rather than lime-based, further suggesting a 19th century date.

The final phase of the portico, which may have happened in the 20th century, is the cladding of the lower part of the façade with paler granite slabs and the blocking up of the coal cellar entrances.

Section 5 Conclusions

An examination of the surviving plaster of the basement spaces of Rathfarnham Castle identified a series of plasters, dating to different periods and including successive applications of whitewash or lime-washes. Most of these were lime-based layers, with different additives or binders - from limestone chips or gravel on the exterior surface of the castle (dating from the later 16th- to early 18th centuries) to animal hair (e.g. added to the later 18th century plaster of the eastern bow addition, Room B6). Other plasters used included the application of lime mortar to small areas where patches of earlier plasters had fallen off or were removed during alteration works. In yet other areas (e.g. embrasures of blocked window and southeastern corner of south wall in Room B7), rather than re-applying areas of missing plaster, whitewash or lime-wash was applied to the bare masonry to create a visual impression of uniformly rendered white surfaces. The whiteness of the walls and ceilings in the basement may have been important from the earliest years of the castle's existence (c.f. Beard et al. 2011, 19), however ochre- and turquoise-coloured paint finishes were used in the later periods of basement use.

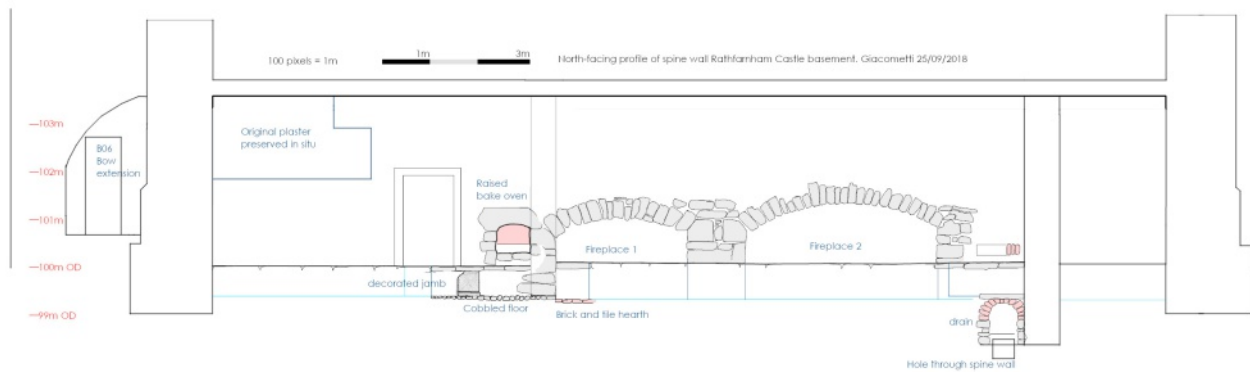
The most significant discovery was the earliest plaster (termed here type A), which was composed of a layer of clay or loam to which straw and possible small twigs had been added as a binder, and which was then given a skim of thin lime-plaster or thick lime-wash. Such plaster have been previously documented as clay plaster render or loam plaster, however Markley has suggested (pers.com. 2019) that a better term might be 'earth mortar plaster containing organic material', and has pointed out that the absence of a defined term to describe it has resulted in this construction technique remaining largely obscure in the archaeological record.

While the use of such plasters is relatively well

known from vernacular buildings dating from the middle-ages to the twentieth century, in an Irish context at least, the majority of these occur in lower status buildings. In higher status buildings of the later middle-ages into the seventeenth century, masonry surfaces were generally given one or more coats of lime and aggregate plasters, over which further lime-based plasters or whitewashes were often applied. In these circumstances, the application of a clay-based plaster to the walls and ceiling of what was a very high status building, planned according to Renaissance principles of symmetry on behalf of a very wealthy English courtier is anomalous.

It has been suggested in this report that the application of the clay plaster may reflect the relatively low status accorded to the basement kitchen spaces in the later 16th century and that there may have been little interest in expending much time or effort plastering their walls. It is also suggested that the plasterers may have been hired to plaster timber or wattle partition walls elsewhere in the building, and that they simply used the clay plaster intended for the partitions to coat the walls of the basement, despite the fact that the earth mixture was not well-suited for this purpose. In short, the anomalous nature of this plaster renders it of potentially high archaeological significance, as it may be a rare survival of a wider lost medieval building tradition, or (given the existence of a similar plaster at Bagenal's Castle, Newry, Co. Down) a record of the work of an English plasterer or other individual unfamiliar with Irish higher status construction practices.

The early plaster used in the vaulted basements of Rathfarnham Castle contrasts with the plaster identified by Collins in 'Cromwell's Fort', the converted coach-house directly north of the castle, in 2018. Cromwell's Fort had wicker-centred vaults and Collins (pers.com. 2018) has



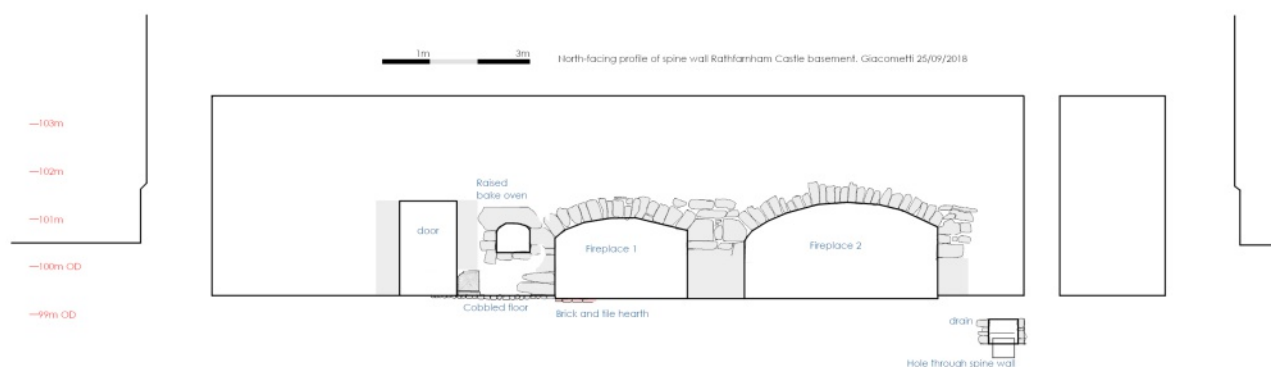
North-facing elevation of spine wall in Rooms B7 and B8 showing key features identified. Blue line shows 16th century floor

dated the wicker by AMS to between the mid-15th and mid-17th century (95% confidence).

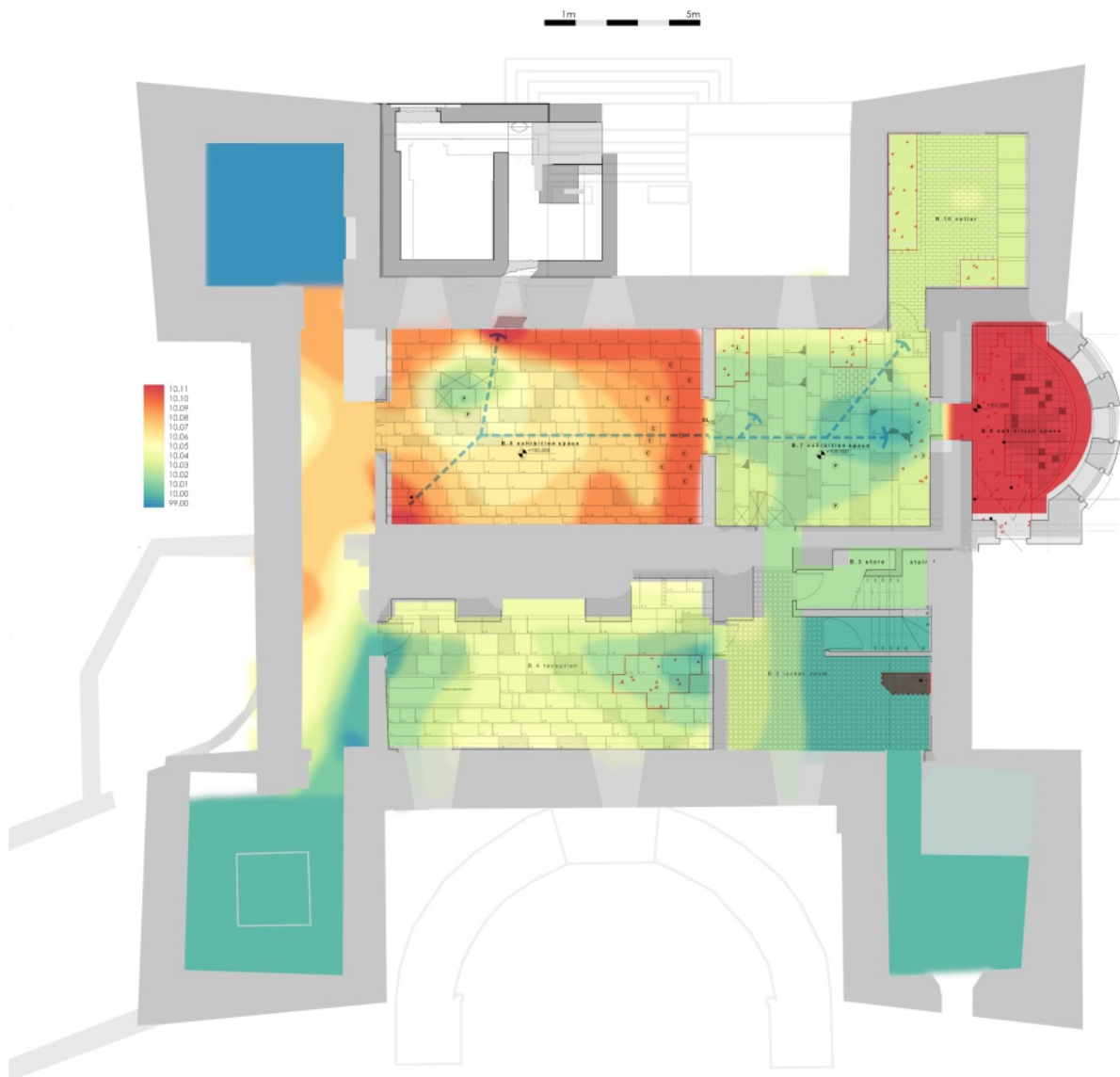
Since Cromwell's Fort is best interpreted as a guardhouse to Rathfarnham Castle, constructed in c. 1583, the date of the wicker-centred vaulting can be refined to c. 1583-1650, which is the same as the estimated date range for the basement type A mortar based on stratigraphy. The plaster used over the wicker in the fort was purely lime-based and contained no earth or loam. If both plasters are broadly contemporary, as suggested here, then it follows that the two buildings were constructed by different craftsmen. Cromwell's Fort would have been constructed by craftsmen familiar with the Irish tradition of later medieval vault construction, whereas Rathfarnham Castle would have been constructed using a different technique (the castle vault is effectively corbelled, see Section 3 above). Buchanan (1956) has pointed out the use of corbelling in late medieval and post-medieval buildings in County Down, for

example in 16th century Walshtown Castle. Dundrum Castle, in Down, an Anglo-Norman fortification, contains phases of both corbelled roofing and wicker-centred vaulting side by side, though not necessarily from the same phase of construction (*ibid*, 101). Combined with the use of the clay loam discussed in the previous paragraph, the use of corbelled vaults instead of wicker-centred vaults in Rathfarnham Castle may support the suggestion that non-Irish craftsmen were employed to construct the castle.

The removal of later phases of plaster from the basement spaces of Rathfarnham Castle revealed several features associated with the earliest phases of the castle's existence; these reflected both the quasi-military and the domestic function of the late-Tudor building and combined elevated living with defensive capacities. The military features included two gun-loops and associated embrasures in the northeastern flanker tower (Room B10) and two



Reconstruction of north-facing spine wall of Room B7/B8 as it was when constructed in c. 1583



Map showing variation in the levels of the 18th century stone floor of the Rathfarnham Castle basement. 'Hotter' colours are higher, and reflect areas that are less worn than the 'cooler' coloured areas. The reconfiguration of the 16th century basement layout by sub-dividing the northern basement is apparent by the discontinuity of the colour-coded levels. This is probably a result of separating fuel stores from other areas of the basement, and the associated shift of the cooking areas to the south basement in the 18th century. It also reflects changing approaches to the control and definition of 'clean' and 'dirty' spaces within the castle during the 18th and into the 19th centuries.

windows (one in Room B7, one in the flanker tower) that, although relatively large for defensive purposes, were set high into the wall, limiting their usefulness to any possible attackers. Also uncovered was the probable original suite of kitchen fireplaces, which were built into the thickness of the east-west spine wall on the southern side of Rooms B7 and B8.

These fireplaces comprised two large hearths and a smaller adjacent bake oven and, when in use, would have enabled the castle cooks to produce large volumes of varied foodstuffs simultaneously. Although the smaller bake oven is currently separated from the two fireplaces by a subdividing wall, the relative locations of these features support the theory that the

northern basement originally functioned as a single large room. A brick and tile hearth found in front of the fireplaces is likely to be 17th or early 18th century in date.

The basement appears to have been cobbled prior to the 18th century. This cobbling was identified across the entire northern basement, and in 2014 in the southeast tower, which housed the castle oven. The rooms with the cobbled surfaces were those used for cooking, whereas the southwest tower, which housed the latrine pit and drains, was paved. It is likely that the entire route of the complex drainage system that ran below the castle basement was paved from the late 16th century with stone lintels, many of which were reused in the 18th and 19th century drain repairs. The original route of the drain was reconstructed based on excavation and CCTV survey.

When the plaster was removed, the alteration of the upper jambs and lintel of the original stone doorway into the northeast tower from the smaller of the two basement rooms was also revealed. This alteration reflected the fact that, at some point between 1720 and 1740 the floor level of the entire basement area was raised by approximately 0.7m, necessitating the raising of the door height to allow access to the tower. It is probable that this alteration of the floor level, the closing-up of the 16th century fireplaces, the partitioning of the basement into Rooms B7 and B8, the removal of the main kitchen activities to the southern side of the spine wall, and the conversion of the larger basement room into a probable coal-store, all occurred at the same time as part of a total overhaul of the ways in which food and fuel were stored and used within the castle. These alterations, together with the dumping of domestic cooking wares, glass, saved pieces of rich clothing and fabric and other goods into the latrine pit in the southwest tower (Giacometti 2015), all point to an unsentimental approach to the use of the basement spaces and a willingness to change the established one-hundred-and-fifty year-old patterns of food processing and cooking at the castle. They also coincide with the evidence for the construction of a new head housekeeper's or head butler's chamber in the southwest tower (Giacometti *ibid*), which reflects a shift in the

way the service quarters of the castle are organised and administered, and a shift in the relationship between the service and living quarters ('upstairs and downstairs') that mirror changes taking place in wider Anglo-Irish elite society.

These alterations also point to a probable injection of money into the household budget (probably from the purse of a new owner or tenant) and a willingness to embrace more up-to-date cooking techniques, including the construction of a new brick bake oven in the masonry cavity of the older one, and the probable use of this new oven in conjunction with the easternmost of the newly-kitted out fireplaces on the southern side of the spine wall.

The reorganisation of domestic and kitchen fuel may also have been part of this modernisation process, if the bunkers identified during earlier archaeological works (Giacometti 2016) were indeed used to store coal. As noted above, the importation of coal into Ireland - primarily from the coal fields of the west of England - increased exponentially from the 1740s onwards, while associations between coal mining and land improvement (e.g. Rees 2014, 58) may also have led to the promotion of coal as a patriotic fuel choice. The findings of the 2016 and 2018 phase of works in the coal cellars below the north portico reinforce the growing importance of coal to the Rathfarnham household in the 18th and into the 19th centuries, and the modification of the probable original east-west circulation patterns within the basement to reflect more complex route-ways separating the possible coal stores from other domestic spaces in the basement (Giacometti 2018, 11). This modification probably also reflected changing approaches to the control and definition of 'clean' and 'dirty' spaces within the castle from the later 16th to the 18th and into the 19th centuries.

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