

**Historic Scotland  
Properties in Care  
Minor Archaeological Works 2010**

**Craigmillar Castle:  
Test Trenches and Excavation  
November/December 2010**

**HS PIC Index Number: 90129  
Project Code: HSCO-90129-2010-01**



**22<sup>nd</sup> - 25<sup>th</sup> November 2010  
14<sup>th</sup> - 15<sup>th</sup> December 2010  
Kirkdale Archaeology**

**Site :** Craigmillar Castle, East Range.

**N.G.R. :** NT 2882 7088

**Project Description :** Watching Brief during the excavation of three test trenches to ascertain the floor make-up and establish the height of the vaults prior to remedial works to prevent water inundation.

**Project Code :** HSCO-90219-2010-01

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## 1.0 INTRODUCTION

Under the terms of its PIC call-off contract with Historic Scotland, Kirkdale Archaeology was asked to undertake an archaeological watching brief on the excavation of three test trenches on the second floor of the East Range (Preston Wing) of Craigmillar Castle. Water penetration was causing damage to the structure of the building and it was assumed that this was due to a failure in the drainage integrity of the exposed floor of the roofless second storey.

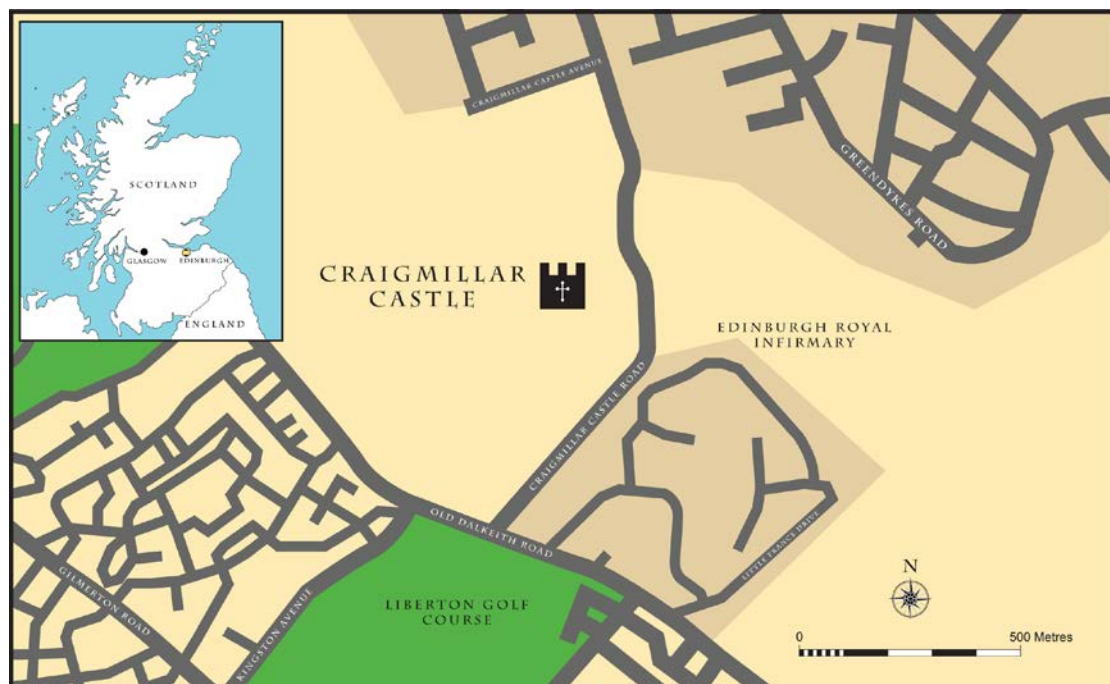
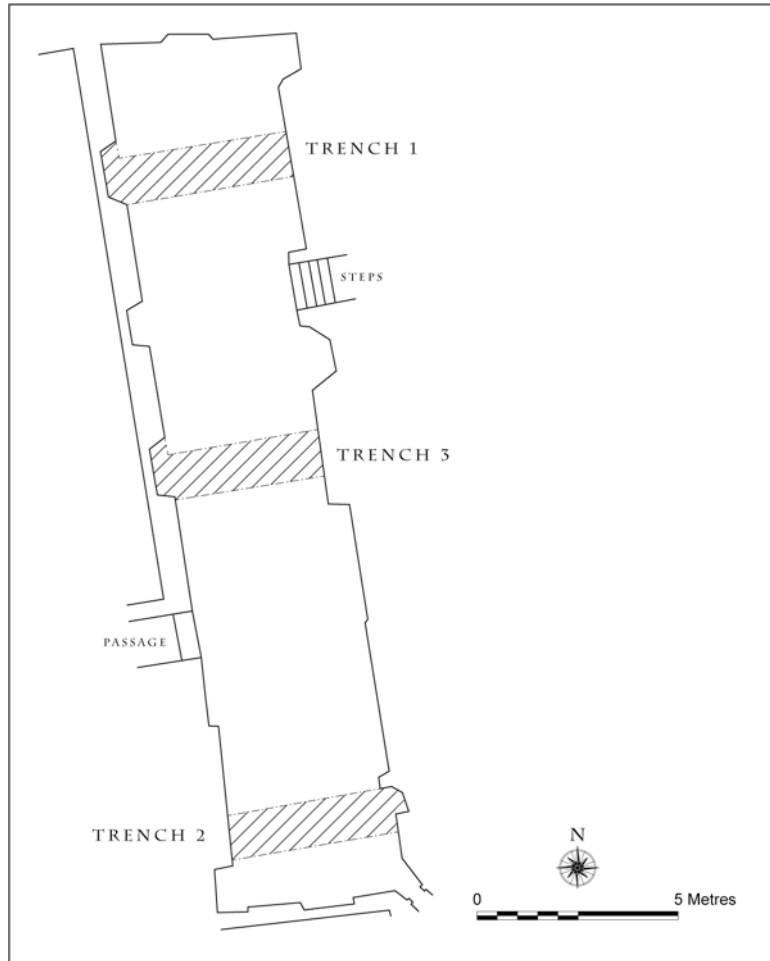


Figure 1: Location map.

The purpose of the current work was to characterise the floor make-up and to expose the extrados of the main vaults to the N, S and central portions of the range. If necessary, the trenches would also expose the depth and make-up of the vault haunches – in the event this only occurred in Trench 3 where a drain inlet was exposed.

The modern upper floor layers (concrete, screed, bitumen and reinforced concrete) were removed by Historic Scotland staff.



**Figure 2:** Trench location plan (at level of existing paving).

All deposits below the level of the modern concrete levelling were hand excavated. In Trenches 1 and 2, the extrados of the main vaults were exposed and shown to have been, at least partially, subject to modern clearance – probably as part of the insertion of the concrete floors in the mid-20<sup>th</sup> century. In Trench 3, the removal of the modern upper floor layers revealed *in situ* stratigraphic deposits. In consultation with Historic Scotland, it was decided that it would be appropriate to use this opportunity to formally excavate this small area in order to characterise the archaeological deposits, retrieve any artefacts, and make a robust record of the extrados of the main and side vaults, as well as the drain inlet below the modern asphalt gutter.

Consolidation of the wall heads and re-pointing of the walls of the East Range has been taking place since the 1950's. Water inundation was obviously a problem and the works reports from the time show that various phases of concrete, bitumen and slabbed flooring have been laid, repaired and replaced several times in the following decades.

## 2.0 DESCRIPTION AND INTERPRETATION

**Trench 1** (see Drawings 2, 3 and 4).

Trench 1 was located at the N end of the second floor of the East Range. Two lines of slabs lying E/W were removed to open up a working platform. The slabs were modern, made of concrete (101) c.50mm thick and generally 780mm x 620mm in area.

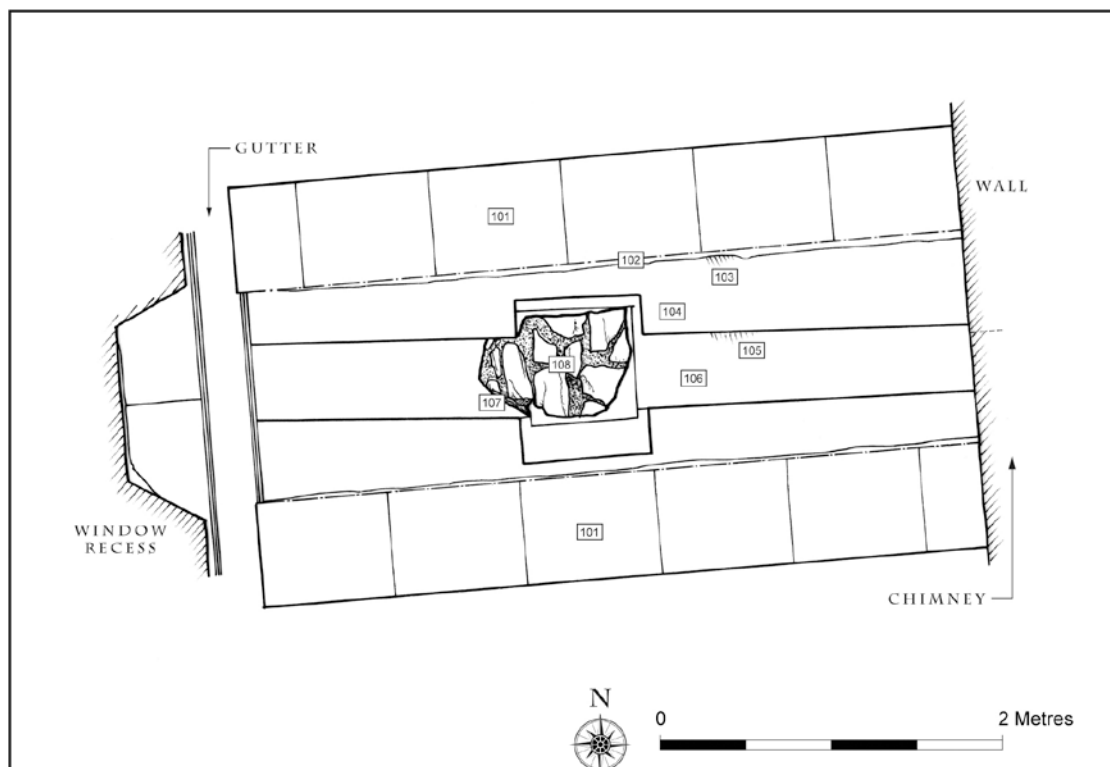


Figure 3: Plan of Trench 1.

These were bedded on a grey concrete screed (102) c.25mm thick. Under the screed lay a layer of bitumen sealant (103), though this was more akin to a painted coat (1-2

mm thick) than a protective layer. The bitumen sealed a layer of poured concrete (104) c.50mm thick. Below the concrete lay a further layer of bitumen (105), this time c.5 mm thick and sealing an undulating layer of reinforced concrete (106). The concrete was between 60 and 160mm thick and was strengthened with square-sectioned metal mesh. When this layer was broken out, a section of the extrados of the main vault was uncovered.

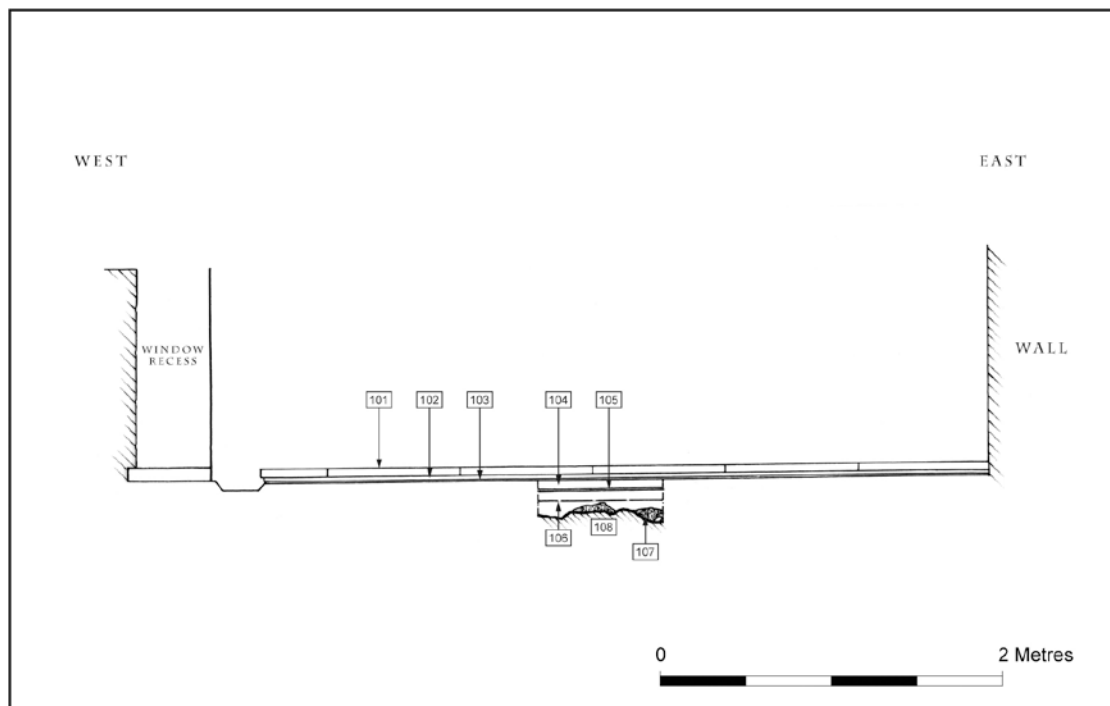


Figure 4: S-facing section in Trench 1.

Between the reinforced concrete and the vault was a loose layer of mortar, stone, brick and bitumen fragments (107) up to 50mm thick. It appeared that when this (or the preceding) arrangement of concrete and bitumen was laid, the deposits over vaults had been removed. This was confirmed by a Ministry of Works plan from May 1960 labelled 'Proposed Strengthening to Arch at North East Corner' (Drawing No. 3804/1) on which there is an annotation 'Existing Fill on Top of Arch to be Completely Removed'. This particular phase of strengthening only extended as far as the area of the vault in the northernmost room on the first floor, and thus explains

why deposits remained *in situ* in Trench 3. There were therefore no *in situ* archaeological deposits at this particular juncture, although the deposits on the vault apex would be the most likely to require reduction when installing a floor. The extrados of the vault (108) itself was composed of cinked angular sandstone blocks running N/S, with the vault in the room below falling to the E and W. The stone was bonded in a whitish yellow lime mortar. Only a small section (600mm N/S x 900mm E/W) of the vault was exposed in its central portion.

**Trench 2** (see Drawings 2, 5 and 6).

Trench 2 was located at the S end of the second floor of the East Range. One line of slabs lying E/W was removed to open up a working platform with a further two slabs removed centrally, as the requirement was again to find the high point of the main vault extrados.

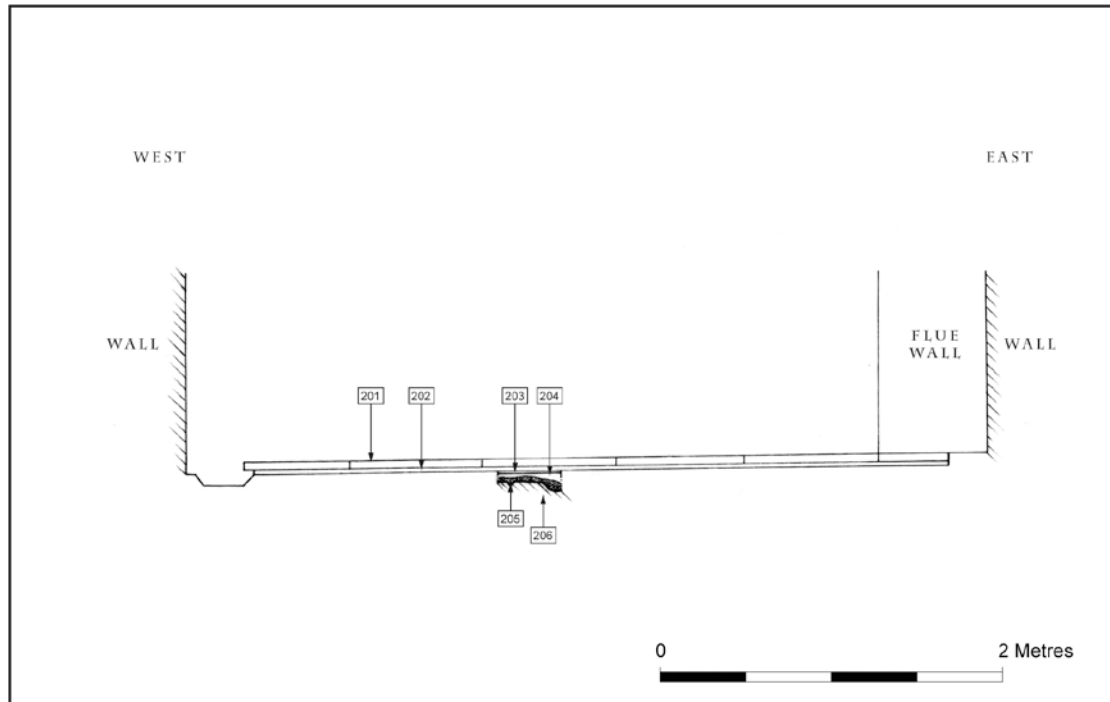


Figure 5: Plan of Trench 2.

The slabs were modern, made of concrete (201) 50mm thick and generally 780mm x 620mm in area. These were bedded on a grey concrete screed (202) c.25mm thick. Under the screed was a layer of bitumen sealant (203), though this was again more akin to a painted coat (1-2mm thick) than a protective layer. The bitumen sealed a layer of undulating poured concrete (204) 20-50mm thick. Below the concrete was a moderately compact light brown layer of stone and mortar (205) sealing the vault extrados. This appeared to be a truncated archaeological layer up to 45mm thick; it contained no artefacts. The installation of a succession of floors had left the *in situ* deposits severely truncated at the vault apex. Context (205) represented the original *in situ* levelling above the vault cap. The vault below was notably higher than that at the N end. The main vault extrados (206) was composed of clinked angular sandstone blocks running N/S, with the vault in the room below falling away to the E and W. The stone was bonded in a whitish yellow lime mortar. To the S, in the room below, was a side vault forming the soffit of the window recess.

To the E of Trench 2, a large semi-circular area of concrete with a bituminous seal may have been a capped flue (207). The feature, as exposed, was 620mm N/S x 800mm E/W. Upon investigation it transpired that it was indeed a flue running up from a fireplace in the vaulted basement below. The only further feature of note was the concrete edging blocks (208) forming the E side of the asphalt gutter.





**Figure 6:** S-facing section in Trench 2.

**Trench 3** (see Drawings 2, 7, 8 and 9).

Trench 3 was located centrally within the second floor of the East Range. Two lines of slabs lying E/W were removed to open up a working platform. The slabs were modern, made of concrete (301) 50mm thick and generally 780mm x 620mm in area. These were bedded on a grey concrete screed (302) 25mm thick. Under the screed was a layer of bitumen sealant (303), though this was again more akin to a painted coat (1-2mm thick) than a protective layer. The bitumen sealed a layer of poured concrete (304) 60-80 mm thick, which formed the gutter to the W. Underneath this was a layer of perished reinforced concrete (305) in very poor condition. This old concrete surface was up to 40mm thick, greyish brown in colour and containing heavily oxidised strengthening mesh. It was likely to date from the initial stages of consolidation in the 1950's or 1960's. Context (305) was truncated to the W by a cut (319) to insert the drain inlet (312). A patch of loose stone and mortar levelling (306) was found below (305) and probably indicated excavated material being re-deposited and used as levelling for the old reinforced floor.

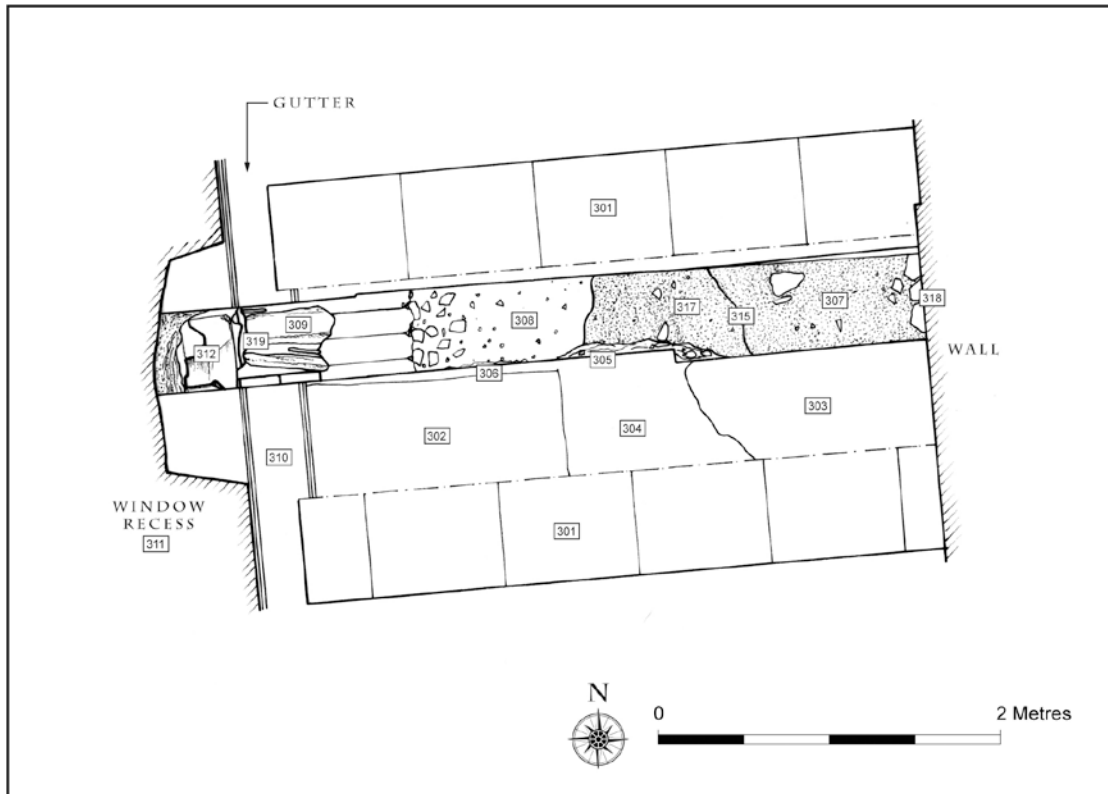


Figure 7: Pre-excitation plan of Trench 3.

It became apparent after the removal of the old reinforced concrete that there were *in situ* deposits sealing the vaults below. The archaeological deposits revealed had been truncated to the W by a cut to insert the drain inlet. The floor of the window recess (311) had been opened by cut (319), up to 260mm deep, which had cleared down onto the extrados of the W side vault serving the window recess in the first floor room below. The drain inlet (312) comprised a rectangular aperture formed from a mixture of brick, sandstone, concrete and smashed pieces of modern terracotta drain pipe. This inlet appeared to feed into a gully running S/N from this point – there were three small rectangular apertures in the exterior W wall facing the courtyard and these had the appearance of outlets. The age of this feature was not clear as it could not be examined in any detail, however there were three observations that are suggestive of a late date:

1. The apertures sat directly over the three first floor windows and the three ground floor doors into the East Range. Water would therefore have dripped over these elements. This would have been an uncharacteristic and impractical arrangement.
2. Drainage apertures are usually served by spouts. The wall walk of the Inner Curtain Wall has many such features to drain the wall walk while carrying the water away from the walls to prevent erosion. The apertures under discussion had no spouts.
3. The apertures appeared to be skimmed with concrete.

The cut for the drain inlet had then been backfilled with (320), a loose mixture of re-deposited silt, mortar and sandstone as well as fragments of red brick and Type 2 stone. To the E, this cut had truncated (308), a layer of dark brown silt and stone levelling over the main vault extrados. The layer was flecked with mortar and charcoal and was up to 160mm thick. Its relationship to the mortar layer (307) was unclear, as it had been truncated by a later cut (315). The mortar layer (307) was up to 150mm deep and composed of a yellowish brown mixture of silt (20%) and un-bonded lime mortar (80%). This was again a levelling layer, situated over the extrados of the E side vault which bonded the main vault below to the chimneybreast of the fireplace in the first floor E wall. Contexts (307) and (308) were truncated by a sloping U-shaped cut (315). Two sandstone blocks bonded in lime mortar, and running N/S (with a straight face to the W), had been laid within the cut. There are several possibilities regarding the function of this feature' although it was clear that it post-dated the building and levelling of the vaults:

1. It may represent the reduced remains of a N/S cross-wall; a later partitioning of the space.
2. It could be some sort of pad for carrying an upright structural element.
3. The feature sat on the cusp between the main vault and E side vault. If this junction was leaking, or for some reason required repairing, then this would

perhaps lead to an interpretation of this feature as a later vault capping to seal the junction between the vaults.

Having only examined the feature within the confines of a small trench, it was impossible to reach a firm conclusion as to its function. The correct function will only be confirmed if future works reveal more of the feature.

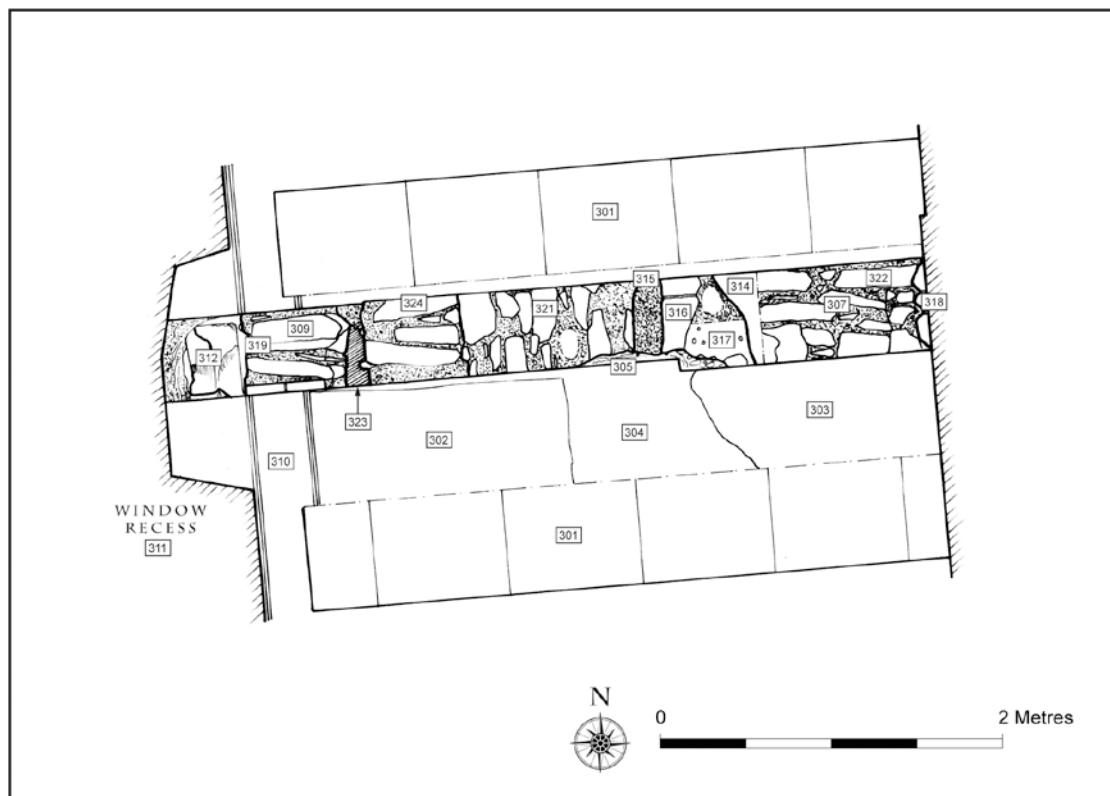


Figure 8: Post-excavation plan of Trench 3.

The feature had been backfilled with a mixture of whitish-yellow un-bonded lime mortar and silt (317) up to 100mm thick, probably a re-deposited mixture of (307) and (308) with added mortar. Over the E side vault (322), the mortar layer (307) cleared onto a charcoal and mortar-rich moderately compact layer of mid-brown silt (314). This represented the basal levelling layer over the vault with (307) above. Similarly, the upper levelling (308) over the main vault extrados cleared onto a thin layer of a charcoal and mortar-rich moderately compact mid-brown silt (313) very

similar to (314). It seemed likely that the two layers represent the same basal levelling event, with (307) and (308) representing different dumps of levelling material. The insertion of a succession of floors from the 1950's has also truncated any sign of the original floor. Hand-made iron nails were found within (308), (313) and (314). While those found within (308) could have belonged to a now-vanished planked floor, those within (313) and (314) were within a sealed deposit. It is likely that the upper floor levels may only survive in fragmentary form against the side walls as a result of this later truncation. The E side wall in Trench 3 could be seen to have a footing of angular sandstone pieces bonded in white mortar (318) laid over the E side vault extrados. The footings protruded from the wall face by 100mm.

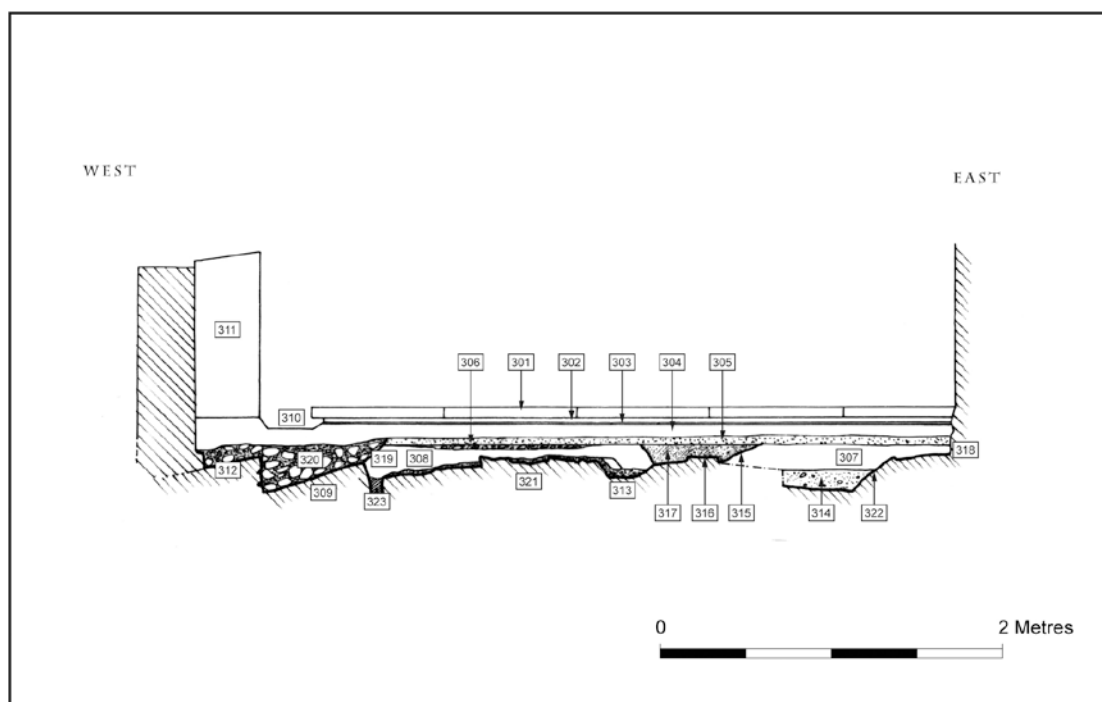


Figure 9: S-facing section in Trench 3.

Having cleared off the soft deposits, the vaults were exposed. The W side vault (309) was composed of clinked angular sandstone blocks running E-W, with the vault in the window recess below falling to the N and S. The stone was bonded in a whitish yellow lime mortar. The main vault extrados (321) was again composed of clinked angular sandstone blocks running N/S, with the vault in the room below falling to

the E and W to meet the side vaults. The stone was bonded in a whitish yellow lime mortar. Where the main vault (321) met the W side vault (309), a capping layer (324) of clinked angular sandstone blocks bonded in whitish-yellow lime mortar running E/W sealed the joint. This joint has failed, as there was a substantial structural crack (323) forming a void up to 140mm wide E/W between the two vaults. The limits of the crack were not visible within the confines of the trench, but could be located during future works. The age of the crack could not be determined, but it was substantial and likely to be one of the main conduits for water penetrating the vault and walls below.

### 3.0 CONCLUSIONS

The location of the structural crack between the main vault and the E side vault was a cause for concern. In general, the deposits within the trenches were dry with the exception of the backfill of the drain inlet cut, next to the structural crack.

The problem of water penetration could be occurring at several junctures. The walls, flues, sides of the floor and general cracks and voids within the steps and stonework could be allowing water to get in and under the floor where it can then percolate, especially via the structural crack, into the floors below.

The excavation has provided a good opportunity to understand part of the construction process of this only partially understood portion of the castle. The East Range is generally considered to date to the mid-16<sup>th</sup> century. There is enough evidence within the fabric to suggest that the range has either been subject to change since that date or alternatively that the mid-16<sup>th</sup> century saw the absorption of pre-existing structures (of as yet indeterminate date) into the current East Range / South East Range / Tower House arrangement. As the Inner Curtain Wall was added in the 1440's there seems no reason why an East Range could not have existed at this time.

There are a large number of blocked apertures visible on the exterior E Wall of the Inner Curtain (serving the East Range) while the interior of the East Range contains at least two capped staircases and one inserted vault. There is also evidence that the upper floor was not a continuous space, but was bisected by a corridor running E from the main entrance to the second floor.

If there is a requirement to expose more of the archaeological fabric as part of the remedial drainage works, it would be prudent and practical to carry out a pre-emptive building survey that would provide the framework for the phasing of all the structural elements within the East Range.

#### 4.0 APPENDIX 1: LIST OF DIGITAL PHOTOGRAPHS

No.	Description	Facing	Date
1	Pre-excavation shot of the E Range second floor	N	22/11/2010
2	Pre-excavation shot of the E Range second floor	NNW	22/11/2010
3	Pre-excavation shot of the E Range second floor	NNE	22/11/2010
4	Pre-excavation shot of the E Range second floor	S	22/11/2010
5	Trench 1 bitumen (103) below slabs (101).	N	22/11/2010
6	Trench 1 concrete (104) and bitumen (105).	N	22/11/2010
7	Trench 1 reinforced concrete (106).	E	22/11/2010
8	Trench 1 detail of reinforced concrete (106).	E	22/11/2010
9	Trench 1 exposed vault extrados (108).	E	22/11/2010
10	Trench 1 reinforced concrete (106) and backfill (107).	W	22/11/2010
11	S-facing section in Trench 1.	N	22/11/2010
12	Post-excavation shot of Trench 1.	W	22/11/2010
13	Work in progress, Trench 1 cutting concrete.	NE	22/11/2010
14	Post-excavation shot of Trench 1.	W	22/11/2010
15	Post-excavation shot of Trench 1.	W	22/11/2010
16	Trench 2: Bitumen (203) below slabs (201).	SSW	22/11/2010
17	Trench 2: Bitumen (203) and concrete (204).	S	22/11/2010
18	Trench 2 Bitumen (203) and concrete (204).	S	22/11/2010
19	Trench 2: Exposed extrados of vault (206).	S	22/11/2010
20	Post-excavation shot of Trench 2.	S	22/11/2010
21	West façade of the E Range.	SE	23/112010
22	N façade of the S Range.	S	23/112010
23	E Range second floor.	SE	23/112010
24	Trench 2: Possible capped flue (207).	E	23/112010
25	Trench 2 Possible capped Flue (207).	E	23/112010
26	Post-excavation shot of Trench 2.	E	23/112010
27	Post-excavation shot of Trench 2.	W	23/112010
28	Post-excavation shot of Trench 2 edging (208) and bitumen (203).	W	23/112010
29	Detail of edging (208) and bitumen (203).	W	23/112010
30	N-facing section in Trench 2.	S	23/112010
31	Trench 3: Old reinforced concrete (305).	E	23/112010
32	Trench 3: Old reinforced concrete (305).	E	23/112010
33	Trench 3: Old reinforced concrete (305).	W	23/112010
34	Trench 3: Old reinforced concrete (305).	W	23/112010
35	Trench 3: Old reinforced concrete (305).	W	23/112010
36	Trench 3: Old reinforced concrete (305).	W	23/112010
37	Trench 3: Old reinforced concrete (305).	E	23/112010
38	Trench 3: Old reinforced concrete (305).	E	23/112010
39	Trench 3: Old reinforced concrete (305).	E	23/112010
40	Trench 3: Drain inlet (312).	W	24/11/2010
41	Trench 3: Drain inlet (312).	W	24/11/2010
42	Trench 3: Mortar Spread (307).	E	24/11/2010
43	Trench 3: Mortar Spread (307).	E	24/11/2010



No.	Description	Facing	Date
44	Trench 3: Drain inlet (312) and side vault (309).	W	24/11/2010
45	Trench 3: Drain inlet (312) and side vault (309).	W	24/11/2010
46	Trench 3: Mortar spread (307) and silt layer (308).	E	24/11/2010
47	Trench 3: Side vault (309).	E	24/11/2010
48	Trench 3: Mortar spread (307) and silt layer (308).	W	24/11/2010
49	Pre-excavation shot of Trench 3.	E	25/11/2010
50	Trench 3: Silt (308) and side vault (309).	E	25/11/2010
51	Trench 3: Drain inlet (312) and side vault (309).	E	25/11/2010
52	Trench 3: Silt (308).	W	25/11/2010
53	Trench 3: Cross wall / cap (316) exposed.	E	14/12/2010
54	Trench 3: Main vault extrados (321) and W side vault (309).	W	14/12/2010
55	Trench 3: Cross wall / cap (316).	N	14/12/2010
56	Trench 3: Cross wall / cap (316).	E	14/12/2010
57	Trench 3: Cross wall / cap (316).	S	14/12/2010
58	Trench 3: E end of Trench.	E	15/12/2010
59	Trench 3: E side vault (322).	E	15/12/2010
60	Trench 3: Cross wall / cap (316) and main vault extrados (321).	E	15/12/2010
61	Post-excavation shot of Trench 3.	E	15/12/2010
62	Trench 3: Detail of void (323).	E	15/12/2010
63	Trench 3: Detail of void (323).	W	15/12/2010
64	Trench 3: S-facing section, W End.	N	15/12/2010
65	Trench 3: S-facing section, W central portion.	N	15/12/2010
66	Trench 3: S-facing section, E central portion.	N	15/12/2010
67	Trench 3: S-facing section, E end.	N	15/12/2010
68	Trench 3: N-facing section, E end.	S	15/12/2010
69	Trench 3: N-Facing section, E central portion.	S	15/12/2010
70	Trench 3: N-facing section, W central portion.	S	15/12/2010
71	Trench 3: N-facing section, W end.	S	15/12/2010
72	Trench 3: Finds from (308).	N/A	N/A
73	Trench 3: Finds from (317).	N/A	N/A
74	Trench 3: Finds from (313).	N/A	N/A
75	Trench 3: Finds from (314).	N/A	N/A
76	Trench 3: Finds from (314).	N/A	N/A
77	Trench 3: SF001 Green braided thread from (314).	N/A	N/A

## 5.0 APPENDIX 2: LIST OF CONTEXTS

No.	Description
101	Paving slabs.
102	Screed under (101).
103	Painted bitumen layer.
104	Concrete below (103).
105	Bitumen layer below (104).
106	Reinforced concrete

No.	Description
107	Backfilled loose mortar, concrete and bitumen.
108	Extrados of main vault.
201	Paving slabs.
202	Screed under (201).
203	Painted bitumen layer.
204	Undulating layer of concrete below (203).
205	Loose stone and mortar over vault.
206	Extrados of main vault.
207	Possible capped flue.
208	Edging blocks at gutter.
301	Paving slabs.
302	Screed under (301).
303	Painted bitumen layer.
304	Concrete below (303).
305	Old reinforced concrete.
306	Loose stone and mortar below (305).
307	Mortar spread to E of trench.
308	Layer of silt and stone to W of trench.
309	W side vault.
310	Concrete gutter.
311	Window recess.
312	Drain inlet.
313	Silt and mortar below (308).
314	Charcoal and mortar-rich silt below (307).
315	Cut for cross-wall / vault cap.
316	Cross-wall / vault cap.
317	Mortar backfill of cut (315).
318	Footings for E wall.
319	Cut to insert drain inlet (312).
320	Loose stone and silt backfill of (319).
321	Main vault extrados.
322	E side vault.
323	Voided area within (309).

## 6.0 APPENDIX 3: LIST OF DRAWINGS

No.	Description	Scale
001	Post-excavation plan of Trench 1.	1:20
002	Post-excavation plan of Trench 2.	1:20
003	S-facing section in Trench 1.	1:20
004	S-facing section in Trench 2.	1:20
005	Pre-excavation plan of Trench 3.	1:20
006	S-facing section in Trench 3.	1:20
007	Post-excavation plan of Trench 3.	1:20

## 7.0 APPENDIX 4: LIST OF FINDS

### Small Finds

No.	Description	Trench / Context
SF001	Hand dyed braided green thread. Possibly a piece of ornamental fringing from a tapestry, a piece of clothing or a soft furnishing.	3 / 314

### General Finds

No. of pieces	Description	Trench/Context
1	Short handmade iron nail.	3 / 308
1	Long handmade iron nail.	3 / 308
1	Piece of animal bone.	3 / 308
3	Long handmade iron nails.	3 / 313
3	Sherds of unglazed pottery.	3 / 313
5	Pieces of animal bone.	3 / 313
3	Short handmade iron nails.	3 / 314
3	Pieces of animal bone.	3 / 314
2	Pierced roof slates.	3 / 314
3	Oyster shells.	3 / 314
1	Fragment of painted lime plaster.	3 / 314
1	Possible thin sherd of pottery	3 / 314
2	Sherds of unglazed pottery.	3 / 317

## 8.0 APPENDIX 6: LIST OF SAMPLES

No.	Trench	Context	Description	Bags	Date
1	3	307	Mortar spread.	1	14/12/2010
2	3	308	Silt and stone layer.	1	14/12/2010
3	3	313	Silt and mortar below (308).	1	15/12/2010
4	3	314	Charcoal-rich silt and mortar below (307).	1	15/12/2010