Discovery and Excavation in Scotland – OASIS-type Form (2006)

LOCAL AUTHORITY:	East Lothian
PROJECT TITLE/SITE NAME:	Dirleton Castle
PROJECT CODE:	HSCO-90096-2012-01
PARISH:	Dirleton
NAME OF CONTRIBUTOR:	Paul Fox
NAME OF ORGANISATION:	Kirkdale Archaeology
TYPE(S) OF PROJECT:	Archaeological monitoring
NMRS NO(S):	NT58SW 1.00
SITE/MONUMENT TYPE(S):	Castle
SIGNIFICANT FINDS:	
NGR (2 letters, 8 or 10 figures)	NT 5162 8396
START DATE (this season)	23 May 2012
END DATE (this season)	24 May 2012
PREVIOUS WORK (incl. *DES* ref.)	
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	A watching brief was maintained during the excavation of three investigative trenches to establish the make-up of the deposits in between the slabbed floor of the Great Hall of the Haliburton Range and the vault crown of the cellars below. It seemed that a significant effort had been made to try to consolidate the floor, probably in the early to mid 20th century, which had involved the removal of the original infilled deposits over the vault.
PROPOSED FUTURE WORK:	
CAPTION(S) FOR ILLUSTRS:	
SPONSOR OR FUNDING BODY:	Historic Scotland
ADDRESS OF MAIN CONTRIBUTOR:	4, Western Terrace, Edinburgh, EH12 5QF
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ARCHIVE LOCATION (intended/deposited)	Archive to be deposited in NMRS

HISTORIC SCOTLAND PROPERTIES IN CARE
MINOR ARCHAEOLOGICAL WORKS 2012

Dirleton Castle: Watching Brief, May 2012

HS PIC Index Number: 90096

SITE: Dirleton Castle, near North Berwick, East Lothian

N.G.R.: NT 5162 8396

DESCRIPTION: Watching Brief during the excavation of three test trenches to establish the nature of the deposits/make-up between the slabbed floor and the vault crown below, in the Great Hall of the Haliburton Range, ahead of remedial works to prevent water ingress

PROJECT CODE: HSCO-90096-2012-01

CONTENTS:

KIRKDALE ARCHAEOLOGY

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JULY 2012

INTRODUCTION

Under the terms of its Properties-In-Care (PIC) call-off contract with Historic Scotland, Kirkdale Archaeology was asked to undertake an archaeological watching brief at Dirleton Castle near North Berwick in East Lothian during the excavation of three investigative trenches to establish the make-up of the deposits in between the slabbed floor of the Great Hall of the Haliburton Range and the vault crown of the cellars below (Fig.1).

Water had been penetrating the floor at several junctures and this could be clearly demonstrated in the cellars below the Great Hall, where water could be seen exiting from the vault *intrados*. It was thought that a damp proof membrane had been inserted as part of the current floor layout. The purpose of the test trenches was to investigate, at several points, the make-up of the sub-floor deposits to check if there was any indication of the cause of the water ingress.

It is not clear when the current floor was installed. What became clear was that a significant effort had been made to try to consolidate the floor, probably in the early - mid 20th century, which had involved the removal of the original infilled deposits over the vault. The traditional form of a barrel vault has the *intrados* (lower) surface faced with the flush ends of its masonry blocks. As blocks of different sizes were used, it then followed that the *extrados* (upper) surface was uneven with masonry projecting up at different heights. The high point of the vault was its central apex (crown) while the sides of the vault (the haunches) were much lower. In order to provide a level floor base over the vault, fine dry material such as sand was used, along with masonry slabs, to infill the haunches initially, rising over the uneven vault *extrados* and clearing the vault crown. A slabbed floor could then be laid over this base.

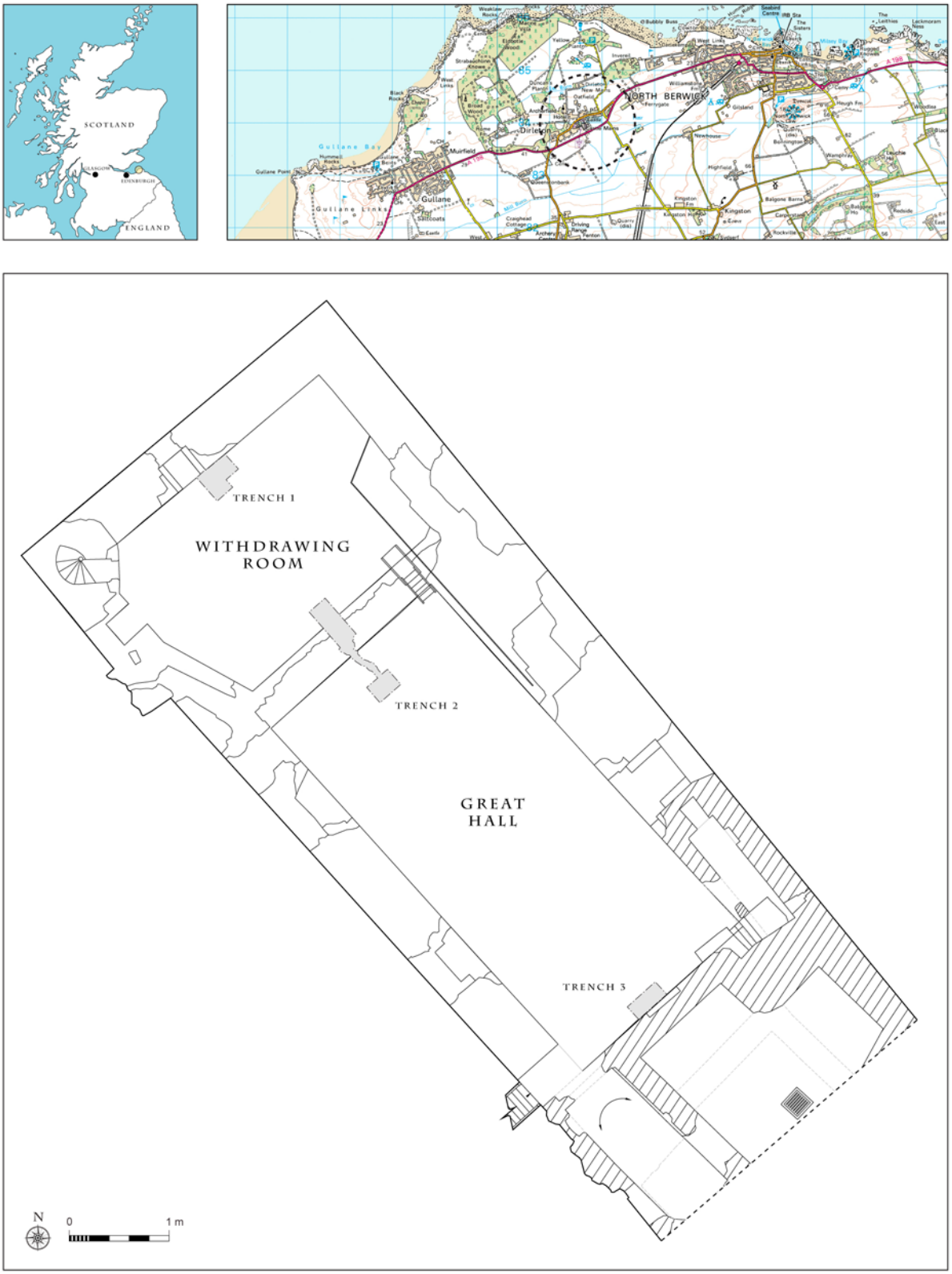

Figure 1: Plan showing the location of Dirleton Castle, and the area of works.

In the case of the floor of the Great Hall, when the current floor slabs were lifted and the concrete base was cut through, the infill was of voided rubble. This immediately suggested that the original sub-floor deposits had been at least partially truncated. There was no sign of the damp proof membrane. Upon the clearance of Trench 1 onto the vault *extrados*, the method of consolidation used in the 20th century was apparent.

The architect Robert Billings had drawn the carved buffet (which he called a 'canopied seat') on the SE wall of the Great Hall in the 1840s. The ground level is clearly shown as being up to the level of the hollow-chamfered sill base. This can be contrasted with a photo of the current floor level (Fig.2).

Figure 2: Robert Billings' drawing of the 'canopied seat' (left) alongside a current view, showing the dramatically altered level of the floor

It is apparent then that a large amount of material (up to 1.5m) must have been removed in order to re-instate the original floor level. When this work was carried out, the post-abandonment overburden, as well as the *in situ* archaeological deposits, were removed in order to expose the vault *extrados*. This was then rendered with cement in order to seal it against water penetration. The rubble, presumably retained from the excavation, was then put back over the vault leaving gaps between to allow air circulation. The voided rubble was sealed with two concrete pours, and the walls were pointed-up. In effect, the damp proof

membrane was actually the cement render over the vault extrados. Unfortunately, when water penetrated through gaps in the pointing it gathered in the vault haunches and found its way through any structural cracks into the cellars below.

The excavations were carried out manually by Historic Scotland staff under archaeological supervision, and the work took place between 23rd and 24th May 2012.

D E S C R I P T I O N

Trench 1

Trench 1 measured 0.7m SW/NE x 1.20m SE/NW x up to 1.13m deep. The trench was located at the E corner of the window recess in the NW wall of the withdrawing room. The nature of the voided deposits encountered meant that a single slab removal did not allow enough room to clear the trench. A second slab was therefore lifted to provide adequate safe working room and access. Below the modern floor slabs **101** (0.05m thick) was a 0.05m thick layer of cement screed **102** without inclusions. This in turn sat over a slightly undulating (basally) layer of concrete **103** with inclusions, the layer being around 0.1m thick. These three elements made up the solid 20th century floor. Concrete **103** had been spread over a vast raft of re-deposited voided rubble **104** containing some finer material. As discussed earlier, this is likely to be selected rubble derived from the excavation of original material over the vaults – there were a few pieces of animal bone within the layer. As the trench was located over the junction of the window bay and main vault of the cellars below, the side vault (running NW/SE) **107**, and main vault (running SW/NE) **106**, could both be seen in the trench. Both appear to have been skimmed with cement **105** as part of the consolidation and waterproofing works. The side vault **107** sat at least 0.14m higher than the main vault **106**.

Trench 2

Trench 2 was located both sides of, and running across, the NE/SW wall separating the Great Hall and the withdrawing room. The purpose of the Trench was to investigate the floor deposits within the Great Hall and the Withdrawing Room while examining the area of rough racking which had been used to protect the cross wall. In the Withdrawing Room, the trench measured 70cm SW/NE x 90cm SE/NW x up to 0.5m deep. It was decided on site that

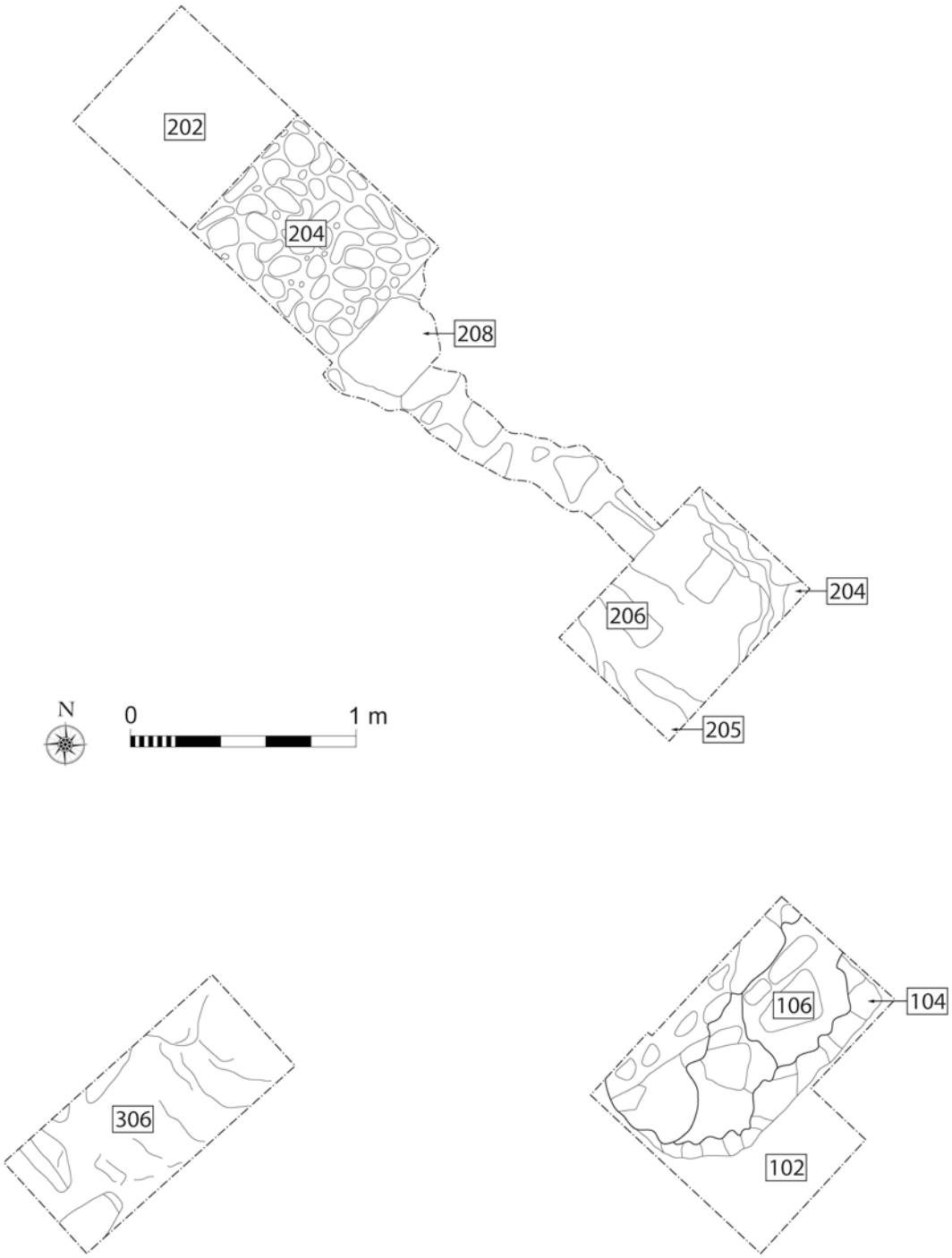

Figure 3: Post-excavation plans of Trenches 1 - 3 (Trench 2, top; Trench 1, lower-right)

Trench 1 had revealed enough about the make-up over the vaults. This portion of Trench 2 therefore simply sought to confirm that the rubble was present below the concrete – which it was. The Great Hall portion of Trench 2 measured 0.86m NW/SE x 0.70m NE/SW x up to 0.52m deep. Below the modern floor slabs **201** (0.05m thick) was a 0.05m thick layer of

cement screed **202** without inclusions. This in turn sat over a slightly undulating (basally) layer of concrete **203** with inclusions, the layer being around 0.18m thick. These three elements made up the solid 20th century floor. Concrete **203** had been spread over a vast raft of re-deposited voided rubble **204** containing some finer material. Again, this is likely to be selected rubble derived from the excavation of original material over the vaults – there were a few pieces of animal bone within the layer. The rubble cleared onto the NW/SE running main vault **206**, which been skimmed with cement **205** as part of the consolidation and waterproofing works. The cross wall separating the Great Hall from the Withdrawing Room had been dressed-off with a 0.20m - 0.40m thick layer of rough racking **207**. The relict wall stub to the NE of the trench had been skimmed on its rear with modern cement such as that found on the rough racking. The racking covered a reduced wall of roughly dressed masonry bonded in lime mortar **208**.

Trench 3

Trench 3 measured 1.22m SW/NE x 0.54m SE/NW x up to 0.46m deep. The trench was located against the SE wall of the Great Hall below the carved buffet. Below the modern floor slabs **301** (0.05m thick) was a 0.08m thick layer of cement screed **302** without inclusions. This in turn sat over a slightly undulating (basally) layer of concrete **303** with inclusions, the layer being around 0.10m thick. These three elements made up the solid 20th century floor. Concrete **303** had been spread over a vast raft of re-deposited voided rubble **304** containing some finer material. Once again, this is likely to be selected rubble derived from the excavation of original material over the vaults – there were a few pieces of animal bone within the layer. The rubble cleared onto the NW/SE running main vault **306** which had been skimmed with cement **305** as part of the consolidation and waterproofing works.

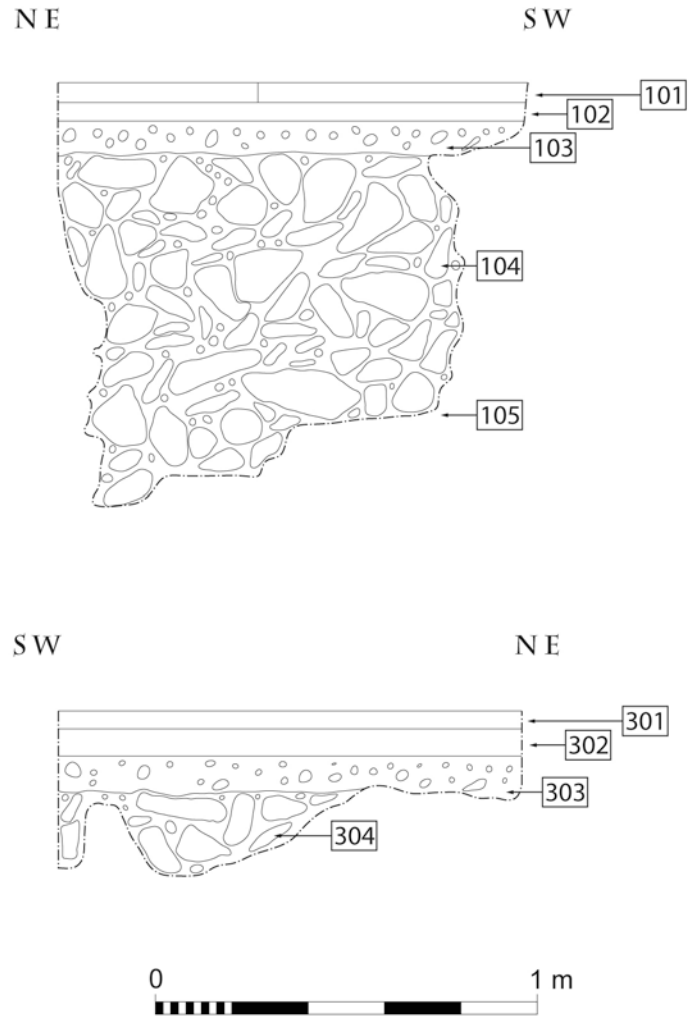

Figure 4: NW-facing section in Trench 1 (top) and SE-facing section in Trench 3

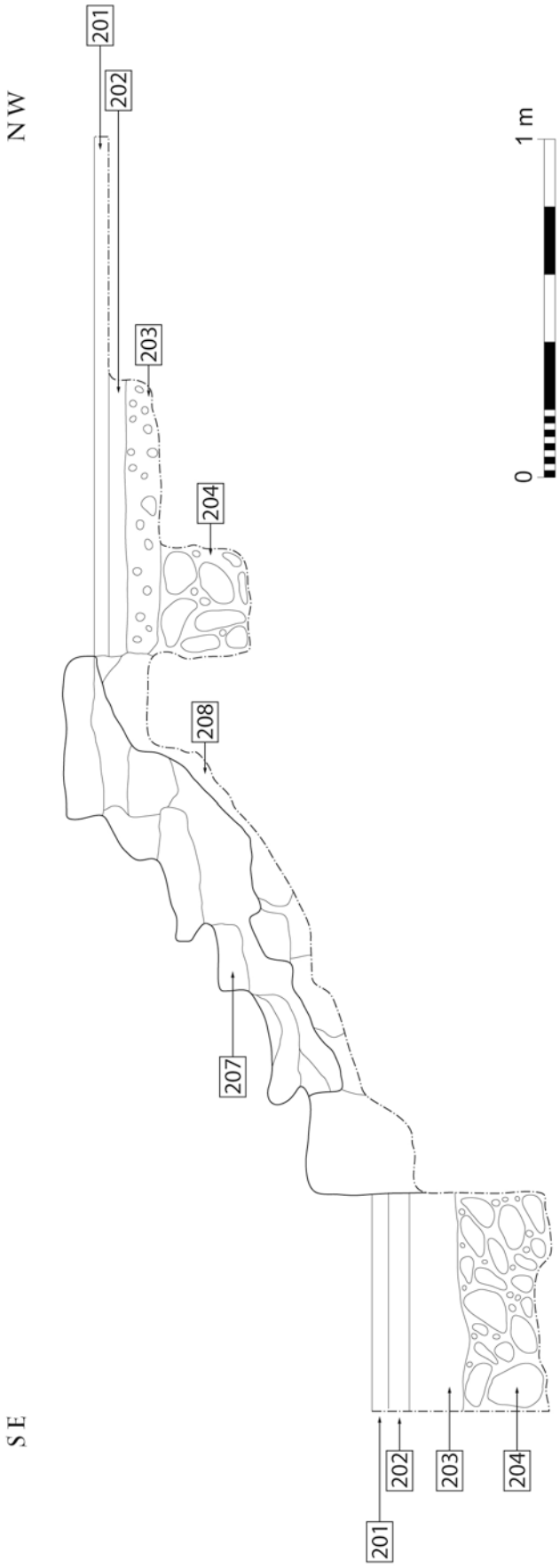

Figure 5: NE-facing section in Trench 2

CONCLUSIONS

The test trenching was successful in that it helped to characterise the floor deposits and explain their form and the reasons for their presence. In terms of finding a solution to the water ingress, an examination of the vaults below the Great Hall gives a good sense of where the water is escaping through the vault. With this knowledge it would be possible to target localised areas above in order to establish the initial point of entry of the water and the area of structural failure allowing its egress into the cellars, which appear to be either side of a joint in the vaulting a short distance SE of the cross wall between the two rooms above. If water is gathering at specific points within the SW and NE vault haunches then it can easily exit here.

Whilst the present works indicate that the deposits over the vaults have been disturbed and re-deposited, further test trenching may reveal undisturbed deposits and structural details - it would therefore be advisable to have an archaeological presence during any further investigative work.

LIST OF CONTEXTS

No.	Description
101	Floor slabs
102	Cement screed
103	Concrete
104	Re-deposited voided rubble
105	Cement skim over 106 and 107
106	Main Vault
107	Side Vault
201	Floor slabs
202	Cement screed
203	Concrete
204	Re-deposited voided rubble
205	Cement skim over 206
206	Main Vault
207	Rough Racking
208	Original wall below 207
301	Floor slabs
302	Cement screed
303	Concrete
304	Re-deposited voided rubble
305	Cement skim over 306
306	Main Vault

LIST OF DIGITAL PHOTOGRAPHS

No.	Description	From	Date
01	Trench 3 with slab removed and carved buffet	NW	23/5/2012
02	Trench 3 with slab removed and carved buffet	NW	23/5/2012
03	Trench 3 with slab removed and carved buffet	W	23/5/2012
04	Trench 3 with slab removed and carved buffet	N	23/5/2012
05	SE end of the Great Hall	N	23/5/2012
06	Trench 2 with slab and rough racking removed	SE	23/5/2012
07	Trench 2 with slab and rough racking removed	SE	23/5/2012
08	Trench 2 with slab and rough racking removed	E	23/5/2012
09	Pre-excavation shot of Trench 1 with slab removed	SE	23/5/2012
10	Pre-excavation shot of Trench 1 with slab removed	SE	23/5/2012
11	Great Hall from the Withdrawing Room	NW	23/5/2012
12	Fireplaces and flues below the SE end of the Great Hall	SE	23/5/2012
13	Fireplaces and flues below the SE end of the Great Hall	SE	23/5/2012
14	Fireplaces and flues below the SE end of the Great Hall	NW	23/5/2012
15	Flue through the SE wall of the Great Hall from the cellar	N/A	23/5/2012
16	Cellars below the Great Hall	SE	23/5/2012
17	Cellars below the Great Hall	SE	23/5/2012
18	Seam between cellar vaults	SE	23/5/2012
19	Door at N corner of the Great Hall cellars	S	23/5/2012
20	Vault below Withdrawing Room	NE	23/5/2012

No.	Description	From	Date
21	Trench 1 Work in progress	SE	23/5/2012
22	Trench 1 Work in progress	NE	23/5/2012
23	General shot of the Great Hall	N	23/5/2012
24	Trench 1 – voided rubble 104 below concrete	SE	23/5/2012
25	Trench 1 – wall foundation and voided rubble 104 below concrete	SW	23/5/2012
26	Trench 1 – wall foundation and voided rubble 104 below concrete	SE	23/5/2012
27	Trench 1 – wall foundation and voided rubble 104 below concrete	NE	23/5/2012
28	Trench 1 – cleaning out rubble 104	SE	23/5/2012
29	Trench 1 – cleaning out rubble 104	SE	23/5/2012
30	Trench 1 – work in progress, rubble 104	NE	23/5/2012
31	Trench 1 – work in progress, rubble 104	NE	23/5/2012
32	Trench 1 – work in progress, rubble 104	SE	23/5/2012
33	Trench 1 – work in progress	NE	23/5/2012
34	Trench 1 – Post-excavation shot of SW-facing section	SW	23/5/2012
35	Trench 1 – Post-excavation shot in plan	NW	23/5/2012
36	Trench 1 – Post-excavation shot in plan	NW	23/5/2012
37	Trench 1 – Post-excavation shot	SW	23/5/2012
38	Trench 1 – stepped foundation	SE	23/5/2012
39	Trench 1 – shot of rendered vault and side vault	NW	23/5/2012
40	Trench 3 – clearing concrete	W	24/5/2012
41	Trench 3 – carved buffet	NW	24/5/2012
42	Trench 3 – Post-excavation shot of cement render 305 over vault 306	NW	24/5/2012
43	Trench 3 – Post-excavation shot of cement render 305 over vault 306	NE	24/5/2012
44	Trench 3 – Post-excavation shot	NE	24/5/2012
45	Trench 3 – Post-excavation shot	SW	24/5/2012
46	SE wall of the Great Hall	NW	24/5/2012
47	Trench 2 – removing concrete	W	24/5/2012
48	Trench 2 – removing concrete	W	24/5/2012
49	Trench 2 – rubble layer 204 exposed	N	24/5/2012
50	Trench 2 – original wall with later cement render	N	24/5/2012
51	Trench 2 – work in progress	E	24/5/2012
52	Trench 2 – work in progress	E	24/5/2012
53	Trench 2 – original wall below rough racking	NE	24/5/2012
54	Trench 2 – original wall below rough racking	NE	24/5/2012
55	Trench 2 – original wall below rough racking	NE	24/5/2012
56	Trench 2 – original wall below rough racking	NW	24/5/2012
57	Trench 2 – original wall with later cement render	NW	24/5/2012
58	Trench 2 – original wall below rough racking	NE	24/5/2012
59	Trench 2 – breaking out concrete	E	24/5/2012
60	Trench 2 – Post-excavation shot	SE	24/5/2012
61	Trench 2 – Post-excavation shot	SE	24/5/2012
62	Trench 2 – Post-excavation shot	SE	24/5/2012
63	Trench 2 – Post-excavation shot, SW-facing section	SW	24/5/2012
64	Trench 2 – Post-excavation shot, SW-facing section	SW	24/5/2012
65	Trench 2 – Post-excavation shot	NW	24/5/2012
66	Trench 2 – Post-excavation shot	NW	24/5/2012
67	Trench 2 – Post-excavation shot	NW	24/5/2012
68	Trench 2 – Post-excavation shot	N	24/5/2012

No.	Description	From	Date
69	Trench 2 – Post-excavation shot, NE-facing section	NE	24/5/2012
70	Trench 2 – Post-excavation shot, NE-facing section	NE	24/5/2012
71	Trench 2 – Post-excavation shot, NE-facing section	N	24/5/2012

LIST OF DRAWINGS

No.	Type	Description	Scale
01	Plan	Trench 1, post-excavation	1:20
02	Section	Trench 1, NW-facing	1:20
03	Plan	Trench 2, post-excavation	1:20
04	Section	Trench 2, NE-facing	1:20
05	Plan	Trench 3, post-excavation	1:20
06	Section	Trench 3, SE-facing	1:20