

# Barbachlaw Stadium

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Metal Detector Surveys on two fields on the Battle of Pinkie

**Biddy Simpson, Heritage Officer, East Lothian Council**

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Four metal detector surveys were undertaken on two fields to the west of Barbachlaw Farm, Wallyford in 2005-2006. A large assemblage of metal artefacts was recovered, a number of which appear to confirm the location of the Battle of Pinkie (1547).

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## **1 Executive Summary**

In 2005 and 2006 a series of formal metal detector surveys were undertaken on two fields to the immediate west and south-west of Barbachlaw Farm, Wallyford (Fig 1). These two fields are situated within the 16<sup>th</sup> century Battle of Pinkie (1547) landscape and within what is believed to be the core area of conflict (Fig 2).

A total of four surveys were undertaken under different vegetation conditions. A large number of artefacts were recovered, a small percentage of which were comprised of artillery shot and interpreted as being associated with the Battle of Pinkie.

## **2 Introduction and Site Location**

Planning permission was granted to build a greyhound stadium and associated infrastructure to the west of Barbachlaw Farm and to the immediate east of the Sewage Works (Figure 1). An archaeological trial trenching evaluation was undertaken on this field by AOC Archaeology in 2002 and a further field to the south east (Field 2) which identified prehistoric remains (Ellis 2002).

Historical research being undertaken on behalf of Historic Scotland (The Battlefields Trust 2005) subsequently suggested that the Battle of Pinkie took place across a large swathe of land extending from the River Esk (to the immediate west of Inveresk, Musselburgh) to the foot of Falside Hill, Wallyford and that both Fields 1 and 2 were believed to be part of the battlefield core (i.e. where the main battle action took place). As a consequence of this research it was realised that a metal detector survey was also necessary before any development took place.

Fortunately, the imminent stadium development planned for Field 1 was put on hold and therefore, with the permission of the owner, a series of metal detecting surveys was undertaken in 2005 and 2006. In 2006, permission was subsequently given by the owners of Barbachlaw Farm, to conduct a similar survey on Field 2.

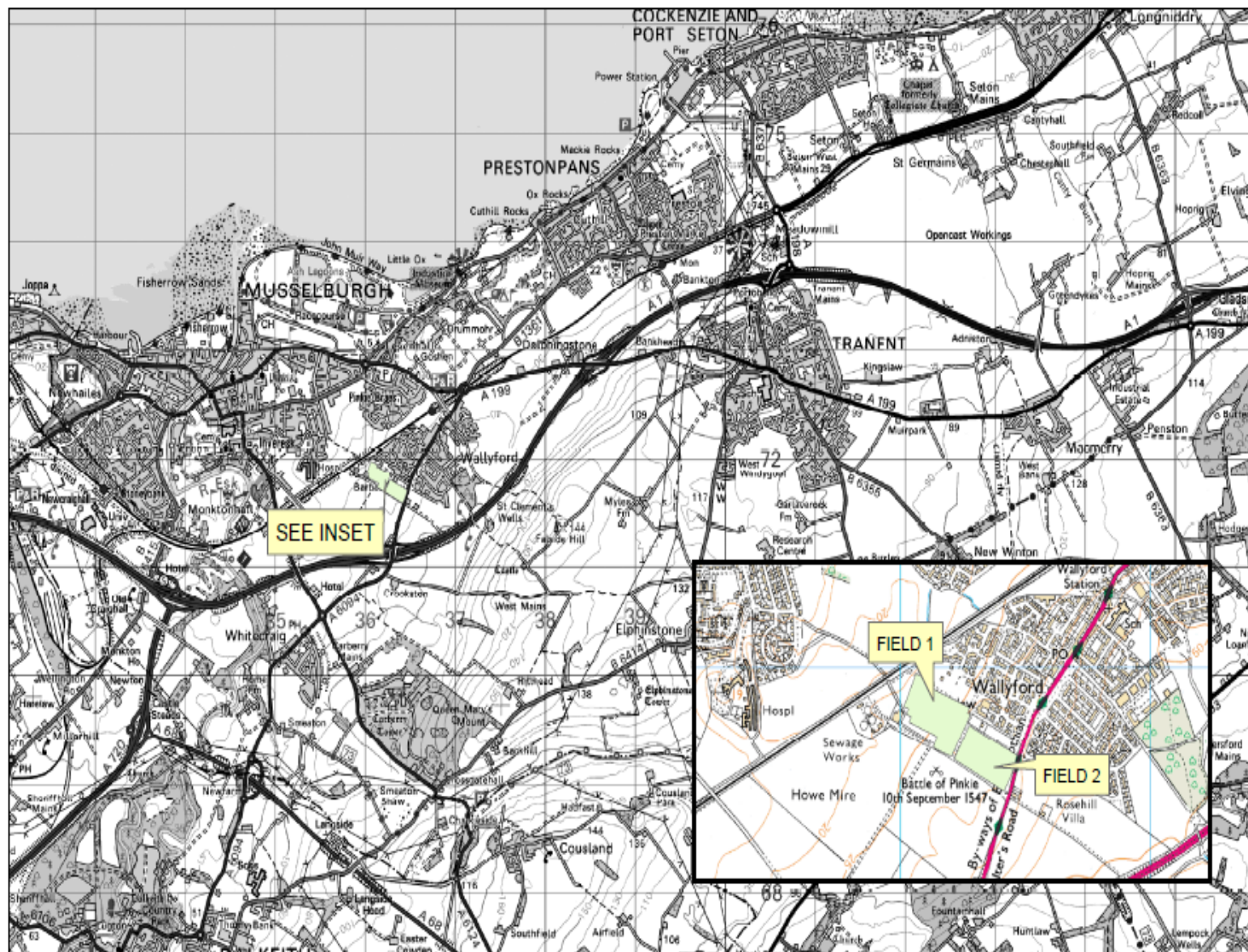


Fig.1 Location of Barbachlaw Stadium Site

1:50,000





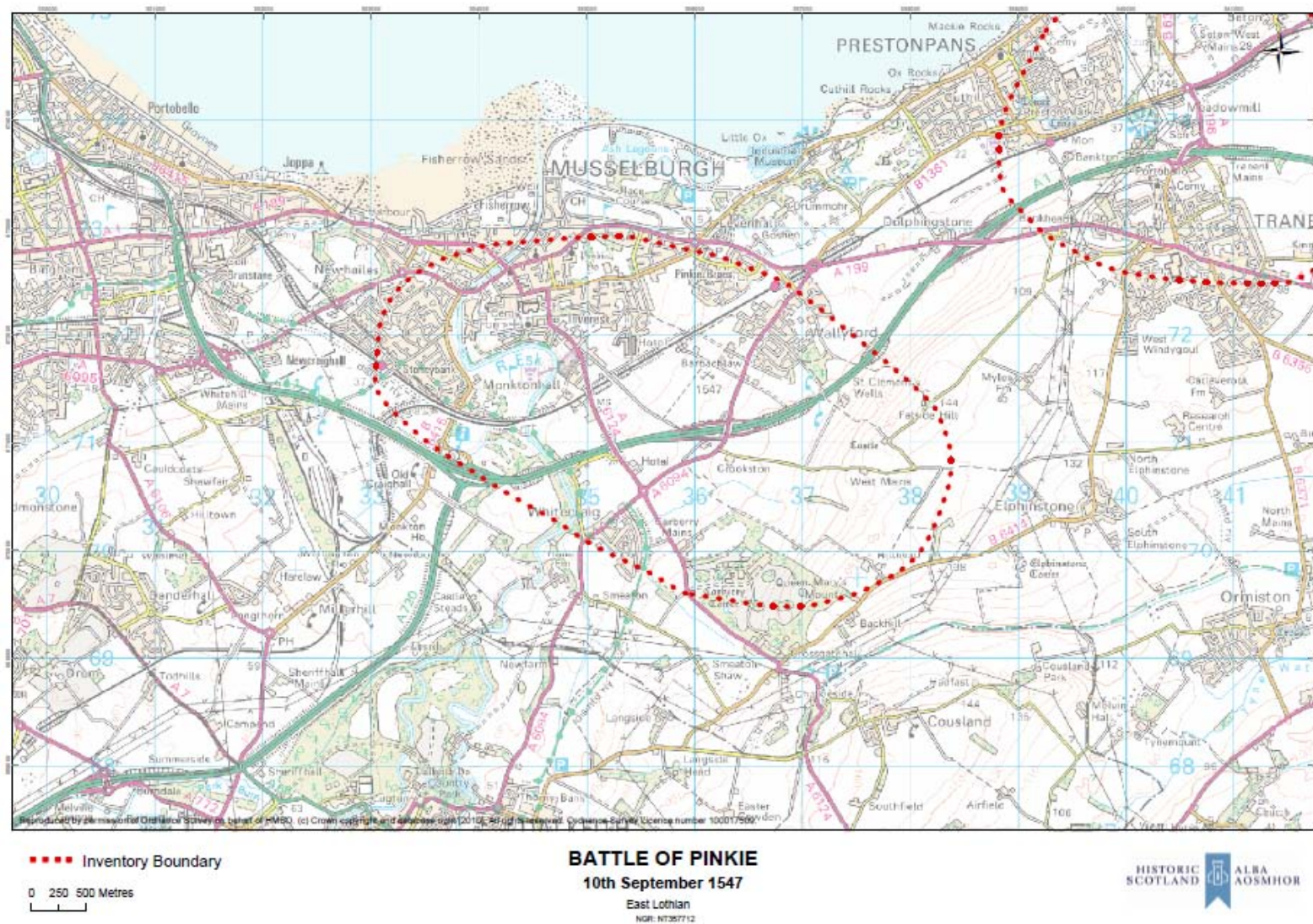


Figure 2 Map defining the area in which the main events of the battle occurred (taken from Historic Scotland Draft Inventory of Historic Battlefields (2010))

### **3 Background**

#### **3.1 Historical Background**

Attempts by the English to link the kingdoms of England and Scotland, through the marriage of the young queen Mary of Scotland and prince Edward of England, collapsed into open conflict. The Battle of Pinkie was fought on the 10<sup>th</sup> September 1547 with the Scottish army (under the Earl of Arran) and the English army (under the Duke of Somerset) clashing on the fields southeast of Musselburgh. It was the last great battle between the two kingdoms before they became united under the rule of a single monarch and it has been described as "... one of the largest battles fought on Scottish soil, with at least 40,000 troops involved. It is also particularly noteworthy in representing the first effective integrated application in Britain of the key military innovation of the 16<sup>th</sup> century: the combined use of pike and shot, together with artillery and cavalry. Battlefields of this key transitional period in military practice are very rare in Britain...If one takes the combined importance, potential and level of threat to this site it seems likely that Pinkie is the battlefield in Scotland with the greatest need of urgent action on a large scale." (The Battlefield Trust 2005).

Between 2004 and 2007, Historic Scotland commissioned two studies of the Battle of Pinkie, as part of a wider assessment of Scottish Fields of Conflict and to develop a proposed Inventory of key sites. This work was undertaken by The Battlefield Trust and the University of Glasgow Archaeology Department. The work looked at both primary and secondary sources, contemporary maps, landscape and geological mapping (The Battlefield Trust 2005; Glasgow University Archaeology Department 2007).

As a consequence of this in depth research, thoughts about the description and location of the battle have been revised. It is now agreed that on the 9<sup>th</sup> September (the day before the main battle) the English approached from the east and by the evening were camped to the west of Prestonpans. Scottish light cavalry had been shadowing from the hills and a detachment of English cavalry were sent out to dislodge them from Falside Hill. The Scots were driven off with about 800 being taken or killed, leaving only half of the cavalry surviving.

On the morning of the 10<sup>th</sup> September, the Scottish camp was situated on the west side of the Esk with a turf defence protecting the camp from artillery fire from the English fleet. The right, southern flank of the army was protected by a marshland (believed to be Shire Haugh) with the River Esk, itself, to the East. Inveresk Hill provided the perfect point to bombard the Scottish camp and so the English army advanced west towards Inveresk that morning. The Scots, however, countered this by crossing the Esk. The English army started to advance towards Inveresk but on seeing the Scots they turned south west towards Falside Hill. The baggage train was taken around to Falside Hill. It is believed that the Scots were positioned to the north of the Howe Mire with Carberry Road to their right with the English at the foot of Falside Hill. Under artillery fire most of the Scottish formation disintegrated before it came to hand to hand fighting and fled in the direction of Dalkeith, actively pursued by the English.

Traditionally, the heart of the battle is viewed as being located in the vicinity of the Howe Mire and large quantities of human bone, pieces of spears, swords and officers' epaulettes have been found close to the Howe Mire during the last century. Their location in a field has always marked the rough centre piece of the battle, however, some have pointed out that this is a secondary source and we cannot be sure of its exact location or validity. Given the uncertainties of the 'exact' placing of the main action, a wide 'core battle landscape' zone

has been drawn for the battlefield (Figure 2), which encompasses the landscape over which the main battle was played out on the 10<sup>th</sup> September; the general area of the cavalry skirmish on the 9<sup>th</sup> on Carberry Hill; Falside Hill; the possible area of the Scottish camp, and areas of the rout close to the battlefield where there is the possibility of mass graves and other artefact scatters.

### **3.2 Planning Background**

The Adopted East Lothian Local Plan 2008 allocated the fields immediately to the west of Barbachlaw Farm for Community Services use (Field 1) and Business Park use (Field 2). In 2004, planning permission was granted to build a greyhound stadium and associated infrastructure on Field 1 to the west of Barbachlaw Farm and to the immediate east of the Sewage Works (Figure 1). An archaeological evaluation was undertaken in 2002 which identified prehistoric remains (Ellis 2002). At that time it was not appreciated that the Battle of Pinkie extended into this area and therefore a metal detector survey (a methodology traditionally used to assess and investigate battlefields) was not undertaken.

As a consequence of research undertaken by The Battlefield Trust on behalf of Historic Scotland, it became clear that Fields 1 and 2 were very probably part of the wider Battle of Pinkie landscape and permission was sought from the land owners to carry out salvage metal detector survey work.

### **3.3 Archaeological Background**

An archaeological evaluation was undertaken on Fields 1 and 2 by AOC Archaeology Group in 2002 following advice from the City of Edinburgh Archaeology Service (the then archaeological advisors for East Lothian Council). This evaluation took the form of a standard 5% intrusive evaluation and consisted of a series of machine trenches being opened up across both Fields 1 and 2 (plus two further fields to the north of the farm which had planning consent for housing development) (Ellis 2002).

Prehistoric settlement remains and a prehistoric burial cist were identified in Field 2. The burial cist was excavated at the time of the evaluation but the settlement remains were merely evaluated. The reason for this was that the settlement remains were sealed by a substantial amount of overburden and the possibility existed that these remains could be preserved *in situ* beneath any future development.

No metal detecting survey and/or battlefield survey was undertaken as part of this evaluation. This was partly due to the fact that the true extent of the battle site and its significance had not been identified until the Battlefield Trust's report on Scotland's Fields of Conflict (The Battlefield Trust 2005). Until the commissioning of this study, the Battle of Pinkie was identified merely as a point in an adjacent field to the south of Fields 1 and 2 and the full extent of the battle landscape had not been appreciated.

Following on from The Battlefield Trust's report it became immediately clear that part of the Battle of Pinkie was to be imminently developed and that no battlefield survey had been undertaken. Following discussions with The Battlefield Trust, the East Lothian Council Archaeology Service contacted the Scottish Detector Club and the Scottish Artefact Recovery Group to undertake a metal detector survey of Fields 1 and 2.

A total of three surveys were undertaken of Field 1 and one survey of Field 2 over 2005-2006. In May 2005, the imminent development of the proposed greyhound stadium led to a rescue metal detecting survey operation being hastily put together. The poor survey conditions (an extremely high crop in the field) meant that two surveys (Survey 1 and 2) had to be undertaken to complete the field. Fortunately, the development was postponed and a further survey (Survey 3) was undertaken after the crop had been harvested. In Field 2, there was no crop and therefore the ground conditions were ideal (Survey 4).

#### **4 Aims and Objectives**

The aims of the metal detecting survey were:

- 1) To undertake a rapid battlefield survey of two fields earmarked for imminent development, and
- 2) To retrieve any artefactual material associated with the Battle of Pinkie.

#### **5 Methodology**

Each field was divided into 20 metre squares and each square was allocated to a metal detectorist who walked systematically across each allocated square, bagging and tagging any artefacts to be recorded. Unless obviously modern, all finds were bagged and two-dimensionally recorded to prevent any ambiguous artefacts that might be related to the battle site being inadvertently discarded. This artefact recovery method was also useful in providing additional information on the number, type and general date of different artefacts present within the topsoil. All artefacts were gently cleaned and were subsequently analysed by two battlefield specialists.

Field 1 was surveyed on the 4<sup>th</sup> June 2005 (Survey 1); 19<sup>th</sup> June 2005 (Survey 2) and on January 15<sup>th</sup> 2006 (Survey 3), whilst Field 2 was surveyed on January 29<sup>th</sup> 2006 (Survey 4).

#### **6 Results**

A total of 335 artefacts were recovered from Field 1 over the course of three surveys, whilst a total of 110 were recovered from Field 2 (see Fig. 3 and Appendix 1). The location of each artefact has also been digitised and is available as a shapefile on a CD accompanying this report (Appendix 2).

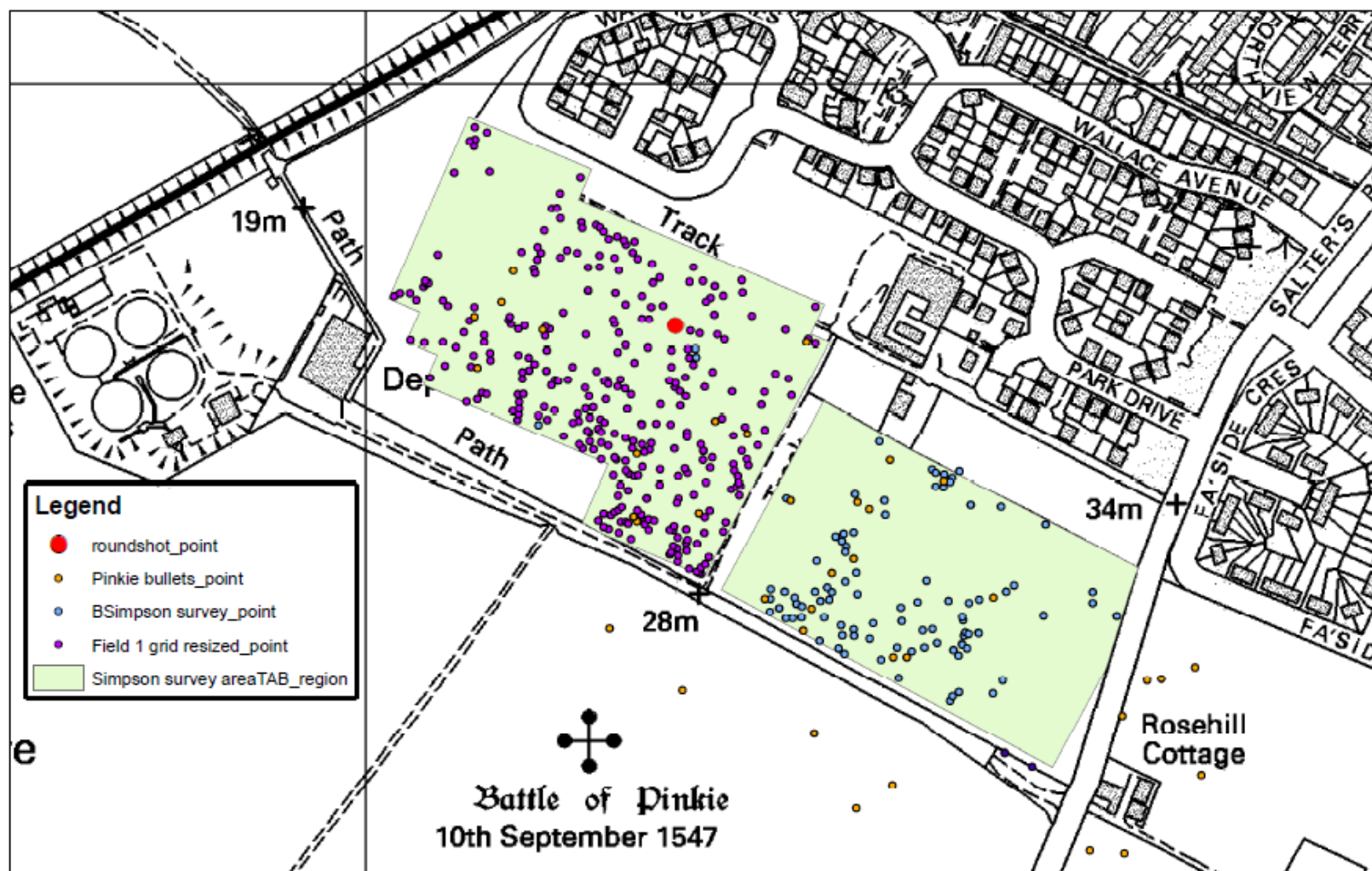
The topography of Field 2 and the surrounding area suggests that the western end of the field (i.e. the part closest to Field 1) had been built up. Differential soil colouring also suggested that soil may have been imported and added to the lower end of the field.

Although artefacts were recovered from across the field there was a noticeable higher density of artefacts located towards the western side of the field, particularly towards the north-western corner. Similarly lead shot artefacts were recovered from across the field but the majority were identified along the field's western and northern edge. Interestingly, even though this field appears to have a substantial overburden towards its northern end, three



pieces of flint were recovered which comprised a possible rough flint arrow head, a flint core and either a flint scraper or a fragment of flint debitage.

The artefacts were initially appraised by Natasha Ferguson, Centre for Battlefield Archaeology, University of Glasgow (2007) (Appendix 3), with a more in depth analysis undertaken by Glen Foard, the Battlefield Trust (2008) (Appendix 4).



## **7 Conclusion**

Specialist analysis of the finds confirmed that a large and varied artefact assemblage was recovered as a consequence of the metal detector surveys, and that this assemblage represents a range of periods from the later medieval to more recent times.

Many of the finds were of a military nature and of those, a number were identifiable as being of 16<sup>th</sup> century date and therefore associated with the Battle of Pinkie. A number of musket balls were identified during this survey and although it can be difficult to date this type of ammunition, three are of the correct caliber to suggest they were harquebus balls and therefore of 16<sup>th</sup> century date. A cannonball was also identified and it is thought that this would have been fired from a field gun such as a Serpentine or Falconet. A groove around the circumference of the munition has been identified as being almost identical to the manufacturing grooves seen on a similar roundshot from the 16<sup>th</sup> century Mary Rose.

In addition to the ammunition, a number of personal objects (ball buttons and buckles) and everyday objects (lead sack seals) were recovered which appear to date to the 16<sup>th</sup> century. Two of the sack seals may potentially be very significant as they are both stamped with a Lion Rampant which was an official Royal seal of Scotland until 1601 and could only be issued by Royal consent. It is very possible that supplies for the Scottish army during the battle were stamped using this seal and so are very important and are classified as very rare indeed.

The finds, together with the historical evidence, strongly suggests that the main area of battle activity was in the vicinity of the Howe Mire and that the location and description of the Battle of Pinkie presented within the Inventory of Historic Battlefields (Historic Scotland 2011) is correct.

Since the surveys in 2005 and 2006, additional metal detector surveys have taken place in the vicinity of Barbachlaw. In 2007 and 2008 CFA Archaeology Ltd undertook a series of metal detector surveys as part of a larger programme of archaeology work (Anderson 2007, Anderson 2008, Mitchell 2008) in fields to the east of Salters Road. AOC Archaeology undertook a metal detector survey in 2007 (AOC 2008) of a large field to the immediate SSE of Barbachlaw Stadium Field 2. Subsequent analysis of the finds recovered from these surveys suggests that the core of the Battle of Pinkie is indeed within the vicinity of the Howe Mire. "The integration of all the data from investigations of the battlefield together with an analysis of the historic terrain, presents a picture that is compatible with the interpretation of the battlefield presented in the draft Inventory report for Historic Scotland by the Battlefields Trust with the AOC site lying in a key location on the battlefield (see Foard 2008 (p102-103), Appendix 12 AOC 2008)

## **8 Discussion**

In 2005 The Battlefield Trust stated that "Pinkie battlefield offers exceptional potential because of the rarity of battlefields of this period in the UK. It has enormous potential to contribute to battlefield studies generally, despite the limited damage caused by development of various kinds. ...A detailed study of the battle is clearly needed if the excellent topographical detail in the accounts and illustrations are to be effectively exploited to place the action securely in the landscape. ... Few other sites in the UK offer such a good

opportunity for the investigation of battle archaeology and its relationship to the documentary record. Any such work on the battlefield must be recognised as likely to need to push the boundaries of battlefield study and to be conducted with the highest level of battlefield expertise. ...If one takes the combined importance, potential and level of threat to this site it seems likely that Pinkie is the battlefield in Scotland with the greatest need of urgent action on a large scale”

Following the analysis of the finds from the 2005 and 2006 survey work at Barbachlaw, Glen Foard went on to say “The potential of the Pinkie battlefield to contribute to the study of warfare in Europe is high and it is at present the only battlefield in Britain with demonstrated battle archaeology of the mid 16<sup>th</sup> century”.

## **9 Acknowledgements**

Many thanks to the following individuals and groups for helping with this salvage project: The Scottish Detector Club, The Scottish Artefact Recovery Group, David Connolly, Nicky Bird, Graham Robinson, Dianne Laing, David Wilson Homes, James Braes (Barbachlaw Farm), Howard Wallace, Natasha Ferguson and Tony Pollard. Particular thanks to Glenn Foard for all his advice and expertise.

## **10 References**

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## **Appendices**

Appendix 1     Finds List



# Appendix 1: Barbachlaw Stadium Artefact List

Find number	Site Code	Survey	Field	Context	Description		Period	Material		Weight (g)
1	PS05	1	1	A1	nail?		unknown	Fe		
2	PS05	1	1	A1	wire		modern	Fe		
3	PS05	1	1	A1	unidentified object		post med?	Pb alloy		
4	PS05	1	1	B1	bullet			Pb		24.37
5	PS05	1	1	A2	crotal		post med	Cu alloy	Sn	
6	PS05	1	1	A2	furniture fitting	knob	post med or modern	Cu alloy		
7	PS05	1	1	A2	unidentified object		post med or modern	Fe		
8	PS05	1	1	A3	button		post med	Cu alloy		
9	PS05	1	1	A3	seal	fob	post med or modern	Cu alloy		
10	PS05	1	1	A3	button		post med	Cu alloy		
11	PS05	1	1	A3	seal	bag	post med or modern	Pb		
12	PS05	1	1	A3	coin?		medieval?	Cu alloy		
13	PS05	1	1	A3	bullet			Pb		6.71
14	PS05	1	1	A4	unidentified object		post med or modern	Pb		
15	PS05	1	1	A4	button		modern	Cu alloy		
16	PS05	1	1	A4	unidentified object	sheet	unknown	Cu alloy		
17	PS05	1	1	A4	button		post med or modern	Cu alloy		
18	PS05	1	1	A4	unidentified object		post med	Pb alloy		
19	PS05	1	1	A4	unidentified object		unknown	Pb		
20	PS05	1	1	A4	button		post med	Cu alloy		
21	PS05	1	1	A4	coin		post med?	Cu alloy		
22	PS05	1	1	A4	button		modern	Cu alloy		
23	PS05	1	1		UNALLOCATED					
24	PS05	1	1		UNALLOCATED					
25	PS05	1	1	A4	button	livery	modern	Cu alloy		
26	PS05	1	1	B4	buckle	horse harness	modern	Cu alloy		
27	PS05	1	1	B4	stud		modern	Cu alloy	Fe	
28	PS05	1	1	B4	button	naval	modern (1837-1901)	Cu alloy	Au	
29	PS05	1	1	B4	brooch		modern	Cu alloy	glass	DISCARDED
30	PS05	1	1	B1	swivel mount		modern	Cu alloy		
31	PS05	1	1	B1	unidentified object		post med or modern	Fe		
32	PS05	1	1	B1	coin?		post med?	Cu alloy		
33	PS05	1	1	B1	unidentified object	blade?	unknown	Fe		DISCARDED
34	PS05	1	1	C1	vessel?	handle?	post med?	Fe		
35	PS05	1	1	C2	buckle	horse harness	post med?	Fe		
36	PS05	1	1	C2	unidentified object		post med or modern	Pb		
37	PS05	1	1		UNALLOCATED					

# Appendix 1: Barbachlaw Stadium Artefact List

38	PS05	1	1	C2	eyelet		modern	Cu alloy		
39	PS05	1	1		UNALLOCATED					
40	PS05	1	1	A3	bullet	ball	post med	Pb		
41	PS05	1	1	A3	coin?		medieval?	Cu alloy		
42	PS05	1	1	A3	stud	spiked	medieval?	Cu alloy		
43	PS05	1	1	C4	coin		post med	Cu alloy		
44	PS05	1	1	C4	coin		roman?	Cu alloy		
45	PS05	1	1	C4	disc		modern	Al		
46	PS05	1	1	C4	button		post med	Cu alloy		
47	PS05	1	1	C4	button		post med or modern	Cu alloy		
48	PS05	1	1	C4	bullet			Pb		29.68
49	PS05	1	1	C4	knife	handle	modern	Fe	bone	
50	PS05	1	1	C5	coin		modern	Cu alloy		
51	PS05	1	1	C5	unidentified object		unknown	Fe		DISCARDED
52	PS05	1	1	C5	unidentified object	blade?	unknown	Fe		DISCARDED
53	PS05	1	1	C5	socket		medieval/early post med?	Fe		
54	PS05	1	1	C5	buckle		post med or modern	Cu alloy		
55	PS05	1	1	B3	unidentified object	disc	modern?	Cu alloy		
56	PS05	1	1	B3	unidentified object		unknown	Pb		
57	PS05	1	1	B3	coin		roman?	Cu alloy		
58	PS05	1	1	C3	unidentified object		post med?	Pb alloy		
59	PS05	1	1	C3	ring		post med or modern	Cu alloy		
60	PS05	1	1	D1	mount	or button?	medieval or post med	Cu alloy		
61	PS05	1	1	D1	button		post med	Cu alloy		
62	PS05	1	1	D2	furniture fitting	handle?	post med or modern	Cu alloy	Fe	
63	PS05	1	1	D2	button		modern	Cu alloy		
64	PS05	1	1	D4	coin		post med or modern	Cu alloy		
65	PS05	1	1	D4	buckle	horse harness	post med or modern	Cu alloy		
66	PS05	1	1	D4	furniture fitting	handle	post med or modern	Cu alloy		
67	PS05	1	1	D4	coin		post med?	Cu alloy		
68	PS05	1	1	D4	button		post med	Cu alloy	Au	
69	PS05	1	1	D4	button		post med	Cu alloy		
70	PS05	1	1	D4	unidentified object		modern	Cu alloy		
71	PS05	1	1		UNALLOCATED					
72	PS05	1	1	E1	coin		modern	Cu alloy		
73	PS05	1	1	E1	unidentified object		modern	Cu alloy	wood	
74	PS05	1	1	E1	nail		post med?	Fe		
74B	PS05	1	1	D4	coin		post med	Cu alloy		
75	PS05	1	1		bullet			Pb		17.48

# Appendix 1: Barbachlaw Stadium Artefact List

76	PS05	1	1	E1	furniture fitting	escutcheon	post med	Cu alloy		
77	PS05	1	1	E2	bullet			Pb		29.87
78	PS05	1	1	E2	bullet					96.51
79	PS05	1	1	F1	unidentified object		post med?	Fe		
80	PS05	1	1	F1	button		post med	Pb		
81	PS05	1	1	G1	candlestick?	decorative finial	modern	Cu alloy		
82	PS05	1	1	G1	button		modern	Cu alloy		
83	PS05	2	1	D3	nail		medieval or post med	Fe		
84	PS05	2	1	E4	nail		medieval or post med	Cu alloy		
85	PS05	2	1	D5	buckle	harness?	post med or modern	Cu alloy		
86	PS05	2	1	D6	button		modern	Cu alloy		
87	PS05	2	1	D6	button		post med or modern	Cu alloy	Au	
88	PS05	2	1	D8	nail		medieval or post med	Fe		
89	PS05	2	1	D6	button		post med or modern	Cu alloy		
90	PS05	2	1	D8	unidentified object	sheet	unknown	ob		
91	PS05	2	1	D9	button		post med or modern	Pb alloy		
92	PS05	2	1	D10	sheet		unknown	Pb alloy		
93	PS05	2	1	E10	nail		post med?	Fe		
94	PS05	2	1	E12	unidentified object		unknown	Fe		DISCARDED
95	PS05	2	1	E12	nail		post med?	Fe		
96	PS05	2	1	E12	nail		medieval or post med	Fe		
98	PS05	2	1	J12	coin		Roman?	Cu alloy		
99	PS05	2	1	J12	unidentified object		modern?	Cu alloy		
100	PS05	2	1	J12	washer		post med or modern	Fe		DISCARDED
101	PS05	2	1	J12	seal	bag	post med or modern	Pb		
102	PS05	2	1	J9	unidentified object		modern	Pb		
103	PS05	2	1	D2	button		post med	Cu alloy		
104	PS05	2	1	D2	seal	bag	post med or modern	Pb		
105	PS05	2	1	D2	buckle	military?	modern	Cu alloy		
106	PS05	2	1	D1	coin		post med	Cu alloy		
107	PS05	2	1	D1	nail		med or post med	Fe		
107B	PS05	2	1	A3	badge?					
108	PS05	2	1	D1	nail		post med?	Fe		
109	PS05	2	1	D1	unidentified object		post med or modern	Pb alloy		
110	PS05	2	1	E2	button?	or stud	post med	Cu alloy	Au	
111	PS05	2	1	D3	nail		post med?	Fe		
112	PS05	2	1	D3	button		modern	Cu alloy		
113	PS05	2	1	D4	button		post med or modern	Cu alloy		
114	PS05	2	1	E5	unidentified object		post med or modern	Pb	Cu alloy	

# Appendix 1: Barbachlaw Stadium Artefact List

115	PS05	2	1	E5	nail		medieval or post med	Fe		
116	PS05	2	1	D6	vessel?		post med	Fe		DISCARDED
117	PS05	2	1	D7	coin		modern	Cu alloy?		
118	PS05	2	1	D8	nail		post med?	Fe		DISCARDED
119	PS05	2	1	D8	button		post med or modern	Cu alloy		
120	PS05	2	1	F2	unidentified object		post med or modern	Cu alloy		
121	PS05	2	1	D9	buckle		post med or modern	Cu alloy		
122	PS05	2	1	D9	washer	large	modern	Fe		DISCARDED
123	PS05	2	1	D9	bullet			Pb		13.09
124	PS05	2	1	D10	washer		modern	Cu alloy		
125	PS05	2	1	D10	buckle	horse harness	modern	Cu alloy		
126	PS05	2	1	E11	rivet	ship?	post med or modern	Fe		DISCARDED
127	PS05	2	1	E11	nail?		unkown	Fe		DISCARDED
128	PS05	2	1	E12	button		post med	Pb alloy		
129	PS05	2	1	D9	button		post med	Pb alloy		
130	PS05	2	1	E1	cauldron		post med	Fe		
131	PS05	2	1	F7	spoon		post med	Pb alloy		
132	PS05	2	1	E6	button		post med	Cu alloy		
133	PS05	2	1	D7	unidentified object	hack	unknown	Cu alloy		
134	PS05	2	1	D8	unidentified object	nut and bolt?	post med or modern	Fe		
135	PS05	2	1	I1	unidentified object		post med or modern	Cu alloy		
136	PS05	2	1	I3	button		post med or modern	Cu alloy	Au	
137	PS05	2	1	G6	hinge?		post med or modern	Fe		DISCARDED
138	PS05	2	1	G6	unidentified object		unknown	Pb		
139	PS05	2	1	G7	buckle	horse harness	post med or modern	Cu alloy		
140	PS05	2	1	H7	button		post med	Cu alloy		
141	PS05	2	1	H7	buckle	horse harness	post med or modern	Cu alloy		
142	PS05	2	1	H7	button	livery	post med or modern	Cu alloy		
143	PS05	2	1	I5	chisel?	cold?	postr med or modern	Fe		
144	PS05	2	1	I12	axe	stone mason's?	post med?	Fe		
145	PS05	2	1	E12	coin		medieval/early post mediev	Ag		
146	PS05	2	1	E12	nail?		unknown	Fe		
147	PS05	2	1	E12	ROD		post med or modern	Fe		
148	PS05	2	1	E12	square			Pb		40.26
149	PS05	2	1	H7	coin		medieval?	Cu alloy		
150	PS05	2	1	I7	unidentified object		modern	Pb alloy		
151	PS05	2	1	H9	horse decoration?		Medoeval or post med?	Cu alloy		
152	PS05	2	1	I11	seal	bag	post med or modern	Pb alloy		
153	PS05	2	1	I7	Cauldron?	leg?	medieval?	Cu alloy		

# Appendix 1: Barbachlaw Stadium Artefact List

154	PS05	2	1	I7	bolt		modern	Cu alloy		
155	PS05	2	1	I9	coin		post med?	Cu alloy		
156	PS05	2	1	F12	unidentified object		post med or modern	Cu alloy		
157	PS05	2	1	I3	button	military	modern	Cu alloy		
158	PS05	2	1	H4	stud		post med?	Cu alloy		
159	PS05	2	1	H2	token?	or button?	post med	Cu alloy		
160	PS05	2	1	H1	furniture fitting	drawer handle	post med or modern	Cu alloy		
161	PS06	3	1	A1	hinge?		modern	Cu alloy	Fe	
162	PS06	3	1	A1	unidentified object		modern	Cu alloy		
163	PS06	3	1	A2	coin		post med	Cu alloy		
164	PS06	3	1	A2	disc		unknown	Pb		
165	PS06	3	1	A2	skirt lifter		modern	Cu alloy		
166	PS06	3	1	A2	coin		post med or modern	Cu alloy		
167	PS06	3	1	A3	badge?	BB	post med or modern	Pb		MISSING
168	PS06	3	1	A3	button		post med	Cu alloy		
169	PS06	3	1	A3	buckle		modern	Cu alloy		
170	PS06	3	1	B4	key		medieval or post med	Cu alloy		
171	PS06	3	1	B4	spoon	bowl	modern	Cu alloy		
172	PS06	3	1	C5	button		post med	Cu alloy		
173	PS06	3	1	C5	unidentified object	vessel?	post med?	Fe		DISCARDED
174	PS06	3	1	C5	button		post med or modern	Cu alloy		
175	PS06	3	1	C5	button		modern	Cu alloy		
176	PS06	3	1	C5	coin		post med	Cu alloy		
177	PS06	3	1	C5	button		post med or modern	Cu alloy		
178	PS06	3	1	C5	coin		medieval or post med	Cu alloy		
179	PS06	3	1	A2	casting waste		unknown	Pb alloy		
180	PS06	3	1	B1	thimble		post med or modern	Cu alloy		
181	PS06	3	1	I4	button	livery	post med or modern	Cu alloy		
182	PS06	3	1	I4	unidentified object		modern	Cu alloy		
183	PS06	3	1	I4	button					
184	PS06	3	1	I6	finial	acorn	modern	Cu alloy		
185	PS06	3	1	B3	clasp		modern	Cu alloy		
185	PS06	3	1	I6	thimble		post med or modern	Cu alloy		
186	PS06	3	1	C3	buckle	horse harness	modern	Cu alloy		
186B	PS06	3	1	I6	casting waste		unknown	Pb alloy		
187B	PS06	3	1	C4	button		post med	Cu alloy		
187	PS06	3	1	I8	casting waste		unknown	Pb		
188	PS06	3	1	C4	unidentified object		unknown	bone		
189	PS06	3	1	C4	casting waste	with sprue	unknown	Pb alloy		



# Appendix 1: Barbachlaw Stadium Artefact List

190	PS06	3	1	C4	button		post med or modern	Cu alloy		
191	PS06	3	1	C4	button		post med	Cu alloy		
192	PS06	3	1	A4	MISSING					
193	PS06	3	1	A2	casting waste		post med?	Pb alloy		
194	PS06	3	1	A2	button		post med	Cu alloy		
195	PS06	3	1	B2	button		post med or modern	Cu alloy		
196	PS06	3	1	B2	button		post med or modern	Cu alloy		
197	PS06	3	1	B2	token		post med or modern	Cu alloy		
198	PS06	3	1	B2	button		early post med	Cu alloy		
199	PS06	3	1	C2	casting waste?		unknown	Pb		
200	PS06	3	1	C10	coin or token		medieval/early post mediev	Cu alloy		
201	PS06	3	1	C8	casting waste		unknown	Pb		
201	PS06	3	1	C8	coin?		post med?	Cu alloy		
202	PS06	3	1	C8	unidentified object		post med?	Pb		
203	PS06	3	1	C8	unidentified object		unknown	Pb		
204	PS06	3	1	C8	unidentified object		medieval?	Cu alloy		
205	PS06	3	1	C9	coin		post med	Cu alloy		
206	PS06	3	1	C10	coin or token		post med?	Cu alloy		
207	PS06	3	1	C7	coin		modern	Cu alloy		
208	PS06	3	1	C7	seal	fob	post med or modern	Cu alloy	Au	
209	PS06	3	1	C7	pipe tamper		post med	Pb alloy		
209	PS06	3	1	C7	strip		post med?	Cu alloy		
210	PS06	3	1	C7	unidentified object	key?	roman?	Cu alloy		
211	PS06	3	1	C7	coin		post med	Cu alloy		
212	PS06	3	1	C6	spoon	bowl	post med or modern	Cu alloy		
213	PS06	3	1	C6	key		medieval?	Fe		MISSING
214	PS06	3	1	C6	button		modern	Cu alloy		
215	PS06	3	1	C9	buckle	horse harness	modern	Cu alloy		
216	PS06	3	1	C9	unidentified object	sheet	unknown	Pb		
217	PS06	3	1	D11	button		post med	Cu alloy		
218	PS06	3	1	D11	button		post med or modern	Cu alloy		
219	PS06	3	1	C9	button		modern	Cu alloy		
220	PS06	3	1	C8	button		post med	Cu alloy		
220	PS06	3	1	C8	washer		modern	Cu alloy		
221	PS06	3	1	C8	button	livery	post med or modern	Cu alloy		
222	PS06	3	1	D6	stylus		post med	Pb		
222	PS06	3	1	C8	button		post med or modern	Cu alloy		
223	PS06	3	1	D6	seal	bag	post med or modern	Pb		
224	PS06	3	1	D7	unidentified object		modern	Sn?	Cu	

# Appendix 1: Barbachlaw Stadium Artefact List

225	PS06	3	1	D7	toy	figure	modern	Pb alloy		
226	PS06	3	1		UNALLOCATED					
227	PS06	3	1	D7	UNALLOCATED					
228	PS06	3	1	E10	unidentified object	rod	modern?	Cu alloy		
229	PS06	3	1	E10	bullet			Pb		31.8
230	PS06	3	1	D9	unidentified object			Pb		
231	PS06	3	1	E9	badge	military	modern	Cu alloy	enamel	
232	PS06	3	1	E9	unidentified object	plate	unknown	Cu alloy		
233	PS06	3	1	E9	casting waste		unknown	Pb alloy		
234	PS06	3	1	E9	seal	bag	modern	Pb		
235	PS06	3	1	E9	weight?	folded sheet	post med	Pb		
236	PS06	3	1	E9	badge	cruciform	medieval or post med	Pb		
236	PS06	3	1	E9	unidentified object		unknown	Pb		
237	PS06	3	1	E8	button		post med	Cu alloy		
237	PS06	3	1	E8	unidentified object		unknown	Pb		
238	PS06	3	1	E8	button	military	modern	Cu alloy		
239	PS06	3	1	E8	coin or token		modern	Cu alloy		
240	PS06	3	1	E8	button		modern	Cu alloy		
241	PS06	3	1	C8	button		modern	Cu alloy		
242	PS06	3	1	D7	button		post med or modern	Cu alloy		
243	PS06	3	1	D7	unidentified object	bullet??	unknown	Pb		
244	PS06	3	1	E7	coin	penny				
245	PS06	3	1	E6	unidentified object	gaming piece?	unknown	Pb		
246	PS06	3	1	E6	mount		modern	Cu alloy		
247	PS06	3	1	E5	coin?	or button	post med or modern	Cu alloy		
248	PS06	3	1	E5	clip		modern	Cu alloy		
249	PS06	3	1	E5	coin		post med or modern	Cu alloy		
250	PS06	3	1	C2	coin	or button	post med	Cu alloy		
251	PS06	3	1		UNALLOCATED					
252	PS06	3	1	D1	unidentified object		unknown	Pb alloy		
253	PS06	3	1	D3	furniture fitting	drawer handle	post med?	Cu alloy		
254	PS06	3	1	D4	weight?	circular perforated	unknown	Pb		
255	PS06	3	1	E4	button		post med or modern	Cu alloy	Au	
256	PS06	3	1	E3	button	Naval	post med	Pb alloy		
257	PS06	3	1	E3	casting waste		unknown	Cu alloy?		
258	PS06	3	1	E3	button	livery	post med or modern	Cu alloy		
259	PS06	3	1	F3	coin		post med	Cu alloy		
260	PS06	3	1	F3	mount		post med or modern	Pb alloy		
261	PS06	3	1	F3	brooch		modern	Cu alloy		

# Appendix 1: Barbachlaw Stadium Artefact List

262	PS06	3	1	F3	button		post med or modern	Cu alloy		
263	PS06	3	1	E1	button		post med or modern	Cu alloy		
264	PS06	3	1	E1	button		post med or modern	Cu alloy		
265	PS06	3	1	D2	unidentified object		unknown	Cu alloy		
266	PS06	3	1	E1	button		post med or modern	Cu alloy		
267	PS06	3	1	F1	button?		post med?	Cu alloy		
268	PS06	3	1	G1	button		post med or modern	Cu alloy		
269	PS06	3	1	H1	bullet?	ball	post med	Pb		
270	PS06	3	1	H1	buckle	horse harness	post med?	Fe		DISCARDED
271	PS06	3	1	H0	coin or token		medieval or post med	Cu alloy		
272	PS06	3	1	D6	stylus		post med	Pb		
272?	PS06	3	1	G0	coin		roman/medieval/post medie	Cu alloy		
273	PS06	3	1	F4	mount		modern	Cu alloy		
274	PS06	3	1	F4	unidentified object	candlestick?	post med or modern	Cu alloy		
275	PS06	3	1	F4	decorative finial		modern	Cu alloy		
276	PS06	3	1	F4	unidentified object		post med or modern	Cu alloy		
277	PS06	3	1	F4	furniture fitting	knob	post med or modern	Cu alloy		
278	PS06	3	1	G3	button		post med	Cu alloy		
279	PS06	3	1	G3	weight?		unknown	Pb		
280	PS06	3	1	G5	vessel	rim	medieval or post med	Cu alloy		
281	PS06	3	1	G5	barrel tap	key	post med	Cu alloy		
282	PS06	3	1	G5	washer		unknown	Fe		DISCARDED
283	PS06	3	1	G6	button		post med	Cu alloy		
284	PS06	3	1	G6	unidentified object		modern	Cu alloy		
285	PS06	3	1	G4	castine waste?		unknown	Pb		
286	PS06	3	1	G4	unidentified object		post med	Pb		
287	PS06	3	1	G4	button		post med	Cu alloy		
288	PS06	3	1	I3	toy		modern	Pb alloy		
289	PS06	3	1	G4	button		post med or modern	Cu alloy		
290	PS06	3	1	G4	musket ball			Pb		338
291	PS06	3	1	H5	fixture	window?	modern	Cu alloy		
292	PS06	3	1	H5	casting waste		unknown	Pb		
293	PS06	3	1	H5	coin		post med?	Cu alloy		
294	PS06	3	1	H4	unidentified object			Pb		33.6
295	PS06	3	1	H4	stylus		post med	Pb		
296	PS06	3	1	D1	casting waste?		unknown	Cu alloy		
297	PS06	3	1	C1	washer		modern	Cu alloy		
298	PS06	3	1	C1	casting waste		unknown	Pb		
299	PS06	3	1		UNALLOCATED					

# Appendix 1: Barbachlaw Stadium Artefact List

300	PS06	3	1	D5	coiled wire		modern	Cu alloy		
301	PS06	3	1	D5	unidentified object		post med?	Cu alloy		
302	PS06	3	1	D5	unidentified object		modern	Cu alloy		
303	PS06	3	1	F5	coin?	clipped	post med?	Cu alloy		
304	PS06	3	1	F5	rivet		post med?	Pb		
305	PS06	3	1	F5	coin		post med	Cu alloy		
306	PS06	3	1	F6	button		post med	Cu alloy		
307	PS06	3	1	F6	button		post med or modern	Cu alloy		
308	PS06	3	1	F6	coin		post med	Cu alloy		
309	PS06	3	1	E8	seal		post med or modern	Pb		
310	PS06	3	1	F7	unidentified object		post med or modern	Cu alloy		
311	PS06	3	1	G9	button		post med	Pb		
312	PS06	3	1	G9	casting waste?		unknown	Pb		
313	PS06	3	1	H9	unidentified object	sheet	unknown	Pb		
314	PS06	3	1	I9	unidentified object			Pb		
315	PS06	3	1	I9	unidentified object		unknown	Pb	Cu alloy	
316	PS06	3	1	I9	coin		post med	Cu alloy		
317	PS06	3	1	I9	casting waste		unknown	Pb		
318	PS06	3	1	H9	button	ball	post med or modern	Cu alloy		
319	PS06	3	1	G9	coin or token		post med?	Cu alloy		
320	PS06	3	1	H8	washer		modern	Cu alloy		
321	PS06	3	1	H8	cap		modern	Cu alloy		
322	PS06	3	1	H8	token		post med	Cu alloy		
323	PS06	3	1	I8	coin		modern	Cu alloy		
324	PS06	3	1	I8	button	livery	post med	Cu alloy		
325	PS06	3	1	I8	plaque		post med or modern	Pb		
326	PS06	3	1	F8	button		post med	Cu alloy		
327	PS06	3	1	F8	unidentified object		post med?	Pb alloy		
328	PS06	3	1	I7	unidentified object	sheet	unknown	Pb		
329	PS06	3	1	I7	washer		post med or modern	Fe		DISCARDED
330	PS06	3	1	I6	coin		modern (1945)	Cu alloy		
331	PS06	3	1	G7	button		post med	Cu alloy		
332	PS06	3	1	F8	button and seal			Pb		
333	PS06	3	1	F9	button		modern	Pb alloy		
334	PS06	3	1	G9	bullet			Pb		28.4
335	PS06	3	1	G9	mount	edging strip	modern	Cu alloy		
336	PS06	3	1	H6	unidentified object		unknown	Pb		
337	PS06	3	1	H9	buckle	horse harness	post med or modern	Cu alloy		
338	PS06	3	1	C7	coin?		post med?	Cu alloy		MISSING

# Appendix 1: Barbachlaw Stadium Artefact List

339	PS06	3	1		UNALLOCATED					
340	PS06	3	1	A1	unidentified object		modern	Cu alloy		
341	PS06	3	1	A1	button		modern	Cu alloy		
342	PS06	3	1	A1	unidentified object			Pb		
343	PS06	3	1	A1	spoon					
344	PS06	3	1	A1	casting waste		unknown	Pb?		
345	PS06	3	1	A1	casting waste?		unknown	Pb		
346	PS06	3	1	A1	lock plate		modern	Cu alloy		
347	PS06	3	1	A1	unidentified object		post med or modern	Pb alloy		
Please note that there has been a slight overlap in the finds numbers in Survey 3 and Survey 4										
255	PS06	4	2	A2	unidentified object		unknown	Pb alloy		
256	P06	4	2	A2	button	military	post med or modern	Cu alloy		
257	P06	4	2	A2	unidentified object		unknown	Pb alloy		
258	P06	4	2	A2	button		post med	Cu alloy		
259	P06	4	2	A2	chain		modern	Cu alloy		
260	P06	4	2	A2	window came?		unknown	Pb		
261	P06	4	2	A2	unidentified object	harness decoration?	post med or modern	Pb		
262	P06	4	2	A2	machine part		modern	Pb alloy		
263	P06	4	2	A1	unidentified object		post med or modern	Fe		DISCARDED
264	P06	4	2	A1	button		modern	Cu alloy		
265	P06	4	2	A1	unidentified object	keyhole cover?	post med or modern	Cu alloy		
266	P06	4	2	A1	bullet			Pb		9.5
267	P06	4	2	A1	blade tip?		neolithic	flint		
268	P06	4	2	A1	lid		modern	Cu alloy		
269	P06	4	2	A4	horseshoe		post med or modern	Fe		DISCARDED
270	P06	4	2	A4	belt fitting?		medieval or post med	Cu alloy		
271	P06	4	2	A4	nut and bolt		post med or modern	Fe		
272	P06	4	2	A4	stud?		modern	Cu alloy	Fe	
273	P06	4	2	A4	casting waste?		unknown	Pb		
274	P06	4	2	A4	unidentified object		modern	Sn?		
275	P06	4	2	A5	button		post med	Cu alloy		
276	P06	4	2	A5	bullet			Pb		20.31
277	P06	4	2	A6	bullet			Pb		23.85
278	P06	4	2	A6	unidentified object		post med or modern	Pb		
279	P06	4	2	A8	button		post med	Cu alloy		
280	P06	4	2	A8	(EMPTY BAG)					
281	P06	4	2	B9	cutlery	spoon	post med or modern	Cu alloy		
282	P06	4	2	B9	nail or spike		unknown	Fe		
283	P06	4	2	B6	cutlery		post med?	Pb alloy		



# Appendix 1: Barbachlaw Stadium Artefact List

284	P06	4	2	B6	bolt?		unknown	Fe		
285	P06	4	2	B6	buckle?		post med	Cu alloy		
286	P06	4	2	B6	button		post med	Cu alloy		
287	P06	4	2	B5	button		post med	Cu alloy	Sn	
288	P06	4	2	B5	button		post med	Cu alloy		
289	P06	4	2	B4	button		post med	Cu alloy		
290	P06	4	2	B3	fastening		modern	Pb alloy		
291	P06	4	2	B3	(EMPTY BAG)					
292	P06	4	2	B2	button		post med	Cu alloy		
293	P06	4	2	B2	buckle		post med (1550-1650)	Cu alloy		
294	P06	4	2	B2	button		post med	Cu alloy		
295	P06	4	2	E8	casting waste?		unknown	Pb		
296	P06	4	2	E8	plate		modern?	Cu alloy		
297	P06	4	2	G8	button		post med	Cu alloy		
298	P06	4	2	F10	buckle	horse harness	post med or modern	Cu alloy		
299	P06	4	2	F10	button		post med	Cu alloy		
300	P06	4	2	A8	mount?	horse harness?	post med	Pb alloy		
301	P06	4	2	C5	unidentified object		unknown	Fe		
302	P06	4	2	C5	button		post med	Pb alloy?		
303	P06	4	2	C2	token or coin		medieval?	Cu alloy		
304	P06	4	2	C2	casting waste?	or weight	unknown	Pb		
305	P06	4	2	C3	button		post med	Pb		
306	P06	4	2	C2	struck fragment		neolithic?	flint		
307	P06	4	2	C3	bullet			Pb		34.28
308	P06	4	2	D2	seal	bag	modern	Pb		
309	P06	4	2	D2	stylus?		post med or modern	Pb alloy		
310	P06	4	2	D2	button		post med	Cu alloy		
311	P06	4	2	D2	buckle	horse harness	post med or modern	Cu alloy		
312	P06	4	2	D2	button		post med	Cu alloy		
313	P06	4	2	A3	button		post med	Cu alloy	Sn	
314	P06	4	2	A3	casting waste?		unknown	Pb		
315	P06	4	2	B3	button		post med	Cu alloy		
316	P06	4	2	B7	gate fitting?		post med or modern	Fe		DISCARDED
317	P06	4	2	B7	unidentified object		unknown	Pb alloy		
318	P06	4	2	C6	button		post med	Cu alloy		
319	P06	4	2	D6	keyhole escutcheon		post med or modern	Cu alloy		
320	P06	4	2	D7	badge?		modern	Pb alloy		
321	P06	4	2	D5	button	large	post med	Cu alloy		
322B	P06	4	2	G4	unidentified object		modern	Cu alloy		

# Appendix 1: Barbachlaw Stadium Artefact List

322	P06	4	2	C3	lid or wheel?		modern?	Cu alloy		
323	P06	4	2	G4	buckle	horse harness, broke	post med or modern	Cu alloy		
324	P06	4	2	G4	domed cap		post med?	Cu alloy		
325	P06	4	2	G4	unidentified object	agricultural?	modern	Pb alloy	Fe	
326	P06	4	2	G4	unidentified object		modern	Pb		
327	P06	4	2	G4	button?		post med	Cu alloy		
328	P06	4	2	G4	shoe clicker		modern	Cu alloy		
329	P06	4	2	G4	buckle	horse harness	post med or modern	Cu alloy	Sn	
330	P06	4	2	G4	button		modern	Cu alloy		
331	P06	4	2	F10	figurine	head of devil/goat ma	post med?	Pb alloy		
332	P06	4	2	F11	unidentified object		modern?	Cu alloy	Fe	
333	P06	4	2	C7	sheet		modern	Cu alloy		
334	P06	4	2	C7	flake		neolithic	flint		
335	P06	4	2	C7	coin or token			Cu alloy		
336	P06	4	2	C7	coin or token, probably token		medieval?	Cu alloy		
337	P06	4	2	C7	unidentified object		modern	Fe	ceramic	
338	P06	4	2	C7	coin			Cu alloy		
339	P06	4	2	C7	bullet			Pb		15.46
340	P06	4	2	C7	sheet		unknown	Pb		
341	P06	4	2	E2	unidentified object		post med?	Pb alloy		
342	P06	4	2	E2	bullet			Pb		34.95
343	P06	4	2	E2	button		post med	Pb alloy		
344	P06	4	2	G2	vessel?		medieval?	Cu alloy		
345	P06	4	2	E3	rivet		modern	Cu alloy		
346	P06	4	2	E3	coin?		unknown	Cu alloy		
347	P06	4	2		UNALLOCATED					
348	P06	4	2		UNALLOCATED					
349	P06	4	2	G5	button		post med	Cu alloy		
350	P06	4	2	G6	unidentified object		post med or modern	Cu alloy		
351	P06	4	2	E9	unidentified object		post med?	Sn?		
352	P06	4	2	D7	bullet			Pb		29.34
353	P06	4	2	D7	unidentified object		modern	Pb alloy		
354	P06	4	2	C7	flake		neolithic?	flint		
355	P06	4	2	C7	unidentified object	button?	post med?	Cu alloy		
356	P06	4	2	A8	seal	bag	post med or modern	Pb		
356B	P06	4	2	A3	button		post med	Cu alloy		
357	P06	4	2	G2	bullet			Pb		34.87
358	P06	4	2	A0-F0	bullet			Pb		22.79
358 (2)	P06	4	2	A0-F0	seal	bag	post med or modern	Pb alloy		

## Appendix 1: Barbachlaw Stadium Artefact List

358 (3)	P06	4	2	A0-F0	unidentified object		unknown	Pb		
358 (4)	P06	4	2	A0-F0	seal		post med or modern	Pb		
358 (5)	P06	4	2	A0-F0	coin or token?		medieval or post med	Cu alloy		
358 (6)	P06	4	2	A0-F0	mount?		post med or modern	Cu alloy		
358 (7)	P06	4	2	A0-F0	buckle		post med	Cu alloy		
358 (7)	P06	4	2	A0-F0	unidentified object		unknown	Pb		
358 (7)	P06	4	2	A0-F0	unidentified object		unknown	Pb alloy		
DISCARDED= Fe ARTEFACTS THAT HAVE BECOME HEAVILY CORRODED AND FRAGMENTARY										

## **Appendix 2   Digital survey information**

Note:

In the Attribute table of the following layers, the Original field is the Finds Number which corresponds with the Finds List in Appendix 2.

Roundshot\_point

Pinkie bullets\_point

## Appendix 3

### **Battle of Pinkie: Preliminary Artefact Report by Natasha Ferguson, Centre for Battlefield Archaeology, Glasgow University**

#### *1.1 Introduction*

The metal detector surveys carried out within what is likely to be the core area of the Battle of Pinkie (1547) has uncovered an extensive and diverse assemblage of artefacts. This assemblage represents a wide range of periods from the late medieval to the early modern period providing a unique understanding of past activity in the local area.

For this brief report the finds have been divided into distinct categories which include military artefacts; associated military artefacts (including military buttons); buttons; buckles; coins; lead seals; personal items; unidentified cu alloy; unidentified iron.

#### *1.2 Survivability of Metallic Objects Found During Metal Detector Survey*

There are a number of limiting factors when attempting to analyse an artefact assemblage uncovered by a metal detector survey. The first is due to the manner of deposition of many artefacts found by metal detectorists i.e. broken away, dropped etc they generally tend to be small in size and, or fragmented often beyond recognition making it difficult to identify their original function. The second is the varying degree of survivability of metallic objects in the soil. Survivability depends very much on both the composition and quality of the metal; duration in the ground and soil conditions. Continuous wet and drying of the soil will severely reduce the survivability of metallic materials and especially iron which will disintegrate in these conditions. Even iron deposited recently will have become corroded to a point beyond recognition. Unfortunately the soil conditions within the survey area, as with most of Scotland, are not suitable for iron objects to survive in to any recognisable degree. It is likely therefore that iron artefacts associated with the Battle of Pinkie such as arrow heads from the Highland archers or pike heads broken off during the heat of battle will almost have certainly disappeared. Metal that does survive to a better degree in these conditions are therefore all the more important. Lead, lead alloys and some C u alloys do have a better survivability. Lead will form a white patina as it oxidises over time and will retain much of its shape and detail except some minor pitting and flaking of the outer surface. Lead alloys such as pewter will eventually oxidise the same as lead but it will often retain a smooth surface and lustre as can be seen in many pewter buttons deposited up until 150 years. Depending on the quality of C u alloys their degradation will differ. Often buttons and buckles of brass, tombac, or those which have been gilt will often survive and retain some of their original features such as decoration or makers names. C u alloys will develop a greenish tinge due to the copper content within them. Overall the levels of survival of many of the artefacts from this survey have been remarkably good except for much of the iron which is to be expected. It is possible to identify the majority of this assemblage and in some cases provide approximate dates for some of the material.

The contents of each category will be briefly described to give an idea of the quality of the material and its importance in understanding the locality, scale and composition of the Battle of Pinkie as well as other activities and events in the local area.

## *2.1 Military Artefacts*

The Battle of Pinkie is a very important battle in terms of advances in military tactics and technologies as it was one of the first battles in Britain and certainly in Scotland to make greater use of hand-held firepower in the form of the *harquebus* or *hagbutter*. The English had a greater proportion of harquebus as well as Spanish mercenaries who were able to fire these heavy and cumbersome firearms mounted on horseback. The English also had superior artillery power in the form of light ordnance which could be easily manoeuvred in field. However this battle is also unique in that much of the most destructive firepower came from the English Navy anchored off the Musselburgh coast. The Scots also had light artillery on the field but had very few harquebuses but instead relied on the skills of the Highland archers who were rapidly routed by the barrage of fire from the ships at sea.

Artefact evidence of such firepower in the form of lead projectiles is very good considering that this battle represents the very earliest use of hand-held firearms to any notable extent. One '*cannonball*' is present within the assemblage and is likely to have been fired from a light field gun such as a Serpentine due to its size and weight. It has certainly been fired as there is slight distortion in the shape of the ball and there are numerous grooves and notches across the surface indicating it probably impacted the ground at high velocity. Whether or not this was before or after it hit a human target is unclear. The condition of the lead is in very good condition with only slight pitting of the surface patina. A ball very similar in size was found on the Battle of Flodden (1514), a very close contemporary of the Battle of Pinkie. It is very likely therefore that this ball is a remnant of ordnance activity during the battle although at this point to say from which side would be only speculation.

A number of *musket balls* were uncovered during this survey, however it is very difficult to associate them directly with the battle as there appears to have been a substantial amount of military activity in the immediate area. Harquebus balls generally have a smaller calibre than later musket balls with a calibre of between 0.55in and 0.65in, whereas a later musket ball is anywhere between 0.65in and 0.75 although this will vary on either side. At present only three have been identified as harquebus balls but this may change with further analysis. The rest of the lead projectiles are later from the 17<sup>th</sup> century onwards. It is known that Cromwell and his army camped very close to this area on Musselburgh Links and the Jacobite army are said to have passed through this area before and after the Battle of Prestonpans (1745). A possibility is that this survey has uncovered evidence of skirmish action from either Cromwell's troops or the Jacobites. Military encampments and barracks, as will be inferred later, have been features of this landscape since the 17<sup>th</sup> century its close proximity to Edinburgh and the ports of Leith and Musselburgh. One feature of such encampments is practice ranges to train soldiers in the use of their muskets. A number of Militia battalions were encamped or garrisoned in barracks in the local

area very close to the survey area from 1798 until at least 1814.



Location of  
MD Survey  
Area

Location of  
Barracks  
from 1804 -  
1814

It is therefore equally possible that this survey has found evidence of a firing range from this period when militias were trained to protect the country from a threat of French invasion. As a side note of interest the Dumfriesshire Militia were garrisoned at the Musselburgh barracks in 1803 and it was this militia battalion which Robert Burns joined shortly before his death in 1796. There are also a number of lead rifle rounds from the Victorian period and later and so it is possible this area continued on as a practice ground or temporary camp after the barracks had been demolished. Other evidence of this later military activity comes in the form of associated military artefacts such as military buttons of which there is an unusually high quantity from various periods. So far there are four regimental buttons in the assemblage; the first is an early button of the Royal Artillery dated to the late 18<sup>th</sup>, early 19<sup>th</sup> century.

Made of pewter and the facing is stamped with the insignia of the Royal Artillery Regiment which is three cannons below a row of three cannon balls held within a shield. The second button is also made of pewter although it was probable gilt with brass or silver. Possibly dating to the mid-19<sup>th</sup> century or later it is a dish shaped button with a central star held within an outer border in which has written County Du.... Reg. but unfortunately the critical word has eroded away but it is likely to be the County Dublin Regiment. Interestingly this button was found with the backing which is a rare as it is often the first part to become lost or is misinterpreted as a button on its own. The latter two are both of the Royal Navy with the first being the earliest and cast with an embossed anchor. The second is also embossed with an anchor but is smaller in size and gilt with gold indicating it is likely to be an officer's button. The date can range from the mid-19<sup>th</sup> century to the early 20<sup>th</sup> century but this will have to be researched further. Found also was a badge with St Andrew holding the Saltire cross and underneath is the word Cameron within a banner. This is a very interesting find as it is a cap badge of the Cameronian Regiment.

Other associated artefacts include a possible frog clip which attaches to the belt to hold equipment; some buckles of military type and what appears to be the terminal end of a scabbard from a bayonet or sword. The most interesting associated finds however may indicate the presence of an encampment on the site or close by. That is the inclusion of a number of lead styli or pencils within the assemblage used by soldiers to write letters or orders. Lead pencils such as this have been found on other encampment sites in Scotland and may now represent an important element of camp life.

## *2.2 Buttons*

The survey produced a very large quantity of buttons and should be regarded as an extremely important assemblage as it greatly increases our ability to produce and accurate typology. The majority date from the 18<sup>th</sup> to 20<sup>th</sup> century and are made from pewter or brass with little or no decoration. Buttons however of this period may often have been covered in a fabric covering so no decoration was required.

There are a number of early buttons in the assemblage which could potentially date back to the 16<sup>th</sup> century. Ball buttons in particular represent early button manufacture of which there are at least two in this group. Also present are a number of flat lead buttons which too could be of an early date, although simple buttons such as these may have been made at any time. Casting technique and the form of the shank and loop are good indicators of chronology. Casting the whole button including the shank and then drilling a hole to make the loop is a distinctive feature of an early button and can be seen in one example within the collection.

Medium to large flat pewter buttons date from the 18<sup>th</sup> century and feature a large casting reservoir with a separate wire shank dipped in during casting are also well represented here. Later brass buttons from the 18<sup>th</sup> to the 20<sup>th</sup> century are occasionally cast in two part moulds with the shank slotted in as a third part, however the majority are cast and then the shank is soldered on. Soldering creates a weakness with the shank often breaking or falling off which is a regular feature in this



collection but will enhance our knowledge of button manufacturing techniques. Two part buttons, also of this period, do not usually survive intact but there are at least four good examples from this survey of varying quality.

Only a small proportion of the buttons are decorated with incised lines or circles. Decoration can be done by hand or later (19<sup>th</sup> century) by machine turning for the more complex patterns such as concentric circles. The process of turning leaves rings on the back of the button and can be easily identified.

There is a very interesting group of buttons which are often referred to as *livery* buttons said to be worn by household servants of the 19<sup>th</sup> century, although this function is now being questioned. There are at least four buttons which have been embossed (or specially cast) with a crest or coat of arms representing a family or sometimes a regiment. The crests include a tree; a lion wearing a crown and with outstretched arms holding sceptres and a rising phoenix. One small pewter button is incised with a crest that looks to be a heart and crown, which is very similar to the Cladagh ring symbol of Galway. This group of buttons are very significant as livery buttons seem to be a common feature of some battlefields meaning their function should possibly be reconsidered.

### *2.3 Buckles*

Buckles have been represented over a range of periods with at least two dating to the 16<sup>th</sup> century and the time of the battle but the majority appear to be from the 18<sup>th</sup> to 20<sup>th</sup> century. Buckles however are at times more difficult to date than buttons as many simple buckles for functional use will retain the same shape over many centuries. Some more ornate buckles may be dated to a more accurately. Buckles have a range of functions from clothing, belts, kit, horse tack etc but generally they can be categorised by looking at quality and size.

The majority of the buckles are made of c u alloys such as brass or bronze but there is at least one iron buckle which has survived too much corrosion and one ornate square pewter buckle probably used as a decorative item. One very good example is a very small complete buckle which is oblong in shape and may have belonged to a small belt or for the bottom of a pair of breeches. Another is a round buckle with the tongue unfortunately missing. Both are potentially an early buckles dating to at least the 17<sup>th</sup> century if not the 16<sup>th</sup>.

### *2.4 Coins*

This survey has collected a very large collection of coins which could be to do with the close proximity of the road or some other activity. Most of the coins have had their facings eroded away making it difficult to identify them except possibly by their size. There are two early buttons which are small and very thin with faint impressions of their markings but an expert would have to identify it. Another two buttons can be dated to the 17<sup>th</sup> and 18<sup>th</sup> century as possibly coins of Charles II and George II with a thistle on the obverse side. There are also numerous Victorian pennies and shillings which is to be expected.

## *2.5 Lead Seals*

Lead seals have come under a category of their own due to their unusually high quantity in this survey. So far more than 10 lead seals of various dates have been looked at in this analysis and they prove to be of significant interest. The seals form two groups, sack seals and cloth seals which were used by merchants or quarter masters to mark their goods and fasten them with each merchant having a distinctive stamp. Lead seals were in use for centuries from at least the 13<sup>th</sup> century until the early 20<sup>th</sup> century.

The concentration of lead seals is unusual, however Musselburgh was a leading centre of cloth manufacture in Scotland and would have imported and exported cloth in great quantities. Some sack seals however have a very military look about them and may have been part of supplies for the barracks which were close by. Or is this the location of a market place?

Two sack seals may potentially be very significant as they are both stamped with a Lion Rampant which was an official Royal seal of Scotland until 1601 and could only be issued by Royal consent. It is very possible that supplies for the Scottish army during the battle were stamped using this seal and so are very important and rare artefacts.

## *3.0 Conclusion*

It must be stressed that this is a preliminary report as the analysis is still ongoing as not all of the artefacts have yet been assessed. Therefore the results in this report may change slightly. However having looked at the majority of the artefacts there is no doubt that this is a very important assemblage indicating a significant degree of military activity in the area from a range of periods as well as the 16<sup>th</sup> century Battle of Pinkie.

## **Appendix 4**

### **Pinkie Battlefield: Report on survey undertaken in 2005-6 by B Simpson for East Lothian Council by Glen Foard, The Battlefield Trust**

The Pinkie battlefield has been subject to three separate archaeological surveys for battle archaeology on three contiguous areas, one by AOC (Gula Flats), one by CFA (Goosebay) and the third undertaken by or for Biddy Simpson on behalf of East Lothian Council (Barbachlaw Stadium). The latter investigation was of two fields and was undertaken with the assistance of the Scottish Detector Club and the Scottish Artefact Recovery Club. This work comprised four separate detecting actions in 2005-2006 with Field 1, also known as the Stadium site, being surveyed three times and Field 2 surveyed once.

The survey was undertaken on a grid and the spatial data provided in the form of a gridded distribution plan with numbered points. An associated plan was provided to enable the grid to be related to the field boundaries. The distribution plans from the fieldwork records were scanned and registered in MapInfo. Some difficulty was encountered in accurately registering the plans but a final accuracy is estimated as  $\pm 2\text{m}$  in locating the grid. For the purposes of the present analysis a single find numbering was applied to all the Pinkie material but these are cross referenced to the original fieldwork record numbering.

An initial report on the assemblage has previously been prepared by Natasha Fergusson of GUARD and that report has been consulted in preparing the present report.<sup>1</sup> In the present study all artefacts that were or which might be bullets or roundshot were analysed by G Foard, for which a detailed report and catalogue is presented here. All other finds were examined by Richard Knox and a brief assessment produced in the form of an Excel spreadsheet. While no artefact within the latter assemblage could be associated with confidence to the battle, it has been concluded as likely that most of the bullets and the single roundshot probably derived from the battle. Similar conclusions have also been drawn in connection with the material from the AOC and the CFA surveys.<sup>2</sup>

### ***Bullets***

A total of 25 early modern lead bullets were recovered in the fieldwork, of which 16 were provided for analysis. All were lead ball with no slugs or case shot present, although one bullet shows equivocal evidence that might represent firing as case shot (see below). In addition there was one lead roundshot. A further four lead objects were examined which proved not to be early modern bullets.

Most of the bullets proved to be in poor condition with a high degree of corrosion and some showing substantial erosion, as was also true of the material from the AOC

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<sup>1</sup> Fergusson, 2006.

<sup>2</sup> Foard, 2008c; Foard, 2008d; the analysis presented here draws heavily upon other research to be published as Foard, in preparation

and CFA surveys. In the 1930s the land on the battlefield, apart from two small paddocks of pasture immediately south east of Barbachlaw Farm, was under arable.<sup>3</sup> In 2000 the site was still almost wholly arable.<sup>4</sup> The geology of the site, like that of the adjacent area examined by AOC, was almost wholly sands or sands and gravels, a parent material which may be expected to have produced as soil with a low pH.<sup>5</sup> In contrast the CFA site was largely on boulder clay though this too was and is subject to cultivation. The combination of low soil pH and aeration of the soil caused by cultivation, when combined with mechanical damage from cultivation, may be expected to have produced fairly aggressive soil condition and this in large part explains the relatively poor condition of the bullets.<sup>6</sup> However analysis of metal composition of several bullets in the AOC assemblage and of one in the CFA assemblage has demonstrated that extreme corrosion and fragmentation of bullets, not seen on any of the bullets reported on in the present report, was due to manufacture with a high proportion of tin relative to lead.<sup>7</sup>



**Figure 1: bullet showing the first stages of erosion of corrosion deposits which is resulting in the loss of surface detail. Also visible are facets of uncertain significance (see below) and a small linear impact gouge (Pinkie 77)**

The analysis of types and of evidence for use has been rendered difficult by the poor condition of most of the bullets. In addition the analysis has been complicated by the slightly unusual combination of attributes that seem to be present. This could be because the bullets are from such an early action where the effects of use of both artillery case and small arms could prove to be slightly different to that seen in later assemblages, where both weapon and gunpowder efficiency had improved and firing practice had possibly been modified. What is required to address these issues is both a much larger assemblage from the Pinkie battlefield and comparative evidence

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<sup>3</sup> Stamp, 1931-1935

<sup>4</sup> Vertical air photographs available online on Virtual Earth in July 2008.

<sup>5</sup> British Geological Survey mapping.

<sup>6</sup> Foard, forthcoming-a

<sup>7</sup> Foard, 2008c

from other battlefields of the period, such as Ancrum Moor (Borders, Scotland) or Dussindale (Norfolk, England).



**Figure 2: Bullet showing unusual deep depressions or gouges, possibly resulting from manufacture rather than impact (Pinkie 75)**



**Figure 3: Bullet showing typical snapped and slightly swaged sprue and slight offset mould ridge. This unaltered detail is immediately opposed to the hemisphere with the deep compression seen in figure 5 (Pinkie 277).**

None of the attributes on the bullets is clearly dateable with one possible exception. Find 227 has a very flat bottomed and sharp sided concave facet which has a distinctive 'd' shaped form. A similar feature has not been seen on any bullets of 16<sup>th</sup> or 17<sup>th</sup> century date previous examined by the author in Britain. It is possible that it is a ramrod mark, which would indicate a much later date for the bullet as metal ramrods appear not to have come into use until the 18<sup>th</sup> century in Britain. However

the feature is much broader and deeper and sharply defined than the example of ramrod compression from 18<sup>th</sup> century USA discussed by Sivilich.<sup>8</sup>



**Figure 4: Bullet showing distinctive deep flat bottomed depression of 'd' shape, with sharp raised edge. This might represent ramming with a metal ramrod but the form is unusual (Pinkie 277)**



**Figure 5: Bullet showing massive impact damage with a major concave facet and distortion of the intact part of the sphere (Pinkie 352)**

Determining whether or not the bullets have been fired has proven difficult, primarily due to loss of evidence through corrosion and erosion. Only one bullet shows fairly distinct evidence of banding from compression against the barrel during firing (find 04). A small number show impact damage varying from massive concave facet on one bullet which has heavily distorted the bullet (find 352) through to minor linear gouges. On some bullets the marks are of uncertain origin, interpretation being

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<sup>8</sup> Sivilich, 2007

further complicated because so little experimental data is currently available on impact damage.



**Figure 6: Indistinct banding running from top to bottom of the image, with on the left hemisphere both flattening and deep impact gouges. The bullet shows the first stages of erosion (Pinkie 4)**

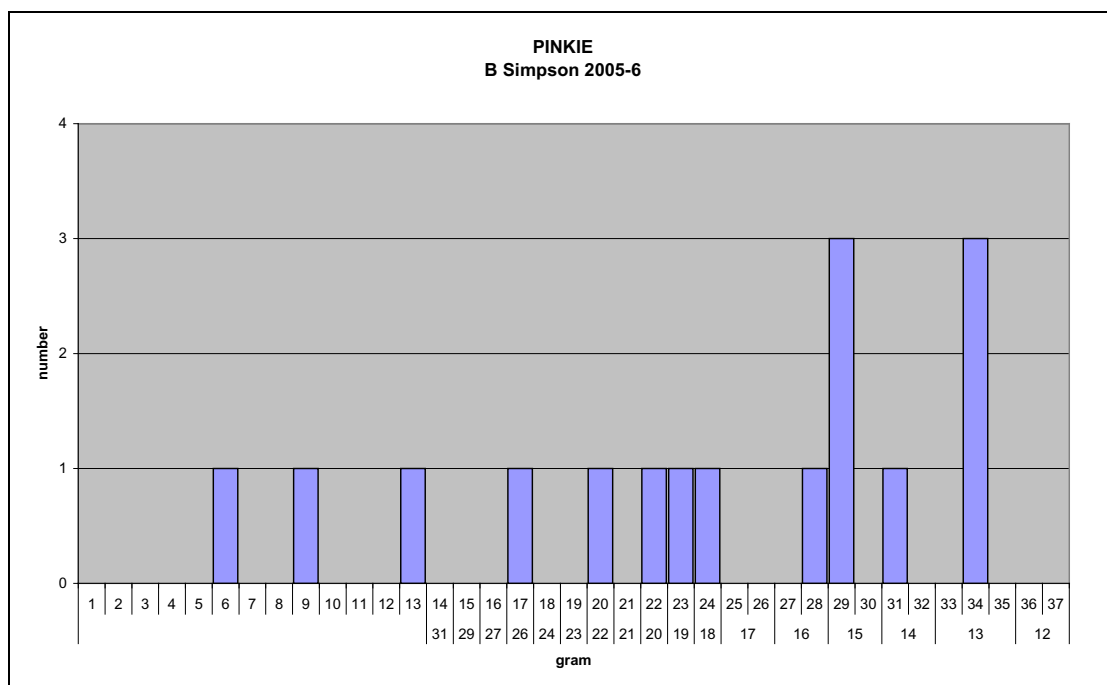
One bullet shows an unusual combination of one large and several small facets. This may represent paring to enable the bullet to enter the barrel but it is just possible that these are facets from firing as case shot, although the combination of facets is unlike that seen on other case shot bullets. This bullet may also have very slight evidence of a striated band which would demonstrate that it had been fired from a hand held gunpowder weapon. Should this bullet prove to be from firing as case then this is particularly significant, as discussed in connection with the AOC assemblage where two bullets show more distinctive but still equivocal evidence. The presence of case shot would be a clear indicator that the assemblage derives from a major military action where artillery was deployed, complementing the roundshot evidence discussed below, and representing the earliest archaeological evidence from Europe for the use of lead bullets as case shot.



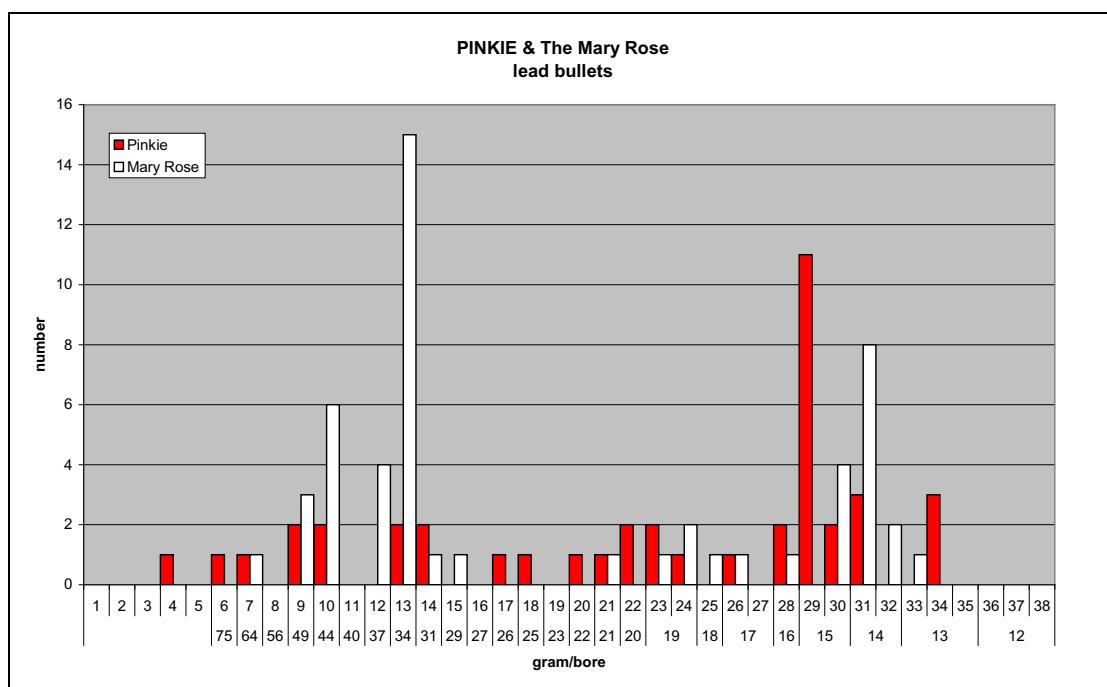
**Figure 7: Bullet showing unusual, sharp edged polygonal facets, one large and the others small. This might represent paring of excess lead prior to firing to enable bullet to enter barrel; there is a possibility that it is the result of compression on firing as case shot (Pinkie 77)**

The assemblage, indeed the whole collection of material from the three investigations on Pinkie battlefield, is notable for the absence of powder box caps while only one slug is present in the assemblages, from the far periphery of the CFA investigation. This is indicative that the assemblage is not from the 17<sup>th</sup> century but does not provide clear proof date. The clearest evidence that the small arms bullets probably come from the battle is the combination of calibres present. Unfortunately the small number of bullets available renders this analysis subject to a high level of random variability and ideally a much larger assemblage should be recovered from the site to allow a more secure analysis.





**Figure 8: Calibre of bullets from survey for East Lothian Council 2005-6 (sample 16 bullets)**



**Figure 9: Comparison of calibre of small arms lead ball from all Pinkie surveys with the unfired assemblage from the Mary Rose (sank 1545)**

The Pinkie assemblage is not matched by a calibre graph from any other site, with the possible exception of a small assemblage from the 1642 action at Aylesbury, though the latter is accompanied by four powder box caps but lacks any roundshot.<sup>9</sup>

<sup>9</sup> Foard, 2008a.

The Mary Rose assemblage (sank 1545) is the one with the greatest affinity to the Pinkie calibre graph but the correlation is not perfect, with the small-calibre peaks on the Mary Rose only matched by a very slight grouping on the Pinkie assemblage. The larger calibre peak is slightly shifted down at Pinkie but this is likely to be a result of weight loss due to melting during firing.<sup>10</sup> Thus it can be suggested that most of the bullets are most likely to derive from the Pinkie battle but this cannot be said with certainty.

### ***Roundshot***

One lead roundshot of small bore was recovered from the survey. It is of a calibre which is compatible with firing single from a small artillery piece such as a falconet.<sup>11</sup> It is however wholly of lead whereas the two from the CFA survey area were composite munitions which have iron cores. It is more difficult to date wholly lead roundshot as, in contrast to composite roundshot, they continued in use through at least to the mid 17<sup>th</sup> century. The manufacturing groove around the circumference of the munition is almost identical to the manufacturing grooves seen on the Mary Rose composite lead roundshot, though the latter had two such grooves at 90 degrees to each other. No comparative data is currently available from lead roundshot of the 17<sup>th</sup> century and so it is not possible at present to say whether such manufacturing marks are distinctive of 16<sup>th</sup> century munitions alone.

There is clear evidence of firing in the form of a broad flattened band extending around 40% of the circumference, resulting from compression against the internal face of the barrel bore during firing. Similar features are seen on one fired lead roundshot recovered from the Mary Rose and believed to represent incoming French fire, and on composite roundshot from Flodden and Pinkie, as well as on numerous small arms bullets from various sites and from experimental firing.<sup>12</sup> Impact damage in the form of gouges is superimposed on both the manufacturing and the firing features. Thus there is no doubt that this roundshot has been fired.

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<sup>10</sup> Foard, 2008c; Foard, 2008b

<sup>11</sup> Foard, 2008c; Foard, 2008d

<sup>12</sup> Foard, forthcoming-a; Foard, 2008b.



**Figure 10: Distinct banding, visible as flattening and resulting from firing, extends around 40% of the circumference and has both deep and shallow impact partly superimposed over the band (Pinkie 290)**



**Figure 11: Roundshot showing narrow linear depression around equator which is clearly overlain by impact gouges (Pinkie 290)**

### ***Other finds***

A wide range of artefacts of copper alloy, lead and other metals from the survey were analysed by Richard Knox. None proved to be unequivocally from military action in 1547 and almost all were of later date. The data is presented in a spreadsheet including all the Pinkie finds and accompanying the present report. It has been suggested by Fergusson that the presence of a small number of military buttons and one conical 19<sup>th</sup> century bullet in the assemblage may indicate that the lead balls from the survey derive from late 18<sup>th</sup> or early 19<sup>th</sup> century training undertaken in the field from the barracks which lay nearby. The evidence of calibre of the small arms bullets, the presence of composite roundshot and the location of the bullets on both sides of a road in use from the late 18<sup>th</sup> to 21<sup>st</sup> century indicates this is unlikely.

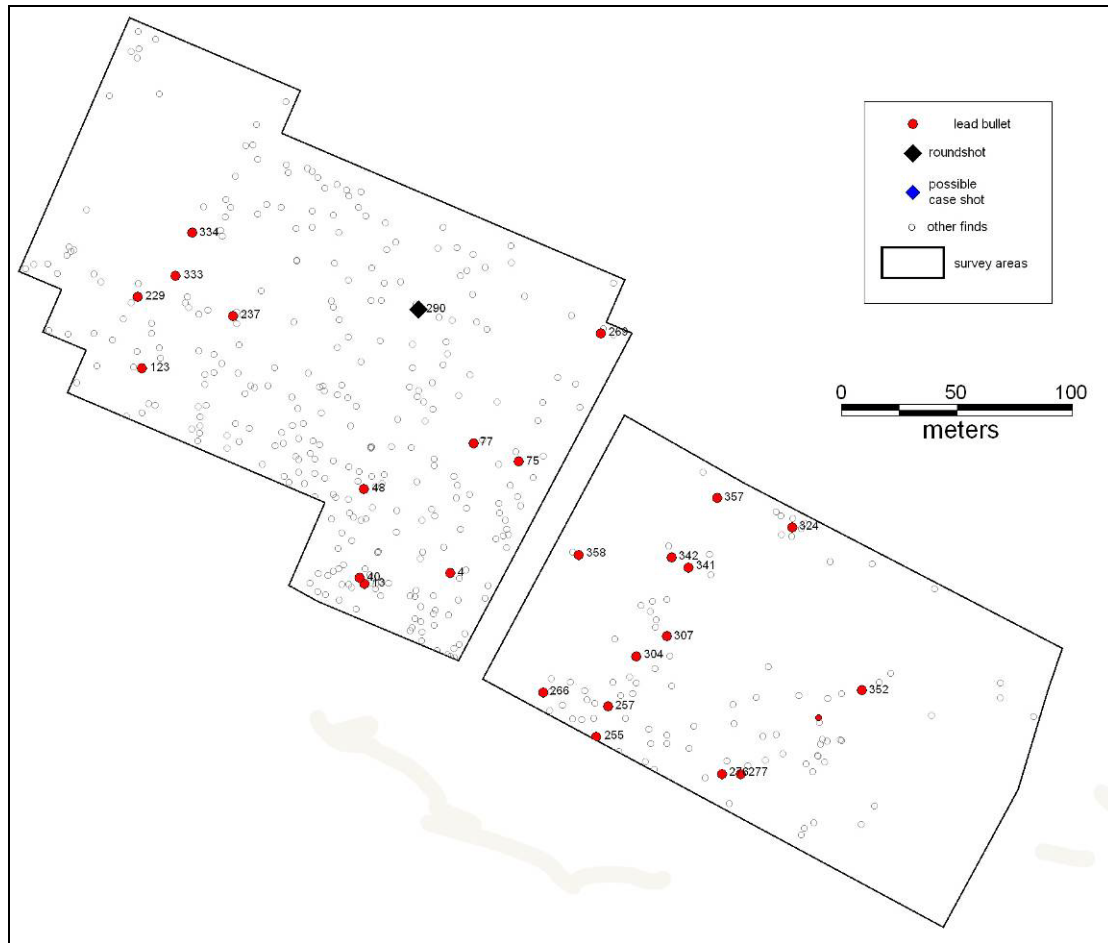
### ***Spatial distribution of munitions***

The higher concentration of finds from the East Lothian survey conducted by Simpson compared to the AOC and CFA surveys may in large part result from the apparent higher intensity of survey. However it is important to note that detailed information on the exact intensity of survey (a combination of transect spacing and reconnaissance speed), detectors used and the experience of individual detectorists was not available for any of the surveys survey.

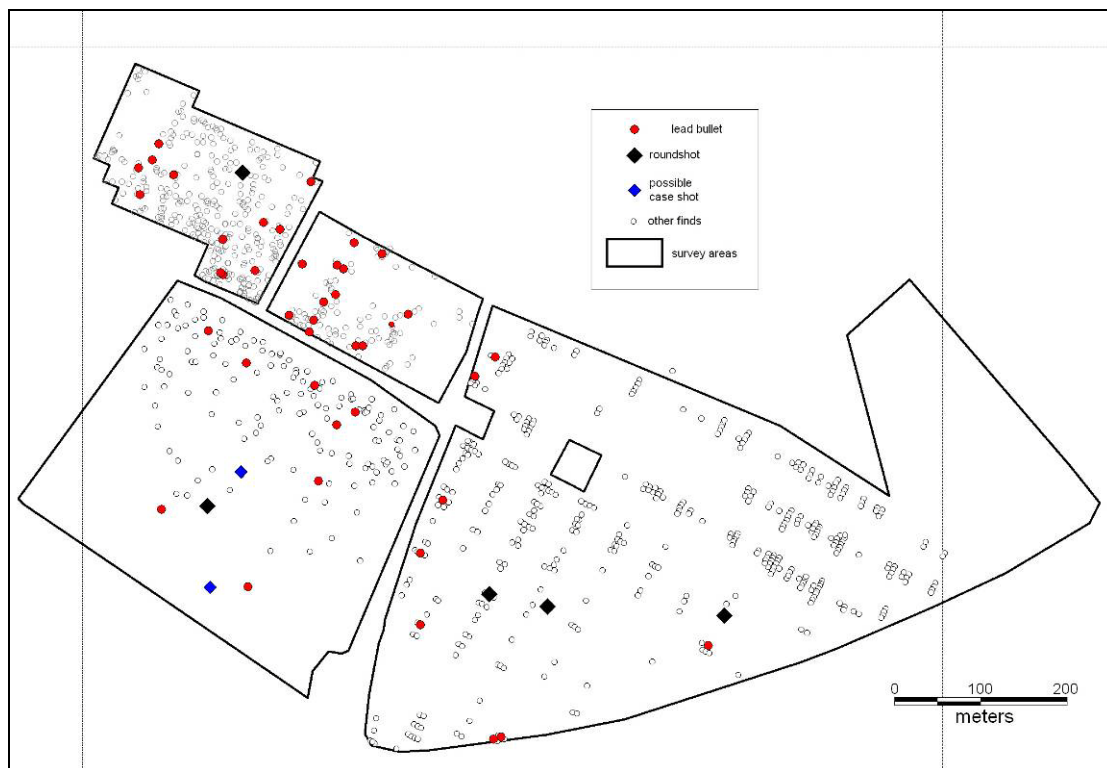
It is important in the light of the fact that three surveys were undertaken in the western of the two fields and only one in the eastern field, that the latter produced a higher density of bullets overall. This would support the distribution seen in the AOC survey which tends to concentrate in a similar zone, producing a scatter that trends south south west to north north east. Perhaps significantly this is almost parallel to the Kelstane Burn. It is also supported by the focus of the CFA distribution, which though of very low density, concentrates towards the western extremity of the survey area. The bullets may represent incoming fire from a distinct firing line which lay to north west or south east. The presence of the roundshot towards the north and south peripheries of the scatter, and of the possible case shot bullets on the south, may support this interpretation as the artillery appear from the documentary record to have been placed on the flanks of the deployments of both armies.<sup>13</sup>

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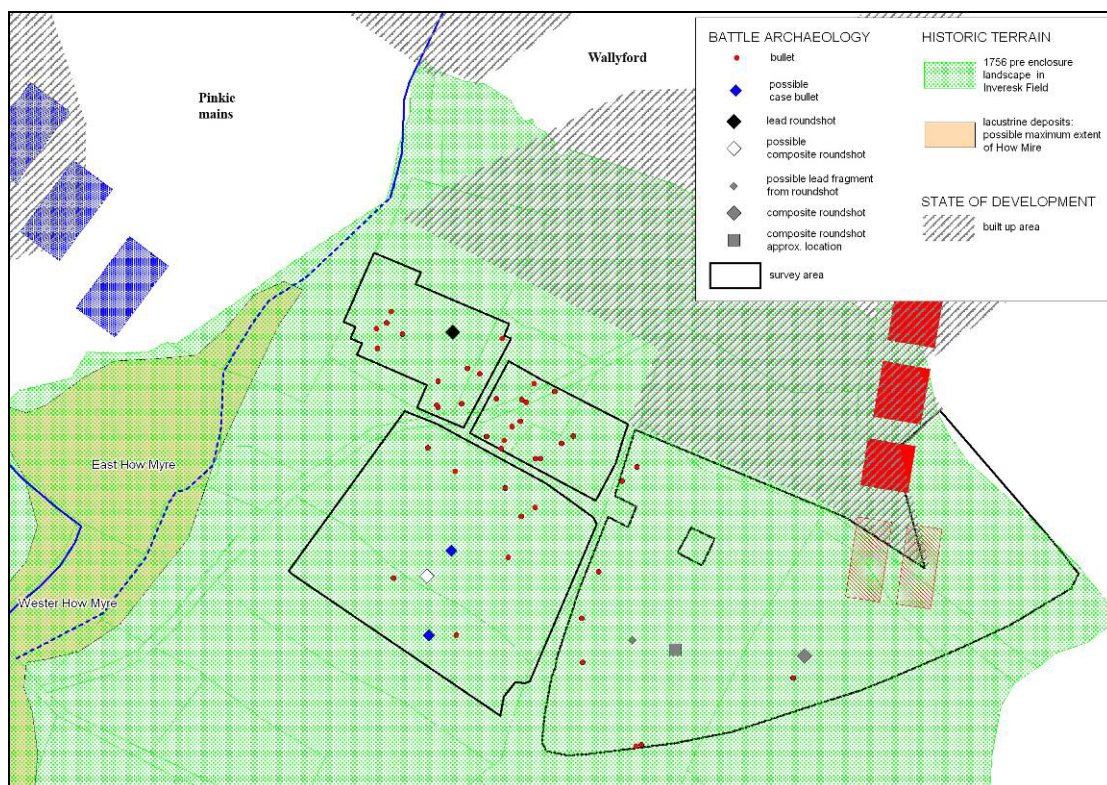
<sup>13</sup> Foard, 2007.



**Figure 12: Plan of distribution of finds from survey for East Lothian Council**



**Figure 13: Plan of distribution of all munitions recovered from the three surveys at Pinkie: AOC survey bottom left, CFA survey right (1 km National Grid).**



**Figure 14: Distribution of munitions placed in the context of reconstructed historic terrain (from Foard, in preparation)**

## **Conclusions**

The two composite roundshot from the CFA site are certainly from the 16<sup>th</sup> century and the one lead roundshot from the East Lothian survey is probably of similar date. The only context for the firing of such munitions on the site would be the Pinkie battle. The small arms bullets have a distribution which is closely associated with these roundshot, particularly when then likely relative ranges of the two types of munition when fired point blank are taken into account.<sup>14</sup> This, together with the similarity of the calibre graph to the Mary Rose assemblage indicates that the small arms bullets are also mainly if not wholly from the battle. The integration of all the data from investigations of the battlefield together with an analysis of the historic terrain, presents a picture that is compatible with the interpretation of the battlefield presented in the draft Inventory report for Historic Scotland.

The losses to unrecorded metal detecting in the past may have significantly distorted the distribution patterns of the bullets but it is clear from the material recovered in all three surveys that significant quantities of material remain and these have a major potential to contribute to our understanding of the battle. The potential of the Pinkie battlefield to contribute to the study of warfare in Europe is high and it is at present the only battlefield in Britain with demonstrated battle archaeology of the mid 16<sup>th</sup> century. Though a limited area has already been lost to development the vast majority of the battlefield appears to remain largely intact, including a very large area on the north west side of the Kelstane Burn which would appear to be the area of Scottish deployment, where the main action probably occurred and thus where the majority of the munitions should lie if the current interpretation is correct.

If a more confident analysis is to be produced then, as the Edgehill survey has demonstrated, what is required is a more intensive and consistent survey of a wide area undertaken to a single methodology and with a high level of recording of the survey parameters as well as of the finds.<sup>15</sup> Substantially increasing the sample of bullets and roundshot and achieving comparability between each area of the battlefield will enable a far more informed analysis. This may resolve the difficulties of interpretation and confirm or refute the broad conclusions suggested here. The most important requirements is therefore to recover a much larger sample of bullets from the Pinkie battlefield through further more intensive and systematic metal detecting survey undertaken in discrimination mode, to provide a much larger sample of bullets for analysis. Research undertaken at Edgehill battlefield demonstrates that intensive re-detecting of fields at 1m intervals where detecting has already been undertaken at 2.5m and 10m intervals will yield a substantially larger number of bullets than the lower intensity survey, especially where the field has been cultivated in the interim.<sup>16</sup> If this is undertaken to a standard methodology that enables direct comparability with other sites then future analysis may be possible to determine with certainty whether the bullets relate to the Pinkie battle or not. Without

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<sup>14</sup> Foard, 2008c

<sup>15</sup> Foard, 2008b

<sup>16</sup> The issue is discussed in detail in Foard, forthcoming-b, chapter 5.



a large assemblage this will never be possible as random variation will be too great, while particular bullet types which represent a small percentage of an assemblage are unlikely to be recovered at all.

To complement this there is the need for a detailed archaeological survey of the open fields of Inveresk and the surrounding areas, following the methodology demonstrated by Hall, to recover the detail of the furlong pattern. If any area is to be destroyed by development then the recording of the open field headlands should be a key requirement. This should be supported by work on Howe Mire, including palaeo-environmental investigation, and on other aspects of the historic terrain such as the park boundaries, together with supporting documentary research on the dates of enclosure and other aspects of landscape evolution. Over the wider landscape such data would also be likely to prove critical to the understanding of the battlefield as a whole.<sup>17</sup>

To ensure that the battlefield is effectively managed an overall conservation plan for the site is required, given the large scale and intensity of the development pressure and the apparent vulnerability of the site to unrecorded metal detecting. The scale of the threat is comparable to that seen on the Newbury I battlefield in England where a battlefield-wide survey is being commissioned to provide a consistent data set across the whole battlefield to enable the local planning authority to determine what land can and cannot reasonably be conserved or developed with or without detailed recording action. A comparable response should ideally be implemented at Pinkie, with follow-up intensive recording action where any land is then made available for development. However in this case, given the low density of bullets to be expected compared to a mid 17<sup>th</sup> century battle, and given the apparently key role of lead and composite roundshot in the interpretation of the battlefield archaeology, a more intensive battlefield-wide survey would be required at Pinkie than the 10m survey proposed for Newbury as this intensity proved only just adequate in yielding an overview of the battle archaeology at Edgehill.<sup>18</sup> It seems likely that the minimum viable sampling intensity for a battlefield-wide survey at Pinkie would be transects of 2.5m interval using a detecting team with a high level of experience in battlefield archaeology.

*Dr G R Foard*  
*July 2008*

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<sup>17</sup> Hall, 1995.

<sup>18</sup> Foard, 2008b



# CATALOGUE

ADD CROSS REF TO ORIGINAL NUMBERING

## ***Bullets***

All bullets are lead ball. No slugs or certain case shot are present. Nine bullets are listed in the survey records which were not present in the assemblage assessed here.

4

Mass: 24.37g

Condition: fair; brown corrosion deposit 5% decayed to white lead.

Irregular sphere due to indeterminate surface modification

Firing: remnant band?

Impact: several concave facets possibly from impact; embedded grains.

Fired: possible

13

Mass: 6.71g; depth: 10.45mm; width: 10.65mm

Condition: fair; light grey/brown deep corrosion deposit; slight pitting; erosion starting.

Snip down; swaged slight flash on mould line.

Impact: several embedded grains

Fired: uncertain

40

Lead ball: missing – no data

48

Mass: 29.68g

Condition: poor; light brown corrosion deposit eroding to white decayed lead.

Impact: possible impact (16.29mm diameter on possible impact facet): unusual; several small gouges; embedded grains.

Fired: possible

75

Mass: 17.48g

Condition: fair; dark grey/brown corrosion deposit 95% intact, but erosion to decayed white lead starting; corrosion obscures most detail.

Moulding faults: 2 irregular holes

Irregular, slightly faceted surface

Fired: uncertain

77

Mass: 29.87g

Condition: poor; dark brown/grey eroding to white; 10% of corrosion deposit eroded to decayed lead. Analysis difficult due to erosion.

Firing: possible slight remnant band with striation and compression of lower hemisphere (flattening diameter 17.20mm), but this conflicts with facet evidence.

On large facet (diameter on facet 16.47mm) surrounded by several small facets, might be due to paring prior to firing, might be compression due to firing as case but the latter conflicts with the other evidence; the facets do not appear to be impact damage.; Significant detail destroyed/obscured by corrosion & erosion; extensive embedded grains.

Fired: yes

123

Mass: 13.09g; depth: 12.93mm

Condition: poor; corrosion deposit eroding to decayed white/grey lead

Massive offset; irregular moulding fault;

Impact: several small gouges

Fired: possible

229

Mass: 31.8g; depth: 17.87mm; width: 17.77mm

Condition: fair; erosion beginning.

Mould line; snip up; slight hole.

Impact: small swaged shallow gouge possibly impact; embedded grains.

Fired: possible

237

Lead ball: missing – no data

255

Lead ball: missing – no data

257

Lead ball: missing – no data

266

Mass: 9.5g; depth: 11.83mm; width: 11.92mm

Condition: fair; 10% erosion to white/grey decayed lead.

Snip; offset.

Impact: embedded grains.

Fired: uncertain

269

Lead ball: missing – no data

276

Mass: 20.31g; depth: 15.36mm; width: ?15.65mm

Condition: poor; brownish white corrosion deposit 70% eroding to decayed white lead.

Snip; slight mould ridge remnant.

Impact: slight linear grooves; embedded grains.

Fired: possible

277

Mass: 23.85g; depth: 16.29mm; width: 16.53mm

Condition: poor; grey/brown corrosion deposit 99% eroded to white decayed lead.

Swaged snip, remnant mould ridge.

Impact: large compressed facet possibly from impact, unlikely to be ramrod mark as no opposing flattening.

304

Lead ball: missing – no data

307

Mass: 34.28g

Condition: poor; grey brown corrosion deposit with extensive erosion to white decayed lead.

Impact: several small pits and gouges both linear and rounded, possibly light impact evidence; embedded grains.

Fired: possible

324

Lead ball: missing – no data

333

Lead ball: missing – no data

334

Mass: 28.4g; depth: 16.36mm; width: 17.21mm

Condition: fair; corrosion deposit 50% eroded to white decayed lead.

Remnant snip and possible mould ridge.

Impact: embedded grains; slight linears and slight striation in small gouges

Fired: yes

341

Lead ball: missing – no data

342

Mass: 34.95g; depth: ?18.38mm; width: ?18.73mm

Condition: poor; 95% of white corrosion deposit eroded to grey lead.

Remnant snip?

Impact: many embedded grains  
Fired: possible

352

Mass: 29.34g  
Condition: poor; corrosion deposit eroding to decayed grey lead.  
Firing: remnant band?  
Impact: massive impact facet (diameter on impact 13.63mm); several striated linear; embedded grains.  
Fired: yes

357

Mass: 34.87g  
Condition: poor; grey/brown corrosion deposit 80% eroded.  
Impact: numerous small shallow gouges/facets; remnant embedded grains; several remnant shallow linear gouges.  
Fired: yes

358

Mass: 22.79g; depth: 16.11mm  
Condition: poor; grey brown corrosion deposit 95% eroded to decayed lead.  
Remnant snip down; remnant mould line or flash; 2 overlapping facets with appearance of second snip but may be impact: unusual.  
Impact: remnant linear grooves  
Fired: uncertain

## ***Roundshot***

290

Mass: 397g  
Condition: good; brownish corrosion deposit on 20% of surface eroding to white.  
Solid lead: magnet test indicates no ferrous core.  
Probable manufacture groove intact around 75% of circumference, centrally placed defining two hemispheres; all gouges are superimposed. These marks are similar to manufacture grooves seen on composite roundshot from the Mary Rose but the latter have a second groove at 90 degrees.  
Firing: banded around 40% of circumference; maximum diameter on band: 39.68mm; diameter at 90 degrees: 42.02mm; sight melt traces.  
Impact: various gouges and linear cuts, some striated; embedded grains, particularly in grooves.  
Fired: yes

## ***Other***

4 artefacts of lead were examined which proved not to be early modern bullets.

294

19<sup>th</sup> century conical lead bullet. Less decayed than the lead balls.

Mass: 336g

339

Cast lead. A sphere manufactured with two massive opposing facets. Unlike any bullet examined but does have a mould line and sprue snip. Ferrous bar through centre has 6.85mm diameter and is lead encased. Flattened facets with 15.56mm diameter are part of the manufactured form.



Figure 15: Find 339

148

Lead cube: has far less corrosion deposit and likely to be modern.

78

Lead with embedded ferrous components. Not a bullet but possibly a weight.

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