Archaeological Services
University of Durham

The Traprain Law Environs Project, East Lothian, Scotland: Phase 2

Evaluation at Knowes (TKN02) Data Structure report

on behalf of

Historic Scotland
Dickinson College
University of Durham

ASUD Report 965
March 2003

Archaeological Services
University of Durham
South Road
Durham DH1 3LE
Tel: 0191 334 1121
Fax: 0191 334 1126
archaeological.services@durham.ac.uk
www.durham.ac.uk/archaeologicalservices

The Traprain Law Environs Project, East Lothian, Scotland: Phase 2

Evaluation at Knowes (TKN02) Data Structure Report

ASUD Report 965
March 2003

Archaeological Services University of Durham

on behalf of

Historic Scotland
Dickinson College
University of Durham

Contents

List of Figures . . . . . *i*
1. Summary 1
2. Project background 2
3. The evaluation 3
4. Excavated features 4
5. The environmental evidence . . 5
6. Discussion and conclusions . . 7
7. References 7
Appendix 1: Context data 8
Appendix 2: Plans & sections . . . 8
Appendix 3: Photographs 9
Appendix 4: Samples 10
Appendix 5: Environmental data . . 10
Appendix 6: Stratigraphic matrix . . 11

List of Figures
Figure 1 Location map
Figure 2 Aerial photograph and interpretation
Figure 3 Geophysical survey with trench location
Figure 4 Trench plan and section

1. Summary

The project

1.1 This report presents the results of an evaluation of a cropmark enclosure at Knowes, East Lothian 2002. The evaluation formed part of Phase 2 of the wider Traprain Law Environs Project.

1.2 The aims of the evaluation were to determine the state of preservation of archaeological deposits and to obtain environmental samples and dating evidence, in order to assess the potential for larger scale excavation at a later date and to provide information of assistance in the cultural resource management of the site.

1.3 The works were generously funded by Historic Scotland.

Results

1.4 The evaluation comprised a single trench, which was machine excavated across the western ditch of the rectilinear enclosure. The ditch proved to be preserved to a considerable depth and contained a number of organic-rich fills with well-preserved macrofossils. No artefacts were recovered.

Recommendations

1.5 The site contains well-preserved archaeological deposits and has a high research potential. It would be suitable for larger scale excavation as part of the Traprain Law Environs Project.

2. Project background

The Traprain Law Environs Project

2.1 The overarching aim of the Traprain Law Environs Project (TLEP) is to investigate aspects of the archaeological landscape around the fortified hilltop site of Traprain Law in order to permit the analysis of economy and society during the 1st millennia BC and AD. The first phase of the project comprised the geophysical investigation of 30 cropmark sites within the vicinity of Traprain Law, comprising 2 multi-vallate, 12 rectilinear (including Knowes) and 13 curvilinear enclosures, as well as 2 ring-ditches and 1 possible building cropmark (Hale *et al.* 2001 & in press). Phase 2 of the TLEP, a programme of excavation of a sample of these sites, began in 2002. The evaluation at Knowes formed a part of this phase.

Site description and status

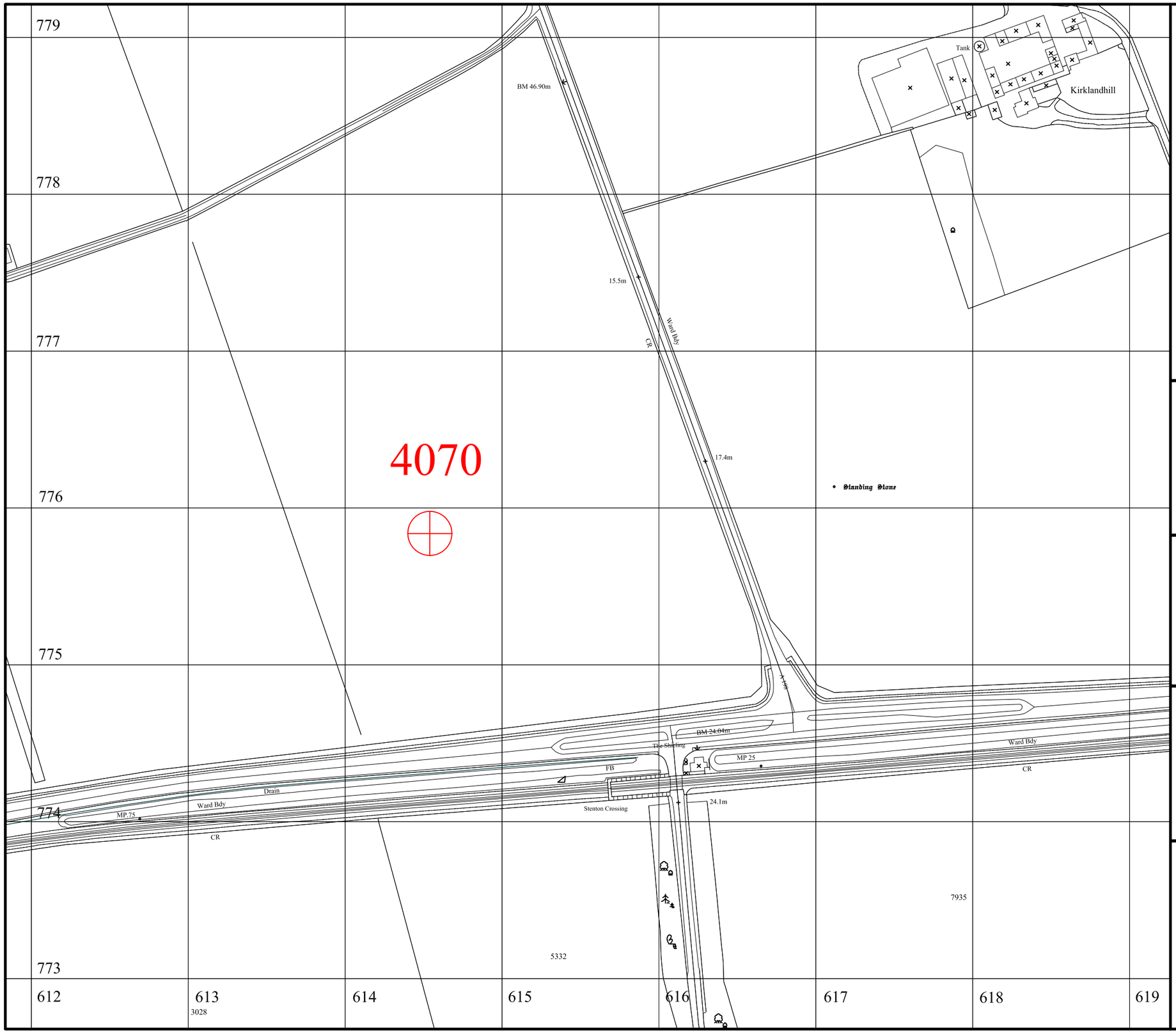
2.2 The enclosure at Knowes, of presumed Iron Age date, is one of a number of such enclosure sites near Traprain Law, none of which have been excavated to date. It is a typical example of the rectilinear enclosure type in this area.

2.3 The site is located at NGR: NT 6140 7755 (Figure 1) and comprises a rectilinear cropmark enclosure of *c*.0.25 ha. A number of other features are known in the same field although their relationship to the rectilinear enclosure is unclear. The site occupies a level terrace of land immediately north of the existing A1(T), *c*.2km due east of East Linton, at an elevation of *c*.20m AOD. The site lies on Calciferous Sandstone Measures of the Carboniferous era, which are overlain by glacial deposits.

2.4 During the last fifty years the site has been recorded on numerous aerial photographs by various bodies, including the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). Figure 2 shows a rectified aerial photograph and interpretation of the site, supplied courtesy of RCAHMS.

2.5 In addition to the main enclosure ditch, the geophysical survey also indicated a number of internal and external features, perhaps indicating more than one phase of activity at the site (Figure 3). The survey confirmed the location of a rectilinear enclosure, of maximum dimensions 55m by 55m. The enclosure ditch is evident as a particularly intense positive magnetic anomaly for most of its course and measures *c.*4m in width. A causewayed entrance is apparent, midway along the eastern side of the enclosure. The remains of at least two ring-ditches are evident within the enclosure, measuring approximately 14m and 7m in diameter. A concentration of small, intense anomalies, possibly reflecting hearths, and an area of enhanced magnetisation were also recorded.

2.6 A number of magnetic anomalies were detected outside the enclosure ditch. In particular, a large positive magnetic anomaly, measuring 18m by 14m, was detected 30m north of the enclosure. This reflects an area of enhanced magnetic susceptibility, probably representing a large soil-filled pit, and is also clear on the aerial photograph. Several linear anomalies, almost certainly reflecting soil-filled ditches, are also evident. The chronological relationships



Archaeological Services
University of Durham

The Traprain Law Environs Project Phase 2

Knowes evaluation

Figure 1

Location of the Knowes site

On behalf of
Historic Scotland
Dickinson College
University of Durham

0 100m

Scale 1:2500

site location

Archaeological Services
University of Durham

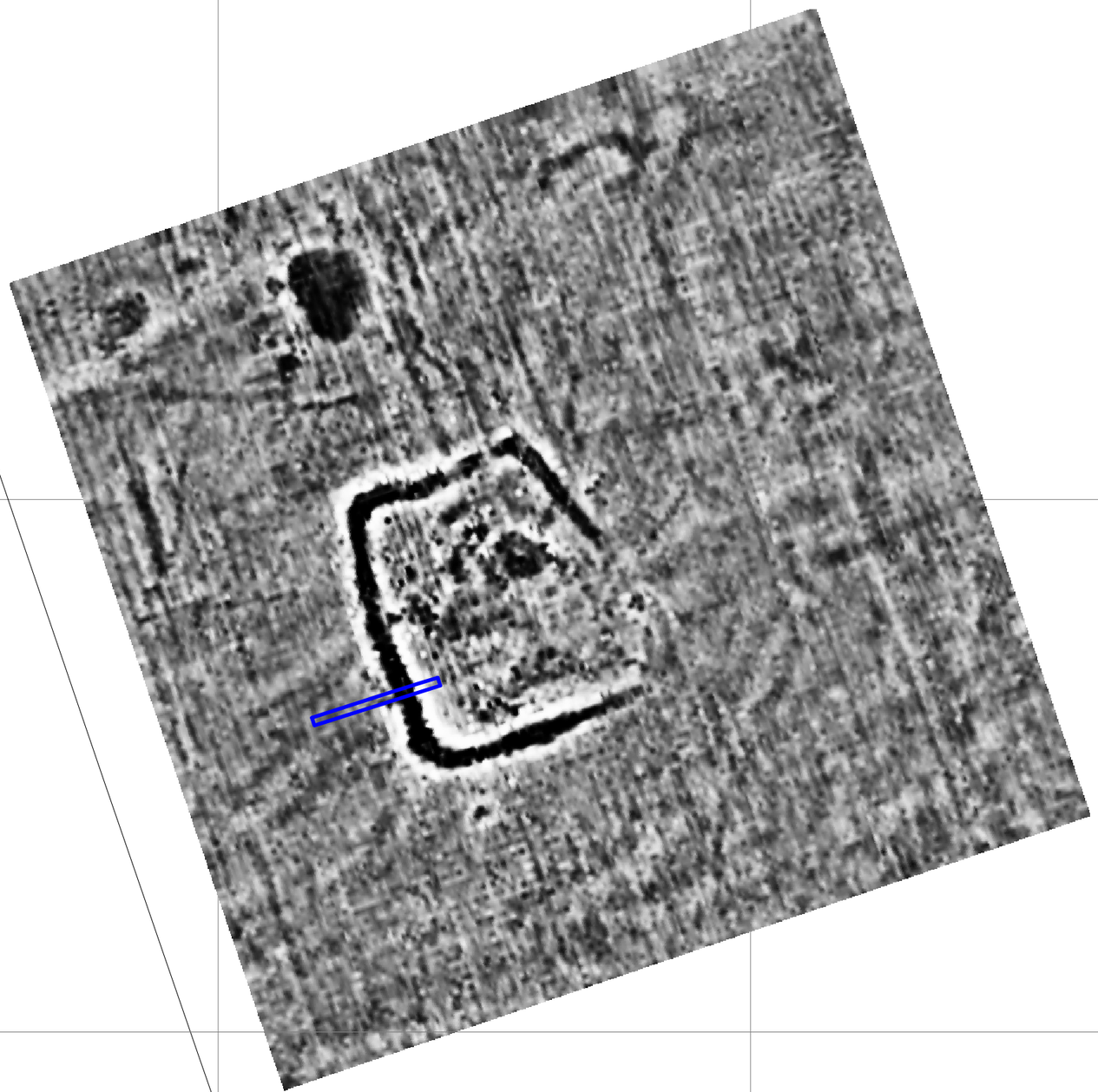
Traprain Law Environs Project Phase 2
Knowes evaluation

Figure 2
Rectified aerial photograph

On behalf of
Historic Scotland
Dickinson College
University of Durham

Computer plot from aerial photographs.
Use only with caution.
Copyright R.C.A.H.M.S.
John Sinclair House
16 Bernard Terrace
Edinburgh EH8 9NX

Plot origin **361300 677400**
AP Neg. No. **EL4557**
Mapsheet **NT67NW**
Site **Knowes**
Region **Lothian**
District **East**
Scale **1:2500**
Date **14.6.02**
SGS PTO **K.H.J. Macleod**



777
776
775
614
615
616

Archaeological Services
University of Durham

The Traprain Law Environs Project Phase 2

Knowes evaluation

Figure 3

Location of the evaluation trench on the geophysical survey greyscale

On behalf of
Historic Scotland
Dickinson College
University of Durham

0 50m

Scale 1:1000

evaluation trench

between these features and the enclosure are not clear. The ploughing regime at the time of survey was reflected in the data as a north-south aligned texture.

2.7 The site is a Scheduled Ancient Monument (number 4070), and is recorded on the NMRS as number NT 67 NW 019.

Objectives

2.8 The specific objectives for this evaluation were:

- to confirm the existence of archaeological features suggested by air photography and geophysical survey
- to obtain information about subsoil conditions and preservation
- to sample features for material culture and environmental remains which would provide information about the date and nature of the activities represented
- to assess the potential for larger scale excavation in 2004
- to assist with the future management of the monument

Dates

2.9 The evaluation was conducted in October 2002. This report was completed in March 2003.

Personnel

2.10 The evaluation was carried out by David Graham, Amanda Brend and Catherine Bell, under the supervision of Andy Platell. This report was prepared by Andy Platell and Duncan Hale with illustrations by Linda Bosveld and David Graham. Environmental samples were processed by Claire Pickin and analysed by Jacqui Huntley.

Acknowledgements

2.11 Funding for the evaluation was generously provided by Historic Scotland, with help in kind from the University of Durham. We are very grateful to the Tyninghame Estate and their tenant farmer, Mr Peter Cochrane, for permission to excavate, and to Olwyn Owen and Patrick Ashmore (Historic Scotland), Bridget Simpson (East Lothian Council) and staff at RCAHMS for advice and assistance with the project as a whole.

Archive

2.12 The site code is TKN02, for Traprain Knowes 2002. On completion of the overall project, the archive will be deposited with Historic Scotland for transfer to the Finds Disposal Panel and the National Monuments Record for Scotland (NMRS).

3. The evaluation

Standards

3.1 The evaluation and reporting has been conducted in accordance with the Institute of Field Archaeologists *Standard and guidance for archaeological field evaluation* (revised 2001) and in accordance with Scheduled Monument

Consent granted by Historic Scotland (dated 18th April 2002) under the Ancient Monuments and Archaeological Areas Act 1979.

Excavation methods and results

3.2 A single trench was excavated across the western ditch of the enclosure. This trench measured 24m in length and 2m in width. The existing ploughsoil was removed by a mechanical excavator fitted with a toothless ditching blade, under strict archaeological supervision. The trench sampled the ground outside the enclosure as well as the enclosure ditch itself. No attempt was made to investigate the ground inside the enclosure, where complex stratigraphy may be expected, on this small-scale excavation.

3.3 The trench was deepened over the enclosure ditch until health and safety considerations prevented further excavation. Both trench sections were cleaned and the south-facing section was drawn at 1:10. Environmental samples were collected from the ditch fills. The trench plan was recorded and tied-in to known, mapped Ordnance Survey points using a Wild T1000 total station survey instrument and SDR33 datalogger.

3.4 The excavation was recorded using the ASUD Iconic Formation Process Recording System, an advanced version of single context recording. The strength of the system relies on the explicit recognition of formation process traits on site during excavation. Photography was by bracketed colour transparency and monochrome 35mm stills, which were processed by our in-house photographer, Mr T Woods.

3.5 The trench was backfilled and re-instated as agricultural land. No artefacts were recovered during the evaluation.

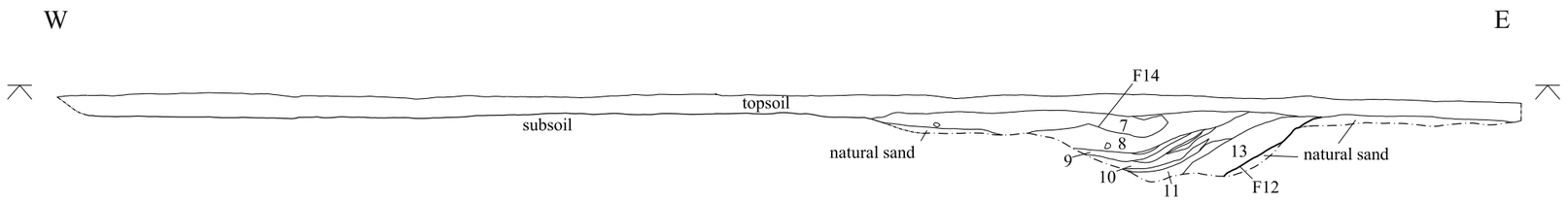
4. Excavated features

4.1 The natural subsoil across the trench comprised a loose, yellow, gritty sand (06), thought to be of glacial origin; over this was 0.3m of ploughsoil (01). All exposed features lay beneath the ploughsoil and were cut into the natural subsoil.

4.2 The enclosure ditch (F12) was excavated to a depth of 0.9m (*i.e.* 1.2m below the existing ground surface) before excavation was discontinued on safety grounds. The ditch measured 4.9m in width at the top, reducing to a width of 1.7m at the base of excavation. Based on the exposed profile, it is estimated that the full depth of the ditch will be between 1.5 and 2m.

4.3 The profile of ditch deposits indicated that a degree of truncation had taken place. At least part of this was not due to the modern plough regime, since a shallow cut (F14), 3m wide but only 0.3m deep, truncated the western side of the ditch below the modern ploughsoil. This cut was not present on the eastern side of the ditch, where archaeological deposits lay directly beneath the ploughsoil. The base of the cut undulated and is interpreted as an early plough feature.

Section 1



Plan 2

Archaeological Services
University of Durham

The Traprain Law Environs Project Phase 2

Knowes evaluation

Figure 4

Section 1 and Plan 2 of the Knowes evaluation trench

On behalf of
Historic Scotland
Dickinson College
University of Durham

0 5m

Scale 1:100

section line

4.4 The earliest exposed deposit was a light brown silty gravel (13), 0.5m in depth, which was only present on the sides of the ditch. This material contained very little organic matter and is likely to be a primary weathering fill of the ditch. By marked contrast, all overlying layers were humic in nature, being dark brown or black in colour. Above gravel 13 was a dark brown silty sand (11), at least 0.15m deep. This was overlain by 0.25m of banded black to dark brown silty sand (10) and then 0.2m of black silt banded with white (flecked with black) ash (09) and above this was 0.35m of mid-brown sandy loam (08). This deposit was truncated by cut F14 (see paragraph 4.8 above), which in turn was filled by 0.35m of dark brown silty loam (07).

4.5 Two irregular features (F03 and F05) were partially exposed to the west of the enclosure ditch (i.e. outside the enclosure). They were thought to be due to animal burrowing but were left unexcavated since their full extent was not exposed.

5. The environmental evidence

The samples

5.1 Twelve bulk sediment samples were recovered from six contexts at the site (07, 08, 09, 10, 11 and 13). Each of these contexts comprised a discrete fill layer within the main enclosure ditch F12, with the exception of 07 which filled a possible early plough feature F14. A 5 litre sub-sample from each context was submitted for assessment.

Objectives

5.2 The objective of the environmental assessment was to determine the nature, extent and potential of the plant macrofossil evidence at the site in terms of environmental, economic and dating evidence.

Methods statement

5.3 5,000ml sub-samples from Contexts 07, 08, 09, 10, 11 and 13 were manually floated and sieved through 500µm mesh sieves. The residues were retained, described and scanned using a magnet for ferrous fragments. The flots were dried slowly, then scanned at x50 magnification for waterlogged and charred botanical remains. Plant macrofossils were identified by comparison with modern reference material held in the Environmental Laboratory, Department of Archaeology, University of Durham.

Results

5.4 Only charred remains are considered to be contemporary with site activity. The few non-charred remains were clearly of modern origin. The charred data are presented in Appendix 5.

5.5 **Context 07** produced a moderate sized flot of roots and silty abraded charcoal with ?burnt soil lumps - possibly burnt turf but rather lumpy and amorphous. Some *Calluna* wood. Selection of weeds, grain and chaff - total 34 items. Worth full processing.

5.6 **Context 08** produced a small flot with small pieces of charcoal and quite a lot of heather type; some possible grass stems. Some barley grains and a few fragments of chaff and weed seeds. Worth processing the remaining material.

5.7 **Context 09** produced a moderate sized flot, still damp, mostly *Calluna* wood, a small amount of monocot culm base/rootstock material, occasional cereal, grass and Juncus stem fragments. Good preservation. Occasional twigs including *Fraxinus*. Some wood charcoal. Occasional fragments charred bracken frond, heather shoots and burnt bone. Barley grain, wheat grain, emmer and barley chaff plus a moderate selection of weed seeds. Wet ground, weeds and plenty of grassland taxa. Only about a third of the 500µm fraction sorted. Process and fully analyse any remaining material.

5.8 **Context 10** Lots of *Calluna* wood and monocot base material, some twiggy charcoal, grass stems, bracken frond fragments. Very occasional fragments of bone. Hulled barley grain, some wheat one of which could be emmer from the high dorsal ridge; chaff includes barley and moderate amounts of emmer glume bases but spelt glume bases also clearly present. Large numbers of *Sieglingia* caryopses with a selection of other weed and grassland taxa. Several sedges including *Carex pilulifera* and several *Carex ovalis*-type nutlets, thus reasonable indications of wet communities. Sufficient plant remains to warrant processing the rest of the material.

5.9 **Context 11** Moderate flot of heather and monocot remains again, some twigs and occasional bracken frond fragment. Good selection of grain, chaff and weeds - 94 items in total. Process remaining material.

5.10 **Context 13** Small flot, modern roots, mineral, coal and some charcoal. Latter rather small. Might be possible to get ^{14}C dates from the charcoal but only if essential. No seeds. No more processing unless essential for dating.

Discussion

5.11 Plant remains are common and abundant in all except the lowermost fill of the enclosure ditch. Preservation was generally reasonable with little evidence for crazed and cracked charcoal, abrasions or modern breakage. The assemblage can thus be assumed to reflect reasonably accurately that at the time of burial. It is also thus likely that the material was buried fairly quickly.

5.12 Barley and wheat grains, including some almost certainly of emmer, were present as was chaff of barley, emmer and spelt wheat. Weed seeds were abundant and suggest predominantly grassland communities with some arable weeds typical of nutrient-enriched and well-manured soils. Whilst the grassland taxa could reflect weedy crop fields they may indicate disposal of burnt turf from fuel or building fires.

5.13 All of the barley was hulled although there were differences in overall shapes of the grains, with some being flatter and more slender than the typical plump, broad grains. The former did not appear immature in that they were not wrinkled or irregular.

5.14 Remains of heather, mostly wood but some shoots, could reflect aspects of fuel or, again, structures roofed in heather thatch.

5.15 Peat may have been a fuel, wood certainly was, and some contexts have sufficient material for further analysis in terms of what was being used and whether there is evidence for selection of species for this purpose.

Recommendations

5.16 All of the remaining material from contexts 07, 08, 09, 10 and 11 should be processed and analysed. They will produce sufficient data for statistical analysis and provide an excellent dataset, albeit from a rather limited number of contexts, for this period in south-east Scotland.

5.17 It is especially important that full sampling continues to be undertaken during further excavations in order to examine distribution of plant material across the site. Currently the data only refer to ditchfills and therefore could be argued to represent an amalgamation of several activities.

5.18 There is adequate material for AMS radiocarbon dating in all of these contexts

6. Discussion and conclusions

6.1 The evaluation was carried out to determine the suitability and potential of the site for larger scale excavation at a later date as part of the Traprain Law Environs Project as well as for cultural resource management purposes.

6.2 The site has been shown to contain deeply buried and well-preserved deposits associated with the enclosure. The plant macrofossil evidence has excellent potential for reconstructing environment, economy and for dating purposes. The site has a high research potential and would be suitable for larger scale excavation.

6.3 On a practical note, the light, well-drained nature of the subsoil would minimise any problems of mud or water-logging during any such excavation while the strong colour contrast between the subsoil and most fills would make the site particularly suitable for training inexperienced excavators.

7. References

Hale, DN, Haselgrove, CC, & Fitts, L (2001) Geophysical survey on enclosure cropmarks in the environs of Traprain Law, East Lothian. *Archaeological Reports 1999/2000* 23, University of Durham and University of Newcastle upon Tyne, Durham.

Hale, DN, Haselgrove, CC, & Fitts, L (in press) Geophysical survey on enclosure cropmarks in the environs of Traprain Law, East Lothian – Part II. *Archaeological Reports 2001/2002* 24, University of Durham and University of Newcastle upon Tyne, Durham.

Appendix 1: Context data

Summary list of contexts. The • symbols in the columns at the right indicate the presence of finds of the following types: P pottery, B bone, M metals, F flint, S slag, O other materials. No finds were recovered from the evaluation trench.

No	Description	P	B	M	F	S	O
01	Ploughsoil						
02	Fill of F03						
F03	Cut of possible animal disturbance						
04	Fill of F05						
F05	Cut of possible animal burrow						
06	Natural subsoil						
07	Dark brown silt loam, fill of F14						
08	mid brown silt loam, fill of F12						
09	Black silt banded with ash, fill of F12						
10	Banded black and brown silty sand, fill of F12						
11	Dark brown silty sand, fill of F12						
F12	Cut of ditch						
13	Light brown silty gravel, fill of F12						
F14	Shallow plough feature cutting west side of ditch						

Appendix 2: Plans and sections

No	Scale	Description
01	1:10	South-facing section of trench
02	1:20	Plan of 02/F03 and 04/F05

Appendix 3: Photographs

Colour slide: film 1

Frame no.	Context/plan/section	Looking N S E W
1-3	General area shot	E
4-6	General area shot	W
7-9	Ditch section S-facing	ENE
10-12	Ditch section N-facing	ESE
13-15	Ditch section N-facing	WSW
16-18	Ditch section S-facing	WNW
19-21	Ditch section N-facing	S
22-24	Ditch section N-facing	S
25-27	Ditch section N-facing (cont.)	S
28-30	Ditch section S-facing	N
31-33	Ditch section S-facing	N
34-36	Ditch section S-facing (cont.)	N

B/w: film 1

Frame no.	Context/plan/section	Looking N S E W
1-3	General area shot	E
4-6	General area shot	W
7-9	Ditch section S-facing	N
10-12	Ditch section S-facing	N
13-15	Ditch section S-facing	ENE
16-18	Ditch section N-facing	ESE
19-21	Ditch section N-facing	WSW
22-24	Ditch section S-facing	WNW
25-27	Ditch section N-facing	S
28-30	Ditch section N-facing	S
31-33	Ditch section S-facing (cont.)	N
34-36	Ditch section N-facing (cont.)	S

Appendix 4: Samples

Context	No. of bags	Volume (l)	Description
07	2		Dark brown silty loam
08	2		Light brown silty loam
09	2		Black/white bands of silty sand
10	2		Black/brown silty sand
11	2		Brown silty sand & gravel
13	2		Light brown silty sand & gravel

Appendix 5: Environmental data

Charred plant macrosfossil results

Context	**11**	**10**	**9**	**8**	**7**
Cereal grains					
Hulled Hordeum	11	13	22	6	2
Indet. cereal	3	7	5		9
Triticum sp		5	2	2	
cf Triticum dicoccon	2	1			
Cereal chaff					
spelt glume bases	4	4			
Triticum sp glume base		6	7		
emmer spikelet fork	2	1			
emmer glume base		21	9		1
Hordeum 6-row rachis node		5	20		
Hordeum rachis node	4	9		1	3
Hordeum basal rachis node		1	1		1
Triticum brittle rachis internode		2			
culm node			1		
Weed seeds					
Sieglingia decumbens	38	38	26	7	2
Carex (trigonous)	10	9	14	2	5
Carex pilulifera		2	5		
<2mm Gramineae	4	15	17		2
Carex (lenticular)		15	10		
Chenopodium album	3	2	7		
Polygonum lapathifolium/P persicaria	4	1	7		6
Rumex obtusifolius-type		2	1		1
Polygonum aviculare	1				
Polygonum convolvulus	1				
>4mm Gramineae	1				
Ranunculus repens-type		1			
Potentilla erecta-type		1			
Cirsium sp		1			
2-4mm Gramineae	1	4			
Montia fontana ssp chondrosperma		1			
Empetrum nigrum - fruit			1		
Polygonum unidff			1		
Veronica hederifolia			2		1
Plantago lanceolata					1

Appendix 6: Stratigraphic matrix