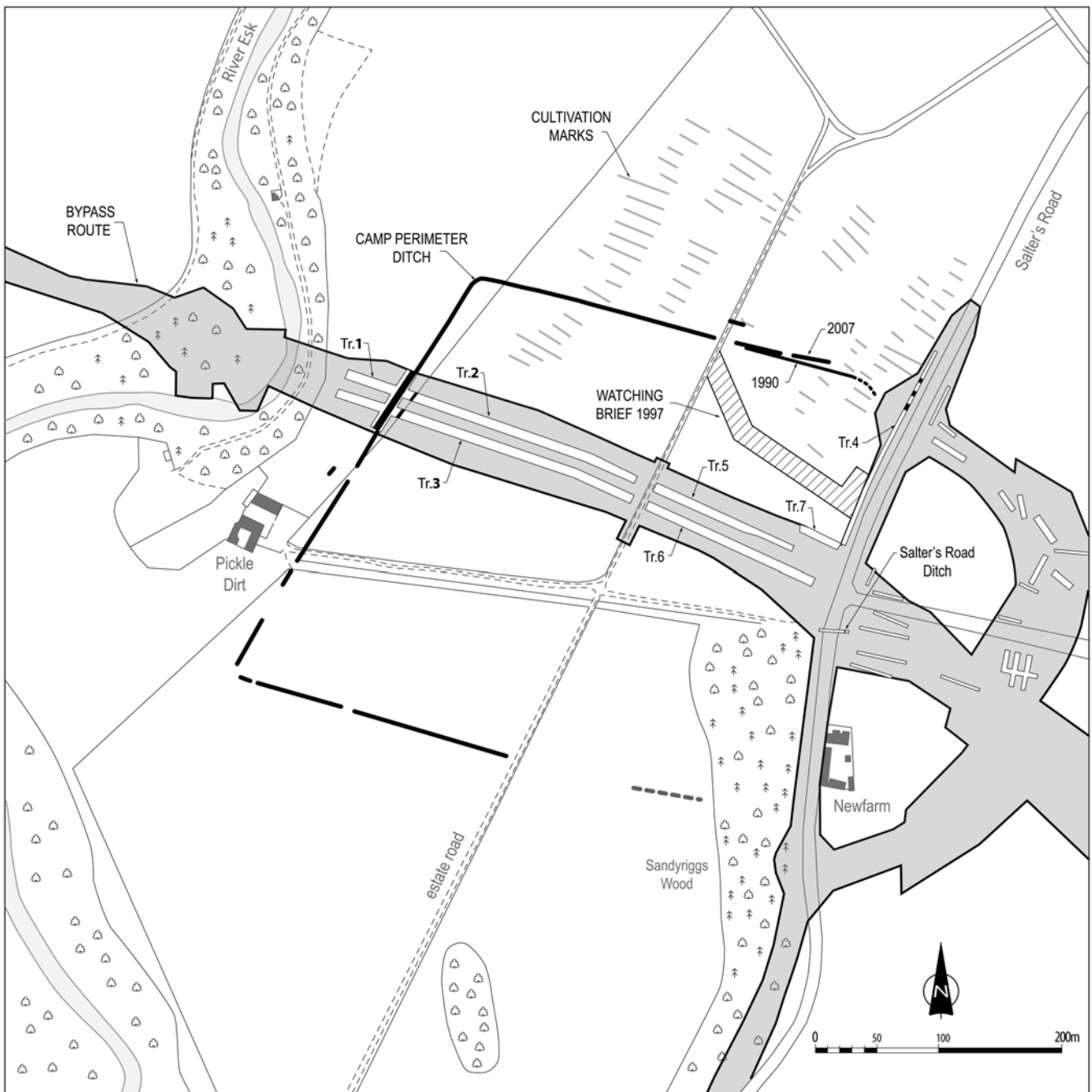


7 SMEATON ROMAN TEMPORARY CAMP, *by A Dunwell and I Suddaby*

7.1 Introduction

On arable land immediately to the east of the River Esk, and c 300m north-east of the confluence of the North and South Esk rivers, at approximately 35m above OD, the road corridor intersected the site of

Smeaton Roman temporary camp (NGR: NT 345 692 area). Prior to these investigations the camp had been recorded only as cropmarks visible on aerial photographs to the west of Salter's Road (NMRS Refs: NT36NW 33 & 54; *illus 7.1, 7.2*). In crossing the three fields between Salter's Road and the river,



Illus 7.1 Location map showing camp perimeter ditch and cultivation furrow cropmarks, and road corridor and excavation trench positions (based upon maps supplied by Historic Scotland and plotted cropmark information produced by RCAHMS)



Illus 7.2 Aerial photograph (Crown Copyright: RCAHMS; Ref: SC973256, 1979)

the corridor generally varied between 45m and 70m wide, and covered an area of *c* 2.5 hectares. Prior to road construction the ground within the corridor fell gently westwards from Salter's Road to an estate road, then was relatively level until descending into the wooded gorge of the River Esk a little to the west of the Roman temporary camp.

This account brings together several phases of investigation of the Roman camp, conducted both in advance of and during road construction. An excavation was conducted across the threatened portion of the camp within the road corridor west of Salter's Road between November 1994 and January 1995. A watching brief was conducted in May 1997 during topsoil-stripping operations within the camp along the line of a gas main re-route. The western perimeter ditch of the Roman temporary camp was re-examined in May 2006. Evaluation trenching and watching briefs were also conducted on various occasions between 1994 and 2008 across and to the east of Salter's Road; some of the more recent interventions were targeted specifically to locate the

eastern perimeter of the camp, which was not found west of Salter's Road in 1994–95.

7.2 Cropmark evidence, and the morphology and date of the camp as understood prior to the investigations

No upstanding remains of the camp survive and, prior to these investigations, details of its nature and extent were restricted to a partial outline plan of its perimeter ditch, recorded as cropmarks on aerial photography (eg [illus 7.2](#)). The camp was first detected in the early 1960s by St Joseph (1965, 80), when a *c* 290m length of its northern perimeter was located, including the probable position of an entrance protected by a *titulus*. Its north-west angle and a *c* 180m length of its west side, including an entrance with *titulus*, were subsequently identified (St Joseph 1973, 216). Uncommonly for one of the many camps discovered by St Joseph, the aerial evidence does not appear in this instance to have

been confirmed on the ground by test excavations. Further linear cropmarks identified subsequently to the south of Pickle Dirt were proposed as a continuation of the western perimeter ditch alignment and part of the southern side of the camp (RCAHMS 1988, 26, no. 109). The resistance to detection of the remainder of the perimeter ditch was assumed prior to the initial archaeological excavation to reflect the varying susceptibility of different ground and subsoil conditions to produce cropmarks. There are no traces on the aerial coverage that can be proposed realistically as relating to internal features of the camp. An extensive spread of cultivation furrows orientated north-west/south-east is visible on this aerial coverage (eg *illus 7.2*).

Rectified transcriptions of the cropmarks of the camp and cultivation marks were produced by RCAHMS in 1990 (Ref: MS 840/371) and 2007, and form the basis of the cropmark positions included on *illus 7.1*. The west side of the camp is c 380m long, with the entrance sited centrally. Approximately 230m of the south side has been identified, although no entrance position has been confirmed. Of the north side, a c 310m length of perimeter ditch has been confidently identified, with the entrance located c 205m from the north-west corner. The 1990 RCAHMS cropmark plot records the northern perimeter alignment as veering south-eastwards at its east end, as if approaching the north-east corner of the camp: this feature is included on the transcription published by Brown (2002, 8). However, the aerial photographic coverage held by RCAHMS is not clear in this regard (it is annotated as a dotted line on *illus 7.1*): indeed this potential alignment was omitted from the 2007 RCAHMS transcription of the Roman temporary camp. The north and south perimeter ditches run almost parallel to each other, although neither meets the west side at right angles, the north-west angle being obtuse (c 108 degrees), and the south-west acute (c 74 degrees). There are no evident topographic reasons to explain this particular morphology, or why a more regular card-shaped enclosure was not constructed.

It was not possible to be certain about the overall size and shape of the camp, based upon the cropmark evidence. If it were assumed that the overall form of the camp could be extrapolated regularly from the visible part, and that the northern entrance was located centrally within that side of the camp perimeter, then it would be possible to envisage the camp as a parallelogram with an area of c 15.5 hectares. However, the results of the investigations detailed below, combined with the lack of evidence for a centrally placed southern entrance, do not bear this out, and preclude accurate estimation of the camp's size and shape. The minimum area of the camp, based upon cropmark evidence, was c 12 hectares.

Prior to the investigations, there was no archaeological evidence with which to date Smeaton camp precisely. Moreover, its location within the local distribution of recorded Roman military instal-

lations did not assist in dating it. Smeaton camp lies roughly midway along the River Esk between two clusters of Roman military settlement (*illus 7.3*). Approximately 3km to the south-west are the Flavian fort at Elginhaugh (excavated in the mid-1980s; Hanson 2007) and nearby temporary camps at Eskbank and Lugton. Previous small-scale excavations of the two overlapping camps at Eskbank (Maxfield 1975; Barber 1985, 30–1) revealed no evidence of their date, although Maxfield (1975, 149) tentatively suggested that the morphology of the later camp indicated a Severan origin. To the north are the Antonine fort and settlement at Inveresk (see eg Bishop 2002) and at least two nearby temporary camps at Monktonhall. The largest camp was posited as being of Severan date on the basis of its morphology (Maxwell & Wilson 1987, 36–7), whereas more recently both Antonine (Hanson 2002, 53) and potentially Flavian (Cook 2004, 153) dates have been advanced on the basis of circumstantial evidence recovered during excavations. The former claim was based upon Antonine samian pottery found near the camp ditch and the latter upon radiocarbon dates obtained from what was interpreted as a field oven within the camp.

The isolation of Smeaton camp from other Roman sites suggested that it was more likely to have been a marching camp than a construction camp accommodating troops building a fort (cf Maxwell 1980, 26).

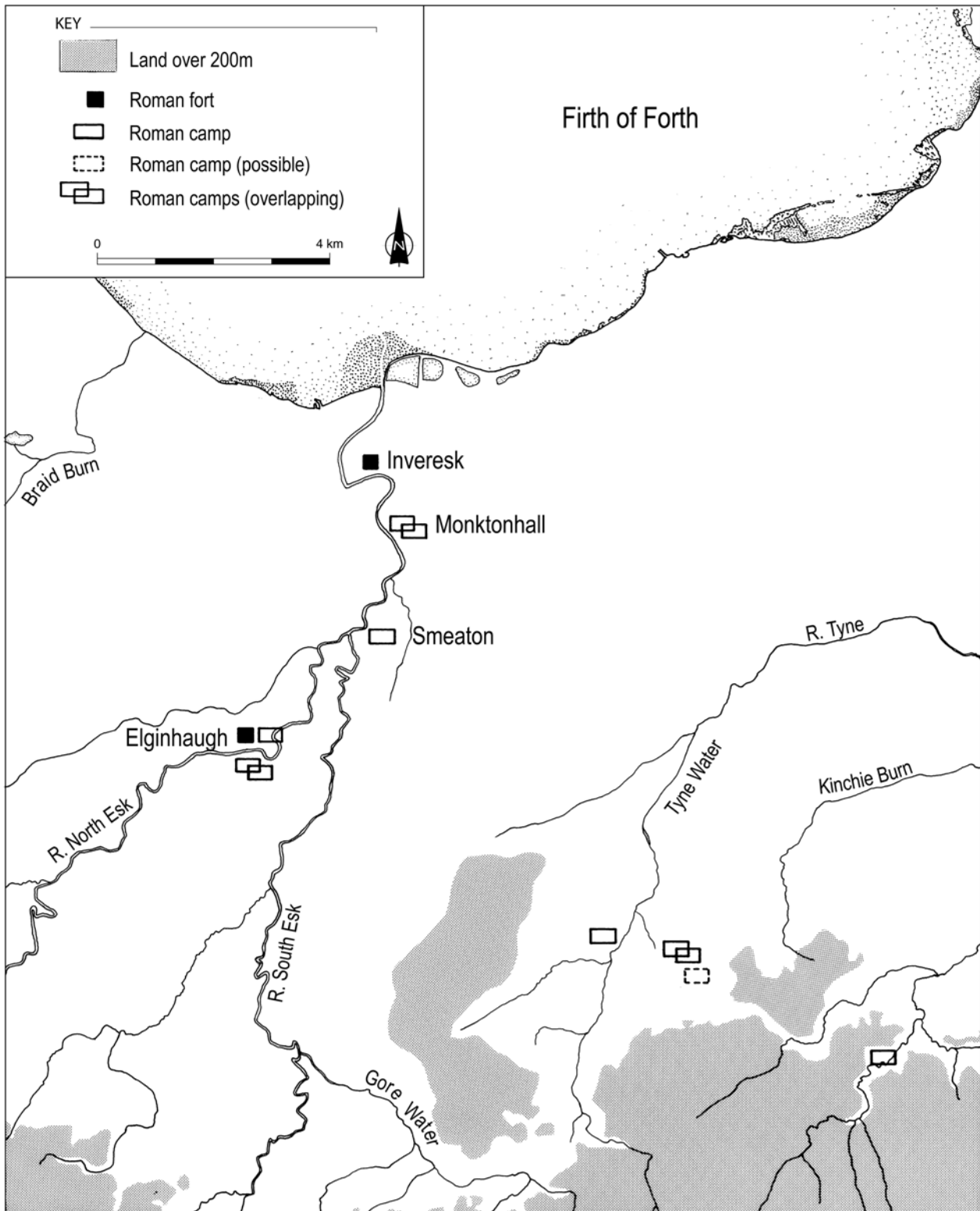
7.3 Investigation strategy and methods

7.3.1 Project design

The road corridor made available for study a substantial transect through the camp (*illus 7.1*). In recognition of this, the Project Design for the initial excavation (1994–95) proposed the investigation of the whole length of the western perimeter ditch present within the road corridor and a substantial sample of the road corridor between the River Esk and Salter's Road, within which area it was anticipated the eastern perimeter ditch might also have been located. This large-scale intervention was felt to be justified in order to address three specific objectives:

- 1) to examine closely the structural characteristics of a length of perimeter ditch;
- 2) to identify the eastern perimeter ditch, and thus the east/west dimension, of the camp;
- 3) to identify the nature, date and patterning of any features revealed within the camp.

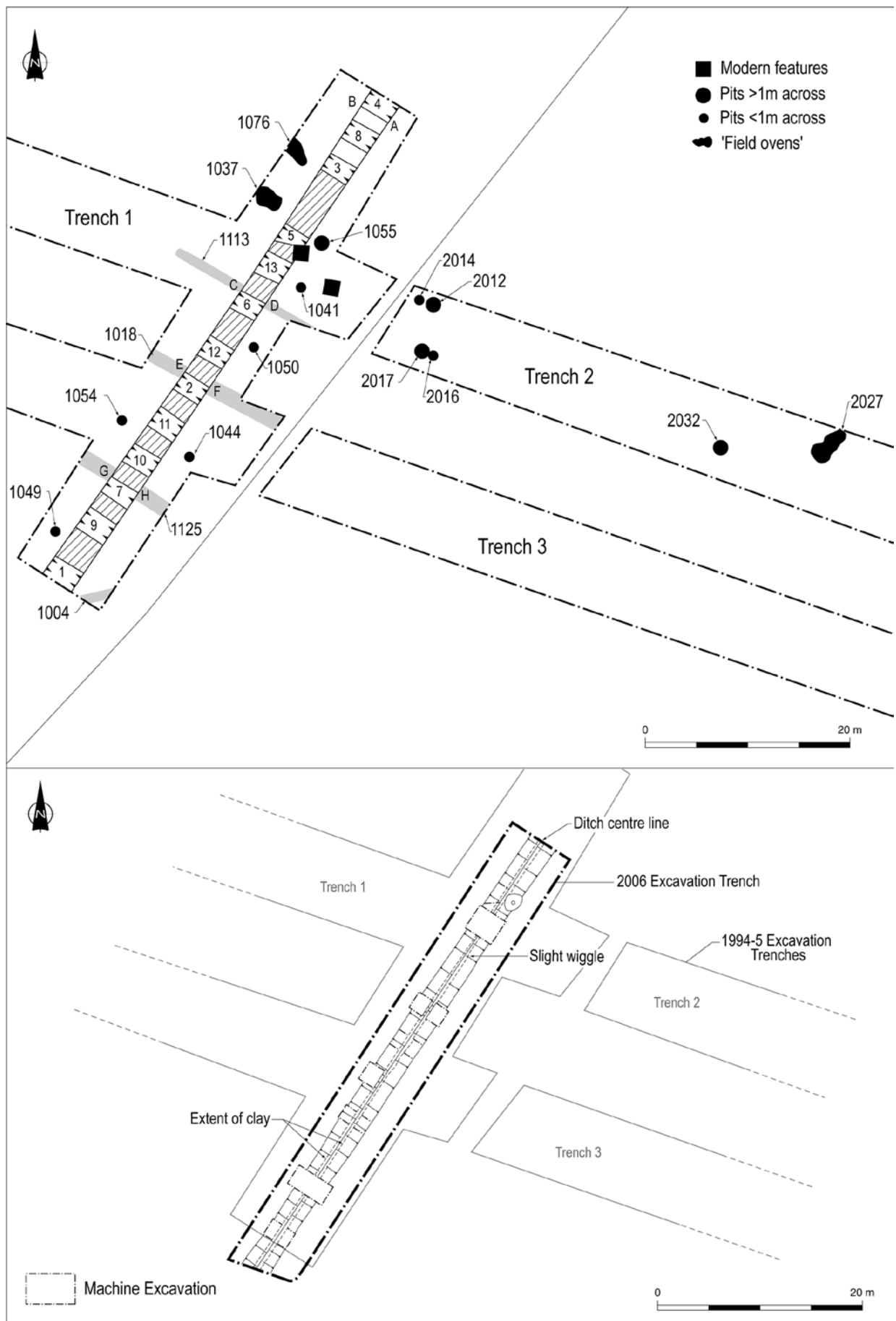
The Project Design placed particular emphasis upon detecting the nature and patterning of activity within the camp. It is generally assumed that the interiors of temporary camps were laid out in a regular or semi-regular pattern, similar to the internal organisation of permanent forts, with



Illus 7.3 Location map showing Smeaton camp and other forts and camps in the Esk Valley and surrounding areas

occupation in tents and the building of structures restricted to ovens and latrines (Welfare & Swan 1995, 21–2). This belief is based principally upon the evidence of Roman literary sources, such as Hyginus Gromaticus (eg Maxwell 1989, 41–43), rather than the results of archaeological field research.

Other camps have provided scant evidence for ordered internal layout, although until relatively recently, as Welfare & Swan (1995, 21) noted, excavations tended to avoid examination of interiors due to the belief that little would be found. Prior to the 1990s the great majority of investigations of Roman camps



Illus 7.4 Upper, summary excavation plan 1994–95, showing camp western perimeter ditch, pits and 'field ovens'; lower, full excavation plan of western perimeter ditch 2006

involved limited exploratory work, mostly confined to the perimeter defences and supplementing aerial survey, designed to trace the extent and form of the camp, to examine entrance morphologies, to recover datable artefacts, and to test stratigraphic relationships between overlapping camps (eg Keppie's work at Dullatur camps, [Keppie 1978](#)). These investigations were conducted within a research framework designed to classify camps into chronological groups, in order to study the history of Roman military campaigns within northern Britain (eg [Hanson 1978](#); [Maxwell 1980](#)). Such pursuits did not require a consideration of the physical characteristics of camp interiors. Increasingly in the last two decades, excavations and watching briefs have been conducted in response to specific development proposals, although only in a few cases (eg Monktonhall, [Hanson 2002](#); Kintore, [Cook & Dunbar 2008](#); and [Spiller & Leslie 1994](#)) have larger-scale investigations, of a scale comparable to (or in the case of Kintore exceeding) the work at Smeaton, been undertaken.

There is some cropmark evidence for the layout of camp interiors. Parallel lines of pits identified from the air as being present within a small number of camps (eg Inchtuthil, [Maxwell 1982](#); [Pitts & St Joseph 1985](#), 223–44; Lochlands, [Maxwell & Wilson 1987](#), 39) have been interpreted as the results of rubbish disposal, and hint at patterned activity. Archaeological excavations have to date encountered little success in identifying coherent patterns of occupation: scatters of pits (eg Annan Hill, [Keppie 1988](#)) and stake-holes (eg Rey Cross, [Welfare & Swan 1995](#), 57–60) have been detected, and more complex features interpreted as hearths and ovens are recorded at several sites (reviewed by [Cook & Dunbar 2008](#), 17). The notable exception is the camp at Kintore, where several separate investigations in recent decades ([Shepherd 1986](#); [Alexander 2000](#); [Cook & Dunbar 2008](#)), and mostly since the initial excavation at Smeaton took place, have amassed considerable evidence of internal features, mostly field ovens but also rubbish pits.

7.3.2 Investigation strategy

Seven trenches, with a combined area of approximately 7,500m² ([illus 7.1](#)), were stripped of topsoil using earth-moving machinery. Five of these (Trenches 2–3, 5–7), generally 8m wide, provided two transects 8m apart across the interior of the camp. Trenches 5 and 7 were staggered in order to avoid the route of a gas pipeline. Trench 1 was opened to expose the western perimeter ditch and ground immediately to either side of it, and to continue the two excavation transects across the camp through to its exterior. Finally, as topsoil stripping and initial cleaning in Trenches 5–7 did not reveal the alignment of the eastern perimeter ditch, Trench 4 was opened in a further attempt to define the extent of the camp, ie by determining whether or not the northern perimeter ditch extended that far east.

Due to the narrowness of the road corridor and the proximity of the Dalkeith Park estate wall, Trench 4 was only 2m wide.

The full c 57.5m length of the threatened section of the western perimeter ditch was exposed in 1994 ([illus 7.4 upper](#), [7.5](#)), in order to detect any variations in its character and to confirm that an entrance did not lie within the road corridor. Intensive sample excavation of c 50% of this length of ditch was undertaken, to record the character of the ditch and its fills, and to recover artefactual material by which the camp might have been dated. Thirteen sections were excavated across the ditch, eight by hand and five aided by earth-moving machinery ([illus 7.4 upper](#)). Ditch sections 3, 4 and 8 were subsequently run together to form a single excavated length of c 9m.

An opportunity to excavate the remainder of the ditch fills in the same area arose in 2006 ([illus 7.4 lower](#)). The rationale for further investigation had been provided by the successful results of the strategy adopted for the investigation of substantial lengths of the perimeter ditches of the Roman camps on the Antonine Wall at Dullatur, North Lanarkshire ([Lowe & Moloney 2000](#)). At that site the primary fills of the ditches were fully excavated following the removal of the upper fills by machine, with the specific intention of recovering stratified datable artefacts.

Much of the re-investigation at Smeaton was conducted by machine, involving the re-exposure of the ditch, the removal of the backfill from the 1994–95 trenches opened across the ditch, and the removal from unexcavated areas of the ditch those upper fills identified in 1994–95 as ploughsoil-derived (see [7.4.2](#) below). The remaining lower ditch fills were then excavated by hand, with a c 50% sample dry-sieved using a 10mm mesh sieve. All material within the ditch was scanned by metal detector by members of the Scottish Detector Club both prior to, and following, its excavation.

As neither the 1994–95 investigation nor the 1997 watching brief to the west of Salter's Road, nor the 1994 evaluation trenches excavated to the east of Salter's Road (before the excavation took place), had located the eastern perimeter ditch of the camp, the opportunity was taken in 2006–08 to further investigate where its alignment might lie. Additional evaluation trenches opened in 2005–06 to the east of Salter's Road, were placed to detect, *inter alia*, the ditch alignment, albeit that the distribution and orientation of those trenches were significantly constrained by the presence of services. As this additional trenching again proved unsuccessful in locating the east side of the camp, in early 2008 a trench was excavated under archaeological supervision across the carriageway and verge of Salter's Road by the road construction contractor, once that section of the road had been closed to traffic during road construction works (the trenches are depicted on [illus 7.1](#)).

The opening and cleaning of trenches forming two transects across the interior of the camp was carried out to seek evidence for patterning of occu-



Illus 7.5 Ditch as initially cleaned, showing its intersections with linear features

pation activity. As part of the 2006 re-investigation of the camp ditch, the Scottish Detector Club metal-detected the whole of the road corridor between Salter's Road and the River Esk.

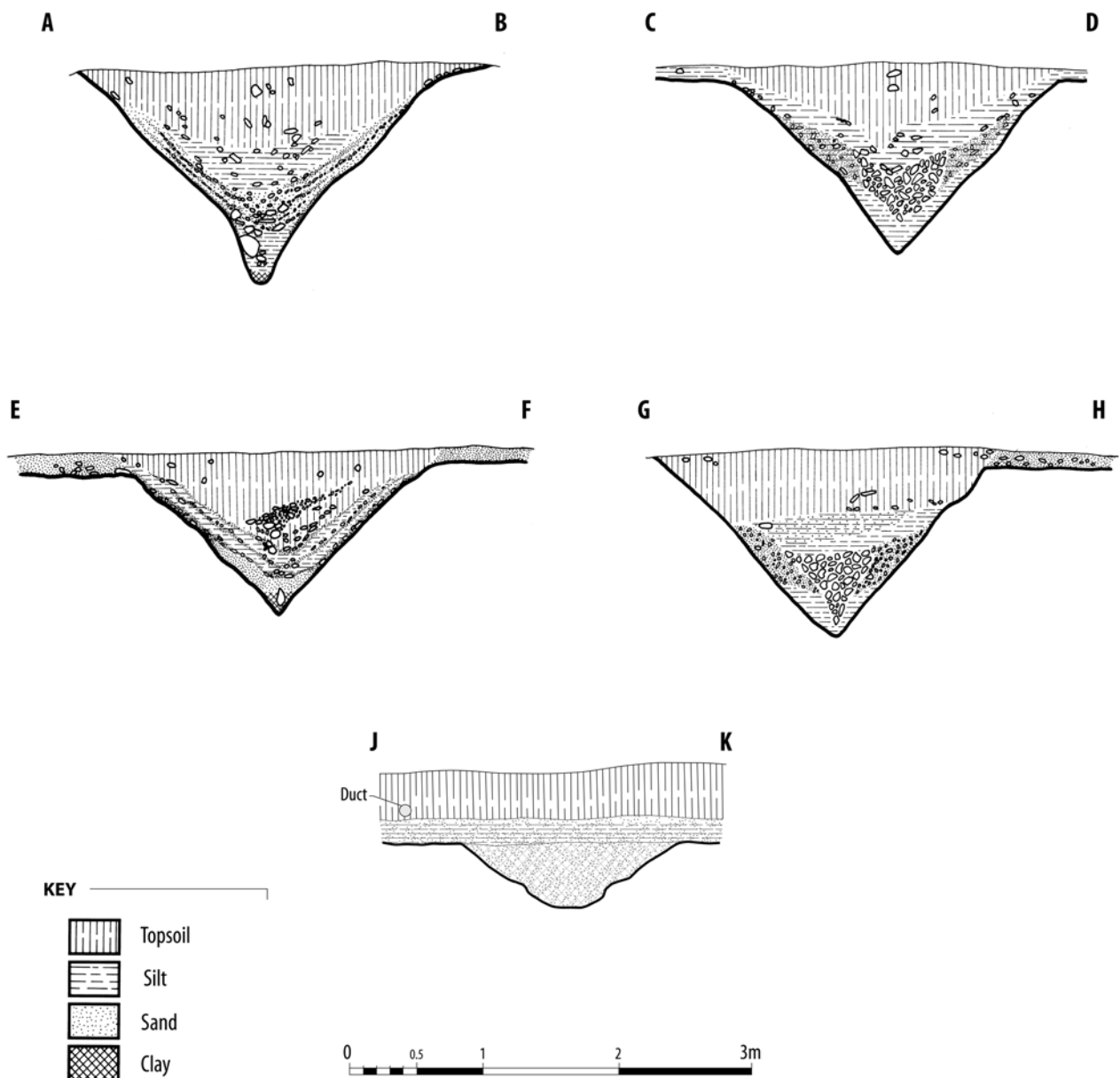
7.4 Archaeological results

7.4.1 Introduction

The investigations revealed evidence of prehistoric, Roman, Early Historic, post-medieval and modern activity. Features of demonstrably pre-medieval date were concentrated in areas of sand and gravel subsoil in Trench 1 and the western halves of

Trenches 2 and 3 ([illus 7.4 upper](#)). To the east of this, where heavy clay subsoil was present, almost all identified features were apparently of post-medieval or modern origin. The combined effects of the cutting of dense networks of land drains and cultivation furrows within this clay subsoil zone were that only a limited proportion of the exposed subsoil surface was undisturbed, thus substantially reducing the opportunity for the survival of earlier features.

The 1994–95 excavations identified the western perimeter ditch of the camp and a scatter of pits and linear features to either side of it. Of these pits, two large examples containing burnt seeds and charcoal were provisionally identified as 'field



Illus 7.6 Camp perimeter ditch, sections A–B, C–D, E–F, G–H. Surface width and maximum depth: A–B, $3.10 \times 1.62\text{m}$; C–D, $2.61 \times 1.31\text{m}$; E–F, $2.49 \times 1.22\text{m}$; G–H, $2.60 \times 1.39\text{m}$. Also shown J–K is a section of the ditch identified beneath the verge of Salter’s Road.

ovens’ (*illus 7.4 upper*, 2027, 1037), and a third pit of similar form, but not containing plant macro-fossil remains, was recorded as a further possible example (*illus 7.4 upper*, 1076). Other remains included cultivation furrows and land drains. The eastern limit of the camp was not located during any phase of work.

7.4.2 Western perimeter camp ditch (*illus 7.4–7.7*)

The exposed surface width of the ditch varied from c 2.5m to c 3.35m, generally widening to the north (see

illus 7.6, and captions). No evidence was identified for any structural complexity, such as entrances or other breaks and deliberate constrictions (*illus 7.4 lower*). The ditch was preserved to between c 1.1m and 1.7m deep, this dimension also generally increasing to the north (*illus 7.6*, and captions). The inconsistencies in dimensions are likely primarily to reflect differential truncation to the ditch, both by ploughing and during topsoil removal for the excavation. The subsoils cut by the ditch are sand and gravel overlying clay. No trace of a camp rampart survived, although one can be expected to have been constructed immediately east of (inside) the ditch alignment.



Illus 7.7 Excavated length of camp perimeter ditch in 2007, looking north

The ditch for the most part had a regular V-shaped profile characteristic of Roman military constructions (illus 7.6 and 7.7), with occasional localised irregularities in the smoothness of the edges representing the results of erosion. A roughly squared slot *c* 0.3m deep, of a type commonly referred to as a cleaning channel or ‘ankle-breaker’, ran along the base of the ditch (eg illus 7.6 A–B), and was the only part of the ditch to have been cut through the natural clay; this was perhaps intentional, but there is no way of being certain. The excavators observed that their movement along the clay base of the ditch rapidly distorted the sharp profile of the basal slot as first exposed, producing a flatter, trampled base. This suggests that there was little Roman or later movement along the base of the ditch, as might have been expected had the ditch been cleared out periodically. A localised wiggle in the alignment of the basal slot was identified *c* 13m from the northern end of the trench, but it did not signify a change in the overall alignment of the ditch.

The sequence of ditch fills was broadly consistent along the excavated length of the ditch, although it varied laterally in detail. The lower fills comprised

inwashed deposits of silts, sands and gravels lining the edges of the ditch and in some cases sealing a primary clay deposit, with larger stones collecting in the centre of the ditch (see illus 7.6 for details). In some sections (eg illus 7.6 A–B) sequences of individual inwash deposits could be discerned, and demonstrate a process of incremental infilling of the ditch (although at an unknown rate) rather than deliberate backfilling. By contrast, the upper fills in each section comprised ploughsoil-derived sandy and silty loams. The orientation of the fills suggests that material was entering the ditch from both sides and in approximately equal amounts, and not simply from the degradation of the adjacent rampart.

Finds recovered from the Roman ditch consist of a sherd of samian ware pottery and the lug of an undated earthenware vessel; fragments of a perforated stone weight and a carved stone; six chert items of early prehistoric origin; parts of a shale or cannel coal bangle; a decorated cast bronze object; and the shaft of an iron nail. The stone weight, nail shaft, two chert flakes and a chert blade derived from secondary inwashed fills of the ditch, and all the rest

from the ploughsoil-derived upper fill. Nothing was found in the basal fills, within the ‘ankle-breaker’.

7.4.3 Eastern perimeter ditch

No convincing evidence was identified for the alignment of the eastern side of the camp within the areas of investigation (*illus 7.1*). The only feature that conceivably could be related is a ditch identified running on a north–south alignment beneath the wide grassy verge on the east side of Salter’s Road, and parallel to the road to the west and a fence-line to the east. Where a full section of the ditch was exposed, it was *c* 1.5m wide and 0.5m deep, with a U-profile, and was filled by clay silt containing a lens of fine sand towards the base (*illus 7.6*, J–K; annotated ‘Salter’s Road ditch’ on *illus 7.1*). Its scale, profile and alignment do not suggest it was related to the Roman construction, and a more recent origin as a relict post-medieval field boundary ditch is considered a more likely explanation for this feature. Six fragments of a large mammal scapula (cow or horse) were recovered from the upper part of the ditch fill – similar material was recovered in comparable contexts in a medieval or later ditch excavated nearby at Newfarm (*Section 8.3.2*).

7.4.4 ‘Field ovens’

Two elongated pits with a notable bulge at one end and with similar filling deposits were identified (*illus 7.4 upper*, 2027, 1037; *illus 7.8*). One lay 1m outside the western camp ditch, and measured *c* 2.85m long, up to 1.45m wide and 0.33m deep (*illus 7.8*, 1037). The second, with a more pronounced bulge, lay 52.5m within the western camp ditch, and was *c* 2.7m long, up to 1.5m wide and 0.55m deep (*illus 7.8*, 2027). Both pits contained charcoal-rich deposits on their bases, within which charred cereal grains were present; the edges of the pits showed some evidence of baking or scorching, suggesting that the charred material was burnt in situ. Magnetic susceptibility tests conducted within the pits tended to support this latter contention (*Clarke 1995*). A patch of clay on the northern side of feature 2027 may indicate the former presence of a clay lining to that feature. The burnt deposits in both pits were sealed beneath deposits of sandy silt soil. A chip of flint was recovered from the upper fill of feature 1037.

The initial field interpretation of these bipartite pits, based upon their physical characteristics, was as Roman ‘field ovens’ associated with the occupation of the camp. Such features (sometimes referred to as ‘dumb-bell-shaped’, eg *Gibson & Taverner 1990*; *Hanson 2002*, 55) have been recorded at a range of sites in southern Scotland, including Roman temporary camps and native settlements (*Section 7.3.1*; and see *Raisen & Rees 1995*, 44, for a brief review of non-Roman occurrences). In order

to evaluate the date and function of the Smeaton examples, samples were taken from the burnt primary fills of features 1037 and 2027 for radiocarbon dating and palaeobotanical analysis (see *Sections 7.6* and *7.7*).

A third feature of similar form, *c* 2.1m long and up to 1.25m wide and 0.5m deep (*illus 7.4 upper*, 1076), was located *c* 3m north-east of ‘field oven’ 1037 and immediately outside the Roman ditch. Whilst that feature may have had the same function as its neighbour, it contained no evidence of burning within it.

7.4.5 Other pits and linear feature

Several other pits were identified during the excavation, located principally in the areas of sandy subsoil in Trenches 1 and 2, and clustering around the western perimeter ditch (*illus 7.4 upper*). Four pits appeared to form a rough alignment running *c* 1m inside the Roman ditch (*illus 7.4 upper*, 1044, 1050, 1041, 1055), and coinciding with the presumed former position of the rampart of the Roman camp.

The pits were typically oval or sub-circular in plan, measuring generally between 0.5m and 1.5m across and less than 0.5m deep (*illus 7.9* and *7.10*). They were typically filled by root-penetrated sand and silt soils. Conjoining pits 2016/2017 had been truncated by a cultivation furrow (see *Section 7.4.6*), and contained over a dozen sherds from a single coarse, handmade pottery vessel of probable Neolithic character (see *Section 7.5.3*).

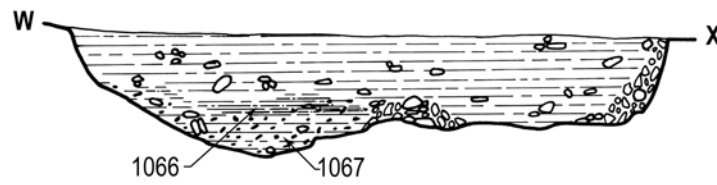
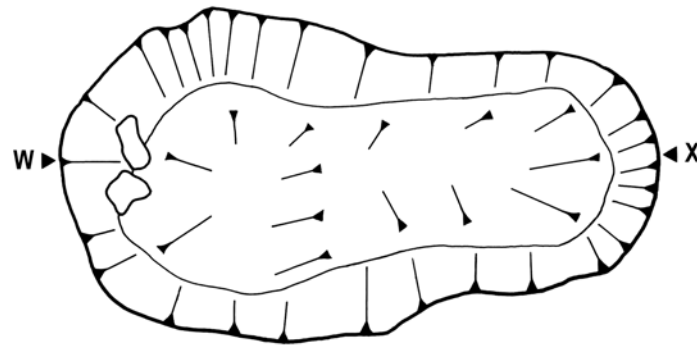
A length of a narrow linear feature running north-east to south-west, *c* 0.6m wide and 0.15m deep and with a brown sandy fill, was revealed in the extreme south-east corner of Trench 1 (*illus 7.4 upper* and *7.11*; 1004). Its alignment was notably different from that of the cultivation furrows (see below) but, owing to its partial exposure and the absence of datable artefacts or observed stratigraphic relationships to other features, its date and function remain undetermined.

7.4.6 Cultivation furrows and land drains

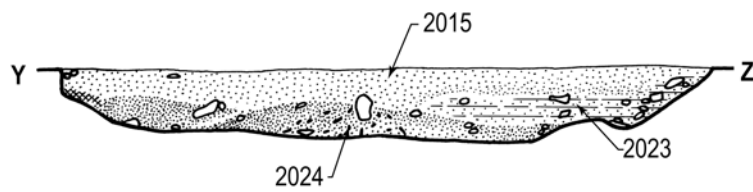
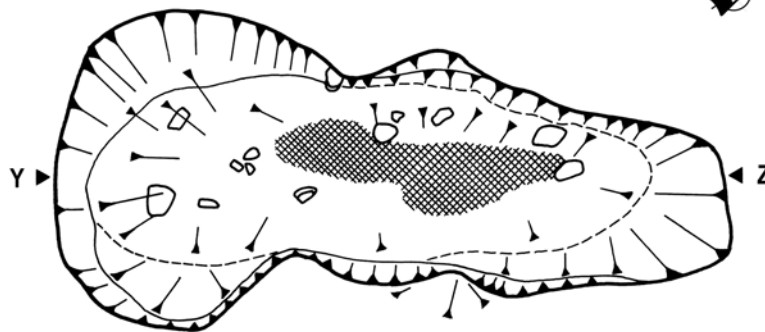
The trenches west of Salter’s Road contained the remains of a regular system of broad cultivation furrows orientated approximately WNW/ESE. They were typically 3m wide and 0.2m deep, with sandy fills, and those identified were spaced at least 7m apart. The furrows were present in both the areas of clay and gravel subsoil, and represent an extension of those traces previously recorded as cropmarks on aerial photographs (*illus 7.1*).

Three near-parallel shallow linear features intersected the alignment of the camp perimeter ditch in Trench 1 (*illus 7.4 upper*, 1018, 1113, 1125). These features were up to *c* 0.2m deep and between *c* 0.5m and *c* 2m wide (eg *illus 7.11*, 1018), and were filled by sandy soil. They terminated at each side

1037



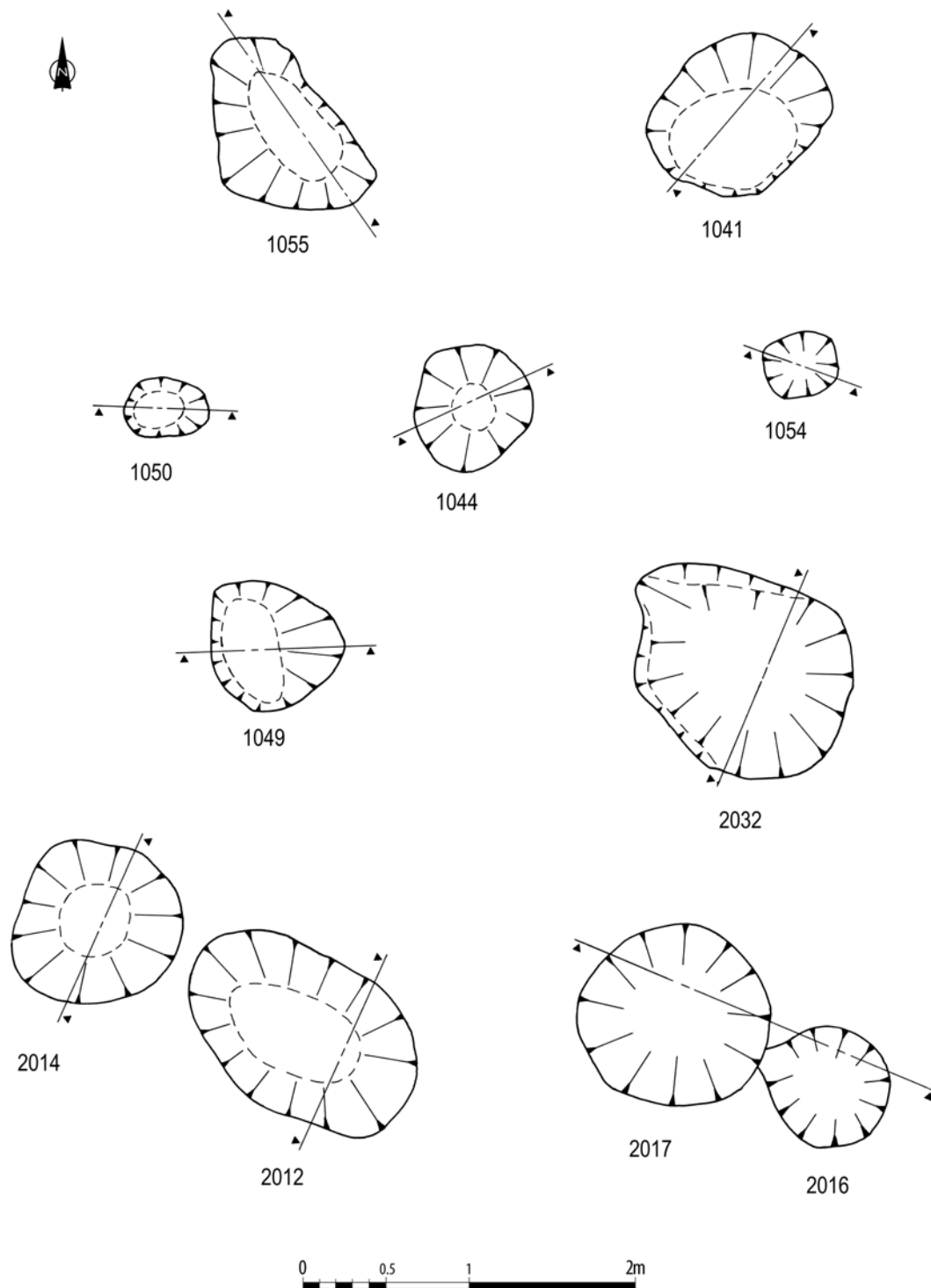
2027



KEY

	Sand		Charcoal
	Clay		Silt

Illus 7.8 Plans and sections of 'field ovens'

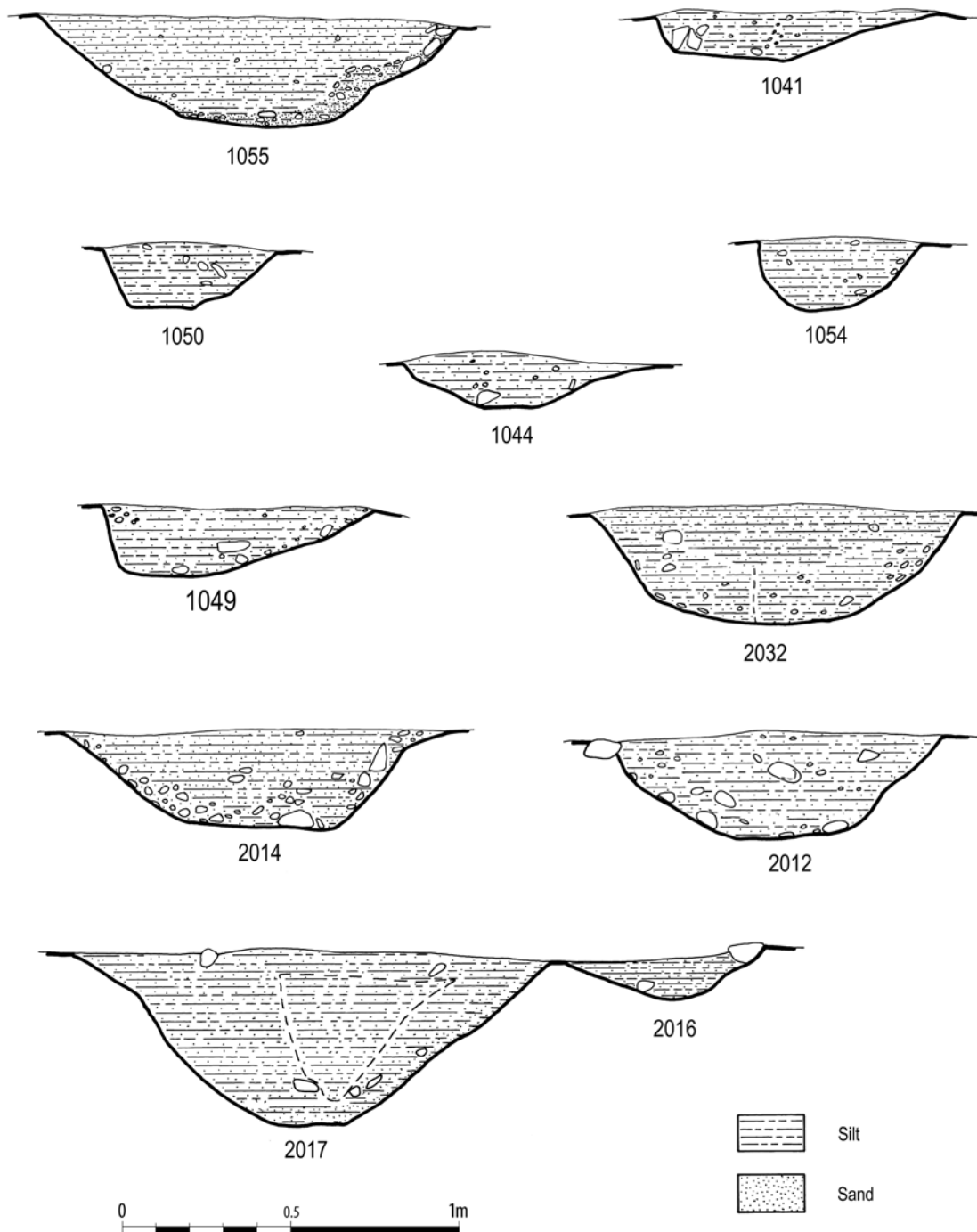


Illus 7.9 Excavated plans of selected pits

of the western camp ditch (eg [illus 7.6](#), E–F, G–H). A medieval or later origin for the rig-and-furrow cultivation system (cf [Halliday 2003](#)), incorporating within it the still partly open Roman ditch, appears the most plausible explanation for this arrangement. The possibility that the cutting of the Roman ditch truncated features of this character appears inherently unlikely: the furrows are not character-

istic of prehistoric cord rig ([ibid](#), 70). No artefacts were recovered from these features.

Three more substantial cultivation furrows, spaced at c 7m intervals and apparently surviving to 0.5m deep or more, were identified in Trench 4, adjacent to Salter’s Road. These features were cut into heavy clay subsoil, and permanent waterlogging prevented their full excavation. Fragments of clay pipe stem were recovered from the fill of the southernmost



Illus 7.10 Sections of selected pits

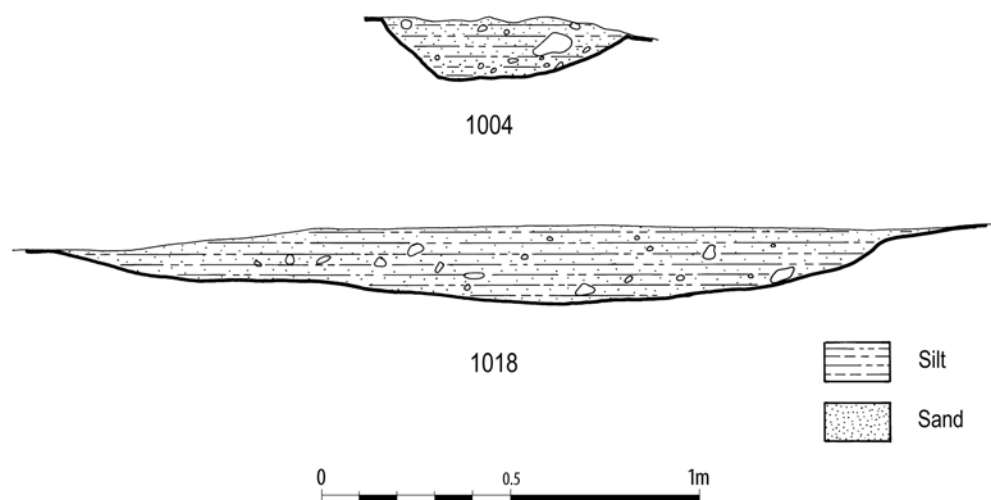
furrow. The alignments of the furrows corresponded with cultivation furrows recorded as cropmarks to the west (*illus 7.1*). None of these features could be interpreted as the northern perimeter of the Roman camp ditch which, if it had extended across Trench 4, would have been expected to run on a different alignment.

The poor drainage qualities of the clay subsoil were demonstrated by the density of tile and rubble land

drains present. These land drains did not extend into the areas of well-drained gravel subsoil.

7.4.7 Modern features

Two deep pits with near-vertical sides were located in Trench 1, one truncating the Roman ditch (*illus 7.4 upper*). Their fills contained pieces of concrete,



Illus 7.11 Sections of linear features 1004 and 1018

one lump shrouding a metal post, indicating a modern origin. They may be the sockets for the legs of a former electricity tower.

An isolated pit, containing a substantial part of the torso and limbs of a sheep, was located c 20m east of 'field oven' 2027 in Trench 2. The burial appears to have been damaged by ploughing. The good quality of bone preservation, combined with the absence of such material elsewhere on the site, suggests that the sheep burial was of relatively recent origin. A report on the animal bone, by Dr Nicola Murray, is included within the project archive.

7.5 Finds reports

7.5.1 Introduction

The few artefacts recovered during the investigations are residues of activity in the vicinity stretching from early prehistory into the 19th century. A sherd of samian ware pottery is the only item definitely of Roman date. Other finds include late Mesolithic or early Neolithic chipped stone; early Neolithic pottery; a fragment of sculpted stone and part of a cast bronze object, both of Roman or later date; and a collection of post-medieval pottery, clay pipe and metal items, mostly unstratified or metal detecting finds.

7.5.2 Samian ware sherd, by F C Wild (illus 7.12)

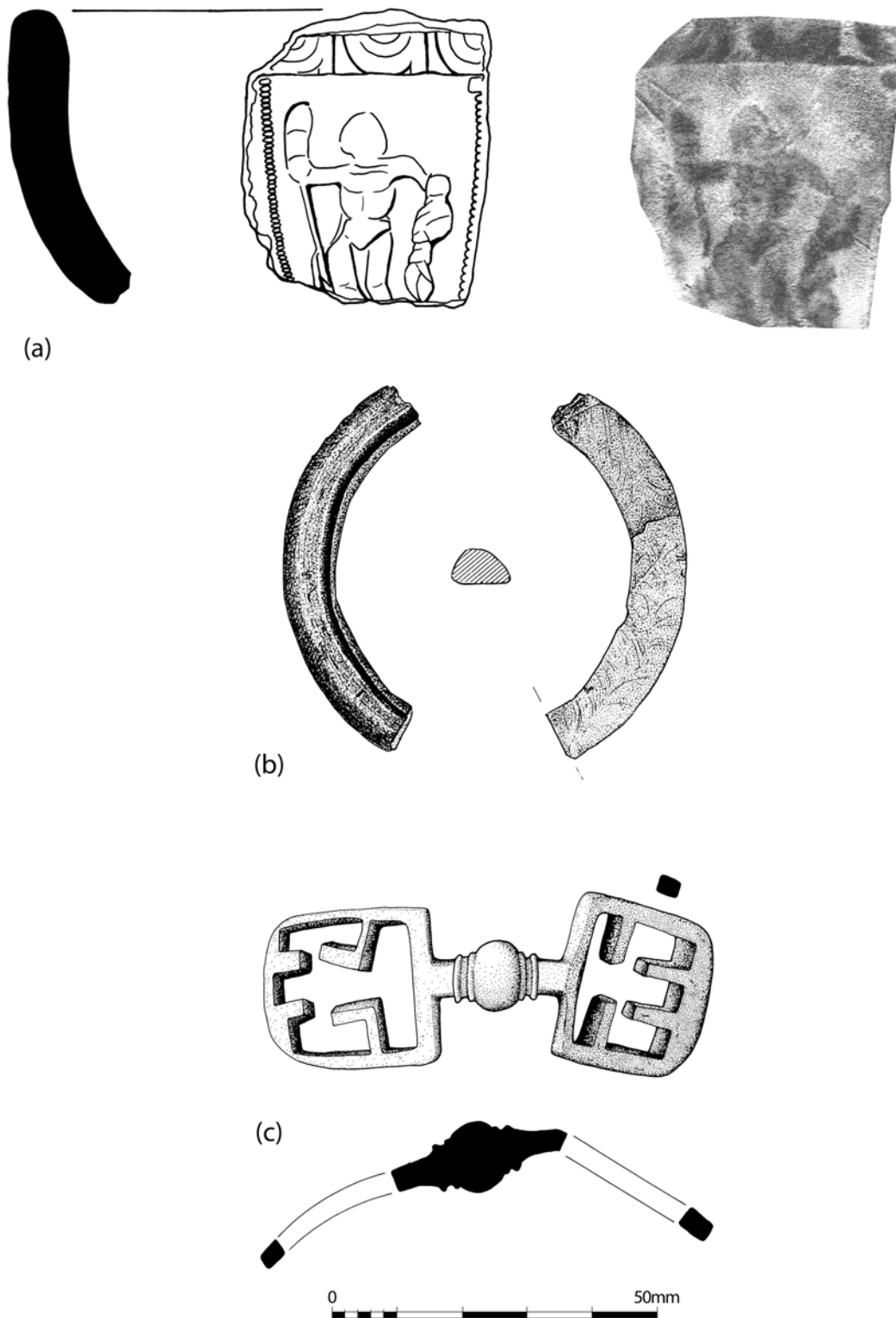
A sherd from a fairly thick bowl, possibly trimmed after breakage, was recovered from context 201, the uppermost fill of the western perimeter ditch. It is from a Form 37, Central Gaulish vessel dating to c AD 150–170. The ovolo (Rogers 1974, B223) was used, as here, with a straight guide-line beneath it and vertical bead rows without a junction-masking

motif, on bowls in the style of Secundus v* (Stanfield & Simpson 1958, pl. 154, 14, 16). This Lezoux potter was clearly a contemporary of Cinnamus ii, as he shared two of Cinnamus' ovolos, this one and, more commonly, Rogers B143 (1974), though, in both cases, normally with a solid guide-line beneath it rather than a bead row. His work was attributed to Pugnus by Stanfield and Simpson (1958, pl. 154–55), though Hartley subsequently redefined this rather distinctive style (1961, 102–3) noting the occurrence of a mould-stamp SECVND[]F on a bowl from Great Chesterford (Rogers 1999, pl 108, 2). The figure in the panel, Mars (Oswald 1936–37, O.143), although used at Lezoux by the Hadrianic–early Antonine potter Drusus ii, is not attested for Pugnus or Secundus, either by Stanfield and Simpson or by Rogers (1999, 232). Oswald (1936–37, 25) notes its occurrence on Form 37 in 'Secundus style' in the Oswald–Plicque collection, but this cannot be checked, and Secundus was a very common name. The type does not occur on either of the two bowls in Secundus v style from that collection illustrated by Rogers (1999, pl. 108, 1, 4). Work in Secundus and Pugnus/Secundus style is well known on Antonine sites in Scotland (Hartley 1961, fig. 5, 4 for a bowl from Mumrills; Hartley 1972, 33 for overall percentages).

* Note: Lower-case Roman numerals after potters' names denote homonyms, as used in Brian Hartley and Brenda Dickinson's forthcoming *Leeds Index of Potters Stamps on Samian Ware*.

7.5.3 Prehistoric pottery, by D Alexander

A total of 66g of ceramic material was recovered from the excavations. All ten sherds and four fragments came from the fills of two conjoining pits (2016 and 2017), and are probably from the same vessel. This assemblage, which includes two pairs of joining wall sherds, includes some sherds exhibiting fresh breaks,



Illus 7.12 Samian sherd, shale or cannel coal bangle, and key

and in general all are roughly abraded. The small size of the assemblage and the lack of diagnostic sherds such as rims or bases has prevented a fuller interpretation. A number of sherds are of varying thickness (sometimes apparent on single sherds) and suggest that the wall of the vessel may have

had a thinned or tapered side. The surfaces of the sherds have smooth finishes but are not burnished, and have no residues adhering. It appears that the interior and exterior of the sherds were formed from two separate pieces of clay, as there is a vertical join down the core of some of them.

The only sherd which provides a clue to the form of the vessel is one with a slight angle on the exterior, perhaps suggesting a shoulder or carination. The orientation and curvature of a number of the sherds suggest a small vessel with slightly flaring sides and rim. The wall thickness varies between 5mm and 10mm. None of the sherds is decorated.

On the basis of the above characteristics the sherds are most consistent with the interpretation that they came from a small, carinated, and flared/open, Early/Middle Neolithic bowl or cup. However, due to our lack of knowledge of the early prehistoric pottery types current within the surrounding area, coupled with the nature of the assemblage, this interpretation should be treated with caution. Little early Neolithic pottery has been published from sites in Midlothian and East Lothian; the assemblage of finds from Hedderwick Sands, East Lothian, being mainly dominated by later Neolithic decorated Impressed Wares (Callander 1929, 67–72), although there are some exceptions (*ibid*, fig. 47, 26, 27). A small bag-shaped pot, probably of early Neolithic date, was found at Roslin in Midlothian (McInnes 1969, 20, no 3). Two sherds with simple rolled rims from early Neolithic bowls were recovered from the excavations at the Catstane, Midlothian (Cowie 1978, 197–8). If indeed the sherds from Smeaton are of early Neolithic date then they are a welcome addition to a small but growing assemblage of similar finds from the area; perhaps a review of sherds from other excavations and unpublished material, as produced recently for eastern and central Scotland (Cowie 1993), is required.

7.5.4 Lithics, by B Finlayson (1995) and T Ballin (2006)

Four undiagnostic chipped stone items were recovered during the 1994–95 excavation – a flake of a grey chalcedony; an inner irregular flake of red-brown flint; a primary flake of grey flint; and a broken fragment of a chert flake, possibly burnt. Only the last of these was recovered from a stratified context, the upper fill of ‘field oven’ 1037. All others derived from the topsoil. All appear to be residual material within their contexts of recovery. A full catalogue is included within the project archive.

A small assemblage of sixteen lithic artefacts from the 2006 re-excavation of the western camp ditch embraces nine pieces of debitage, four cores, and three tools (Table 7.1). A full catalogue is included within the project archive, and the artefacts in this report are referred to by their number (CAT no.) in the catalogue. The pieces were mostly unstratified, but some were recovered from the upper and lower (not primary) fills of the camp ditch (CAT 10–12 from the upper ploughsoil derived fill, context 201; CAT 13–15 from a secondary fill, context 202).

A number of different raw materials were identified, namely:

- 1) fine-grained grey chert (12 pieces);
- 2) fine-grained red and grey flint (CAT 1, 2);
- 3) red jasper (CAT 4);
- 4) black jet or lignite (CAT 16).

The chert corresponds to what is generally known as Southern Uplands chert. As mentioned in Ballin and Johnson (2005, 62), this chert form is particu-

Table 7.1 Summary of 2006 lithic assemblage

	Chert	Flint	Jasper	Jet/lignite	Total
<i>Debitage</i>					
Chips	1				1
Flakes	4	1			5
Microblades	1				1
Indeterminate pieces				1	1
Crested pieces	1				1
<i>Total debitage</i>	7	1		1	9
<i>Cores</i>					
Single-platform cores			1		1
Irregular cores	1	1			2
Bipolar cores	1				1
<i>Total cores</i>	2	1	1		4
<i>Tools</i>					
Short end-scrapers	1				1
Pieces w edge-retouch	2				2
<i>Total tools</i>	3				3
TOTAL	12	2	1	1	16

larly common in Carboniferous Limestone, but it also occurs in some earlier and later sedimentary formations, such as, in Scotland, Ordovician and Silurian formations. At Dalkeith, the chert is most likely to have been procured from the local Carboniferous bedrock. Flint was probably procured from the nearby shores of the North Sea (Saville 1994), whereas jasper may have been obtained from sources in volcanic bedrock in the Edinburgh or North Berwick areas (Lacaille 1937; Saville 1994). Jet, or lignite, is exotic to the Dalkeith area and may have been acquired through trade links with north-east England, or from sources near Brora in Sutherland (Shepherd 1985). In 1864, a jet slider was found during excavations at Balgone near North Berwick, approximately 20km from the present site (Struthers 1868).

The debitage includes one chip (CAT 9), five flakes (CAT 2, 3, 12, 13, 15), one microblade (CAT 11), one indeterminate piece (CAT 16), and one crested blade (CAT 14). Most unmodified and modified blanks are technologically definable, with one being a small bipolar flake (CAT 2), and one a soft-hammer microblade (CAT 11); the remainder were all detached by the application of hard percussion. Apart from one flake in flint (CAT 2), and one indeterminate piece in jet/lignite (CAT 16), all debitage is in chert.

The cores are one single-platform core in jasper (CAT 4), one irregular core in chert (CAT 10) and one in flint (CAT 1), and one bipolar core in chert (CAT 8). All cores are small, with greatest dimensions between 18mm and 33mm. The tools are one short end-scraper on a flake (CAT 6), and two flakes with edge-retouch (CAT 5, 7). All tools are in chert.

The presence of a highly regular, slender microblade (CAT 11) suggests that the assemblage may be the product of a blade or microblade industry. The individual flakes may be either discarded blanks from parallel flake production, or waste flakes from the preparation of the industry's blade/microblade cores. Most likely, blades/microblades were manufactured by the application of soft percussion, whereas flakes may generally have been produced in more robust techniques. The crested blade (CAT 14) indicates that careful core preparation took place *prior to* commencement of blank production. Proximal blank attributes reveal that preparation in the form of platform-edge trimming took place *during* blank production. In technological terms, the chert-dominated assemblage from Smeaton corresponds closely to that of the chert assemblage from Glentagart in South Lanarkshire (Ballin & Johnson 2005).

The collection includes no strictly diagnostic pieces, but the general size of debitage, cores, and tools indicates a date for the bulk of the material around the transition of the Mesolithic/Early Neolithic periods. Traditionally, microblade assemblages have been dated to the Late Mesolithic period, but the composition of indisputably Early Neolithic assemblages suggests that microblades may also be a feature of that period. Pitchstone microblade

assemblages from pits have been radiocarbon dated to the beginning of the Early Neolithic period (eg, finds from Fordhouse Barrow in Fife and Carzield in Dumfries: Ballin forthcoming b; Maynard 1993), and microblade assemblages in flint, associated with carinated pottery, have been radiocarbon dated to the same period (eg, Garthdee Road in Aberdeen: Ballin forthcoming c). The Smeaton assemblage is therefore likely to date to either the Late Mesolithic or the Early Neolithic.

The cores are all fairly small, suggestive of a Late Mesolithic or Early Neolithic narrow-blade industry. Although the collection's solitary end-scraper (CAT 6) is metrically defined as a thumbnail-scraper, it was modified by plain retouch and not pressure-flaking, and the working-edge is steep and not acute. It is therefore unlikely that the implement dates to the Early Bronze Age, and a Mesolithic or Early Neolithic date is more probable. Most prehistoric jet/lignite (eg CAT 16) appears to have been mined and traded during the Late Neolithic and – in particular – the Early Bronze Age periods (Manby 1974, 98; McInnes 1968; Shepherd 1985).

7.5.5 Perforated stone weight, by A Jackson

A large but fragmentary perforated stone (1.376kg; 209 × 112 × 48mm) was recovered from context 203, a secondary deposit of gravel and cobbles within the western Roman camp ditch. It is probable that the stone was used as a weight; possibly tied up and used as a counterbalance, thatchweight or similar. The central perforation was formed by drilling/grinding from both sides to form an hourglass profile. The irregular large flat sectioned cobble original was broken in antiquity, as evidenced by weathering and smoothing of broken edges. Objects of this form, manufactured from locally available raw material (in this case diabase), are impossible to date but they are commonly found on prehistoric and later sites, including those of broadly Iron Age date. It is clear that this example was broken in antiquity and consequently discarded. Although it might have been accidentally deposited in the ditch with other fill material, it is equally possible that it was deliberately thrown in once it became defunct and is therefore of broadly contemporary date.

7.5.6 Sculptural fragment, by F Hunter

A damaged sandstone block (illus 7.13) bearing the remains of decoration was found in the uppermost fill of the camp perimeter ditch (context 1002). The surviving fragment is roughly cuboidal (height 220mm; width 165mm; thickness 90mm), suggesting it was deliberately dressed for reuse in a building or dyke. On the front are four low-relief half-columns and part of a fifth. Above them lies a slightly angled horizontal groove, part of a rounded moulding of uncertain form which is seen most clearly in section.



Illus 7.13 Carved stone (copyright Trustees of the National Museums of Scotland)

Behind and above this again are the remains of another, more substantial, rounded moulding, at about 45 degrees to the columns, visible on the front face only as a roughly-chiselled groove but surviving somewhat better in section and on the rear, where the toolmarks have not been smoothed. Another rounded moulding is developed below this on the rear, but is largely truncated. The groove separating

and defining these two mouldings has been finished with a saw. Most of the rear has been lost in the later dressing.

The presence of horizontal and angled mouldings at the top of the stone implies this is close to the original top edge. It is not possible to reconstruct the design in detail, but it appears to have included an angled capital decorated with mouldings, with the face bearing columnar decoration.

If this stone had been found on a Roman fort as opposed to a temporary camp there would be little hesitation in accepting it as Roman: similar fragments are common from Roman sites in Scotland (eg [Keppie & Arnold 1984](#), nos. 33–38, 52, 74), and the combination of columnar edging and angled capitals can be paralleled on dedication slabs and gravestones (*ibid.*, nos. 109–110, 156–7). The use of a saw in the decoration is rare in Roman masonry, but is not entirely unknown ([Blagg 1976](#), 155). However, its context in a temporary camp would be a highly unusual one for decorative stonework, and the fragment is not sufficiently distinctive on its own to say it is Roman rather than a post-medieval classically inspired piece. As it appears to have been reused it may of course have been brought in later times from a Roman site elsewhere: the area around the nearby fort at Inveresk has produced sculptural fragments in the past ([Keppie & Arnold 1984](#), no. 59), and Roman bathhouse stonework had been reused within long cist graves at Thornybank, less than half a kilometre from the current excavations ([Rees 2002](#)).

In summary, this fragment is too damaged to claim it as definitely Roman, although the possibility is intriguing.

7.5.7 Bangle fragment of shale or cannel coal, by F Hunter

A bangle fragment ([illus 7.12](#)) was found in the uppermost fill of the camp perimeter ditch (context 1082). It was originally D-sectioned and polished to a low lustre all over, with no surviving toolmarks. Its outer faces are scuffed and worn. Analysis of the composition by standard X-ray fluorescence and X-ray techniques ([Hunter et al 1993](#)) indicates that the material is a cannel coal or organic shale. The evidence of some slight lamination in the structure suggests it is a shale, but destructive analysis would be required to confirm the identification. There has been little work to date on the sources exploited in prehistoric and early historic times for such materials in the Lothians, but as the area is rich in oil shales and Coal Measures deposits ([Cameron & Stephenson 1985](#)), raw materials were readily available.

Such bangles are notoriously undiagnostic to period. Their floruit stretches from the Late Bronze Age (with some earlier examples) through the remainder of the first millennia BC and AD; they do not occur in medieval deposits. There are occasional finds from Roman sites in Scotland (cf [Frere](#)

Table 7.2 Charcoal identifications

Feature	Context	Type	Wt/g	Note
1037	1067	<i>Betula</i> sp.	4.55	
		<i>Pinus</i> sp.	0.33	
		Indeterminate	3.62	
2027	2015	<i>Betula</i> sp.	8.90	
	2024	Indeterminate	21.28	
		<i>Corylus avellana</i>	0.02	submitted for radiocarbon dating

& Wilkes 1989, 154, no.s 103–4), although they are far more common in indigenous contexts.

7.5.8 Decorated cast bronze fragment, by F Hunter

A heavily corroded curved bronze fragment (length 41mm; width 24mm; thickness 3–4mm) was found in the uppermost fill of the camp perimeter ditch (context 1002): extensive corrosion bubbles and lamination make detailed identification impossible. No original surfaces survive, and it is unclear if the curved form is intentional. The convex surface bears probable cast decoration: a linear groove with two small curvilinear features in relief to one side, perhaps part of a larger arcaded pattern. It derives from a cast object – the composition (leaded bronze with some zinc) is typical for casting alloys. No identification or date can be proposed, but the presence of zinc in the alloy implies a date no earlier than the Roman period.

7.5.9 Other metalwork, by S Anderson

The only stratified find was an undatable iron nail shaft (67mm long) from ditch fill 202. All other finds were from topsoil or were unstratified. They included two worn discs (possibly coins), two buttons, a belt slide, two lead musket balls, lead waste including possible ingots (one plano-convex) and melt fragments, binding rings and other fittings, a lead washer, a fragment of a bail handle for a drawer or similar, and a slide key with two bits (illus 7.12). All objects which could be dated were post-medieval or modern. The key is perhaps the most interesting find as published parallels generally only have one bit (Egan 1998, 102–3; 2005, 74). Keys of this type were in use from the 14th to the 19th centuries, but this example is likely to belong to the latter part of this date range.

7.6 Environmental evidence

7.6.1 Wood charcoal identification, by M Cressey

Wood charcoal from the ‘field ovens’ was submitted for identification prior to submission for radiocar-

bon dating. Charcoal pieces greater than 4mm were suitable for identification; pieces below this size were generally deemed unidentifiable. The finer sieved fractions below 4mm were hand sorted for smaller fragments of roundwood and other charred macroremains. Analyses were carried out on fractured charcoal samples using reflective light microscopy ($\times 10$ – 400 magnification) examining the transversal sections and, where necessary, longitudinal surfaces. Comparisons were made against in-house anatomical wood reference material and relevant keys listed in Schweingruber (1990). Attention was given to the possibility of contaminants such as coal, cinders and shell, of which none were present. The results of the identifications are summarised in Table 7.2.

The upper fill of feature 2027 is dominated by charcoal from *Betula* sp. (birch) and comprises mainly small sub-rounded branch-wood fragments. The primary fill of feature 1037 contained *Betula* sp. with *Pinus* (pine) in trace amounts (0.33g). In general the charcoal was observed to be very abraded as a result of post-depositional factors.

7.6.2 Archaeobotanical analysis, by R Pelling and M Hastie

Eight bulk soil samples were taken from two bipartite pits 1037 and 2027, provisionally identified as ‘field ovens’ during the excavation. A sub-sample of each (approximately 7 litres) was processed for the assessment of archaeobotanical remains. Each sub-sample was processed using a Siraf style flotation tank; flots collected on a $300\mu\text{m}$ and 1mm mesh. The samples were air-dried and scanned for carbonised remains, revealing the presence of abundant cereal grains within the primary fills of the two pits.

On the basis of the assessment five samples were submitted for full analysis. The plant remains were scanned using a low-powered microscope (magnification $\times 10$ to $\times 20$). Identifications were based on morphological characteristics and by reference to Oxford University Museum’s comparative modern collection. The results are summarised in Table 7.3.

The majority of charred cereal grains and weed seeds were recovered from the primary fills of each pit, the largest concentration of grain being recovered from pit 2027. Grains of barley (*Hordeum*

Table 7.3 The botanical remains

Latin name	Plant part	Common name	Pit 1037	Pit 2027	2024	2023	2015
			Primary fill	Burnt lens			
<i>Raphanus raphanistrum</i>	seed	wild radish	–	–	2	–	–
Cruciferae indet.	siliqua	charlock	–	–	1	–	–
<i>Chenopodium album</i>	seed	fat hen	2	–	–	–	–
<i>Atriplex</i> sp.	seed	orache	–	1	–	–	–
Chenopodiaceae indet.	seed	fat hen family	3	2	–	–	–
<i>Prunus spinosa</i>	fruit	sloe	1	–	–	–	–
<i>Polygonum aviculare</i>	nutlet	knotgrass	–	–	1	–	–
Cyperaceae indet.	seed	cotton-grass	2	–	–	–	–
Seed indet.	seed	indeterminate	–	–	1	–	–
<i>Triticum</i> sp. (hulled)	caryopsis	hulled wheat	–	–	1	–	–
<i>Triticum</i> sp.	caryopsis	wheat	–	–	2	–	–
<i>Hordeum vulgare</i>	caryopsis	hulled 6-row barley	1	–	16	–	–
<i>Hordeum</i> sp. (hulled)	caryopsis	hulled barley	11	2	150	12	2
<i>Hordeum</i> sp. (hulled – ST)	caryopsis	hulled barley	5	–	24	7	–
<i>Hordeum</i> sp.	caryopsis	barley	10	4	26	–	–
<i>Avena</i> sp.	caryopsis	oat	–	–	1	–	–
Cereal indet.	caryopsis	indeterminate	2	3	29	–	1

sp.) dominated the plant assemblages, in some cases fragments of hulls were still attached indicating the presence of the hulled variety. A few asymmetrical lateral grains attest the presence of six-row barley (*Hordeum vulgare*). Three grains of wheat (*Triticum* sp.) and one grain of oat (*Avena* sp.) were also recovered from the primary fill of pit 2027. One grain of wheat still had hulls attached suggesting that it was either emmer or spelt wheat.

Seeds of wild species were very scarce, but comprised common arable/ruderal species including wild radish (*Raphanus raphanistrum*), fat hen (*Chenopodium album*) and knotgrass (*Polygonum aviculare*). A single charred fruit of sloe (*Prunus spinosa*), complete with flesh, was recovered from the primary fill of pit 1037.

Evidence from other Iron Age/Roman Scottish sites suggest that hulled six-row barley was the principal cereal cultivated in the first millennium AD with some oat and wheat probably emmer as secondary crops (summarised in Boyd 1988; Greig 1991; Dickson & Dickson 2000).

The almost pure assemblages of grain recovered from the pits at Smeaton suggests that they represent a late stage in cereal processing, the finer weed seeds and chaff having been sieved from the grain. Hulled barley, if used for human consumption, requires a processing stage in which the tightly attached hulls are removed. While this stage

can simply involve drying the grain naturally, then rubbing it to remove the hulls (Hillman 1981), in wetter climates, or following a wet harvest, it may be necessary to parch the grain in order to render the hulls sufficiently brittle.

Burnt grains, in varying quantities, are commonly recovered from Scottish prehistoric and later sites and in most cases are interpreted as grain burnt during corn drying/parching activities, carried out either next to the hearth or in kilns. The presence of cereal grains within the two pits at Smeaton, particularly from burnt in situ deposits, could therefore imply that the pits were used for this purpose. If the rubbing of the parched grain took place by the edge of the pit, any spoiled/burnt grain could have been discarded onto the fire.

Of note is the recovery of a single sloe fruit from the primary deposits in pit 1037. The fruit of sloes do have culinary uses, generally as flavouring, although a single charred fruit recovered from the pit is more likely to have been brought to the site along with wood collected for fuel.

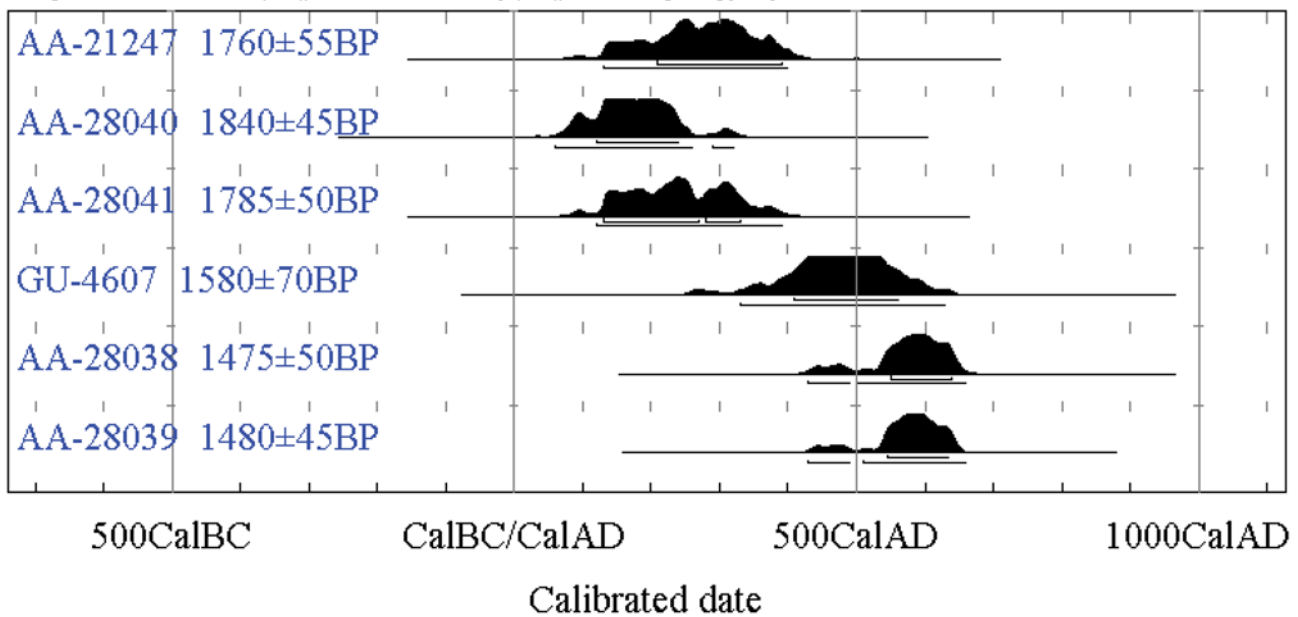
7.7 Radiocarbon dates

Six radiocarbon dates were obtained from the primary fills of the two ‘field ovens’ (contexts 1067 and 2024). Samples were submitted to the Scottish

Table 7.4 Radiocarbon determinations, calibrated using OxCal version 3.10

Lab No.	Context	Material	Years BP uncal	Calibrated date range 1 σ (AD)	Calibrated date range 2 σ (AD)	$\sigma^{13}C$
GU-4607	1067	Betula sp.	1580 \pm 70	410–560	330–630	–25.4
AA-28038	1067	Triticum sp.	1475 \pm 50	550–640	430–660	–24.3
AA-28039	1067	Betula sp.	1480 \pm 45	545–635	430–660	–25.6
AA-21247	2024	Hordeum sp.	1760 \pm 55	210–390	130–400	–24.0
AA-28040	2024	Triticum sp.	1840 \pm 45	120–220	60–320	–24.0
AA-28041	2024	Corylus sp.	1785 \pm 50	130–330	120–390	–25.5

Atmospheric data from Reimer et al (2004); OxCal v3.10 Bronk Ramsey (2005); cub r:5 sd:12 prob usp [chron]



Illus 7.14 Plot showing calibrated radiocarbon dates (using OxCal v. 3.10 (Bronk Ramsey 2005))

Research and Reactor Centre (SURRC) for radiocarbon analysis.

Initially, two samples were submitted, comprising bulk samples of wood charcoal from context 1067 and *Hordeum* sp. from context 2024 (GU-4607; AA-21247). The dates from these samples did not conclusively establish whether the features were of Roman military origin, and also suggested that the two burnt deposits were not contemporary.

However, it was recognised once the dates had been obtained that dating multiple entity samples may be misleading, since such samples may contain entities of different ages, thus potentially providing ‘average’ radiocarbon determinations (Ashmore 1999). In consultation with Patrick Ashmore of Historic Scotland, therefore, four further samples were selected for dating in order to clarify the ambiguities arising from the initial determinations, comprising single entity samples of wood charcoal and *Triticum* sp. from the primary fills of each pit. The results are shown in Table 7.4 (and graphically in illus 7.14).

The single entity dates from context 2024 (AA-28040-1), the pit within the Roman temporary camp, have an approximate 2 σ range of AD 60–390; whereas those from context 1067 (AA-28038-9), the pit outside the camp, fall within the range AD 430–660. This evidence demonstrates that the burnt deposits are chronologically distinct, and thus that the two pits are most likely of different ages. Chi-squared tests (cf Shennan 1988, ch 6) conducted on OxCal version 3.10 (Bronk Ramsey 2005) demonstrated that the single entity dates from fill 2024 form a statistically coherent group. A T-value of 1.4 indicates a strong probability that the dates reflect a simultaneous event (which can in any case be considered likely on taphonomic grounds); a T-value of 6 or more would have suggested that the dates securely reflected (to a probability of 95%) different episodes of burning. Similarly, a chi-squared test for the dates from 1067 produced a T-value of 1.8, again reinforcing the evidence of excavation to suggest that those dates represent a single episode of burning. However, it is not appropriate to combine

the determinations within each context group since the dates from each context were obtained from separate entities (cf [Ward & Wilson 1978](#)). Despite this, these results are of interest, in that they demonstrate that the primary deposit inside pit 2027, within the Roman temporary camp, lies within the known range of Roman military activity in northern Britain and encompasses the date of the samian ware pottery recovered from the Roman camp ditch. Conversely the primary deposit of pit 1037, which lies immediately outside the camp, cannot relate to Roman military occupation within the temporary camp.

Two possible hypotheses can thus be constructed to explain the radiocarbon dates:

- 1) that pit 2024 relates to Roman military activity and pit 1037 to post-Roman activity;
- 2) that both pits reflect indigenous activity, one event during and the other after the period of Roman influence in north Britain.

These hypotheses are discussed further below.

7.8 Discussion

7.8.1 Introduction

The interpretation of the excavated remains requires a consideration of patterns of archaeological survival. The distribution of remains identified during the investigations was quite discrete, with few archaeological features present on the areas of heavy clay subsoil apart from likely medieval or later cultivation furrows and more recent land drains. This may be at least partly explained by the truncation of earlier features, potentially even larger examples such as the eastern Roman camp ditch (assuming that a complete circuit was once present, discussed further below), as a result of medieval or later agricultural activity. However, it may be that these heavy clay soils, much more poorly draining than the sand and gravel subsoil to the west, were deliberately avoided as activity areas. The results of the route evaluation appear to demonstrate this dichotomy at a broader scale along the route corridor.

The result of this bias in the distribution of archaeological remains, whether reflecting past behaviour or a product of archaeological survival, is that the majority of identified features lie in proximity to the western perimeter ditch of the Roman camp. It cannot be assumed that these features relate to the camp purely on spatial evidence. Indeed, the limited datable evidence from the excavation indicates activity around the site from early prehistoric times.

7.8.2 Prehistoric activity

Two conjoined pits contained several sherds of pottery from a single vessel of probably Neolithic

character. They are likely to have been incorporated in the pits as sherds of a broken vessel, but the level of abrasion and quantity of the sherds suggests that the vessel had been smashed in the immediate vicinity of their context of recovery. This does not prove that the pits themselves were of prehistoric origin, although it seems highly probable. No definite evidence of associated prehistoric features was identified in the vicinity, although other undated pits (see below) were recorded ([illus 7.4 upper](#)).

Other artefacts point to prehistoric activity in the area later occupied by the Roman camp, although they were found in more recent contexts such as the topsoil, Roman camp ditch or one of the 'field ovens'. A small assemblage of chipped stone artefacts, in a range of materials but mainly of locally available chert, is testament to a Late Mesolithic or Early Neolithic presence, although a piece of worked jet or lignite would not be out of place in a Late Neolithic or Early Bronze Age context ([Ballin, Section 7.5.4](#)). Fragments of a shale or cannel coal bangle are not closely dateable, but are likely to be of broadly later prehistoric or Early Historic origin.

The indications of prehistoric activity at this location are not surprising given the dense spread of sites recorded by excavation and aerial reconnaissance along the Esk Valley (this report; see also [eg Hanson & Breeze 1991](#), 73–4, fig. 4.3). As such, the finds may reflect as 'background noise' intensive prehistoric occupation and land use in the valley, and potentially relate to further archaeological sites present close to but outside the areas investigated.

7.8.3 Construction of the Roman camp – perimeter defences

The investigations provided no additional information regarding the overall size and shape of the camp (a parallelogram at least 12 hectares in area; discussed further in [Section 7.2](#)), as the northern and eastern alignments of its perimeter ditch were not located. The arrangement of investigation areas was such that had a complete circuit of the perimeter ditch survived, either the northern or eastern ditch alignment should have been intersected at least once. The two most likely potential reasons for the failure to locate either ditch alignment are that, a) the camp defences were never fully constructed to form a complete circuit or b) the camp ditch has been entirely truncated at locations where it would formerly have crossed the investigation areas. Further site investigations or additional aerial photographic evidence would be necessary to determine which, if either, of these explanations is correct.

The excavation of the western perimeter ditch provided some information both about its character and about the structural history of the camp. The dimensions of the ditch varied where examined between *c* 2.5m and 3.35m in surface width, and *c* 1.1m and 1.7m in depth ([illus 7.6](#)), increasing in scale to the north. These variations can be explained

largely as differential survival resulting from ploughing and topsoil removal for the excavation. The V-shaped profile with basal ‘ankle-breaker’ is common for Roman military ditches of this type.

The absence of re-cuts within the perimeter ditch may suggest that the camp was occupied only on a single occasion, although some caution is necessary based upon the evidence from the excavation at Dunning camp, where more than one occupation was inferred despite the absence of ditch re-cuts (Dunwell & Keppie 1995) and indicates that structural evidence alone provides less than definite proof. The perimeter ditch at Smeaton silted up incrementally, although over an unknown timespan, and was not deliberately backfilled by the Roman army upon its abandonment.

7.8.4 ‘Field ovens’ and other features

A range of archaeological features was identified both inside and outside the Roman temporary camp. Some demonstrably were not contemporary with the occupation of the camp, such as the cultivation furrows. The pits containing Neolithic pottery are also unlikely to be associated with the Roman camp. The remaining features consist of a scatter of undated pits and two (possibly three) complex pits that appear to be associated with crop processing, one of which contained a primary burnt deposit of post-Roman date.

The majority of undated pits lay immediately to either side of the western camp ditch. Four of these formed a rough alignment running parallel to the ditch, where the rampart of the camp would have been located. Whilst this coincidence of alignment is of interest, and the pits could reflect the sockets of stakes driven through the rampart (cf Maxwell 1989, 48, fig. 3.4), the pits cannot be proposed definitively as part a structural element of the camp on that basis. At best the alignment can be proposed as Roman or later in origin – the ditch is likely to have acted as a land boundary long after its abandonment by the Romans, and may have defined the courses of other constructions, such as fences. A similar alignment of pits was recorded in the 1996 excavations at Kintore Roman camp and was beset with the same interpretative problems (Alexander 2000, 31). Indeed, the western camp ditch at Smeaton appears to have been still a surface feature when it was incorporated into a medieval or later rig-and-furrow cultivation system. No recognisable trace of it remained by the middle of the 19th century, as it is not recorded on the first edition Ordnance Survey map (1854).

What had been interpreted in the field as ‘field ovens’ associated with the occupation of the Roman camp must be interpreted in a different light with the results of palaeobotanical analysis and radiocarbon dating. Pit 1037 (illus 7.4 upper), which lay outside the camp, contained a primary burnt deposit dating to between the fifth and seventh centuries cal AD.

The burnt deposit thus cannot be of Roman military origin. A second pit of similar character (1076, illus 7.4 upper) lay adjacent to it, but contained no evidence of burning. Pit 2027, within the Roman camp, was of similar character to pit 1037, and contained a primary burnt deposit comparable to that from pit 1037. The similarity of pit 2027 and its contents to that of 1037 suggests a common design. Yet the radiocarbon dates suggest that burning in pit 2027 took place considerably earlier, probably at some point within the first four centuries cal AD. Again, the primary nature of the fill suggests the pit had been opened not long before burning had taken place. Whilst the date for pit 2027 spans the period of Roman military influence in north Britain, the identification of the cereal assemblage as comprising mainly barley tends to argue against a Roman military origin: the Roman soldier preferred wheat to barley as a staple, with the latter used only in times of shortage or as punishment (Groenman-van Waateringe 1989, 99), or to feed horses (Hanson 2007, 613, 671).

On balance, it is easier to explain both ‘field ovens’ as reflecting episodes of activity unrelated to the short-lived presence of a Roman temporary camp at this location. As such, the features would appear to be isolated and without contemporary structural or settlement associations, at least within the excavated areas. In some cases similar features have been located in native settlement contexts without evidence of Roman activity, such as Melville Nurseries, Eskbank (Raisen & Rees 1995) and Dundee High Technology Park (Gibson & Taverner 1990). However, pit 2027 certainly cannot be ruled out as being of Roman military origin on the basis of the excavated evidence, an ambiguity of interpretation contributed to by a lack of secure evidence for the functions of those excavated ‘ovens’ that can be more securely associated with Roman temporary camps.

The foregoing discussion reveals that, apart from the western perimeter ditch, no archaeological feature can be unequivocally associated with the construction and occupation of the camp. Many of the identified features are undated, and whilst it is conceivable to link them to the camp on spatial grounds alone, equally they could be associated with activity of almost any other period from early prehistory onwards, to judge from the range of dated features and artefacts encountered. The lack of coherent internal features of the camp may be explained to some extent, in particular in the areas of clay subsoil, as a result of plough-truncation and related variations in patterns of archaeological survival. However, within the sand and gravel subsoil areas, where archaeological survival of negative features was tolerably good, it is argued that the absence of substantial features of Roman date indicates that none were ever cut. The absence of intensive activity does confirm the results of most other excavations of Roman camp interiors within northern Britain, with the notable exception of Kintore (Cook

& Dunbar 2008). It is clear that patterns of likely truncation and archaeological survival should be considered in any future strategies proposed for the examination of camp interiors. It is likely that the results from the excavation of cropmark sites can be calibrated by investigating the interior of one of the few remaining upstanding camps surviving in uncultivated land.

7.8.5 The date and associations of the Roman camp

A reasonable case can be made for dating the camp to the Antonine occupation, based upon the recovery of a decorated sherd of a samian ware bowl from the Roman camp ditch. The dating of *c.* AD 150–170 advanced for this potsherd (Wild, Section 7.5.2) might further suggest that the camp was not a marching camp associated with the initial Antonine re-conquest of southern Scotland, but may have been built for some other purpose, once the nearby centre at Inveresk had been established following the invasion (Breeze 2002).

There are taphonomic factors that caution against uncritical acceptance of this dating for the camp. Firstly, the potsherd may have been trimmed after breakage (Wild, Section 7.5.2), suggesting reuse and potentially an extended use-life. Secondary use of reshaped samian sherds for alternative purposes

has been attested for pottery found at several native settlements across Scotland (Hunter 2001, 301), although of course this does not preclude the possibility of Roman military reuse of the sherds of a broken vessel. Secondly, the potsherd was recovered from the uppermost ploughsoil-derived fill of the camp ditch, which was deposited at this location long after the abandonment of the camp as a Roman military construction, and which also contained artefacts of prehistoric origin. Neither this tertiary fill deposit nor the residually occurring artefacts recovered from it directly date the construction of the camp. Thirdly, Hunter (Section 7.5.6) has raised the possibility that a reused fragment of Roman carved stone, recovered from the same context as the samian sherd, was imported to the site as a consequence of its reuse, since the presence of sculptured stonework is not readily reconcilable with a temporary military occupation site. A local source for such material, and indeed the stonework reused in the nearby Thornybank long cist cemetery (Rees 2002) could have been Inveresk, Elginhaugh, or another as yet undiscovered Roman settlement or bathhouse closer to hand beside the River Esk.

Ultimately, none of these factors fatally undermines a working hypothesis that Smeaton is a Roman temporary camp that belonged to the Antonine occupation, a reasonable conclusion which provides a starting-point for any future investigations of the site.