4 CASTLESTEADS AND LANGSIDE PIT ALIGNMENTS *by K Cameron & S Mitchell*

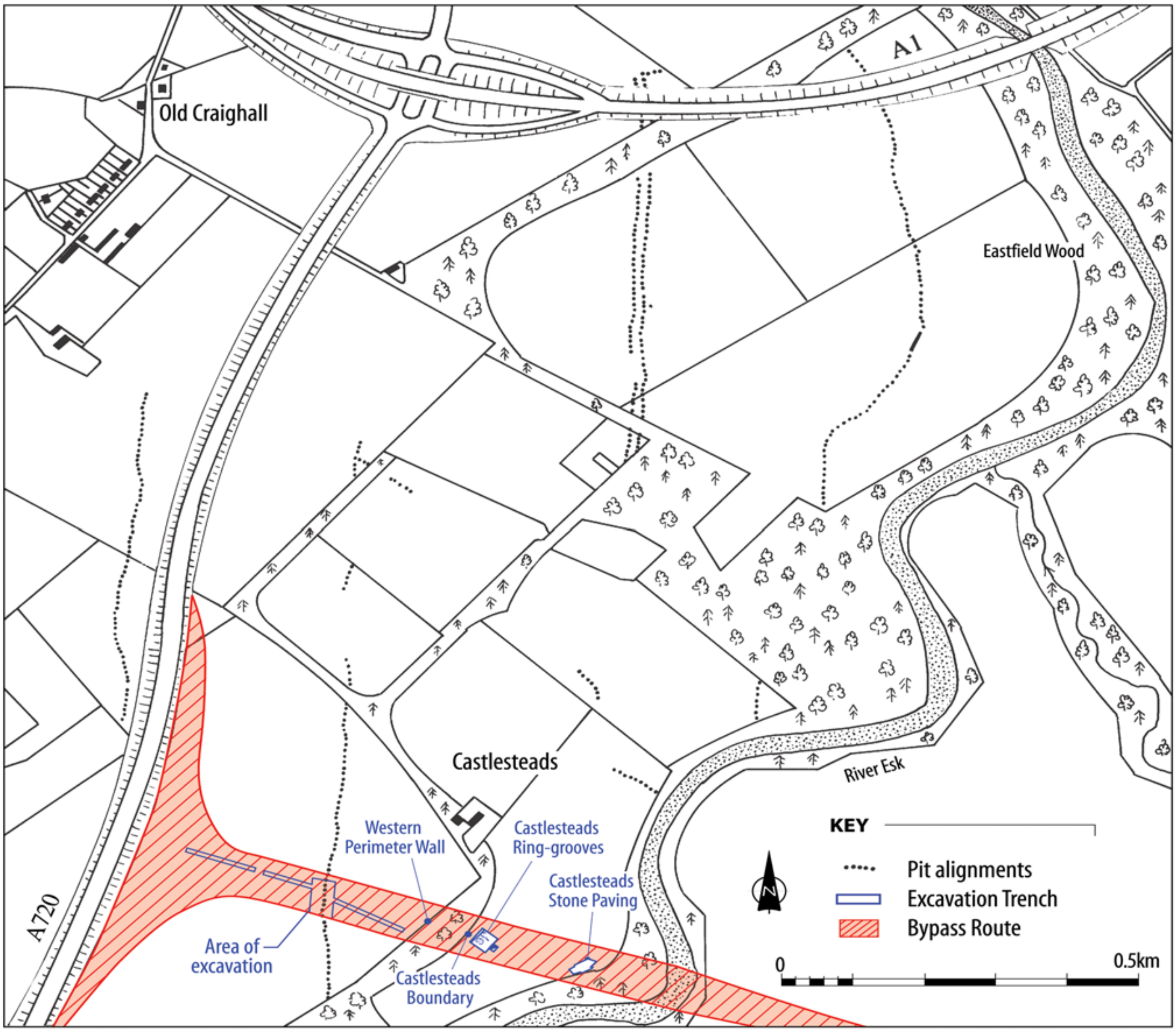
4.1 Introduction

Pit alignments were discovered at Castlesteads, Langside and Thornybank. Castlesteads and Langside are described individually below, and compared in the discussion. Thornybank has been published previously (Rees 2002). The pit alignment at Castlesteads is described first.

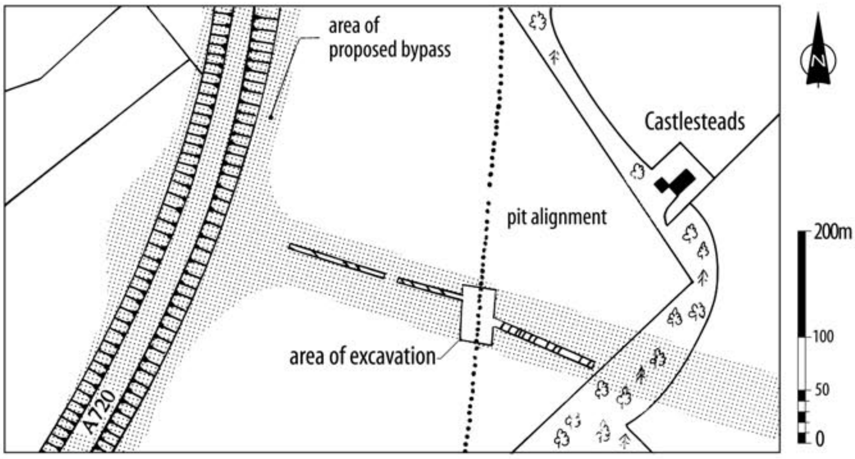
4.2 Castlesteads pit alignment, by K Cameron

4.2.1 Introduction

The pit alignment in the field to the south-west of Castlesteads (NMRS ref : NT36NW 53) was discovered by aerial photography as one of a series of cropmarks in the Castlesteads/Newton area (illus 4.1–4.2; Halliday 1982). This example is described in NMRS records as consisting of around 80 pits, centred *c* 3–5m apart, disposed in a single line and orientated approximately from north to south. Aerial photographs of the area and the rectified cropmark plot produced by RCAHMS also show an extensive area of cultivation marks orientated obliquely to the pit alignment in its vicinity. The proposed road corridor, which determined the sector available for excavation, was approximately 40m wide where it intersected the course of the pit alignment.

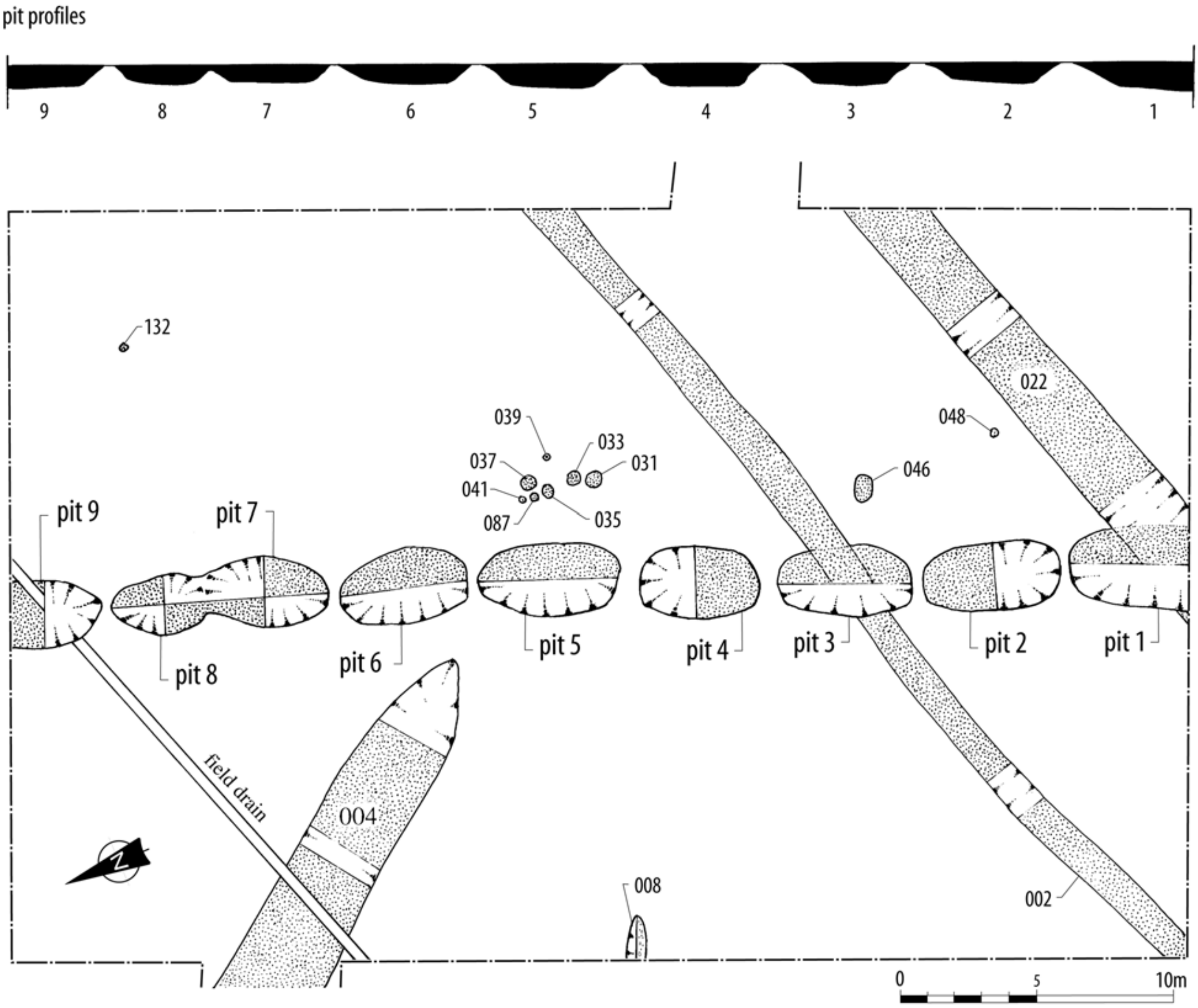


Illus 4.1 Pit alignments around Castlesteads (after Halliday 1982)



Illus 4.2 Aerial photograph of the pit alignment looking north (Crown Copyright: RCAHMS; Ref. SC973255, 2003)

The pit alignment here considered is only one of a number of such features identified in the Newton and Castlesteads area, which together remain one of the most coherent systems of this type revealed by cropmarks on the Lothian Plain (Halliday 1982; pers comm). At least three other lines of pits are known to run parallel to it at intervals of around 350m; a double line is located to the east with a



Illus 4.3 Plan of features and composite profile along pit alignment

single line beyond this, and a single line is present to the west. The latter was extrapolated into the line of the proposed route but was not identified during the evaluation (see Section 3.3). Halliday (1982, 76) argues that together they comprise a series of 'pitted boundaries' covering an area of about 120 hectares, which define enclosures up to 24 hectares in extent (illus 4.1). Elsewhere in eastern Scotland, cropmark pit alignments sometimes delimit closed forms, but the Castlesteads examples seem to comprise mainly a series of approximately parallel alignments. A few alignments running north-west to south-east have been identified (illus 4.1), but these are limited in extent.

The field through which the examined pit alignment runs has been intensively cultivated. Roy's map (1747–55) indicates that rig cultivation was practised prior to the agricultural improvements that led to the enclosure of the land, and provides a cartographic context for the cropmark evidence. No traces of either positive or negative features were visible on the ground surface prior to excavation. Once *c* 0.25–0.35m of topsoil had been stripped by machine, the pit alignment was detectable at the subsoil interface. The underlying deposits consist of fluvio-glacial gravel and sand. The site lies on relatively level ground 400m to the west of the River Esk.

4.2.2 Strategy

Excavation took place during October and November 1994, after the crop had been harvested. Intensive sampling of the road corridor was also undertaken elsewhere in the field in the vicinity of the known cropmarks, owing to the archaeological sensitivity of the area surrounding the pit alignment and in order to detect any archaeological features present. Topsoil was stripped by mechanical excavator over a substantial corridor 15m wide either side of the pit alignment, in order to expose the pit alignment and any associated features adjacent to it (such as the remains of an upcast bank). The entire length of the pit alignment within the road corridor was then excavated by hand. A further evaluation carried

Table 4.1 Dimensions and characteristics of pits 1–9 at Castlesteads

Pit	Length (m)	Width (m)	Depth (m)	Distance apart (m) (centre–centre)	Cut by	Finds (context)
1	4.0 (exposed)	3.0	1.0	**1–2** : 5.7	furrow (022)	2 frags med pot (072)
2	5.0	2.5	0.8	**2–3** : 5.3	–	–
3	5.0	2.5	0.75	**3–4** : 5.4	furrow (002)	pot rim (076)
4	4.5	2.75	0.8	**4–5** : 5.2	–	–
5	4.95	2.8	0.9	**5–6** : 5.2	–	med pot sherd (024)
6	5.0	2.5	0.6	**6–7** : 5.0	–	med pot lid (094), chert (098)
7	4.0	2.2	0.6	**7–8** : 3.9	–	med pot rim (134)
8	3.5	2.8	0.65	**8–9** : 5.2	–	–
9	3.7 (exposed)	2.5	0.7	–	drain	med pot sherd (081)

out at Castlesteads in 2006 revealed no additional archaeological remains associated with the pit alignments.

The site lies on the same soil formation, fluvio-glacial deposits, as the pit alignment excavated at Eskbank Nurseries by Barber (1985), and the expectation that similar conditions of preservation of organic remains would prevail underpinned the excavation strategy. The principal objectives were to recover secure evidence of the date and function of the pit alignment wherever possible, and to record the basic dimensions and spatial arrangement of the pits. Full allowance for possible contradictory indications as to function was, however, maintained in the field programme – especially in relation to the palaeoenvironmental strategy, which necessarily formed a central concern.

All identified features within the trench were fully excavated and bulk soil samples were taken from each context within each pit. On-site dry-sieving of significant material excavated from the components of the pit alignment was conducted in order to identify, within the limitations of the dry-sieving technique, the presence of artefacts and plant macrofossil remains. Palaeoenvironmental work was conducted with a view to reconstructing the nature of the local environment and land use.

4.2.3 Archaeological results

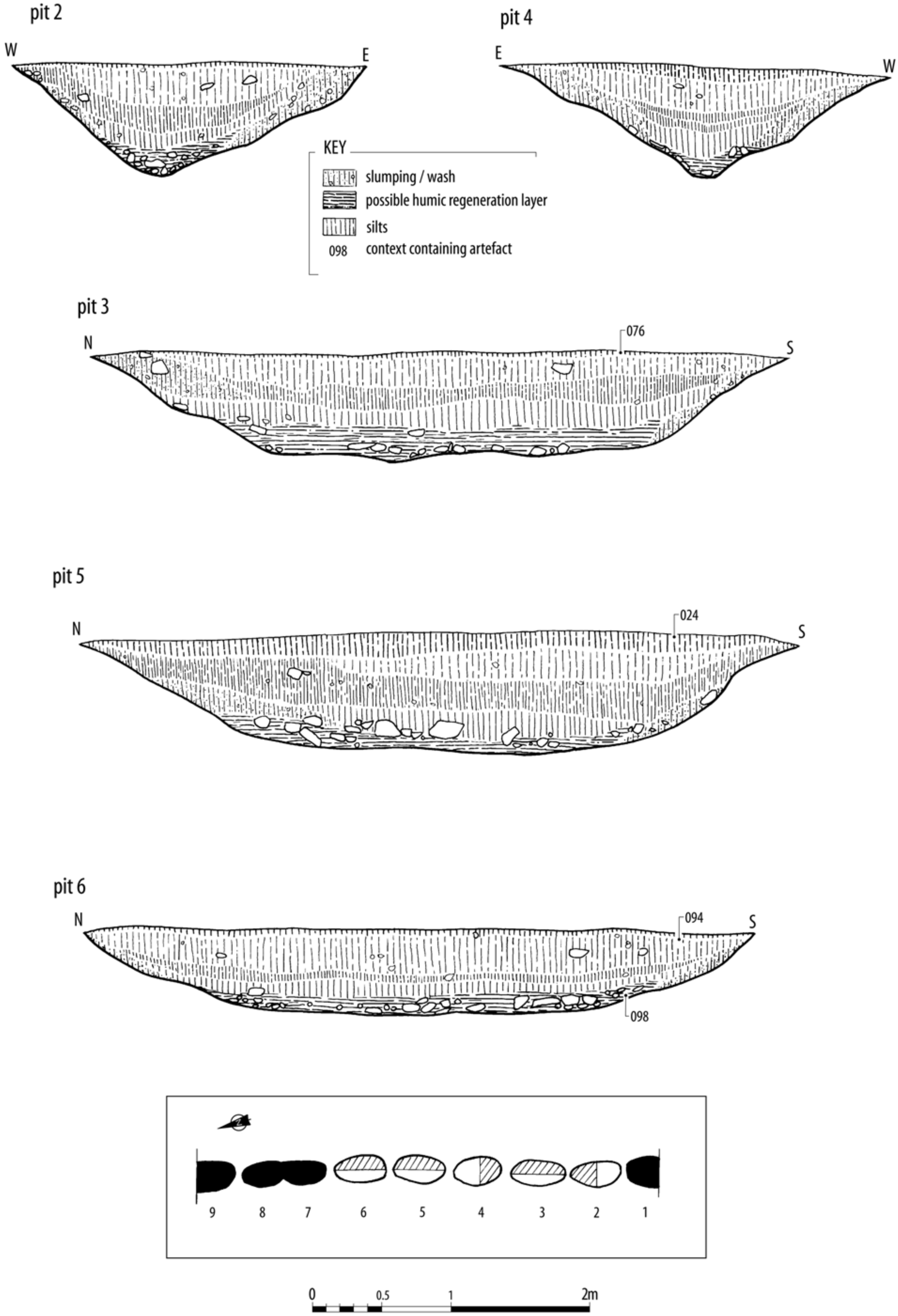
4.2.3.1 Pit alignment

The main trench was *c* 50m long and 30m wide, orientated approximately north to south, with the pit alignment running centrally along its long axis (illus 4.3). Each pit in the alignment was numbered sequentially from 1 to 9, running south to north. Within these pits, every fill was allocated an individual context number (shown in parentheses in the following descriptions), although most of the pits displayed deposits of very similar character. Initial cleaning following topsoil removal revealed that two linear features, running diagonally from south-west to north-east, intersected pits 1 and 3 respectively, thus obscuring their edges. Pits 1 and 9 were not fully exposed in the trench.

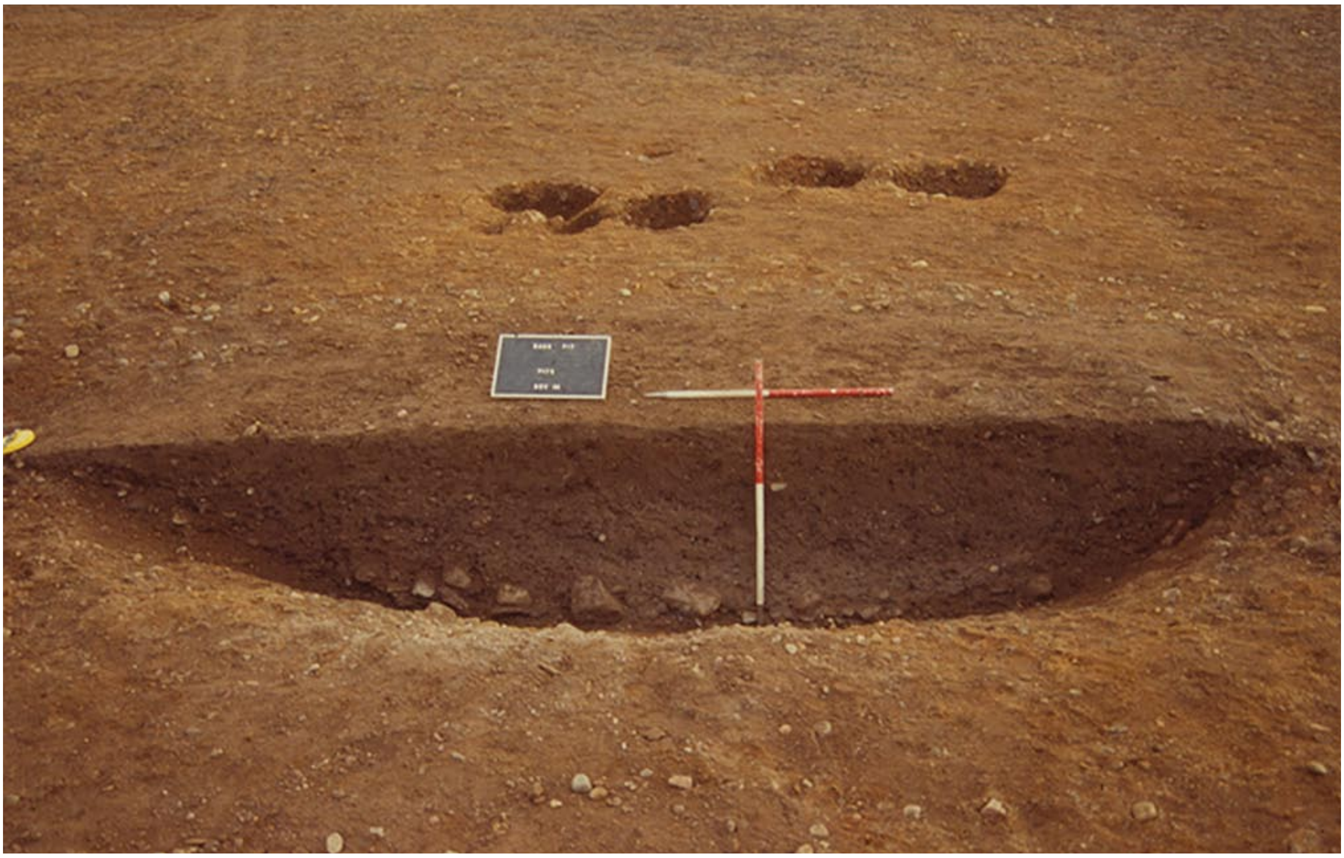
On plan the pits were of a slightly elongated oval shape. The pit cuts were all steep-sided along their longer sides, giving a V-shaped profile across their width, and more gently sloping along their shorter sides which, with the flat bases, formed an elongated 'boat-shaped' profile lengthwise (illus 4.4 and 4.5). The dimensions and basic characteristics of the excavated pits are shown in Table 4.1; depths are cited from the top of the features as exposed below ploughsoil. All pits were orientated with their long axis along the primary direction of the alignment. Pit 8 was considerably smaller than the other excavated examples in the alignment, and abutted the adjacent pit (7). All other pits were *c* 0.3 to 0.5m apart at the uppermost surviving level.

A basic sequence of fills within the pits was consistently found (illus 4.4) and can be summarised as follows. Large sub-rounded stones were consistently found at the bottom of the pit within a grey silty matrix, possibly a humic regeneration deposit (although it was not confirmed as such by soil micromorphology, and alternative explanations, such as a waterborne sediment, remain possible, as at Langside pit alignment, Section 4.3.4.4). The stones lined the flat bottom of each pit (to a depth of 0.1–0.2m) and were similar to the larger stones visible within the surrounding subsoil. No post setting was discernible in the base of any pit. There was no evidence for re-cutting of the pits. Slope-wash and slumping had subsequently occurred around the sides of the pit cuts. Overlying the basal stones were generally two layers of grey silt, with the lower fill containing a higher percentage of grit and small stones. These fills underlay a deposit of brown silt which formed the topmost fill and which on occasion produced fragments of medieval pottery. The brown silt was overlain by a shallow spread of ploughsoil occupying any residual basin of deposition.

Two fragments of medieval pottery were recovered from the top fill of pit 1. Pit 3 contained a rim fragment of Roman or medieval pottery in the upper fill (illus 4.7). A single fragment of medieval pottery



Illus 4.4 Selected pit sections



Illus 4.5 Photograph of section through pit 5, with pit cluster behind

was recovered from an upper fill of pit 5. A complete pottery lid was recovered from an upper fill (094) in pit 6 and a chert flake was found within another fill (098). A medieval pottery rim was recovered from an upper fill of pit 7 (134). A medieval pottery sherd was retrieved from the main upper fill (081) of pit 9, which was cut by a modern field drain to a depth of 0.5m.

A number of other features were identified in the vicinity of the pit alignment. Many of these could not be related stratigraphically to the pit alignment. There was no archaeological trace of a bank running parallel to either side of the pit alignment, such as survive as earthworks in a very few cases (eg Strong 1988) or as was detected as residual plough-truncated remains nearby at Thornybank (Rees 2002), although if such a feature had been present it may have been eliminated entirely by ploughing. The original form of the pit alignment is returned to in Section 4.4.

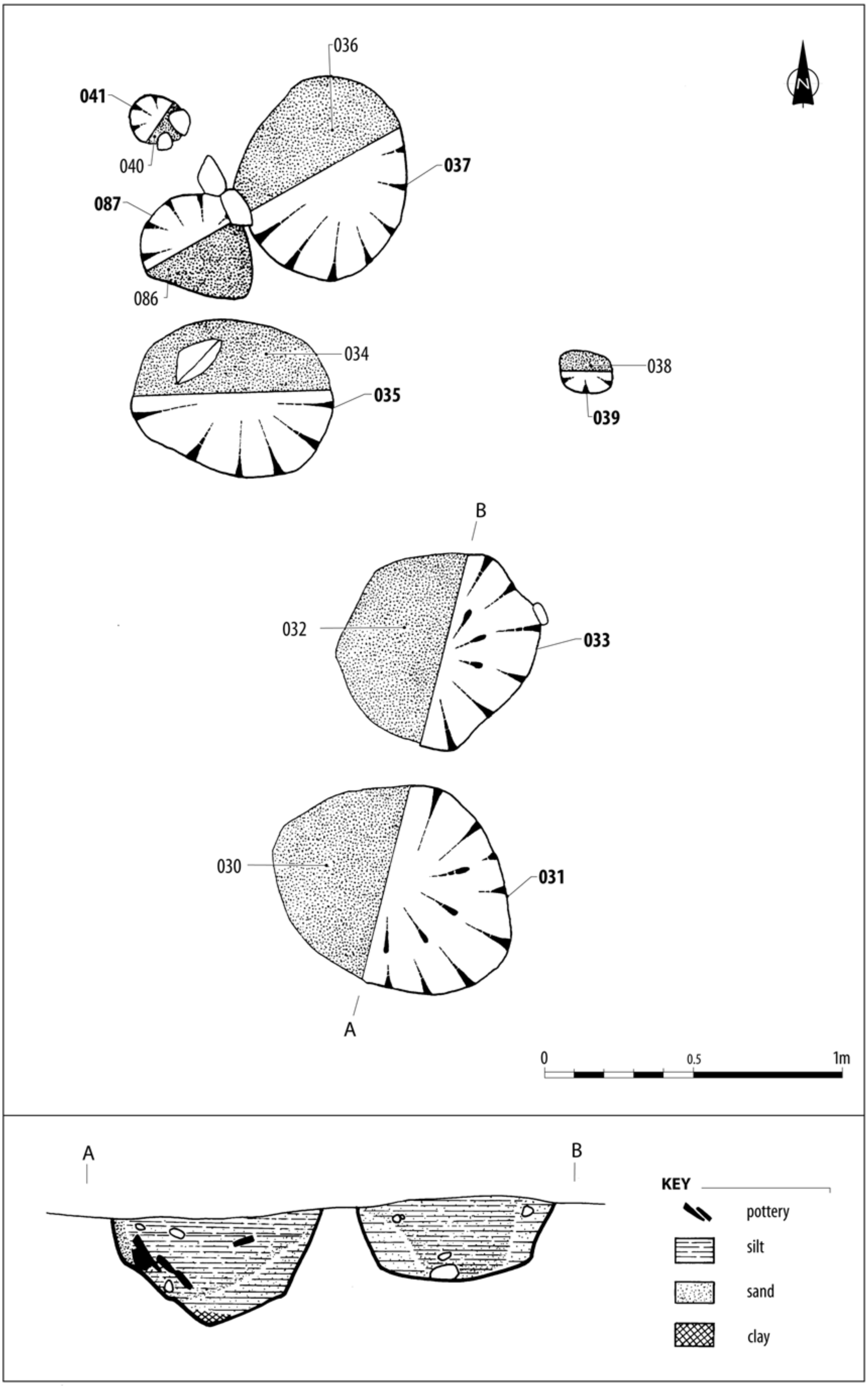
4.2.3.2 Pit cluster

Seven small pits or post-holes were identified in a cluster (illus 4.6), *c* 2m to the east of pit 5. These seven pits were filled with charcoal-flecked sandy soil and had rounded profiles. Three of them (031, 033, 035) contained fragments of prehistoric pottery. Burnt organic residues on two sherds from 035 were subject to radiocarbon dating (see below). These features, which were spread over an area of roughly three square metres, do not form a recognisable pattern. Despite their proximity to the pit alignment, there was no stratigraphic association with it. The broad range of dates ascribed to the pottery assemblage as a whole has simply provided a *terminus post quem* for the infilling of the pits (Johnson below).

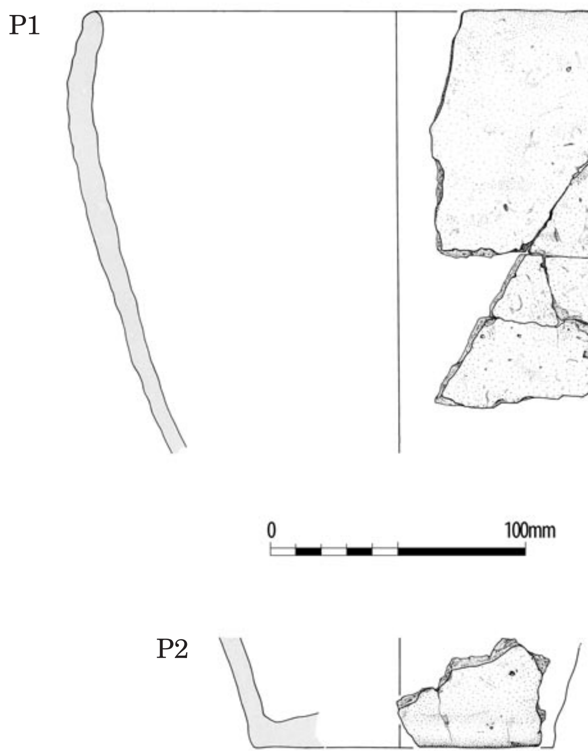
4.2.3.3 Rig and furrow

Two further, narrow excavation trenches were positioned in order to explore the area to the east and west of the pit alignment. In these trenches a number of cultivation traces were located (illus 4.3). These took the form of shallow furrows, corresponding to the eroded remains of a rig-and-furrow landscape. These furrows were irregularly spaced and proved to be no more than a few centimetres deep at maximum where they cut into the subsoil. They were seen to be aligned differently: towards the east of the field they ran on a south-west to north-east axis, roughly parallel with the current land divisions and relatively narrow, whereas to the west the axis was north to south and appears to be a broad rig of more than 10m wavelength.

Rig-and-furrow cultivation did not respect the pit alignment, as is witnessed by the crossing of pits 1 and 3 by two such furrows (022 and 002, illus 4.3). These furrows were not visible in the pit sections as, owing to their shallow nature, they had not penetrated below the top fill of residual ploughsoil and



Illus 4.6 Plan and section of small pit cluster, showing pottery in situ



Illus 4.7 Iron Age vessel(s) from pit cluster

Table 4.2 Radiocarbon dates from Castlesteads pit 035

SUERC Lab No BP	Material	Lab age BP	δ13C	Cal date 1δ	Cal date 2δ
22074	carbonised residue	3990±30	–26.5‰	2565–2470BC	2580–2460BC
22078	carbonised residue	3940±30	–26.6‰	2490–2340BC	2570–2300BC

their fills only served to obscure the pit edges at the outset.

Another possible furrow, 004, ran on a different alignment and was extremely shallow, with a maximum excavated depth of 0.05m; it was the easternmost of a series of parallel furrows located to the west of the pit alignment. This feature appears on plan to terminate immediately west of the alignment, however, due to its shallow nature it is likely that it did extend across the pit alignment, but was entirely removed during surface cleaning. It is apparent that these furrows represent a different, later pattern of land-use from that illustrated by the pit alignment, and also that the differences in alignment and spacing may indicate different land plots and/or differences in age.

4.2.3.4 Other features

Isolated features identified include two very shallow pits (132 and 048, illus 4.3) located to the east of the pit alignment. Neither of these produced any finds. A shallow, oval-shaped stony spread (008) of uncertain function was located running under the centre of the western baulk; and a large stone-filled pit (046) with dimensions of 1.2m by 1.1m and a depth of 0.35m was identified to the east of pit 3.

4.2.4 Dating

No organic material suitable for radiocarbon dating was recovered from the pit alignment. However, the burnt residues on sherds of prehistoric pottery from pit fill 034 (from pit 035 beside the alignment) were considered suitable for sampling, and were submitted for radiocarbon dating in December 2008. The results are shown in Table 4.2.

4.2.5 The finds and environmental evidence

4.2.5.1 Prehistoric pottery, by M Johnson

Prehistoric pottery, comprising 24 sherds weighing 733g, was recovered from the fills of three of the pit cluster pits (031, 033 and 035), and represented a maximum of five different vessels.

The remains of a substantial portion of the upper part of a vessel (P1) were recovered from pit 031 (illus 4.7). Eighteen sherds were recorded, weighing 591g, representing just under a quarter of the total rim circumference of a barrel-shaped vessel with rounded, slightly inturning, rim. All of the sherds, except one, join. Its rim diameter was 250mm and the height of the section of vessel recovered is 180mm. The fabric is coarse and hard, slightly crumbly, sandy, and with stone inclusions up to 10mm in size. A few organic impressions are also present but are unlikely to represent a deliberately added material. The vessel is brown to orange-brown on the exterior, with a dark grey core and grey to dark grey interior. The vessel is generally about 9mm thick and has some evidence for laminar fracture; it has also broken along a coil join at the bottom of the section. Both surfaces are fairly well smoothed, with some finger-marking, wiping and protruding inclusions to give uneven surfaces. There is light sooting on the exterior towards the upper part of the body, and light sooting all over the interior.

A base sherd (P2), which may not be from the same vessel as that above, was also found in this pit (illus 4.7). It is a flat, slightly footed base with a diameter of 120mm and thickness of 11mm, weighing 41g. Its fabric is not sandy and it is better finished than P1, suggesting a different vessel. It was, however, also brown on the exterior, with a grey core and interior. It was well smoothed on the exterior and smoothed and wiped on the interior. There was sooting on the interior. A crack along the interior at the base of the wall suggests the sherd has separated along the manufacturing joint.

The shape and fabric of vessel P1 make it difficult to pinpoint a date with any degree of accuracy, as such simple undecorated vessels, of so-called flat-rimmed ware type, have a currency from at least the mid second millennium BC to the pre-Roman Iron Age. There are at present few certain typological or chronological distinctions in such assemblages. A lone vessel is also harder to pinpoint with certainty than those coming from larger assemblages where more general themes can be established.

In the Mid–Late Bronze Age, the pottery has parallels with vessels from sites such as the unenclosed platform settlements at Lintshie Gutter, Lanarkshire (Terry 1995), Ormiston Farm hut circle, Fife (Sherriff 1988) and Green Knowe, Peeblesshire (Jobey 1980). During the Iron Age in the local area, bucket-shaped plain coarse vessels were found at Broxmouth hillfort (Cool 1982), St Germains (Alexander & Watkins 1998), Dryburn Bridge (Cool 2007) and Fisher's Road, Port Seton (Cowie 2000), all likely dating from around the middle of the first millennium BC and into the first century or two AD.

The final sherd recovered from this pit (P3) was an abraded, decorated body sherd of an entirely different date, weighing 10g. It had a fairly fine fabric, with dark red stone inclusions and a corky fabric. It had a brown exterior and grey core and interior. Both surfaces were well smoothed and it was 6mm thick. It had impressed decoration and, although the overall motif was unclear due to heavy wear, it included a double row of stabs, a single row of stabs or possible comb impression, and two perpendicular/slightly diagonal lines of stabs or possibly comb or twisted cord. The apparent design of the decoration and the corky fabric lead to the suggestion that this is a sherd of Beaker pottery.

A single vessel (P4) represented by two joining sherds was recovered from pit 033, weighing 43g. They were plain body sherds of a coarse, sandy fabric, measuring 8mm thick. The exterior was orange-brown in colour, with a grey core and interior. The exterior surface was very abraded, and slightly pitted, while the interior was sooted. Both surfaces had been smoothed, with some finger-marking on the exterior and some protruding inclusions on the interior. It is very difficult to ascribe a period to such featureless sherds; however, the fabric has some similarities with that from pit 035 and so may be considered to be of comparable date.

A single vessel (P5) represented by two joining sherds was recovered from pit 035, weighing 48g. The fragments were body sherds of a coarse sandy fabric, decorated with probably four parallel lines of impressed twisted cord on the exterior. The outer surface is very abraded. The sherds have an orange-brown exterior and grey core and interior. Both surfaces were well smoothed. The sherd measured 7mm thick and had a thick charred residue adhering to the interior surface and possibly across a sherd edge. The presence of twisted cord impressions in parallel rows strongly suggests this sherd to be Late Neolithic Impressed Ware or Beaker. Residue taken from each sherd has been radiocarbon dated (Table 4.2) and application of the chi-squared test confirms that these dates are statistically the same; when the dates are combined they provide a range of 2570–2450 BC. This date is on the very earliest end of the range for Beaker pottery and so it may be more likely that it is Impressed Ware.

Discussion

The pottery provides a *terminus post quem* for the infilling of the pits. Pottery of two different dates has been identified, and it seems likely, given the small sherds and highly abraded nature, that the earlier, Late Neolithic/Beaker sherds were not deposited freshly broken into the pits (031 and 035) but were incorporated into the fills some time after their primary period of use and were re-deposited from elsewhere. As such, they are a poor indicator for the date of infilling for the pits and cannot be used at all to date the excavation of the pits.

The presence of a substantial portion of a single vessel in pit 031, and the angle of rest of the sherds as illustrated on the section drawing (illus 4.6), suggest that this vessel was deposited in a single act during the backfilling of the pit, and may well have broken upon deposition. It is unlikely that a sherd of that size would have been introduced into the pit through natural processes and so could have been

Illus 4.8 Roman/medieval jar rim

incorporated into the fill simply as a component of the soil used to fill the pit or as a deliberate intentional deposition. It is unfortunate that the vessel is not of a more strongly diagnostic type, and may only be dated to a broad range of *c* 1500 BC to *c* 100 AD.

4.2.5.2 Roman/medieval pottery, by D Alexander

The Roman or medieval rim sherd (illus 4.8) was from a wheel-thrown jar with a slight depression on the inner side of the rim forming a seat for a possible lid. It was recovered from the upper fill of pit 3, and was likely to be in a re-deposited context. The rim diameter was between 80 and 100mm. The fabric was grey in colour, hard, with very common medium-sized (0.25–1.0mm) dark stone grits. The wall of the vessel just below the neck was *c* 3mm thick. The sherd weighed 4g. Parallels for the vessel form have been recovered from the civilian settlement outside the Roman fort at Inveresk (G D Thomas, pers comm). This sherd does, however, bear some resemblance to the fabric of medieval East Coast White Gritty Ware, which has a date-range of 12th–15th centuries AD (G Haggarty, pers comm).

Other sherds of White Gritty Ware were recovered from upper fills of several pits (pits 1, 3, 5, 6 and 9) and have been dated to the 13th–14th centuries AD (G Haggarty, pers comm).

4.2.5.3 Chipped stone, by B Finlayson

This small collection of chipped stone is dominated by chert derived from sources in the Southern Uplands. There are chert pebbles and blocks occurring naturally within the local soils, and because of the fracture properties of this chert it is not always clear when the material has been worked. Some of the chert collected from the topsoil here is probably unworked, but has been damaged by ploughing.

There are six definitely worked pieces, of which four were collected during cleaning following topsoil removal. Two flint flakes were collected from stratified contexts: one from pit fill 030 and an abraded example from the lowest fill of pit 6. The only significant item is a bipolar core from the topsoil, which may indicate a Neolithic, or conceivably early Bronze Age date. Certainly this technique was rarely used in the Mesolithic to work chert.

4.2.5.4 Pollen analysis, by Robert McCulloch

A preliminary assessment of the macrofossil content and the presence and state of preservation of palynomorphs in two soil samples from pit 4 indicated the presence of identifiable pollen grains and the potential for a detailed palynological analysis of a putative humus regeneration band within the pit (Clarke 1996). Pollen analysis of a similar band in a pit alignment, also in the Dalkeith area, permitted an environmental reconstruction and a hypothesis of the function of the pit alignment (Barber 1985).

Ten 0.5cm^3 sub samples were taken from Kubiena tins across the proposed humus regeneration band in the base of pit 4. These samples were processed for pollen content using standard laboratory techniques (Moore et al 1991). In addition the samples were treated with HF acid and heated in a boiling water bath for a total of 1 hour 15 minutes, with the HF acid changed at 30-minute intervals. Eucalyptus tablets were added to enable the estimation of pollen concentrations. A complete slide was counted for each sample using an Olympus BX40 microscope at ×400 magnification. Identification was made with reference to type material and photomicrographs (Moore et al 1991).

Due to the low concentrations of pollen and, as a result, the low total land pollen sums, it was not reasonable to calculate percentage abundances except for the upper two samples, although with the caveat that even the percentage figures for these samples are unreliable.

The herb taxa of *Gramineae*, *Compositae tubuliflorae* and *Liguliflorae* dominate the pollen assemblage, with the addition of pasture/ruderal taxa and polypod ferns. The species diversity declines with depth and conversely total abundances increase upwards. There are no cultivars and an almost complete absence of arboreal taxa (although due to the similarity between eucalyptus pollen and degraded *Betula* pollen, the latter may be under-represented in the results).

The pollen assemblage of pit 4 indicates a grassland with ruderal components common to open pasture. However, further interpretation of the vegetation is constrained by taphonomic processes. The degraded state of almost all pollen grains, the increase in taxa diversity and pollen concentrations upwards and the dominance of palynomorphs more resistant to deterioration (eg *Polypodiaceae* and *Compositae*) suggest that there has been oxidation and secondary decomposition of the profile. This interpretation is consistent with the apparent lack of macrofossils from the same profile.

The Castlesteads and Eskbank pollen profiles suggest similar open pasture grassland, although the latter record indicated a level of surrounding arboreal and shrub vegetation local to the site. The Eskbank pollen assemblage and its degree of preservation also suggest that the site was wetter than Castlesteads. The pits subsequently infilled through natural slope processes. It is likely that the free-draining substratum led to the deteriorated state of the pollen at Castlesteads.

An important reservation on comparing the two

Table 4.3 Dimensions and characteristics of pits 1–6 and 8–9 at Langside

Pit	Length (m)	Width (m)	Depth (m)	Distance apart (m) (centre–centre)	Cut by	Finds (context)
1	2.5	2.0	0.70	1–2: 5.5	–	–
2	2.2	0.6	0.35	2–3: 2.1	–	–
3	2.0	1.2	0.45	3–4: 15.5	clay drain	–
4	2.0	1.0	0.50	4–5: 7.5	clay drain	–
5	2.0	1.0	0.50	5–6: 3.0	clay drain	Flint scraper (503)
6	2.2	0.9	0.60	6–8: 2.9	–	Coarse stone, flint (603)
8	2.3	0.9	0.50	8–9: 2.8	clay drain	Microlith (802), flake (804)
9	2.1	1.3	0.50		clay drain	Flake fragment (902)

profiles is that the samples prepared by B Moffat were 7.0cm^3 and subjected to 36 hours of treatment with HF acid (Barber 1985). The samples prepared for this study by R Kynoch were initially 0.5cm^3 and treated for 1 hour 15 minutes. The respective preparations could account for the differences in pollen concentrations and percentage abundances, as the longer treatment time may have resulted in fewer surviving grains.

In summary, the pollen assemblage from the putative humus regeneration band at the Castlesteads pit alignment indicates open pasture and the absence of arboreal vegetation. However, edaphic processes have led to the deterioration of the pollen profile, which prevents a more detailed environmental reconstruction.

4.3 Langside, by S Mitchell

4.3.1 Introduction

The site was located on an open north-west facing hillside, to the south-west of Langside Farm. Trial trenching evaluation undertaken during 2005 revealed the remains of an alignment of three pits, sealed beneath ploughsoil and cut into plough-scored stiff sandy clay subsoil containing numerous field drains. A subsequent excavation revealed an alignment of six pits (pits 1–6), and a later watching brief exposed a further two pits (pits 8 and 9) forming part of the same alignment (illus 4.9). The alignment has affinities with the later prehistoric pit alignments identified elsewhere within the Esk Valley, of which examples have been excavated within the road corridor and ancillary works areas at Castlesteads and Thornybank (Rees 2002).

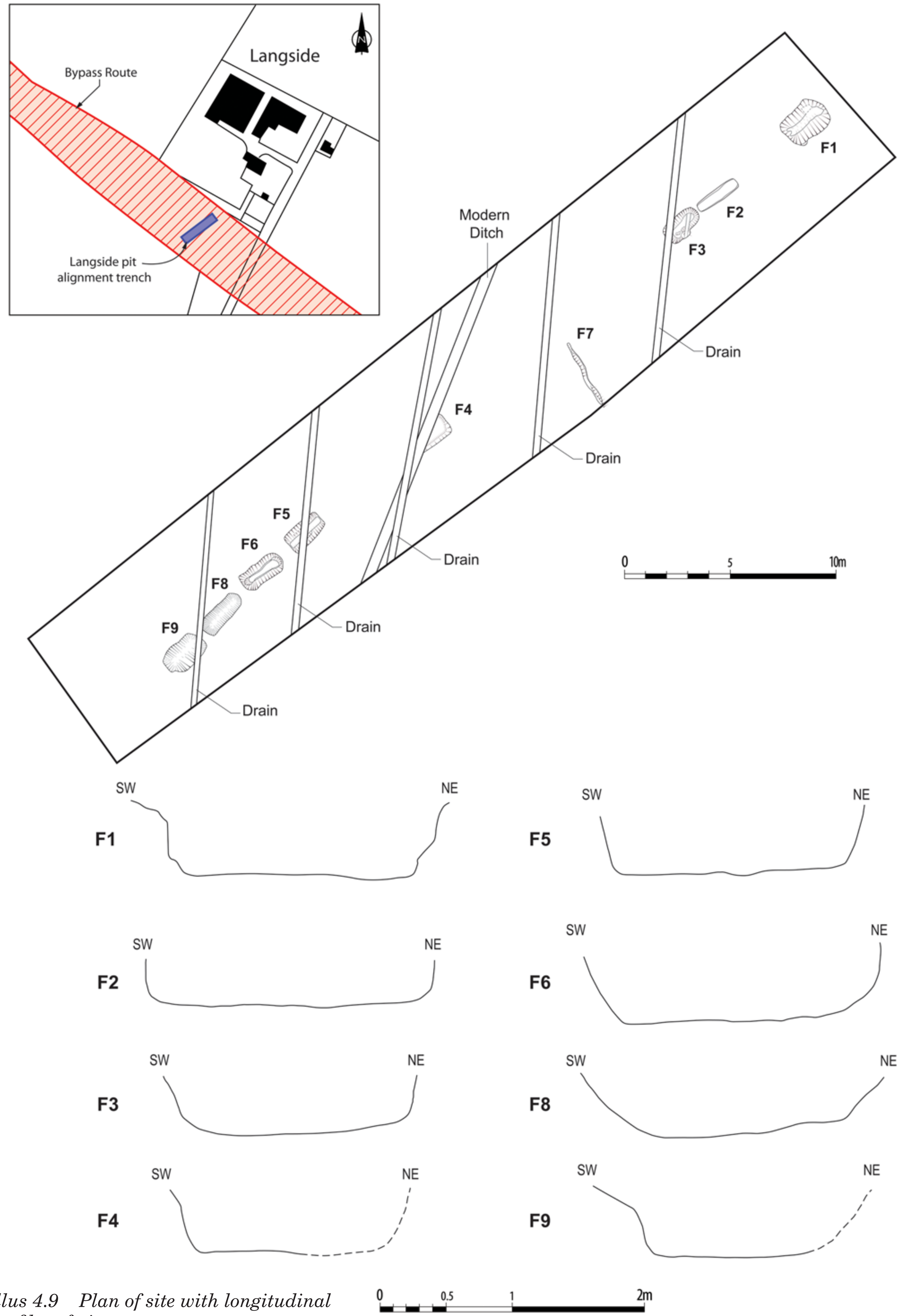
4.3.2 Strategy

Topsoil was removed from the site using a tracked mechanical excavator fitted with a smooth-bladed ditching bucket under constant archaeological supervision. All pre-modern archaeological features cut into the subsoil (ie excluding a modern ditch and land drains) were fully excavated. Bulk soil samples were taken of all archaeological deposits, for wet-sieving to recover charred plant wood and plant remains. Kubiena samples were taken to allow the formation processes of the fills of certain pits to be established (ie to address whether filling was gradual or sudden, a result of natural or direct human agency etc), and to allow the taphonomy of wood charcoal potentially suitable for radiocarbon dating to be better understood. The spoil heaps, fills of linear features and surrounding area within the road corridor boundary were scanned by members of the Scottish Detector Club.

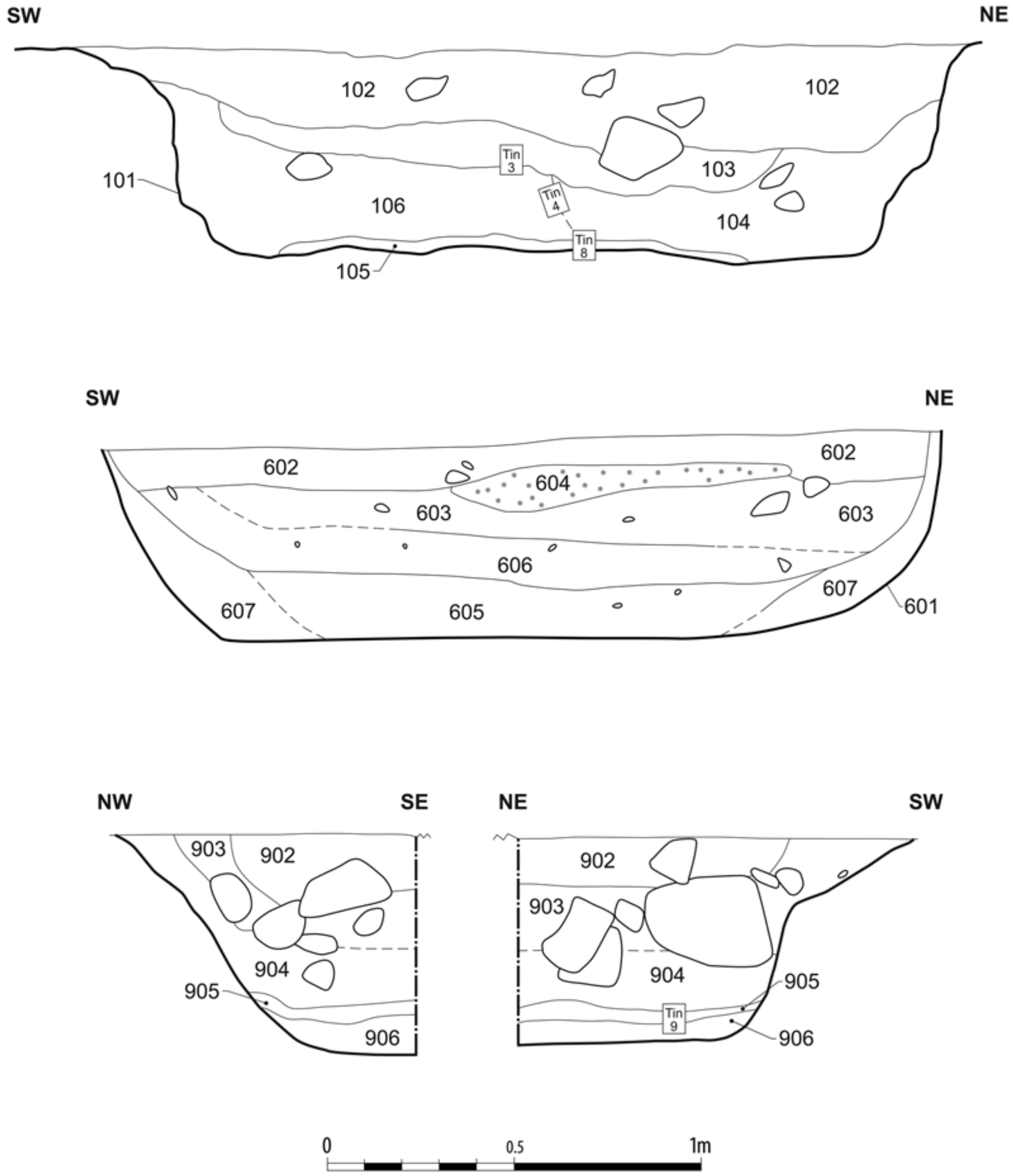
4.3.3 Archaeological results

The excavation trench was 35m long and 7.5m wide, orientated roughly north-east to south-west, with the pit alignment running centrally along its long axis (illus 4.9). Each pit in the alignment was assigned a feature number running sequentially from 1 to 9. Feature 7 was found to be an ice wedge. The depth of the topsoil (001) was up to 0.35m, below which was a deposit of plough-disturbed, dense silty clay varying in depth between 0.2m and 0.3m (002), which sealed a number of field drains and the features. Four of the pits had been cut by 20th-century field drains. The natural subsoil, into which all the archaeological features were cut, varied from sandy clay at the north-east end of the trench to clay in the rest of the trench.

Eight sub-rectangular pits were revealed, of similar size and form. The dimensions and characteristics of the individual pits are shown in Table 4.3; depths are cited from the top of the features as exposed at the surface of the natural subsoil. All were orientated with their long axis along the primary direction of the alignment. There was significant variation in the spacing of the pits. Pits 5, 6, 8 and 9 and pits 2 and 3 were roughly equidistant, set *c* 0.35m from each other, while a gap of *c* 6m lay between pits 4 and 5. A gap of *c* 13.5m lay between pits 3 and 4, and pit 2 was separated from pit 1 by a gap of *c* 3m.



Illus 4.9 Plan of site with longitudinal profiles of pits



Illus 4.10 Longitudinal sections of F1 and F6, and quadrant sections of F9, showing positions of Kubiena tins

All the pits had steep sides and flattish, irregular bases, with no indications of post-settings. They measured approximately 2–2.3m long by 1.3m wide and 0.45m deep, with the exceptions of pits 1 and 2. Pit 1 was notably larger than the others, measuring 2.5m by 2m and 0.7m deep, and pit 2 was narrower, measuring 2.2m by 0.6m and 0.35m deep. The sequence of fills (illus 4.10) was broadly consistent in all the pits and can be summarised as follows: the basal fills comprised firm orange-grey clay; overlying the basal deposit were generally three to four layers of mixed clay matrices. Medium to large stones were contained within the fills of pits 3 and 9, but had no structural indicators and did not form a lining to the base of the pits. Slope-wash and slumping had occurred around the edges of some pits. There was no evidence for re-cutting of any of the pits. Charcoal was recovered from deposits in pits 1, 2, 5, 6, 8 and 9, and samples from contexts 105 (pit 1), 604 (pit 6) and 905 (pit 9) were radiocarbon dated (Section 4.3.5). A coarse stone artefact was recovered from pit 6, and lithic artefacts were recovered from fills within pits 5, 6 and 9.

4.3.4 The finds and environmental evidence

4.3.4.1 The lithic assemblage, by T Ballin

Six lithic artefacts were recovered, comprising three pieces of debitage (two flint and one agate/jasper flakes), one chert core, and two tools (an agate/jasper obliquely blunted point, and a chert side-scraper).

A number of different raw materials were identified, namely fine-grained grey, black or mottled chert, fine-grained red flint, medium-grained brown flint, white/pink agate and red jasper. The chert corresponds to what is generally known as Southern Uplands chert and is most likely to have been procured from the local Carboniferous bedrock (Ballin & Johnson 2005). Flint was probably procured from the nearby shores of the North Sea (Saville 1994), whereas agate may have been obtained from sources in volcanic bedrock in the Edinburgh or North Berwick areas (eg Pentland Hills and Blackford Hill; Heddle 1901, 76). Jasper is basically a red chalcedony (Pellant 1992, 88), where agate is banded chalcedony, and jasper and agate may therefore have been obtained from the same geological formations.

The debitage includes two flakes, one of which was a hard-hammer flake. Only one certain core was recovered. It is a small fragment of a disintegrated, now indefinable core type. At one end, a small proportion of an original flaking-front survives, whereas all other faces are irregular and based on frost-induced disintegration. The tools are one obliquely blunted point (microlith) and one side-scraper on a flake.

The evidence does not allow a more detailed characterisation of the industry(-ies). Flakes were manufactured by the application of hard percussion. The lack of blades or microblades could simply be the result of random statistical fluctuations, as the assemblage is exceedingly small. No preparation flakes or definable cores were retrieved from the excavations. The side-scraper has a trimmed platform-edge, but mostly the recovered flakes have untrimmed, plain or faceted platforms.

The collection only includes one diagnostic piece, namely the obliquely blunted point. In Clark's classification schema (1934), this microlith form belongs to Type A, whereas in Jacobi's schema (Jacobi 1978), it belongs to Type 1a (for an overview, see Butler 2005, 90). Obliquely blunted microliths are generally perceived as dating to the Early Mesolithic period. In principle, all other lithic finds could date to any part of the period between the Mesolithic and the Bronze Age. Usually, complete absence of blades indicates a date after the first stages of the Late Neolithic period (Pitts & Jacobi 1979; Ballin forthcoming a), but as hinted at above, the small numerical size of the assemblage prevents unequivocal technological characterisation and, thereby, certain dating of the material.

Based upon date range proposed above, and the radiocarbon dates obtained from organic material recovered from the pits, the lithics from the Langside pits are surely in secondary, residual contexts of deposition.

4.3.4.2 Coarse stone, by A Jackson

A basalt grinder from feature 6, fill 603, shows slight evidence of grinding use at both poles and slight polishing on one face, possibly the result of handling. The object is of otherwise unmodified natural form. Grinding stones of this expedient type are not chronologically sensitive as they are commonplace on Scottish sites of all periods.

4.3.4.3 Miscellaneous finds, by S Anderson

All miscellaneous finds were collected during a metal detector survey and were unstratified. They include a short section of lead pipe, a brass screw, eighteen copper alloy or silver coins, a colliery check token, a fragment of shoe buckle frame, sixteen buttons, three lead dress weights, a finger ring, a medal (uninscribed, laurel wreath border), a strap fitting, a large iron buckle (horse tack), a lock tumbler, terminals from two spoon/fork handles, lead melt waste, various fittings such as hinge plates and straps, a possible ramrod tip, lead shot, a lead soldier, a conical weight and a sack seal. All of these finds were of 18th- to 20th-century date. A possible late medieval or early post-medieval spoon handle was also found. Two clay pipe stems, a ceramic marble, a marble in clear glass with white glass swirls, and half a small green glass bead were also recovered during the metal detector survey.

4.3.4.4 Charcoal, by M Cressey

Charcoal was recovered from wet-sieving of samples recovered from several deposits in six pits (1, 2, 5, 6, 8 and 9). The assemblage comprises 25g of identifiable charcoal made up of five species. Hazel attained the highest frequency (n=53; 11.3g), followed by oak (n=28; 11.3g). Alder, birch and pine are present but are extremely low in frequency (0.5g, 0.8g and 1.5g respectively). Overall the assemblage is poor and low in frequency. A full report and data table is included within the site archive. No plant macrofossils were identified during post-excavation.

4.3.4.5 Soil micromorphology, by C Ellis

Three Kubiena samples from a single pit section in pit 1, and a further Kubiena sample from pit 9 were analysed. Positions of the tins are shown in illus 4.10. The summary results are given below and full descriptions of methodology and results are available in the site archive.

The pit fills comprise various combinations of clay, silt and sand. All the contexts, except 905, were compact, with the porosity ranging from around 1 to 10%, whilst the charcoal layer 905 exhibited a porosity of around 20%. Although a small sample, the microstructure of the natural subsoil appears to comprise peds or clods. The upper pit fills are dominated by a channel microstructure which is a product of bioturbation. The microstructure of the lower and upper fills of pit 9 were predominantly massive while that of the charcoal layer was vughy.

Colloidal organic matter was generally not observed. Very few fragments of charcoal occurred in every context from pit 1, but charcoal was disseminated within the matrix and biogenic silica was only observed within the uppermost sampled deposit. Very few roots occurred in every context. The charcoal of the lower and upper examined fills of pit 9 was also very rare but the central fill (905) was dominated by large fragments and clasts of cellular charcoal.

Mode of formation and deposition
The fills of pits 1 and 9 are of a similar composition and share similar modes of deposition; they are clearly derived from a similar source. The general lack of observed amorphous organic matter is perhaps partially due to the masking effects of the sesquioxides of iron but is also likely to be a consequence of the source of the fills, potentially the upcast from the excavation of the pits and eroding natural subsoil.

The natural silty clay appears to have been disturbed during the original excavation of pit 1 and the newly exposed surface may have dried out immediately following this, resulting in the formation of peds or clods of sediment. The boundary between the natural subsoil and the overlying silt (105) is prominent and sharp but slightly wavy. Its sharpness is a consequence of the lack of iron impregnation within the silt of 105, rather than a dramatic change in sediment type or presence of linear arrangement of voids etc. This silt and dusty clay of 105 also extends down between the clods of the natural subsoil, with the long axis of the larger sand-sized mineral grains arranged about the vertical, demonstrating that it was rapidly incorporated by a combination of gravity and infiltration. The silty clay (906) of pit 9 shares similar sedimentary characteristics with the natural subsoil and also exhibits planar voids which are infilled with silt and fine sand-sized material; it seems likely that 906 is also a disturbed natural subsoil. Consequently the basal fill of pit 9 appears to be the layer of charcoal and ash 905. However, the lack of a basal silt layer (eg 105 in pit 1) overlying the natural, the truncated nature of the planar void infills and the sharpness of the boundary between the two contexts requires explanation. It is possible that pit 9 was deliberately re-excavated, ie cleaned out, prior to the rapid deposition of the charcoal layer and upper ash band.

The inter-bedded silts and clays of basal fill 105 in pit 1 were produced by differential settlement-out-of-suspension. Soon after initial pit construction run-off introduced silt and clay, the silt settled first while the clay gradually accumulated, falling out of suspension from still rainwater trapped within the pit. Occasional pulses of addition runoff are evident in the presence of silt microlaminations. This clay is overlain by a laminated sequence roughly comprising 2mm wide silt, 1mm wide clay, 1mm wide silt, 1mm wide clay, 1mm silt and then 20mm of clay; a sequence that could have readily accumulated during the course of a few months of changeable weather, or perhaps over a year.

The prominent, sharp but wavy boundary between the upper clay 105 and the overlying moderately sorted sandy clay 104 is a consequence of a sudden change in the depositional environment, namely a sudden influx of silt- and clay-laden runoff. However, it is also a consequence of the post-depositional compaction in which the softer waterlogged clay has been compacted and differentially forced up into the context above. This also demonstrates that there was no hiatus in sedimentation between the two contexts in which vegetation within the pit could have accumulated or the clay surface dried out.

The sequences of accumulation of 104 and 904 are very likely to have been similar to that described for 105, but the laminated fabric characteristic of 105 has been destroyed in 104 by post-depositional bioturbation. The two contexts, 104 and 106, were not readily distinguishable in thin section, perhaps because they are not fundamentally different sediment types but identified in the field as such due to differential mottling/gleying (S Mitchell, pers comm), or perhaps because bioturbation has blurred the boundary to such an extent that the difference between the two is only observable over a large section face.

The silty clay 103 also lacks an internal microfabric, but given its grain-size it is likely that this too was washed into the pit by episodic run-off. The homogeneity of 103 is also a consequence of post-depositional bioturbation.

Anthropic indicators
Anthropic indicators in pit 1 are minimal. The very few charcoal fragments indicate some form of organic combustion taking place within the general locality of the pit; it is unclear from its size and distribution through the profile whether this took place prior to pit construction and was incorporated in the upcast, or whether fires were intermittent during the silting-up of the pit and the charcoal was periodically blown and/or washed in. However, the uppermost sampled context (103) appears to be partially composed of the surviving remnants of ash, comprising charcoal and fragmentary biogenic silica (Carter 1998). The burning did not take place within the pit; rather the ash has been incorporated through natural processes. The concentration of ash indicates a localised source.

Localised burning is also evident from the basal charcoal layer in pit 9 (905). The rounded and vaguely sorted nature of the charcoal clasts, the presence of rounded clasts of ash and the existence of an upper ash band indicates that this material is not in situ, but has been incorporated into the pit by natural forces such as runoff and wind, possibly over a short period. However, given the concentration of charcoal and the relative purity of the in-washed ash band it is very likely that the burning event(s) took place adjacent to the pit, and is therefore a reasonable means of dating the context from which it derives.

Post-depositional processes
Sesquioxides of iron mottles, which are common to dominant in all but the uppermost sampled context, developed under oxidising conditions, where soluble

iron is absorbed by clay minerals (Courty et al 1989). These mottles occurred juxtaposed with grey zones of sediment (pseudo-gley) or in laminations of grey silt and grey clay (eg 105), and provide evidence for periodic reducing and periodic oxidising conditions. The natural subsoil had been subject to damp but largely oxidising conditions, resulting in the formation of mottles prior to the deposition of the overlying silt which remained unaffected by mottling. In pit 1 the overlying silt and clay laminations appears to have been laid down relatively rapidly in largely reducing conditions, although subsequent and limited root penetration and degrading of organic matter resulted in isolated pockets in which sesquioxides of iron accumulated. The movement and accumulation of fine particles through the sediment profile within porewater (a process known as illuviation) is testified in the frequent to common infilled channels, voids and pores with silt and dusty clay within 906, 905, 904, 103 and 104.

Post-depositional bioturbation is evident throughout the sampled pit 1 profile, but is especially marked in the upper contexts. The concentration of biological activity in the upper deposits is probably due to the domination of oxidising and less waterlogged conditions and probably a slower rate of sediment accumulation. The channel microstructure of 104 and 103 is a product of bioturbation. The homogeneity of the convoluted fabrics of 104 and 103 is interpreted as a consequence of the mixing and reworking of the sediments by soil biota, the original depositional fabric having been destroyed. Stacks of sand grains and thin accumulations of silt within these deposits are also indicative of the activities of soil biota.

Evidence for post-depositional bioturbation is more limited in the sampled contexts from pit 9. The very few clasts of mixed charcoal and mineral grains in 905 appear to be the by-product of bioturbation. The infilled channels of the upper fill 904 are interpreted as products of bioturbation.

Summary conclusions

The fills of pits 1 and 9 comprise clay, silt clay, silt and poorly to moderately sorted sandy clay; these fills are likely to be derived from pit upcast and localised erosion. Pit 9 also contains a layer (905) dominated by cellular charcoal.

- The pit fills accumulated under natural forces (run-off and gravity).
- Rates of sedimentation were relatively rapid; the lowermost fill of pit 1 could have accumulated over the course of a few months to perhaps a year.
- No hiatus in sedimentation was observed, although rapid changes in localised conditions of deposition were evident.
- Pit 9 appears to have been re-excavated prior to the deposition of the charcoal-dominated layer 905.
- Anthropic inclusions were limited to the charcoal and ash layer 905 in pit 9 and a very few minute pieces of charcoal and the remnants of ash in the uppermost sampled context 103 of pit 1.
- The charcoal and ash of 905 and ash of 103 were not burnt in situ but appeared to have been deposited rapidly by natural forces from immediate, local sources.
- The pit fills have been subject to post-depositional processes including periodic wetting and drying and illuviation.
- All the sediments in pit 1 had been affected by bioturbation. The level of bioturbation intensified in the uppermost contexts. The sediments of pit 9 were less affected by bioturbation.

4.3.5 Radiocarbon dates, by A Dunwell

Paired samples of charcoal from three features across the site were submitted to SUERC for radiocarbon dating. The results are presented in Table 4.4.

The radiocarbon dates give a range from 800 to 510 cal BC for pit 1 (basal fill 105), 360 to 40 cal BC for pit 6 (upper charcoal fill 604) and 390–200 cal BC for pit 9 (basal fill 905). The radiocarbon dates from the basal fill of pit 1 are indubitably earlier than those from pits 6 and 9 (illus 4.11). Whilst those from pits 6 and 9 do share some overlap in their ranges, they fail a chi-squared test when combined as a group, as do the earliest and latest of the four when combined (GU-15886 from pit 9 and GU-15884 from pit 6), and are therefore statistically significantly different (although GU-15887 from pit 9 and GU-15885 from pit 6, which are the closest together, pass a chi-squared test, and therefore could relate to the same event). However, the probability is that the pairs of dates from each context, while internally consistent, are the residues of three separate burning events. The fact that in each case the paired dates are in agreement suggests that this was not the result of mixed material being washed into the pits; and this, combined with the soil micromorphological evidence, indicates that some faith may be placed in the material as dating the formation of the deposits from which the dated samples were recovered.

Micromorphological analysis suggests that 105 was deposited rapidly and that no re-excavation of the pit down to the original cut (101) was undertaken, thus the dates for this feature may reflect a fairly accurate date for its construction. The dates from the fill 905 of pit 9 are significantly more recent than those from the basal fill of pit 1, but of interest is that the soil micromorphological evidence suggests that fill 905 may have been deposited in pit 9 after an episode of cleaning out or re-cutting. Fill 604 was deposited relatively high in the sequence of fills within pit 6 (illus 4.10). The dates from this fill may therefore be the result of the incorporation of material burnt either within or close to the pit some considerable time after the original excava-

Table 4.4 Radiocarbon dates for Langside

Lab code	Context	Sample	Lab age BP	δ13C	Calibrated dates	
					1δ	2δ
GU-15882	105	Charcoal: *Quercus* sp.	2505±35	–25.7‰	770–540BC	800–510BC
GU-15883	105	Charcoal: *Quercus* sp.	2520±35	–24.8‰	780–550BC	800–520BC
GU-15884	604	Charcoal: *Corylus avellana*	2125±35	–27.8‰	210–90BC	350–40BC
GU-15885	604	Charcoal: *Corylus avellana*	2140±35	–28.1‰	350–100BC	360–50BC
GU-15886	905	Charcoal: *Quercus* sp.	2235±35	–25.7‰	380–210BC	390–200BC
GU-15887	905	Charcoal: *Quercus* sp.	2225±35	–26.2‰	370–200BC	390–200BC

tion of the pit, by which time the part of the pit that survived was nearly filled with sediment and must have been a less prominent landscape feature than when first excavated.

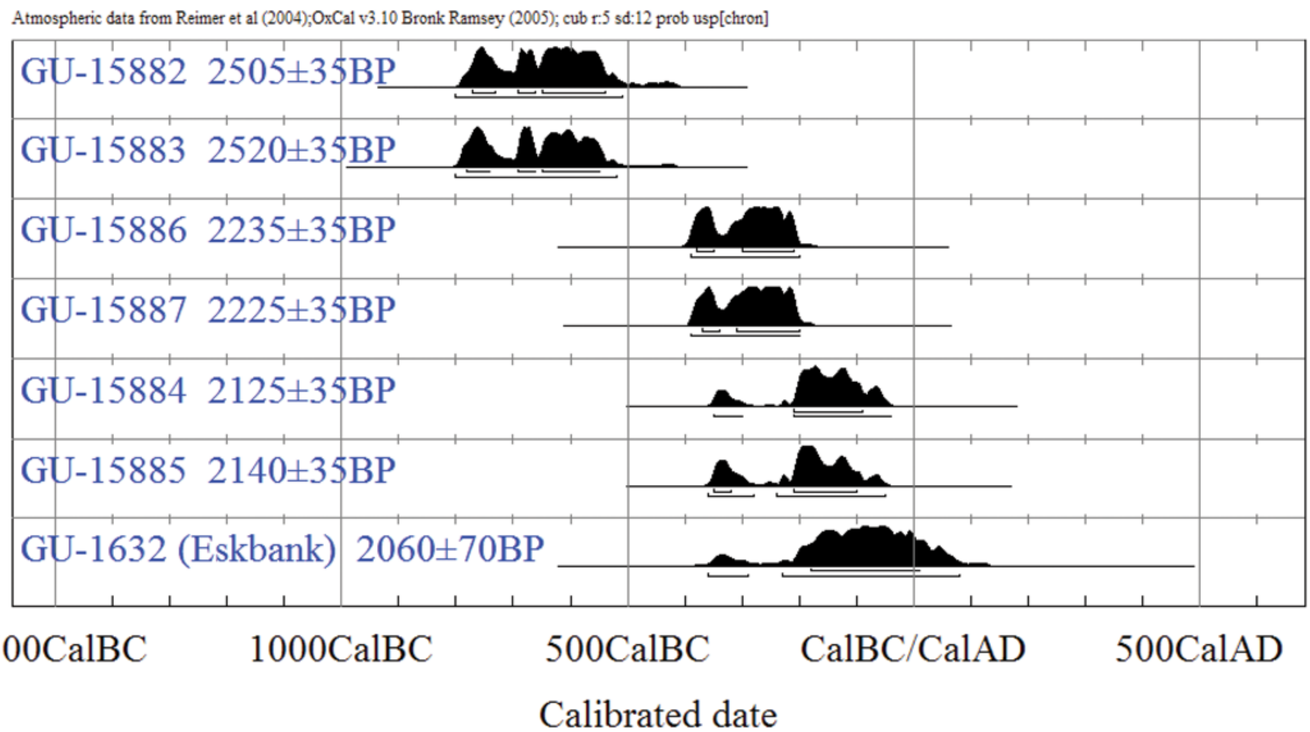
There is a good case to be made that the Langside pit alignment was an Early Iron Age construction. It is notable that the singleton date obtained from a lower fill of a pit forming part of an alignment at Eskbank (Barber 1985; GU-1632) is contemporary with the latest pair of dates from Langside, from the upper fill of pit 6 (the two sets of radiocarbon dates pass a chi-squared test). This might indicate that the Eskbank pit alignment is a more recent construction than the Langside example, and hence that the dividing of the lands along the Esk Valley was not a single event. The apparent difference in form between the Langside pit alignment and those excavated at Castlesteads, Thornybank and Eskbank may therefore have some chronological explanation. However, we should perhaps be wary of asserting this on the basis of the limited radiocarbon evidence currently available, and the different approaches taken to establishing the taphonomy of the dated samples.

4.4 Discussion

4.4.1 Pit alignments in general

The interpretation of pit alignments is problematical. Owing to variations amongst the remains that are described as pit alignments, it is perhaps unsurprising that different investigations have produced a range of claims as to their derivation and function, and that at least as many questions as answers have arisen.

Earlier approaches generally focused on either



Illus 4.11 Plot showing calibrated radiocarbon dates (using OxCal v. 3.10 (Bronk Ramsey 2005))

a functional explanation or a symbolic and ritual perspective. The function of pit alignments is not self-evident. Unlike ditches or banks, the discontinuous nature of pit alignments does not appear to offer any effective qualities either as a boundary or a drain. Excavation of a series of pits is also significantly more arduous than digging a linear ditch, thus it is unlikely that they were dug as segmented ditches on the grounds that it involved less work. The lack of any conclusive indicators to their purpose invites the theory that they were primarily ritual or symbolic. Earlier interpretations of postulated symbolic and ritual attributes have not, however, provided any conclusion on what content and meaning the ritual or symbolism might have (Pollard 1996; Waddington 1997).

The distance between neighbouring pits is considered to be a useful criterion in the estimation of their function. The prevailing hypothesis at the time of the excavation at Castlesteads was that the role of the pit alignment related to the subdivision of an agricultural or pastoral landscape (Halliday et al 1981; Halliday 1982; Barber 1985; Pickering 1992). Halliday (1982) proposed, on the basis of map-based study and a consideration of the few surviving upstanding examples, that pit alignments formed parts of a more extensive series representing 'pitted boundaries' associated with a pastoral landscape. The pitted features in the Castlesteads/Newton area formed a major element of his hypothesis. If pit alignments were associated with a functional boundary, regular maintenance might be expected to have been required in order to prevent slumping. Halliday (1982) has also suggested that pit alignments may have functioned as a boundary and stock deterrent, although without an additional structure, it is difficult to envisage how the pit alignment alone would function as such, the regular causeways allowing easy crossing of the line.

Strong (1988) excavated a pit alignment at Marygoldhill, Berwickshire, which he suggested were post-holes for a palisade or similar structure related to a nearby Iron Age Enclosure. However the Marygoldhill pits were different from the Castlesteads and Langside pits in that they were round, rather than rectangular, and were smaller, the largest having a diameter of 1.5m tapering to a depth of 0.87m with a basal diameter of 0.85m.

Miket (1981) proposed that pits in the Milfield Basin, Northumberland had formerly held posts set at their terminal ends, although the stratigraphic evidence supporting this argument cannot be seen as definitive. The presence of posts was clearly demonstrated for the pit alignment excavated at Meldon Bridge (Burgess 1976; Speak & Burgess 1999), but this feature was dated by radiocarbon to the late third millennium BC and, given its different character, need not have been constructed with the same intent as that dug probably two millennia later at Castlesteads and Langside; indeed, the Meldon Bridge arrangement seems to belong to a special series of pit-defined enclosures, also known for example in the Earn Valley at Forteviot (Burgess & Miket 1984). There was no evidence that posts had been set into the Castlesteads or Langside pits.

While there are similarities between pit alignments containing post-settings and those without, Rylatt and Bevan (2007) argue that these two types of pitted alignment should not be *a priori* considered together as a single feature type, as they represent differing functions, the addition of posts indicating a basis for a solid and continuous physical boundary.

An alternative interpretation is that they were quarry pits, possibly for clay or building material. Halliday (1982) has suggested that pit alignments are a by-product of soil extraction for bank building, and there is evidence for a possible plough-truncated bank adjacent to the pits at Thornybank (Rees 2002).

Barber's excavations and soil and pollen analyses at Melville Nurseries at Eskbank near Dalkeith produced no evidence for posts having been set in the pits, which were thus interpreted as being quarry pits for an adjacent ploughed-out bank (Barber 1985). A radiocarbon determination of 360 cal BC to 90 cal AD (GU-1632; calibrated using OxCal 3.10) was obtained from charcoal within a lower fill in one of these pits. A pre-Roman, Iron Age pastoral landscape was proposed in the immediate vicinity of the Eskbank example on the basis of pollen analysis, although Barber wisely pointed out that is not possible to generalise about the land-use patterns around all pit alignments from one case study.

The pit alignments at one of the few recognised upstanding remains of this type in south-east Scotland, at Marygoldhill Plantation, Berwickshire (Strong 1988) ran beside banks, thereby corroborating Barber's interpretation, but Strong argues that the deep and narrow profile of those pits excavated at this site must raise doubt as to whether they were excavated simply to extract materials for the adjacent bank. At one point the pits lay between segments of a shallower and wider ditch – an arrangement which Strong (1988) believed more likely to have provided material quarried for the bank. Barber (1985) suggested that the construction of banks from segmented ditches has a long tradition which cannot be tied to any particular period. Claims for the former presence of a marginal bank have been advanced on the basis of the partially-excavated fill of three pits in an alignment at Chesters, Drem, East Lothian (Mackay 1980, 36); in these examples the presence of substantial cobbles within the pits was taken as an indication of deliberate infilling, in contrast with the evidence for more gradual silting indicated at Castlesteads and Langside.

More recent approaches have sought to interpret the alignments within the context of their wider landscape. Powlesland (1986) has defined a later Bronze Age pit alignment at Heslerton, North Yorkshire as an initial landscape division serving as a focus for open settlement, transforming through later phases into a part of later prehistoric enclosed field systems and possibly forming a significant component of the Yorkshire Wolds dyke system.

Rylatt and Bevan (2007) have proposed that while the pits functioned as boundaries, they may have formed visual conceptual boundaries as opposed to physical utilitarian boundaries. Evidence from pit alignments at Kilvington, Nottinghamshire and Gardom's Edge, Derbyshire suggests a relationship with natural watercourse boundaries; a flood level in the case of Kilverton and a watershed in the case of Gardom's Edge. They argue that water is of key significance to understanding pit alignments' significance, as many have been either dug in poorly drained clayey soils, such as at Langside, where the basal sediments within pit 1 formed through the settling of sediment suspended in rainwater trapped in the pit, or deliberately lined with puddled clay, as at Gardom's Edge, in order to retain water. The Castlesteads pits were cut through free-draining sand and gravel, and would not have retained rainwater without the presence of a clay lining, for which there was no evidence. Rylatt and Bevan (2007) suggest the pits as a long-term landscape feature which through visibility, changing seasonal water levels and the engagement necessitated by walking between pits via the causeways, would attain significance and meaning to the people who created, maintained and lived with them. Thus the pit alignments are interpreted as representing a visible landscape feature forming both a conceptual and a physical boundary demarcating two or more separate entities and reflecting a conscious cultural relationship with the wider landscape and possibly other perceived supernatural dimensions.

4.4.2 Castlesteads and Langside

The excavations at Castlesteads and Langside have revealed pit alignments of potentially significant archaeological interest. They extend the distribution of these features east of the Esk and onto the clay subsoils, where they are less likely to be revealed as cropmarks. Their shared similarities were a north-east to south-west alignment and multiple fills suggestive of natural silting processes rather than deliberate backfilling. They appear to represent the remains of later prehistoric pit alignments related to those excavated at Thornybank (Rees 2002).

Pit alignments are generally dated between the Neolithic and the early Roman period, although credible evidence for a massive Mesolithic pit alignment has been identified at Warren Field, Crathes, Aberdeenshire (Murray & Murray 2006). No secure dates are available from Castlesteads, whilst radiocarbon dates from Langside range from *c* 800 to *c* 50 cal BC. Dates from pits 1 and 9 were both derived from basal fills, and the dated material from the basal fill of pit 1 may well have entered the pit very soon after the original excavation of the pit, based upon soil micromorphological evidence. Assuming all pits were created synchronously, the radiocarbon dating evidence tends to suggest that the Langside pit alignment was first constructed before 400 cal BC, and that the pits had become substantially choked by sediment before the end of the millennium, by when they would have appeared as less prominent surface depressions. One could speculate that by the end of the first millennium BC the pit alignment was either disused or its meaning/function had changed.

While Castlesteads shares many fundamental attributes with Thornybank, Langside differs in that the pits were irregularly spaced. It is more likely that the irregular spacing reflects design rather than truncation, as the surviving pits were of significant size and depth, and the natural subsoil surface was uniform and undisturbed aside from the cutting of field drains. One could suggest that the pit alignment in this area had originally been created across land with very localised height variations, which was subsequently planed flat by ploughing (with the higher ground reduced by at least the depth of the surviving pits), eliminating those pits that had occupied the elevated ground and producing the irregular spacing revealed by excavation. It is alternatively possible that shallower pits had been present between those surviving and were removed by ploughing. Both these explanations require some special pleading, however, and it is notable that the cropmark evidence around Castlesteads appears to show short and apparently discontinuous lengths of pit alignment to be present (illus 4.1). However, only a relatively small area exposing eight pits was excavated at Langside, which necessarily affords a restricted perspective and dataset for analysis and comparison.

It seems unlikely that the original excavators of the Langside pits were extracting clay, as although the subsoil is clay, it is of such poor quality, with sand and stone inclusions, that it would be of no use for pottery. There would also have been no need to excavate quarry pits in a regular linear arrangement. In addition, a better source of clay can be found in the valley bottom in and around Smeaton, where there has been industrial extraction of quality clay used by the Smeaton brick and tile works.

The less regular nature of the shapes and spacing of the pits encountered at Langside is possibly more supportive of quarrying for bank material being one of the motives for their excavation, however this may be a reflection of the medium the pits were dug into; the heavy clay subsoil being significantly less accommodating of large-scale excavation than the sands and gravels found elsewhere. The probable maintenance of pit 9 suggests a level of upkeep that would exclude quarrying as a single cause for excavating the pits, although quarried clay could have been a complementary by-product of the pit digging.

No traces of an upcast bank were found at Castlesteads or Langside, although had one once existed, subsequent ploughing could have removed it given the relatively shallow topsoil depth and the presence of ploughmarks in the surface of the natural subsoil. Residual evidence for a flanking bank was found roughly 1km away from Castlesteads at Thornybank (Rees 2002). It is likely that the spoil removed from pits of the dimensions encountered in pit alignments – though a considerable amount – would in any case only have been sufficient to have formed a relatively slight bank. Material considered by Ellis (above) to be redeposited upcast was present in the fills of pits 1 and 9 at Langside.

However, it seems unlikely that the pit alignments at Castlesteads and Langside were designed simply as a series of quarry-pits for the construction of a bank – the strikingly regular profiles and depths of the pits suggest that their shape as originally dug out was integral to their function and their regularity may have been the main feature of the line. It would have been difficult to manoeuvre within the pits, but they are of a size that suggests that the original excavator worked within the cut. One of the requirements for excavation is space for movement, the use of tools and the extraction of hardcore (Barber 1985). The form of these pits thus suggests that they are unlikely to be the result of mere quarrying activity, since they would represent a very inefficient means of extracting materials for bank construction. A more likely by-product of quarrying would be a ditch or a series of much larger pits. The occasional known instances where a pit alignment continues its course as a ditch are not helpful, as these seem to be indicative of re-cutting (eg Marygoldhill, Strong 1988). Assuming some degree of plough truncation, it appears that the pits at Castlesteads could have been conjoined at levels now eliminated by ploughing, although even if touching they would have remained very separate entities and are unlikely to have had the appearance of a continuous, regular ditch from the ground surface.

The uniformity of the pits in the alignment is perhaps significant; it could be that the holes themselves were important in terms of function and appearance. The regular spacing and size could have been used as a rough visual guide to measurement and areas of land, not as a universal measurement but as one common to this particular set of features. It must, however, be noted that the pits in the nearby alignment at Thornybank (Rees 2002) were slightly smaller, with average sizes of *c* 4m × 2m; and at Eskbank (Barber 1985), like Langside, the pits were considerably smaller at *c* 2m × 1.5m.

Two pits in the excavated portion of the alignment at Castlesteads (pits 7 and 8, illus 4.1 and 4.3) were markedly shorter than the other pits and intersected at the level of the subsoil surface. It is possible that this is a result of the pit alignment having been dug not one pit at a time sequentially in a single direction, but rather in a series of segments. These two pits may reflect the joining of two such segments where the gap left was too small to excavate two 'standard-size pits', and too large for just one pit to be excavated. This phenomenon was also noted at Thornybank (Rees 2002), where a smaller pit had been dug within a gap, and at St Ives (Pollard 1996), where it was suggested as evidence of gang construction, whereby segments of pit lines were allocated to specific individuals or teams. Evidence of this method of construction can be inferred from studying the alignment on plans and aerial photographs (illus 4.1 and 4.2). It can be seen that the pit alignment is not ruler-straight and the slight wobbles and alignment changes could reflect construction segments such as have been hypothesised here.

One of the pit alignments in the Castlesteads series, to the east of the excavated example (illus 4.1), appears to respect the natural boundary of the River Esk – the curve of the pit alignment is paralleled in a river meander. The river certainly represents a physically efficient barrier and the proximity of these two different boundaries may give credence to the idea that pit alignments were not intended to be physically restrictive, but rather to symbolise the landscape itself by mirroring its configuration, as well as organising it into specified areas (cf Rylatt & Bevan 2007).

The cluster of small pits to the east of the pit alignment at Castlesteads poses some interesting questions. The inclusion of pottery in these small pits is noteworthy – the pits are at least 200m from the nearest known settlement of probable Iron Age date (see Section 5). There is some evidence (Hingley 1991) for structured deposition close to boundaries in the Iron Age and the deliberate deposition of freshly broken pottery here may represent a similar act. It is possible that the pits may have underlain a bank that accompanied the pit alignment, perhaps dug to hold a foundation deposit. Alternatively, the pit cluster may post-date construction of the alignment and simply respect the line.

The fine, silty and clayey nature of the pit fills at Castlesteads suggests a process of gradual infilling, as might the putative vegetation regeneration layer at the bottom of the pits. It is clear that the pits were left open after their initial excavation. There was no evidence at Castlesteads for re-cutting of pits, but neither is there evidence that they were deliberately infilled, other than the possibility that the stones near the bases represent minimal field clearance from the area immediately around the pit alignment soon after its excavation, that is, before slopewash and slumping occurred. The upper brown silt fills of pits in the alignment contained medieval pottery fragments that were likely incorporated as a result of ploughing, suggesting that the pits were still visible on the ground until this time.

Although there was no in situ burning evidence at the Langside pits, it is likely that burning occurred close by and the charcoal and ash were blown or washed into the open pit 9. There was also evidence of charcoal within pits 1, 4, 5, 6 and 8. This may be directly connected to the function of the pits, but it seems more likely that it simply reflects cooking, small-scale industrial activity or a simple fire for heat having occurred coincidentally close to an open pit.

In the cases of Castlesteads and Langside, evidence for distinctive land-usage has not survived. Many reasons have been sought to explain what appears to be an 'illogical earthwork' (Pollard 1996) and the efficiency of a simple pit alignment as a physical barrier has been doubted. It would be easy to dismiss the pit lines with a simple interpretation as a by-product of quarrying, or as sockets for holding posts, but the evidence in these cases does not support that view. The evidence from Castlesteads suggests that pit alignments may have had a symbolic as well as a functional purpose. Nevertheless, this like other pit alignments points to the use of pit lines as territorial divisions or boundaries, demarcating large blocks of land and possibly reflecting a trend towards a more organised landscape in later prehistory.