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Some excavations on the line of the Antonine Wall, 1994–2001

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ABSTRACT

The results of over 30 separate excavations and watching briefs along the line of the Antonine Wall are presented. The alignment and character of the frontier works and fort defences were clarified in several places. New information was obtained regarding a possible enclosure on the north side of the Wall near Auchendavy.

INTRODUCTION

This report pulls together the results of over 30 excavations and watching briefs conducted along the line of the Antonine Wall between 1994 and 2001. Preliminary accounts of the results of these investigations have been published in the relevant issues of *Discovery and Excavation in Scotland* and *Britannia*. Summary mention is made of some of the interventions recorded here in the recently revised fifth edition of *The Antonine Wall: A Handbook to the Surviving Remains* (Robertson 2001). Several larger-scale investigations have been undertaken within the same time period, and are not reported here. These include at Carriden annexe (Bailey 1997), Balmuildy (Duffy et al forthcoming), Dullatur Roman Temporary Camp (Lowe & Moloney 2000), Falkirk Roman fort (Bailey, forthcoming a), Kinneil (Glendinning 2000), and Mumrills annexe (Bailey, forthcoming b). A ford discovered near Rough Castle, which was originally thought to have been Roman, as it lay beside the Military Way, was subsequently proved to have been prehistoric (*Discovery Excav Scot 1995*, 12 & *1996*, 42; Hamilton et al 2001).

The format of this report follows those of previous compilations (most recently Keppie et al 1995) in many respects. Investigation sites are considered from east to west and numbered sequentially (illus 1). However, those sites that produced no significant archaeological results are summarized in Table 1 for the sake of brevity, and readers requiring further

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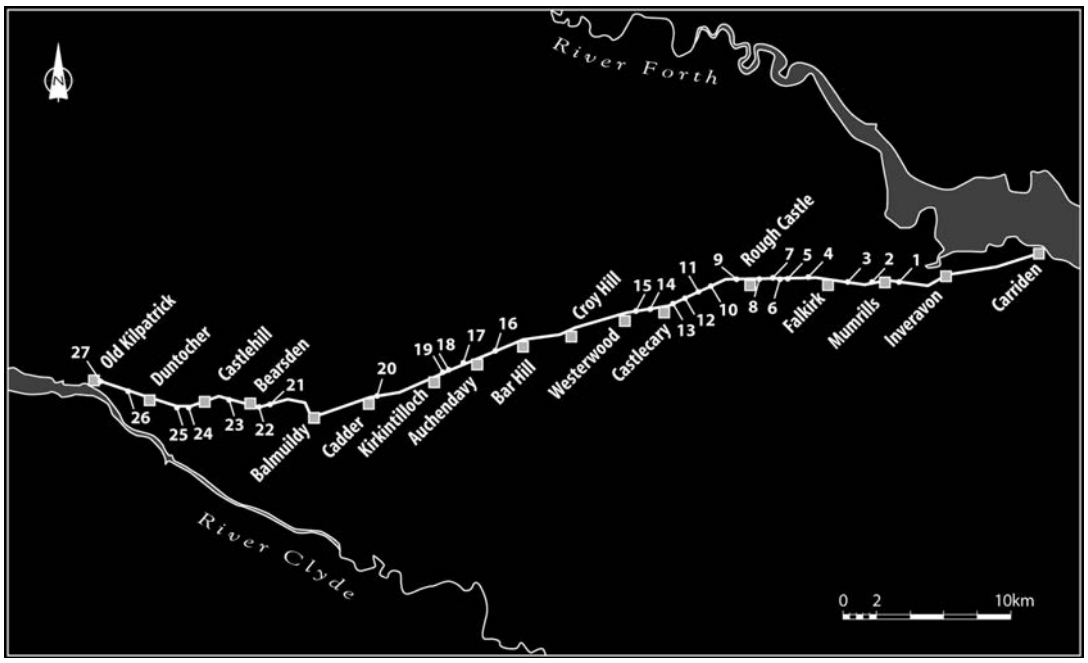


ILLUS 1 The Antonine Wall, showing locations of sites investigated

information are referred to other published summaries and the project archives.

In the following reports, the terms 'Antonine Wall' or 'Wall' are used to describe the frontier as a whole or the frontier works as a group at any particular location. The terms Rampart, Ditch, Outer Mound, Berm and Military Way are reserved for the description of the main linear components of the frontier works.

1: BREWERS FAYRE, FALKIRK (NATIONAL GRID REFERENCE: NS 9265 7950)

A Duffy

In June 1999 an evaluation was undertaken on the site of a proposed Brewers Fayre and Travel Inn, near Falkirk. The proposed development lay on the route of the Antonine Wall, remnants of which were seen within the development area at its western edge during the excavation of a trench for a drain ('Polmont Burn': Bailey 1996, 355–7). The three trenches, each 2m wide and totalling 76m in length, were orientated roughly N/S, at right angles to the adjacent A905 road. No physical evidence of the Rampart, Ditch or Military Way was noted during the evaluation. The absence of the Ditch is of particular interest as, given the large size of this feature, it seems highly unlikely that its absence can be explained in terms of lack of preservation. The possibility that it was never present here can be countenanced (see Commentary, below).

2: MARY STREET, LAURIESTON, FALKIRK (NS 9099 7951) (illus 2–6)

G B Bailey

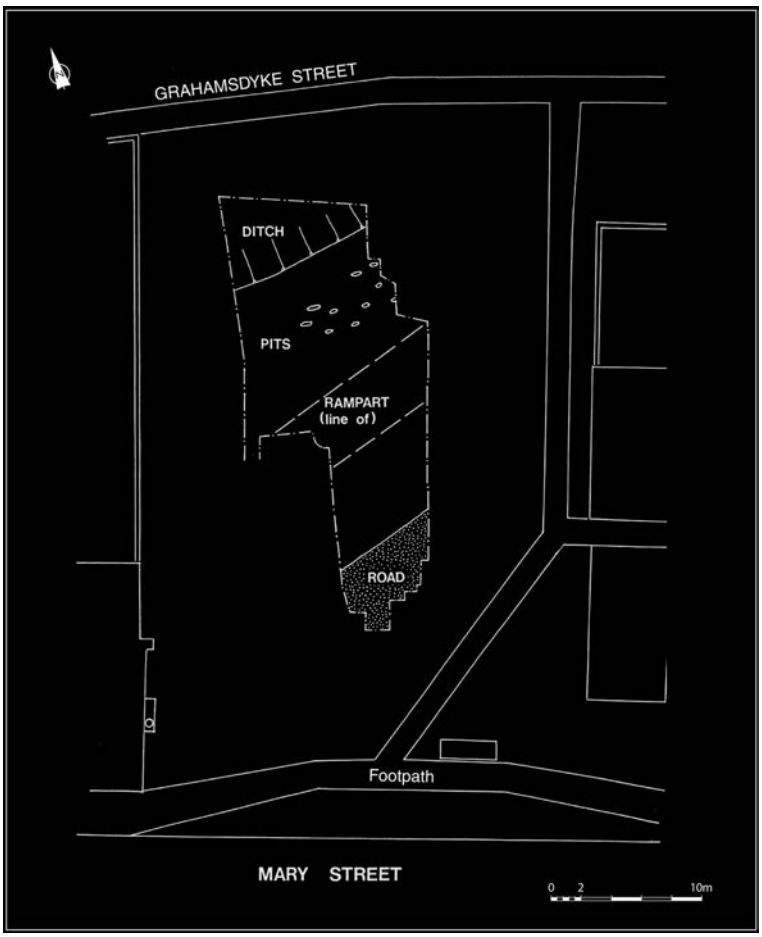
In May 1999 an excavation was carried out by Falkirk Museum Service in the north-west corner of Mary Square, Laurieston in advance of the construction of sheltered housing by the Key Housing Association Ltd.

The street plan indicated that Grahamsdyke Street was an existing road at the time that the village was laid out in 1764 and that it therefore lay on the Outer Mound of the Antonine Wall, as is normal for roads with that name. This location gave these roads a drain to the south (ie the Ditch) and a receding slope to the north. The Ditch had evidently remained open until the creation of the

TABLE 1

Investigations along the Antonine Wall revealing no significant archaeological results

No	Name	NGR	Excavator	*Discovery Excav Scot* ref	Summary description
3	Callendar Park, Falkirk	NS 8966 7958	A Rees, Univ Edinburgh	1996, 42	Test-pitting proved that a proposed gas pipeline, which was to cross the Antonine Wall adjacent to Symon Tower, would not disturb its remains.
4	Tamfourhill Road, Falkirk	NS 865 798	L Main, Central Regional Council	1994, 8	A watching brief during road widening operations revealed no remains associated with the adjacent Antonine Wall.
8	Rough Castle, Falkirk	NS 8465 7985	A Rees, Univ Edinburgh	1995, 12	A watching brief was conducted within the field system SE of Rough Castle fort (Máté 1995), during the excavation of foundations for two electricity poles. No remains were found.
9	Rough Castle, Falkirk	NS 8423 7986	A Dunwell, Univ Edinburgh	1995, 12	The dismantling of an electricity pylon that formerly stood on the east bank of the Rowantree Burn was achieved without causing damage to archaeological remains associated with Rough Castle fort.
10	Park Street, High Bonnybridge, Falkirk	NS 8300 7971	A Dunwell, Univ Edinburgh	1995, 12	The dismantling of an electricity pylon that formerly stood on the Rampart, still visible as a prominent earthwork, was monitored. Dressed sandstone chunks, probably from the Rampart base, were discovered in the construction backfill of one foundation pit.
11	Milnquarter camp, Falkirk	NS 8261 7934	A Dunwell, Univ Edinburgh	1995, 13	The dismantling of an electricity pylon that formerly stood within the camp was monitored. Nothing of archaeological interest was observed.
13	Dundas Cottages, Bonnybridge, Falkirk	NS 7939 7855	J Gooder, AOC Archaeology	2000, 39	A test-pitting evaluation determined that a proposed foul sewer, which was to be inserted across the Antonine Wall, would not disturb its remains. No Roman features were identified within the depths explored.
14	Garnhall 1 temporary camp, Castlecary, North Lanarkshire	NS 7850 7803	K Cameron, Univ Edinburgh	1996, 79	Excavations within the perimeter of the camp, to the west of Castlecary House Hotel, revealed the ground to have been greatly disturbed in recent times. Nothing of archaeological interest was encountered.
15	Tollpark, Cumbernauld, North Lanarkshire	NS 778 774	P Duffy, GUARD	1998, 69	Trial trenching and a watching brief associated with development works at the Isola Factory demonstrated that all trace of Tollpark Roman camp had been removed by previous construction work in the area.
21	Douglas Park Golf Course, Bearsden, East Dunbartonshire	NS 557 724	S Halliday & G Tompsett, GUARD	1997, 29	Test-pitting demonstrated that deep tyre rutting caused by a mechanical excavator had not damaged the buried remains of the Antonine Wall. No Roman features were identified within the depths explored.
24	Cleddans Farm, West Dunbartonshire	NS 512 723	D Abernethy, GUARD	1995, 69	A field evaluation conducted to the south of the scheduled area of the frontier works revealed no archaeological remains or finds.
26	Carleith Primary School, Duntocher, West Dunbartonshire	NS 482 729	D Abernethy, GUARD	1997, 83	Monitoring of the construction of a perimeter fence for the school along the S side of the scheduled area of the Antonine Wall revealed no remains or finds.



ILLUS 2 Mary Street, Laurieston: plan showing Roman features

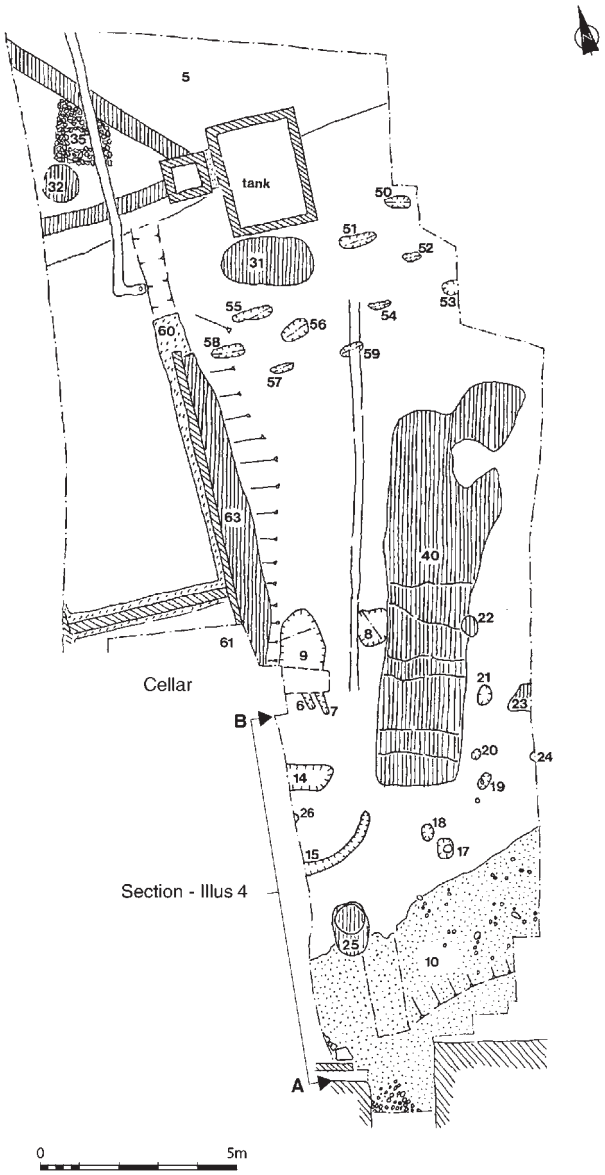
village and was then actively infilled from the late 18th century onwards. During the 1960s and 1970s, Grahamsdyke Street hereabouts was widened and slightly realigned so that it ran further south than its predecessor (illus 2).

The purpose of the excavation was to establish the line of the Ditch. Although it was reasonable to assume that the Rampart itself would have been eradicated and the stone base used as a quarry for the village, it was hoped that, as well as the Ditch, other negative features of the Roman period, such as the defensive pits on the Berm, might survive.

EXCAVATION

At the time of the excavation, the land sloped gently down to the north from Mary Street to Grahamsdyke Street, with a fall of 2.8m from 52.7m OD to 49.9m OD over a distance of 42m. It had been assumed that the Rampart would have occupied the higher ground to the south. In the event it was found that this part of the site had been built up since that period, whereas the northern part had been truncated. The Roman ground level in the south of the excavated trench lay at 50.6m OD, and the truncated subsoil south of the Ditch at 49.4m OD. Allowing for the removal of 0.3m in the latter area (see below), there had been a fall of only c 0.9m at the time that the Wall was constructed.

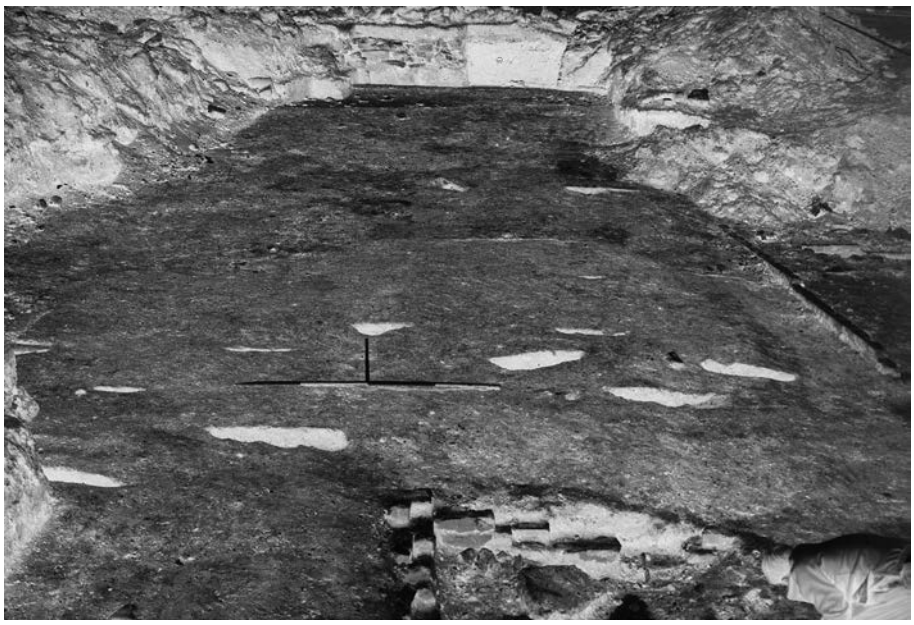
The natural deposits consisted of interleaved layers of fine yellow sand and red-brown gravel. Most of the site was covered with a thick layer of these gravels. The Ditch was easily located at the northern end of the site. Its fill was a brown clay loam (F5), almost impervious to water (illus 3; note



ILLUS 3 Mary Street, Laurieston: general plan of the excavation, with feature numbers

that layers and other features are refereed to in the illustrations only by their number: for example '5', rather than F5). Cleaning the upper levels produced a number of sherds of reduced green glazed wares, indicating that filling it had been completed in the 18th century. The northern edge of the Ditch lay outside the area available for excavation, but the southern edge showed that the alignment followed that of Grahamsdyke Street before its alteration in the 1960s. The Ditch was at least 6m wide. The lower levels, which will be sealed beneath a car park in the new development, were not excavated.

Set into the top of the Ditch fill was a stone rubble raft (F35). This had been cut by a N/S water pipe trench, and by a trench running NW/SE to a brick-built tank (illus 3). The latter trench had



ILLUS 4 Mary Street, Laurieston: defensive pits

removed the north-east corner of the stone raft. The stones had a dirty clay matrix and were quite angular fragments of sandstone. On plan the raft had originally been rectangular, measuring 1.5m by 1.6m. The brick tank and other modern features (F60, F61, F63) were associated with a vehicle workshop formerly occupying this site.

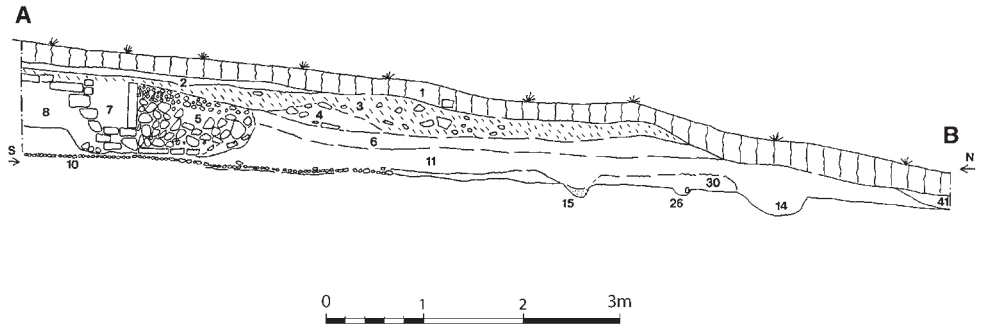
2.3m south of the Ditch edge was the first of ten surviving defensive pits (F50–59) (illus 3 & 4). They had been arranged in the conventional quincunx pattern and varied from 0.03m to 0.20m deep, becoming shallower to the south where more of the natural subsoil had presumably been removed. The length of the deepest, and hence best surviving, of the pits was only 0.86m. At least three rows are represented by the ten pits, but the shallowness of their remains made it difficult to determine their true alignment, and further rows to the south could have been totally obliterated. If they had lain parallel to the Ditch edge there are five rows represented by the surviving pits. On plan the pits tapered slightly at their western ends. The fills of the pits were uniform, consisting of an orange-brown clay loam. The only exception to this was in one example, where a small patch of pale grey clay probably represents a turf.

There was no trace of the stone base of the Rampart. A cut-line in the main section on the west (F41: illus 5), 13m south of the lip of the Ditch, may represent the heel of a robber trench, dug to quarry the stone for use elsewhere. No similar cut was discerned in the eastern section.

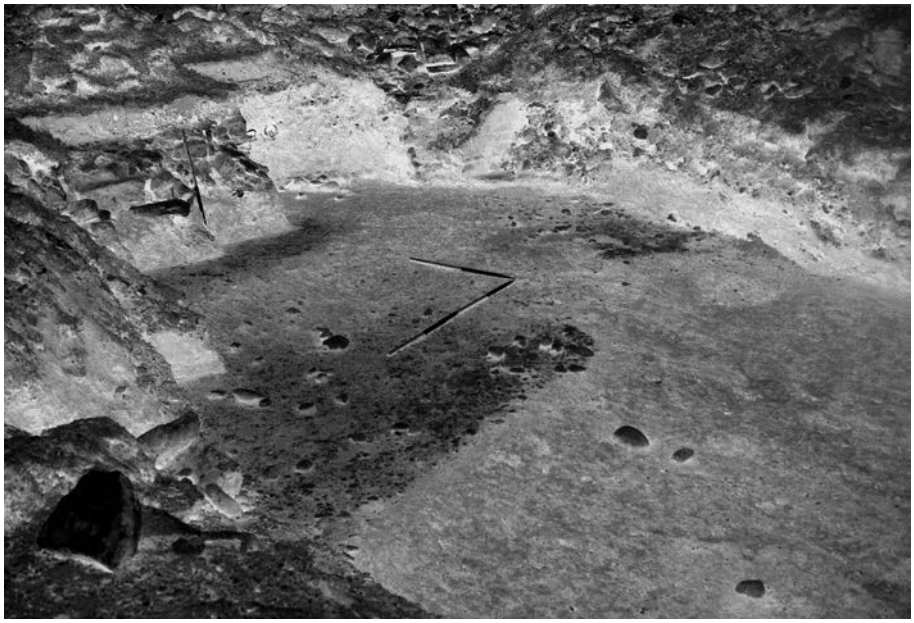
At a distance of 19m south of the Ditch, the northern edge of a gravel road (F10) was found almost on the same alignment (illus 3, 5 & 6). It had been laid directly upon the natural gravel. The southern edge did not lie within the excavation trench. The rammed gravel surface was still flat, save for a ridge 2.5–2.7m from the edge. The location suggests this to have been the Military Way, only 6m south of the rear of the presumed Rampart.

On top of the road surface were a number of small cobbles that did not appear to have derived from the road matrix itself. These were surrounded by clean pale brown-orange sandy loam (F11), up to 0.3m deep (illus 5). This layer continued as far north as the presumed robber trench (F41) and must represent the debris from the Rampart's superstructure.

Layer F11 filled a pit (F14) located not far south of the robber trench for the Rampart (illus 5). This pit was 0.77m wide and had been cut 0.24m into the natural gravel. It was aligned E/W with straight sides and a rounded end. In the pit the layer



ILLUS 5 Mary Street, Laurieston: section of the west side of the trench from the south end to the robber trench for the Rampart



ILLUS 6 Mary Street, Laurieston: Military Way

was mixed with patches of blue-grey and grey-cream coloured clay. This material may have been derived from the Rampart cheeks in which case the pit would have been open at the time of the collapse. F11 also formed the upper fill of a curving gully (F15: illus 3 & 5). This gully had a shallow U-shaped profile and cut 0.2m into the natural at its deepest. It was 0.3m wide at this level, but opened out to 0.7m only 0.1m above this. Its lower fill was an orange-brown silty clay loam. The remaining arc represents approximately one sixth of a circle of 4.1m diameter. It petered out to the north or down-hill side.

Both the gully (F15) and the pit (F14) cut through, or were contemporary with, a thin but very compact layer of dark brown loam that contained some small pebbles. This layer (F30) extended southwards to merge with the road metalling (illus 4). To the north it ended at the pit F14 on the west, and petered out about a metre further north on the east.

A series of small post-holes to the north of the Military Way (F17–21 & F24) contained a grey-brown loamy fill (illus 3). They appeared to have been cut from a high level, but contained no dating evidence. Near them and at the north end of the site

were numerous pits of varying size (F22–23, F31–32) filled with a black loam containing 19th- and early 20th-century pottery and glassware. A further pit (F25) contained the remains of a circular wooden tub. There was also a very large pit (F40) running N/S. Its fill was banded across its width and it had clearly been backfilled in a number of discrete phases.

DISCUSSION

Pre-Roman

The curving gully (F15) with its silty lower fill is consistent with the drip gully of a prehistoric roundhouse, which would be unnecessary on the lower, north, side. Two possibly related small linear gullies (F6 & F7) commenced on the outer edge of the projected circle of the drip gully and headed northwards, presumably into the shallow pit F9 (illus 3). Another shallow pit (F8) would also appear to belong to this phase. Post-hole F26 could have been an internal feature of the dwelling implied by the drip gully. The drip gully was still partially open when the debris from the Rampart superstructure was spread in this direction. The building may therefore be contemporary with the Antonine Wall, or slightly earlier. Logic would suggest that it ought to be earlier, and perhaps it was demolished by the Roman army to make way for the new frontier. The compact layer of dark brown loam (F30) was the occupation layer associated with the dwelling.

Roman

The northern limit of layer F30 lay some 2.5m south of the presumed line of the Rampart. In the main west section (illus 5) it appears to have been truncated, whereas further east it merely tapered out. It is possible that it had been removed further to the north as part of the site preparation for the Rampart base.

Given the standard width of 4.3m for the Wall base, the location of the robber trench cut would give a Berm 8.7m wide. The debris from the Rampart (F11) suggests that it was made of earth rather than turf. Surprisingly, no evidence of clay cheeks was found amongst the collapsed material, with the possible exception of the fill of pit F14. That it was brought down at an early date is shown by the extremely good condition of the rammed gravel surface of the Military Way. Otherwise this road would have continued in use, becoming pot-holed and rutted. The significance of the small cobbles lying on the road metalling is uncertain. It is possible that they derived from a layer of stones capping the Rampart, perhaps even providing the surface of a wall walk. However, it is more likely that they had been incorporated into the core of the rampart, and that as it tumbled they rolled over the collapsed material ending up on the road some 6m away.

The road is unusually close to the Rampart at this point. To the west, at Callendar Park, where there was a narrow ridge to follow, it lay some 15m away (Keppie & Walker 1989, 146). To the east, the location of the road is known as it issues from the west gate of the annexe at Mumrills. There it lies some 22m south of the Rampart. However, as the Military Way left Callendar Park it drew closer to the Wall in order to cut the rather awkward corner created by a sudden realignment of the Rampart. The orientation of the Ditch on the present site suggests that another minor readjustment of the Antonine Wall line occurred in this area and this may account for the close proximity of the two features. The positive identification of the road so close to the Wall calls into doubt the date of the road found at 9 Dundas Crescent (at NS 9143 7947) (*Discovery Excav Scot 1967*, 52). That road was 48m from the Wall and was orientated on the centre of the annexe at Mumrills, rather than on the known entrance. It is therefore possible that the 1967 road belongs to an earlier Roman occupation of the area as suggested by Macdonald & Curle (1929), although recent work in the Mumrills annexe suggests that it would be Trajanic rather than Flavian (Bailey, forthcoming b). Alternatively, it might be part of the unenclosed industrial area that lay west of the Antonine fort before the annexe was constructed (ibid).

The discovery of the defensive pits at yet another site along the Berm can be seen as confirmation that these are an integral part of the whole frontier. Their uniform fill, except for a probable piece of turf, and the lack of any evidence of stake holes in their bases, suggests that they were partly backfilled in order to support the vertical wooden stake that gives these pits the name of *lilia*. Similar pits in Callendar Park, only 550m to the west, were 1.40m long and 0.35m deep (Bailey 1995, 592). At these sizes those at Laurieston would also have provided

good defensive cover for the Rampart, their rounded ends overlapping a line at right angles to the Wall. The tapering shape of the pits could reflect right-handed diggers working with their faces to the north.

Post-Roman

The filling of the Ditch was finally completed towards the end of the 18th century, to judge by the green glazed ware found there. This probably coincided with the building of the stone dwellings and school facing Mary Street. In the garden ground behind these a number of pits were dug to dispose of rubbish and fences were erected to demarcate the separate ownerships. Post-holes F17–21 & F24 may belong to such structures. At the bottom of the garden, the stone raft F35 would have supported an outhouse. Through the 19th century brick extensions were placed on the north sides of the buildings fronting Mary Street, and in the 20th century a large vehicle repair shop was erected on the north-west part of the site, terraced into the hill slope.

5: TAMFOURHILL TEMPORARY CAMP, TAMFOURHILL, FALKIRK (NS 8595 7955 & NS 8583 7959) (illus 7–8)

J W Gooder

INTRODUCTION

Cropmarks show almost the entire circuit of the Tamfourhill temporary camp's defensive ditches enclosing an area measuring approximately 220m N/S by 140m E/W with well-defined entrances on the northern and southern sides. It has been argued that it was possibly a labour camp associated with the construction of the Antonine Wall (Maxwell & Wilson 1987, 29) which lies approximately 300m to the north. The extension to the Union Canal being constructed as part of the Millennium Link (Falkirk Interchange) Project necessitated the precise location of the camp's northern tutulus to ensure its preservation. The archaeological works took place in January 2000 under the terms of a scheduled monument consent.

EXCAVATION

Tutulus (NS 8595 7955)

Trenching revealed a ditch running approximately E/W parallel with and c 20m north of the northern line of the camp's defences (illus 7). No trace of any associated bank was found. The feature had maximum plan dimensions of 8.10x2.0m. Roughly rectangular in shape, the eastern and western sides curved inwards to the south thus shortening the southern side. Its uppermost fill was a dark brown sandy loam with occasional small stone inclusions. A field drain cut the centre of the feature.

Road (NS 8583 7959)

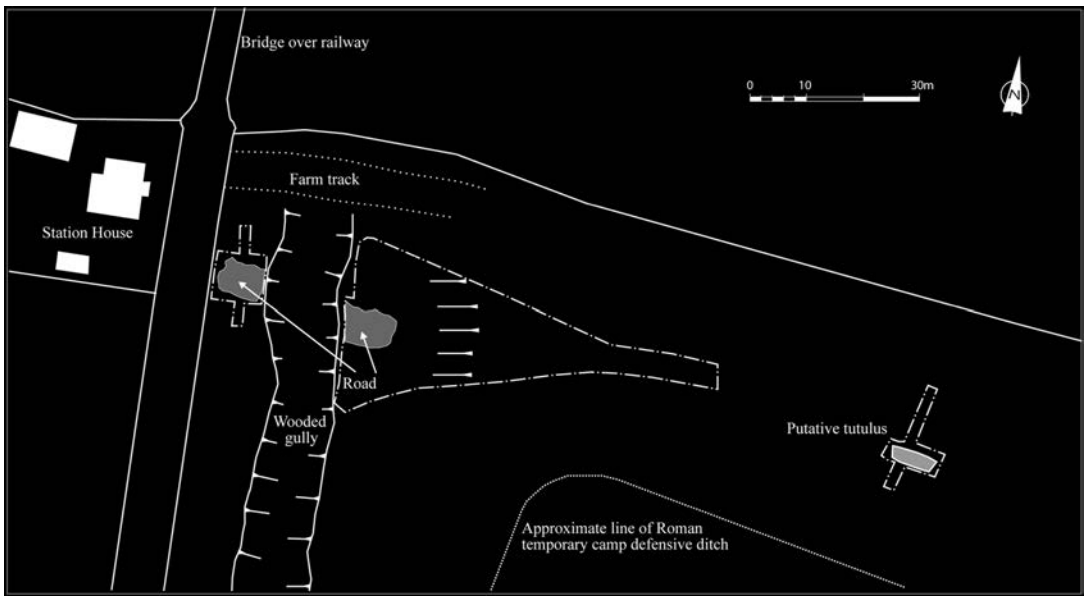
The land-take for the canal intruded into the north-western part of the camp's scheduled area, but not into the camp itself. The topsoil was stripped from a triangular area with maximum dimensions of 66m by 31m (illus 7). A layer of densely packed angular and rounded stones was located emerging from the western section which lay immediately adjacent to a narrow wooded gully. The feature was approximately 6m wide and ran eastwards for a distance of 9.9m. Average stone size was 0.15x0.15x0.10m with rounded stones in the minority (illus 8). This feature survived to one or two stones depth (roughly 0.3m deep). Various stone types were present with a large percentage of sandstone, some river-rolled cobbles and igneous stone types overlain by patches of rounded pebbles/gravel. A cream-coloured, compact clay deposit formed a possible bedding below the stone layer (illus 8).

The road continued for c 8m from the western side of the gully before fading into the rising subsoil. The stones were mostly angular with the larger examples predominantly distributed in the east near the edge of the gully, probably indicating the need for additional levelling in this area. The feature survived to one or two stones depth (maximum of 0.45m) with small areas of pebbles/gravel again acting as possible surface metalling. No evidence was located for any structure bridging the gully, and no work was undertaken within the gully.

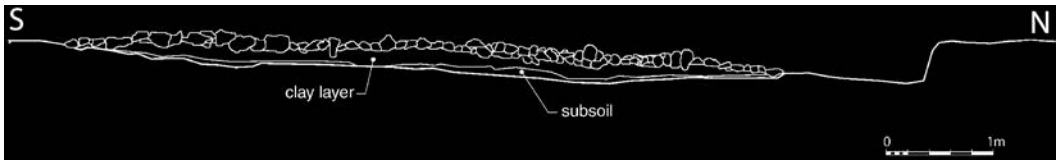
DISCUSSION

Tutulus

The location of the putative tutulus at approximately 20m distant from the entrance to the camp



ILLUS 7 Tamfourhill Roman Temporary Camp: *tutulus* and road (*Based on the Ordnance Survey map © Crown copyright*)



ILLUS 8 Tamfourhill Roman Temporary Camp: east-facing section through road

is unusual. An analogous situation is known at Plumpton Head, Cumbria where the distance was 18m, approximately that recommended by Hyginus. However, the entrance at Plumpton Head was also peculiar in being abnormally wide: elsewhere a width around 5m has been found to be the norm (Welfare & Swan 1995, 20–1). The unusual entrance configuration at Tamfourhill may be a consequence of the camp's possible function as a construction base: the need for ease of movement of personnel and materials may have necessitated a pragmatic approach to entrance design requiring a greater distance between entrance and tutulus.

Road

The road could not be dated. While its structure is not unlike most roads built before 1850, examination of historic maps of the area failed to locate any track or road here. The course of the Military Way in this area is unknown, recent nearby excavations (this report) having failed to locate its line. Any supposition that this remnant surface represents part of that Military Way must be tempered by recognition of the distance at which it lies from the Wall, some 200m to the north. However, its structure was not unlike the surface found during test-pitting immediately behind the Rampart at NS 8523 7978 (7, below).

6: LIME ROAD, TAMFOURHILL, FALKIRK (NS 8571 7983)

J W Gooder

The Millennium Link (Falkirk Interchange) Project required the re-alignment of Lime Road at its junction with the B816 at Tamfourhill, Falkirk. It is at this point that Lime Road crosses the Antonine Wall and the new course of the road impacted on

the scheduled area of the monument. The affected area lay immediately north of the B816 and to the west of Lime Road, forming an elongated wedge shape pointing north and amounting to approximately 550sq m. Mature and immature trees covered much of the higher part of the area in the east and south. Here the landform had a mounded appearance in places, indicative of episodes of dumping. The slope down to the north and west had a small burn, once culverted, at its base that ran slightly inside the north-western boundary of the excavation area.

Fieldwork in November 2000 found made-ground to cover the entire site, reaching a maximum depth of 1.65m. Underlying this dumped accumulation lay recent drainage trenches, a modern sump and the headwall of a former culvert. At the northern end of the excavated area the subsoil surface rose abruptly. This was interpreted as the northern edge of the Ditch cut, a hypothesis supported by observation and extrapolation of this feature's situation relative to the well-preserved section of Ditch lying immediately to the west. The cut was filled with a light/mid brown clayey sand with small and medium sized stone inclusions. The fill became increasingly clayey with depth but the Ditch's full depth remained unknown because of flooding by the burn. No small finds were recovered.

7: BONNYHILL ROAD (NS 852 797 area) (illus 9)

J W Gooder

A series of minor excavations and watching briefs took place within the scheduled area of the Antonine Wall and Rough Castle fort between 1995 and 2001, close to the point where Bonnyhill Road crosses over the Glasgow–Edinburgh Railway. Excavations and watching briefs undertaken by the Centre for Field Archaeology, University of Edinburgh, for Scottish Power and Dames & Moore, and by CFA Archaeology Ltd for Scottish Power produced no remains of archaeological significance, despite the proximity of the works to the putative line of the Military Way (for further details see *Discovery Excav Scot 1995*, 12; *1998*, 38; *1999*, 45; *2001*, 45–6). Only the results of more productive work in the same area by AOC Archaeology Group are reported here.

In March 2000, four test-pits, each 4sq m in area, were excavated in woodland to the south of the Antonine Wall and to the north of Bonnyhill Road. This investigation was necessitated by site investigation works associated with the Millennium Link (Falkirk Interchange) Project.

Test-pit 3 (illus 9) lay roughly 40m south of the Rampart. Its excavation revealed 0.43m of topsoil overlying a very tightly-packed layer of sub-rounded to sub-angular stones. The layer was generally of only one stone's thickness, the stones being 0.20–0.25m broad, and extended across the entire test-pit. It overlay a pale cream-coloured clay deposit, possibly bedding, which in turn directly overlay drift. Test-pit 1 lay approximately 13m north of Test-pit 3. Here a discontinuous spread of stones of similar size and form to those discovered in Test-pit 3 was revealed. The other test-pits (2 & 4) proved archaeologically sterile or disturbed.

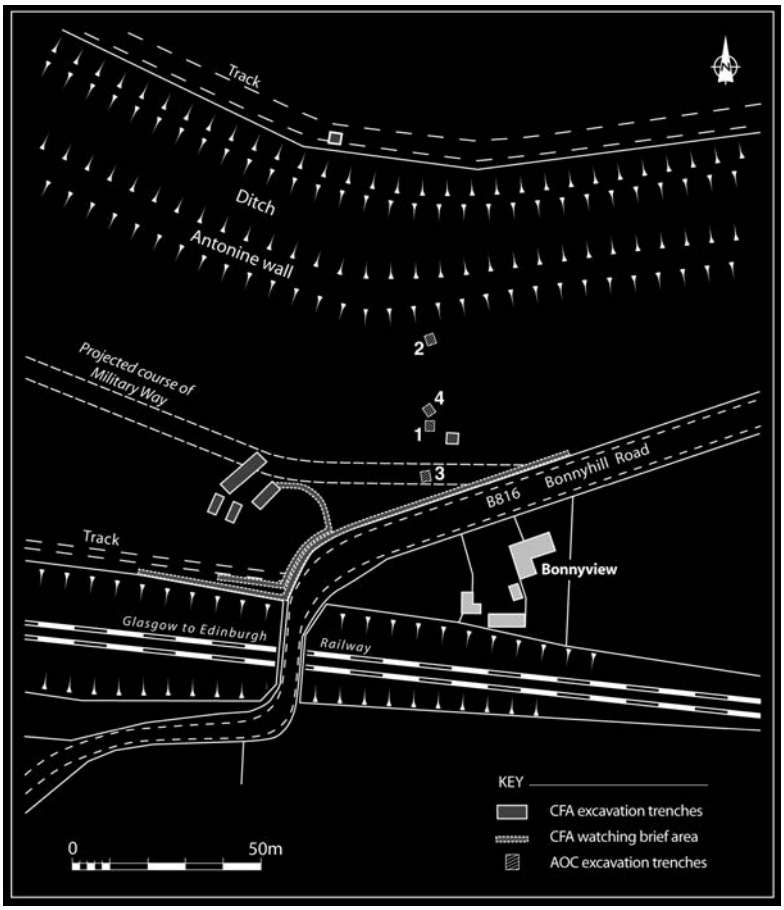
The stone layer in Test-pit 3 represents a cobbled surface of unknown date and the scatter of stones in Test-pit 1 could be a disturbed part of the same feature. The feature is too ephemeral to relate to the rampart base of an unknown mile fortlet, that has been proposed for this area (Keppie & Walker 1981, 161). The route of the Military Way is unconfirmed in this area and, although on the basis of this very limited investigation it would be premature to correlate this feature with its heavily reduced remnants, this probably renders a more plausible hypothesis which may be tested by future works in the vicinity.

12: ALLANDALE COTTAGES, ALLANDALE, FALKIRK (NS 8035 7885) (illus 10)

J W Gooder

In 1988, Bailey recorded a partially exposed section of the Ditch immediately north of Lochpark Cottage, Allandale, where a sewer pipe trench had been excavated through it (Keppie et al 1995, 630–1; illus 10). Those investigations demonstrated that its northern edge had been damaged at that point during the insertion of the main sewer around 1920. The Ditch was estimated as approximately 5m wide at the extrapolated Roman ground surface and 2.4m deep, and had probably been deliberately infilled during the 18th or 19th century.

In April 1999 the existing sewer was replaced. The objectives of the consequent archaeological work, as permitted by scheduled monument consent, were to assess the condition and extent of the



ILLUS 9 Bonnyhill Road: plan showing excavation and watching brief locations (*Based on the Ordnance Survey map © Crown copyright*)

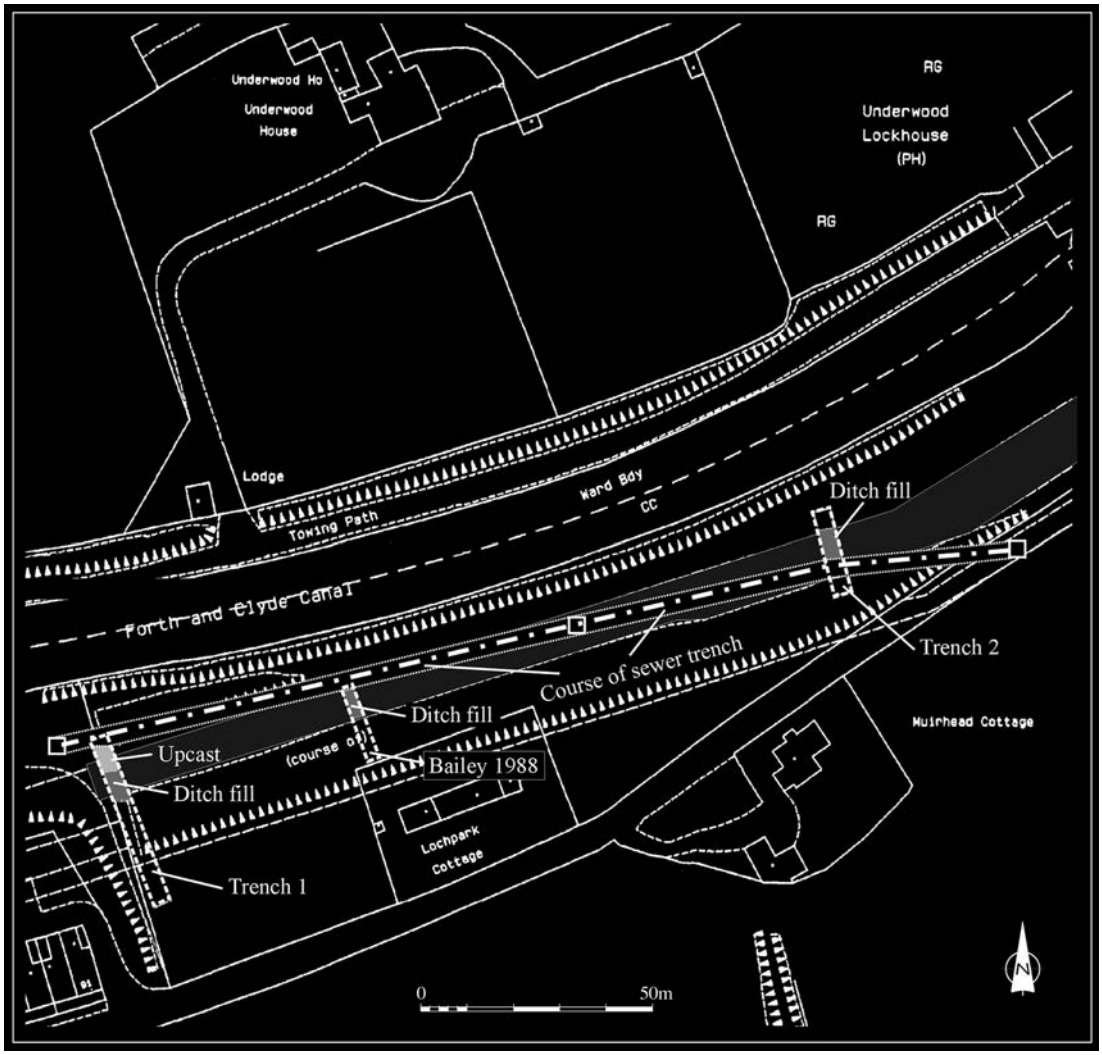
remains of the Antonine Wall; to fix the position of the existing sewer line in order to minimize the amount of ground disturbance over the scheduled area; and to permit the location of a temporary access road where this would cause least damage to any upstanding elements of the Antonine Wall.

The two trenches lay between the B816 and the Forth Clyde Canal, to the east of Allandale Cottages, Allandale, on either side of Bailey's trench (illus 10). Given the non-destructive nature of the construction requirements, excavation ceased on the surface of the uppermost Ditch fill.

In Trench 1, measuring 37m by 3m, the uppermost Ditch fill was found to be 7.1m wide. Upcast material to the north of the Ditch, comprising a greyish red clay with grit, pebbles and cobble inclusions, was cut by the existing sewer trench which ran WNW across the Outer Mound and ESE into the Ditch. The Ditch was also truncated by a brick-capped field drain.

Trench 2 measured 18m by 3m. The northern edge of the existing sewer trench (c 3.5m wide) was found to cut the Ditch fill, the exposed surface of which was found to be 7.75m wide (its width at the original Roman ground surface could not be measured in this case).

Despite Trench 1 running for some distance to the south no trace of any Rampart footings was unearthed, indicating the complete truncation of the Rampart in this area. However, the presence of



ILLUS 10 Allandale Cottages: plan showing locations of 1988 and 1999 investigations (*Based on the Ordnance Survey map © Crown copyright*)

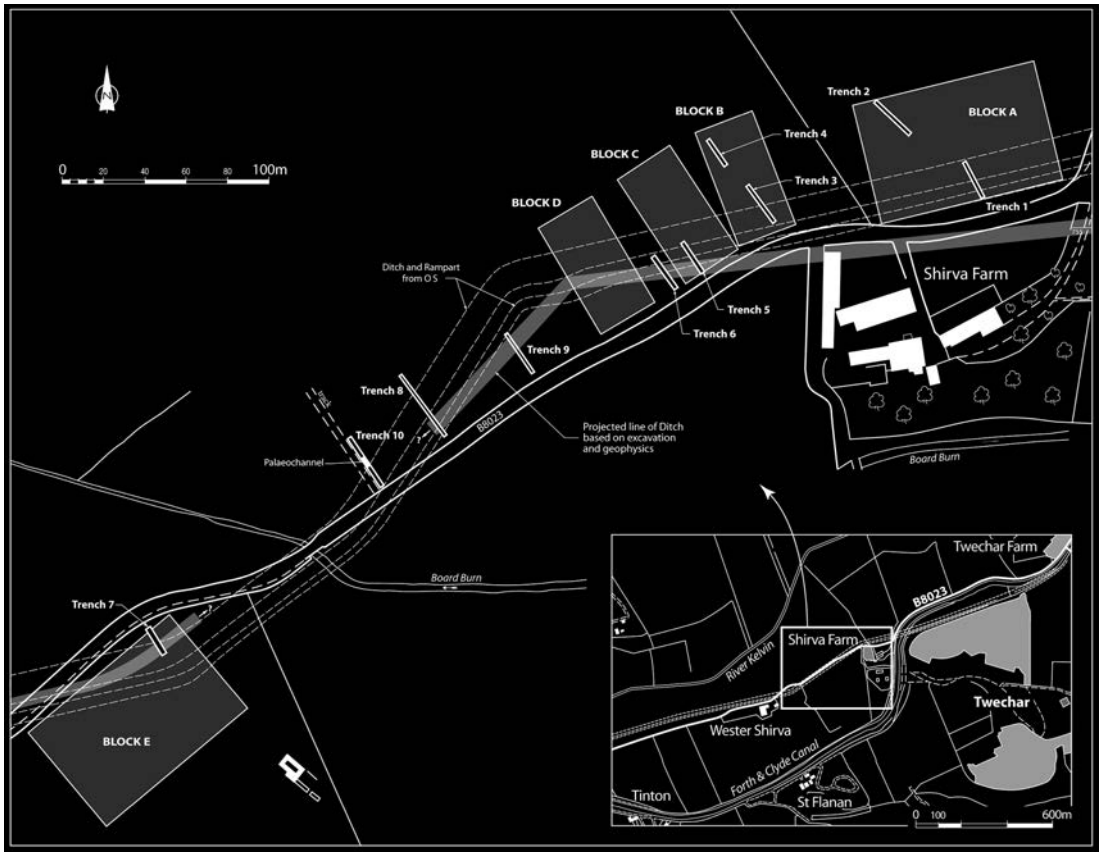
the Outer Mound was confirmed, albeit in a heavily denuded state.

16: SHIRVA, EAST DUNBARTONSHIRE (NS 688 754 area) (illus 11)

INTRODUCTION

Three separate evaluation excavations took place between 1998 and 2001 along the Antonine Wall between Wester Shirva and Shirva Farm, including the crossing point of the Board Burn. While the burn appears to have been canalized and may not have flowed exactly on the same course during the Antonine occupation of Scotland, local topography dictates that its course must have lain within a few metres to either side of its current alignment.

First, in October 1998 geophysical survey and trial trenching (Trenches 1–7) were conducted between Wester Shirva and Shirva (NS 6865 7525–NS 6981 7552). This evaluation was commissioned by Historic Scotland as part of a wider review of the scheduling of the Roman frontier works and in order to define more accurately the line of the



ILLUS 11 Shirva, showing trench and geophysical survey locations (*Based on the Ordnance Survey map © Crown copyright*)

Antonine Wall at this point. This work was conducted by the Centre for Field Archaeology, University of Edinburgh.

The second trial trenching evaluation (Trenches 8 & 9) was undertaken in January 1999 to confirm the line of the Ditch just to the east of the Board Burn (at NS 6885 7542). The evaluation was commissioned by West of Scotland Water in relation to proposed sewer works. The results of the first evaluation had not confirmed the crossing point of the Board Burn by the frontier works, and several different alignments were possible. This work was also conducted by the Centre for Field Archaeology, University of Edinburgh.

Finally, during 2000 and 2001, a watching brief was undertaken on sewer construction works. As part of this exercise, a third evaluation was undertaken at Shirva (Trench 10). The objectives of this work were to determine the location of the Ditch and assess the degree of compression of the underlying sediments. A trench was dug (at NS 6882 7540) immediately to the east of an access track leading NNW off the B8023 road. This work was conducted by AOC Archaeology Group on behalf of West of Scotland Water.

The previously proposed line of the Wall in this area was suggested by Sir George Macdonald (1934, plate XXIV). The line of the Ditch has been traced on modern aerial photographs to the west of Wester Shirva. To the east of this there was no recognized cropmark evidence, and no archaeological excavation is known to have been conducted. The nearest recorded sections lie c 200m west of Wester Shirva (at NS 684 752; Keppie 1976, 64; Keppie & Walker 1989, 153). In 1973 a pipeline trench was cut through the frontier works, revealing the stone base of the Rampart to be preserved, still kerbed, at a depth of c 1.3m. The Rampart base was

c 4.4m wide, although no trace of its superstructure survived. The southern lip of the Ditch was observed c 8m north of the Rampart (Keppie 1976, 64). No mention is made of the location of the Military Way by that source. Of potential importance to this study was the proposal, made in terms of spacing (and without any physical evidence), that Shirva may be the location of a fortlet (Hanson & Maxwell 1986, 122, 127).

In 1728–9 at least three Roman tombstones and two further sculptured commemorative slabs were discovered somewhere in the Shirva area (Keppie 1998). These stones probably came originally from a cemetery associated with a nearby fort (either Auchendavy or Bar Hill), and appear to have been re-used within a souterrain constructed within the Ditch. The stonework recovered also included diamond-broached ashlar stones, as well as columns and column bases, which probably came from the fabric of the Roman fort itself (Welfare 1984, 314).

EVALUATIONS 1 & 2

B Glendinning & K Cameron

The application of geophysical survey was restricted to the raised, drier ground to either side of the Board Burn. Nine trenches were excavated, their locations influenced mainly by the results of geophysical investigations and aerial photographic evidence. Five of these trenches contained what appeared to be the remains of the Ditch; the others were devoid of archaeological features. The number of trenches excavated was kept to a minimum because of wet ground conditions caused by unusually heavy rainfall. In light of this it was felt that further excavation would cause unacceptable damage to the farmland. The waterlogged conditions also hampered excavation of the Ditch, where located.

Within geophysics Blocks C, D and E, an anomaly representing a large ditched feature could be clearly seen. Trenches 5–7 were placed to examine these anomalies, which proved to be the Ditch (Block D lay on a slope, and was an area not suitable for machine excavation at the time of fieldwork; hence Trench 6 was positioned as far west as was possible). In Trench 6, the Ditch had a surface width of c 7m, whereas in Trench 7 it was nearer 6m in width. Trench 5 did not reveal the full width of the Ditch. The upper fills of the Ditch in Trenches 5 and 6 comprised sandy or sandy silt soils similar to the subsoil. By contrast, in Trench 7, an upper clayey fill was encountered; this overlay in turn a peaty deposit and a leached grey sand.

In Trench 8, a ditched feature c 8m wide was revealed, and interpreted as the Ditch. Deposits were excavated to a maximum depth of 0.9m, revealing a sequence (from the uppermost downwards) of silty clay, clay and peat deposits. The Ditch edges were steep-sided although they became noticeably shallower towards the surface. A core was taken through the centre of the Ditch in Trench 8 in order to characterize the nature of the deposits and to determine their palaeoenvironmental potential. The maximum core depth attained at the centre of the Ditch was 2.17m. Within the feature a basal sand and gravel fill was overlain in turn by slow-forming silty deposits and the peat identified through hand excavation (which the core suggested to be slightly less than 1m thick). The core sample was not subject to detailed palaeoenvironmental analysis.

Attempts to corroborate the results of Trench 8, through the excavation of Trench 9, were confounded by flooding, although the northern edge of a ditch was located at approximately the expected position and alignment.

In Trench 5, the putative remains of the Outer Mound were identified along the northern lip of the Ditch, comprising mixed redeposited sands and gravels. No further archaeological features of any kind were located.

EVALUATION 3

C Ellis & J W Gooder

Excavation of Trench 10, c 35–40m west of Trench 8, revealed 0.40–0.58m of alluvial silt overlying a feature with a U-shaped profile measuring 6.25m wide by 0.65m deep. The sides had a slope of 30–35°, becoming shallower with depth to a broad concave base. The feature was filled with an upper deposit of thin grey clay which had a sharp boundary with the underlying silt, which was very rich in organic matter and became extremely well humified silty peat with depth. The boundary between the silty peat and the underlying well humified monocot peat was sharp and apparent in section by the accumulation of detrital wood (one large piece has been identified as willow (*Salix* sp: A Crone, pers comm). The lower portion of the monocot peat was interbedded with a thin, discontinuous lamination

of bluish grey silty clay up to 20mm thick. This feature is interpreted as a natural palaeochannel masked by subsequent inorganic flood deposits.

DISCUSSION

The combined work has allowed the alignment of the frontier works to be better understood in this area. This is of considerable importance, as the previously suggested route of the frontier through most of this area was not based on any physical evidence (marked by a dashed line on illus 11). To the west of the Board Burn, the Ditch alignment was confirmed substantially on its previously extrapolated alignment. To the east of the burn, however, it appears that the frontier alignment lies to the south of its previously mapped position, either within the grounds of Shirva Farm or beneath the road. It is notable that the Ditch forms a straight alignment to either side of Board Burn, unlike the kinking route which had been proposed formerly. The presence of peat fills within the Ditch is of importance because of the potential of such deposits for undertaking landscape and land-use reconstruction through pollen analysis (cf Dunwell & Coles 1998).

Extrapolation of the opposed Ditch alignments confirmed to the south-west and north-east of the Board Burn indicates that the Ditch should have crossed the south-east end of Trench 10, and its absence requires explanation. Although the stratigraphic profile of the Ditch fills in Trench 8 was similar to that of the Trench 10 palaeochannel, suggesting accumulation under similar environmental conditions, the details of the specific units indicates that these were not the same. In addition the form of the two features is markedly different. One possibility is that the Ditch had never been constructed across the alignment of the burn. However, Bailey (1996, 367) has noted that the considerable problems of flooding caused by such an arrangement must have been balanced against the potential weakness in the frontier line caused by a gap in the Ditch alignment, and that a water-filled Ditch may have been considered a preferable solution to having no Ditch at all. This raises a second possibility, that the Ditch alignment kinked southwards slightly for a short distance on both sides of the burn, to create a re-entrant angle providing additional protection to any gap the frontier works at the burn crossing (ie similar to that proposed at the Gil Burn, Kinneil (ibid, 361), although that possibility was subsequently disproved by fieldwork (Glendinning 2000)). Both possibilities would provide an explanation for the absence of the Ditch from Trench 10.

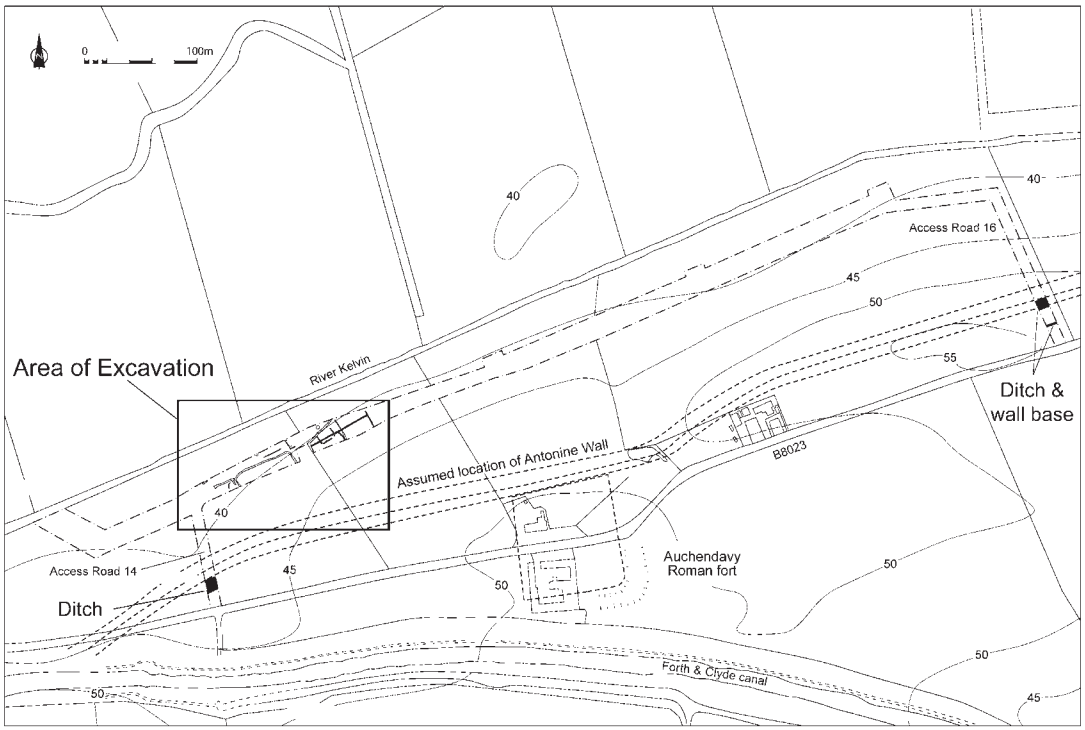
No consistent trace of the Outer Mound was located. There was no evidence for defensive pits on the Berm, although most trenches did not extend south of the Ditch. Although no remains of the Rampart were identified, investigations to the west of Wester Shirva have located traces of the stone base of the Rampart (Keppie 1976, 64; Keppie & Walker 1989, 153). Given that the land-use regime is the same along most of this valley it is probable that the Rampart does survive within the study area, even if not consistently. No evidence for the proposed fortlet was recovered, though work did not cover the areas best suited to the siting of one. The most likely sites for a fortlet are on the high well-drained ground at Shirva Farm or Wester Shirva, and it is probably no coincidence that these sites are the locations of modern settlement. No evidence relating to the souterrain was recovered.

17: AUCHENDAVY, EAST DUNBARTONSHIRE (NS 674 750) (illus 12–14)

M Hastie

INTRODUCTION

In May 1999 Headland Archaeology Ltd carried out an archaeological watching brief during the construction of the Kelvin Valley Sewer. A possible Roman enclosure was discovered north-west of the Antonine Wall at Auchendavy (illus 12). This section of the sewer ran along the foot of the slope below Auchendavy Farm, 100m north of the Antonine Wall and adjacent to the River Kelvin. Access to this section of the sewer required the creation of two temporary roads over the line of the Antonine Wall and the opportunity was taken to confirm its precise position at these points. Monitoring during the stripping of the way-leave for the pipe trench identified archaeological features over a 150m section. The majority of features uncovered appeared to form part of a medieval or later field enclosure system. Three stratigraphically earlier ditches contained only Roman artefacts and their close proximity to the Antonine Wall and Roman fort at Auchendavy suggested that they might be contemporary with the frontier wall. The presence of



ILLUS 12 Auchendavy: location map (*Based on the Ordnance Survey map © Crown copyright*)

Roman features immediately north of the Antonine Wall is unusual and without obvious parallel. The evidence available seems to suggest that the Roman ditches probably formed part of an agricultural field enclosure associated with the provisioning of the garrison at Auchendavy Roman fort.

ANTONINE WALL & DITCH

Scheduled monument consent was obtained and methodologies approved to minimize impact of the two temporary access roads on the remains of the Rampart and Ditch.

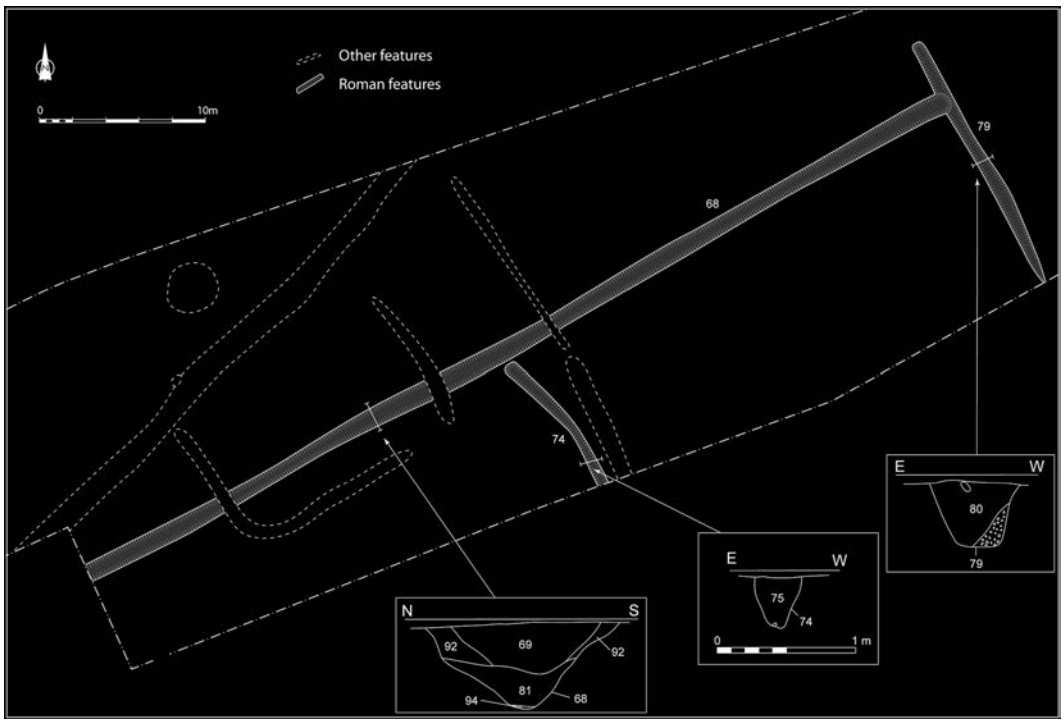
A machine-excavated trench was opened along the length of the proposed route for both access roads; both were stripped of topsoil and hand-cleaned in order to confirm the position of the Rampart and Ditch so that they could be protected during construction of the access roads. A more detailed programme of recording was instigated at the request of Historic Scotland to measure the impact of the roads on the archaeological features. The results of this work will be published once the monitoring has been completed.

Both the Rampart base and Ditch were revealed in Access Road 16 just north of the B8023 road, confirming the assumed location of the Antonine Wall (illus 12). Preservation of the Rampart base was extremely poor with only a small number of stones remaining.

Only the Ditch was uncovered at Access Road 14 (illus 12). It was recorded further south than expected and this indicates that the Wall curves to the south-west.

FEATURES NORTH OF THE ANTONINE WALL

In the excavated area (4000sq m) to the north of the Antonine Wall (illus 13 & 14) 22 features were recorded. The majority of the features appeared to form part of a series of enclosures. One ditch contained a fragment of medieval pottery. Three ditches were noticeably different in character from the rest. Two of these contained fragments of Roman pottery indicating an Antonine date.



ILLUS 13 Auchendavy: plans and sections of Roman features

Roman features

Three distinctive ditches were uncovered to the north-east end of the excavated area: F68, F74 and F79 (illus 13 & 14). The most substantial ditch (F68) was aligned north-east to south-west and ran for 60m before disappearing under the south-west baulk. Sections across this ditch revealed a V-shaped cut with steep sides. Ditch F79 was aligned north-west to south-east. It ran for 18m before petering out at the south-east end. The ditch was U-shaped in profile with steep sides and a narrow base. The third ditch (F74) was located to the south of F68. It was slightly curved on plan and 10m of its length was visible in the trench, before it ran under the south baulk. The ditch profile was very similar to F79, being U-shaped with steep sides , but it was smaller.

The steep sided U-shaped profiles of both F74 and F79 showed no signs of erosion, suggesting that they had probably been filled very shortly after being dug. In contrast, the irregular V-shaped cut of Ditch F68 and the presence of a number of different fills, thought to have been formed by slumping or erosion, probably indicate that this ditch stood open for longer.

The pottery

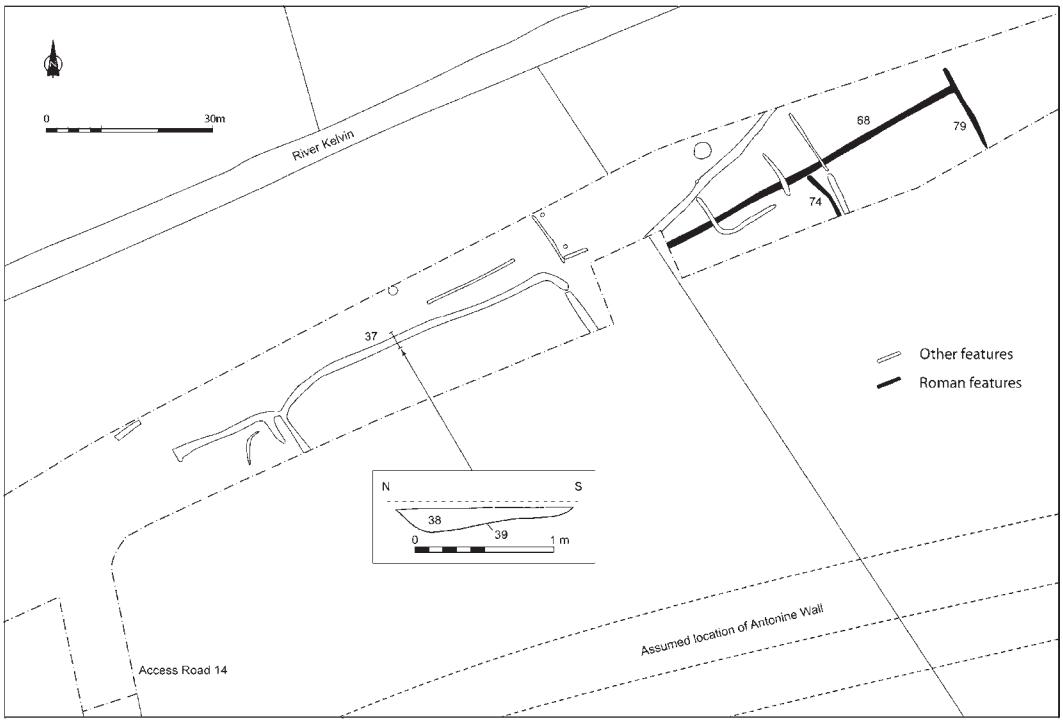
Jeremy Evans

Twenty-one sherds of Roman pottery were recovered from two of the ditches (F68 & F74). The pottery is probably of Antonine date (Table 2). Although it is a small collection, and few firm conclusions can be based on it, the pottery would seem more likely to come from a Roman rather than a 'native' site.

Non-ferrous metal working debris

Effie Photos-Jones

Three small fragments of what appeared to be metal-working slag were recovered from the fills of ditches F68 and F79. They are metallurgical ceramics, probably part of the same structure, a metallurgical hearth or a furnace. The fragments appear too large and coarse to have been part of a



ILLUS 14 Auchendavy: plans and section of other features

TABLE 2

Catalogue of Roman Pottery

Ditch No	Pottery Type	Date/Period
68	BB1 bodysherd with acute lattice, sooted	Hadrianic–Antonine
68	A sooted BB1 dish/bowl base sherd with chamfered base	Hadrianic or later
68	Three BB1 bodysherds, heavily burnt and eroded	Hadrianic or later
68	A white slipped oxidized flagon bodysherd in a 'clean' orange fabric	1st–2nd century
68	A greyware bodysherd with some coarse sand temper	Roman
68	A sandy greyware BB copy jar rimsherd, sooted	Hadrianic–Antonine
68	Two joining bodysherds in the same fabric, as above rimsherd, with common moderate sand temper	Hadrianic–Antonine
68	A grooved rim BB1 dish with basal chamfer, sooted, with acute lattice/pointed intersecting arcs	Probably Antonine
68	Three oxidized bodysherds from one vessel with common fine sand temper, possibly from a flagon	Possibly 1st–2nd century
74	Five Dressel 20 amphora bodysherds	1st–3rd century
74	A smooth grey jar shoulder bodysherd, 'clean' with occasional moderate sand temper and common very fine mica	Roman
74	A greyware bodysherd with common fine sand temper	Roman

crucible. They are 'ceramics' only by name in the sense that they are made primarily of a sandy and silty quartz-rich matrix. The vitrified area is composed of a lead-rich matrix with the lead distributed unevenly through it; metallic tin has also been detected in one sample. Overall, the results point to a hearth/furnace used for low-melting-temperature metals like lead and/or tin (Photos-Jones 2001a).

The date of this material cannot be determined from the above analysis. The coarseness of the 'ceramic' can be attributed either to an early date (Iron Age?) or can be due simply to the lack of

availability of appropriate materials. It could be a combination of both. In comparison, metallurgical ceramics from Doune Roman Fort, analysed recently by the present author (Photos-Jones 2001b), show that great care and attention could be put into the preparation of metallurgical furnace walls/hearths, if the expertise was in place, as was probably the case in the vicinity of a Roman fort. In any case, evidence for non-ferrous metallurgical activities, however crude, does not appear with the regularity of ferrous ones and as such is of note and interest. Perhaps one is looking at the activities of an early (Iron Age?) tinker.

The iron objects

A set of 16 iron studs and fragments of two iron nails were recovered from Ditches F68 and F74 respectively. The iron studs were identified as probable Roman hobnails for a shoe or boot. They were recovered from the same area of Ditch F68 and are probably the remnants of a discarded boot or shoe.

Finds discussion

The finds recovered are the main source of dating for these features. The pottery and hobnails indicate a Roman date with the majority of the pottery dated to the Antonine period or 1st/2nd century. The dating evidence and position of the enclosure, lying some 100m to the north of the Antonine Wall, must be assumed to indicate its association with the frontier wall.

The small but varied finds assemblage recovered from these three ditches seems to suggest that some small-scale domestic and industrial activities were taking place within the local area. The area investigated did not, however, contain any evidence for occupation layers or features to indicate that these activities were directly associated with the ditches. The best explanation at this stage for the presence of such a mix of material would be the disposal or dumping of rubbish from the fort at Auchendavy which is located only 200m from the enclosure

Other features

Eleven shallow U-shaped ditches were found aligned both NW/SE and NE/SW (illus 14). The ditches ranged in width from 0.5m to 1.3m and their maximum depth was 0.35m. The majority of these ditches were filled with a single deposit consisting of dark brown silty sand and gravel. A small number of shallow cuts, possibly representing the remnants of truncated post-holes, and two larger pits were also excavated.

The finds recovered from these features were very limited. One fragment of medieval pottery and a horseshoe were recovered from Ditch F37. The pottery fragment was identified as the base of a 14th–15th-century cooking pot jar (G Haggarty, pers comm) and provides a terminus post quem for the infilling of this feature.

The environmental remains were equally sparse. They comprised a few charred cereal grains (mostly hulled barley) and a small waterlogged assemblage from a pit. The waterlogged material was dominated by plant taxa characteristic of wet environments. No further information could be gained from these assemblages.

It appears that Ditch F37 and associated features form part of a series of enclosures situated on the north-facing slope below Auchendavy. The enclosures clearly pre-date the existing field layout, which is believed to be 18th-century in date. It appears that the ditches represent an example of rural agricultural enclosures and associated features that may have formed part of the farmstead that pre-dates the present farm at Auchendavy.

DISCUSSION

The excavation revealed three stratigraphically early ditches that appear to be Roman in date. Recovery of Antonine pottery from two of the ditches gives a terminus post quem for the infilling of these features and suggests an association with the Antonine Wall located to the south.

There are three possible explanations for these ditches, taking into account their location, size and layout. They could be part of a Roman temporary camp; extra defensive features to strengthen this section of the wall; or field enclosures associated with the fort at Auchendavy.

Initially the closest parallel was thought to be that of the Roman temporary camp. These camps consisted primarily of light defences, usually a single ditch and rampart (Maxwell 1989). A number of such camps have been recorded, principally as crop-marks, along the line of the Antonine Wall (Hanson & Maxwell 1986, 117–9). They would have housed surveyors and troops employed in the

construction and repair of the Wall or its forts. The presence of such a camp near the fort at Auchendavy would therefore not be out of place. All are situated south of the Wall, except one camp recorded at Balmuildy (alternatively named as Buchley), which is located to the north. This camp was a temporary construction camp for Balmuildy Roman fort which was completed prior to the building of the Antonine Wall, so that its location relative to the Wall is immaterial.

The size and shape of the enclosure at Auchendavy are not, however, the same as those of temporary camps. The available evidence suggests a much smaller enclosure and the typical rounded corners, characteristic of a temporary camp, were also not visible; instead, F79 extends past the junction with F68, and there was no evidence for any ditch terminals or entrances.

Previous excavations along the line of the Antonine Wall have revealed a number of extra defensive features positioned on the north side of the Wall, consisting of rows of large pits that held upright sharpened stakes known as *lilia* (Bailey 1995). A number of these pits have been found to the north of the fort at Rough Castle (Buchanan et al 1905). None of the features uncovered at Kelvin Valley are analogous to these defence systems and it is only their position that may imply a defensive function.

The dimension and layout of the ditches appear to correspond well with a number of excavated Roman field systems. These enclosures or plots have been recorded close to Roman forts associated with the Antonine Wall, for example at Carriden (Keppie et al 1995, 602–6), and south-east of Rough Castle (Máté 1995). They generally consist of arrangements of sub-rectangular ditched enclosures characterized by rounded angles and slightly offset junctions (Keppie et al 1995, 602–6). The morphology and characteristics of the field system at Carriden are very similar to those of the enclosure uncovered at Auchendavy and it is possible that these ditches represent the remains of a field system associated with a *vicus* located just north of Auchendavy Roman fort. The recovery of primarily domestic remains from the ditch fills could be a product of the use of domestic waste as manure if the enclosures were being used for cultivation rather than keeping stock.

The placement of an enclosure, either for cultivation or stock, on the north side of the Antonine Wall does, however, seem rather peculiar. It would seem too vulnerable an area for such activity to have taken place, unless of course, the River Kelvin, which is located immediately to the north of the features, was deemed to provide sufficient protection.

In conclusion, the results of the excavation would suggest that the three ditches are of Roman date. The evidence discounts their identification as part of a simple temporary or pre-wall surveyors' camp, or part of a defensive system. Not enough of these features was available for investigation to be certain of their nature and function. However, they appear to be very similar to Roman field systems identified at a number of auxiliary forts.

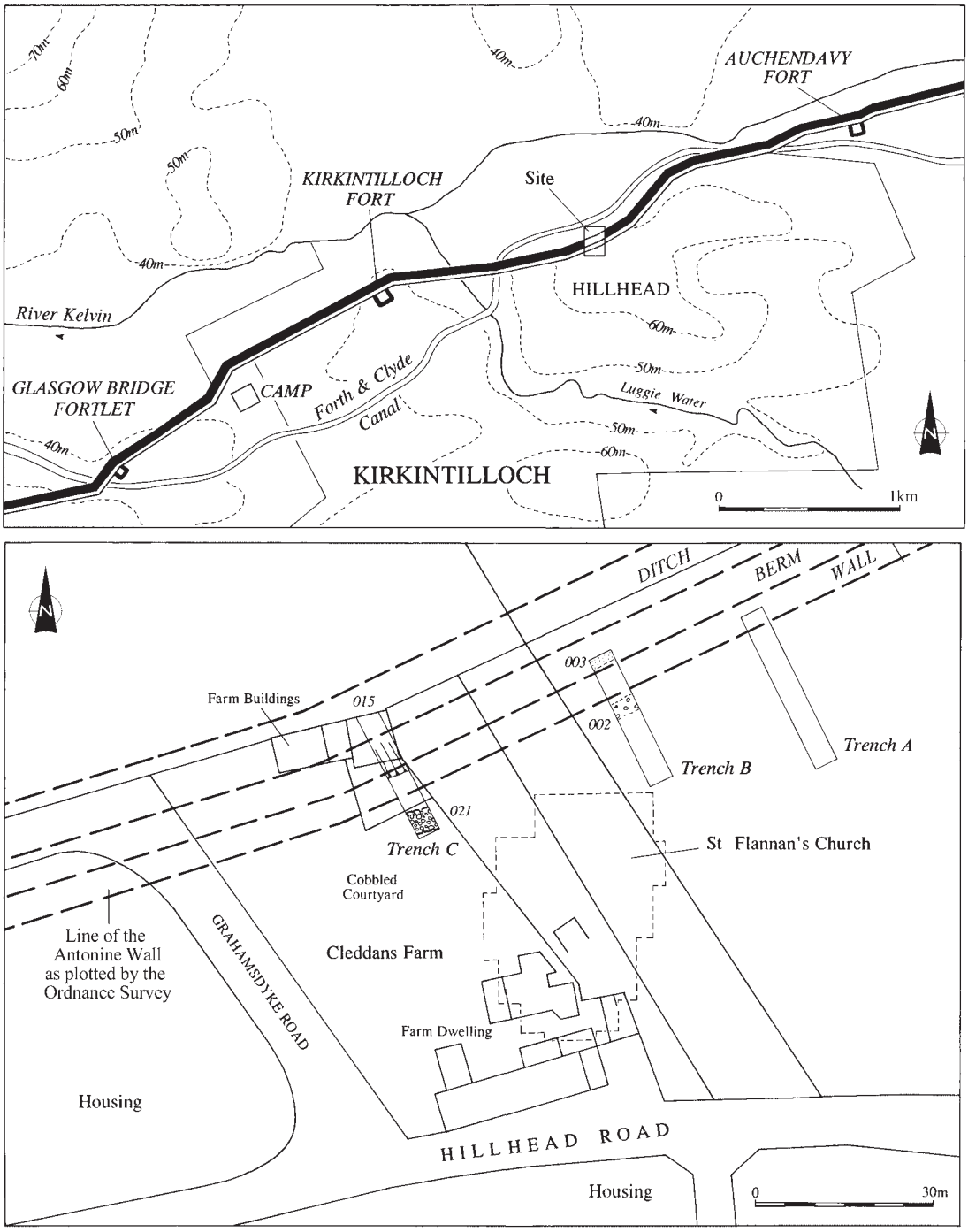
18: ST FLANNAN'S CHURCH, HILLHEAD, KIRKINTILLOCH, EAST DUNBARTONSHIRE (NS 663 742) (illus 15–17)

K Speller & A Leslie

INTRODUCTION

St Flannan's has been proposed as the possible location of an Antonine Wall fortlet (Hanson & Maxwell 1986, 122) because one would be expected, on the grounds of spacing, between the forts at Auchendavy to the east and Kirkintilloch to the west (illus 15) and St Flannan's is topographically an excellent location. Excavations were conducted just west of the church (at NS 662 742) in 1958 by James Barber (Keppie & Breeze 1981, 233), when the Ditch was found to be only 6.15m wide with a stepped cut, and no trace was found of the Rampart base. In 1980, Lawrence Keppie recorded rather different dimensions some 300m to the east of the church (NS 663 743–NS 666 745), where the average width of the Ditch was found to be 9.2m lip to lip (Keppie & Breeze 1981, 241), although here again almost all traces of the Rampart base had been ploughed away. The suggestion has been made that this significant discrepancy in dimensions may have arisen from this area being a point on the Rampart's line where two work parties met (Hanson & Maxwell 1986, 127).

In December 1994 and February 1995 five trenches (A–E) were opened by GUARD around St Flannan's Church, three along the line of the Wall



ILLUS 15 St Flannan's Church, Hillhead, Kirkintilloch: location plan, including the line of the Wall as plotted by the Ordnance Survey (*Based on the Ordnance Survey map © Crown copyright*)

and two behind it (illus 16). The work was conducted in advance of a proposed housing development. The Wall line at this point is a scheduled ancient monument, thus three of the trenches (A–C) met a requirement from Historic Scotland to evaluate the condition of the monument. As a result of the excellent state of preservation encountered in one trench (see below), and following negotiations involving West of Scotland Archaeology Service (WoSAS) and Historic Scotland, two further trenches behind the line of the Rampart were opened by agreement with the developer in unscheduled land, in order to determine whether or not a fortlet or other associated Roman remains were present. Trenches A, D and E were archaeologically sterile.

EXCAVATION

Trench B

Beneath deposits of dumped debris, deriving from the construction of the church, and underlying ploughsoil, a sparse spread of rounded stones was revealed lying on and slightly within the natural subsoil. This deposit had an average width of c 3m, forming a roughly linear NE/SW-aligned pattern in the trench (002 on illus 16). It seems likely to represent the ephemeral remains of the base of the Rampart. At the north end of the trench a colour change in the soil c 8m from the putative northern edge of the Rampart revealed an indistinct edge, also running NE/SW, though full exposure of this layer proved impossible because of the constant flooding of the trench. This edge is presumed to have been the south lip of the Ditch. There were no small finds.

Trench C (illus 16 & 17)

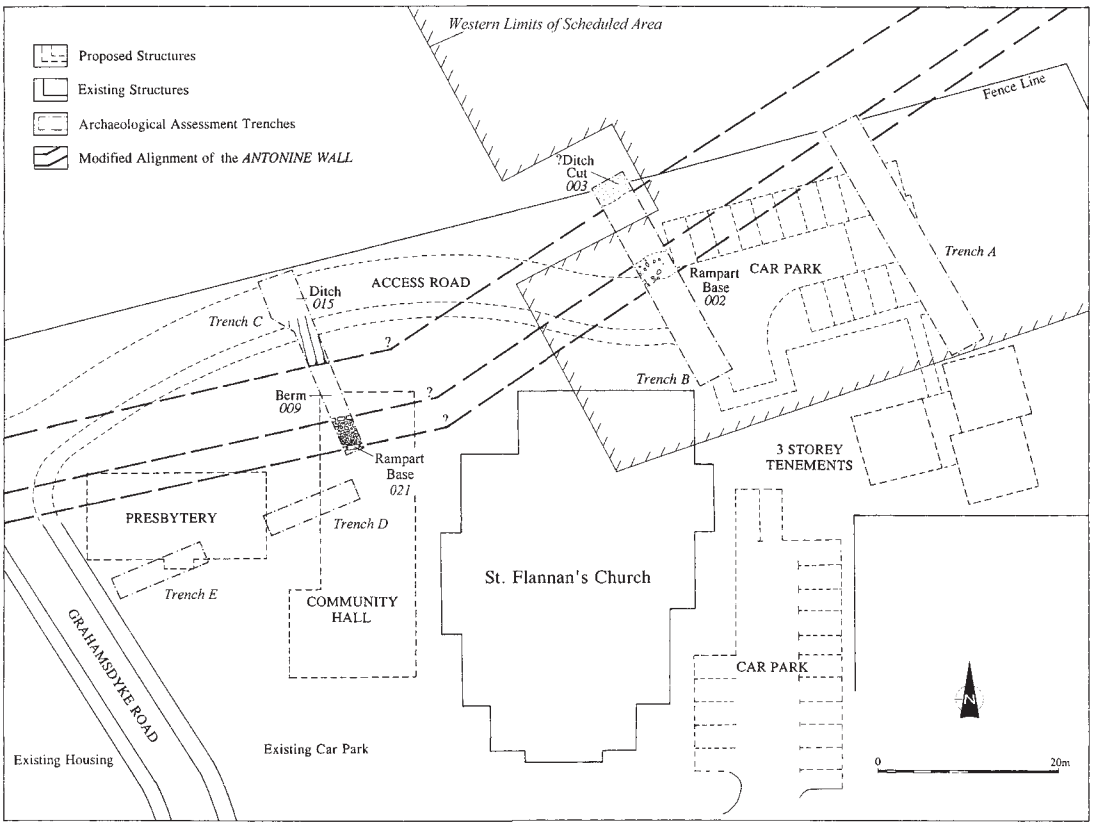
Removal of some 0.8m of overburden at the northern end of the trench and of c 2m of make-up from the southern end, revealed the relatively well-preserved remains of the Antonine Wall. The Rampart base of rounded and angular stones, one or two deep, set largely on top of the natural subsoil, was clearly defined to north and south by a kerb line of large, rectangular limestone blocks, giving the base a width of 4.3–4.4m. Above the basal stones, successive layers of turf were recorded, many of which still displayed their original sub-rectangular block shapes, the whole standing to a maximum height of 0.55m. To the south, these turfs were found to extend beyond the kerb. To the north, the situation was obscured by disturbance from modern service pipes serving Cleddans Farm, which had occupied the site until its demolition in 1959.

Beyond the north kerb, a sequence of events was represented by various layers and cuts, most probably of relatively modern date. These overlay the old Roman ground surface, which may be identified as a highly leached layer (009) and presumably formed the Berm. Although only patches of 009 survived, the full width of the Berm (from the kerbstones marking the front of the Wall to the southern lip of the ditch) appears to have been around 7m. At the northern limit of the Berm the south lip of the Ditch was encountered. A combination of safety considerations, constant waterlogging and truncation of deposits by large rafts of railway sleepers supporting the in situ remains of the drainage system serving outbuildings of Cleddans Farm, prevented the establishment of the full dimensions of the Ditch. However the northern edge of the Ditch cut was not recorded at the same level within the remaining 5m of the trench.

Two churned dumps of turf (004 & 008) which directly overlay the old Roman ground surface (009) may best be interpreted as slippage from the Rampart, subsequently disturbed by the digging out of later features (007 & 017). 007 seems assuredly much later in date, because of the presence within its fill of partly decomposed animal bone. The date of 017 is less clear, though definitely earlier than field drain 013, which is perhaps best associated with the period of agricultural improvements in the late 18th century. The small post-hole or stake-hole 005 is probably later than the deposition of turf (004), though if the latter does represent Rampart slip then the post-hole may be the earlier feature. No small finds of Roman date were recovered from Trench C.

DISCUSSION

The Rampart base, as established in Trench C, falls within, but at the narrow end of, the range of previously recorded dimensions (Hanson & Maxwell 1986, 80), although its width is consistent with dimensions previously recorded in the Kirkintilloch area (Keppie 1974, 158). Constructed on a natural slope, the front of the Rampart base had evidently been levelled up, either by the positioning of extra turfs beneath the cobbles or the retention of the original turf and topsoil at this point (= 010 on illus 17).

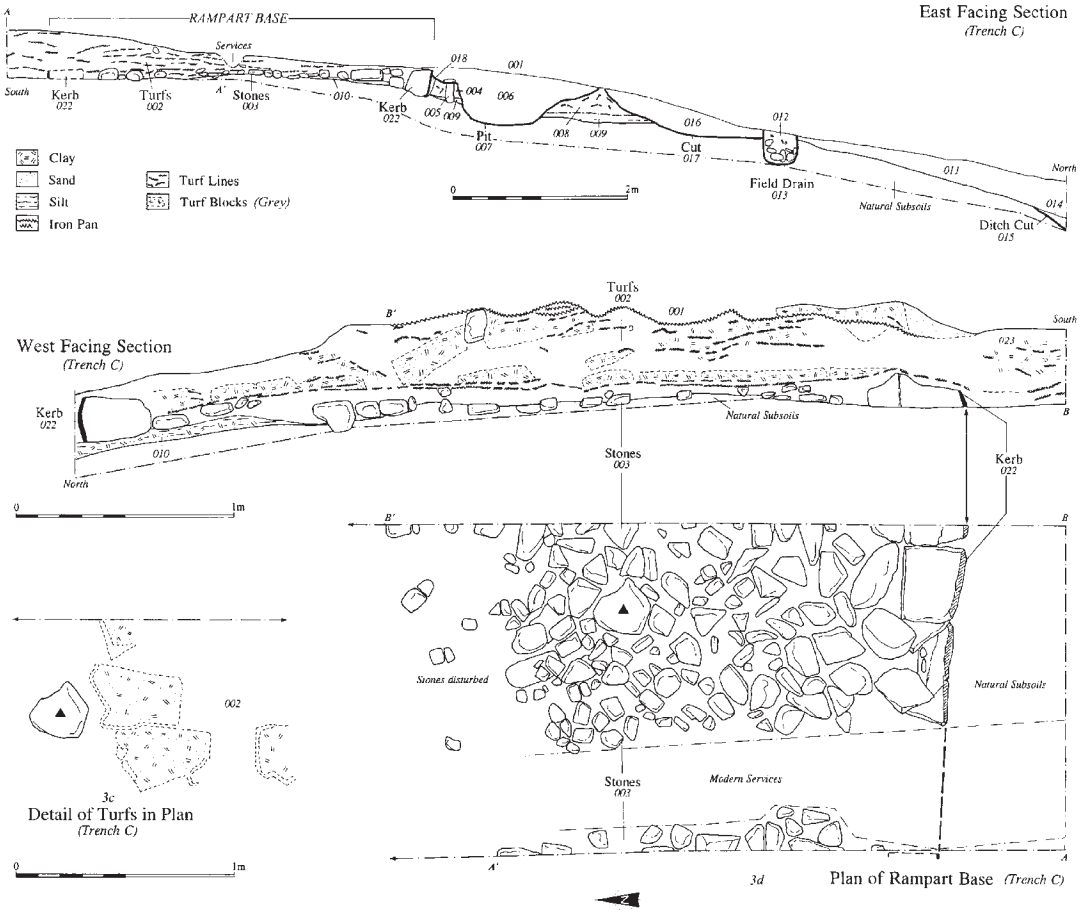


ILLUS 16 St Flannan's Church, Hillhead, Kirkintilloch: localized site plan showing trench locations (*Based on the Ordnance Survey map © Crown copyright*)

The turf of the Rampart seems likely to have been largely dug from the surrounding area, where no ploughsoil had been developed. This is based on the observation that between the darker turf lines, the soil matrix matched the yellow-orange colour of the mineralized natural subsoils present today. The original shapes of the turfs were particularly clear in the east section (B'–B on illus 17), which allowed the number surviving vertically to be discerned. A maximum build-up of five turfs could be discerned in the east section in Trench C, surviving to a height of 0.55m. Based on an assumed standardized Roman turf thickness of 0.15m (Vegetius III. 8), this would originally have been 0.75m high.

The turfs were not bounded by the line of the southern kerb of the base, but continued beyond it, remaining roughly horizontal in section, at an average surviving height of 0.35m. No evidence was found to suggest that these might represent later additions. Considering the natural slope of the location, most spread or slippage should have occurred to the north. It is, therefore, worthy of note that such a consistently thick and horizontal build-up of turfs is present at the back and upslope end of the Rampart base, especially given the evidence for truncation of the Rampart. It may be that some sort of deliberate extension to the back of the Rampart was intended here, though if so, its precise character remains unclear. The possibility that this represents a 'turf stack' (Keppie & Murray 1981) cannot be discounted.

The surviving layer (009) interpreted as having formed the Berm appears as level ground, though it could not be traced beyond the disturbance caused by cut 017, where the top of the natural subsoil was found to be sloping gently towards the cut of the Ditch. It is therefore possible that the division



ILLUS 17 St Flannan's Church, Hillhead, Kirkintilloch: Trench C, plans and sections through the Rampart

between layer 011 and the subsoil is in fact a shallow cut, in which case the width of the Berm would have to be reconsidered.

It is particularly unfortunate that the full width of the Ditch could not be determined, as it is in this general area that two quite distinct Ditch width dimensions have been recorded. The inner edge of the Ditch on the south side was assumed to be the point where the angle of the natural subsoil changed most abruptly. However if layer 011 is lying in a cut and the Berm was in fact level for a greater distance running north, then the Ditch cut would have been c 1.2m higher and c 1.75m further upslope to the south. There was no evidence to suggest that the Ditch had been cut in a step here, as has been observed at other nearby locations (see, for example, 19 below).

The work at St Flannan's has thus produced a record of a well-preserved Rampart in Trench C, a fact made more interesting by the contrasting very poor preservation of the same structure just a few metres away. This excellent state of survival must surely be the result of the Rampart remains in Trench C having lain under the cobbled courtyard of Cleddans Farm, instead of being exposed, as elsewhere, to the ravages of the plough. The 0.55m surviving height may be set in context by comparison with the best surviving stretch west of Rough Castle near Bonnybridge, where survival has been recorded to a height of 1.6m, and with generally accepted best estimates of the original maximum height of the Rampart of 3–3.5m.

The position of the Rampart as it runs through the site is c 8m south of that plotted by the

Ordnance Survey (OS). Illus 15, which takes the line of the Wall from the OS, reveals an angle in the line of the Wall occurring to west of Trench C. The evidence from the work at St Flannan's appears to show that such an angle need not have been present at this point; the line of the Wall may readily be continued in a straight line along the breast of the ridge to link up with the 1994 trenches at the Manse, 110m to the west. Equally, though, the work at St Flannan's appears to indicate that there would have been a change in alignment between Trenches B and C (depicted on illus 16).

19: THE MANSE, HILLHEAD ROAD, KIRKINTILLOCH, EAST DUNBARTONSHIRE (NS 661 743) (illus 18)

J A Atkinson

INTRODUCTION

Two trenches were opened by GUARD in June 1994, a little to the west of St Flannan's Church, ahead of the construction of a house, where the development impinged upon the line of the Antonine Wall as marked on the Ordnance Survey maps. The site lay in the grounds of The Manse on Hillhead Road, although the trenches were actually located at the rear of the property, closer to the end of Grahamsdyke Road. The same considerations that applied to the work at the Church (see above) had been applied at this site, which was in fact examined some six months beforehand. In addition to the expectation of locating the line of the Antonine Wall, guided by previous work by Barber and Keppie nearby, there was also reason to consider the possibility of the presence of a fortlet.

Located roughly 12m apart, both trenches successfully located three principal Antonine Wall elements: Rampart base, Berm and Ditch. The brief for the work specifically excluded full excavation of the Ditch and neither trench extended far enough south to encompass the full width of the Rampart base.

EXCAVATION

Trench 1

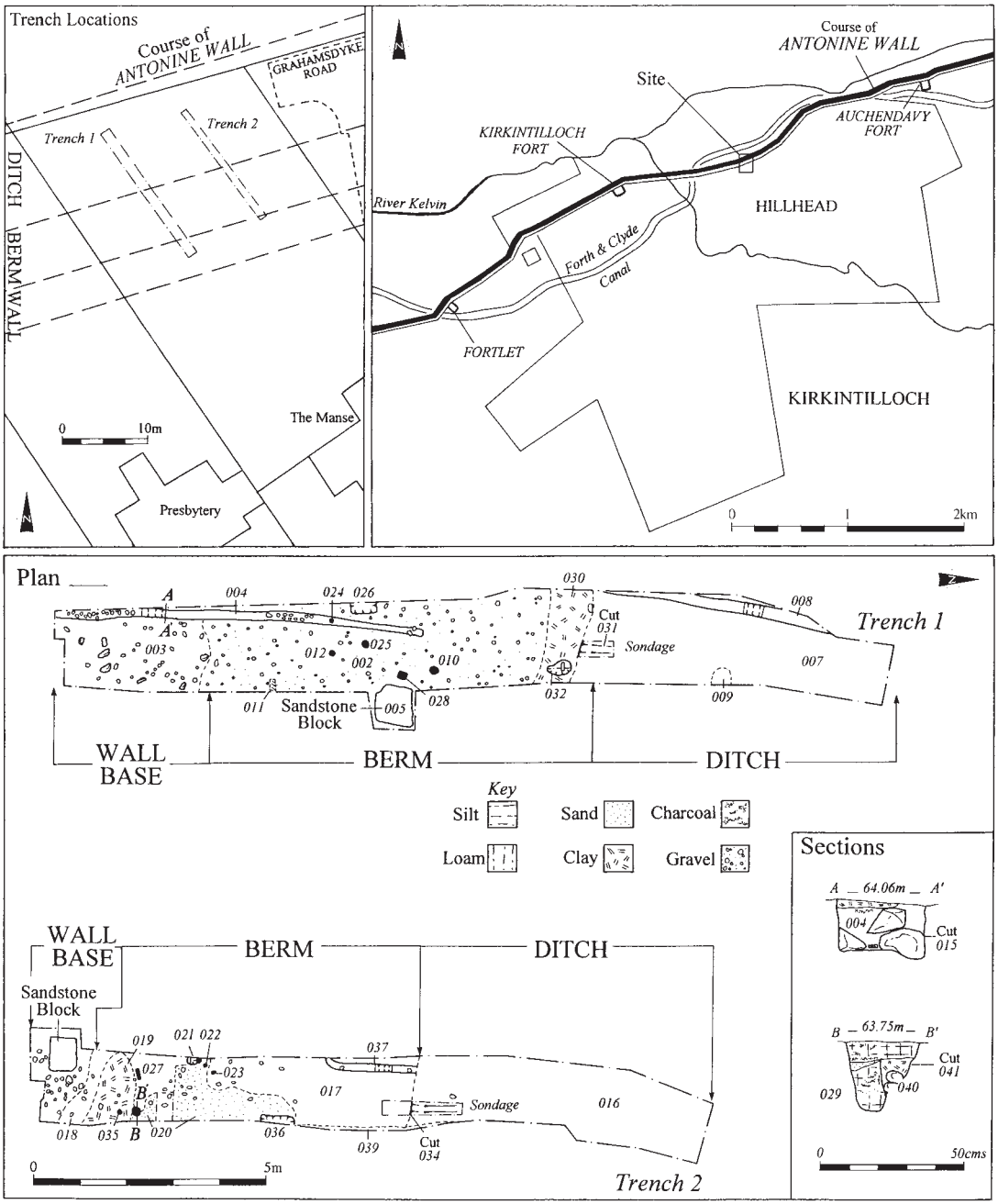
In common with results obtained from other excavations nearby, the Rampart base was found to survive as little more than a patchy scatter of stones, the consequence of many years of plough degradation. No kerbstones were located in situ. A linear feature running from Rampart base to Berm proved to be modern on the basis of pottery recovered from its fill. Various small features encountered on the Berm also appear to represent relatively modern disturbance. The Berm itself was measured at c 7.5–8m wide. A small section was cut running out from the Berm and into the Ditch to a depth of some 0.35m, enough to demonstrate the latter as having a step-cut profile, in common with evidence obtained elsewhere in the vicinity (Keppie & Breeze 1981, 233). The only small finds were modern.

Trench 2

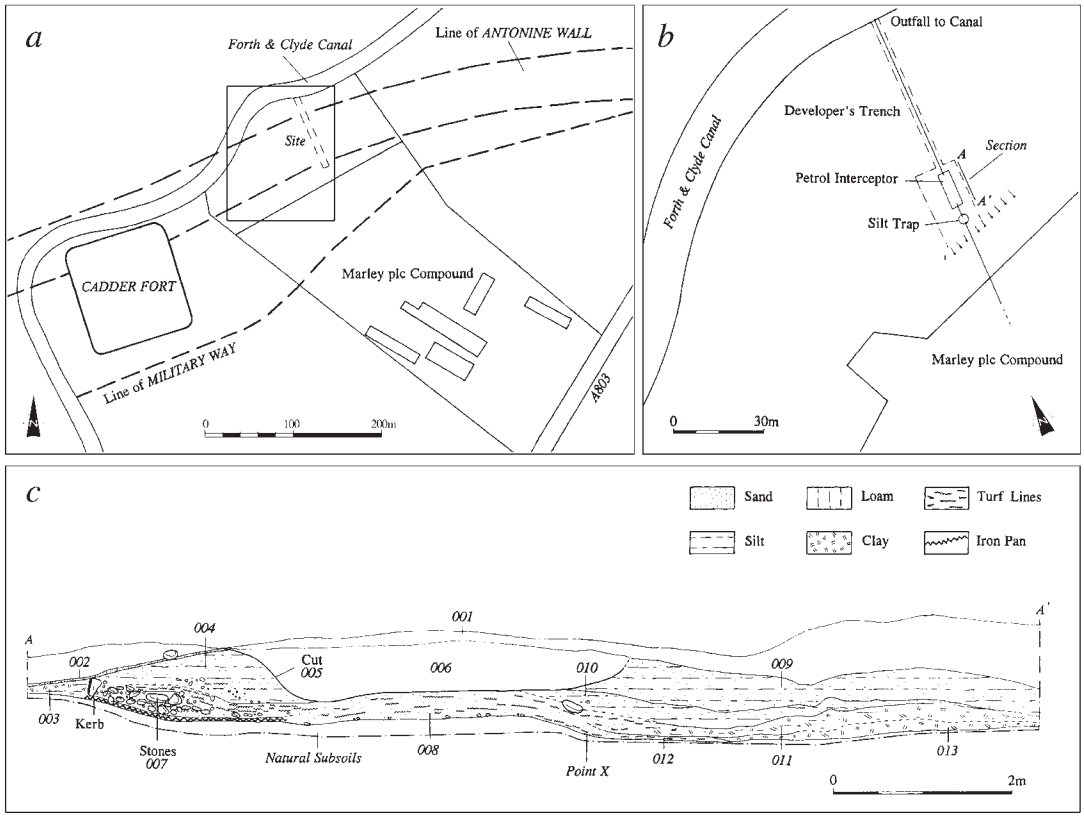
Very little of the Rampart base was exposed in Trench 2; what little there was was also heavily denuded. Two deposits, of charcoal-flecked clay and sandy silt, located on the area occupied by the Berm may well represent a combination of the old ground surface and soils washed off the Rampart. One deposit sealed a small stake-hole located within 1m of the front of the Rampart base. As in Trench 1, various small features located in the area of the Berm appear to represent post-Roman activity. The Berm was measured at 6.5–7m wide. A 1.75m long section cut from the Berm into the Ditch once again revealed the latter to have a stepped profile, though in this instance the stepping was more gradual and at least two 'steps' were observed before the point at which the section was stopped. There were no small finds of Roman date.

DISCUSSION

The results of the work at The Manse largely corroborate evidence obtained from other excavations across the line of the Antonine Wall in the immediate vicinity. The effects of many years of ploughing appear to have removed most traces of the Rampart and its base, including the kerb-stones. The dimensions of the Berm and the characteristics of the Ditch, insofar as the latter was examined, were broadly consistent with the testimony of other excavators.



ILLUS 18 The Manse, Hillhead Road, Kirkintilloch: composite location plan, trench plans and sections (*Based on the Ordnance Survey map © Crown copyright*)



ILLUS 19 Cadder: composite location plans and section (*Based on the Ordnance Survey map © Crown copyright*)

20: CADDER, EAST DUNBARTONSHIRE (NS 619 727) (illus 19)

K Speller & A Leslie

In November 1994 a short emergency recording exercise was undertaken by GUARD on a section through the Antonine Wall near the site of the fort at Cadder (Clarke 1933), after a trench some 14m wide had been cut through the scheduled monument without prior consent. The trench had been partially backfilled before the arrival of the archaeologists, allowing only the west-facing section to be recorded.

The trench had been cut into the natural subsoils, leaving no trace of the Wall on plan. Cleaning of the section face revealed part of the base of the Rampart in the form of a layer of cobbles (007 on illus 19c) sitting directly over the natural subsoils. A clear kerb-stone was located at the north end, although none was found to the south where the cobbling was also found to be absent. The cobble spread was therefore no more than 1.5m wide, in contrast to the more usual Rampart base width of 4–5m. A clear dip in the level of the natural subsoil some 5.5m from the north kerb-stone (point X on illus 19c) may denote the original position of the rear of the Rampart base. The conclusion drawn is that at the point examined only the front third of the Rampart base survives in situ. However, to judge from surface characteristics in the immediate vicinity, this limited survival is quite possibly a very localized circumstance and the Rampart may be far better preserved within a metre or two of the disturbed area.

Partly overlying the cobbles, a thick build-up of compressed turfs (008), representing the remains of the Rampart, extended to a height of c 0.5m above the natural subsoils. At what would have been the front of the Wall base, a thick layer of brown sandy silt (004), containing a few turf marks within its

lower reaches, overlay layer 008. To the south of point X on the section, a series of clays and silts (009, 010, 011, 012 & 013) had accumulated to a height of c 0.80m and extended southward for a considerable distance. All were stone free and the lower layers (010–012) contained faint traces of turf marks. 009 was similar in colour and form to 004, and both were cut by 005, which contained 19th- and 20th-century artefacts; otherwise no datable finds were recovered from the exercise. This build-up of stone-free layers to the south of the Wall may perhaps be interpreted as soils washed off the turf rampart with subsequent settling. The exposed section did not extend far enough to the north to locate the position of the Ditch.

22: No 39 ROMAN ROAD, BEARSDEN, EAST DUNBARTONSHIRE (NS 5474 7209) (illus 20)

P Robins

Strathclyde Regional Council carried out a watching brief in 1994 during the excavations for the foundations of a substantial extension to a stone-built villa at 39 Roman Road, Bearsden. The area had been identified as archaeologically sensitive because the Ordnance Survey had mapped the line of the Antonine Wall within the garden, and it was thought that the new extension might affect buried remains of the Wall or related features.

A small spread of sizeable boulders and stones was revealed immediately below the turf. Although it resembled the Rampart base as unearthed at other points along the Wall, it did not appear to have any kerb or larger stones and was only up to 2.5m long. On removal, it was found to overlie a buried ploughsoil which contained abundant coal and coke and some modern glass and pottery. The stones could therefore not have represented in situ remains of the Rampart base. A deep garden soil, possibly brought in to level the garden, was also encountered (illus 20).

Six very small sherds from possibly two different vessels (based on wall thickness only) of black burnished ware of Roman date were recovered from the garden soil. These were briefly identified and verified at the time of excavation by Lawrence Keppie.

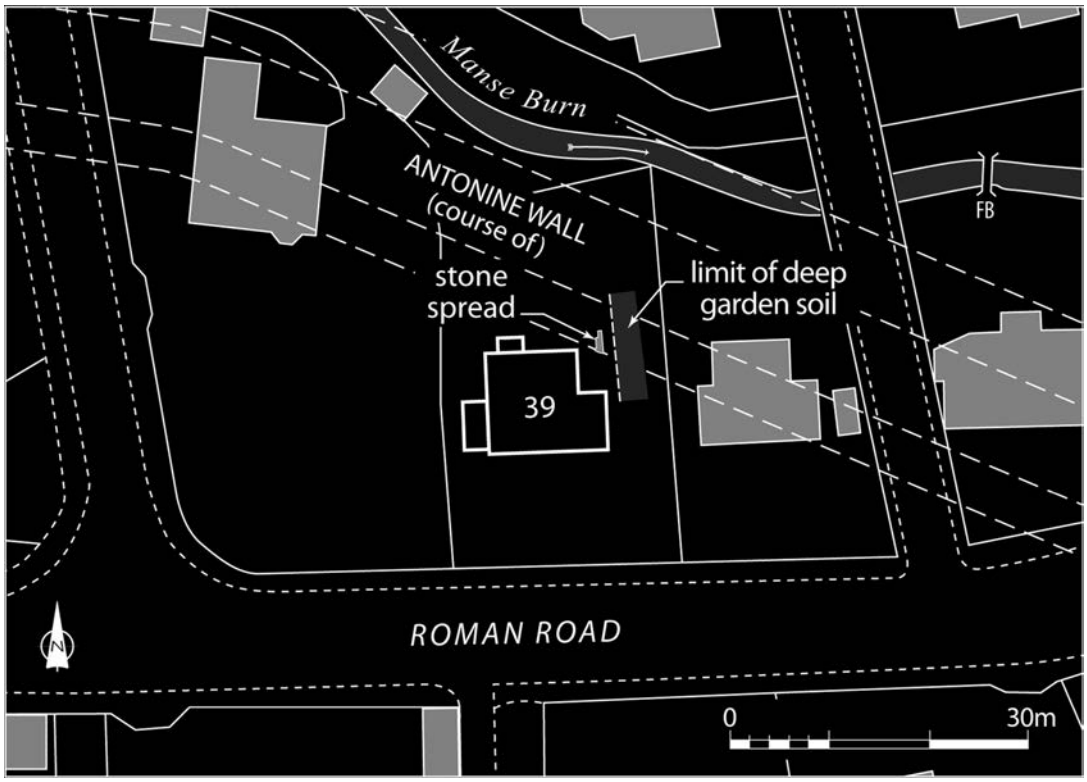
No evidence for the presence of the Wall was uncovered at this location but given the presence of the buried plough/garden soil it may have been removed in the past through agriculture or garden landscaping. The results of the watching brief do not provide enough evidence to suggest the mapped location of the Rampart and Ditch is in error at this particular location. The finding of the pottery from a re-deposited context is suggestive of the former presence of Roman remains in the vicinity, but, given the sloping nature of the underlying soils in the area of the extension, it is possible that soil already containing the pottery had been imported for levelling.

23: BALLAIG AVENUE, BEARSDEN, EAST DUNBARTONSHIRE (NS 535 724) (illus 21)

K Speller & A Leslie

Two trenches were opened by GUARD in September 1997, ahead of a proposed single house development, to locate and evaluate the condition of any surviving remains of the Antonine Wall, and thus to ensure that any building work could avoid them. The house plot lay on the line of the Antonine Wall (most probably over the Ditch and Outer Mound) as marked on Ordnance Survey maps. The site lies almost exactly halfway between Castlehill fort to the west and Bearsden fort to the east. Some indication of the likely condition and characteristics of the Wall at this point was provided by records of an excavation conducted immediately west of the site in 1963 (*Discovery Excav Scot 1964*, 28). A small portion of the Rampart base revealed by that work can still be seen today exposed on the ground.

Trench 1 revealed that the Ditch survived more or less in the location anticipated, beneath evidence of substantial landscaping, attributable to the demolition of Thorn Farm, which occupied the site until the 1950s, and to the construction of a new house in 1966. Although not fully excavated, thereby precluding measurement of its surviving width, a section cut into the Ditch fills demonstrated the feature to have a step-cut profile on its north side (visible beneath cut 1/009 on illus 21) and to have been allowed to fill naturally over the centuries. The cut of the Ditch followed a very sharp angle, far in excess of the 30° commonly suggested as the norm (Hanson & Maxwell 1986, 79, although see Bailey 1995, 590, where 30° is suggested as more like the minimum angle). Trench 2, located 3m to the east of Trench 1, exposed an identical sequence



ILLUS 20 39 Roman Road, Bearsden: location map showing existing house before extension, stone surface and area of garden soil (*Based on the Ordnance Survey map © Crown copyright*)

except that in this case the Ditch was not examined for health and safety reasons.

25: CLEDDANS ROAD, HARDGATE, WEST DUNBARTONSHIRE (NS 5046 7225) (illus 22–3)

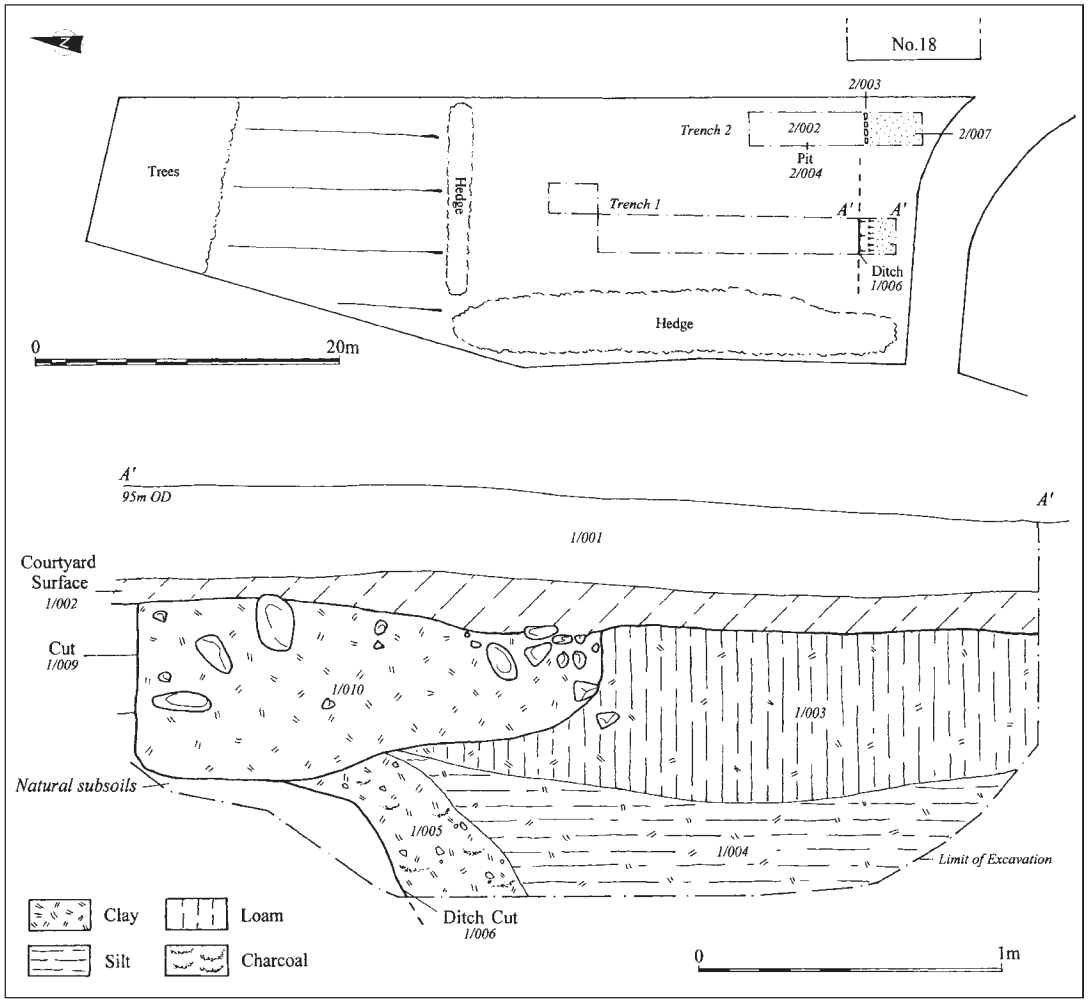
R Strachan & K Cameron

INTRODUCTION

Archaeological excavations and a watching brief were undertaken in 2000 across the line of the Antonine Wall at Cleddans Road, Hardgate by the former Centre for Field Archaeology, University of Edinburgh. The work was commissioned by Scottish Power UK plc in advance of the laying of an underground electricity cable and associated structures within the scheduled area of the Antonine Wall (illus 22).

The alignment and condition of the Antonine Wall features had not been previously confirmed by excavation in the immediate vicinity of the development site. The Ordnance Survey here maps the Rampart alignment c 5m south of Cleddans Road and the Ditch alignment largely beneath the road. The precise alignment of the Military Way was not known. The nearest identified garrison point, Cleddans fortlet, lies c 350m east of the excavation site (Keppie & Walker 1981). At the time of excavation, the field to the south of Cleddans Road was under pasture (although excavations revealed that it had been ploughed in the past), whereas the land to the north of the road lay on the edge of Clydebank & District Golf Club.

The first stage of work comprised the excavation of two 2m wide evaluation trenches (Trenches 1 & 2: illus 22) along the proposed cable route, to north and south of Cleddans Road. The objectives of this evaluation were to define the positions, extents and

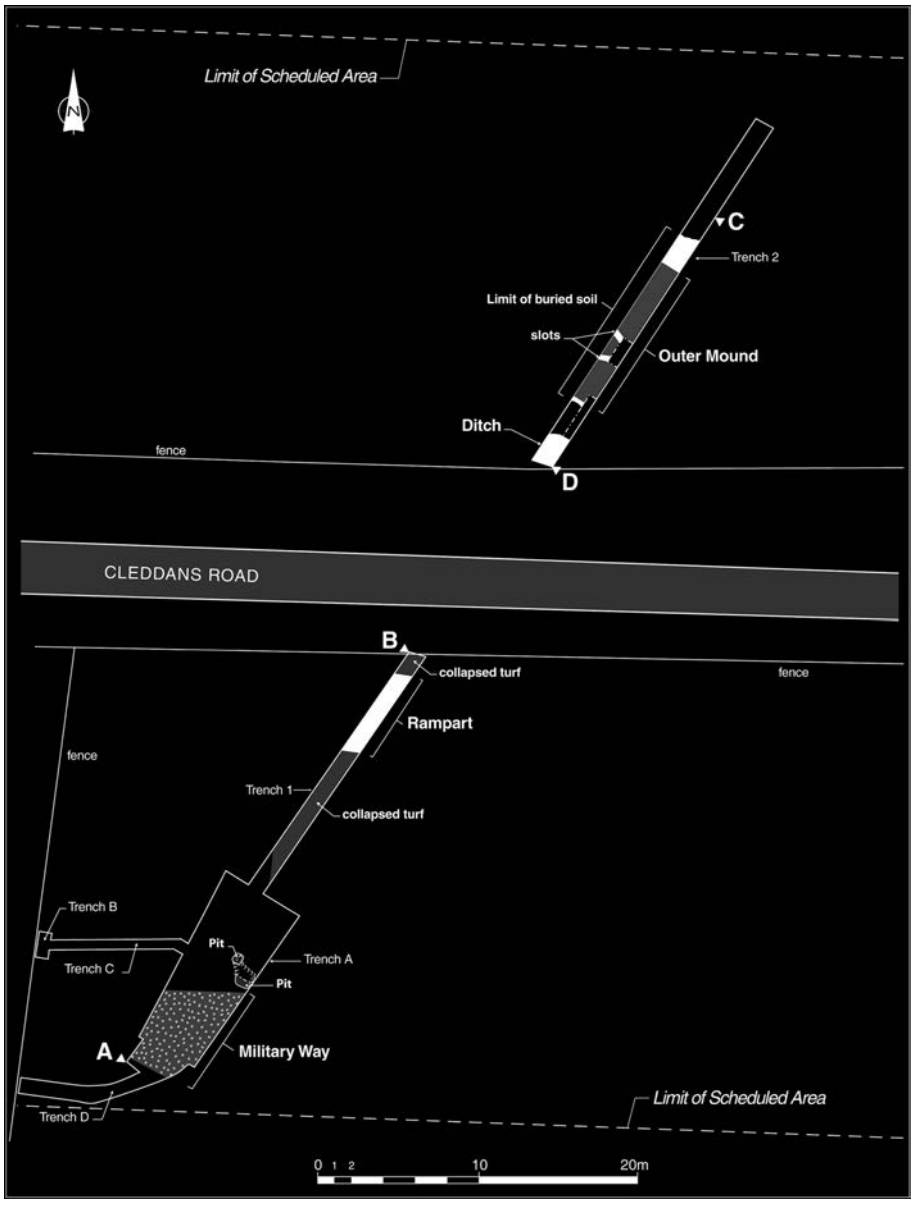


ILLUS 21 Ballaig Avenue, Bearsden: site plan and sections

condition of the various elements of the Antonine Wall, and thereafter to determine an appropriate method for laying the cable that would ensure the survival of well-preserved remains. Therefore, only sample excavation of archaeological features was undertaken.

The evaluation confirmed the presence of the Rampart, Ditch, Outer Mound and Military Way, with associated deposits and features present (illus 22). The good preservation of archaeological remains required that the cable was thrust-bored beneath the Antonine Wall as far as was possible within technical constraints. By these methods the Rampart, Ditch and Outer Mound were preserved in situ, and no further excavation was required. A second stage of excavation involved the investigation of an area of the Military Way that could not be preserved (Trench A: illus 22), and the examination of other areas in which an ancillary structure and cable were to be placed (Trenches B & C: illus 22).

At the southern edge of the scheduled area, the cable trench turned westwards and ran as far as the track leading south to Braidfield cottage (Trench D). An archaeological watching brief was undertaken during the excavation of the trench in this unscheduled zone, although no discoveries of archaeological interest were made.

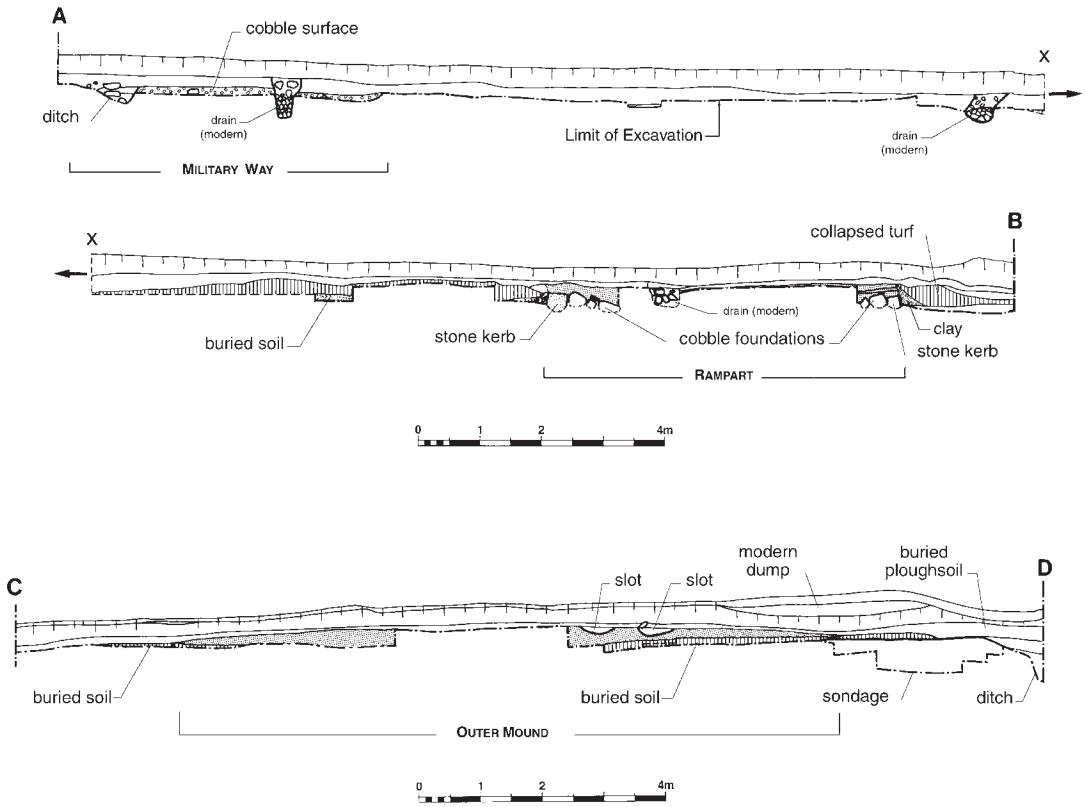


ILLUS 22 Cleddans Road: location plan, showing position of all trenches and Roman features

EXCAVATION

Rampart

The Rampart measured 5m wide and was formed of a turf body resting on a kerbed stone base (illus 23). Two parallel basal kerbs of single coursed large angular blocks of yellow sandstone were identified, c 0.15–0.2m high. An attempt had been made by the builders to construct an even inner face to the northern kerb, but not to the southern. The stone foundation core comprised medium- to small-sized angular sandstone chunks. The depth of this deposit and any underlying deposits was not determined. The turf body of the Rampart extended fully across



ILLUS 23 Cleddans Road: SE-facing section showing Military Way and Rampart, and NW-facing section showing outer Ditch cut and Outer Mound

the stone base. Where examined, the deposit measured up to 0.28m deep and comprised a mottled and striated mid-light brown/orange/black fine silty clay. This appeared to reflect the presence of in situ stacked turfs that had been little disturbed (eg by ploughing).

Immediately to the south of, and abutting, the southern face of the Rampart lay an extensive mixed deposit of grey silty clay which extended for c 7.4m from the Rampart face (illus 23). This deposit measured 0.18m deep and appears to represent either a build-up of slopewash against the Rampart face, or perhaps more likely, the mixed remains of turf collapsed or eroded from the Rampart. Where examined, a buried soil was sealed beneath the putative collapse deposit. It comprised a dark brown-purple, very fine clay silt, 0.02m thick. An isolated pocket of mixed brown clay was located immediately above the collapsed turf and abutting the in situ turf deposit.

Berm

An isolated deposit of clay was located abutting the face of the northern Rampart kerb and may represent either a dumped deposit to protect the stone base and assist water run-off, or part of the collapse of the turf component of the Rampart (illus 23). Situated above this layer and extending northwards into the trench edge lay a thick deposit of decayed turf, c 0.35m deep. This deposit was of similar composition to the in situ turf on top of the Rampart base, although more mixed, and most likely represents the upper turf component of the Rampart which had collapsed northwards onto the surface of the Berm. This layer lay directly upon a clay subsoil. No features such as defensive pits (cf Bailey 1995) were located in the small amount of the Berm examined, although only the innermost c 1.3m of the Berm was investigated and the defensive pits are normally located at least this distance

away from the Rampart base (G Bailey, pers comm).

Ditch

Only the northern, outer edge of the Ditch was identified, on the northern side of Cleddans Road (illus 22). Excavation was limited to a depth of c 0.75m below subsoil surface level. Its outer edge was cut through the clay subsoil and seen to exhibit two breaks of slope (illus 23). The initial slope comprised a c 20° gradient for approximately 0.8m where the edge steepened to almost vertical. The upper, shallower slope was probably the result of erosion. Two fills were identified within the excavated portion of the Ditch. The upper fill comprised a mixed and mottled light-brown/orange/purple/blue silty clay, measuring 0.15m deep. The lower fill comprised a more homogeneous deposit of bluish-grey gritty clay and measured at least 0.45m deep. Waterlogging of the Ditch to the upper level of the lower fill was evident during excavation.

Outer Mound

The Outer Mound measured 11m wide by up to c 0.25m deep, and lay c 2m north of the Ditch (illus 22). Its northern and southern edges, however, were poorly defined and it is considered more than likely that its original width was greater. The Outer Mound was composed of a compacted and mottled light brown/orange/grey silty clay, most likely derived from the excavation of the Ditch to the south: the character of this deposit was similar to the subsoil but more mixed. A distinctive layer was present beneath the Outer Mound and extended slightly beyond its limits (illus 23). This layer measured c 13.5m wide by 0.09m deep and comprised a light grey fine silt. It appeared to represent a buried soil, and most likely defines the original limits of the Outer Mound.

Two slots c 0.5m wide and 0.15–0.2m deep were located, c 0.9m apart, cut into the surviving summit of the Outer Mound. Their date and function could not be determined; however, they clearly post-date the construction and decay of the Outer Mound.

Military Way

What appeared to be the remains of the Military Way were located c 18m to the south of the Rampart, and c 26m south of the field boundary on the south side of Cleddans Road. The remains of the road comprised a slight depression measuring c 4m wide by 0.10m deep that contained a spread of cobbles and pebbles within a silty clay matrix. The spread of stones was poorly defined and many of the stones had clearly become displaced, most likely by ploughing. A narrow ditch measuring c 0.35m wide by 0.29m deep ran immediately south of, and parallel to, the stone surface, and contained stones no doubt displaced from the adjacent road. There was no indication of a bank accompanying this ditch. There was no coherent evidence for a ditch flanking the northern side of the road.

Two small, shallow pits containing carbon-rich silty soil were located to the north of the pebbled surface (illus 22). Their date is uncertain, although a post-Roman origin is considered likely on the basis of coal flecks being present in their fills. Coal flecks were absent from all stratified Roman deposits, but were evident in most demonstrably post-Roman soils.

DISCUSSION

The excavation has demonstrated the relatively good quality of preservation of the Rampart, Ditch and Outer Mound here. The waterlogging of the Ditch deposits suggests the likelihood for the preservation of significant palaeoenvironmental remains in the lower fills. The Outer Mound is not normally well-preserved where it is not visible as a surface feature. The buried soils sealed beneath it and the collapsed turf south of the Rampart may contain important palaeoenvironmental remains relating to the local environment when the Antonine Wall was built. The Military Way was less well preserved, although its survival at all in agricultural land is comparatively rare. No other features or pre-modern finds, which could suggest a garrison point in the vicinity, were identified by the archaeological work. Previous estimates of the alignments of the Rampart and Ditch were proved to have been largely accurate – the Rampart lies 3m further north than its previously mapped alignment, whereas the northern edge of the Ditch was found precisely where expected.

In the vicinity of Cleddans, variations in the quality of preservation of the Antonine Wall frontier works are apparent. To the west of Cleddans at Golden Hill, Duntocher, the Rampart measured 4.8m wide and the Ditch 6m wide (Robertson

1957). The width of the Rampart there compares well with that established at Cleddans Road. However, the Rampart at Duntocher was poorly preserved and the turf superstructure was noted to have been almost completely ploughed out (ibid, 7). Excavations in 1980 at Cleddans fortlet (Keppie & Walker 1981) revealed that the northern kerb of the Rampart had been robbed away (ibid, 155). Excavations in 1995 at Cleddans Farm (24, Table 1), immediately south of the Antonine Wall, revealed no archaeological deposits.

27: GAVINBURN BUS DEPOT, OLD KILPATRICK, WEST DUNBARTONSHIRE (NS 460 731) (illus 24– 26)

INTRODUCTION

A Leslie, R McCullagh & K Speller

The first evidence of the presence of a Roman fort at Old Kilpatrick was provided by the discovery of the remains of a Roman bath house in 1790 during the construction of the Forth and Clyde Canal. Excavations in the first half of the 20th century, ahead of housing development, confirmed the presence of the westernmost terminal fort of the frontier system, revealed much of its character and demonstrated that it had been constructed prior to the completion of the Antonine Wall (Miller 1928; Macdonald 1915; 1932; 1934) (illus 24). Miller (1928, 10–14, 51–3) noted what he considered to be evidence – such as pre-Antonine Roman pottery recovered from the bottom of a ditch at a different angle to the fort ditch system – that suggested first century AD occupation on the site, though he found no structures from this earlier period. Further, as a result of these investigations, clear evidence of two phases of Antonine activity was found within the fort, together with evidence for a development in the defensive ditch system. Both the headquarters building and a supposed latrine building had been rebuilt from the foundations up (Miller 1928, 27–9), while the sites of two of the six timber barracks excavated had not been re-used during the second phase. Miller also suggested that the Wall cut across the line of an earlier Roman road, which may have led beyond what became the frontier line, perhaps to a harbour site downstream from the Dumbuck shoals.

In more recent times a significant proportion of the fort site has been in use as a bus depot and, in August and September 1994, GUARD were asked to carry out an excavation where it was proposed to extend the existing bus washing facility. The location of the proposed development coincided, based on Miller's fort plan, with an area just outside the fort defences, at its western corner and at a point where there is a break in the line of the triple ditches fronting the fort.

Several years later, in July 1999, AOC Archaeology Ltd maintained a watching brief while engineering contractors cut two site investigation trenches through the concrete slab of the depot forecourt and a further five small test pits through the floor of the standing bus garage building.

Work in 1994 (illus 24–26)

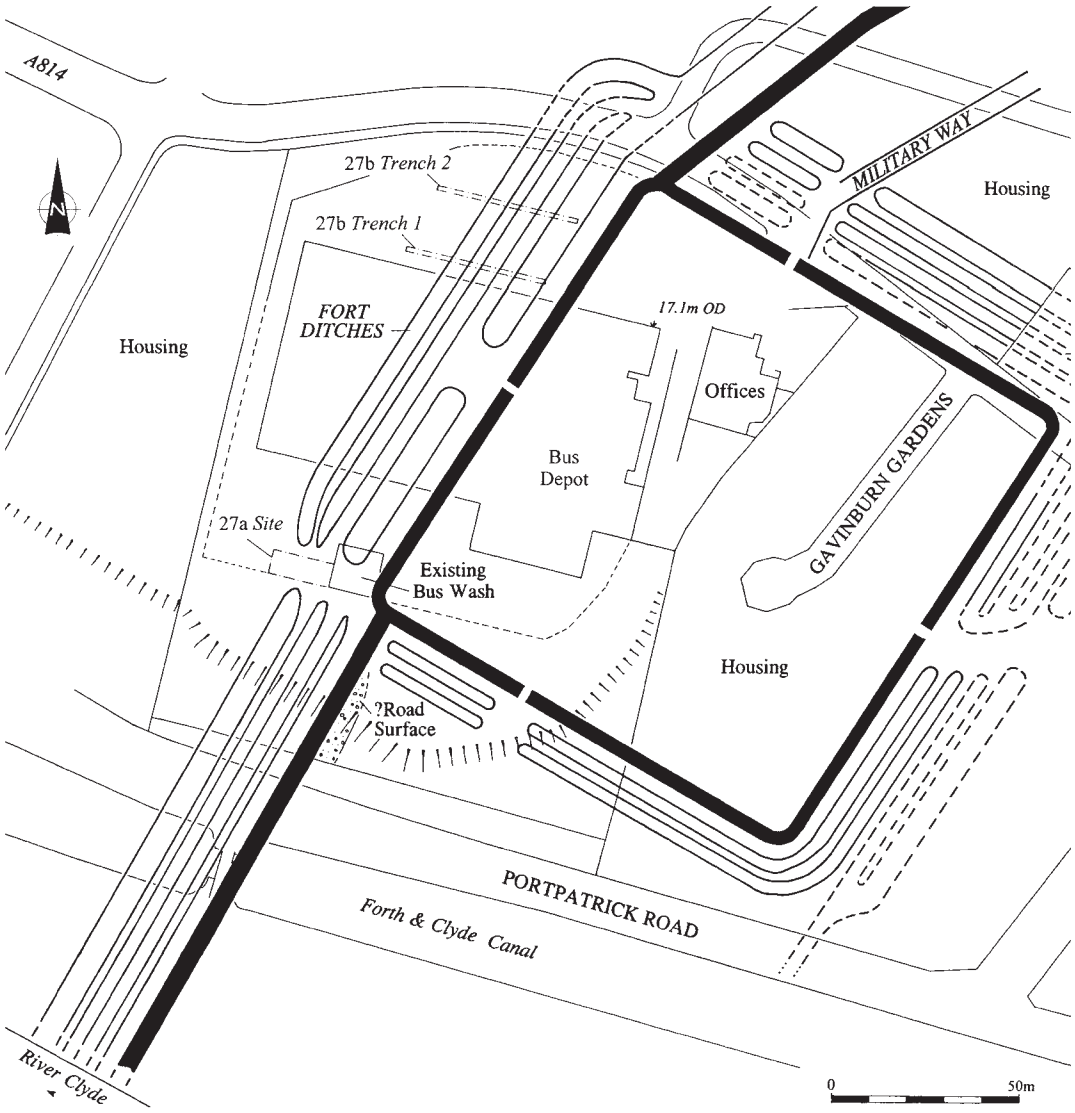
K Speller & A Leslie

The area to be occupied by the extension to the bus washing facility measured 16x7m, but the specification for the work required only that excavation be conducted on those points within the footprint which would be dug out for foundation or drainage purposes. Accordingly 15 small trenches were opened within the area labelled 27a on illus 24, five of which produced archaeologically significant remains and all of which were found beneath the modern make-up of the bus depot and a layer of compressed ploughsoil (illus 25, which shows 12 of the 15 trenches).

In Trench C a sandstone block was found set tightly into a shallow, square pit cut into a hard-packed sand and gravel layer; two orthostats were positioned between the stone and the edge of the cut. This feature may represent a post-pad or the base of a post-hole. Two further possible post-holes and three stake-holes were also identified in the trench. The post-holes, if such, were so shallow that they must have suffered heavy truncation.

In Trench E there was a very hard-packed layer of sand, gravel and small stones, 0.25–0.3m deep, sitting on top of the hard-packed sandy subsoil, throughout the trench. This feature had the character and appearance of a Roman road and was similar to the pre-Wall road described by Miller.

In Trench F excavation revealed a c 0.2m thick spread of loosely compacted and unbonded, unworked, rounded stones, forming a feature with a clear edge running WNW/ESE through the trench.

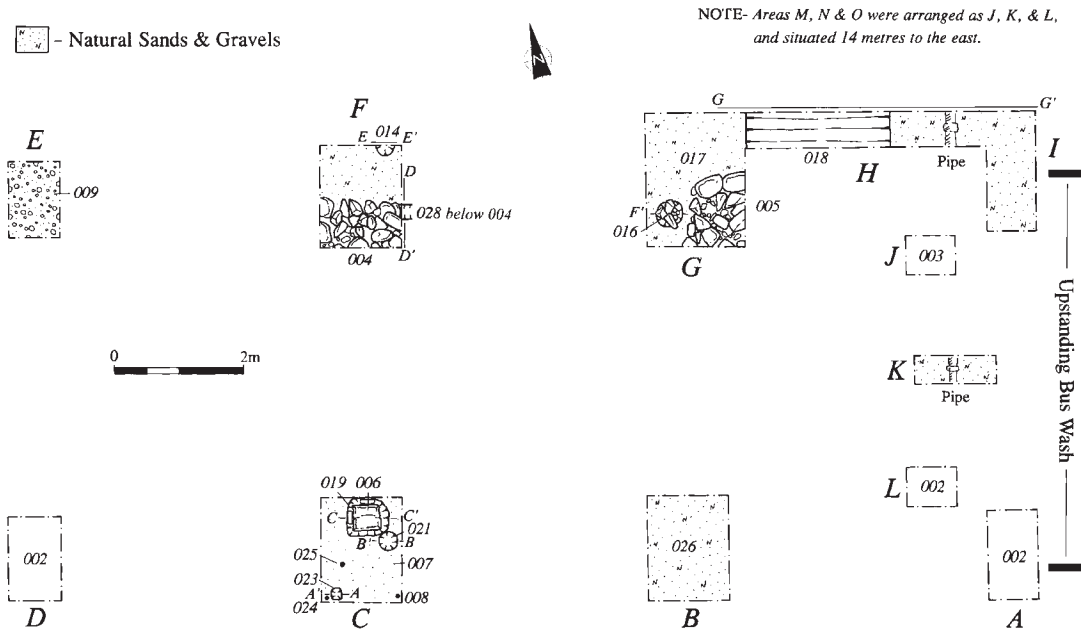


ILLUS 24 Old Kilpatrick, 1994 & 1999: location plan, including the line of the Wall (*Based on the Ordnance Survey map © Crown copyright*)

The stones were set onto the sandy subsoil, though where removed a small linear gully was revealed running on the same alignment as and under the 'edge' of the feature. A further, isolated possible post-hole was also located, set away from the stones.

Work in Trench G revealed another spread of stones, similar in character and composition to the feature in Trench F, with the addition, on the north side, of two markedly larger stones appearing to form a rough kerb. This feature also appeared to represent a corner, its edges running out of the trench to east and south. Beyond the stones, to the west, a large post-hole was revealed, which proved to have by far the greatest surviving depth (0.45m) of any such feature or putative feature located on the site.

In Trench H, a 2.2m wide shallow V-shaped ditch or gully, with a central (maximum) depth of 0.45m was encountered, running on a N/S alignment.



ILLUS 25 Old Kilpatrick 1994, trench plan

The lack of any diagnostic finds from secure contexts makes it impossible to date any of the features recorded; there was, indeed, a complete absence of demonstrably Roman finds. Further, the nature of the investigation, involving the opening of numerous small, discrete keyhole trenches, precludes the identification of anything bar the most rudimentary stratigraphic relationships. The remains encountered could be contemporary with the fort, though if so their function and relationship are obscure; that one feature, briefly glimpsed, resembles a road may or may not be significant. All is beyond proof.

Work in 1999 (illus 24)

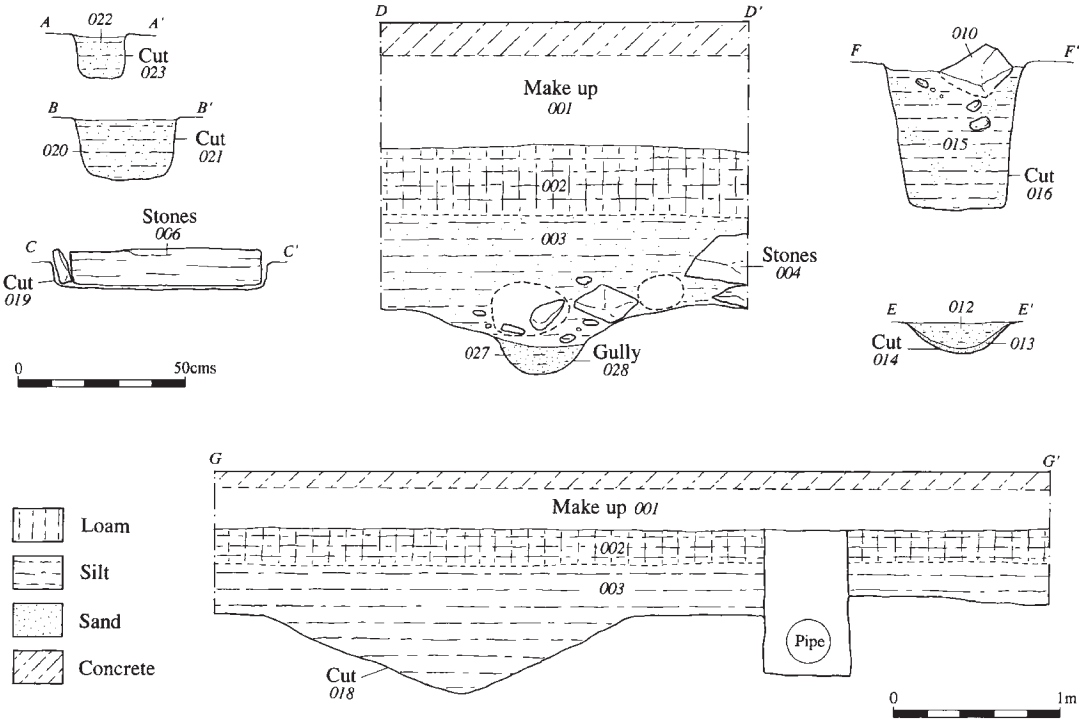
R P J McCullagh

Trench 1 measured 36.7m by 1.3m; in it the three ditches that formed the western fore-works to the combined Roman fort and Antonine Wall defences were located. The same features were unearthed in Trench 2. In both cases the ditches ran close to perpendicular to the trench, although the narrowness and depth of the trench did not permit access to allow detailed section recording.

Both the western and central ditches possessed the same uppermost fill of a mid brown sandy slit overlying a grey/brown stony sandy silt in the western ditch and clayey sand in the central ditch. The innermost ditch was filled by a light orange/brown, stony sandy silt overlying grey/brown stony sandy silt. Two fragments of non-diagnostic dressed masonry were found in the upper fills of one of the ditch sections and, after examination, it was found that they probably both date to a much later period. In Trench 2, measuring 35.5m by 1.75m and located some 15m to the north of Trench 1, the degree of truncation of the ditches was more apparent. As in Trench 1, none showed any evidence of re-cutting. The only additional feature in Trench 2 was a small ditch (visible in section only and not recorded on illus 24) that appeared to be partially truncated by the cut of the innermost ditch.

Less certainty was possible in interpreting features seen in the small test pits but it is probable that further elements of the ditch system were encountered.

The identification of the ditches repeats observations by earlier investigators on the site and confirms the survival of the truncated, combined fort



ILLUS 26 Old Kilpatrick 1994, sections

TABLE 3

Ditch dimensions revealed by 1999 work at Old Kilpatrick. Depths are measured from the base of the modern hard-standing.

	Western (outer)ditch	Central ditch	Eastern (inner) ditch
Trench 1			
Breadth	5.0m	3.5m	7.0m
Depth	1.65m	1.15m	0.75m
Profile	U-shaped	U-shaped	U-shaped
Trench 2			
Breadth	5.0m	3.5m	Not fully exposed
Depth	1.25m	1.15m	0.65m
Profile	Semi-V-shaped	U-shaped	Flattened U-shape

and Wall defences in almost exactly the same situation and alignment separately identified by Macdonald and Miller. It should be noted, however, that none of these features resembled the classic Roman V-shaped ditch profile. Miller describes the ditches seen in his excavations as V-shaped, although his obviously schematic section drawing (1928, 4) shows them with a not entirely convincing profile. He also claims that the base of each ditch was equipped with a clay-lined stone drain. No such feature was seen in any of the features exposed in1999.

The recognition of the early ditch feature in Trench 2 pre-dating the innermost ditch raises the significance of this trench. Macdonald has argued that the inner ditch (his Ditch A) related to the fort defences (ie it pre-dated the Antonine Wall) and was therefore a primary feature in the defensive system (1932, 223–5). It would seem therefore that this feature pre-dates the Roman fort's construction.

COMMENTARY

THE ANTONINE WALL AND DEVELOPMENT CONTROL

In a previous compilation of small interventions along the line of the Antonine Wall, Lawrence Keppie (Keppie et al 1995, 659) remarked that, 'The pace of destruction continues, especially during recent years in the eastern half of the Wall's course'. This paper contains the first compilation of projects conceived and undertaken entirely under the terms of the *National Planning Policy Guideline 5* and the accompanying *Planning Advice Note 42* relating to the treatment of archaeology in the planning process (both published in 1994). This is therefore a useful point at which to examine whether Keppie's statement still applies. However, before doing that it should be noted that there were many potential threats to the Wall which were averted before even reaching the stage of applications for planning or scheduled monument consent. In a number of cases, consultation at an early enough stage allowed curators to indicate where proposals were simply unacceptable, or to request that proposals should be redesigned to avoid encroaching on sensitive archaeological areas. While scheduling and planning legislation can provide fairly robust protection for the physical remains of the Wall itself, more problematic are issues relating to its setting. The introduction of the requirement for Environmental Impact Assessments may help where larger scale developments are concerned, as they require a broader view to be taken of archaeological, landscape and related issues, but piecemeal development in the area around the Wall is still a problem. Telecommunications have been a major issue for curators along the Wall; almost every fort site along the Wall has seen a proposal for a mobile phone mast, which at least indicates that the Roman army chose its fort sites well! The legislation introduced in 2001 requiring full planning permission for all ground-based masts now means that curators can do more than manage to move the mast site just outside the scheduled area, though in some cases the damage is already done.

Technical advances have also contributed towards the protection of the Wall; thrust-boring for pipelines and underground electrical cables below linear features like the Wall is now in many cases cheaper and quicker than placing them in an open cut, particularly where there would also be high archaeological costs involved in open cut methods. This has meant that a new pipeline constructed by BP across the line of the Antonine Wall near Inveravon actually went below the Wall, causing no damage or disturbance to archaeological deposits. The Kelvin Valley Sewer also avoided damage to the Wall on its several crossings of the line by boring below the Wall. The use of temporary road surfaces for access across the line of the Wall has been pioneered by the Kelvin Valley Sewer project with the assistance of the West of Scotland Archaeology Service (see no 17), and an ongoing study by Headland Archaeology Ltd for Historic Scotland is attempting to quantify the degree of compression of archaeological deposits below the temporary road surfaces.

Some threats have advanced and then receded, but may yet advance again. During the period covered by this compilation, non-invasive fieldwork in advance of the proposed M80/A80 road upgrade was carried out, but a change in government and changes in transport policy have meant that, at the time of writing, the route has not been finalized. Either route (via the Kelvin Valley or upgrading the existing A80 line) would have serious consequences for Roman archaeology in central Scotland, whether at Castlecary or Mollins. A public local inquiry took place over a proposed landfill site on the site of the temporary camps at Inveravon, and the Reporter found against the landfill proposals on many environmental grounds (of which archaeology was not the least).

Perhaps only one major casualty can be identified during this period: the camp at

Dullatur (Lowe & Moloney 2000). The zoning of this area for housing development was an integral part of the Cumbernauld New Town development plan, which could not be overturned. However, the excavation secured by the West of Scotland Archaeology Service provided some interesting findings, which add to the growing body of knowledge (and questions) about camps in the vicinity of the Antonine Wall.

A closer examination of the projects contained within this compilation reveals that the majority (21) did not result in permanent loss or destruction of archaeological deposits. Many of the smaller scale evaluations and watching briefs either returned negative findings, as expected, or served to locate known archaeological features or deposits so that they could be avoided by a development, such as the Tamfourhill traverse (5) and the St Flannan's excavations (18). Seven projects (2, 5, 6, 17, 20, 27a & b) involved the destruction of archaeology to some degree, although only numbers 2 and 17 (Mary Street and the Auchendavy enclosure) involved the loss of a significant feature or group of features. One important point to be noted is the extreme difficulty in interpretation of features seen in very small excavation trenches, such as those at the Gavinburn bus depot (27a), and it is necessary for both curators and contractors to advise developers of this problem and to ensure that trench sizes are designed to avoid this pitfall in future.

Not all developments are necessarily harmful to the Wall or its setting. Positive developments to help people visit and enjoy the Wall have included the construction of new lengths of accessible-for-all footpaths and new interpretation in the Falkirk area by Falkirk Council and the Central Scotland Countryside Trust, and local community groups in the Croy area have been working on access initiatives around Croy Hill.

Although hard-pressed curators may testify that in the Council areas through which the Antonine Wall runs the pace of development has, if anything, increased since 1995, the pace of destruction of the Wall itself has not.

LINEAR COMPONENTS OF THE FRONTIER WORKS

Even minor archaeological interventions along the line of the Antonine Wall can provide important opportunities for establishing the precise alignments, structure and quality of preservation of the linear components of the frontier works. It is through this cumulative data collection that current understanding of the character of the frontier works can be assessed and refined. The patchwork nature of the work is emphasized by the fact that not one of the investigations reported here examined a full section through the frontier works. The only artefacts discovered were from close to forts at Auchendavy (17) and Bearsden (22), the latter in any case occurring in a residual context.

The current batch of projects has allowed the fine-tuning of frontier alignments at several locations. Most significant in this regard has been the work between Shirva and Wester Shirva (16), where the Ditch alignment has been established for the first time and the possibility raised, albeit as yet unproven, that the frontier works were aligned on either side of the Board Burn in such a way as to create a re-entrant angle protecting the water crossing. Minor adjustments can be proposed to the frontier line as mapped by the Ordnance Survey at Mary Street, Laurieston (2), Auchendavy (17), St Flannan's, Kirkintilloch (18) and Cleddans Road (25). Of potential interest was the absence of any remains of the frontier on its expected alignment at Brewer's Fayre, near the Polmont Burn, Falkirk (1). While the lack of survival of above-ground features is commonly observed in arable land, the absence of the Ditch here is perplexing. The possibility must be countenanced that the Ditch was never constructed here, one of the lowest-lying and wettest points along the frontier line (G Bailey, pers comm), especially as

abnormal and reduced Ditch profiles have been recorded in the same topographic zone a short distance to the west at Beancross (cf Keppie et al 1995, 611–9).

Observations of the various linear elements of the Antonine Wall help to fill in the gaps in our knowledge about its varying character, while conforming largely to expectations based upon empirical data (as tabulated by eg Keppie 1974; Bailey 1995). Of the Rampart, coherent remains of the kerbed stone base and turf superstructure were identified at St Flannan's, Kirkintilloch (18, Trench C), Cadder (20) and Cleddans Road (25). Vestigial traces of the Rampart were identified as plough-disturbed spreads of stones at Auchendavy (17), St Flannan's, Kirkintilloch (18, Trench B), and The Manse, Hillhead, Kirkintilloch (19), and as the remains of a robber trench at Mary Street, Laurieston (2).

Of these investigations, St Flannan's was of particular interest for two reasons. First, the trenching demonstrated how considerably the quality of preservation of the Rampart can vary over short distances – being well preserved in Trench C, poorly preserved in Trench B c 35m away, and absent a further 20m away in Trench A. This warns against using the results from single trenches to make generalized statements as to the quality of preservation of frontier remains in particular places, even the same field. Secondly, a possible turf-built structure was identified extending from the south face of the Rampart, and hints at the presence here of a structure such as a turf stack (cf Keppie & Murray 1981, 250–1).

A further occurrence of 'defensive pits' was identified on the Berm at Mary Street, Laurieston (2). Here, at least three, and potentially five, rows of pits are represented. This example can be added to previous discoveries on the eastern half of the Wall at, for example, Callendar Park (Bailey 1995), Garnhall (ibid) and Inveravon (Dunwell & Ralston 1995). The cumulative evidence is beginning to suggest that defensive pits formed a regular presence on the Berm, at least along the eastern part of the frontier. Their presence has yet to be confirmed to the west of Garnhall, and nothing was revealed in the admittedly narrow trenches at Shirva (16), Auchendavy (17), and The Manse, Hillhead, Kirkintilloch (19). In the other relevant investigations the Berm area was either only partly examined (eg 25) or proved to have been extensively disturbed (eg 18). The vestigial nature of the pits discovered at Mary Street, in some cases surviving less than 50mm deep, highlights the vulnerability of these features to removal by the plough and other forms of disturbance, and indicates that in many places their survival is not to be expected.

The Ditch was exposed at several locations, although at none was a complete excavated profile obtained because of the restricted objectives of the various exercises; in each case the development design provided for the preservation in situ of the Ditch completely or in part. The limited nature of the work inevitably limited the amount of new structural information that could be gathered. Surface widths were obtained at only three points – Allandale (12), Shirva (16) and Auchendavy (17). At Allandale and Auchendavy the variations noted between the surface widths obtained by the excavators with previous observations in the vicinity appear to reflect differences in the levels from which the Ditch widths were measured. At Shirva, a combination of excavation and coring beside the Board Burn indicated that the Ditch was as little as c 5m wide and 2.2m deep. Its small size here may have been due to the waterlogged nature of the low-lying ground being crossed (cf Brewer's Fayre discussion above). Step-cut Ditch profiles were recorded at various locations towards the west end of the frontier (18, 19, 23, 25). Waterlogged Ditch fills were recorded at Shirva (16) and Cleddans Road (25), and such deposits have demonstrable value as repositories of palaeoenvironmental information. The locations and extents of suitable deposits along the frontier remains unknown in detail, although recent studies from samples taken from the

Ditch near Glasgow Bridge (Dunwell & Coles 1998) and from fort ditches at Bearsden (Knights et al 1983) and Kirkintilloch (Keppie et al 1995, 652, 666–8) have highlighted the potential value of such work. Therefore, while preservation in situ of the physical remains of the Ditch is now routinely required within the context of development proposals, it remains important that the potential indirect effects of substantial land use changes upon the hydrology of the deposits surviving within the Ditch are considered.

Of the remaining linear features less additional information has come to light. A surprisingly well-preserved section of the Outer Mound and sealed buried soil was found within the Clydebank and District Golf Course at Cleddans Road (25). Vestigial remains of the Outer Mound were identified in one trench at Shirva (16), and the presence of the feature was confirmed but not explored at Allandale (12). The Military Way was exposed at Mary Street, Laurieston (2) and Cleddans Road (25). At the former it had a rammed gravel surface at least 5m wide, and at the latter it survived to 4m wide with a possible drain on its southern, upslope side. The narrowness and shallowness of the remains at Cleddans Road suggest that the road had been considerably truncated. Despite several small-scale interventions in the Bonnyhill Road area (7), the line of the Military Way has yet to be confirmed, although cobbled spreads visible in certain test-pits may be related to it.

FORTS & CAMPS

One consequence of the success of scheduled monument legislation in protecting the remains of the Antonine frontier system, now supported by the terms of *NPPG 5* and *PAN 42*, is a reduction in new information arising from 'rescue' excavations and other development-driven interventions. The forts and camps of the frontier system have proved to be especially well protected by the archaeological monitoring agencies over the period covered by this paper, though this achievement does mean that there is little in the recent work reported here which could be said to have significantly advanced knowledge or understanding of the installations along the Wall. Nonetheless, one or two points of detail, and of potential, may be worth highlighting.

No Antonine Wall fort was examined inside the ramparts during the period as part of the work reviewed here and only at Old Kilpatrick (27) did intrusive work impinge upon even the defensive emplacements. The limited work conducted at Old Kilpatrick at once confirms but also potentially challenges our current understanding of the site, for which we still rely heavily on the results of the 1920s excavations (Miller 1928). Nothing recovered from the two interventions reported here would suggest any problem, in broad terms, with the general plan of the site. In one of the two investigations, the ditches on the north-west front of the fort were found as Miller had planned them, though points of detail, in particular the ditch profiles, were found to differ markedly from those reported in the original excavation report. This is proving to be a recurring theme in the re-examination of forts originally excavated in the more distant past. Recent work on the defensive ditches at Balmuildy fort, like Old Kilpatrick originally excavated by Miller (1922), also found the ground plan to be accurate but, in this case, supposedly fully-excavated sections of the ditches were discovered with their original fills largely intact (Duffy et al, forthcoming). The same phenomenon of extrapolating ditch profiles from a few sections to the rest of the defensive ditches may well explain the discrepancy at Old Kilpatrick. The presence of a previously unrecorded ditch, predating the main defences of the fort at Old Kilpatrick, may also yet prove significant to the history of both the site and/or the development of the frontier, especially given Miller's suggestion that earlier activity seemed likely, though too little was found in this examination to allow any definitive statements to be made.

Elsewhere at Old Kilpatrick, minor works outside the west corner, in an area designated on Miller's plan as a break in the line of the triple-ditch system fronting the fort, further demonstrated the presence of surviving archaeological remains, though in this case neither the date nor the character of these remains could be identified with any confidence. Taken together with the as yet ill-understood early ditch, located a little distance away to the north-east, it is increasingly tempting to speculate further about the possibility of pre-Wall fort activity on the site. For such speculation to have any real substance however, further, more meaningful information will require to be obtained.

The specific information which has been retrieved at these Wall fort sites has so far been at a very detailed level. However, a wider lesson may be drawn concerning the potential which still exists in many seemingly unpromising locations. Certainly, if any of the fort sites along the Wall should come under threat from development in the future, even those deemed to have been fully excavated in the past would benefit from intrusive evaluation prior to any development taking place, especially where the original excavation is of significant vintage.

The discovery at Auchendavy (17) of what may be field systems to the north of the Antonine Wall is of particular interest. Possibly comparable systems are known elsewhere along the frontier at, for example, Rough Castle (Máté 1995) and Carriden (Bailey 1997), but these lie on the south side of the frontier works. This new evidence parallels recent discoveries along Hadrian's Wall, such as at Burgh-by-Sands (Burnham et al 1999, 333), and indicates that we should not assume that the military and civilian remains along the frontier are confined to the area south of the Outer Mound.

No fortlets were examined during the period in question, although two separate excavations took place in the vicinity of the presumed fortlet at Hillhead (18 & 19), and other work focused in the area of the presumed fortlet at Shirva (16) (Hanson & Maxwell 1986, 122). None of these interventions located evidence for such installations, but despite the absence of positive evidence, they have at least narrowed down the range of remaining possible locations, assuming the regular spacing pattern proposed for the provision of fortlets to the frontier accurately reflects the make-up of the Antonine Wall.

Work took place on five Roman temporary camp sites along the line of the Wall. The large-scale excavation at Dullatur has already been reported elsewhere (Lowe & Moloney 2000). Of the remaining four, only the investigations at the presumed labour camp at Tamfourhill (5) produced positive evidence, in the form of confirmation of the existence and position of a traverse outside the north gate, first seen on RCAHMS aerial photographs in 1977 (Goodburn 1978, 413; Maxwell & Wilson 1987, 29). Small-scale examinations at Milnquarter (11), Garnhall (14) and Tollpark (15) all produced negative evidence, although in none of the three cases could such a result be described as unexpected or especially informative. At Milnquarter, the work was on such a small scale that the failure to find evidence from tiny trenches located in what would have been the interior of the camp can hardly be described as surprising. The sites of both Garnhall and Tollpark proved to have been subject to very significant modern landscape modification, in the latter case removing all traces of the defensive ditches on the east side of the camp. At Garnhall however, the possibility remains of Roman archaeology surviving beneath a build-up of modern deposits.

ARCHIVE, SITE RECORDS AND SMALL FINDS

The site archives will be deposited with the National Monuments Record of Scotland, and the West of Scotland Archaeology Service and Falkirk Council Sites and Monuments Record. The finds from Auchendavy (17) have

been allocated to East Dunbartonshire Council, and those from 39 Roman Road, Bearsden (22) have been allocated to WoSAS and will be retained for teaching purposes.

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REFERENCES

Bailey, G B 1995 'The Antonine frontier in Callendar Park, Falkirk: its form and structural sequence', *Proc Soc Antiq Scot*, 125, 577–600.

Bailey, G B 1996 'Stream crossings on the Antonine Wall', *Proc Soc Antiq Scot*, 126, 347–69.

Bailey, G B 1997 'Excavation of Roman, medieval and later features at Carriden Roman fort annexe in 1994', *Proc Soc Antiq Scot*, 127, 577–94.

Bailey, G B forthcoming a 'Excavations at Falkirk Roman fort'.

Bailey, G B forthcoming b 'Excavations in the annexe at Mumrills Roman fort'.

Buchanan, M, Christison, D & Anderson, J 1905 'Report on the Society's excavation of Rough Castle on the Antonine Vallum', *Proc Soc Antiq Scot*, 39 (1904–5), 442–99.

Burnham, B C, Keppie, L J F, Esmonde Cleary, A S, Hassall, M W C & Tomlin, R S O 1999 'Roman Britain in 1998', *Britannia*, 30, 320–86.

Clarke, J 1933 *The Roman Fort at Cadder*. Glasgow.

Duffy, P, Leslie, A, & MacGregor, G forthcoming 'Excavations at Balmuildy Roman fort'.

Dunwell, A & Coles, G 1998 'Archaeological and palynological investigations on the Antonine Wall near Glasgow Bridge, Kirkintilloch', *Proc Soc Antiq Scot*, 128, 461–79.

Dunwell, A & Ralston, I 1995 'Excavations at Inveravon on the Antonine Wall', *Proc Soc Antiq Scot*, 125, 521–76.

Glendinning, B 2000 'Investigations of the Antonine Wall and medieval settlement at Kinneil House, Bo'ness, Falkirk', *Proc Soc Antiq Scot*, 130, 509–24.

Goodburn, R (ed) 1978 'Roman Britain in 1977', *Britannia*, 9, 404–72.

Hamilton, J, Clarke, C, Dunwell, A & Tipping, R 2001 'A prehistoric ford near Rough Castle, Falkirk', *Scott Archaeol J*, 23.2, 91–103.

Hanson W S & Maxwell G S 1986 *Rome's North-West Frontier: The Antonine Wall*, rev edn. Edinburgh.

Keppie, L J F 1974 'The building of the Antonine Wall: archaeological and epigraphic evidence', *Proc Soc Antiq Scot*, 105 (1972–4), 151–65.

Keppie, L J F 1976 'Some rescue excavation on the line of the Antonine Wall', *Proc Soc Antiq Scot*, 107 (1976), 61–80.

Keppie, L J F 1998 *Roman Inscribed and Sculptured Stones in the Hunterian Museum*. London (= Britannia Monogr, 13).

Keppie L J F & Breeze, D J 1981 'Some excavations on the line of the Antonine Wall, 1957–80', *Proc Soc Antiq Scot*, 111, 229–47.

Keppie, L J F & Murray, J F 1981 'A Roman hypocausted building at Falkirk', *Proc Soc Antiq Scot*, 111, 248–62.

Keppie L J F & Walker J J 1981 'Fortlets on the Antonine Wall at Seabegs Wood, Kinneil and Cleddans', *Britannia*, 12, 143–62.

Keppie, L J F & Walker, J J 1989 'Some excavations along the line of the Antonine Wall, 1981–5', *Proc Soc Antiq Scot*, 119, 143–59.

Keppie, L J F, Bailey, G B, Dunwell, A J, McBrien, J H & Speller, K 1995 'Some excavations on the line of the Antonine Wall, 1985–93', *Proc Soc Antiq Scot*, 125, 601–71.

Knights, B A, Dickson, C A, Dickson, J H & Breeze, D J 1983 'Evidence concerning the Roman military diet at Bearsden, Scotland, in the second century AD', *J Archaeol Sci*, 10, 139–52.

Lowe, C E & Moloney, R 2000 'Excavation of the Roman Temporary Camps at Dullatur, North Lanarkshire', *Britannia*, 31, 239–54.

Macdonald, G 1915 'Some recent discoveries on the line of the Antonine Wall', *Proc Soc Antiq Scot*, 49, 93–138.

Macdonald, G 1932 'Notes on the Roman forts at Old Kilpatrick and Croy Hill and a relief of Jupiter Dolichenus', *Proc Soc Antiq Scot*, 66 (1931–32), 219–76.

Macdonald, G 1934 *The Roman Wall in Scotland*, 2nd edn. Oxford.

Macdonald, G & Curle, A O 1929 'The Roman fort at Mumrills, near Falkirk', *Proc Soc Antiq Scot*, 63 (1928–9), 396–575.

Máté, I D 1995 'Excavations of an enclosure system at Rough Castle, Falkirk', *Proc Soc Antiq Scot,* 125, 483–97.

Maxwell, G S 1989 *The Romans in Scotland*. Edinburgh.

Maxwell, G S & Wilson, D R 1987 'Air reconnaissance in Roman Britain 1977–84', *Britannia*, 18, 1–48.

Miller, S N 1922 *The Roman Fort at Balmuildy*. Glasgow.

Miller, S N 1928 *The Roman Fort at Old Kilpatrick: Being an Account of the Excavations Conducted on Behalf of the Glasgow Archaeological Society*. Glasgow.

Photos-Jones, E 2001a *The Kelvin Valley Sewer Project metallurgical ceramics: a technical characterisation*. Unpubl report.

Photos-Jones, E 2001b *The technical characterization of IW from Doune Roman Fort at the site of Doune Primary School, Stirlingshire*. Unpubl report.

Robertson A S 1957 *An Antonine Fort, Golden Hill, Duntocher*. Edinburgh.

Robertson A S 2001 *The Antonine Wall. A Handbook to the surviving remains*, 5th edn, rev & ed L Keppie. Glasgow.

Welfare H 1984 'The southern souterrains', *in* Miket, R & Burgess, C (eds) *Between and Beyond the Walls*, 305–23. Edinburgh.

Welfare, H & Swan, V 1995 *Roman Camps in England*. London.

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