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A Report on a Geophysical Survey of the Roman Fort and *Vicus* at Halton Chesters

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SUMMARY

This paper outlines the results of a geophysical survey of the *vicus* to the south of the fort, together with the southern part of the fort. Although the main areas of the *vicus* were not identified, buildings were seen either side of the road leading south out of the fort. These structures were seen to overlie earlier field systems. A significant finding of the survey was the identification of buildings between Hadrian's Wall and the Vallum, as well as between the south of the fort and the Vallum. These buildings were almost certainly of military use; there are no analogues for such siting elsewhere *per lineam valli*.

INTRODUCTION

The fort of Halton Chesters is sited astride the Wall and is now cut, approximately on the line of the *via principalis*, by the B 6318 road (see plan, fig. 1). A service road, slightly to the west of the *via decumana*, leads from the main road to Halton Castle to the south. The site slopes from north to south and there is a slight east-west cross fall.

The road system serving the fort, which includes Dere Street, is not fully understood. However, the construction methods of Dere Street are well recorded in the vicinity of the bridge at Corbridge (Knowles 1909); it is also probable that the general line of the road followed a prehistoric trackway (Bishop 1995, 3–9). The existence of a more complex and extensive road system within the area of Corbridge has been postulated (Selkirk 1995), and

parts of this system have been confirmed by excavation. The presence of a 'mural road' running parallel to the Wall is implied by records which indicate that it was dug up in the eighteenth century at a cost of six pence per yard to permit ploughing (Brand 1789, 609, note).

The archaeological history of the site has been summarised by Birley (1961, 170–2) and Daniels (1978, 84–9). The field to the north of the main road was excavated in 1802–1803 and again in 1823 and 1827, prior to being brought into cultivation, when a bathhouse with ten or eleven rooms was destroyed (Hodgson 1840, 316–20). A little earlier, in 1807, a substantial open stone water channel (*per canale structiles*) was uncovered and was presumed to carry water from a source to the north of the fort. A major excavation of the site between 1935–1936 located the east, west and north gates (Simpson and Richmond 1937); this excavation also identified barracks and other buildings within the eastern sector of the *praetentura*. Later excavations in the south-western portion of the fort in 1956–1959 were directed by Jarrett (1959, 177–90). Gillam's subsequent investigation of the western portion of the *latera praetorii* in 1960–1961 (Taylor 1962, 164–5) has not been fully published. An analytical survey was carried out in 1989 by the RCHME (Blood and Bowden 1990) and a geophysical survey of the fort was undertaken in 1995 (Berry and Taylor 1997, 51–60).

GEOPHYSICAL SURVEY

The survey was carried out in May 1999 during a period of unsettled weather and covered an

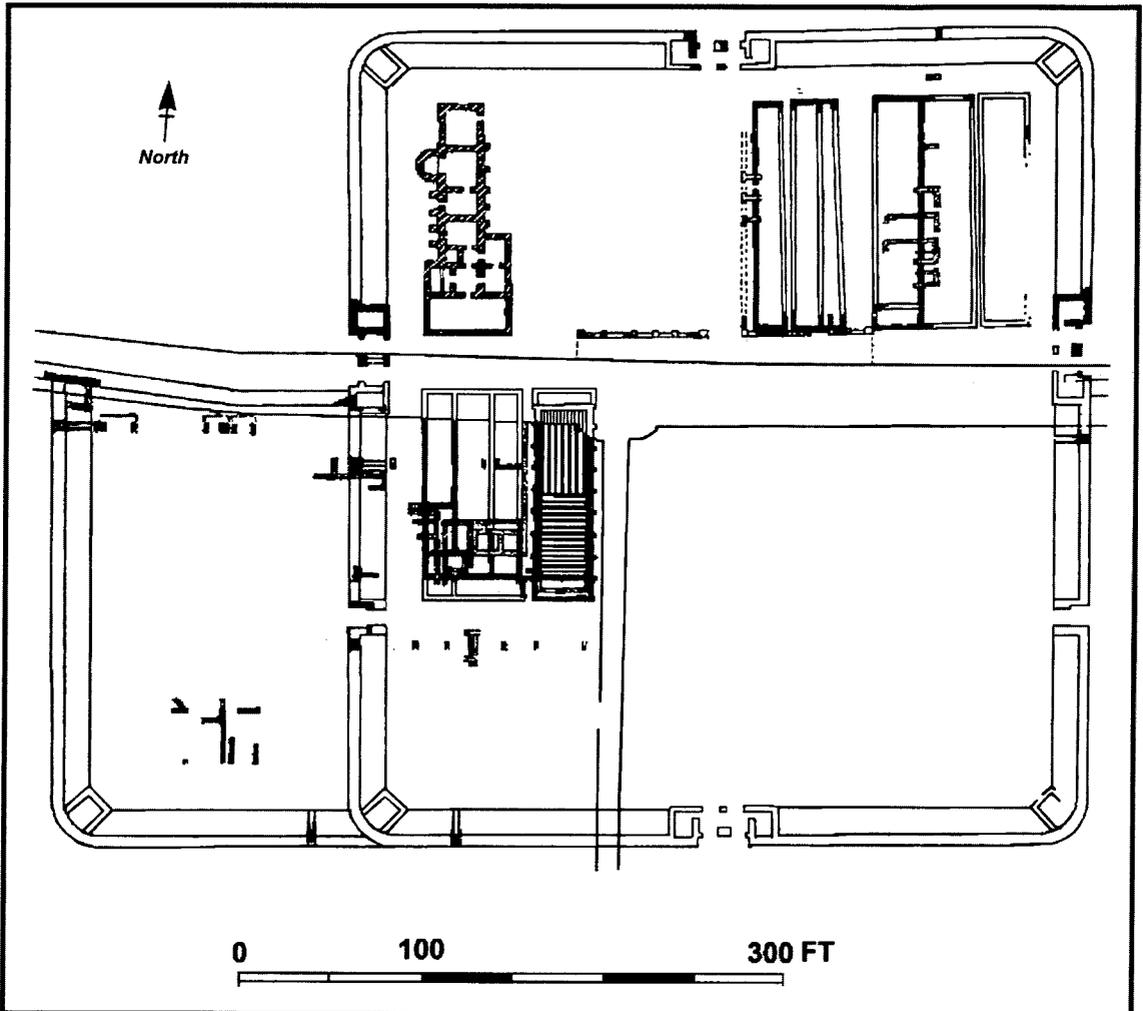


Fig. 1 Plan of the fort as recorded in 1961.

area of 9 hectares to the south of the B6318 road (fig. 2). A Geoscan FM36 fluxgate gradiometer was used to carry out a magnetometry survey employing 1m parallel traverses with 0.5m sample intervals. The grids were set out at an angle of approximately 45 degrees to the fort curtain wall using a Leica TC403L EDM and the grids and other relevant mapping features recorded. This survey strategy eliminates some spurious effects of data processing, effectively enhancing the resolution of the features.

SURVEY RESULTS

The results are shown as both a grey scale magnetometry plot (fig. 2) from which a magnetic anomaly interpretation plan (fig. 3) has been produced. In order to relate the findings of the present survey to that information derived from previous excavations and survey work, a composite anomaly and excavation plan is also presented (fig. 4). The survey confirmed the layout of the fort and its annexe, as

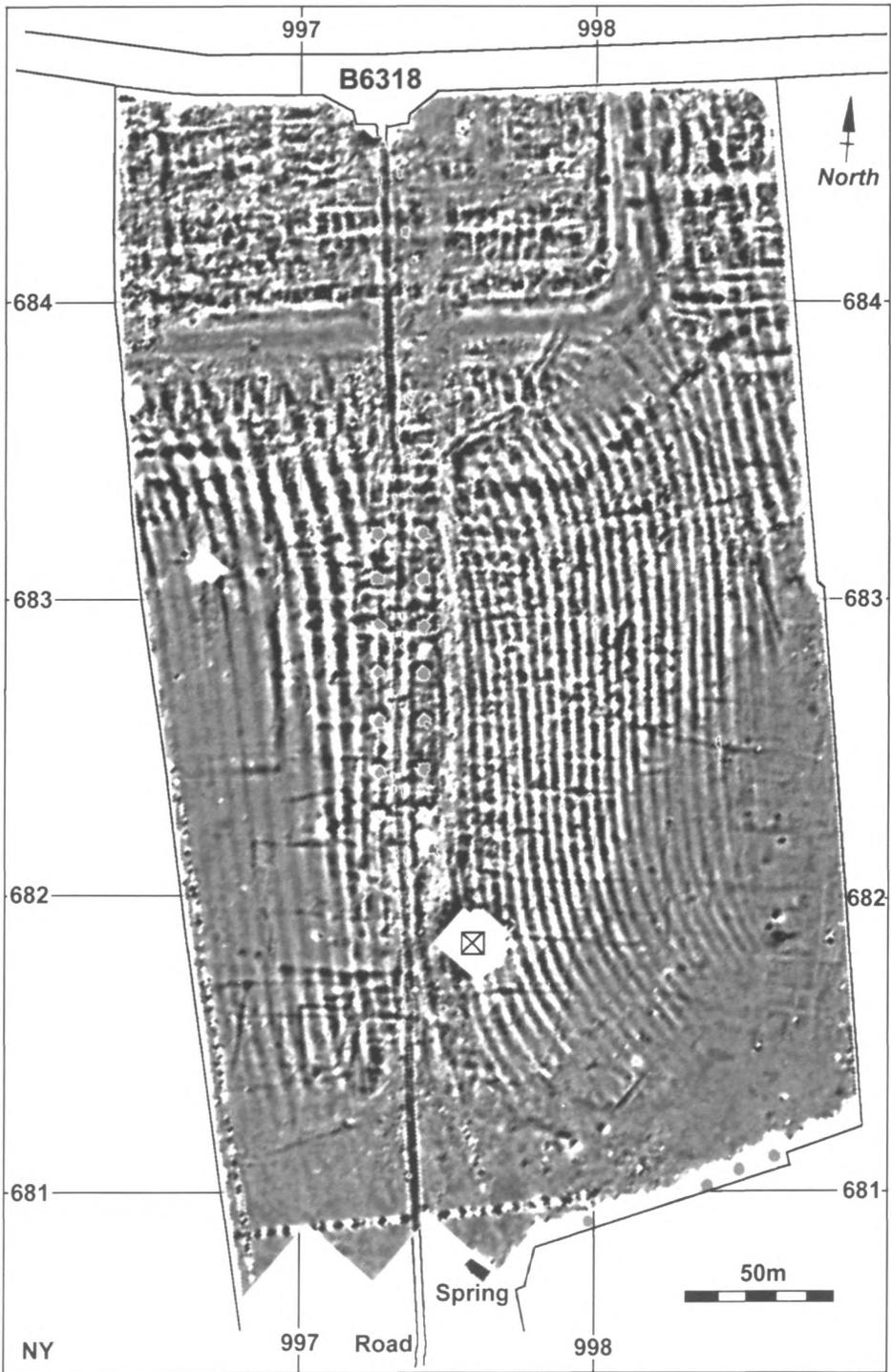


Fig. 2 Grey scale magnetometry plot.

surveyed and described by Berry and Taylor (1997), although the more recent processing software advances have enhanced the earlier results (Geoplot 3, Geoscan Research). In the following discussion features carry a numerical notation, which correlates with the enumeration indicated on figure 3 (magnetic anomaly interpretative plan).

The Vallum (1) is clearly defined to the east of the road leading south from the fort, although it is much less well defined to the west, probably as a result of ploughing. The magnetic anomalies suggest that the Vallum to the east was left open for a considerable period, as the strong positive readings indicate the presence of organic deposits resulting from a gradual infilling of the ditch. There is evidence of a further length of ditch to the west (2), between the Vallum and the western section of the fort ditches. Numerous stone buildings are evident between the fort ditches and the Vallum to the south of the fort (3); in form they follow a typical configuration with narrow gables and long side walls, many of the structures being c. 7–10m wide by c. 10–15m long. A substantial building is sited across the main drain (or channel) leading from the south-east corner of the fort (4); in view of its position on the line of the drain, this might well be a bathhouse.

Substantial medieval ridge and furrow, which is extant up to a depth of 30–40cm and prevalent south of the fort and its ditches, tended to obscure the response of the sub-surface features. This ridge and furrow appears to be of two dimensions: c. 5m towards the east of the survey area and c. 8m to the west. The significance of this distinction, in terms of agricultural practice, is uncertain but the course of the road appears to mark the boundary between the two types. Further buildings appear to the east of the fort between Hadrian's Wall and the Vallum, with their western edge close to the lip of the outer eastern ditch (5); their eastern extent is unknown as it extends beyond the limit of the survey area. A causeway (6) leading east from the *porta quintana dextra* joins a road running between two rows of buildings (7); this would appear to have been cut

when the outer east ditch was reformed, presumably when these buildings had been abandoned. The buildings seem to be individually constructed, and are not linked to form one large structure. A further row of buildings, c. 15m long by c. 7m wide has been constructed on the northern lip of the Vallum (8), with an interconnecting narrow street running towards the north. This street allowed access to a subsidiary road aligned east-west (9), which also had buildings on each side. One of these buildings to the south is c. 7m wide and over 30m long, and may possibly have been a barrack or a stable (10).

Substantial stone buildings are evident to either side of the road, leading south from the fort (11), although there is little evidence of structures towards the southern edge of the survey. Some evidence of an additional group of buildings was detected further east of this road, approximately midway along its length, where a small amount of masonry, probably Roman, was exposed (12). However, the effects of the ridge and furrow seriously obscured the magnetometry response in this area.

Many of the plot boundaries which can be seen overlying a large proportion of the site do not relate directly to the buildings, and are cut by the road leading to the south as well as by some of the stone buildings themselves (fig. 2). Boundaries do not appear to be associated with any of the buildings to the north of the Vallum, nor have any similar boundaries been seen in the *vicus* at Birdoswald (Biggins *et al.*, forthcoming). It is likely therefore that the majority of these boundaries relate to earlier use of the site, which was probably centred towards Fence Burn to the west. It cannot however be discounted that some of the boundaries might have related to the Roman or post-Roman buildings on the site.

A substantial stone structure can be seen near the south-east corner of the survey area (13), measuring c. 60m by c. 15m. It is probable that only part of this building has been recognised, as there is evidence of considerable quantities of stone in the adjacent field to the east, which could form part of a much larger structure. The feature has been robbed of stone

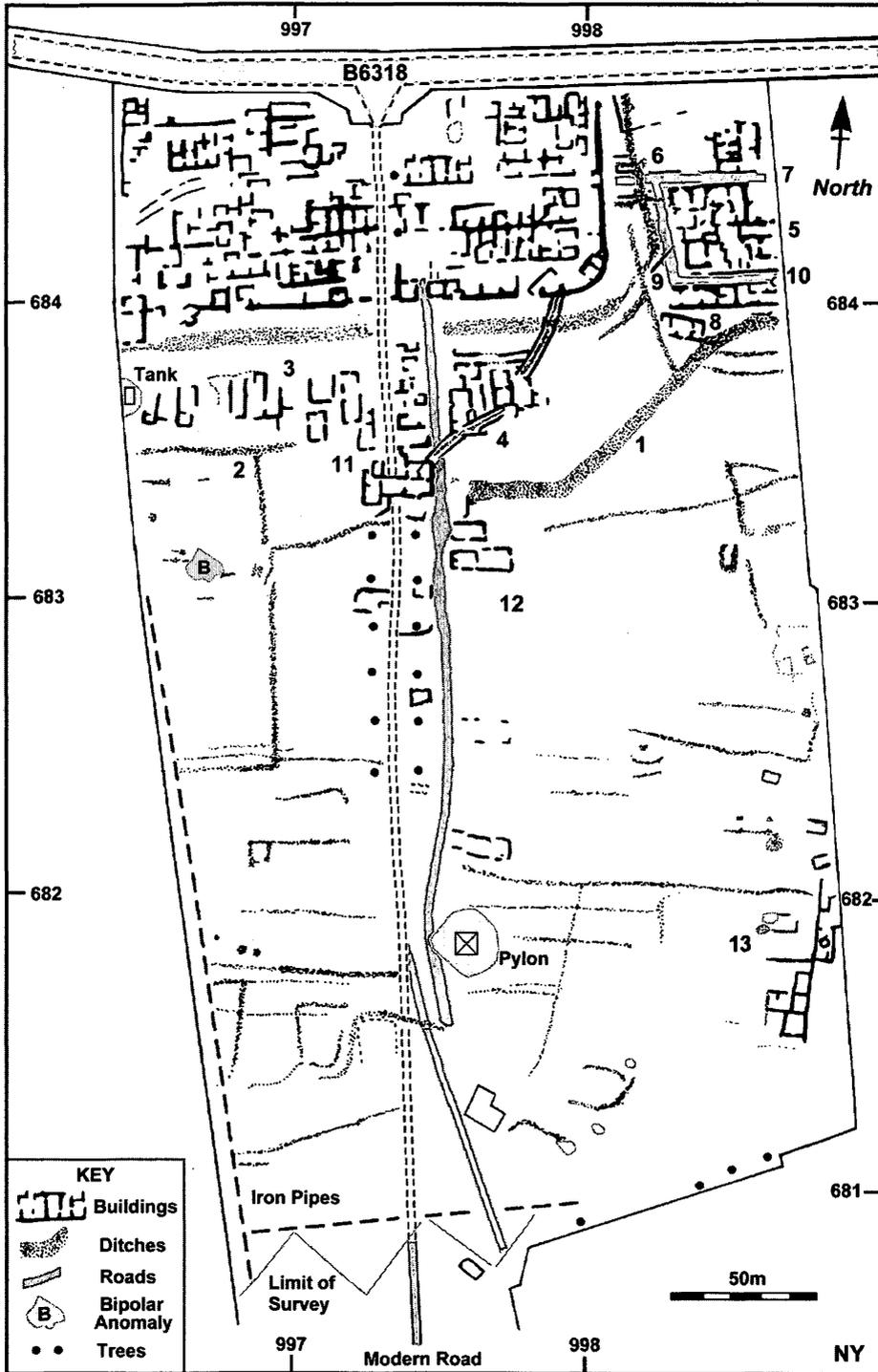


Fig. 3 Magnetic anomaly interpretation.

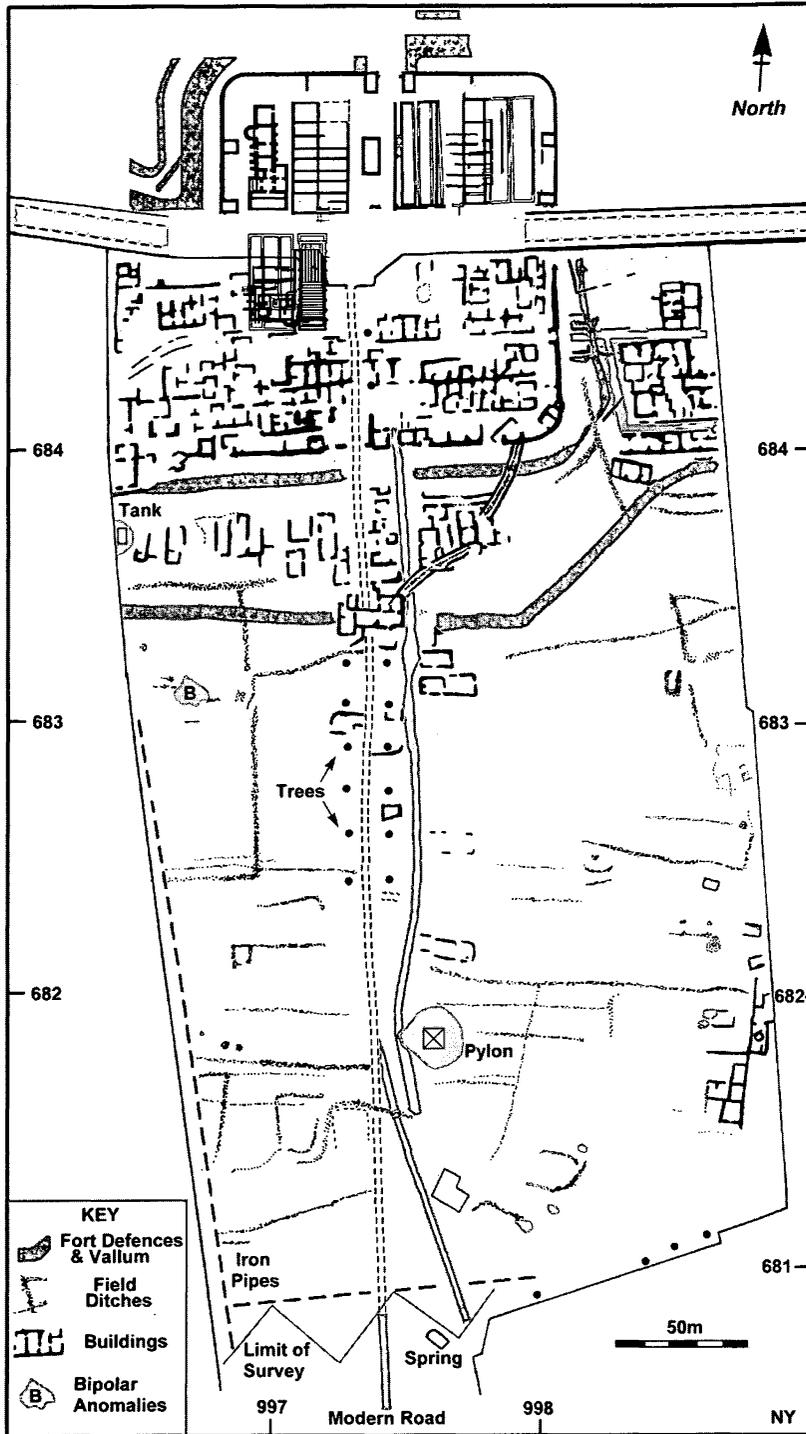


Fig. 4 Composite excavation and magnetic anomaly plan.

but is evident as a depression on the ground and is readily visible from aerial photographs. Field boundaries, which could relate to this building, can be seen to the west. However, a drift mine was sunk outside the survey area to the south east, and its spoil heap is still extant. We cannot therefore be certain that these features seen in the south east of the survey do not relate to mining activities, although there is no indication of buildings on maps of the early modern period.

DISCUSSION

The survey has covered the major portion of the scheduled area of the fort and its surrounds to the south of the main B 6318, and yet has found only limited evidence of the civilian settlement. What little can be traced appears to be restricted to a linear development following the road south leading from the *via decumana*, and to areas to the east of the fort. It must therefore be assumed that this settlement lies outside the limits of the survey, within the scheduled area beyond the field boundary to the west, extending towards Fence Burn.

It would seem that the development to the south of the Vallum was laid out on an expansive scale with buildings being limited to either side of the road and further groups of buildings and open areas set behind them. This development would seem to stop abruptly some 260m south of the fort as if at some predetermined limit; at this point evidence of earlier field systems can be seen. To the south east, the substantial stone building (13) respects the same southern limit. The development alongside the road to the south of the fort bears a strong parallel to that leading west out from the fort at Birdoswald. In this case also the buildings are almost entirely limited to either side of the road and terminate at a similar type of (apparently) planned limit.

The buildings outside the fort to the north of the Vallum (5, 8, 10) are without known parallel *per lineam valli*. The fact that they would seem to respect the line of the fort ditches and

the Vallum could suggest that both these features were extant when the buildings were erected. This contrasts with the Vallum at Birdoswald where the stone fort and settlement were built after it was infilled (Wilmott 1997, 91). In view of their siting it is likely that these Halton Chesters structures may have had a military use. It is tempting to speculate that the size of the individual buildings suggest their provision for an additional unit, for which there was no room in the original fort or its later extension. In view of this possibility a clear priority is to extend the survey towards the east and the west to establish the extent of these buildings. Similarly, the large building to the south east could represent part of a much larger structure, and further survey to the south and east should throw light on its possible use.

The fort at Halton Chesters was occupied by cavalry, there being a *cohors equitata* present under Hadrian and an *ala* in the third-century; the latter unit is also mentioned in the *Notitia Digitatum* (Breeze and Dobson 1991, 244). The number of horses associated with the fort would have been considerable, including remounts, draught horses, and those belonging to civilians. Classical writers such as Josephus, Vegetius and Varro acknowledge the importance of providing grazing for horses and pack animals, which was presumably provided within the *territorium* of the fort. Dixon and Southern (1992, 208–217) also stress the importance of the correct feeding and grazing of horses. They point out that it is the availability, above anything else, of food and water which limits the activities of the cavalry. It is quite conceivable that at least 250–300 horses could have been associated with the Hadrianic fort, and over 1,000 with the extended third century fort. Given that good husbandry allows for an area of some two acres (0.8 hectares) to graze a horse, the pasture required for grazing would have been at least 500 acres (200 hectares) under Hadrian, and 2000 acres (800 hectares) in the third century. However it is worth remembering that the nominal role of the *I Cohors Tungrica*, at Vindolanda (*Tab. Vindol.* 1, 154) indicates a strength of 752 all ranks, but

only 256 (34%) were available for duty; it follows from this disparity that the stabling and grazing facilities required in the immediate vicinity of Halton Chesters can at best be an estimate.

Whatever the precise grazing requirement, it is possible that the open ground flanking the south road could have been used as paddocks for some of the horses, and that the land was deliberately left free of any development for this use. Equally, an agricultural function, such as a home farm arrangement, cannot be discounted. The same suggestion could apply to the area to the west of Birdoswald where similar circumstances apply, although details of a cavalry unit there are less certain (Wilmott 1997, 99); in this example the line of a field boundary can be identified close the western edge of the development.

The identification of earlier field boundaries beneath the Roman buildings once again shows the earlier exploitation of the land which then became the site of a permanent fort. The same pattern emerged from a recent survey of the civilian settlement at the fort at Castlesteads by the authors, and is known at the forts of Wallsend, Newcastle upon Tyne, Rudchester, Carrawburgh, Birdoswald, Carlisle, South Shields and Chesterholm (Bennett 1998, 19). The form of the field system is similar to those identified on marginal Romano-British farmsteads in Littondale in the Central Pennines (Maude 1999, 42–46). The *annona* or corn levy (Williams 1996, 62), attested at many Roman stations, implies the active presence of civilian farmers to provide victuals for the garrison; the Halton Chesters field system may represent the work of farming groups which found new markets with the building of the Wall. The manner in which the system operated is as yet unknown.

It is quite possible that at Halton Chesters, as has been shown at Birdoswald, occupation continued after the departure of the Roman army (Wilmott 1997, 408–19). Continuity of occupation may be a recurring pattern along the Frontier and it is probable that the Roman buildings were altered and re-built for continued use. Some evidence for this is provided by an estate map by Thomas Forster, dated

1677, which includes the area covered by the geophysical survey; it shows the road to the south with the sites of the former buildings to either side of that road depicted as enclosed, and described as 'The Cottage Close'. It is likely however that the settlement moved south, down the slope, once the Wall served no further purpose, and occupied the more level areas around the Castle; an extension of the survey area to the south could throw more light on this period of transition. Though a Jacobean house was built onto the tower in the seventeenth century, it is likely that from this period the settlement declined; following the Act of Union the need for protection from international and internecine aggression was much reduced.

CONCLUSION

The survey shows that the *vicus* to the fort at Halton Chesters overlay evidence for earlier land exploitation and was extensive. The location of buildings sited between the Vallum and Hadrian's wall does not follow the accepted interpretation of the constructional pattern for buildings associated with Wall forts. Both the size of the fort and the military buildings outside the curtain wall probably reflect its location and the importance of the direct route between York and the north, Halton Chesters being the last fort on this road south of the Wall. Evidence derived from the site at Halton Chesters and others suggests that not only were the forts constructed under direct military supervision, but so also to varying degrees, were elements of the *vicus*. It is reasonable to conclude, based upon the available evidence, that settlement boundaries were pre-planned and may have been determined by military tactical considerations.

It is a clear priority that the survey should be extended on all sides within the limit of the settlement, to establish both its extent and layout. A full survey will undoubtedly shed new light on the role of the military on the Wall and their symbiotic interaction with the civilian population. It is not beyond the present evidence to suggest that the extent and relationship

of the roads emanating from the fort and their relationship with Dere Street and the Stanegate are equivocal (Selkirk 1995, 104–5). Indeed detection of an inter-vallum road, often sought, is in itself worthy of future research.

NOTES ON THE FIGURES

1. Plan slightly adapted from Daniels (1978, 86), showing the fort as recorded following the 1961 excavations by Gillam *et al.*
2. Grey scale magnetometry plot, with results plotted as $\pm 3\eta$ Teslas absolute values. The prominent magnetic response from the extant medieval ridge and furrow obscures some of the earlier archaeological features.
3. Magnetic anomaly interpretation. The medieval ridge and furrow has been omitted in order to clarify the interpretative plan. The large complex of buildings seen in the south-east corner of the survey area are visible as depressions, presumably caused by stone robbing. The boundaries of this structure are respected by the ridge and furrow and are therefore thought to be of earlier date, and not associated with the nearby drift mine.
4. Composite excavation and magnetic anomaly plan. This includes data derived from previous excavations and a geophysical survey completed in 1997 by Berry and Taylor. The full extent of the fort annexe, defences and *vicus* has not been revealed by this latest survey, but a much more extensive settlement is expected towards the west and east of the fort, particularly south of the Wall.

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