spring below Wharram Percy Cottages makes the achievement of such regularity impractical. The plan is more likely to have been confined within the triangular space formed by Road 2B on the west, the foot of the slope of the western side of the valley on the east, and the northern edge of the scallop-shaped depression on the south. Although the more southerly of the identifiable plots in this area are fairly long, regular rectangles aligned end-on to Road 2B, they become increasingly irregular in shape towards the northern apex of the triangle. While the tofts are still set out at right angles to the road, the crofts are laid out perpendicular to the foot of the slope, creating a change of alignment at the junction of the tofts and crofts. From this pattern, it seems likely that Road 2B was established at the same time that East Row was laid out. It is not impossible that the route of the road had already been established, but it is not easy to explain the abandonment of the putative earlier and more straightforward route, Road 2C, except by the imposition of the row. It was also evidently considered desirable, presumably for practical reasons to do with the cultivation of the ground, that the crofts should not be aligned obliquely to the contours. The eastern boundary of the crofts is marked by a continuous scarp up to 0.7m high, which presumably carried a hedge or fence. Its form is essentially that of a substantial lynchet; indeed, it probably originated as the lowermost of the lynchets produced by earlier cultivation on this slope (see Section 5.8). Its much greater size seems to indicate that it built up further during the lifetime of the row, which would suggest that the interiors of all the crofts were worked to some degree. There may well have been a 'back lane', but the existence of what would probably have been little more than a footpath, if it existed at all, does not fully account for the broad interval between the ends of the crofts and the edge of the Wharram stream. Today, this part of the valley floor is dry and level and would apparently make useful cultivable land. The complete avoidance of the valley floor hints that it may once have been much more boggy (see Section 5.9). The bank that defines the frontage of the row continues beyond its junction with the scarp that defines the eastern side. This may have had the effect of blocking any back lane; there are other stratigraphic hints that the bank may have been rebuilt at some relatively late date, perhaps to carry a hedgeline in the late 18th century, although no such boundary is depicted on historic maps.

All the peasant houses that can be detected are aligned side-on to Road 2B, in striking contrast to the eventual form of West Row (north) in particular. Whether this alignment simply respects the natural lie of the contours is doubtful, for a number of the tofts at the southern end of the row are sufficiently level to accommodate buildings aligned end-on to the road. It is tempting to draw a parallel with West Row (north) in its early phase, where Stuart Wrathmell (1989, 44) has suggested that most of the buildings may have been aligned side-on to Track 4. The side-on alignment may be a common feature of a single phase of planning, a distinctive characteristic of the blue-print for a standard two-row plan comprising the whole north end of the village. If so, it may follow that East Row did not experience any subsequent modification, as West Row (north) clearly did, from which it may be inferred that much of East Row may have been abandoned at a relatively early date.

The tofts are of more variable breadth than anywhere else around the village, ranging from 16m to 22m, but there is no sign that this was done deliberately in an attempt to maintain

a constant area in the face of the unequal length of the plots. Towards the northern apex of the row, the alignment of the long boundaries, which are more or less parallel towards to the south, becomes less regular. This can only partly be accounted for by the nature of the natural topography, so it is tempting to infer that the 'planning' of this part of the village was genuinely more piecemeal than elsewhere and perhaps not contemporary with West Row (north) and North Row, which define the other two sides of the village green.

Toft 27, despite its small size and irregular plan (and later damage caused by slumping and erosion by livestock), contains at least one rectangular earthwork that could be interpreted as a building platform.

Toft 28 contains Building 1, which shows some evidence of an internal division. Its north-western wall contains no trace of any doorway, which may support the theory that the frontage was overlaid by a field boundary bank in the post-medieval period. The southern boundary of the toft changes angle sharply where it becomes the boundary of the croft, and this change of angle is echoed to a lesser degree by the next four boundaries to the south.

Toft 29 contains Building 2, which seems to have had two doorways spaced symmetrically along its south-eastern side. This may indicate that the building was not domestic in function.

Toft 30 contains vestigial traces of what can probably be interpreted as a building, which has not previously been recognised as such. Its north-western side is indistinguishable from the frontage, possibly because, as suggested above, the frontage was overlain by a post-medieval field boundary.

Toft 31 contains Building 3, which clearly differs in size and form from the other buildings in the row; it also seems to be of relatively late origin. In size, the building is comparable to other stratigraphically late buildings, notably Building 5 and Building 19. The north-eastern end of the building seems to have been overlain by a series of slight earthworks which may be interpreted as the wall-lines of a smaller, less substantial structure sited to make use of the level platform created by Building 3. Despite this disturbance, there are also signs that Building 3 may have had a tripartite division of its interior. Downslope from the building, a large terraced platform has been created, also unlike anything else along the length of the row. There are slight hints of another, smaller structure on this platform. Both banks that bound the adjoining croft are ditched along their inner edges. At the foot of the slope, there are also slight hints that activity may, at some point, have extended beyond the lynchet that elsewhere defines the eastern edge of the row. Unlike Building 5, Building 3 does not lie in close association with a farmyard. It is tempting, therefore, to interpret it as an isolated house and garden. Alternatively, it is possible to link its occupation (assuming it was domestic in function) to the farmyard in Tofts 23/24, which lacks evidence for an associated farmhouse. However, the intervening distance and steep slope perhaps make it more likely that one of the other buildings on the plateau was the farmhouse in question.

Toft 32 contains possible, though indistinct, traces of what may be interpreted as a building. Both banks that bound the adjoining croft are ditched along their outside edges. In addition,

the pre-existing lynchets within this croft are unusually prominent, as though either less degraded by whatever land-use was being practised in the other crofts, or emphasised by what was being done in this one. These distinctive characteristics hint that the croft may have eventually become associated with the occupation of Building 3, perhaps as a garden.

Toft 33 contains a single building, with an amorphous mound extending at right angles from its northern end, which may represent the tumbled or disturbed remains of another structure. A small kiosk was sited at this point in the early 1990s, but it seems unlikely that this did any significant damage to the earthworks or accounts for the existence of the mound.

Toft 34 contains part of a building which has presumably escaped recognition before because it has been partly cut away by the course of Track 10, whose origin can be dated with confidence to about 1777 (see Section 5.2). Two very slight banks, which apparently converge at their western (upslope) ends, seem to have defined the southern boundary of the adjoining croft, presumably defining its limits at different dates. Only the more southerly of the two, which corresponds more closely to the pattern evident further north along the row, is revealed clearly by the most recent geophysical survey (Linford and Linford 2003, fig 3).

Toft 35 contains vestigial traces which probably represent the remains of a building. The southern boundary of the adjoining croft, which comprises a very slight bank and ditch, can be traced all the way through the modern plantation as far as the lynchet which defines the eastern perimeter of the row further north. This is a good indicator that the plan of the row continued in a fairly regular form at least as far south as this point. The boundary is certainly cut by Track 10 and does not continue across it, as depicted on the earlier survey, which relied on transcription of oblique aerial photographs.

Toft 36 contains what may represent only part of a building whose western side has been obscured by Road 3E, or by material cast up from the hollow way. The line of the bank that defines the southern boundary of the adjoining croft is continued by a narrow depression which cuts through Track 10. This is interpreted as a modern drainage channel, rather than an earlier ditch accompanying the bank. A similar channel lies a few metres to the south. At its eastern end, the bank appears to curve gently northwards, before it has been erased as an earthwork by the disturbance caused by the construction of the pumping station in 1935. This may be deceptive, but it is possible that it reflects the changing form of the topographic background, and indicates that this, or an adjacent toft and croft to the south, were the southernmost in the row.

Toft 37 is in part conjectural, based to some extent on the potential of the natural topography to contain another croft of similar width to those identified further north in the row. A bank which would fit well with the pattern of croft boundaries identified further north can be traced running parallel to, and a few metres north of, the north-eastern frontage of the post-medieval courtyard farm. However, its proximity to the courtyard farm, its identical alignment and, most crucially, the fact that it overlies the course of Track 5, strongly suggest that what can be seen on the surface is not medieval, although perhaps the line of the boundary is.

The village green

The triangle of the steep valley side enclosed by East Row, North Row and West Row (north), an area of about 1ha (2.47 acres), has been interpreted as a village green. The earlier survey depicted this steep ground as essentially an open area, though traversed by a number of trackways. While there is no reason to dispute the interpretation of the area as a green, the field investigation undertaken by English Heritage in 2002 has identified a number of important earthwork remains scattered across the area, which collectively give the impression of more intensive activity. The southern extent of the green is open to question. Unsurprisingly, the steep section of the valley side east of West Row (south) was evidently not settled (apart from the toft-like enclosures east of Tofts 8, 9 and 10), so it could be inferred that this formed part of the green. On the other hand, consideration of the overall plan suggests that the green proper would have extended no further south than Track 5a, allowing access from both manors and all three northern rows.

Pounds

Two circular enclosures, defined by what must formerly have been quite massive embankments (presumably originally supplemented by some form of stockade), are typical in size and plan of common livestock pounds. Their existence was hinted at by the previous survey, but not made explicit. Why two should have existed is unclear; it may be that they were of different dates, or related in some way to the early division of the village between two manors. Alternatively, it is possible that one (or both) served a function other than a pound, for example as an arena for bear-baiting, bull-baiting or cock-fighting, or as a small show-ring. On Ham Hill in Somerset, a circular pit of similar size, enclosed by a penannular bank, appears to have served similar functions during fairs held on the hilltop in the post-medieval period, although the fairs originated early in the 12th century (RCHME 1997, 29-30). At Wharram Percy, both enclosures seem to have been sited adjacent to Road 1B and to have faced on to it, though the entrance into the more northerly one is not easy to discern. Both were evidently created by scooping into the natural slope to a maximum depth of 0.4m and using the resulting material to augment the height of the surrounding bank.

The more southerly enclosure, with an internal area of 120m^2, is more clearly defined, but it is uncertain whether this is because it was constructed at a later date or simply because it was less affected by later activity.

The internal area of the more northerly of the two enclosures, at 240m^2, is about twice that of the southern one. A slight kick in the course of Road 1B, which is otherwise a smooth curve, suggests that the construction of the pound may post-date the establishment of the route, forcing traffic to divert slightly to avoid its entrance. There is evidence for a fairly large rectangular building, apparently a later superimposition, occupying its northern side, with vestigial traces of what may be two more structures to its south, sharing a similar alignment. This hints that the pound enclosure may have eventually been converted into a toft-like unit. There is no way of telling whether this modification caused the construction of the second pound, or whether it was merely a piece of opportunism after the enclosure had already fallen into disuse. Either way, it is tempting to infer that the building which re-used what had

previously been a communal space might have retained some communal function, such as a smithy.

Settlement remains on the village green and elsewhere

On the steep slope to the east and south of the pounds is a scatter of newly identified earthworks which probably represent the sites of small buildings. The clearest of these are approximately rectangular platforms, occasionally accompanied by slight suggestions of wall-lines, generally aligned along the contours. The largest are only slightly smaller than the houses and other buildings that comprise the rest of the domestic settlement. The earthworks are far slighter and much less crisply defined than the remains of the buildings on the western plateau, but it could not be ascertained whether this difference reflects the effects of soil-creep on the sloping ground, or a genuine difference in the age, function or form of the buildings. Indeed, some of the apparent platforms may be merely the products of small-scale quarrying. At least one, however, appears to have had access onto Road 1D. This may point to a relatively early date, but it is perhaps more likely that the early route remained in use as an access track long into the medieval period. At any rate, the fact that a number of the platforms appear to make use of the terminals of the early cultivation ridges seems firmly to rule out a pre-medieval origin.

One building within a rectangular enclosure can be distinguished on the opposite side of Track 4 from Tofts 16 and 17. The construction of a boundary bank overlying the embankment that defines the eastern side of Track 4 seems to point to a relatively late origin for the unit. Indeed, the apparent encroachment of a private building onto what had formerly been public space seems in itself to suggest a late context. The building may have been an outlying component of a late farmstead centred in one of the tofts in West Row (north).

A building in a similar position can be identified on the relatively level area on the opposite side of Track 8a from Tofts 8 and 9. There are two possible enclosures with which it might have been associated, one to the north, within which it lies, and one to the south, which it adjoins. The limits of both are uncertain, and it is possible that their eastern sides may have been distorted by the superimposition of Boundary 13, probably in the late-18th century. Again, these may have been outlying components of a late farmstead on the opposite side of the track.

Building 4, whose interior was apparently divided into two halves, also lies within its own quadrangular embanked enclosure. This enclosure appears to have been added onto the southern end of West Row (south) and it adjoins the paddock-like enclosure to the rear of Tofts 1 and 2, so that its western boundary continues the alignment of Boundary 5. It is therefore most plausibly interpreted as a component of the farmstead in Tofts 2/3. This, together with the atypical siting of the building in relation to the frontage of the plot, suggests that the building may have been an agricultural outbuilding.

At the extreme southern end of the village, terraced into the steep slope overlooking one of the two major springs that feeds the Wharram stream and served by Track 17, are two probable buildings whose existence was hinted at by the earlier survey. The more northerly

of the two appears to be a longhouse with a tripartite division of its interior, but its appearance is confused by a large pit, mid-way along the building, produced either by stone robbing or small-scale quarrying, or both. The more southerly building is shorter and broader in plan and may not have been domestic in function.

5.7 The 'lynchet bank'

The main body of this earthwork appears to be a terrace-like accumulation of soil created by repeated ploughing (technically termed a 'positive lynchet'), which extends southwards for some 380m from the southern edge of Road 1B. It parallels the edge of the western plateau, following a sinuous curve that is reminiscent of the so-called 'reverse-S' pattern created by the use of oxen to draw a plough. The steep face of the lynchet stands to a maximum height of 1.6m, even though the natural slope is not pronounced, and the sheer size of the earthwork has led to consideration of the possibility that it is actually a deliberate construction contemporary with the construction of the toft boundaries, perhaps a 'wall' made of turf stripped from the rear of the tofts (Beresford and Hurst 1990, 78). The size of the scarp does appear to have been enhanced in places by other features and by erosion within the tofts. For parts of its length, a broad bank, 0.2m high on average, runs along the top of the lynchet. This seems to have originated in the medieval period as a plough 'headland' and may well have served as a path along the rear of the house plots (see Section 5.2: Track 13). The earthwork as a whole, presumably surmounted by a hedge or fence, clearly served to divide the ends of the tofts from the adjacent crofts.

Although it was initially assumed that all the village earthworks were of broadly the same date, the so-called 'lynchet bank' was soon recognised as being an anomaly of considerable importance to the understanding of the plan of the medieval village and potentially of earlier origin (Beresford 1979, 23). Following a visit to Wharram Percy in 1978 by Peter Fowler, then Secretary of the Royal Commission on the Historical Monuments of England, it was interpreted as a possible Bronze Age 'linear earthwork' boundary (information from Chris Dunn, English Heritage; Hurst 1984, 84-85 and fig1; Beresford and Hurst 1990, 78). Excavations that were intended to settle the question produced only a single sherd of pottery, which, although not strictly diagnostic, has been interpreted as pointing to a 12th-century date. However, the excavation seemed to show that the lynchet bank was stratigraphically later than features of late Saxon date. Most recently, this evidence has also been questioned and it has been concluded that the origin of the earthwork remains uncertain: whether earlier than, contemporary with, or later than the toft boundaries that adjoin it (Stamper *et al* 2000, 19).

It is easy to understand the deductive process by which Beresford and Fowler reached the conclusion that the earthwork predates the medieval village, for most of the observations are sound and are correctly depicted on the plan produced by the earlier survey. Firstly, the lynchet bank is clearly cut into by Tracks 5b and 6 (the former previously thought to be of Iron Age or Roman origin), as well as by several minor hollows which apparently gave access to the headland from the rear of the tofts. One particular section is not adequately depicted on the earlier survey: the short surviving length of the lynchet bank between Tracks

5b and 6 maintains the same alignment as the rest of the earthwork, which would be almost inconceivable were the tracks earlier than the lynchet. However, since the English Heritage investigation also suggests that Tracks 5b and 6 are not likely to be of medieval origin, as has been assumed in the past, but more probably of 18th-century date, this stratigraphic relationship does not in itself rule out a medieval origin for the lynchet bank. Secondly, notwithstanding the most recent inconclusive appraisal of the evidence, in almost every instance the banks that form the medieval toft boundaries can be seen to ride over the lynchet bank. In the other instances, the relationship of one earthwork to the other is merely uncertain; none suggests that the lynchet bank is later. On the other hand, it could be argued that what is visible on the surface represents only the latest phase of the earthwork and that the toft boundaries were probably redefined many times, disguising or reversing the original stratigraphic relationship. Yet it may be significant that the boundary of the *curia* enclosure of the South Manor, which seems less likely to have been redefined after the *camera* of the South Manor was demolished, also rides over the lynchet bank. Similarly, a large platform that may well be the site of one of the manorial buildings, which has previously gone unrecognised, is cut into the foot of the lynchet bank. In short, were it not for the excavated evidence which apparently shows the contrary, there would be little hesitation in inferring that the lynchet bank is of earlier origin than the foundation of the manorial enclosure and the contemporary episode of planning.

However, it has been inherent in this and previous interpretations of the earthwork that the lynchet bank can be treated as a single feature. Although it describes a sinuous curve overall, close consideration reveals that there are slight differences in its form. Where it runs behind West Row (north), the scarp is higher and sharper, running very straight and parallel to the frontage of the row. By contrast, where it runs behind West Row (south), it is generally lower, making several minor changes of course and not running precisely parallel to the frontage, giving the impression of a more organic development. This perception is sustained by the apparent existence of a series of very slight cultivation ridges of unusual form, which are discussed more fully in Section 5.8. To summarise, along the length of West Row (south), these ridges are cut by the lynchet bank, but cannot be traced further east, suggesting that they may, in essence, be the manifestation of the ploughing responsible for creating the lynchet, though truncated by later activity within the tofts. If so, they may be contemporary in origin with the establishment of this part of the village though not necessarily the planned row. On the other hand, for the length of West Row (north) the ridges seem to have extended beyond the lynchet bank and beyond the earthworks of the tofts themselves. Alternatively, it may be that the survival of the ridges beyond the frontage of West Row (north) is a freak and that the whole settlement was laid out over the ridged cultivation. However, the more obvious inference, although the evidence is far from clear-cut, is that the southern half of the lynchet bank is in essence a genuine lynchet, though undoubtedly modified by the laying out of West Row (south), while the northern half is a deliberately built boundary bank. It is difficult to pin-point precisely where these two putative features join, but the line of the earthwork kicks westwards by some 7m at or near the northern side of the *curia* of the South Manor. As discussed in Section 5.6, Stuart Wrathmell has proposed convincingly that West Row (south) and (north) joined at about the same place.

Peter Fowler's early suggestion that the lynchet bank might follow the line of a Bronze Age linear earthwork can be firmly ruled out. There are many examples of such boundary earthworks on the Yorkshire Wolds, including one 900m south of Wharram Percy. Of this, a short stretch on the steep valley side survives well in earthwork form as a typical double bank with a medial ditch, while the remainder can be traced as a cropmark (Stoertz 1997, map 1). Fowler suggested a Bronze Age date, in line with examples known at that date on the chalk uplands of Wessex. However, it now seems likely that the earliest examples in Yorkshire, and perhaps beyond, date to the late Neolithic, while in the Yorkshire region the tradition certainly continued well into the Iron Age (Vyner 1994,). However, the relationships of such boundaries to the natural topography are distinctive, most running across relatively narrow necks of land, usually at right angles to the contours and often between the heads or junctions of valleys. The lynchet bank has none of these characteristics and its stratigraphic relationship to the early ridged cultivation renders a prehistoric date implausible.

5.8 The agricultural landscape

As already touched upon repeatedly, the field investigation in 2002 identified an episode of ridged cultivation significantly different in form from the majority of conventional 'ridge and furrow' recorded around the fringes of the site, and apparently predating the establishment of much, and perhaps even all, of the medieval village. It survives best in the area to the south of the north boundary of the *curia* enclosure of the South Manor, including within the bounds of the *curia*. The ridges are of greater than normal width, up to 20m wide and are very low, barely higher than 0.1m, and gently cambered so that the intervening furrows appear extraordinarily broad, on average 6m wide. This appearance may be the result of the deliberate levelling of more typical ridge and furrow, or the product of intensive activity of a different nature in the crofts associated with West Row (south), but there is no proof for either possibility. Indeed, their consistent appearance across a large area argues against any piecemeal modification of individual crofts. The fact that the ridges are similarly slight both within the *curia* and to the south of it suggests that they were already in that condition when the South Manor was laid out, that is, probably by the later 12th century. Boundary 3, which was established before the *curia* boundary of the South Manor was laid out, appears to impinge on the ridges, again pointing to an early date for the cultivation.

In the crofts adjoining West Row (south), traces of the cultivation remains were recorded from the 1946 RAF aerial photographs for the earlier survey, on which they are clearly visible (RAF 1946). However, detailed examination on the ground under optimal conditions allows the alignment and extent of the furrows to be more accurately plotted. It is difficult now to gauge how far west the ridges extended, not least because a strip of land east of the current boundary of the Guardianship Area, whose eastern limit is defined by Boundary 7, was ploughed for a few years in the early 1970s (see, for example, RCHME 1971). However, they do seem to extend at least as far as the present limit of arable cultivation, that is, beyond Boundary 5, which is the limit suggested by the earlier survey (see Figures 5 and 25). Given the very degraded condition of all the earthworks by the time of the survey in 2002, this observation may be incorrect. Boundary 4, of which only a short length now survives as an earthwork within the Guardianship Area, seems to post-date the ridge and

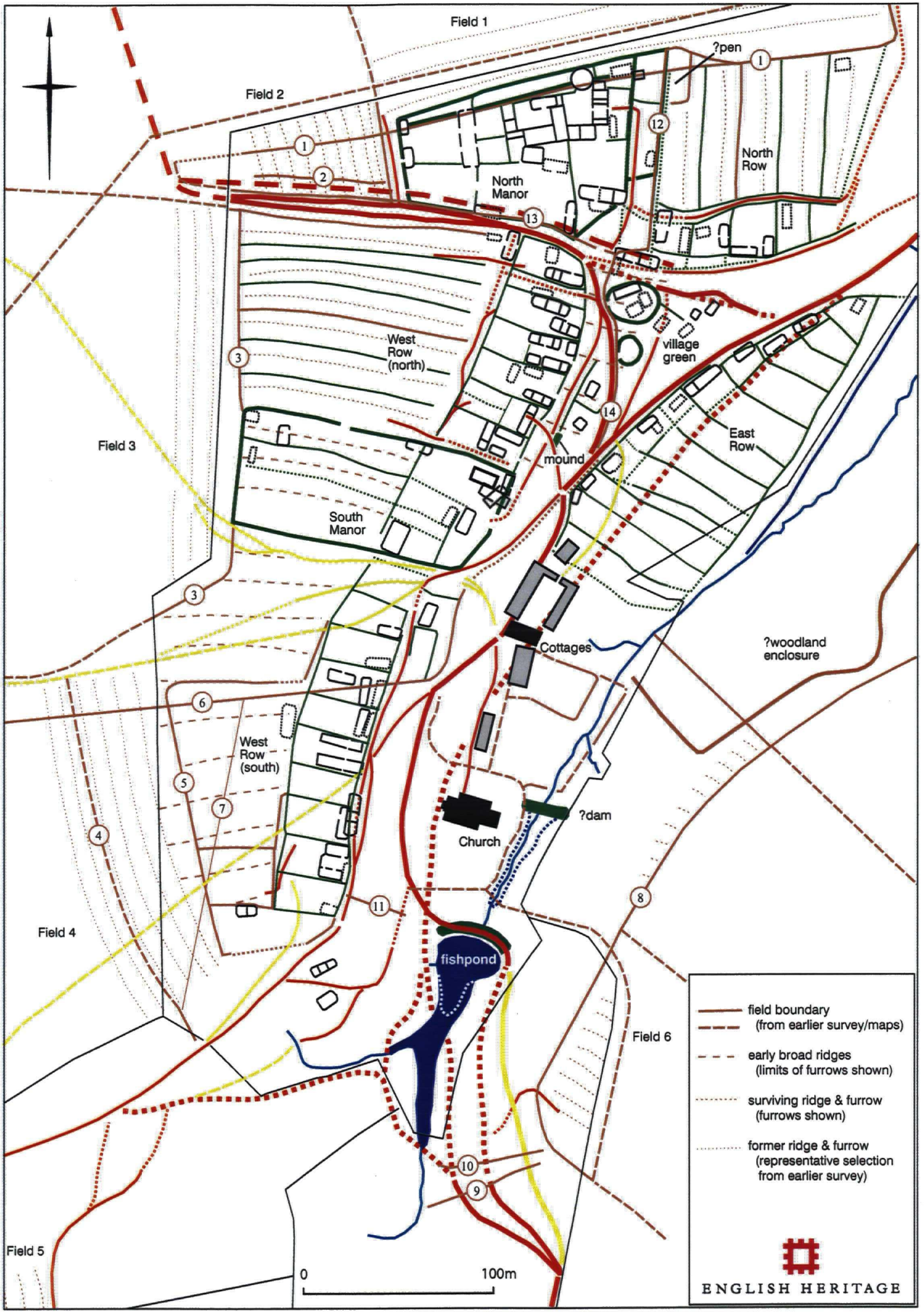

Figure 24 *Schematic plan of the agricultural landscape*

furrow in Field 4, so seems unlikely to have defined the earlier cultivation. Perhaps the simplest conclusion is that the ridges never extended any further west than the easternmost furrow of Field 4.

In relation to the layout of West Row (south), two key points emerge. Firstly, at no point do the lines of the broad furrows coincide perfectly with the lines of the proposed toft boundaries, nor do they share the same alignment. Secondly, although the lynchet bank cuts through the ridges, at no point can any of the ridges be traced east of the lynchet bank. In other words, this section of the lynchet bank could conceivably be the headland associated with the ploughing, although truncated to some degree, presumably by the laying out of the row. If so, the ploughing would have appeared to have ended well short of the edge of the western plateau, as though respecting something in that area. It would be logical to infer that the cultivation might have originated at the same time as the early settlement in the vicinity of West Row (south) – though not necessarily the planned row itself.

This is not the case in West Row (north). Although all trace of the type of cultivation has been erased by conventional ridge and furrow within the area of the crofts adjoining the row, what appear to be the fragmentary remains of a series of ridges of comparable form can be traced to the east of the frontage, extending right to the edge of the western plateau. There, the ridges seem to end in pronounced terminals, rather than on a conventional headland bank. Notably, several of the buildings on the village green and both livestock pounds seem to have made use of the relatively level platforms on the edge of the escarpment offered by the terminals of the ridges. The ridges are also apparently visible as a series of undulations in the narrow interval between the frontage of the row and the course of Track 4. Significantly, unlike West Row (south), the lines of the supposed ridges appear to coincide closely with the lateral boundaries of the tofts. Furthermore, Road 1C cuts through several of the ridges, suggesting that it is unlikely to have been part of the Romano-British route, but instead developed within the medieval period. The northernmost ridge seems to lie close against the side of Road 1B, which is known to have developed to a hollow way of considerable depth by the 6th century AD.

The cultivation ridges underlying North Row, mentioned in Section 5.6, may have been aligned at approximately 90 degrees to those already described, but the surviving terminals suggest that they were of comparable width. They seem to predate the sub-division of the crofts into pairs of conventional ridges, and in some cases to have influenced the placement of the toft boundaries. They too seem to have extended to the edge of the escarpment, their terminals creating a series of broad swells in the ground to the south of the frontage of the row. It has been suggested that Road 1D was a continuation of Road 1A, although geophysical survey hints that a route following the same line as Track 3 may have been another important route. Track 3 cannot have been intensively used, if at all, while ploughing was extending as far as the edge of the escarpment, so it is possible that this episode of cultivation was responsible for erasing the earthworks of Road 1A and causing the shift to the line of Road 1B and 1D. Although at face value the conclusion seems unpalatable, given the intensity of later medieval activity elsewhere, the available earthwork evidence hints that this unusual

form of cultivation may be of early medieval date; that is, Anglo-Saxon or Anglo-Scandinavian. An earlier date can be ruled out: geophysical survey indicates that the pattern of Romano-British enclosures did not extend this far south of Road 1A and 1B and no other early features have been identified on the plateau that might have caused the ploughing to stop short of the edge.

Another area of cultivation remains, already mentioned in Section 5.6, is defined by the series of slight lynchets on a north to south alignment underlying the crofts of East Row. These lynchets, apart from the larger one that defines the eastern ends of the crofts, do not appear on the existing survey plan. The stratigraphic evidence suggests that these could conceivably be pre-medieval in date, but the form of the lynchets is more reminiscent of ridge and furrow, where the direction of ploughing has followed the contours, that is, in effect strip lynchets, but only developed to a slight degree. This would then point to East Row having been laid out at a relatively late date, as already observed.

Beyond the fringes of the village, the agricultural landscape does not survive well in earthwork form and is for the most part better understood through analysis of the aerial photographic record. The only extensive tracts of well-preserved ridge and furrow lie on the southern side of Drue Dale (Field 5). However, the pattern of the fields in relation to the settlement remains is significant in that it raises questions concerning the development of the village as a whole.

Field 1, except for its southernmost edge, lies beyond the northern boundary of the Guardianship Area. RAF aerial photographs taken in 1946 when the land was still under pasture, clearly show ridge and furrow surviving in earthwork form on approximately an east – west alignment, as depicted on the earlier survey (RAF 1946; Figure 5). This must represent the latest phase of ancient ploughing in the field. The 1836 estate map shows that the field was under pasture at that date and contained within the land parcel called 'Ings Meadow' (Dykes 1836). None of this ridge and furrow now survives in earthwork form, although modern ploughing has not extended right up to the northern boundary of the North Manor *curia*. The extent of modern ploughing has been constrained by the fact that the field boundary laid out between 1836 and 1851, later followed by the boundary of the Guardianship Area, ran some 8m north of Boundary 1, though on exactly the same alignment (Dykes 1836; Ordnance Survey 1854). The eastern edge of Field 1 ends a few metres short of the crest of the western plateau, defined by a lynchet surmounted by a low bank which may have supported a hedgeline or fence, with a ditch of negligible depth on its western side (upslope). The interval between the field boundary and the edge of the escarpment hints that Track 3 may have made use of the narrow space along the crest like Road 3A.

On its southern side, Field 1 appears to have been initially defined by Boundary 1, a lynchet up to 1.0m high surmounted by a low bank. This boundary has previously been interpreted as being of prehistoric origin on the evidence of its superficial similarity to the lynchet bank and the inference, not supported by the new survey, that at its western end it turned southwards and so continued the line of Boundary 3 (Hurst 1984, fig 1). The earthwork evidently defined

the northern boundary of the North Manor in its earlier phase; the expansion of the *curia* onto Field 1, leaving most of Boundary 1 fossilised within the manor complex, has been discussed at some length in Section 5.5. Boundary 1 can also be traced beyond the western edge of Field 1, as a broad, degraded bank suggestive of a headland. It is uncertain whether it turned southwards on the line of the eastern boundary of Field 3, as suggested by the earlier survey, or continued straight on to the side of Road 1B, as the vestigial earthworks recorded by the new survey suggest. The alignment of Boundary 1 at first appears curiously at odds with Road 1B, for it lies at an oblique angle to it which would have made the achievement of a typical pattern of quadrangular fields awkward. The geophysical survey undertaken in 2002 may provide some context for this anomaly (Linford and Linford 2003, figs 3 and 5). Both the fluxgate and the magnetometer survey clearly show that a series of other linear features in this area radiate in a web-like pattern from a curving boundary, each at a similar oblique angle to its neighbours and to Boundary 1. The curving boundary may have formed part of a curvilinear enclosure enclosing the quadrangular Iron Age/Romano-British enclosure in the north-western corner of the Guardianship Area, which has been sampled by excavation, but this is not entirely clear from the geophysical survey. However, the geophysics also show that at least one of the radiating features extends westward beyond the line of the curving boundary and continues across the Iron Age/Romano-British enclosure, suggesting that it is of later date, possibly medieval. Boundary 1 accords well with this broader pattern, and seems to confirm that the radiating linear features detected by geophysical survey are not of natural origin. It therefore seems likely that the 'striations' recorded between the radiating boundaries, which radiate in a similar fashion, genuinely represent traces of ploughing rather than features of natural geological origin, as previously concluded (Linford and Linford 2003, 9-10). In short, the striations detected by geophysical survey may represent an early episode of ploughing associated with field boundaries which were subsequently, with the exception of Boundary 1, entirely ploughed away.

Returning to Boundary 1, the form of the lynchet, and of the headland where it exists in that form, may also indicate that the ploughing within the field was at some stage oriented at right angles to the ridge and furrow evident on the 1946 aerial photographs. In other words, the direction of ploughing may formerly have been on the same alignment as the ridge and furrow in the adjacent Field 2. Such an alignment might be closer to the early ridged cultivation identified under North Row. If cultivation ridges on this alignment once extended as far as the northern side of Road 1B, prior to the establishment of the North Manor, it may be that the terminals of the ridges identified south of the frontage of North Row relate to this episode of ploughing, rather than the putative early cultivation. Alternatively, the appearance of the earthwork may result from it having originated not simply as a lynchet but as a deliberately constructed field boundary. In this scenario, the radiating pattern revealed by the geophysical survey may have been superseded by the east – west alignment visible on the 1946 aerial photographs. In either case, perhaps the most plausible context for this re-alignment, and perhaps the eradication of the ploughing identified by geophysical survey, is the imposition of the North Manor complex. The irregular quadrangle of the early *curia* boundary may reflect the fact that it was initially fitted into the area between Boundary 1 and Road 1B,

conforming to the pre-existing pattern of land-use. Track 1 seems to have been provided to allow access to the newly-created headland of Field 1.

Field 2, except for its south-eastern corner, also lies beyond the boundary of the Guardianship Area. Aerial photographs taken when the land was still under pasture clearly show the ridge and furrow surviving in earthwork form on approximately a north-south alignment, as depicted on the earlier survey (Figure 5). If Boundary 1 indeed acted as a headland at some point, Field 2 may also initially have extended only as far as Boundary 1 and could at that stage have been part of the same field. If so, it is unclear how the small irregular quadrangle of land between Road 1B, Track 1 and Boundary 1 was used - perhaps simply as a small paddock. It is clear that the form of the field did not remain static. Its most logical southerly extent is the northern side of Road 1B and Boundary 2, a headland which survives for a distance of some 65m west of the North Manor complex and immediately north of Road 1B, proves that ploughing extended this far at some point. Boundary 2 cannot be traced within the manorial compound, although this area should, in theory, have been less degraded, suggesting that it may have been the product of ploughing the extent of the field as depicted on Porter's earlier survey. On the other hand, it is possible that some form of activity within the western compartments of the manorial complex erased all trace of a continuation of the headland. The slight lynchets on a north to south alignment tentatively identified within the North Manor complex might support this theory. Subsequently, Boundary 2 was also overploughed, the ploughing encroaching onto Road 1B, cutting across it at least as far as the ridge that divides the two hollow ways that make up the Road. In several cases, there are slight hints that the furrows may have cut all the way across the Road to the bank that defines the northern boundary of the crofts of West Row (north). The discovery of numerous horseshoes in the excavation trench that sections the Road south of the North Manor indicates that the route was definitely in use well into the medieval period (information from Ann Clark). From this, it may be inferred that the encroachment onto the line of the road came very late in the life of the village, or after its desertion.

Field 3, except for its easternmost edge, lies beyond the western boundary of the Guardianship Area. Aerial photographs taken when the land was still under pasture clearly show the ridge and furrow surviving in earthwork form on approximately a north to south alignment, as depicted on the earlier survey (Figure 5). All trace on the ground has since been ploughed away. Boundary 3, which defines the eastern edge of Field 3 and the rear of the crofts of West Row (north), predates the laying out of the *curia* boundary of the South Manor, as described in Section 5.4. Where it extends to the south of the *curia* boundary, it comprises a low bank with a ditch on its western side. The western side of the ditch has been enlarged to a height of 0.6m by what seems to be a fairly massive lynchet, presumably the product of the ploughing in Field 3, so that this is the most imposing element of the earthwork. The boundary has been interpreted as being of medieval origin on the basis of the geophysical survey undertaken in 2002, but its line continues that of one of the late Iron Age/Romano-British boundaries that define the enclosures to the south of Road 1A (Linford and Linford 2003, fig 9). The north-east to south-west alignment of the stretch south of the South Manor is certainly at odds with most of the pre-medieval land divisions. From the overall field

pattern, the whole of the stretch to the south of the north-west corner of the *curia* could be said to impinge upon the early, broad cultivation ridges discussed above. It is therefore possible that the boundary comprises two elements: the stretch north of the South Manor may be of late Iron Age or Romano-British origin, while the southerly stretch may be a medieval extension, post-dating the establishment of the broad cultivation ridges, but pre-dating the establishment of the *curia* boundary. Immediately north of the South Manor, the vestigial earthwork traces hint that a bank may have kicked back to the north-west, mirroring the turn further south. However, geophysical survey offers no support whatsoever for this observation, so it can probably be dismissed.

Field 4, as recorded by Porter's survey, comprised well-developed ridge and furrow on approximately a north to south alignment, extending well within the present Guardianship Area, but only just beyond Boundary 7, the former fenceline that marked the limit of ploughing for a brief spell in the early 1970s. As a result, with the exception of the southernmost terminals of two furrows surviving in the narrow triangle of ground defined by Boundary 7, the boundary of the quadrangular paddock south of West Row (south) and the edge of the western plateau, the ridge and furrow cannot be traced with confidence on the ground. Boundary 4, a bank and ditch on a north to south alignment which repilcates the curve of the cultivation ridges, was recorded as an earthwork by both Porter's survey and the Ordnance Survey First Edition 6-inch scale map (Ordnance Survey 1854). It is now under intensive arable cultivation and has been totally erased, apart from a short stretch at its southernmost end, which lies on the steep slope within the Guardianship Area and south of Boundary 7. Boundary 5 is visible on early aerial photographs and was also recorded by the Ordnance Survey First Edition map and Porter's survey (RAF 1946; Ordnance Survey 1854). Its plan relationship to the paddock enclosing Building 4, and the paddock to the west of Tofts 1 and 2, as well as its proximity to the courtyard farm in Tofts 2/3, strongly suggests it to be part of that late medieval complex. Although only ploughed for a few years in the early 1970s, the size of the earthwork was evidently greatly reduced by that process. The stretch south of Boundary 6 can now be traced only as slight and intermittent scarps, but the stretch to the north, which was overlooked by the earlier survey, remains reasonably prominent, the ditch more easily traceable as a slightly deeper depression on the same line as one of the earlier furrows. Porter's observation, apparently based primarily on the 1946 RAF aerial photographs, that the cultivation ridges in Field 4 extended east of Boundary 4, and almost as far east as Boundary 5, is correct (RAF 1946). However, to judge from the degraded condition of Boundary 4 as it appears on the 1946 images, it may have been ploughed over. This suggests that the cultivation to the east of Boundary 4 may be a later transgression – presumably not a long-lasting one, since the bank was not entirely levelled - beyond the bank that originally defined the boundary of Field 4 (as reconstructed in Beresford and Hurst 1990, fig 34). This encroachment also seems to have truncated the early broad ridges, short stetches of which are visible immediately west of Boundary 5, despite a subsequent brief episode of over-ploughing in the 1970s. Their survival indicates that the ridges of Field 4 that encroached beyond Boundary 4 did not extend right up to Boundary 5, but no firm conclusion can be reached as to whether Boundary 5 or the supposed episode of encroachment was earlier. A parallel can perhaps be drawn with the transgression of Field 2, again apparently of brief

duration, beyond its original limit, Boundary 2, and onto the line of Road 1B. Both trangressions beyond the original field boundaries may have occurred in the latest stages of the village's life.

In summary, the following likely sequence emerges: Boundary 4 initially marked the eastern edge of Field 4. It perhaps also marked the western ends of the early cultivation ridges west of West Row (south), although it is doubtful, given the intensity of modern cultivation, whether this relationship could now be tested even by excavation. Boundary 5 was laid out as part of the complex associated with the late courtyard farm. Perhaps at roughly the same date, Field 4 was extended beyond Boundary 4 and the boundary bank was overploughed. Ploughing of this area apparently did not continue for long before the field became pasture. Boundary 6 almost certainly originated as part of the division of the pastoral landscape around the 18th-century Improvement farm and is described in Section 5.11. Boundary 7 is the slight scarp (schematised for the purposes of the 2002 survey), which marks the edge of the brief episode of ploughing that occurred in the early 1970s, prior to the imposition of the current fenceline around the Guardianship Area.

Field 5 comprises ridge and furrow extending on a north to south alignment on the south side of Drue Dale, the northernmost ends of the ridges surviving well in earthwork form. The rest of the field, called Low Wold in 1836, was already under arable cultivation by that date, and has probably remained so ever since (Dyke 1836; RAF 1946). Though now under pasture, the western end of the Dale was also under the plough in 1836 (the field called High Drewdale), and this almost certainly accounts for the more degraded condition of the ridge and furrow in that area. The eastern boundary of High Drewdale can still be identified as a bank and ditch overlying the ridge and furrow, the bank surmounted by an ancient ash tree which is possibly one of those planted in 1775-6 (see section 5.11). The condition of the headland defining the northern limit of the ploughing, which appears to have been narrowed where it survives at all, gives some idea of the severity of the erosion that has occurred since the medieval period. Medieval agriculture would almost certainly have exacerbated such erosion, and may have been directly responsible for a large landslip towards the western end of the valley. Numerous minor slips along the slope, some of which obscure the lower part of Track 16, also seem to indicate that erosion was active while the fields were under cultivation. The floor of Drue Dale may, therefore, have been buried in a deep layer of colluvial silt, which could have preserved environmental and other evidence.

Field 6 comprises ridge and furrow on a north-west to south-east alignment which survived in earthwork form until after 1956; it is particularly clear on the 1946 RAF aerial photographs and was transcribed from these images for the earlier survey (RAF 1946; see Figure 5). Only the western ends of the ridge and furrow in the south-western corner of the fields now survives in an area of rough pasture. As the previous survey has recorded, Boundary 8 cuts through the ends of the ridges and seems likely to be associated with the 18th-century Improvement farm, discussed in Section 5.11. The ridges can be traced beyond this, almost to the edge of the steep valley side, which is surmounted by a headland not previously recorded. The headland appears to have been cut away in part by the ditch of the possible

woodland boundary, but the existence of a pronounced positive lynchet along the eastern side of the ditch suggests that ploughing continued (see Section 5.10). Elsewhere, like the headland of Field 5, in places the bank does not survive at all, pointing to the severity of the erosion along this slope. However, even where it does survive in its entirety, it lies right on the edge of the escarpment and is a maximum of 6m wide: rather narrow by comparison with examples in the classic Midlands field systems. This may reflect the use of horses, rather than oxen, to draw the plough, as attested by the excavated faunal remains (Beresford and Hurst 1990, 44).

Boundaries 9 and 10, neither of which have been identified before on the ground, seem to be different phases of the same boundary. Boundary 9 was evidently once the more massive earthwork, but is now very degraded. It is cut by the lower branch of Road 3C and by Boundary 10. This latter relationship may be the more reliable chronological indicator, given that the route from Thixendale may have been used occasionally until the late 19th century, but Boundary 10 also overlies both branches of Road 3C. William Dykes' estate map of 1836 shows a boundary defining the northern end of the field called West Seeds (Dykes 1836). Taking the map at face value, this would appear to correspond more closely to Boundary 9, but closer consideration suggests that it was Boundary 10 that was depicted. The First Edition 6-inch scale map surveyed in 1850-1 depicts Boundary 10 (Ordnance Survey 1854). The First Edition 25-inch scale map surveyed in 1888 depicts the same boundary, like most of the boundaries shown on Dykes' map, as a relict hedgeline; that is, as a discontinuous line of trees (Ordnance Survey 1890). There are slight inaccuracies elsewhere in Dykes' map and any survey error may have been accentuated by the very steep ground at this point. Rather than inferring that the alignment of the boundary was changed between 1836 and 1851, it therefore seems more reasonable to conclude that Boundary 10 was already in existence in 1836. The relative condition of Boundary 9 suggests that it may be considerably older and the relationship with Road 3C hints that it may be medieval in origin.

Boundary 11, which has not been identified previously, is very degraded as an earthwork, partly as a result of natural slippage on the steep slope and partly due to continuing trampling by cattle descending that slope to reach the spring. Its form - a central ditch with a slight bank on both sides - has been noted in Section 5.7 as a characteristic of Bronze Age 'linear ditches' and its location within what was effectively part of the village's public space might seem a favourable context for the survival of a very early boundary. However, the earthwork actually appears to be of relatively late origin, for while its relationship with the Track 8a is unclear, there are slight hints on the western side of the track that it turned to meet the southern boundary of Toft 2. It is possible that it was associated with the late medieval courtyard farm complex that seems to have developed in Tofts 2/3 and thus represents another example of encroachment onto the former public space, late in the life of the village.

5.9 The water mills

Excavations carried out between 1972 and 1981 have indicated that the upper stretch of the Wharram stream was initially dammed in the late Saxon period to create a small pond to

the south of the church, which powered a waterwheel whose pit and padstone survived (Beresford and Hurst 1990, 66-7). The wheel is now believed to have been vertical, rather than horizontal, as widely reported (information from S Wrathmell). This was the precursor of one of the two watermills mentioned in 14th-century documents as lying within the township. A document of 1368 refers to a pond called '*Milndam*' on the north side of the town, which has not previously been securely located, and profits from another pond on the south, which undoubtedly equates to the excavated one. Since the pond on the south was not called a millpond or milldam in 1368, it has been concluded that milling there had ceased by that time, but continued at the northern site, since a single mill was referred to in 15th century documents. The excavations showed that at some stage the dam had been raised by 1.2m in height to form a fishpond, which is essentially the pond that can be seen today. It has been suggested in the past that this modification may have been made under the influence of Haltemprice Priory, which acquired the advowson of the church in the 1320s (Beresford and Hurst 1990, 67). More recently, Stuart Wrathmell has argued that since the pond acquired by Haltemprice was called the 'pool of the mill' in 1322, it may have been the northern one that they acquired. The fishpond may therefore have been created in the later 12th century, possibly when the Chamberlains surrendered their interests to the Percy family *c* 1175. A 'sheepwash', set into the dam at some point between 1850 and 1888 and subsequently modified, is discussed in more detail in Section 5.12. Following excavation, the pond was cleaned and the dam (minus the sheepwash) was reconstructed for display, creating an ornamental feature and wildlife habitat. Although the modern dam approximately replicates the earlier earthwork, the survey undertaken of the earthwork prior to the excavation indicates that the two differ slightly in shape and extent (see Figure 5). The cleaning of the pond undertaken in the 1980s did not significantly alter its outline, but since the destruction of a timber sluice designed to trap silt flowing into the pond from the springs, silting has considerably reduced the depth of the water. In summary, analysis of the present earthworks can contribute relatively little to the understanding of the remains.

It is worth noting that the sinuous and irregular plan of the pond, in common with most millponds and many fishponds of vernacular origin, never seems to have owed a great deal to formal design, but much to the natural topography. William Dykes' estate map of 1836, the First Edition 6-inch scale map surveyed in 1850-1, the First Edition 25-inch scale map surveyed in 1888 (after the addition of the sheepwash) and the Second Edition revised in 1909 (after the extension of the sheepwash) all depict the pond (Dykes 1836; Ordnance Survey 1854; 1890; 1910). The maps concur that it was formerly more than twice the present length of the main body of standing water, extending back to within 50m of the southernmost springs. At this southernmost point, the deliberate tipping of rubble currently allows modern farm vehicles to ford the stream and Road 3C may also have crossed the valley floor here. The precise extent of the pond can be accurately determined from the contour model of the terrain and from this it can also be calculated that the water level would have come nearly to the top of the modern reconstructed dam, or nearly a metre higher than at present. The earlier mill dams, being 1.2m lower, must have retained a pond that stretched no further south than the modern sluice. This earlier phase may account for the bulbous northern end of the pond, the greater width compensating to some degree for the shallower

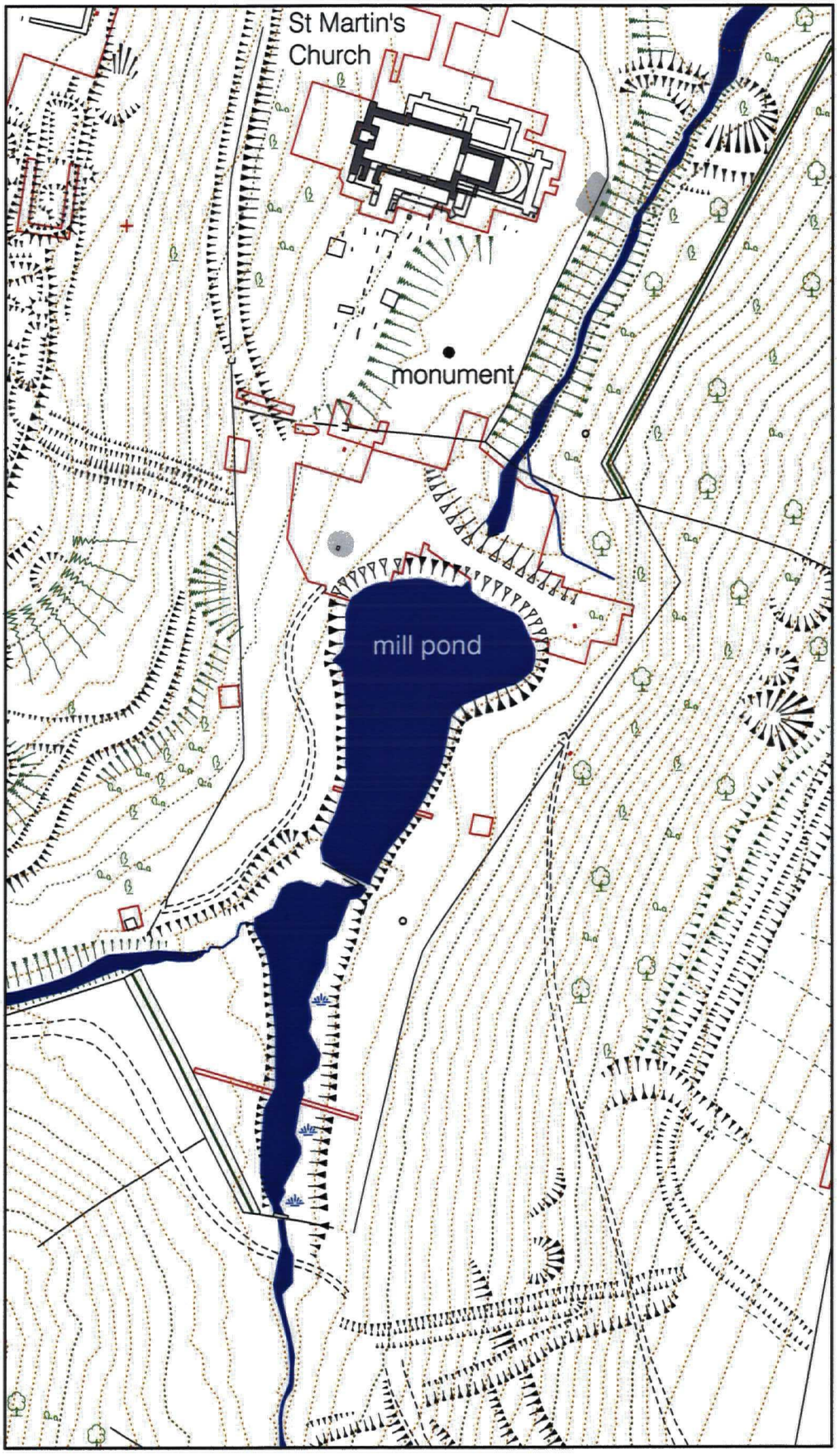

Figure 25
English Heritage plan of the millpond and probable mill dam (at 1:1 000 scale)

depth. All the historic maps also concur in showing that the overflow channel was sited, quite typically, at the end of the dam (in this case the east end), rather than at its centre where the modern concrete culvert is now sited. There is nothing to indicate that the 19th-century arrangement did not replicate the medieval. However, the excavations demonstrated that the dam was faced with sandstone blocks in the late 18th century and the survival of the pond throughout the post-medieval period suggests that it may have been subject to many similar episodes of minor repair and refurbishment.

In 1368, the northern pond, at that time apparently the site of the village's sole mill, was described as lying 'on the northern side of the town' (although 'township' could be an alternative translation of the Latin '*villa*'). The mill's apparent physical proximity to the North Manor seemed to sit happily with the early idea that it was one of the assets of that manor, a theory which Stuart Wrathmell now disputes. The documentary reference has been taken to imply that the mill may have been entirely destroyed by the construction of the railway cutting (Beresford and Hurst 1990, 67). This is a superficially attractive argument, but one that is difficult to prove either way; a few relevant observations arise from the English Heritage investigation, although these may ultimately prove inconclusive.

The identification of any possible earthwork evidence for a dam in this area is hampered not only by the railway cutting itself, which affects the natural course of the Wharram stream for *c* 300m, but also by associated earth-moving. North of the timber railway bridge, the original ground surface of the valley floor eastwards from the edge of the cutting has been concealed by the dumping of spoil, apparently from the Burdale Tunnel, in a series of long 'finger dumps' up to *c* 1.5m deep. To the west of the cutting, dense scrub obscures the valley side. However, large-scale surveys of the proposed route of the railway made in 1845 give no hint of the existence of any earthwork, though they record other minor details of potential importance to the construction of the railway (Bampton and Dykes 1845, plan 5; Birkinshaw and Dickens 1845).

Despite the effects of the railway, it is still possible to gain a fair impression of the earlier lie of the natural land-surface. The clay dams that retained the southern millpond were admittedly much smaller than the massive earthwork that was eventually built in the 1320s to form the fishpond. This, together with the fact that the Wharram stream provides a fairly constant flow of water, suggests that the regulation of the pressure onto the wheel would have been a more important consideration than the creation of a large pond to act as a reservoir for the summer months. All the same, the volume of the stream channel itself, as it approaches the railway cutting, is very small, for it is at most 5m wide and no more than 1m deep. If anything, it has only become more deeply incised since the medieval period. The contour model of the terrain in the vicinity of the intersection of the railway cutting and the stream demonstrates that the rest of the valley floor is relatively level and broad by comparison with the location of the southern dam. Therefore, the creation of a body of water of a suitable size in such a location would have required a relatively long earthwork, though perhaps one of no great height, which would have resulted in the flooding of a broad expanse of the valley floor. There is indeed some evidence to support the theory that a large area of the part of this

section of the valley floor was formerly more boggy than it is today. The eastern boundaries of the crofts of the East Row terminate on the line of a scarp which probably supported a hedge or fenceline, but which seems to have originated as the lowermost of a series of lynchets produced by earlier cultivation on this slope. This earthwork may also mark the western edge of a 'back lane' serving the East Row, although there is nothing conclusive in the form of the earthworks to indicate that this existed. Whether or not this is the case, the interval of up to 35m between the ends of the crofts and the Wharram stream, especially in the context of the evident lack of space to accommodate regular crofts, hints that the valley floor might have been deliberately avoided. Although the valley floor is now dry, support for the idea that the ground was once much wetter is also provided by the maps made in the 19th century (Dykes 1836; Bampton and Dykes 1845, plan 5; Birkinshaw and Dickens 1845; Ordnance Survey 1854; 1890). All these, surveyed before the construction of the extant concrete sheep dip *c* 1927, depict the ditch that follows the western boundary of Nut Wood as what appears to be a major drainage channel rather than just a field boundary. Although the broad, shallow channel was evidently recut and diverted when the sheepdip was constructed *c* 1927, it still retains a body of gently flowing water. Its straight, regular course suggests that it may have been constructed in the late 18th century, when Nut Wood and the adjacent field boundary were also perhaps created. Its existence may well reflect the fact that the valley floor was previously boggy and in need of 'improvement'. Nevertheless, this does not constitute strong evidence that the valley floor was actually flooded at any stage.

The maps made prior to the construction of the railway cutting indicate that until that time, Road 2A crossed the stream immediately north of the timber railway bridge, on the line of the present footpath. The identification of Road 1D adds weight to the theory that there was a route that directly crossed the valley at this point long before, perhaps as early as the late Iron Age. If the putative millpond was indeed a very small body of water entirely confined within the narrow channel of the stream, which seems unlikely, it could easily have been crossed via a bridge. If, however, a larger earthwork were necessary, as proposed above, the area occupied by the pond may well have been large enough to influence the course of the route, as was evidently the case with the southern pond, but there is no sign that this was the case. The contrary argument, that a dam was sited on the line of a pre-existing route in order to allow its continued use, cannot be dismissed out of hand, but runs contrary to what slight hints are offered by the surviving earthworks of the road.

Furthermore, the English Heritage investigation has identified what appears to be a fairly well-preserved remnant of a small earthen dam 240m downstream of the railway bridge, beyond both the area affected by the railway cutting and the limits of the area surveyed in detail, at SE 8616 6477. This could plausibly be equated with the northern dam recorded in 1368 as lying on the northern side of the village. The probable dam comprises a bank *c* 1m high projecting from the western side of the stream channel, with possible traces of an overflow channel at its western end. Most importantly, the probable dam is sited at a natural 'pinch-point' in the topography of the valley sides, so that with a length of no more than *c* 8m, it could have retained a significant body of water, of similar proportions to that created

by the early phases of the southern dam. This would suggest that the topography was, perhaps predictably, an important influence on the choice of location for dams. Even taking into account the effects of the railway cutting and associated spoil dumping, there is no evidence that there were ever any similar pinch-points in the stretch of the valley immediately to the north. In short, most of what circumstantial evidence can be gleaned argues against the theory that the railway was responsible for the destruction of the site of the northern mill.

The English Heritage investigation has identified another possible dam, which would also have been well placed in relation to the natural topography, but for which there is no supporting documentary evidence, and which must also be regarded as less convincing on the field evidence. At the northern end of the deep, steep-sided section of the stream channel immediately to the east of the churchyard, only 80m north of the reconstructed fishpond dam, is an earthwork which might be interpreted as the eroded stump of an earthen dam. A bank, some 8m long, 3m wide and up to 1.5m above the present height of the stream at its highest point, projects from the eastern side of the valley at right angles to the stream. The height of the earthwork diminishes sharply as it approaches the stream and there is only the slightest possible trace of a corresponding stump on the opposite bank, but none of this is inconsistent with the effects of water erosion. The contour model of the terrain indicates that a dam sited at this point could have retained a pond extending almost to the foot of the dam of the fishpond, representing a considerable volume of water, despite the relatively small size of the earthwork. However, the western bank of the stream upstream from the possible dam appears to be overlain by a series of small-scale tips, of unknown depth, but of relatively modern date to judge from the condition of the earthworks. This material, whose source is unknown, masks the rear of the bank and makes it difficult to judge whether the earthwork is genuinely a dam and, if so, precisely how much water it could have retained. On the eastern side of the stream, immediately downstream of the bank, an irregular platform roughly 4m square is cut into the slope to a maximum depth of 0.6m. This probably represents small-scale quarrying to provide material for the construction of the bank, but it is not inconceivable that it subsequently served as the site of a mill building.

The pinch-point in the valley sides adjacent to the pumping station built in 1935 is an equally suitable location for a dam from a topographic point of view. At this point, the northern end of the scallop eroded deep into the western valley side by the spring below Wharram Percy Cottages coincides with the tip of a low spur formed by natural slumping on the eastern side of the valley. The contour model of the terrain indicates that the construction of a barrier only a few metres long could have created a sizeable pond in the level area scoured out by the spring. Although there is no visible trace of any actual earthwork, the effects of water erosion on dams are often severe and the absence of evidence cannot be taken as conclusive evidence of absence.

5.10 Miscellaneous features

Possible woodland boundary

Previous surveys have recorded a boundary earthwork that closely follows the crest of the eastern side of Deep Dale (see Figure 24). The boundary comprises a broad ditch with a

bank running along its western edge, that is, along the very lip of the steep valley side. The earthwork was examined through the excavation of a trial trench (referred to in the Wharram Research Project archives as 'Site 42'), which recovered two small abraded fragments of pottery, one of Romano-British date and the other possibly Iron Age or Romano-British. However, given their condition these may well have been deposited in the ditch through the action of ploughing in the neighbouring field, so cannot be taken as useful dating evidence for the origin of the boundary. Indeed, the southern end of this stretch of the ditch appears to cut into the headland of Field 6, indicating that it was dug when the field pattern was long-established, that is, relatively late in the medieval period or later still. For much of its length, the depth of the ditch has been reduced by silting to no more than 0.2m deep and in places it is little more than a level terrace, apparently having been used at some point as a trackway, most obviously towards its southern end. Its eastern side is accentuated by what appears to be a substantial positive lynchet *c* 0.5m high, apparently resulting from continued ploughing on the level ground to the east, in Field 6. This would seem to indicate that the ditch was dug or recut within the period that the ridge and furrow fields were being cultivated, that is, within the medieval period. The bank is quite pronounced where the boundary diverges slightly from the crest, standing up to 0.4m high, but is virtually indistinguishable from the natural lip where it lies right on the very edge. At its southern end, the boundary turns through a right angle and descends the steep slope of the valley side. Previous survey work has not traced the earthwork further than the foot of the slope. It is certainly much diminished beyond this point and the ditch cannot be traced at all, presumably due to the effects of soil creep, which are likely to be severe at the foot of such a steep slope, especially given the geological conditions. However, a slight remnant of the bank can be traced onwards to the eastern edge of the Wharram stream, where it appears to bend very slightly northwards before fading away altogether. In plan, the scarp that marks the lower limit of the crofts of East Row seems to represent a reasonable continuation of the boundary, but it is equally possible that the Wharram stream continued its course beyond this point.

At the northern end of the boundary earthwork, the previous survey has suggested that the ditch merges with the line of one of the drainage channels cut in the 19th century. The drainage channel certainly follows and recuts part of the ditch, but the boundary does not continue on the same line all the way to the foot of the slope. To the east of the 19th-century track that passes above the entrance to the Burdale Tunnel (that is, beyond the area surveyed in detail by English Heritage and perhaps beyond the area perambulated in the course of the earlier survey), the earthwork resumes. Having apparently turned through an acute angle near the point at which the stretch recorded previously becomes indistinct, it runs south-eastwards, here lying a few metres below the crest of the south-western side of the tributary valley covered by Tunnel Plantation. The first section of the ditch has again been recut as a drainage channel and has also been overlain by upcast from a small quarry hollow which appears to have provided the material for building up the embankment of the 19th-century track. Beyond this, both bank and ditch are relatively well preserved. Where the natural slope is too gentle to greatly accentuate the downslope face of the bank, the earthwork is more massive, the bank standing to a maximum height of 1.2m on its downslope side. Its course is fairly straight, leading gently downslope at an oblique angle, although at

one point it seems to follow a dog-leg for no apparent reason. Some 150m from the track, at SE 8619 6425, it turns a right angle down slope and cannot be traced beyond the valley floor. The north-eastern crest of the valley, which the edge of Tunnel Plantation follows, is marked by a succession of positive lynchets. One of these might equate to the boundary earthwork, or the later build-up of material might have totally obscured it, but there is no firm evidence that allows its course to be traced further.

The angular course of the boundary defines an area of at least approximately 4ha (10 acres) of difficult terrain, which would have been unsuitable for either arable agriculture or settlement, due to the steep slopes and the boggy and unstable condition of the ground. The nature of the enclosed ground, together with the form of the boundary, is suggestive of an enclosure of managed woodland. It is suggested in section 5.11 that the current boundaries of Nut Wood may be of 18th-century origin, but it is conceivable that a similar area might have been used for woodland in the medieval period, presumably for similar reasons. If this extended to the west of the Wharram stream as far as the eastern limit of the crofts of East Row, this might offer an explanation for the curious avoidance of the valley floor by the croft tails.

Mound

On the crest of the western escarpment, next to the intersection of Track 19 with Track 4 (see Figure 24), is a mound, some 8m wide by 10m long and a maximum of 0.6m high on the downslope side. The northern side of Track 19 seems to have slightly truncated the north-west corner of the mound, so that it may originally have been a more regular rectangle in plan than it first appears. The fact that the mound pre-dates Track 19 is unhelpful in dating it, given that this track may have continued in use into, or more probably originated in, the post-medieval period.

The interpretation of the earthwork is left open, but its form is unique in the context of Wharram Percy and as such it is worth drawing attention to it. Given the size and shape of the mound, it is tempting to draw a comparison with Iron Age square barrows, which are a common feature of the region, although relatively few survive as earthworks (Stead 1991; Stoertz 1997, fig 15). In Field 2 to the north, centred around SE 8595 6467, the cropmarks of three small, square ditched enclosures in similar positions close to the edge of the western plateau probably represent a cluster of ploughed-out barrows of similar date. It has also been suggested that the Iron Age burial revealed by excavation north of the church may originally have been marked by a barrow. In the context of the 'public space' of the village green and the land around the church, the survival of early monuments is not out of the question; Bronze Age barrows apparently survived as earthworks throughout the occupation of Normanby le Wold, in Lincolnshire (Everson *et al* 1991, 135). However, the mound seems to lie just within the area affected by the early broad-ridged cultivation described in sections 5.6 and 5.8, if indeed the identification of a series of ridge terminals along this slope is correct. Beresford and Hurst (1990, 44) have suggested the existence of large communal middens somewhere around the village, but the regularity of the mound, together with its very prominent position and distance from the cultivated land where most midden material would have been spread, make that interpretation improbable.

Quarrying

Several small quarries are visible as earthworks on both sides of Deep Dale, mostly biting into the crest of the escarpments. That to the east of Toft 4 seems to predate the establishment of the frontage of West Row (south) and, as mentioned in Section 5.6, the hollow within which the late farmyard in Toft 2 was constructed may also have originated as a quarry hollow. As described in Section 5.4, the oval pit towards the centre of the *curia* of the South Manor may predate the ridged cultivation in that area, which in turn predates the establishment of the manorial complex. Excavation of the quarry south of Building 4, at the southernmost end of West Row (south), yielded evidence which was taken to indicate that the quarry might have Roman origins. The upper part of the quarry, however, appears to be post-medieval, for it cuts into the line of the enclosure surrounding Building 4, which can be associated with the late farm complex centred in Tofts 2/3. Other small quarries were encountered during the excavations and it seems likely that most were dug in the medieval period to provide building material.

Two much larger quarries lie on the northern side of Drue Dale and are more likely to be of post-medieval date. Both are shown on the First Edition map surveyed in 1850-1, one annotated as a 'Chalk Pit' which implies that it was in active use at that date (Ordnance Survey 1854).

5.11 The Improvement farm and its landscape

The history of Wharram Farm, built in the period between 1775 and 1779 and demolished, apart from the south range, in stages between 1836 and 1851, has been summarised in Section 4. The courtyard farm is depicted in its entirety on William Dykes' estate map of 1836, but the large-scale plan made in 1845 in advance of the construction of the railway shows that the west range of the courtyard had been demolished by that date (Dykes 1836; Birkinshaw and Dickens 1845). By 1851, all that remained was the south range, which had been incorporated into Wharram Percy Cottages (Ordnance Survey 1854). The fact that the 18th-century farmhouse, demolished less than six years earlier, was recorded as an earthwork by the Ordnance Survey, reflects the parameters of Captain Bayly's orders and the strictness with which he followed them, as discussed in Section 3. Immediately to the north-west of the farmyard, a building shown on the 1836 map was also recorded as an earthwork by the Ordnance Survey; this lies beyond the excavated area and consequently still survives as a well-defined earthwork. By 1888, this building alone was depicted as an earthwork, implying that the wall-lines of the farmhouse had been deliberately cleared in the interim (Ordnance Survey 1890). There is no need in this report for detailed description of the other buildings, which have been fully excavated and analysed.

The remnant of the range incorporated into Wharram Percy Cottages was examined briefly in the course of the English Heritage investigation. It is worth observing at the outset that the rhomboid plan of the 18th-century range incorporated into the Cottages makes a striking contrast with the typical symmetrical and rectangular plan of the other ranges around the courtyard. It could be inferred from this awkwardness that the south range may have occupied the footprint of an earlier building; indeed, this possibility was the starting point for the re-

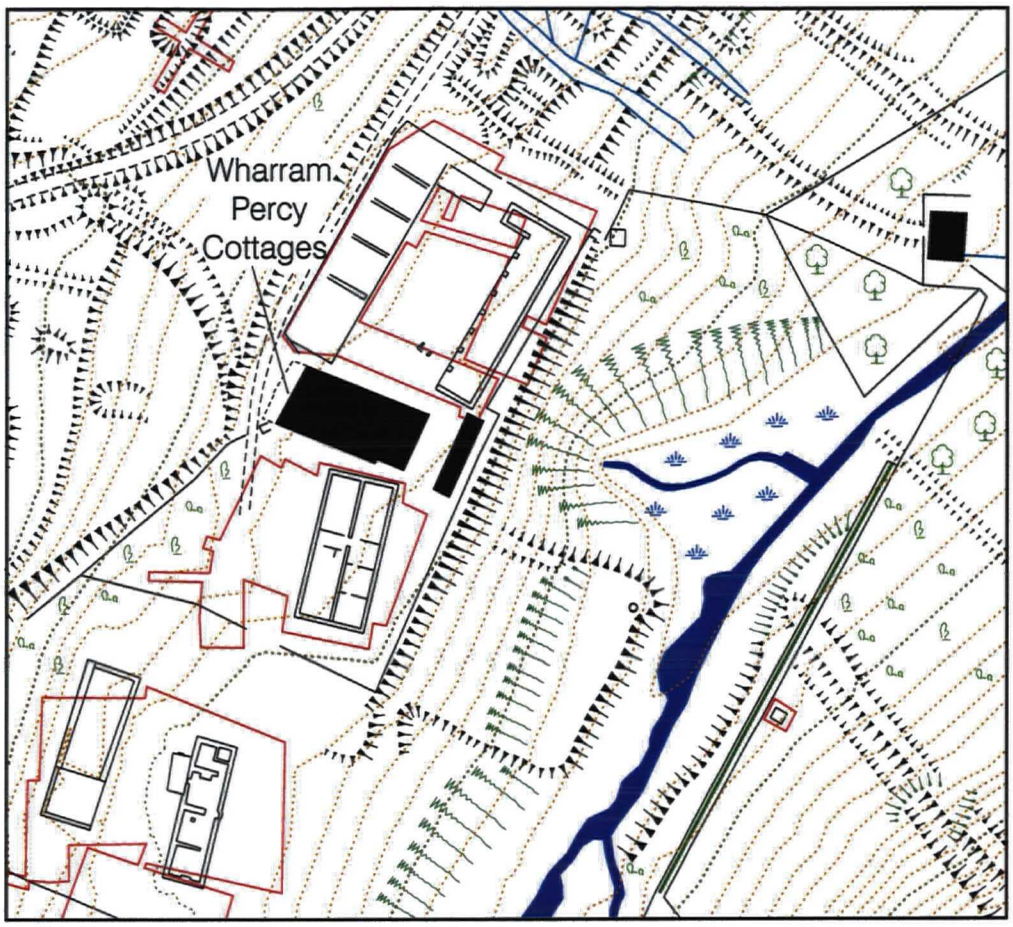

Figure 26
English Heritage plan of Wharram Percy cottages and environs (at 1:1 000 scale)

examination of the extant remains in 2002. However, this argument is severely weakened by the fact that it is not possible to point to any example of any earlier building at Wharram Percy whose plan is not rectangular. It must therefore be concluded that the rhomboid plan of the south range reflects the offset in the south ends of the ranges flanking the courtyard and masks the different alignment of the free-standing farmhouse to the south, though this still falls some way short of a full explanation.

The 18th-century building was a single-storeyed gabled range, comprising two compartments which were both linked to the farming of livestock. The west and south walls, those seen by anyone visiting the farmhouse or attending St Martin's Church, were faced with brick, considered a more ornamental material at that period, laid in English garden wall bond, whereas the north and east walls were of chalk on both faces, the north wall set on flush brick footings. This approach is identical to that of the free-standing farmhouse to the south, suggesting that the two buildings were closely contemporary in origin. An internal cross wall, which divided the interior into a larger west and smaller east compartment, was also of chalk. The gabled west wall survives virtually untouched, its rounded brick corners a characteristic feature of agricultural buildings of the period. The north and south walls have original opposed doorways into the larger west compartment; that on the north wall was blocked in the 19th century, in part with re-used 18th-century material, while that on the south remains in use. There is also an original doorway, now blocked, at the south-east corner of the east compartment. No original window openings were identified, but both walls were cut into when windows were inserted during the conversion of the building into cottages.

This conversion led to the loss of more of the upper courses of chalk blocks which faced the north wall, than of the courses of brick in the south wall. The extent of the survival of the original east wall is unknown, since it was subsequently built against and plastered. The larger west compartment of the building, with its opposed doorways, was probably a byre. The smaller east compartment seems to have been a room in which food was prepared for farm animals on the evidence of a wide, low opening in the centre of the east wall. This is spanned by a pair of timber beams, at least one of which retains some of its bark, and must be a fireplace opening which has lost the walls of its external stack. The two compartments of the building were not originally linked internally, although at some time before the building was converted into cottages a doorway was inserted into the cross wall; it was blocked at the time of conversion.

The north wall of the range extends eastwards beyond the line of the main east gable wall, apparently terminating in line with the west frontage of the range on the east side of the courtyard. This extra length is best interpreted as a boundary wall, which, with a gate spanning the gap between it and the east range, would have closed the south-east corner of the farmyard. This short length of wall appears at a later date to have become part of what may have been either a yard or a covered extension built against the east end of the south range. This addition, not as deep as the main block of the south range, was trapezoidal in shape, and the difference in date is suggested by the fact that the bond of the bricks in its east and south walls differs from that of the main part of the building.

The surviving mature ash trees dotted in and around the village have been said to date to the early 19th century (Beresford and Hurst 1990, 127-8). However, there are documentary references to the planting of 500 ash seedlings along the fenceliness in 1775-6, amongst which are presumably those mentioned in a Terrier of 1825 as standing around the perimeter of the churchyard (Beresford and Hurst 1990, 115; Borthwick Institute PR WP 9/1a). One of the trees, which stands on the southern boundary of the former garden associated with the Improvement period farmhouse, shows evidence of having been pollarded. While the siting of this tree would, at face value, seem to suggest that it may have been planted in the late 18th century, historic maps indicate that the garden outlived the destruction of the farmhouse and came to be used by the Cottages (Dykes 1836; Ordnance Survey 1854).

The estate map of 1836 suggests that part of the glebe land enclosed the garden and a stretch of the Wharram stream (Dykes 1836). The southern boundary of this parcel survives as a slight bank continuing the line of the present fenceline on the north side of the churchyard. The eastern boundary is suggested by a slight sharpening on the eastern side of the natural channel eroded by the stream.

Nut Wood has existed since at least 1836, at which date it was shown (possibly incorrectly) as an informal mixture of deciduous and coniferous trees (Dykes 1836). The First Edition 6-inch scale map surveyed in 1850-1 indicates that by that date, its layout had been formalised into two equal compartments of deciduous and coniferous trees (Ordnance Survey 1854). Its origins may well lie in the late 18th century, when formal hazel plantations were commonly

planted as a source of food and craft materials. The proximity of the garden of the farmhouse on the adjoining slope may support this theory.

The field boundaries associated with the Improvement farm (see Figure 24) can be identified with some confidence from the 1836 estate map and the First Edition 6-inch scale map, which depicts relict hedgelines as discontinuous lines of trees (Dykes 1836; Ordnance Survey 1854). In places, for example in the fields called High Worthy, whose extent more or less corresponds to Field 6, comparison of ridge and furrow visible on aerial photographs with the boundaries shown on historic maps clearly show that the Improvement boundaries followed medieval antecedents. Elsewhere, where stratigraphic relationships are still detectable on the ground, the Improvement boundaries can also be distinguished as being of relatively late origin. Notable examples are Boundary 12, comprising the ditch that cuts through Building 19 and the bank overlying the eastern boundary of the *curia* of the North Manor. The bank is accompanied by an ancient and solitary hawthorn, which is presumably the last remnant of the earlier hedge shown in relict condition on 19th-century maps (Ordnance Survey 1854; 1890). Boundary 13 is not detectable for its whole length as a separate earthwork, but its eastern end can clearly be distinguished as a late superimposition and, again, the whole length is depicted in relict condition on 19th-century Ordnance Survey maps. Together, these boundaries defined the southern edge of the field called Ings Meadow. Boundary 6 divided Great Hog Walk on the north from Low Drewdale on the south. Boundary 14, marking the eastern side of Great Hog Walk, can be traced southwards from its junction with Boundary 12, following the eastern edge of Road 1B as far as the western side of Road 2B, which suggests that Road 1B remained in use well into the post-medieval period. The field boundary was shown as an earthwork on the First Edition 6-inch scale map surveyed in 1850-1 and as a relict hedgeline on First Edition 25-inch map surveyed in 1888 (Ordnance Survey 1854; 1890). However, its continuation as far as the eastern end of Boundary 6 is not at all clearly defined as an earthwork, nor is it depicted on any map other than the 1836 estate map (Dykes 1836).

Boundary 8 is unusual in that it seems to have been laid out without any regard for medieval antecedents, as were the boundaries descending the slope from it (not numbered). Boundary 8 was laid out on a new line a few metres east of the medieval headland of Field 6, which follows the crest of the eastern side of Deep Dale. Boundary 10, which may be interpreted as the northern boundary of West Seeds as shown on the 1836 map, appears to have replicated Boundary 9, whose date is uncertain, but on a slightly different alignment.

Three enclosures, two of which lie beyond the limits of the area surveyed on the ground, are interpreted as possible sheep pens, but it is uncertain whether they were associated with the 18th-century farm or with one of the earlier post-medieval farms. At SE 8557 6439, an enclosure survived as an earthwork in the centre of Great Hog Walk until the onset of modern ploughing in the 1960s. It is depicted on historic Ordnance Survey maps and is clearly visible on earlier aerial photographs, where it can be seen to overlie the ridge and furrow of Field 3 (see, for example, St Joseph 1970). It can still be clearly seen as a soilmark and cropmark on most relevant aerial photographs. The earthwork comprises a