

6. Characterisation of the Aerial Photograph Evidence

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Introduction

By taking a broad overview of the data, enabled by detailed mapping conducted over a wide area, it has been possible to assess distributions, patterns and trends in the various forms of cropmarks that more parochial studies have not had the scope for. The benefit of such a global picture has prompted a reassessment of certain cropmark types and a degree of rationalisation and modification of interpretation, both in terms of their frequency and their determining factors, issues which shall be addressed further in the discussion.

The cropmarks have been categorised broadly in terms of their perceived or known chronology, but principally by their form. The early prehistoric cropmarks primarily relate to ritual monuments, whilst those of the Iron Age and Roman period are associated, almost entirely, with various forms of land division. These have been broadly divided into three categories: field systems, trackways and enclosures; although the latter has been further divided into a series of sub-classifications, one of which is defended sites, including Roman forts and fortlets.

Neolithic and Bronze Age (Figs 6.0-6.3)

Apart from the known Neolithic and Bronze Age ritual foci around the two Neolithic henges near the River Aire at Ferrybridge and the River Wharfe at Newton Kyme, the analysis of the cropmarks has revealed a wider spread of potential ritual monuments across the study area (see Fig. 6.1).

The landscape around Ferrybridge Henge has been the subject of extensive geophysical survey and open area excavations which revealed 22 potential ritual monuments encircling the near-levelled henge, including round barrows, hengiform enclosures, timber circles and possible long barrows, not all of which were visible on aerial photographs, some having been masked by a colluvial deposit that ran across the site (Fig. 6.2) (Roberts 2005b).

Five hundred metres to the south-west of the henge, and virtually on the same axis as its two opposed entrances, lie the remains of a large curvilinear enclosure covering an area of 1.4ha (see Figs 6.2 and 6.3). It seems that this enclosure was embedded within a later system of fields and enclosures and may be of Neolithic or Bronze Age date. A similar, though rather larger, 3.7ha enclosure is recorded south-west of Brodsworth and it too appears to be respected by Iron Age or Roman field boundaries. Others have been recorded at Glasshoughton (inner circuit 0.75ha), Fryston Park (incomplete) and Scawthorpe (0.85 ha). These are similar in plan and scale to the Neolithic enclosure discovered at Longstones Field at Beckhampton, Avebury, Wiltshire and two undated enclosures on the Yorkshire Wolds at Driffeld Wold, Nafferton and Greenlands, Rudston (Gillings *et al.* 1999, Stoertz 1997, fig. 24). The circuit of the Longstones Field example was actually semi-segmented with the causeways between cut segments having been subsequently removed (Gillings *et al.* 1999). A similar process at Ferrybridge and Brodsworth may explain the rather irregular appearance of these cropmarks. The Longstone Field enclosure has been radiocarbon dated to the mid-3rd millennium BC but its excavators suggest it is more akin to the earlier causewayed enclosures (Gillings *et al.* 2000).

Very few of the possible Neolithic or Bronze Age monuments that are visible from the air have been verified by excavation. There are, however, three quite different monuments that may have Neolithic origins: an intriguing if barely plausible short *cursus* near Whitwood, a possible long barrow on Bramham Moor and an oval enclosure at Ledston (Fig. 6.2). The Whitwood short *cursus* or long enclosure is of comparable shape and size to the Barnack short *cursus* (Harding with Lee 1987, fig. on p. 76). It is rather more similar to a more local example that was partially excavated on Swillington Common and which is thought to be post-Roman to 10th-century in date (Johnson 2003). The possible long barrow on Bramham Moor is of a form that is widely recognised as the cropmark expression of levelled elongated burial monuments of this period and similar to other examples on the Yorkshire Wolds and in North Lincolnshire (Stoertz 1997, fig. 8.6, Jones 1998, fig. 2.50). A further four long barrows are recorded by the SMR in the South Yorkshire parishes of High Melton, Sprotborough and Cadeby, including the King Hengist Rein Long Cairn, a scheduled ancient monument, but

none of these was recognised from the air. Some writers have identified certain small oval or oblong enclosures as possible Neolithic monuments (Loveday and Petchey 1982; Jones 1998; Stoertz 1997, 24). The short oblong or oval-shaped enclosure at Ledston is unusual amongst the predominantly rectilinear landscape of the Iron Age and Roman period. Furthermore, its long axis, and its three internal pits were aligned with a possible round barrow that lay 150m to the south-west (Fig. 6.3).

The excavations at Ferrybridge have clearly demonstrated that ritual monuments in these periods are diverse and complex so undoubtedly many forms remain undiscovered or have been misidentified.

There are, of course, well documented problems associated with the identification of simple cropmarked ring ditches (e.g. Deegan forthcoming). The greatest concern is that the remains of burial monuments may be mistaken for hut circles and *vice versa*. Even given the likelihood of some misidentification the count of 80 possible ring ditches is unexpectedly high because the excavation record suggests that they are rarely encountered in the field (see Chapter 8). Beyond the clusters at Ferrybridge and Newton Kyme there are seemingly looser groups amongst the Iron Age or Roman fields at Methley, between the Aire-Calder confluence and between Ledsham and Ledston (Fig. 6.1). The alignment of three ring ditches that were excavated on Swillington Common also fit this pattern (Fig. 2.8). Otherwise they are distributed singly and widely, though inevitably with a bias towards the higher, better drained ground. The presence of Late Neolithic and Late Bronze Age trackways on Hatfield and Thorne Moors does show that the lowlands were also exploited at this time (Chapman and Gearey 2006; Brewster 1973, 75; Moorhouse 1973, 2000).

Most ring ditches are of a simple circular form with one continuous ditch but there are some interesting variations. Three examples have internal diameters of between 35m and 50m and may be considered 'outsize'. Two of these are hengiform enclosures, which were located immediately to the east of Ferrybridge Henge, the third being near Firbeck. The latter encircled a pit some 30m in diameter although it is by no means certain that this was a prehistoric feature.

There is considerable morphological overlap with circular settlement enclosures of possible Iron Age date (see below).

There are two unusual ring ditch forms, one at Methley, the other to the east of Pontefract (Fig. 6.3). The Methley example was probably a hengiform enclosure with a wide south-facing entrance that is confirmed by geophysical survey. Forming a partial circuit around the southern edge of this enclosure, and partially overlapping the entrance, there is a series of at least five pits, which correspond with a concentric outer gully to the north. The geophysical survey also suggests a large anomaly at the centre of this enclosure and both Neolithic and Bronze Age flints have been recovered from this area (Marriott and Yarwood 1992). The Pontefract example has no visible entrance but comprised two inner circuits and an outer circuit of pits and gully. Interestingly, this monument appears to have been deliberately avoided by the neighbouring field boundary, of probable Iron Age or Roman date, whilst conversely a presumed later field boundary runs straight through the centre of the Methley example.

Iron Age and Roman Period (Figs 6.4-6.20)

The extensive and often cohesive remains of probable Iron Age and Roman landscapes are visible as cropmarks on aerial photographs in many parts of the survey area. These remnants can be broadly categorised as fields, trackways and enclosures. Some sites fall outside these categories and these shall be discussed individually below.

Field Systems

Ancient systems of land division are visible over nearly 5% of the entire survey area (Fig. 6.4). As with most of the cropmarks, these are concentrated on the areas of freer-draining soils and geologies, and in those areas they are in evidence over almost 15% of the land surface. On the freer-draining soils, gaps between blocks of cropmark fields can often be explained by the presence of development, unsuitable vegetation including woodland, or long-standing extraction sites and of course an absence of aerial photography at an appropriate time. Where cropmarks are absent on favourable ground, geophysical survey, when applied, has demonstrated that these field systems do indeed survive (see Chapter 2). The

likelihood is that most areas with well-drained soils were exploited in this manner at some point during the Iron Age and Roman period and this of course has implications for archaeological mitigation.

In his assessment of the crop-marked field systems south and east of Doncaster and into North Nottinghamshire, Derrick Riley characterised them as being of 'brickwork', 'nuclear', 'irregular' or 'uncertain' plan (Riley 1980, chapter III). He used the fields at Edenthorpe near Doncaster as an exemplar of the 'brickwork' plan (Riley 1980, fig. 3), a status that has not been diminished by subsequent photography or the NMP mapping. Riley defined the 'brickwork' fields as comprising 'long ditches, ...often following gently curving lines, ...generally between fifty and one hundred metres in width. Short "cross boundaries" may divide the strips into fields which are up to three hectares in size...' (1980, 12-15).

In overview, however, Riley's term 'brickwork' is slightly misleading. The long strip fields are more often a series of distinct shorter strips aligned end on and the cross boundaries are rarely neatly staggered in true brickwork fashion and indeed are often aligned across several strips. Nonetheless, this description does hold some weight and the term is employed legitimately in the literature of landscape archaeology for this area (e.g. Chadwick 1999), although it has more often been used inappropriately out of convenience in relation to any rectilinear field pattern. Less convincing though are the categories of 'nuclear' and 'irregular' field systems. Riley illustrates his 'nuclear' type with the Hesley Hall cropmarks but this, without the enclosure as the focus, which may equally be later than the fields, actually appears to be the interface between two blocks of strip field of different orientations (1980, fig. 3).

Adopting a fairly strict classification criteria of four or more strip fields, no wider than 100m, divided by long boundaries of at least 400m length, and the presence of at least one short cross boundary, then several of the field systems may be considered to be similar to Riley's brickwork plan fields. Most of the strip field 'bundles' lie south of the River Don, on the Sherwood/Nottingham Castle Sandstone formations. Strip fields are also in evidence between Adwick le Street

and Bentley, north of Adwick le Street near Barnburgh, on Went Hill, west of Aberford and as far north as the River Wharfe (Fig. 6.4).

Far more common are arrangements of fields that are broader and shorter than the strips but are also more variable in overall size and particular width, these are referred to here as mixed field systems (Fig. 6.5). Although there is often a considerable range of field size within the mixed field systems similar-sized fields are often grouped together. This together with the often axial position of a trackway gives an overall impression of order. Sometimes these arrangements contain irregular or polygonal fields which may distract from this but the apparent randomness of some fields is often exaggerated by fragmentary cropmarks. Even on the sandstones and including Riley's exemplar at Edenthorpe, strip fields are often intermingled and contiguous with the mixed field systems. Riley's 'nuclear', 'irregular' and uncertain classifications can all be accommodated with the 'mixed field system' description.

Topography and geology appear to have a significant bearing on the form of fields with strip fields being largely restricted to the flatter, low-lying ground found on the sandstones, the gentler plateau of the limestone and the broad shallow valley at the confluence of Hampole Dike and the River Don (see Views 6V.1-6V.2 and 6V.4-6V.6). The evidence from aerial photographs alone cannot reveal the functional and cultural influences that may also have produced these differences.

One distinctive characteristic of some of the field systems is linear features that are formed by short irregular segments rather than continuous ditches. These are quite distinct from the pit alignments that are so common further south in the Trent Valley and north on the Yorkshire Wolds but are quite infrequent in these parts. Aside from the alignment excavated at Ferrybridge (Richardson 2005a, 53-71) only a handful of other pit alignments are known (see Fig. 6.4). Whilst the Ferrybridge examples were rectangular and oblong the others appear from the cropmark evidence to be round to oval in plan. The segmented boundary type appears as either short closely set cropmarks, often quite curved in plan, or as continuous cropmarks with a distinctly ragged and wiggly appearance. The latter may arise either because the gap between segments is so small, or as result of recutting. A small but informative number of segmented ditches have now been

excavated (see Table 6.1). It has been suggested that some of these segmented features are simply the slightly deeper remnants of heavily truncated continuous ditches. The interruptions along the possible palisade trench that ran along the southern boundary of the Iron Age enclosures at Dalton Parlours were similarly explained (Sumpter 1990, 12). It is difficult to argue this case without the evidence of longitudinal sections. The plans of Ferrybridge (Richardson 2005d, fig. 69) and Roman Ridge West (O'Neill 2001b, fig. 81) suggest that the segments were butt-ended and did not simply peter out, which might be expected if they were the consequence of truncation.

Table 6.1. Notes on excavated segmented ditches

Site name	Comment	Reference
Site 1 Crispin Quarry, Ledston	The segmented ditch was cut by a broad east-west aligned ditch.	Holbrey and Roberts 2005, 15, fig. 8
Features 3163, 3159 and 3140, Ferrybridge	Partially recut by probable Iron Age Ditch 102	Richardson 2005d, 72 and fig. 69
Ditches 7159 and 7160, Roman Ridge West	Phased to Late Iron Age - Early Roman period	O'Neill 2001b, fig. 81
South Elmsall	Segmented ditch running through an unenclosed settlement	McNaught forthcoming
Barnsdale Bar	Segmented ditch possibly formed due to truncation	Brown and Morris 1997
Dalton Parlours	Interrupted boundary preceding Iron Age Enclosure I, II and III but probably a once continuous but now heavily eroded palisade trench	Sumpter 1990, 6-18
Went Edge Quarry, Kirk Smeaton, North Yorkshire	A north-south segmented linear ditch was excavated to the south of two ditched enclosures	Gidman and Whittaker 2004
Red House, Adwick le Street	A north-south segmented ditch runs through a rectangular enclosure and appears to predate it	Northamptonshire Archaeology 2001

Field systems incorporating segmented ditches are largely confined to the limestone which may in part explain why there are very few associations with the strip field form. The rationale for the segmented ditches is unknown. They may simply take the path of least resistance through the fractured limestone or, like the pit alignments, they may have had symbolic meaning which has been lost (for discussion see Thomas 2003).

Trackways

At least 300 cropmarked trackways, droveways or lanes of likely Iron Age and/or Roman date have been recorded, primarily in the form of double-ditched linear features. This quantification rests on the assumption that most double-ditched linear features, either deliberately or consequentially, marked out routes for people, animals or wheeled traffic. It has regularly been suggested that some double-ditched linear features were simply adjacent field boundaries and that they may have had a central bank or hedgerow; however, nearly a fifth of the examples observed here contain a central depression, ranging in scale from a narrow groove to a wide hollow, which may indicate the wear caused by traffic.

As is to be expected, almost all the trackways are visible on the permeable ground or its margins though this is not to say that trackways were altogether absent from the impermeable soils and geologies.

There are several different aspects to the form of the trackways and their relationship to the field systems and to the local topography. The narrowest double-ditched linear features are no more than 4-5m wide, excluding the outer ditches. These were generally fairly straight and ran between fields as seen at Went Hill on the limestone and more commonly between the 'brickwork' type fields at Tickhill and beyond this survey area into north Nottinghamshire at Torworth and Barnby Moor (see Fig. 6.18; Riley 1980, map 23).

The vast majority of the trackways or lanes recorded had a 5-15m interval between the ditches; however the broadest example was up to 35m wide in parts. This ran for at least 3.5km along the western edge of extensive field systems on the east side of modern Doncaster (see View 6V.5). This feature was perhaps a droveway associated with the movement of large numbers of stock animals.

At least one third of the trackways are formed part by segmented ditches (discussed above), either in the form of distinct interruptions or with the signature ragged cropmarks. Segmented ditches are more commonly observed along the trackways than in the field boundaries, and are restricted to the limestone north of the River Don (Fig. 6.6.a).

Few of the trackways that are visible over more than a couple of hundred metres can be described as truly straight. Some have straight sections and gentle changes in direction, some zig-zag via smooth right-angled bends, others are gently meandering but a considerable proportion might be described as highly sinuous. Those to be noted for their particular sinuosity are at Dalton Parlours, running from the eastern edge of the Iron Age settlement, Hartly Wood near Micklefield and Hampole Wood. The more meandering or sinuous trackways are often shown by the interrupted or ragged cropmarks that may indicate segmented ditches. Several field boundaries take the same sinuous form and this probably influenced the layout of settlements like those at Wattle Syke and Leyfield House, Aberford (see Figure 6.12). The routes taken by these trackways do not appear to have been determined by any surviving topographic features so it may be assumed that they observed now long-removed obstacles. It has been suggested that their origins lie in asserting boundaries marking the uneven interface between cleared ground and woodland (Chapter 8; Roberts forthcoming; Wrathmell pers. comm.).

The relationship of the trackways and any neighbouring fields can be characterised as axial, parallel or intersecting. Axial trackways are identified here as those that were flanked on either or both sides by the short edge of rectilinear fields as at Warren Hill, between Pickburn and Marr and at Stapleton Park (Fig. 6.6.b). This arrangement offered access to the maximum number of field units. The parallel trackways ran between fields in the alignment of a field's long axis as seen at Ledston, Went Hill and Hesley Hall Wood. Sometimes the distinction between these forms is unclear especially where the field system evidence is fragmentary. In some cases, like at Parlington Hollins, trackways meandered through the field systems alternating between axial and parallel.

The cropmarks of some trackways present altogether more complex relationships with the field systems. These appear to have cut across the general trend of the fields but at the same time appear to be embedded within the field system. The starkest example of this arrangement is the trackway and field system at New Rossington (see Fig. 6.6.b). The northern section of the trackway ran through the strip fields in a parallel manner but then swung eastward to cut across the trend of the strips. It would seem that the trackway and fields were not constructed at one

time and logically it would seem that the trackway was the earlier feature but some overlap of their use may reasonably be surmised. Between Hickleton and Marr, Lead and Dalton Parlours there are similar complex arrangements (see Fig. 6.6.b).

Although the cropmarks give only a fragmentary view of the buried Iron Age and Roman landscapes, taking a broad view it is clear that some trackways were not limited to providing access between enclosures, fields and local resources. As mentioned above, the driveway to the east of modern Doncaster can be traced over a distance of at least 3.5km (see Fig. 6.5 and View 6V.5). Almost due south from there the trackway that meandered across the fields at New Rossington can be traced over a distance of over 4km (see Fig. 6.5 and View 6V.6). This route seems to have taken the higher ground, this is only a marginal elevation from the surrounding land, no more than 10-15m but perhaps significant none the less. To the north-west, over 5km of trackway converged on the River Went and the site of the possible Iron Age fort at Norton (see Fig. 6.5 and View 6V.4). These trackways take the most westerly elevated routes across the flat expanses that surround the convergence of Womersley Beck, the River Went and former Hampole Beck with the River Don. Around Methley a trackway over 4.5km long meanders east to west between the converging Rivers Aire and Calder. There may also have been a route that crossed the higher ground east to west through Brodsworth but there are large gaps in the cropmarks (see View 6V.4). In each case the meanderings and deviations of the trackways are largely accommodated by the surrounding field systems suggesting that these routes were the earlier features. Moreover, the presence of possible Neolithic and Bronze Age monuments in the vicinity of the Methley and Brodsworth examples in particular may suggest that these routes actually had their origins in these periods, if not earlier, and were perhaps formalised by ditches in the Iron Age and later.

At Barnby Dun, Little Smeaton and Went Hill, where the cropmark information is particularly extensive it is possible to trace rectilinear networks of local trackways. These particular networks are undoubtedly a consequence of running access routes through largely rectilinear systems of fields and giving respect to the major linear topographic features: the rivers at Barnby Dun and Little Smeaton

and the Limestone edge at Went Hill. Nevertheless, these examples hint at a planned landscape in contrast to the more gradual and organic development perceived for the meandering trackways and associated fields systems.

Other Features

There are a small number of other noteworthy features associated with the trackways. Trackway ditches are frequently found to have converged or diverged slightly along the route. This could have been in response to other now invisible elements in the landscape including earlier monuments, or simply the result of inconsistent gangwork. In some case there are distinctive bulges that may well have been deliberate widenings, perhaps to provide passing places for carts and animals or temporary holding points for animals (Fig. 6.7). In some cases these are well-shaped rectangular areas, which support the hypothesis that these were purposeful features.

Finally there are features whose presence cannot be satisfactorily ascertained from the cropmark evidence alone because it relies on negative evidence. These are the gaps that have been observed along trackways, between fields and around enclosures. The examples at Norton and Wattle Syke, if indeed they are devoid of features, are perhaps akin to the medieval village green (Fig. 6.8). At Wattle Syke the two linear settlements and a further enclosure surrounded a roughly rectangular area of land, 400m long and 120m wide. The absence of cropmarked features is largely supported by the geophysical survey results, which cover approximately half the area. This 'green' may well have led into an even larger triangular area that is bounded by irregular ditches and flanked by fields. A further trackway leads from this area north-eastward to the banks of the River Wharfe near Boston Spa. This might have been a holding area for animals to be watered at the river. There is a similar, though much smaller, feature at Broomhill, Tickhill, close to the banks of the River Ryton, which Riley identified as a possible 'assembly point for herds of stock' and another near Scaftworth, close to the River Idle (Fig. 6.8; Riley 1980, 47).

On Went Hill there is an east to west gap between the cropmark field system. This would seem to have formed an extra-broad droveway with 40m between the

ditches, widening to 85m in parts, though if it continued eastward towards the river this would have required an abrupt and steep descent down from the limestone cliff. This gap does contain several extensive pit clusters. Pits were also a feature of the area opened onto by several trackways at Ledston, where at least two were used for human burial (Sumpter and Marriott 2005, 12). Their presence may reflect both a communal, and possibly a ritual, character of these areas. This theme is repeated at Ferrybridge with the trackways that were flanked by late Iron Age and Romano-British fields opening out into the area of earlier ritual monuments (see Fig. 6.2; Roberts 2005d).

Enclosures

The aerial-photograph mapping element of this project has recorded approximately 1390 known and possible Iron Age or Roman enclosures. These can be broadly divided into those which are basically rectilinear in plan (that is polygonal, rectangular or square) and those that are more or less curvilinear, including those with one straight side.

Curvilinear Enclosures

Curvilinear enclosures constitute only 6.5% of all the enclosures recorded and are very varied in their morphology. Amongst the curvilinear enclosures there is a type that is particularly distinctive from the more usual rectilinear forms. Just twelve examples have been identified (Fig. 6.9). They are mostly sub-circular in plan though a few have one slightly flattened side and appear to be more D-shaped. They measure between 32 and 67m in diameter. Some of these are defined by broad ditches but in others the cropmarks are especially fine, perhaps suggesting a palisade trench rather than a ditch. If these are indeed palisaded enclosures then it is possible that more survive than the aerial photograph evidence suggests because they are less likely to produce distinct cropmarks than ditch-defined enclosures. Two palisaded enclosures have been excavated in the study area, at South Elmsall and Swillington Common, and neither was visible on aerial photographs (Howell 1998; 2001, 56). Further afield, a possible Late Bronze Age or Early Iron Age sub-circular enclosure was excavated at Pallet Hill, near Catterick (Brewster and Finney forthcoming, North Yorkshire County Council air photo ref. TCB8.F.9).

The more circular examples in this group, and the example at Burton Salmon in particular are similar in appearance to the partially excavated hengiforms 176 and 178 at Ferrybridge, which whilst undated are thought to be Neolithic (Roberts 2005, figs 18 and 25). Overall though the context of these enclosures is seemingly quite different from the ritual monument groups and there are few, if any, spatial associations to other known Neolithic or Bronze Age monuments. Furthermore most are in some way associated with presumed Iron Age or Roman enclosures and boundaries. Intriguingly, at Burton Salmon and Adwick le Street field boundaries bisected the sub-circular enclosures so neatly as to suggest a deliberate act and thus that the enclosure was still visible when the boundary ditch was dug. The Methley, Methley Bridge, Adwick le Street, Bentley, Norton, Kirk Smeaton and Minsthorpe enclosures were located on low lying ground close to water. Those at Braithwell, Burton Salmon, Elmsall Lodge Farm, Elm Leys Farm were on higher ground but still close by streams. Only the Bilham Grange example was seemingly distant from a water supply.

The other curvilinear enclosures are a much more varied group in terms of size, shape and context, some may be described as D-shaped in plan (Fig. 6.10). In a number of cases, such as at Heygates Lane, Bramham, it is highly probable that the basically curving circuits were abutted to or constrained by pre-existing field boundaries and trackways to form the D-shaped plan enclosure. Perhaps even those examples that seem to occur in isolation, such as the one-off Toulston Lane, near Toulston, were influenced by now unseen linear features. In other examples like Bond Street, New Rossington it is quite possible that the associated field boundaries or trackways were later features.

Overall, as a group that includes both the 0.05ha oval enclosure near Oglethorpe Hall and the massive-ditched 0.7ha enclosure near Ackworth it is clear that the curvilinear enclosures do not form a coherent archaeological type. It is interesting to note that they are more numerous on the limestone geology north of High Melton and rather sparse south of the River Don particularly on the sandstones (Fig. 6.11). This seems to suggest a broad pattern of more diverse enclosure forms

on the limestone and greater homogeneity on the sandstone, which is reflected in the distribution of some of the more distinctive rectilinear forms discussed below.

Extensive Enclosure Groups

Most of the curvilinear and rectilinear enclosures occur alone or in small clustered or aligned groups so it is worth noting that large enclosure groups such as these may denote significantly larger settlements. These occur at Dalton Parlours, Collingham; Castle Hills, Micklefield; in Bramham Park; at two locations at Wattle Syke, near Hungerhills Plantation, Aberford and near Leyfield House, Aberford (Fig. 6.12). In so far as it is visible on the aerial photographs, approximately one third of the extensive settlement group at Dalton Parlours has been excavated (Yarwood 1990, fig. 155). This Iron Age settlement consisted of a series of conjoined and overlapping enclosures, mostly curvilinear in plan, seemingly contained within a neat rectangular area between fields. A Roman villa was constructed in the eastern part of the settlement at the beginning of the second century AD, apparently after that area had been abandoned for some time (Wrathmell 1990, 279). The Castle Hills and the Bramham Park settlements are very similar in character although the latter has a slightly more orderly appearance due to straighter boundaries and more rectilinear enclosures. The double-ditched enclosure at the southern end of this group may be the site of a villa (see below). The Hunger Hills Plantation enclosure group is similarly constrained between fields but this time into a triangular area. These examples bear some comparison to sites on the Yorkshire Wolds described by Stoertz as curvilinear enclosure complexes (1997, fig. 30) There are no convincing examples of Stoertz's linear enclosure complexes (sometimes referred to as 'ladder settlements') within this survey's area: alignments of conjoined rectilinear enclosures often stretching over many hundreds of metres (1997, fig. 26). The enclosure groups at Wattle Syke (perhaps two or more distinct settlements) and Leyfield House may be described as linear arrangements but the enclosures display none of the uniformity that characterises Stoertz's Wolds examples. In each case the 'spinal' boundary ditch off which these enclosures are arranged is highly sinuous. Meandering features such as this have, as has been discussed elsewhere, been suggested to have either originated as boundaries in woodland marking out areas for clearance or marking the margins of cleared land against woodland.

Undoubtedly, many of the enclosures in these groups are stock pens, paddocks or for industrial activities but the density of pits, particularly at Dalton Parlours, Castle Hills and Hunger Hills Plantation could be an indication of prolonged occupation or settlement of considerable size. It could be argued that these sites represent no more than settlement drift of a relatively small population but they each seem to be rather too neatly confined within their boundaries for drift to be the cause.

These seven extended enclosure groups are only found in the northern part of the study area. Here they are strung out along the spine of the limestone belt between the River Wharfe to just south of Mill Beck, over a distance of no more than 15km.

Rectilinear Enclosures

The rectilinear enclosures are by far the most numerous group and, in terms of morphology, a far more homogeneous group. There are a number of distinct polygonal examples but on the whole irregularities of shape are probably due to the constraints placed by other features in the vicinity such as trackways and boundaries. In the case of the very irregular enclosures excavated at Dale Lane, South Elmsall and Whitwood Common (Burgess 1998; Burgess and Roberts 2004), it is likely that their plan was dictated by some unseen obstacle or feature.

Most of the rectilinear enclosures are rectangular, near square or, more rarely, square in plan. The smallest are less than 20m by 20m, less than 0.05ha but the largest are often indistinguishable from paddocks and fields. Evidence for occupation from cropmarks is scarce. Less than 25 hut circles have been identified on the aerial photographs for the whole of the survey area, and it is by no means certain that these were all dwellings. Undoubtedly hut remains have been mistaken for earlier burial monuments and *vice versa* but it is most likely that they are greatly under-represented amongst the cropmarks. An overview of a selection of excavated roundhouses demonstrates why this is so. It is unsurprising that pit-defined structures like the Swillington Common structures were not detected; such features are simply too small to produce coherent cropmarks (Howell 2001, 47-67). The shallow depth at which the gullies and wall trenches of structures at

Moss Carr, Whitwood Common, Low Common and Bullerthorpe Lane survive amply explains the failure of these features to produce cropmarks (Roberts and Richardson 2002; Burgess and Roberts 2004; Wheelhouse 2001a). Perhaps the surprise is that similarly slight features at Ferrybridge Enclosure C and at Wattle Syke are visible on the aerial photographs; both were rock-cut features although the former was much wider and deeper than the latter (Martin 2005, 102; Turner 1991). Of the meagre representation of cropmarked hut circles, approximately half appear to have been situated within enclosures, the others were mostly located within fields, often beside trackways although they were not necessarily contemporaneous with any of these features.

As a consequence of the paucity of clear occupation evidence or a lack of any clear signature for other activities it is very difficult to categorise the thirteen hundred or so rectilinear enclosures that are visible on the aerial photographs. There are, however, some identifiable characteristics that may have archaeological relevance. Because the following categories are based on characteristics rather than overall type there is a degree of overlap between the different groups.

Table 6.2. Size and form of select excavated hut circles

Site name	Feature reference	Form	Feature dimensions	Wall-trench/gully width	Trench wall/gully excavated depth	Seen on APs	Reference
Moss Carr, Methley	structure 5	wall-trench	18m diameter	0.5-1	0.1-0.3	no	Roberts and Richardson 2002, 10
Bullerthorpe Lane	structure 1	gully	8.5m	<=0.4	<=0.2	no	Wheelhouse 2001a, 44
Ferrybridge enclosure C	structure 5	rock cut ditch	12.5m diameter	0.3-0.7	0.1-0.5	yes	Martin 2005, 103-105
Whitwood Common	roundhouse	gully	c. 10m diameter	<=0.6	<=0.1	no	Burgess and Roberts 2004, 26
Low Common, Whitwood	roundhouse	gully	9.2m diameter	0.5	0.05 - 0.2	no	Burgess and Roberts 2004, 13
Dalton Parlours	roundhouse 5 (largest of 8, of which only 3 had gullies or slots)	gully	17m diameter	<0.8m	<0.37m	no	Sumpter 1990, 19-24
Topham Farm, Sykehouse	structure 1 (largest of 10)	gully	17.5x15m	<=.55	<=0.25	no	Roberts 2003c, 17
Swillington Brickworks		gully	c. 16m diameter	<1m		no	Eyre-Morgan 1992
Wattle Syke	?	rock cut gully	?	?	?	yes	Turner 1991
Swillington Common	structures 1 & 2	pit		na	na	no	Howell 2001, fig. 30
Ferrybridge enclosure A	structures 1, 2 & 3	pit		na	na	no	Martin 2005, fig. 78

Enclosures with Trackway Entrances

The most distinctive type of enclosure identified from the cropmarks are those that were linked by avenues to local trackways (Fig. 6.13). Most of the examples within this survey area were rectilinear in form but there are at least four sub-circular examples just to the west around the Iron Age fort at South Kirby. The curvilinear examples in particular are akin to the Iron Age 'banjo enclosure', which is more usually associated with southern England. The 'banjo enclosure' form is thought to be associated with the movement and corralling of cattle (Cunliffe 2005, 245-6). Of particular note in this study area is the juxtaposition of narrow causewayed or extended entrances (usually east-facing) and wider avenues, trackways and spaces. At Ackton Pastures this is manifest as a narrow causeway across a broad ditch that opened into a 20-25m wide avenue, which in turn leads onto a narrower trackway. In most cases the entrances led downslope or along the level. Although this type of enclosure is frequently associated with field boundaries and trackways these often appear to accommodate the enclosures suggesting that the field ditches are the later features. Unfortunately, as yet, there do not appear to have been any excavations that test this hypothesis.

All of the better examples of this type lie between the Rivers Aire and Don (Fig. 6.14). Most appear to occur singly amongst fields and other enclosures but the clustering around South Kirby Camp and Brodsworth may be significant and perhaps more representative of their original pattern of distribution. Most examples lie within a kilometre of a major beck or river or, like the South Kirby cluster close to springs.

Enclosures with Broad Ditches

The enclosures discussed above, in common with many of the other rectilinear enclosure types, appear to have had ditch circuits that were broader than any internal features or surrounding field boundaries or trackway ditches (Fig. 6.15). The broad ditched enclosures identified here range in size from 0.1 to 0.45 hectares. Most had internal features, either hut circles, internal divisions or occasionally both. Excavations have revealed hut circles within broad-ditched enclosures at Normanton

Golf Course (FAS 2005b), Swillington Brickworks (Eyre-Morgan 1992), Wattle Syke (Turner 1991), and Enclosure A at Moss Carr, Methley (Roberts and Richardson 2002). Whilst many of these enclosures were identified from the air few have internal features, such as roundhouses, visible on the aerial photographs. Such structures were probably present at many more of the cropmarked examples but the evidence is absent for the reasons discussed above. Many of the broad-ditched enclosures had internal subdivisions. Commonly these were in the form of cornered off quadrants as exemplified by the example excavated at Hazel Lane Quarry, Hampole (Brown 1997). This presents something of a quandary as to the function of these enclosures since the Hazel Lane example is not thought to have been the site of occupation. Where entrances have been detected these were generally east or south-east facing and often featured an annex or outwork which, like the extended entrances discussed above, was perhaps related to function.

Broad-ditched enclosures are numerous and fairly widespread on the permeable geology between Cock Beck and High Melton (see Fig. 6.14). Far fewer have been identified north of Cock Beck although this is an area rich in cropmarks. They are also rather scarce on the sandstone geology to the south-east of the River Don. Unfortunately, the width of a cropmark is not always a good indication of the width of the underlying ditch. It may be that cropmarks on this geology do not represent differing ditch widths as clearly as limestone cropmarks and so potential examples are unrecognised. Broad-ditched enclosures appear to be absent from the cropmarks recorded on the limestone south of High Melton but here they may be under-represented due to general paucity of other cropmarks against which to compare them.

Most of the broad-ditched enclosures are closely associated with field boundaries and trackways. Often, in so far as it is possible to deduce from the cropmark evidence alone, the enclosures appear to have been later additions, though this is not the case for those with extended entrances.

Enclosures with Outer Compounds

As rectilinear forms and layouts are so common in this area it is perhaps significant that a handful of rectilinear enclosures seem to be sited within altogether looser and more curvilinear outer compounds (Fig. 6.16). At least two of the compounds occur in the bends of meandering trackways but others appear to have been planned more purposefully. In some of the compounds the land around the broad-ditched enclosure was divided into small fields or paddocks perhaps indicating that stock rearing and management was a principal activity at these sites. The Garmill Lane, Stanley, Bog Lane and Kennels Lane examples were located very close to streams or rivers but for others the nearest water source is unknown. This type is found between the Rivers Wharfe and Went (Fig. 6.14).

Enclosures in Field Corner Locations

By far the most numerous and widespread types of enclosure within this area are what might be termed as ‘field corner enclosures’. As the name suggests these appear to originate as enclosures constructed at the intersection of two field boundaries, although both boundaries may not always be visible. In their simplest form these enclosures were defined by arcs of ditch cut across the apex of two intersecting ditched boundaries, with a gap at one or both ends (Fig. 6.17). It is not clear whether these gaps are for access or whether they mark the former presence of a bank. Ditch 172, the earliest phase of Enclosure A, Ferrybridge and Enclosure A, Dawson’s Wood are two excavated examples of such (Martin 2005; O’Neill 2001d). Other unexcavated ones are known at Ruins Plantation, Harworth and Bircotes, Went Hill and Kirk Smeaton. This very simple form is not common, perhaps because as with Ditch 172 at Ferrybridge, they were frequently remodelled and enlarged. Ditch 172 was superseded by two perpendicular ditches that together with the field boundaries formed a rectangular field corner enclosure. Other examples may not have been reused but alone are too slight to produce cropmarks.

So close is the relationship between the rectilinear enclosures recorded by this project and the field systems and trackways that a high proportion, including many of the

broad-ditched examples (but probably excluding those with extended entrances) might reasonably be described as field corner enclosures. Some appear to occur individually, others were paired at the corners of neighbouring fields, like Enclosures A and B at Ferrybridge (Fig. 6.18). Others appear to have culminated in small clusters, although it may be that not all were in use at any one time.

Field corner enclosures are common across most of the permeable ground, with the exception of the area south of High Melton. Rectilinear enclosures are present in that area, albeit more sparsely, but the general absence of visible linear features like field boundaries and trackways make it difficult to deduce their relationship to the infrastructure, if indeed one existed.

The density of field corner enclosures does vary across the permeable ground as demonstrated by comparison of landscapes at Tickhill on sandstone, Went Hill and Bramham Park, both on limestone (see Fig. 6.18). Cropmarks at all three locations have revealed extensive and detailed evidence of field systems and trackways. Whilst small field corner enclosures are especially numerous at Went Hill there are very few at either Tickhill or Bramham Park. The function of field corner enclosures has been discussed by Roberts (2005d, 212-13).

Enclosures with Multiple Circuits

A small but significant proportion of curvilinear and rectilinear enclosures had two or more ditch circuits. The most notable example is the possible fort at Norton (Fig. 6.19). Multiple ditches were presumably partnered with one or more banks and are often considered to be a form of defence. Their presence underlies the interpretation of the sites at Norton, Tickhill, and Balby Carr as defended enclosures and of Scaftworth (1 and 2) and Thorpe Audlin as Roman military features (see Fig. 6.22). Alternatively, multiple ditches may have conferred a different, perhaps elevated status on an enclosure. There is also potential for confusing trackway ditches with extra circuits and in some case the duplicity may arise from gradual enlargement or rearrangement. Multiple ditches are not confined to any one type of enclosure but

they are more common around small field corner enclosures. There are distinct concentrations of double-ditched enclosures between Cock Beck and Bramham Beck and Womersley Beck and the River Went; elsewhere on the limestone they are rather sparsely distributed. South of the River Don within this survey area the only enclosures with more than one visible ditch are the possible marsh forts and possible Roman military enclosures discussed below. There are significant clusters of double-ditched enclosures further south in Nottinghamshire such as at Babworth South (Riley 1980, map 26).

Roman Villas

Ten or more known or potential Roman villas are recorded within the study area but only one confirmed villa has been associated with any of the mapped cropmarks. This, at Dalton Parlours, was located within the Iron Age extended enclosure group discussed above. Although many of the Iron Age ditches had been filled in before the villa was built, it appears that some of the outer ditches were recut to form a partial enclosure around the buildings (Wrathmell 1990, 280, fig. 158). Surprisingly, given the ready availability of limestone there are no cropmarks of possible villa buildings or for that matter other stone-built structures anywhere within the project area. Stone remains or robber trenches can produce very clear and distinctive parchmarks and cropmarks. Excavations have shown this apparent absence to be misleading with stone-built structures revealed at Hazel Lane Quarry, Hampole and Brierlands, Garforth (Price 2002; Owen 2000). There is one more site to note in this respect and that is the near square enclosure located at the southern end of the Bramham Park extended enclosure group (see Fig. 6.12). It is surrounded by a series of paddocks or small fields and is bisected by the trackway that runs through the entire settlement. It is possible that this is the site of a villa. Unfortunately there is no supporting evidence for this hypothesis at present.

There are other rectilinear enclosures within the survey area that resist any more detailed characterisation of the cropmark evidence. There are, however, two sites worthy of a final note. These lie, some 50km apart, one near Ravenfield, the other on

Bramham Moor, but they are similar in several respects and they are significantly different to the other rectilinear enclosures in that both comprise an inner and outer enclosure (Fig. 6.20). The Bramham Moor outer enclosure has four very rounded corners and an inturned entrance that extends to the inner enclosure. Its inner enclosure is near square and has very angular corners. The cropmark of the inner ditch is much finer than the outer ditch perhaps indicating a palisade trench. The site near Ravenfield has an outer enclosure with two well rounded corners and two more angular corners and an inturned entrance. Its inner enclosure is smaller and is more elongated but also has fairly abrupt corners. The Bramham Moor example lies 180m to the south-west of the putative long barrow and is also close to the Dalton Parlours extended settlement group and villa and the Wattle Syke settlements. The other lies between two known villas. Whilst these two may just represent a less common rectilinear settlement form, it is equally possible that they represent specialised sites, possibly even shrines or temples, which are otherwise unknown. If confirmed they would join the cart burial at Fryston Park and the possible shrine at Ferrybridge as some of the very few ritual monuments of this date that have been identified in this region (Brown *et al.* forthcoming; Roberts 2005, 215).

Forts, Military Sites and Roads (Figs 6.21 and 6.22)

Within the survey area and its immediate environs there are a number of Iron Age sites that might be identified as forts, as well as several known and newly identified potential Roman military enclosures (Fig. 6.21).

There is no new information relating to the one hillfort in the study area, that at Wendel Hill, Barwick in Elmet. The project has further documented a class of likely defended Iron Age fortified enclosures on the lower ground. As well as the early Iron Age enclosure on Sutton Common, sometimes referred to as a 'marsh fort', due to its location on the edge of the wetlands, a second putative 'marsh fort' at Moorhouse Farm, Tickhill was first identified by Riley (1980, map 11) and also lay in a low position on a small island of sandstone protruding above the surrounding peat and alluvium. Its environs are now quite dry but the presence of peat suggests that it too

was once protected or isolated by less passable ground. There is, however, a third possible 'marsh fort' at Balby Carr. It is not clear from the aerial photographs if the multiple ditches around this enclosure were really defensive in scale, nor whether there were associated banks. The north-western corner lies in a plantation and survives as a low earthwork and further non-intrusive investigation here might prove to be informative.

Just over 4.5 km to the north-west of Sutton Common there is a complex enclosure on the north bank of the River Went, at Norton (see Fig. 6.19). Although the inner enclosure was much smaller than the interiors of the possible 'marsh forts' it had at least four ditch circuits and an elaborate entrance arrangement. Again its defensive qualities are uncertain but this site is likely to have been of a quite different function or status to the other very numerous rectangular enclosures recorded from the aerial photographs.

There are within this survey area a number of linear earthworks, namely Grim's Ditch and a group collectively known as the Aberford Dykes. Grim's Ditch and two of the Aberford Dykes, the South Dyke and Becca Banks have, with the benefit of recent archaeological interventions, been dated to the Iron Age (Wheelhouse and Burgess 2001, 123-48). Not all of the known linear earthworks were visible on the aerial photographs.

There are known Roman forts beneath the modern settlements of Doncaster, Castleford and Templeborough (just beyond this survey's area at Rotherham). Aerial photographs have revealed at least two camps and two forts (and associated settlement) at Newton Kyme, a fort at Rossington Bridge and another just to the east of this survey's area at Roall Manor Farm. The lesser known fort at Robin Hood's Well, near Burghwallis represents perhaps three successive separate layouts, each on a slightly different alignment and position (Fig. 6.22). Only the north-eastern corner of each is visible on the aerial photographs. The work for this particular project has sought to light a possible additional fort on the south bank of the River Don at Long

Sandall. The likelihood of a precursor to the Doncaster fort in the Wheatley or Kirk Sandall area has been discussed for some time (e.g. Webster 1981, 99; Buckland and Magilton 1986, 208-9). Only three sides of this enclosure are known but it is possible that the river acted as the fourth side, much as the cliff and river may have done for the fort at Newton-on-Trent in Nottinghamshire (St Joseph 1965, 74-5). A small near-square multi-ditch enclosure at Scaftworth has often been posited as a possible fortlet (e.g. St Joesph 1953, 87; Bartlett and Riley 1958) and the cropmarks of a rounded corner to the immediate north-east suggest part of a camp. More recent excavations on the possible fortlet have called this military interpretation into question (Van de Noort 1997, 427). There is a similar enclosure less than 1.5km to the east and another at Thorpe Audlin. The latter lies on the southern side of the River Went where it was crossed by the Roman Ridge Roman road. The cropmarks suggest there were several phases of activity at this site. A further fortlet has been suggested at Sandtoft on the basis of its similarity to the Scaftworth example (Samuels and Buckland 1978). The mapping produced by this project suggests the two are actually quite different; the Sandtoft example being less regular (see Fig. 6.19)

Several new stretches of possible Roman roads have been recorded by this project. The most significant is perhaps the north-south aligned road which extends from the south-west corner of the fort at Rossington Bridge for at least 3.6km seemingly cutting across pre-existing regimes of fields, trackways and enclosures. If it continued southward for 5.5km on this alignment it would have met the crossing of the River Ryton just north of Blyth. Shorter stretches of possible Roman roads were recorded at Methley and north of South Elmsall. Both are flanked by what appear to be roadside quarries and both cut across fields. The former example extends into the grounds of Methley Park and it cannot be discounted that this was actually an element of the park landscape (Deegan 1999b), though morphologically this seems unlikely.