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Chapter 6. Later Prehistoric Settlement of South-East Scotland

"Later Prehistory has suffered from a tendency to be a dustbin for all sorts of sites, generally enclosures..." (Cowley 2009, 207)

6.1 Introduction

It is important to contextualise Broxmouth in its broadly contemporary landscape as many of the issues raised in chapters 4 and 5 require an interrogation of the wider settlement pattern. The later prehistoric evidence of East Lothian is subjected in this chapter to a series of analyses to characterise the morphology, area size, number of ditches, entrance locations and landscape setting of enclosed sites. These are then interrogated further to explore the relationships of these characteristics with the landscape further before taking forward these observations when discussing the excavated data in chapter 7.

6.2 Compiling the Database

The evidence for potentially later prehistoric sites in East Lothian was gathered primarily via CANMORE (see chapter 3) and around 750 results were returned. In order to focus the analysis, a study area was defined (incorporating Broxmouth). The study area was designed to incorporate the key sites, Broxmouth and Traprain Law and a substantial area around them, including key aspects of the landscape identified in chapter 4, including the coastal plain, the uplands and the coast. The total area defined is 440km² and this includes 295 potentially later prehistoric enclosed sites including numerous excavated and surveyed sites derived from the
Traprain Law Environs Project (TLEP) (Haselgrove 2009a) and the A1 upgrade (Lelong and MacGregor 2008). There is also excavated data from the site of Traprain Law itself (Curle 1915; 1920; Curle and Cree 1916; 1921; Cree 1923; 1924; Cree and Curle 1922; Armit *et al.* 2002; 2006) and Dryburn Bridge (Triscott 1982; Dunwell 2007).

Using CANMORE (the national online database for Scotland’s built and archaeological heritage, maintained by the Royal Commission on the Ancient and Historical Monuments of Scotland – RCAHMS), all known potentially later prehistoric sites were initially inputted into Microsoft Excel (see Appendix B), using a keyword search comprising “fort”, “settlement” and “enclosure”. For the purposes of this study, the later prehistoric period extends from *c.*1300 cal BC (late Bronze Age) through to *c.*cal AD 400 (Roman Iron Age). This is a largely pragmatic definition, derived from radiocarbon dates (all quoted at 2-sigma) relating to enclosed sites in
south-east Scotland. The earliest enclosure circuit on Traprain Law, for example, is thought to date from around 1200-1000 BC, with major occupation in the 9th century BC (Armit et al. 2002). Other settlement sites such as Standingstone have evidence of enclosure dating to 1370-900 cal BC (Haselgrove et al. 2009b, 55) and the site of Whittingehame Tower also dates to this period, with initial construction dating between 1200-940 cal BC (Haselgrove et al. 2009a, 30). Defining the end date is based on arguments that ditches and ramparts went out of use on some sites by the first century AD (e.g. Lelong 2008b, 243). However the use of sites continues once ramparts and ditches are derelict and at Knowes for example which had a later unenclosed phase and was probably abandoned by the end of the second century AD (Haselgrove et al. 2009c, 97). Eweford Cottages may also have been abandoned around the same time (Lelong 2008b, 243). Traprain Law however, continued to be occupied until the beginning of the fifth century AD (Jobey 1976) and a rampart was rebuilt during fourth century AD. There is clearly a complex relationship between enclosure creation, neglect and ‘unenclosed settlement’ which will be explored further below.

After inputting all known sites, the database was refined further by using 1:10000 OS maps in GIS to verify some ambiguous CANMORE entries. This proved fruitful as some of the sites classed as enclosures, for example, could be ruled out as being modern constructions, especially upland sites, which upon further inspection turned out to be sheepfolds (see Figure 6.2). Where sites had no accompanying cropmark data or were not known to be upstanding, they were also omitted. Sixty nine sites in total were ruled out primarily due to either being modern constructs, lacking cropmark data or other information to suggest a later prehistoric date. 226 sites in
total are being analysed and it is this cleaned database that will be used in the analyses presented here.

Figure 6.2 OS Map (1:10,000) showing a disused sheepfold and modern fox covert, one of the sites ruled out as later prehistoric in date (© Crown copyright 2011. An Ordnance Survey/EDINA supplied service).

The decision was taken to analyse all enclosed sites together as too much focus has been given over in the past to the observation of one single category, i.e. hillforts, and the aim of this study is to examine all forms of enclosure. Previous analyses by Macinnes have subdivided hillforts into morphological types (1984, 181) but this does very little for further analysis and interpretation as it is there from the start. This analysis involved disregarding all prior divisions and categorisations of enclosed sites which were interpretative, instead letting any interpretative division be drawn from the evidence.
The evidence for other later prehistoric activity is also considered and this falls primarily into three categories: isolated roundhouses/open settlements, stray finds and other sites such as caves and middens. These are not subjected to any detailed analysis however they further inform on the use of landscape during this period.

6.2.1 Morphology

For this study, morphology has been determined by examining the cropmark data (compiled from aerial photographs, which have been rectified and transcribed by the RCAHMS). Site morphology was divided into rectilinear, curvilinear or D-shaped according to the RCHME classifications adopted for similar studies (Whimster 1989; Stoertz 1997; see Figure 6.3), known here as general morphology. The RCHME category of quadrilateral is not utilised in the context of the later prehistory in this area, therefore to avoid confusion, quadrilateral is known as rectilinear and is referred to as such from now on. Sites which only had one ditch/rampart were subdivided into a specific morphological class (regular, irregular or elongated curvilinear; short, long or irregular rectilinear; polygonal; D-shaped hybrid or irregular hybrid – (Whimster 1989, 29). Whimster noted that multiple-ditched enclosures are less amenable to specific morphological classification and do not strongly adhere to specific shapes (1989, 46) and this problem was encountered during the classification in this study. Therefore general morphology has been applied to multiple-ditched enclosed sites and specific morphology only to the single ditched enclosed sites. This analysis will examine the variety of morphologies and also possible chronological horizons: it has been suggested, for example, that
rectilinear enclosures may be specific to the late first millennium BC (Cowley 2009, 212).

![Diagram](image)

Figure 6.3 Morphology categories used to classify cropmark enclosures and forts with some examples shown from the study area (in green – see Appendix B) (After Whimster 1989, 29)

6.2.2 Area Sizes

Some cropmarks were complete enough to allow for area size measurements (56% of the dataset). This was done within the ArcGIS programme by digitising the inner-most ditch lip and then calculating the area in hectares. For upstanding sites, the plans were taken from the 1924 East Lothian inventory and scanned into
AutoCAD, where a measurement was also taken from the inner lip of the ditch, to generate consistent results with the cropmark data. This is slightly artificial, as the bank would have reduced the area size, however to keep results consistent this is the pragmatic solution.

6.2.3 Entrance Locations

Entrance locations were established from the surviving RCAHMS inventory plans and the cropmark data. AutoCAD was used to determine the orientation of the entrance, using north as 0°. Nottage noted that many enclosed sites are of varying shapes and sizes and although a central point can be determined, the results produced by referencing orientation using the central point are misleading. Nottage tried and tested various methods to accurately determine the entrance orientation and concluded that the most consistent method was to determine the orientation according to where an individual would face if standing in the middle of the entrance, looking out (2010, 26-30). The cropmark images were all exported as separate images from GIS, then imported into AutoCAD and scaled to the correct size (see Figure 6.5 for example). A line was then drawn across the entrance with a line emanating from the mid-point at a 90° angle, perpendicular to the original line. Taking 0° as the north point, the angle was measured using the angular dimension tool, according to the diagram below. It must be noted that due to the partial nature of some of the cropmarks, some sites may have had more entrances than is now apparent and that this is far from a complete dataset.
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6.2.4 Landscape Setting

The landscape settings of sites were determined according to Whimster’s classifications (1989, 19) and these were divided into four broad groups: riverine, promontory/spur, valley slope and hilltop. From observing the evidence in East Lothian, an additional category of ‘scarp’ was added as Nottage noted that certain forts overlooked steep scarps like promontory forts, however the ditches did not cut...
off the land (Nottage 2010; pers. comm.). Hamilton and Manley have recently established that there were complex relationships between sites and their topography (2000) and Taylor (1999) has also noted that minor variations in topography have been shown to be important in the location of enclosed sites. Despite this, there is little methodological rigour in establishing topographical locations and they can be difficult to classify. As with the morphological classifications, sites may have similar settings on hilltops but hills can vary significantly in height and may not be the highest point in the landscape. Therefore only broad definitions have been used to classify topographic location and to identify broad patterns in this initial analysis. Table 6.1 outlines the definitions of topographical location adopted for this study.

<table>
<thead>
<tr>
<th>Topographical Location</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilltop (Figure 6.6)</td>
<td>The peak of any hill, i.e. where the contour completely surrounds the plateau or peak</td>
</tr>
<tr>
<td>Promontory (Figure 6.7)</td>
<td>A prominent mass of land which overlooks lower lying land or a body of water. The enclosed site essentially ‘cuts off’ the particular portion of land</td>
</tr>
<tr>
<td>Scarp (Figure 6.8)</td>
<td>A steep cliff or slope which overlooks lower lying land or a body of water. The enclosed site does not cut off the portion of land, unlike a promontory</td>
</tr>
<tr>
<td>Slope (Figure 6.9)</td>
<td>A depression with a predominant extent in one direction between hills, usually with a river flowing through. Sites in this category are located between contour lines or on a contour, but do not fit into the other categories</td>
</tr>
<tr>
<td>Riverine (Figure 6.10)</td>
<td>An area through which a watercourse runs. Sites classed as riverine are those located within 300m of a watercourse and also not amenable to one of the four topographical locations defined above. As there are no sizeable rivers in East Lothian, the definition has been extended to all watercourses.</td>
</tr>
</tbody>
</table>

Table 6.1 Table of the definitions used to classify landscape settings for this study
Figure 6.6 Example of a hilltop location (site shown in black, other enclosed sites in grey (Whitelaw Hill - site 222) (All maps with contour data © Crown Copyright 2010. An Ordnance Survey/EDINA supplied service)

Figure 6.7 Example of a promontory location (Branxton Cottage - site 21)
Figure 6.8 Example of a scarp location (Carfrae - site 27)

Figure 6.9 Example of slope locations (From left clockwise: Pinkerton Hill 2A and 2B - sites 148 and 149; Pinkerton Hill 1 - site 147; Easter Pinkerton 1 and 2 - sites 64 and 65)
Contour maps were used to determine the location of enclosed sites according to height in metres OD, which was recorded to the nearest 10m. The aspect of the slope was also noted in GIS according to the cardinal and ordinal directions (eight in total).

6.3 Limitations

One of the main problems in any landscape analysis reliant on aerial photographic data is that cropmarks are difficult to date. To overcome this, the excavated data from South-East Scotland has to be relied on and virtually all examples are known to date to the later prehistoric period. Some classes of later prehistoric settlement can be identified with some certainty (for example: rectilinear enclosures and unenclosed scoop settlements), based on information drawn from forty years of survey and excavation within northern England and southern Scotland (Cowley
The TLEP excavations (Haselgrove 2009a) have also added to the database of later prehistoric curvilinear enclosed sites, alongside Broxmouth (Hill 1982b; 1995), Dryburn Bridge (Triscott 1982) and Fishers Road East (Haselgrove and McCullagh 2000). Whimster has also stated that although some may conceivably be medieval, the majority are likely to be later prehistoric in date (1989, 35). Although there may be later, medieval examples of enclosure in the East Lothian cropmark record, these are identified as such, for example at Whitekirk (see chapter 4) and the risk has been judged to be minimal.

The majority of the enclosed sites remain unexcavated and this in turn leads to difficulties in determining the occupation length of these sites or indeed, if they were occupied, leading to questions over their functions. This is especially true of the more fragmentary cropmarks where internal occupation cannot be determined. Recently excavated sites in East Lothian have shown variations in occupation longevity and any changes in the use and morphology of these sites can be observed and related to the wider landscape and settlement pattern.

Care has to be taken not to assume any functional or symbolic differences in different morphological categories (cf Moore 2006, 44). Morphological differences alone do not necessitate any differences in function or symbology although it has been argued that settlement architecture and structuring space may have been important in reflecting the cosmology or social organisation of individual communities, as has been seen from various ethno-archaeological studies (Hill 1996; Parker-Pearson 1996, 117). Therefore other aspects such as excavated evidence and the topographical location of these sites also need to be considered in determining any functional or symbolic significance of a particular site.
6.4 Results

6.4.1 Landscape Setting, Geology and Soils

GIS was used to carry out an average nearest neighbour analysis (see Figure 6.12; Table 6.2), which simply evaluates the spatial pattern of the enclosed sites within the study area and whether they exhibit a clustered, random or dispersed pattern. The average nearest-neighbour index value is the ratio of observed density of the enclosed sites, compared to the ideal random density one would expect from the study area.

Figure 6.11 Map showing the location of enclosed sites in relation to the topography; the nine upstanding sites in the study area are shown in yellow.
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Average Nearest Neighbour Index (O) | 424.60
---|---
Expected Mean Distance (E) | 631.92
Nearest Neighbour Ratio | 0.67
Z-Value | -9.5

Table 6.2 The results of the average nearest neighbour test (shown to two decimal places)

The results show that there is less than 1% likelihood that this clustered pattern is a result of random chance (Figure 6.12). In other words, the enclosed sites tend to cluster in certain locations, the most obvious being the lowlands (see Figure 6.11). The majority of the enclosed sites in the study area lie on the coastal plain around...
the middle and to the north of the county. There are sites scattered along the fringes of the Lammermuirs but the higher ground itself is virtually devoid of settlement, with the exception of a few sites. It is no surprise that the majority of the sites lying on the coastal plain survive only as cropmarks. Only nine sites (4%) are upstanding in the study area and only Traprain Law survives in this condition in the coastal plain, the rest are found along the fringes of the Lammermuirs (see Figure 6.11). There appears to be a gap to the east of Traprain Law with only one cropmark settlement site located in this area.

Figure 6.13 The enclosed sites of the study area in relation to the geology

In order to test whether there is a bias of settlement on different geologies and whether they could affect cropmarks formation in the area, a chi-squared test was applied to test the relationship of enclosed sites with geology. The chi-squared test tests a null hypothesis to see whether the distribution of certain events is consistent
with the theoretical distribution. In this case, if geology had no factor to play in the
distribution of settlements then theoretically, we should see no difference in density
of settlements across the study area. In this case, we are testing whether geology
affects the visibility of cropmarks rather than suggesting that it was the reasoning
for the location of sites in the first place. Therefore:

\[ H^0 = \text{there is no difference in the density of settlements on different geologies} \]

<table>
<thead>
<tr>
<th>Geology type</th>
<th>Settlements (O)</th>
<th>% of area</th>
<th>Expected (E)</th>
<th>O-E</th>
<th>O-E²</th>
<th>(O-E²)/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt Lava</td>
<td>28</td>
<td>8.29</td>
<td>18.817</td>
<td>9.183</td>
<td>84.326</td>
<td>4.481</td>
</tr>
<tr>
<td>Blown Sand</td>
<td>0</td>
<td>0.27</td>
<td>0.619</td>
<td>-0.619</td>
<td>0.383</td>
<td>0.619</td>
</tr>
<tr>
<td>Conglomerate</td>
<td>42</td>
<td>18.28</td>
<td>41.489</td>
<td>0.511</td>
<td>0.261</td>
<td>0.006</td>
</tr>
<tr>
<td>Greywacke</td>
<td>10</td>
<td>31.89</td>
<td>72.383</td>
<td>-62.383</td>
<td>3891.663</td>
<td>53.765</td>
</tr>
<tr>
<td>Igneous Intrusion</td>
<td>2</td>
<td>0.09</td>
<td>0.212</td>
<td>1.788</td>
<td>3.196</td>
<td>15.051</td>
</tr>
<tr>
<td>Limestone</td>
<td>13</td>
<td>2.69</td>
<td>6.113</td>
<td>6.687</td>
<td>47.425</td>
<td>7.757</td>
</tr>
<tr>
<td>Raised Beach</td>
<td>7</td>
<td>6.45</td>
<td>14.641</td>
<td>-7.641</td>
<td>58.388</td>
<td>3.988</td>
</tr>
<tr>
<td>River Alluvial</td>
<td>1</td>
<td>1.92</td>
<td>4.369</td>
<td>-2.439</td>
<td>5.938</td>
<td>2.598</td>
</tr>
<tr>
<td>Sandstone</td>
<td>111</td>
<td>27.91</td>
<td>63.345</td>
<td>-35.434</td>
<td>1259.157</td>
<td>37.371</td>
</tr>
<tr>
<td>Trachyte Lava</td>
<td>12</td>
<td>2.21</td>
<td>5.011</td>
<td>6.799</td>
<td>48.844</td>
<td>9.747</td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>9</td>
<td></td>
<td>x² value</td>
<td>135.384</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.3 Table showing the testing of the enclosed site-geology relationship using chi-squared

<table>
<thead>
<tr>
<th>Degree of Freedom</th>
<th>Probability p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td>9</td>
<td>2.088</td>
</tr>
</tbody>
</table>

Table 6.4 Table of probable significance levels set for chi-squared tests

We can confidently reject the null hypothesis and say that there is a difference in
the density of settlements in relation to the geology. The areas which are devoid
of settlement, however also relate to the topography of the area, with much of the
conglomerate and greywacke geology forming the uplands therefore this is not an
independent variable. Alluvial deposits may be masking cropmark sites as very few
enclosed sites have been documented in these areas. On the other hand, alluvium
only accounts for 1.92% of the geology in the study area and thus may not be
significant, although other variables would affect the choice of location here (see below). There seems to be very few sites on the limestone geology, however, this has been a focus for modern industrial quarrying with a large power station along this band of geology potentially masking cropmark sites. Although there is a lack of sites on the raised beach deposits in the north-east, much of this has been landscaped by the Whitekirk and Tyninhame estate and many other cropmarks, including possible Anglian halls and rig and furrow, have been recorded here so the absence of later prehistoric ones is hard to explain.

With the exception of the geologies of the uplands, the geology does not appear to affect the distribution of enclosed sites. Therefore a chi-squared test was carried out to see whether there is a relationship between soils and enclosed sites, especially as the soils would have more of an impact on cropmark formation. Heavier, less perfectly draining soils would not show cropmarks as well as the drier, freely draining soils.

Figure 6.14 Map of enclosed sites in relation to the soils of the area (soil data from Macauley Institute 1966)
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\[ H^0 = \text{there is no difference in the density of settlements on different soil drainages} \]

<table>
<thead>
<tr>
<th>Soil type</th>
<th>Settlements (O)</th>
<th>% of area</th>
<th>Expected (E)</th>
<th>O-E</th>
<th>O-E²</th>
<th>(O-E²)/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alluvium</td>
<td>11</td>
<td>5.8</td>
<td>13.1</td>
<td>-2.10</td>
<td>4.42</td>
<td>0.34</td>
</tr>
<tr>
<td>Basin Peat</td>
<td>0</td>
<td>0.2</td>
<td>0.44</td>
<td>-0.44</td>
<td>0.19</td>
<td>0.44</td>
</tr>
<tr>
<td>Freely Draining</td>
<td>131</td>
<td>40.8</td>
<td>92.56</td>
<td>38.44</td>
<td>1477.32</td>
<td>15.96</td>
</tr>
<tr>
<td>Freely Below B1</td>
<td>0</td>
<td>12.1</td>
<td>27.53</td>
<td>-27.53</td>
<td>758.11</td>
<td>27.53</td>
</tr>
<tr>
<td>Imperfectly Draining</td>
<td>74</td>
<td>25.6</td>
<td>58.2</td>
<td>16.80</td>
<td>282.13</td>
<td>4.85</td>
</tr>
<tr>
<td>Peat Alluvium Complex</td>
<td>0</td>
<td>0.1</td>
<td>0.13</td>
<td>-0.13</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>Poorly Draining</td>
<td>0</td>
<td>2</td>
<td>4.64</td>
<td>-4.64</td>
<td>21.56</td>
<td>4.64</td>
</tr>
<tr>
<td>Saltings</td>
<td>0</td>
<td>0.2</td>
<td>0.42</td>
<td>-0.42</td>
<td>0.17</td>
<td>0.42</td>
</tr>
<tr>
<td>Skeletal</td>
<td>6</td>
<td>0.8</td>
<td>1.91</td>
<td>4.09</td>
<td>16.73</td>
<td>8.76</td>
</tr>
<tr>
<td>Soil Complex</td>
<td>0</td>
<td>0.3</td>
<td>0.62</td>
<td>-0.62</td>
<td>0.38</td>
<td>0.62</td>
</tr>
<tr>
<td>Very Poorly</td>
<td>0</td>
<td>2.6</td>
<td>5.98</td>
<td>-5.98</td>
<td>35.73</td>
<td>5.98</td>
</tr>
<tr>
<td>No Soil Information</td>
<td>4</td>
<td>5.4</td>
<td>12.33</td>
<td>-8.33</td>
<td>69.31</td>
<td>5.62</td>
</tr>
</tbody>
</table>

| Degree of Freedom | 12 | X² value | 84.42 |

Table 6.5 Table showing testing of null hypothesis using a chi-squared test

<table>
<thead>
<tr>
<th>Degree of Freedom</th>
<th>Probability ( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td>12</td>
<td>3.57</td>
</tr>
</tbody>
</table>

Table 6.6 Table of probable significance levels set for chi-squared tests

The chi-squared value is higher than the probability values, therefore we can confidently reject the null hypothesis and say that there is a clear difference of settlement density on different soil types. Again, however, this appears to be due to the lack of sites in the uplands, which coincides with the poorly draining soils and freely draining peaty podzols which are uncultivatable today (see Figure 6.14).
There is also a clear gap in the cropmark data to the east of Traprain Law, with only one site known from this area (see Figure 6.11; Figure 6.13; Figure 6.14). The soils in this area are of the Biel association and consequently are imperfectly drained, meaning that cropmark formation is potentially less likely. With this in mind, a chi-squared test was carried out to test the relationship of enclosed sites and the freely and imperfectly draining soils, as 91% of sites are located on these soils. The null hypothesis remains the same:

\[ H^0 = \text{there is no difference in the density of settlements on different soil drainages} \]

<table>
<thead>
<tr>
<th>Soil type</th>
<th>Settlements (O)</th>
<th>% of area</th>
<th>Expected (E)</th>
<th>O-E</th>
<th>O-E²</th>
<th>(O-E²)/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freely</td>
<td>131</td>
<td>61.4</td>
<td>125.87</td>
<td>5.13</td>
<td>26.32</td>
<td>0.21</td>
</tr>
<tr>
<td>Imperfectly</td>
<td>74</td>
<td>38.6</td>
<td>79.13</td>
<td>-5.13</td>
<td>26.32</td>
<td>0.33</td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>1</td>
<td></td>
<td>X² value</td>
<td></td>
<td></td>
<td>0.54</td>
</tr>
</tbody>
</table>

Table 6.7 Table showing testing of null hypothesis using chi-squared test

<table>
<thead>
<tr>
<th>Degree of Freedom</th>
<th>Probability p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td>1</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 6.8 Table of probable significance levels set for chi-squared tests

However in this case we have to accept the null hypothesis, that there is no difference in the density of settlements between the freely draining and imperfectly draining soils. Therefore the reason for the lack of cropmarks in the blank area is statistically not due to the imperfectly draining soils.
6.4.2 Topography, Soils and Geology Discussion

With the lack of cultivation in the uplands, it would be expected that sites would survive as upstanding monuments but the lack of settlement appears to be a genuine gap. Early modern land use similarly shows a general avoidance of the highest ground and the landscapes of the Lammermuirs are dominated by rough grazing today. This is reflected in the few farmsteads that survive on the higher ground and the dominance of sheepfolds and the division of landuse is further emphasised by the number of farms on the lowlands (see Figure 6.15). The survival of routeways (see chapter 5) and the close relationship with the farms, sheepfolds and early prehistoric monuments may indicate that this landscape was still traversed during later prehistory, even if it was not actively settled.

Figure 6.15 Study area showing location of farmsteads (lime) and sheepfolds (blue) in relation to soils, routeways and urban areas (black). The gap in later prehistoric settlement is also highlighted. This may be the early modern reflections of the later prehistoric predominance of pasture on the higher ground. See Figure 6.14 for soil key (contains First Edition Ordnance Survey data © Crown Copyright 2011)
As there are no pollen diagrams for this area, it is difficult to pinpoint environmental reasons for the character of the Uplands landscape today. Pollen diagrams from elsewhere do show a climatic decline during the Bronze Age and upland areas became less settled, although in the Bowmont Valley for example, it has been argued that the land continued to be used for grazing (Tipping 2010). Peat formation has taken place in some areas and may have begun after the early Bronze Age as a possible stone circle identified at Penshiel Hill (NT66SW 23) was found buried beneath a layer of peat. If this is the case, then the land would have gradually become unsuitable for arable cultivation and there may have been a decline in sites with focus instead shifted to more favourable areas (*cf* Cowley 1998; 1999; Haselgrove 2009b, 229). Environmental decline however, is not the only reason for the shift in activity and there may have been other factors leading to the decline of activity in the uplands.

The blank area to the east of Traprain has been discussed in the TLEP publication and East Lothian is generally regarded as an area with good cropmark formation (Cowley *et al.* 2009, 14). The county has benefitted from being located close to the aerial base in Edinburgh and no new cropmarks have been discovered in the past four years, despite frequent flyovers (Cowley pers. comm.), which may suggest that the record reflects the true density of settlement during later prehistory. The blank area may have genuinely been avoided as location for settlement in the later prehistoric period. Perhaps this was a wooded area, cleared towards the later Iron Age due to agricultural intensification and settlement expansion into previously sparsely populated areas as has been suggested for southern Scotland and northern England (Haselgrove 2009b, 229; Van der Veen 1992). Wise also noted distinct clusterings of sites in the Tweed Basin and also found that soil types tended not to
have a bearing on settlement location. She argued that these clusters were probably representative of small groups of people occupying the same area over long periods of time, suggesting social organisation based around the extended family who would have had close social ties (2000, 96-97). The gap may indicate that communities clustered into territories (Haselgrove and McCullagh 2000, 187).

### 6.4.3 Landscape Setting

![Landscape Setting Pie Chart](image)

Figure 6.16 Pie chart showing the landscape settings of enclosed sites

Figure 6.16 shows that the majority of sites lie on a slope (48%), although there is a wide variation in the slope directions (see Figure 6.17). 32% of sites lie within 300m of a watercourse, however no sites are located more than 1km away from a water source. Only 12% of the sites lie on hilltops (6%) or promontories (6%) which suggests that defence was not a priority for many of the sites in the area. However with so few of these sites, it is possible that they had a special function.
There is a lack of sites on south and south-west facing slopes, however the general topography of East Lothian slopes from SE-NW, towards the coast hence sites located on the northerly slopes (see Figure 6.17). However southerly slopes are the most productive for agriculture, being exposed to sunlight for the longest time during the day and these may have been reserved primarily for agriculture (Armit pers. comm.). Sites are located at a range of heights, varying between 10 and 305m OD (see Figure 6.18) and there appears to be no obvious preferred elevation. With the exception of the gaps discussed above, settlement is spread across the study area with no obvious clustering or preference. The number of sites located over 200m OD drops dramatically with most sites located below this (see Figure 6.19).
Figure 6.18 Chart showing the height ranges of enclosed sites

Figure 6.19 Simplified graph of the altitudes of enclosed sites
6.4.4 Morphology

Figure 6.20 Pie chart showing the general morphology of the sites (226) in the study area

Figure 6.21 Pie chart showing the number of ditches/ramparts at the sites (226) in the study area
These analyses show that the majority of enclosed sites (68%) are curvilinear (see Figure 6.20) and single ditched (71%) (see Figure 6.21). Where specific morphology could be recorded, regular curvilinear was the dominant shape, however this analysis also shows the variety of shapes recorded for later prehistoric sites (see Figure 6.22). Morphology cannot necessarily be linked to specific functions with so few sites excavated however there is a possible chronological difference. Rectilinear enclosures are thought to be later in date, as discussed above (Cowley 2009, 207) and there are almost three times as few of these as there are curvilinear sites, which may suggest that not as many enclosed sites were constructed during the later period. The other explanation is that curvilinear enclosed sites continued to be constructed and only certain communities chose to construct in a different style; differing ideologies may have governed the reasoning behind constructing different enclosure shapes.
6.4.5 Location of different morphologies

Figure 6.23 Distribution maps of (clockwise from top left) curvilinear, rectilinear and D-shaped enclosed sites

Rectilinear enclosures are not located in geographically distinct locations although it is rare for rectilinear enclosures to overlie other sites (Cowley 2009). Rectilinear sites are almost absent from the fringes of the Lammermuirs and concentrate on the coastal plain, as well as appearing to retreat slightly from the coast (see Figure
6.23). We know from Broxmouth that curvilinear sites have long currency, into the Roman Iron Age. Clearly, therefore, previously settled areas were not abandoned although new settlement does push into areas previously unsettled. This may be the case to the east of Traprain Law, where only one rectilinear enclosed site is recorded in an area approximately 25km² (see Figure 6.23). If rectilinear enclosures appear later in the first millennium BC then the reasons why this change occurs needs to be explored. Care has to be taken when rigidly distinguishing between the two main morphologies (Haselgrove and McCullagh 2000, 187) and indeed some sites have a more sub-rectangular shape (e.g. East Linton; Fishers Road West – not in the study area).

The enclosed sites located just to the south of Broxmouth shows the close proximity of rectilinear sites to curvilinear sites and may indicate continuing occupation of the same landscapes over time (Figure 6.24). Other factors such as vallation and size may also give an indication to the longevity of sites and this is discussed below. A possible shift is evidenced SE of Broxmouth along the fringes of the Lammermuirs where there are four rectilinear enclosures on the opposite side of the water course. This may have been a deliberate attempt to define a particular area or territory.
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Figure 6.24 Map showing the differences in location of curvilinear enclosures (red) to rectilinear enclosures (blue) in the environs of Broxmouth

6.4.6 Morphology vs. Landscape Setting

Figure 6.25 Graph showing the percentage of different morphologies to each landscape setting
Wise noted that hilltop and promontory sites were exclusively curvilinear in the Tweed Valley (2000, 95) and this appears to be the case in the study area (see Figure 6.25), as there are no rectilinear sites on hilltops or promontory locations. There is very little difference in the height of enclosed sites according to the morphology, however there is only one rectilinear site located above 200m OD (see Figure 6.26). Rectilinear sites appear to avoid prominent locations and may reflect wider social changes during the later centuries BC.

![Altitude vs. Morphology](image)

Figure 6.26 Location of enclosed sites (m OD) according to morphology

6.4.7 Constructional Style

With the majority of sites (96%) surviving as cropmarks, very little can be said in relation to rampart construction style. However the upstanding sites in the study area all display dump rampart construction (see chapter 8). However the use of palisades can be ascertained to a certain extent from the cropmark data.
Palisades are not frequently seen as cropmarks, forming only 15% of the record. Interestingly there is only one rectilinear palisade in the study area at East Linton and this is potentially early (Haselgrove and Hale 2009), suggesting that rectilinear palisade enclosures were not constructed. This implies that access to wood into the latter centuries BC was restricted although this will be returned to in light of the excavated evidence (chapter 7).

The amount of wood required for enclosure construction has been calculated in the past and these figures have been based on a post being placed every 30cm along a palisade bedding trench (C.M. Piggott 1951; S. Piggott 1960). C.M. Piggott also postulated that around 1600 posts would have been required for the double palisade at Hayhope Knowe (internal area c.0.33ha) and a further 1000 for the revetment (internal area c.0.54ha), therefore a total of 3.6ha of woodland (1951, 61-63) (722 posts per hectare) would have been cleared. Reynolds estimates that
each post would have been c.2m high and based on the assumption that between 6-6.5m of usable timber could be obtained from a fully grown tree (3 posts per tree), a minimum of 863 trees would have been required for Hayhope Knowe (1982, 44) therefore c.240 trees per hectare (see Figure 6.28). Based on Piggott’s observations, the number of posts and area of woodland required for the creation of a palisade slot has been calculated, with the assumption that the palisades would have had a continuous circuit. These figures have been calculated for the 7% of all sites that had the majority of the circuit present to allow calculations.
\[ T = \frac{PL}{0.3}/UT \]
\[ WA = \frac{T}{240} \]

Figure 6.28 Formula for calculating number of trees and woodland area (T = trees; PL = palisade length; WA = woodland area; UT = usable timber, which is 3 posts) based on Piggott 1951; 1960; Reynolds 1982

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name</th>
<th>Phase/ Palisade Only</th>
<th>Est. Palisade Length (m)</th>
<th>Est. Number of Posts</th>
<th>Number of trees</th>
<th>Area of woodland required (ha)</th>
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</thead>
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<tr>
<td>4</td>
<td>Bara Wood</td>
<td>Palisade Only</td>
<td>145.4</td>
<td>479</td>
<td>160</td>
<td>0.67</td>
</tr>
<tr>
<td>22</td>
<td>Broxmouth</td>
<td>Phase</td>
<td>152.05</td>
<td>506</td>
<td>169</td>
<td>0.7</td>
</tr>
<tr>
<td>27</td>
<td>Carfrae 1</td>
<td>Phase</td>
<td>222.2</td>
<td>740</td>
<td>247</td>
<td>1.03</td>
</tr>
<tr>
<td>37</td>
<td>Chesters 2</td>
<td>Phase</td>
<td>150.3</td>
<td>500</td>
<td>167</td>
<td>0.7</td>
</tr>
<tr>
<td>50</td>
<td>Doon Hill 4</td>
<td>Palisade Only</td>
<td>46.45</td>
<td>145</td>
<td>48</td>
<td>0.2</td>
</tr>
<tr>
<td>52</td>
<td>Dovecot Hall</td>
<td>Palisade Only</td>
<td>92.22</td>
<td>308</td>
<td>103</td>
<td>0.43</td>
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<tr>
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<td>Palisade Only</td>
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<td>735</td>
<td>245</td>
<td>1.02</td>
</tr>
<tr>
<td>54</td>
<td>Dryburn Bridge 1</td>
<td>Palisade Only</td>
<td>85.79</td>
<td>286</td>
<td>95</td>
<td>0.4</td>
</tr>
<tr>
<td>55</td>
<td>Dryburn Bridge 2</td>
<td>Palisade Only</td>
<td>135.6</td>
<td>452</td>
<td>151</td>
<td>0.63</td>
</tr>
<tr>
<td>61</td>
<td>East Linton</td>
<td>Phase</td>
<td>217</td>
<td>723</td>
<td>241</td>
<td>1</td>
</tr>
<tr>
<td>92</td>
<td>Hedderwick 1</td>
<td>Phase</td>
<td>97.5</td>
<td>325</td>
<td>108</td>
<td>0.45</td>
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<tr>
<td>164</td>
<td>Sled Hill 2</td>
<td>Palisade Only</td>
<td>152.57</td>
<td>509</td>
<td>170</td>
<td>0.71</td>
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<tr>
<td>168</td>
<td>Snawdon Hill</td>
<td>Palisade Only</td>
<td>85.9</td>
<td>286</td>
<td>95</td>
<td>0.4</td>
</tr>
<tr>
<td>172</td>
<td>South Belton 2</td>
<td>Palisade Only</td>
<td>53.48</td>
<td>178</td>
<td>59</td>
<td>0.25</td>
</tr>
<tr>
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<td>Springfield 3</td>
<td>Palisade Only</td>
<td>104.32</td>
<td>347</td>
<td>116</td>
<td>0.49</td>
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<td>188</td>
<td>Standingstone</td>
<td>Phase</td>
<td>90</td>
<td>300</td>
<td>100</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Table 6.9 Lengths of palisades and estimated number of posts required for their construction from selected sites within the study area
These figures only provide a snapshot of the amount of wood required to create palisaded enclosures and access to large amounts of wood would have been imperative. However timber would also have been required for constructing roundhouses and also fires (it has also been suggested that tree leaves could have provided fodder for animals – Chadwick 2008, 101). As woodland was cleared, more land would have been available for settlement and farming but this would not have been a simple process (see chapter 7 for further discussion). However the amount of timber available may have dwindle and pollen diagrams from elsewhere suggest that clearance intensified into the late Iron Age (Tipping 1994). Woodland therefore may have been managed for sustainability and perhaps even controlled by certain communities.
6.4.8 Vallation: Single vs. Double vs. Multiple

Figure 6.29 Maps showing the distribution of single, double and multiple ditched sites
There is a common assumption that multivallate sites are forts. If these were territorial markers, therefore, it would be reasonable to assume an even spread across the study area. This appears to be the case within the study area and a relatively even spread of double and multiple ditched sites can be seen (see Figure 6.29). These sites may have been dominant within their landscapes or sitting within catchments. The analysis of Broxmouth, however, has revealed that care has to be taken with the cropmark data as despite having the appearances of a multivallate site, the phasing suggests otherwise (see chapter 4) and although the inner and middle ditches may have co-existed, this would only have been for a short time. These sites, like Broxmouth, may have had long biographies and the multiple ditches simply reflecting different enclosure creation circuits over a long period of time (*cf* Hingley 1992). The potential longevity of these sites is explored further in chapter 7, with regards to the excavated evidence.

6.4.9 Vallation vs. Landscape setting

![Vallation vs. Landscape Setting](image)

Figure 6.30 Chart showing relationship between landscape setting and number of ditches
Wise has noted that promontory forts in particular, often had multiple boundaries “convincingly defensive in location and scale” (2000, 95-96). This analysis has shown that there is an over-representation of multivallate sites on more prominent locations, particularly promontory sites. However, there are sites of all vallations in different landscape settings (see Figure 6.30). Instead of viewing these sites as defensive, multiple ditches may not be an indication of defence but of long biographies.

Figure 6.31 Height of enclosed sites according to number of ditches

Figure 6.31 further shows that there is very little relationship between the vallation of sites and the altitude. Multivallate sites are located in a wide range of altitudes although most of them are in prominent locations. Equally, single-ditched sites are found in prominent locations although the percentage is not as high as multiple-ditched sites. This will be explored further in chapter 8 as to whether there is a visual dominance of sites in relation to the topography.
6.4.10 Area Sizes

127 area measurements were taken from a total of 119 enclosed sites in the study area (53% of the sites – see Figure 6.32). Only 53% of the sites could be measured due to the fragmentary nature of some of the cropmarks and the decision was taken to only measure enclosed sites clearly delineated on all sides by either a ditch or natural features (as was the case for some of the promontory sites). Where cropmarks were shown to have distinctly separate phases (i.e. overlapping enclosures), separate measurements were taken (e.g. Northrig A and B – sites 130 and 131 – see Figure 6.33). Cropmark area sizes were calculated in GIS from the cropmark data (supplied by RCAHMS) and upstanding sites were calculated using the 1924 inventory plans, scanned and inputted into AutoCAD. For consistency, both upstanding and cropmark sites were measured from the inner lip of the innermost enclosure ditch. Two measurements were taken from Traprain
Law: from the inner rampart (which follows the course of the Cruden wall along the north side of the hill) and the outer rampart (see Figure 6.77). The measurement was then taken following the base of the hill, assuming that this rampart continued, it followed this line.

![Diagram](image)

**Figure 6.33** An example of an enclosed site where two separate measurements had to be taken. This site is interpreted as having two separate phases (Northrig A and B - sites 130 and 131)

![Graph](image)

**Figure 6.34** Scatter graph of the area sizes of all enclosed sites in the study area (including the two outliers which represent the two separate phases of Traprain Law: Cruden Wall (7.11ha) and outer rampart (16.73ha))
Figure 6.35 Scatter graph showing a detailed breakdown of area sizes (omitting Traprain Law).
Broxmouth measures 0.46ha

Traprain Law is by far the largest site, even during its smaller phase it is almost seven times bigger than the next biggest (Traprain’s nearest rival in size is Whitelaw Hill (site 222) at 1.37 hectares). Putting Traprain Law to one side, the great majority of sites (81%) are less than 0.5ha in size (Figure 6.35).

Figure 6.36 Chart showing area sizes according to the number of enclosing circuits
Single ditched enclosures tend to be smaller in size than those with two or more ditches (see Figure 6.36) but ranged wildly in size, the largest being 1.37ha in size (Whitelaw Hill; with the exception of Traprain Law). The multiple ditched sites do tend to be bigger, ranging from 0.33 (Snawdon 3 – site 167) to 0.94 (Friar’s Nose – site 70) but appear to be restricted in size range. Sites with multiple ditches/ramparts in other areas of southern Scotland have also been noted as being restricted in size range, not being amongst the largest examples but not being among the smallest either (Kokeza 2008, 57) and, as is the case in East Lothian, the largest sites do not tend to be multiple ditched. Broxmouth is 0.46ha in size and fits into this size bracket of multiple ditched sites.

Examples of larger sites with only one ditch are known from Wessex and these tend to be devoid of internal features, suggesting that these may have been meeting places rather than settlements (Payne et al. 2006). This could be the case at Garvald Mains as it was noted during the phenomenological study how much the site sloped in the interior and it would have been difficult constructing houses on the slope (see chapter 8). Smaller single ditched sites may not have been occupied for long, as the excavated evidence from Biel Water has suggested (Innes 2008). However this is further explored in chapter 7.
6.4.11 Area size vs. Morphology

Each morphological group ranges widely in size but there appear to be restrictions on the size range of rectilinear sites, with the largest one being 0.64ha (Thurston 3 – site 207). Some of these sites may not even be later prehistoric in date and have been compared with possible medieval field systems (e.g. Cowley 2009). Halls 1 (87) may be such an example (see Figure 6.38) and is similar to the settlement revealed north of the Tyningham estate in the north-east of the county (see chapter 4). Although there are only eight D-shaped enclosures, these are larger in size (the two smaller measurements appear to be part of the same enclosed site – see below).
Figure 6.38 Halls 1 (87) which may be part of a medieval field system, rather than being later prehistoric in date.

Figure 6.39 Spott Farm showing the two smallest D-shaped enclosed sites in the study area as components of a bigger, curvilinear enclosure.
6.4.12 Area Size vs. Altitude

There is very little relationship between altitude and area size (see Figure 6.40), although the larger sites (> 1ha) are restricted to 150-200m OD. Generally the smaller sites are located at < 200m OD but there are still examples located on higher ground and the patterning does not appear to be significant.
6.4.13 Larger sites in the landscape

Figure 6.41 Maps showing the sites divided into less than (above, showing the sites without area size data) and greater than 0.5ha (below)
It can be argued that in the east of the study area, the sites bigger than 0.5ha are evenly spread, suggesting that these could be foci for larger populations (see Figure 6.41). However the larger sites tend to cluster in the western area of the study area, suggesting a subtle difference in social organisation (see ‘Comparing Either Side of the Gap’ below). The enclosed sites on the east side could be territorial markers, as they fringe the higher ground, giving good views over this particular NW-SE coastal plain area down into Berwickshire. The larger sites in the west also tend to avoid the flattest areas of the coastal plain with Traprain Law being one of the exceptions.

Figure 6.42 Map showing the large sites (> 0.5ha in size) and Broxmouth in relation to the early routeways (based on Graham 1951; 1962; Aliaga-Kelly 1986)

Interestingly, the larger sites are located very close to early routeways, and this is explored further in chapter 8. Some of these sites may have been integral to movement across and although slightly smaller, sites like Broxmouth may have formed way markers for people moving through the landscape. Smaller sites may
have been the main focus for settlement, whereas larger sites may have also been meeting places or visited occasionally. Larger sites with permanent settlement may have existed, but the complex nature of the evidence from Broxmouth suggests that these sites may have changed in function over several years. This is explored more in relation to the excavated data in chapter 7.

6.4.14 Broxmouth and other multivallate sites in the landscape

Eleven sites were identified as broadly similar to Broxmouth, in terms of vallation (and potentially long biography), number of entrances and area size. The following analysis will investigate the location of these sites in the landscape and discuss how they compare.

Figure 6.43 Sites comparable to Broxmouth. 22 – Broxmouth; 40 – Clifton Hill; 47 – Doon Hill 1; 48 – Doon Hill 2; 65 – Easter Pinkerton 2; 70 Friar’s Nose (upstanding); 157 – Sheriffside 1; 166 – Snawdon 2; 167 – Snawdon 3; 174 – Spott Dod; 197 – The Chesters, Spott; 219 – White Castle (upstanding)
Figure 6.44 Map showing the location of the Broxmouth-like sites

These sites are spread out over the study area (Figure 6.44) and despite the similarities noted; these also differ in many ways, particularly with regards to the arrangement of ramparts and ditches and landscape settings. The internal area of Friar’s Nose stands at 0.94 hectares, larger than Broxmouth (internal area: 0.46ha), though the similarity in ditch spacing and one side having more ditches shows what Broxmouth may have looked like when it was upstanding. The Chesters Spott has a similar internal area to Broxmouth, well preserved internal settlement evidence and similar orientation of entrances. However the spacing between ditches is much wider than that at Broxmouth, which suggests that all of these circuits could have been contemporary and created within a short space of time. There are implications for how many people would have been involved in the creation of the site and the social relationships that existed to facilitate this. Also the ditches
appear to be wider which implies that the ramparts may have been larger too. Snawdon 2 is similar in size, morphology and entrance orientation; however this site is only bivallate which may suggest a shorter or less intense occupation period.

Chesters Spott would have made a very impressive visual impact being located on top of a hill, whereas Broxmouth would have had a limited impact on a hill only 25m OD, although this is dictated by a coastal landscape with no big hills (see chapter 8 also). Friar’s Nose and White Castle lie in isolated positions where visual impact would arguably have been very limited. Friar’s Nose has evidence for dense settlement and also post-enclosure settlement. Despite its isolated location, there is evidence for cord rig near the site which suggests that land would have been farmed during later prehistory. Other sites such as Snawdon 2 and 3 are located on the fringes of the Lammermuirs which may have been related to the use of the area as transhumance. The site of Clifton Hill is located on flat ground; however this site is also located close to the coast and shares similar entrance orientations with Broxmouth.

6.4.15 Number of Entrances and Orientation

Very little is discussed in relation to the orientation of enclosed site entrances (however see Nottage 2010), although the orientation of roundhouse entrances have been attributed to cosmological factors (e.g. Oswald 1997; Parker Pearson 1996). Certain orientations may have been status indicators (e.g. Parker Pearson and Sharples 1999) or may indicate a different function, as has been suggested for the number of entrances at sites. Brown Caterthun’s nine entrances, for example, are interpreted as symbolic and that this site was easily entered and facilitated
access to and through the site (Dunwell and Strachan 2007). Broxmouth’s three entrances (east, west and south-west) reflect two different phases of entrance use, therefore it is possible that other sites in the study area with more than one entrance could have more than one phase. However the west entrance of Broxmouth was not detected until excavation and was found to have been blocked during its history. As many of the cropmarks are partial, more entrances may have existed and although all entrances were recorded, most of the analysis has been restricted to complete cropmarks.

Of the 226 enclosed sites in the study area, a total of 196 entrances were determined from 126 sites which had enough information surviving to determine entrance locations. 67 sites had complete circuits where the number of entrances could be accurately determined. In a further 59 cases, visible circuits were incomplete and only a minimum number of entrances could be identified. A further 100 sites were classed as incomplete, where no entrances could be discerned from the cropmarks or where the cropmark data was so convoluted that entrances could not be distinguished (see Figure 6.45). Entrances at multivallate sites that broke through all circuits along the same orientation were classed as a single entrance. However if differently orientated entrances broke through different circuits then these were classed as separate entrances.
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Figure 6.45 Spott Dod (site 174). Some of the numerous breaks in the various circuits may be a product of plough truncation rather than original entrances.

Figure 6.46 Chart showing the number of entrances present at enclosed sites.
Figure 6.47 Entrance orientations of enclosed sites in the study area

Figure 6.47 shows that east appears to be the favoured orientation (14%) and generally, easterly facing directions ranging from NE to SE outnumber the westerly directions ranging from SW to NW (40% versus 34%). However this does not form an overwhelming majority. North facing entrances are rare (4%), as are south facing ones (3%).

Figure 6.48 Chart showing entrance orientations of sites with only one entrance present
Forty sites had complete circuits with only one entrance visible (see Figure 6.48) and there is a preponderance of eastern orientated entrances, particularly orientated east (23%) and north-east (18%). There is also a distinct difference between the number of easterly (55%) and westerly (20%) orientated entrances, which suggests that westerly orientations are predominantly a feature of sites with multiple entrances. Unlike roundhouses, enclosed sites would not have to take into account light or wind for entrance orientation however topography and easy access may have been factors in the location of entrances (see below).
East orientated entrances dominate at single ditched sites (16% - see top Figure 6.49). Double ditched sites have an equal number of easterly and westerly orientated entrances. However western-orientated entrances dominate at multiple-ditched sites (22%), closely followed by SSW orientations (19%) (see bottom Figure 6.49). Northerly facing entrances are rare across all sites, however they are absent from multiple-ditched sites. At Broxmouth, the cemetery was placed on the north side of the site and there may have been an avoidance of using this direction for an entrance at certain sites. Westerly facing entrances have been argued to be high status indicators, with regards to the brochs and wheelhouses on the Western Isles (Parker Pearson and Sharples 1999, 17). However this appears not to be the case here, considering they are found at different vallations of enclosures. Multiple ditched sites tend to display more entrances and this appears to reflect the longevity of use at these sites, as well as their larger size.
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Both curvilinear and rectilinear sites are dominated by E and W orientated entrances (curvilinear 13%; 10% and rectilinear 20%; 13% respectively – see Figure 6.50). There are subtle differences between the two morphologies, with rectilinear sites having no south-orientated entrances and more marked concentrations of east and west orientated entrances.

6.4.16 Number of entrances vs. vallation

![Entrance Orientations: Morphology](image)

**Figure 6.50 Chart showing entrance orientation in relation to morphology**

![Number of Entrances vs. Vallation: Complete Circuits](image)

**Figure 6.51 Bar chart showing the entrance data for sites with complete circuits**
The majority of enclosed sites have only one entrance (see Figure 6.51). Only five single ditched sites have more than three entrances showing that it is uncommon for single ditched sites to have multiple entrances. A similar pattern can be observed from the incomplete sites (see Figure 6.52). The data however from double and multiple ditched sites is too fragmentary to observe any noticeable patterns.

![Bar chart showing the entrance data for sites where only a minimum number of entrances could be ascertained](image)

Figure 6.52 Bar chart showing the entrance data for sites where only a minimum number of entrances could be ascertained

![Old Belton 1 (site 133) with three entrances, each interpreted as original. This morphology is rare in the study area](image)

Figure 6.53 Old Belton 1 (site 133) with three entrances, each interpreted as original. This morphology is rare in the study area
6.4.17 Number of Entrances vs. Altitude

![Altitude vs. Number of Entrances](image)

Figure 6.54 Scatter graph showing relationship between the altitude and number of entrances at enclosed sites

Only sites with complete cropmarks and upstanding sites were subjected to the above analysis (see Figure 6.54). The majority of the enclosed sites with one entrance lie below 200m OD. Sites with two entrances are restricted to between 50-200m OD; whereas a range of heights are observed for sites with more than three entrances. Overall however there is very little relationship between altitude and number of entrances, where the highest sites do not necessarily have a high number of entrances.

6.4.18 Entrances and the relationship to local topography

Kokeza in her recent study of southern Scotland (2008, 79-81) investigated the relationship of entrance orientation to the local topography and divided the relationships as follows:

- Sites with entrances orientated towards the closest watercourse
• Sites with entrances orientated towards an easy approach
• Sites with entrances not orientated towards water or an easy approach

Sites could be orientated on an easy approach or a watercourse for functional reasons. However with notable topographic features such as Traprain Law, it will be interesting to examine if there is a potential relationship between entrance orientation and special places in the landscape. Where sites have more than one entrance, potential differences in entrance orientation will be discussed.

The easiest approach was defined as an approach along flat land or, if the site was located on a hill or a slope, the gentlest slope. There is a possibility that these approaches may not have been the easiest in the past as the lower lands may have been waterlogged. However despite analysis of modern and historical OS maps, the extent of waterlogged land is difficult to assess therefore an element of caution has to be exercised. Sites that were located within 300m of a watercourse and with an entrance orientated in this direction was classed as orientated on a watercourse. If this also constitutes an easy approach, it was still classed as orientated on a watercourse, if an entrance could have been placed somewhere else in the circuit and still take advantage of an easy approach. Sites that do not appear to be either of the above have entrances that are orientated on steep approaches.
Figure 6.55 Example of enclosed site with the entrance orientated on the easiest approach, which in this case follows the contour line (Bara Wood - site 4).

Figure 6.56 Example of enclosed site with the entrance orientated on a water course (East Bearford 2 - site 59).

Figure 6.57 The entrance to this enclosed site is orientated down the steepest side of the hill, however an easier approach would be from the east or the south.
Figure 6.58 Pie chart showing the relationship of entrances to the local topography

The majority of entrances orientate on the easiest approach (74% - see Figure 6.58). Where entrances do not orientate on the easiest approach or towards water, they tend to orientate down steep slopes (e.g. Pinkerton Hill 1 – see Figure 6.57). The reason for this may be because the ‘easiest’ approaches were blocked, for example, by areas of woodland. There may also have been conscious decisions to avoid orientation on other enclosed sites in the area, which may or may not have been occupied at the same time.

6.4.19 Opposing Entrances

It was noted during the previous analysis that of the forty seven sites with at least two entrances, thirty five (74%) including Broxmouth, had opposing entrances; therefore the decision was taken to analyse the relationship of opposing entrances to the local topography. The definition of opposing entrances does not just mean
directly opposing entrances; rather sites with entrances in opposing sides of the
circuit (see Figure 6.59 and Figure 6.60).

Figure 6.59 Example of enclosed site with directly opposing entrances (Branxton 1 - site 19)

Figure 6.60 Example of enclosed site with non-directly opposing entrances but located on different
sides of the circuit (Chesters 2 - site 37)
Eight sites (23%) had one entrance orientated towards the easiest approach and the other towards water (Figure 6.61), which would arguably facilitate movement of stock easily in and out of the site and towards water. Opposing entrances tend to be orientated on easy approaches (57%) although it is interesting to note the rarity of sites that orientate both entrances on water or steep approaches. Apart from three sites, all sites had at least one entrance orientated on an easy approach. If entrances were not contemporary, this could reflect the changing needs of the community within the settlement, e.g. if animal husbandry had become more important and an accessible entrance to water was needed.

6.4.20 Entrance Discussion

There is no one preferred entrance orientation, although easterly and westerly orientated ones dominate, with a general avoidance of north and south orientated entrances. Whilst cosmological concerns may have governed the orientation, entrances may have been orientated for practical reasons to account for
topography, location of water and ease of access (see below). This is ultimately linked to the decisions governing the location of the site initially and subsequent use may lead to changes in entrance orientation or the addition of entrances. This may be reflected in multiple-ditched sites, where there are an unusually high number of westerly entrance orientations, such as SSW and W, and an unusually low number of easterly orientations.

There is little relationship between the number of ditches or the height of the enclosure to the number of entrances. Topography however does appear to have been a concern to enclosure builders as many of the entrances were orientated on the easiest approaches. Ease of access therefore was an important factor and could be linked to the need for people and animals to have easy access into enclosures. The sites that displayed opposing entrances on easy approaches and water may indicate an emphasis on animal husbandry, as evidenced by the Broxmouth faunal assemblage (see chapter 4) and a desire to facilitate animal movement and access. The natural topography of East Lothian facilitates relatively easy access across the landscape and suggests that people and animals could move relatively freely although pit alignments and field systems (see below), as well an enclosures may have delineated areas of land where access was more tightly controlled.

6.4.21 Site Biographies

Although the discussion of biographies can only be explored in detail with regards to the excavated evidence, there is information to be gleaned from the cropmark evidence. Clear evidence of different phases is difficult to differentiate from the
cropmark evidence, although there is limited evidence for later ‘unenclosed’ settlement (see below). Generally where there is more than one ditch, subsequent ditches follow the same shape and it is rare that separate phases overlap or have a different shape, with only three of these in the study area (see Figure 6.62).

![Figure 6.62 Sites that display distinctive phases of enclosure and differing morphologies. From left: Northrig; Sled Hill 1; South Belton 1](image)

It has been suggested that small (< 0.2ha) enclosed sites may only have housed one family and may have only lasted a generation (Innes 2008; Hamilton 2010). 53 sites in the study are < 0.2ha in size (23%), with six (11%) having evidence for double ditches and none with multiple ditches.
The small sites are evenly spread throughout the study area (see Figure 6.63).

Many of the sites lie on the coastal plain itself and for the few that are located on the fringes of the Lammermuirs; many are closely associated with the larger and potentially longer-settled sites. Interestingly the small rectilinear sites are located very close to the routeways which may suggest that these were established by the latter centuries BC. The relict remains of small enclosures may equally have formed foci to locate and establish routeways into the post-Roman period along the coastal plain. Although sites may have been ‘abandoned’, their imprint was still visible in the landscape and there is evidence for long abandoned sites (e.g. Whittingehame Tower and Standingstone – Haselgrove 2009a) being returned to in later periods. This is explored further in relation to the excavated evidence in chapter 7 as Bayesian analysis of excavated sites show that some sites of this size only lasted 25–40 years (Hamilton 2010, 263).
6.5 Comparing Either Side of the ‘Gap’

A gap in the distribution of enclosed sites has been identified, through the above analyses, to the east of Traprain Law and appears to be a genuine gap during later prehistory. This analysis examines the characteristics of the sites either side of the gap, including morphology, vallation and area size, in order to help determine whether this gap is genuine and if the settlement characteristics differ from one side of the gap to the other. This analysis focuses on the coastal plain, therefore the sites located in the uplands (70 - Friar's Nose; 186 - St Agnes; 219 - White Castle), as well as the lone site located within the gap (192 - Stenton) have been omitted. 110 sites have been identified to the east of the gap and 113 sites to the west (see Figure 6.64).
6.5.1 Morphology

Figure 6.65 Chart showing the comparable morphologies of both areas
Figure 6.65 shows there is clearly very little difference in the number of differently shaped sites. Although there are five D-Shaped enclosed sites in the east of the county but only three in the west, the numbers are too small to be significant.

6.5.2 Vallation

![Chart showing the difference between univallate, bivallate and multivallate sites either side of the gap](image)

Figure 6.66 Chart showing the difference between univallate, bivallate and multivallate sites either side of the gap

Figure 6.66 similarly shows that there are no significant differences in the vallation either side of the gap either.
6.5.3 Area Size

Figure 6.67 Chart showing the differing area sizes of sites either side of the gap

Figure 6.67 shows that there are differences in area sizes either side of the gap. The chart shows that, for the west side, there are many small sites (< 0.1ha) and larger sites (> 1ha), with fewer sites in the middle range. However to the east, there are more sites in the middle range. If these sites are all broadly contemporary, this may indicate a less developed site hierarchy in the east with fewer numbers of larger sites. Doing this analysis also teases out further information whereas the conventional analysis can dissolve patterning, as Figure 6.68 shows.
6.5.4 Discussion

There are subtle differences between the settlement patterns either side of the gap although whether this is significant is debatable. The variances noted were in area size (Figure 6.67) where there were no sites to the east of the gap that were larger than 1ha in internal area, and also in vallation, where there are more single ditched sites in the west (Figure 6.66). It can be argued that the settlement pattern of later prehistory is homogenous over a wide area although the subtle differences highlighted may indicate slight differences in settlement organisation. This may indicate that different communities had subtle variations in social organisation, which persist through the Iron Age.
6.6 ‘Forts’ versus ‘enclosures’

Figure 6.69 Map showing the location of the forts (left) and enclosures (right) in the study area

All enclosed sites within the study area have been analysed together as the main aim of this chapter was to analyse the wider settlement pattern and deliberately avoided imposing the categories of fort and enclosure. These categories are returned to here to ascertain whether these categories are valid and whether they can say anything about the sites’ functions during later prehistory. The following analysis aims to observe any notable differences in the vallation, morphology, area size, and landscape settings between the different categories of site, as defined by the RCHAMS. According to the RCAHMS definitions, there are 184 enclosures and 42 forts in the study area.
6.6.1 Vallation

Figure 6.70 Forts versus enclosures: vallation

Figure 6.70 shows that the majority of enclosures are single ditched (83%), whereas the majority of forts are multiple ditched (57%). However one can argue that the reason sites are classified as forts in the first place is generally because of the multivallation. Therefore vallation alone is insufficient to define a separate category of ‘fort’.
6.6.2 Morphology

Figure 6.71 shows that the majority of both forts and enclosures are curvilinear, however forts display less architectural variety and only 5% are rectilinear. As the majority of forts have more than one vallation, specific morphology cannot be compared to the enclosures.
6.6.3 Landscape Setting

![Enclosures: Landscape Setting](image1)

![Forts: Landscape Setting](image2)

Figure 6.72 Forts versus enclosures: landscape settings

Most enclosures either lie on a slope (55%) or close to a river (37%), with most forts lying on a promontory location (31%), however these do not form an overwhelming majority. According to CANMORE, a fort is “often located on a hilltop”, however this analysis has shown that this is not necessarily the case and sites classed as forts occupy a variety of landscape settings. Also, a small number of enclosures also occupy hilltop positions (3%). This is not to diminish the fact that most forts do indeed occupy prominent positions but only in relation to the local landscape; Traprain Law being a good example of this.
6.6.4 Area Size

![Graph: Area Sizes of Forts and Enclosures]

Although forts are clearly not amongst the smallest of the enclosed sites, their sizes still are comparable to those of enclosures and the largest enclosed site is an enclosure rather than a fort (with the exception of Traprain Law). Again, size is a factor in categorisation but with sites overall in East Lothian being relatively small, the term ‘fort’ seems inappropriate.

6.6.5 Discussion

There are no clear criteria by which to separate the two classes of monuments. As the landscape of East Lothian is relatively flat where most sites are located, there appears to have been difficulty clearly defining the site types. This seems to have been hampered by the relatively limited size range of the dataset. There seems to be no justification for retaining the separation between the two groups of sites in the study area.
6.7 ‘Unusual’ sites

Certain sites which stand out in some way from the settlement pattern are worth discussing more specifically in relation to issues of creation, maintenance and use of the landscape during later prehistory.

6.7.1 Doon Hill 1 and 2 – sites 47 and 48

The hilltop at Doon Hill overlooks Broxmouth and lies c.5km south of the coast and has revealed the remains of two enclosed sites, almost touching. The general morphology of both sites are strikingly similar and it is believed that the two belong to the later prehistoric period (Halliday pers. comm.). Armit has argued that one site may have replaced the other and is analagous with the Pā in New Zealand. When individual pās went out of use, often following the death of a chief, they were treated as tapu (taboo) and sometimes resulted in the construction of a new pā on
an adjacent site, often within a few hundred metres (2007, 35). The implications for contemporaneity are interesting as the sites may reflect centuries of creation and maintenance. The sites are strikingly similar to Earn’s Heugh in Berwickshire, excavated by Childe in the 1930s where again, no stratigraphic relationship could be established (Childe and Forde 1932; see Figure 6.75). The sites are located in a prominent location and the spectacle of gathering people together to create these sites would have been great.

Figure 6.75 The two forts of Earn’s Heugh, which are comparable to Doon Hill (http://canmore.rcahms.gov.uk)
6.7.2 Blackcastle Cottage – site 14

Blackcastle Cottage is located on a gentle hill and has been singled out as unusual due to its apparently unique entrance, where the ditches almost loop back on themselves. Allowing room for a rampart, this could reflect monumentalising of the entrance as the extra material from the ditch could have been used to heighten the ramparts here.
6.7.3 Traprain Law A and B – sites 211 and 212

Figure 6.77 Traprain Law (after Feachem 1958; Armit et al 2006)

Traprain Law has been singled out not only for its exceptional chronological depth, dating back to the Neolithic, but also the pre-eminent position it occupies in the East Lothian landscape. This site is the most intensively excavated later prehistoric site in East Lothian and arguably, south-east Scotland. It was first excavated during the 1910s and 1920s by Alexander Curle and James Cree over seven years (e.g. Curle 1915; Curle and Cree 1916; Cree 1923). Various smaller scale excavations have been carried out by Cruden (1940), Bersu (Close-Brooks 1983) and within the last twenty years (e.g. Armit et al. 2002; 2006). The range of artefacts uncovered by the various campaigns has shown that the hill has been a focus of activity since the Neolithic and through the Bronze Age (Armit et al. 2006, 603). However activity intensifies in the Late Bronze Age when the first rampart (the inner rampart enclosure) was apparently constructed. The evidence from the summit of the site shows intensive occupation, especially during the ninth century.
BC, with occupation on the western terrace dating to a little later, into the earliest Iron Age (Armit et al. 2006, 604). However this did not last and evidence for occupation in the Iron Age is virtually absent, although this need not mean the site was abandoned altogether.

The intensity of activity returns during the Roman Iron Age with artefactual evidence for dense settlement at this time. The site continued to be a focus for activity, with a spectacular late Roman silver hoard (Curle 1923) and the ‘Cruden wall’ (named after the excavator) which was constructed around the fourth century AD. During the medieval period, the site may have been a pilgrimage place, linked to St Kentigern who was the supposed grandchild of the mythical King Loth, from which ‘Lothian’ derives. The medieval structures that survive on Traprain may be related to this mythology (Armit et al. 2006, 607) and it is possible that this story is connected to myths and legends perhaps derived from an earlier time.

6.8 Other evidence for the later prehistoric period

6.8.1 The unenclosed settlement pattern

Only 38 unenclosed later prehistoric sites are recorded within the study area, which were recorded on CANMORE as ring ditch, hut circle, roundhouse and unenclosed settlement.
The distribution pattern (see Figure 6.78) corresponds broadly to the location of the enclosed sites during the later prehistoric period. However, as highlighted earlier, there is less certainty over whether every circular cropmark represents a roundhouse. There is uncertainty in CANMORE, for example, over whether some cropmarks are roundhouses, or Bronze Age barrows. It appears that the dominant settlement pattern in later prehistory is that of enclosed sites despite the uncertainty due to the discovery of unenclosed sites not known from cropmarks (e.g. Newmains (Clarke 1969; 1970); Phantassie Farm (Lelong 2008a)). There is also no unenclosed settlement distribution in the uplands, with the exception of a few isolated examples.

The Broxmouth evidence has highlighted, however, that unenclosed settlements can be located within and over previously existing boundaries. The excavated
evidence (see chapter 7) has highlighted examples of this and there are also cropmarks and upstanding sites where this also may be the case (see Figure 6.79). There is no definitive way to prove that unexcavated cropmark enclosures have later houses, however where potential remains are located close to the inner lip of the ditch, this may indicate later settlement not contemporary with enclosure creation, although still respecting the boundary. Although the later evidence at Broxmouth appeared to have slighted the boundaries, the later cemetery, roadway and phase 6 reworking of the inner rampart (phases 5 and 6; see chapter 4) indicate a modicum of respect for the boundaries. This may suggest that the boundaries would have been visible and although no longer maintained, conceptually they may still have been important.

Figure 6.79 Sites with houses possibly later than enclosure creation. From left to right: 19 - Branxton 1; 43 - Colstoun Mains; 98 Innerwick 1
6.8.2 Stray Finds

Figure 6.80 Map showing the distribution of stray finds in the study area. Gilmerton House is circled

There are only seven stray finds recorded from the study area. All are stone items, either querns, whetstones or spindlewhorls except for Gilmerton House (see Figure 6.80), where a fieldwalking exercise recovered pottery, a Roman brooch, Roman glass as well as a rotary quern (Hunter 2009). Although not directly associated, there is an enclosure in the vicinity of these finds.
6.8.3 Isolated Burials

Figure 6.81 Map showing location of isolated later prehistoric burials

East Lothian has a relatively high number of Iron Age burials, particularly from Broxmouth and Dryburn Bridge, although isolated Iron Age burials are relatively rare (see Figure 6.81). The majority of burials are found within cists and these have a long currency of use through to the Medieval period. Broxmouth offers the best evidence for burial practices during this period with an extra-mural cemetery to the north of the hillfort (possibly dating to one generation of burial activity), four interior burials (although one was post-Roman) and nineteen fragments of human bone from various contexts. Dryburn Bridge has ten Iron Age cist burials although many of these were fragmentary and incomplete. Some were contemporaneous with the settlement although other clearly post-dated the palisade (Dunwell 2007, 63-67).
6.8.4 Caves/Middens

Caves and midden deposits have been grouped together as midden deposits are frequently associated with caves, as well as being found as stand-alone deposits. There is one potential ‘midden’ deposit from the study area, located at Pincod, Dunbar. The finds were reported in *PSAS* in 1910 but the grid reference is only four figure. The collection of eighteen finds included a bone pin, a sherd of pottery, flint arrowhead and animal remains. The list is very ambiguous as there is no indication to the dates of these items although it is possible that these finds date to the earlier prehistoric period. There are no known cave sites from the study area, however along the north and west coasts of East Lothian there are a few examples with later prehistoric activity (see chapter 7).

6.8.5 Pit Alignments

Figure 6.82 The extensive pit alignments that survive near Chesters Drem and Barney Mains
Pit alignments are perhaps the most enigmatic features in the study area. Extensive systems are known to survive to the south-east in Berwickshire, particularly in association with the forts at Marygoldhill Plantation (Strong 1988) and further to the west in East Lothian, outside the study area, are complex systems on a similar scale around Chesters Drem and Barney Mains forts (see Figure 6.82). The association with later prehistoric sites has led to the assumption that these features belong to this period and they are often interpreted as large scale land divisions (Halliday 2002), linked to later prehistoric economic and political structures (Cowley and Dickson 2007, 49-50). However pit alignments are also known from the Neolithic period, with examples from Northumberland (Mket 1981). The close association of the south-east Scottish examples with later prehistoric settlements argues for a later date. The following images map pit alignments in relation to the sites of varying size and vallation, as well as known watercourses.
Figure 6.83 Distribution of pit alignments across the study area. (shown in blue). Boxes highlight the densest areas of pit alignments within the study area – see Figure 6.84; Figure 6.85
Pit alignments forming coherent systems (akin to those at Barney Mains and Chesters Drem – see Figure 6.82) do not occur in the study area (see Figure 6.83). Very little survives in the east of the study area; however a potential ‘system’ may survive west of Broxmouth (see Figure 6.84). Elsewhere in the eastern part of the study area, the remains are much more fragmentary, although some can be seen running perpendicular to water courses, which may have defined blocks of land also utilising natural features. In the western part of the study area, there are more short lengths of alignments surviving on slightly higher ground fringing the Lammermuirs. These too appear to originate at water courses and demarcate areas of land.

Figure 6.84 Details of the pit alignments (turquoise) in the east of the study area, in relation to watercourses, routeways (pink) and enclosed sites (red dots)
Figure 6.85 Details of pit alignments in the west of the study area, in relation to watercourses, routeways (pink) and enclosed sites (red dots)

Whilst sites like Black Castle (Figure 6.85) appear to have pit alignments directly associated with them, the two areas show that there are no large and extensive systems like those at Chesters, Drem. However, there appears to be a close association of pit alignments and routeways, particularly in the western part of the study area around the Black Castle area. It is plausible therefore, that these alignments are associated with land division, and possibly stock movement into the Lammermuirs. If contemporary, enclosed sites would not just have functioned as standalone settlements, rather, they would have been incorporated into wider landscape division. Enclosures would not only have been sites for human occupation but for animals also, some of which display evidence for internal divisions or possible outer compounds which could be evidence for stock rearing and management (see Figure 6.86). Cattle and sheep would have been kept on or close to settlements but the pit alignments and routeways show that animals would
have been driven into the uplands, possibly during summer months. The coastal plain may not have been formally divided, however the routes into the Lammermuirs themselves appear to have been controlled.

Figure 6.86 Enclosures in the study area with partitions potentially defining areas for stock (124; 175-177; 179) and sites with possible outer compounds (93-94; 121-122; 162-163)
6.9 Discussion

6.9.1 A county of contrast

The majority of sites lie on the coastal plain and all sites enclosed and unenclosed avoid the uplands, which is contrary to the early prehistoric evidence (see chapter 5). This appears to indicate real patterning and the modern land use of the Lammermuirs may have origins in this period. The development of routeways may have originated during the prehistoric period and appears to be part of a wider landuse strategy. The arrangement of pit alignments across the study area may relate to wider movements of animals and the argument here is that this area was used for transhumance during later prehistory. Arable farming has dominated the coastal plain for centuries and consequently, only 4% of the sites in the study area survive as upstanding remains in the areas dominated by pasture on the Lammermuir fringes. The East Lothian coastal plain, on the other hand, is relatively flat and fertile which means that the area is dominated by arable farming. Centuries of ploughing has contributed to the cropmark record we see today, Broxmouth being a good example of this. However, despite centuries of plough truncation reducing this site in some areas as much as 0.75m from the original ground surface (Hill 1982b, 143), there was still exceptional preservation on this site and the cropmarks of the interior are a pale reflection of the activity that once took place here.

6.9.2 The nature of later prehistoric enclosed sites

This initial analysis has offered an overview of the nature and characteristics of the later prehistoric enclosed settlement in East Lothian. Enclosed sites tend to be
single ditched, less than 0.5ha in size and curvilinear, although enclosed sites in the study area display subtle variations within the three basic categories of morphology. The area size data also lacks any breaks in the data which implies a lack of formal site ranking according to size. The entrance orientations favour both east and west, with the north and south generally avoided which may suggest that there were shared cultural norms throughout the period. There is little relationship between enclosed sites and altitude although rectilinear sites tended to avoid prominent locations and may be part of wider social changes around the time of the later centuries BC.

The gap to the east of Traprain appears also to be a genuine reflection of later prehistoric activity. The chi-squared tests showed that statistically, the geology and soils were not factors affecting cropmark formation in this area and the mapping of modern farms (see chapter 5) shows that this area is amenable for settlement, therefore the lack of settlement appears to be a reflection of social and cultural choices during later prehistory. As the analysis also shows that there are subtle differences in the cropmark characteristics either side of the gap, this area may have formed a no-man’s land or a territorial division.

Other evidence for later prehistoric settlement and activity is much rarer and due to lack of excavation and antiquarian investigations, much more difficult to interpret. Open settlements have a long currency and are much rarer, in comparison to the north of the Forth where large numbers of open settlements, proven to be later prehistoric in date, have been found (Davies 2007; Cowley 2009). Stray finds are rare in the study area however many examples are known from coastal areas in the west. Cave and isolated midden sites are rare also within the study area, however
there are a few known from other areas of East Lothian (see chapter 7). The characteristics of the settlement pattern can be further investigated using the excavated evidence. The next chapter investigates aspects of enclosed sites, such as creation, maintenance and abandonment to look at the broad chronology of activity in this area.