EARLY MEDIEVAL DYKES (400 TO 850 AD)

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Abstract

Across Britain, there are over 100 possible early-medieval linear earthworks commonly termed dykes; in total, they stretch for over 400 kilometres. They vary in size from those just 100 metres in length to the famous Offa's Dyke, which is over 95 kilometres long. There have been studies of individual dykes (Noble and Gelling 1983 for example) and general discussions of the larger examples (Squatriti 2002 for example), but no systematic attempt to catalogue and analyse them all. Their size and number suggests these earthworks were probably an important aspect of early-medieval life and have the capacity to tell us a great deal about the societies that built them. Dating such earthworks is difficult even with modern archaeological techniques and, as few early-medieval written sources survive, historians have often incorrectly ascribed enigmatic dykes to this period. This present study ascertained which dykes probably belong to the early-medieval period and contains a comprehensive gazetteer of them in the appendix. It also discusses how the dykes relate to the surviving written records, how many people were involved in their construction, what were their functions and what dykes can tell us about the processes that created early-medieval Britain. It calculated that far fewer people were needed to build them than many previous studies had supposed. While some were estate boundaries and King Offa may have ordered the building of the dyke that bears his name to bolster his power, it is argued that many of these earthworks were designed to prevent raiding. The dykes were a symptom of the endemic low-intensity warfare and small-scale forays into neighbouring territories that often characterised this period.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Copyright statement

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All photographs and diagrams in this study are the author's, unless otherwise stated.

Abbreviations

H.E.S.: Historic Environment Services (the county archaeological service for Cornwall)

H.H.E.R.: Hampshire Heritage Environment Record

1 INTRODUCTION AND METHODOLOGY

"There was in Mercia in fairly recent times a certain vigorous king called Offa, who terrified all the neighbouring kings and provinces around him, and who had a great dyke built between Wales and Mercia from sea to sea." Taken from Asser's *Life of King Alfred* written about 900 AD (Keynes and Lapidge 1983 71).

Across Britain, there are numerous long earthworks some of which stretch for miles across the landscape. Unfortunately, this tantalisingly enigmatic reference to an eighth-century Mercian king building an earthwork along the Welsh border is one of the few early-medieval clues we have as to who built them. Even in this quote it is not clear why it was dug, though the author, Asser, seems to imply that this king built it because he was 'vigorous' and wanted to terrify his neighbours. Despite having numerous ramblers following them across the landscape every year, we know surprisingly little about dykes. Though the quote above suggests that Offa ordered one built, we cannot be sure who ordered the building of the rest or why. Not only do we not know the name of the kings who built most of them, we are not even sure which kingdoms were involved. Furthermore, while we suspect that there was a rash of dyke building in the early-medieval period, we are also uncertain which dykes definitely do and which do not date to that time. The time is long overdue for a comprehensive study of early-medieval dykes.

This study therefore attempts to establish how many dykes date to the early-medieval period and attempts to calculate how many people were needed to build them. It also collates all the available evidence (including archaeological and written) to hypothesise why they were built and what functions they fulfilled. This treatise analyses what Fox calls 'travelling, running or linear earthworks', but as these are rather clumsy terms, so the term 'dykes' is used throughout (Fox 1929 135). This work is limited to the period 400 (roughly the end of Roman rule in Britain) to 850 (just before Viking raids became invasions) in

order to exclude Roman defences and those structures built by, or to counter, the Vikings.

Defining what is and what is not a dyke is problematic as any definition may prejudge any conclusions. Earthworks designed to keep animals fenced in (or out) are excluded, as are those that enclose settlements (hillforts and *burhs* for example) and drainage dykes. Luckily, the word ‘dyke’ (which goes back to the Old English language that was established in the early-medieval period) and the Welsh equivalent, ‘clawdd’, are not narrow terms, but can mean just a bank, just a ditch or a combination of the two. Usually one cannot have a bank without a ditch from which the material is quarried, but if one is absent due to later damage, the terms dyke or clawdd are still apposite. Therefore, this study includes any earthwork that contains one or both of those features and does not define a settlement, drain water or have an agricultural purpose. There are three types of earthworks frequently mistaken for early-medieval dykes that we must take particular care to exclude. The first are head dykes, which are usually late medieval features that divided the settled, fertile, arable, lowland areas from less fertile, upland, rough grazing and so prevent animals eating crops (Graham 1951; Silvester and Hankinson 2002 13). The second group are later medieval earthworks found around private woods and game parks (often called park pales or woodbanks). The third type of earthwork to exclude is roads; some dykes look very similar to Roman roads and vice versa, which has caused confusion among scholars (Borlase 1758 325; Smail 1882 119-21; Lynn 1898 88-89; Ferns 1980). Roman Ridge in Yorkshire, for example, is a Roman road, while the nearby Roman Rig is a dyke.

The study covers Wales, England and lowland Scotland; the highlands and islands of Scotland do not seem to contain similar structures. This study should help us understand how dyke building fitted into the wider changes that transformed Britain south of the Forth-Clyde line in the period 400 to 850. At the start, this area was part of the Roman Empire which fragmented into tribal groupings and then towards the end of the period large kingdoms emerged,

some of which spoke a Germanic language brought by invaders from across the North Sea.

While this work contains evidence obtained by archaeologists, it is not written by one. Linking archaeological evidence with written evidence is always problematic, but if historians do not study periods where archaeology provides the bulk of the evidence, they potentially surrender the chance to marry an analysis of early-medieval texts with the physical remains from the period.

1.1 The history of dyke studies

"I would maintain that, on a subject of such bewildering confusion as that of our ancient dykes and earthworks, any reasonable hypothesis that enables us to group together a certain number of these boundary lines, can hardly fail to be of service" (Guest 1849 192)

Guest's call for a systematic study of the dykes of Britain went largely unheeded, despite Godsal later repeating it (Godsal 1913 3). A century after Godsal there has still been no major study of early-medieval British dykes that definitely lists and categorises them though there have been studies of individual earthworks or small groups of them. An examination of how previous scholars have studied dykes though can help formulate future research strategies and did indeed help in the production of this study. We should use caution with such works as with few surviving contemporary documents, early-medieval dykes can attract some bizarre theories; Pitt Rivers once postulated Bokerley Dyke and Grim's Dyke acted as a giant funnel for herding deer from the New Forest to Cranborne Chase Forest, a claim so unlikely that even he dropped it almost immediately (Pitt Rivers 1892 291-93).

An analysis of, say, prehistoric henge building that merely concentrated on Stonehenge or Avebury would be considered fatally flawed, yet previous studies of early-medieval dykes have usually focused on individual examples, usually the more famous and therefore larger ones. When Wileman, for example, discussed the purpose of dykes, she merely touched on the larger earthworks and the piece was more a framework for how we might attempt a study than an in-depth analysis (Wileman 2003). The problems of dating monuments which produce few finds even when systematically excavated has put many historians off from tackling them (Barbara Yorke, personal communication). As dykes are physical features, most discussions have been by archaeologists who have focused on the size, length and fabric of a dyke rather than their role in early-medieval society. While there have been some studies of dyke building, when

general historical studies of the period discuss these earthworks it is merely to mention how individual earthworks fitted into local circumstances with no attempt to link them into the development of early medieval society (Hill 1985 140-41; Dark 1994 125 and 150 for example).

After Asser's brief mention of Offa's Dyke, it was not until the rise of antiquarianism in the eighteenth century that descriptions of most of these earthworks were published (Borlase 1758 325-26; Nichols 1795 305 for example). Later scholars have often questioned the accuracy of the descriptions given by these antiquaries such as assertions that Wansdyke reached the Bristol Channel (Fox and Fox 1958 1) and even Asser's statement that Offa's Dyke ran from sea to sea (Hill and Worthington 2003 106). While some antiquarians were probably exaggerating the size of earthworks, we must be cautious of dismissing descriptions of the dykes from before they suffered the ravages of the Agricultural Revolution. Some scholars went beyond merely describing the dykes and tried, often erroneously (with hindsight), to link them with known historical events like the Belgic invasions mentioned by Caesar or Caesar's own invasion (Warne 1872 4-10; Guest 1883; Handford 1951 119-40). Among these early, rather speculative descriptions, the work of the Wiltshire historian Sir Richard Colt Hoare (1758-1838) stands out, not only in terms of the quality of his survey work but also his ability to differentiate between features of different dates, for example by realising that the central section of Wansdyke was actually a Roman road (Hoare 1812; Hoare 1821).

The rise of modern archaeology allowed nineteenth-century scholars to make great strides in the study of dykes. Augustus Henry Lane Fox (1827-1900) was the first to excavate dykes in a systematic manner (Bowen 1990 3-5; Bowden 1991 155-56; Green 2000 29-35). He started surveying dykes in 1867 then in 1879 he started to excavate them looking for dating evidence (Pitt Rivers 1869 2-4). In 1875, he used excavation evidence to demonstrate that the flint mines at Cissbury in Sussex predated the Iron-Age hillfort because a portion of the rampart overlay a mineshaft. This conclusion seems obvious to modern readers, but this reasoning was a massive step forward in archaeology which

led to later scholars developing dating by stratigraphy (Bowden 1991 77-81). In 1879, Fox excavated the Danevirke in Denmark with a colleague using a spade borrowed from a nearby cottage, but despite these ad hoc methods and his inability to securely date the monument, he was able to detect modifications made to the dyke (Pitt Rivers 1880 400). In October 1879, he directed a far more ambitious excavation at Dane's Dyke at Flamborough Head in Yorkshire in an unsuccessful attempt to date the structure (Pitt Rivers 1882). In 1890, Fox inherited a large estate based on Cranborne Chase, an area full of archaeological sites, allowing him to indulge further his passion for archaeology though it also entailed him adopting the name Pitt Rivers. Modern scholars usually refer to him by this later moniker, as does this study partly to differentiate him from Sir Cyril Fox. Pitt Rivers carried out further excavations at Bokerley Dyke (which he called Bokerly Dyke) and Wansdyke between 1888 and 1891 (Pitt Rivers 1892; Pitt Rivers 1926), but age prevented a planned excavation at Offa's Dyke (Bowden 1991 117-22). He was a military man, a general, whose studies of the development of the rifle (for example how new models usually innovate slightly on older designs) influenced his thinking about changes in archaeological artefacts over time (Pitt Rivers 1882 467; Pitt Rivers 1892 9 and 60-61). He unsurprisingly saw dykes as military structures built by successive waves of invaders.

After Pitt Rivers, works on dykes took something of a step backwards for the next three decades. For example, in 1913 Godsal wrote a study encompassing many of the more famous dykes that contained no new survey of the earthworks or archaeological evidence, but was full of rather crude notions of race (Godsal 1913). He thought nations or races (he uses the terms interchangeably) must have built them against other races and claimed that as the English never felt animosity to other English groups they were not borders between Anglo-Saxon kingdoms. He wrote that because the Celts were never sufficiently organised to build such edifices, the English therefore built them, probably to keep the Britons from trying to recapture territory they considered their own.

Arguably the most famous figure in twentieth-century dyke studies was Sir Cyril Fox. His fieldwork was thorough and the plans he produced far in advance of anything previously seen, but he also analysed the monuments, attempting to link them with known historical events. He started studying the dykes in Cambridgeshire which he postulated were built by the East Angles in the early-medieval period (Fox 1923; Fox 1929). After he was appointed the director of the National Museum of Wales, he spent the years 1925-32 carrying out an intensive survey of Offa's Dyke and Wat's Dyke, which was published intermittently between 1926 and 1934 and then collected into a single volume in 1955 (Fox 1934; Fox 1955). He concluded that Offa's Dyke was a single structure designed to mark the Anglo-Welsh border and ran from sea to sea with the gaps (for example in Herefordshire) being where thick woodland made an earthwork unnecessary. Though he agreed that it looked military, he thought it was an agreed boundary often set back from the actual frontier to allow the Welsh access to resources like the River Wye (Fox 1955 279-84). He thought that Wat's and the Short Dykes (a term he coined for the smaller dykes along the Welsh borders) were earlier incomplete Mercian attempts to mark the boundary (Fox 1955 284-87). Inspired by his rigorous fieldwork, in 1946 Fox, along with O'Neil and Grimes, produced a guide to surveying dykes (Fox, O'Neil et al. 1946). In 1958, Fox and his second wife, Aileen, wrote a work on Wansdyke which dismissed the idea that Wansdyke reached the Bristol Channel and concluded that it was in fact two separate monuments built at different periods by the West Saxons (Fox and Fox 1958).

Fox's fieldwork methods have greatly influenced scholars up until the present. Like Fox, both field archaeologists (like those working for the Ordnance Survey) and historians have produced extensive surveys of dykes with relatively little analysis apart from brief attempts to link them with events in the *Anglo-Saxon Chronicle* (Clark 1957 for example), though there were two notable exceptions. The archaeologist Mortimer Wheeler produced an analysis of the dykes of south-east England and, like Fox, suggested that they were not primarily military structures, but political boundary markers facing post-Roman Britons centred on London (Wheeler 1934 261). Problems of dating dykes have

bedevilled the most distinguished of scholars and it has become clear that some of the dykes he used in this model actually predate the Romans (Hinchcliffe 1975; Ford 1981-2). Despite being employed by the Ordnance Survey, Osbert Crawford's 1953 book also went beyond merely surveying dykes and is the first work systematically to compare British dykes with examples from the continent (Crawford 1953). The study was a reaction to Major and Burrow's book on Wansdyke (Major and Burrow 1926) which Crawford considered full of inaccuracies (Crawford 1953 252; Reynolds and Langlands 2006 24). Crawford noted both how many of the British dykes seemed to bar thoroughfares and that overseas dykes or walls varied in their purposes, some being military structures, others customs barriers, while some combined the two purposes. Unlike many who have written on the subject, he did not limit his analysis to the major dykes; in a previous article he had looked at how the names of mythical giants had become associated with the relatively obscure dykes of Cornwall (Crawford 1936b). His analysis was unfortunately largely limited to describing dykes as either military-political (with no clarification of what that meant in practice) or in respect of the coastal dykes (like Dane's Dyke at Flamborough Head or the Cornish dykes) calling them beach-heads (Crawford 1953 183-86). He also made no attempt to group what he termed defensive linear earthworks by period; in his list of them given as an appendix to his field archaeology guide he includes prehistoric and Anglo-Saxon dykes together with undated earthworks (Crawford 1936b 240-53). These shortcomings are easy to criticise now, though at the time Crawford's work was exceptional.

Since the days of Fox, there have been major scientific advances in archaeology by which scholars can test previous assumptions, such as whether areas of primeval woodland explain possible gaps in a dyke. The technique of examining soil samples for pollen so we can understand the flora of historic landscapes has a long history, but, with the exception of E. Clifford's study, was rarely used on dykes prior to the 1960s (Erdtman 1924 291; Clifford 1937 291). C. Crampton's 1966 study of dykes in Wales was the first to date various earthworks using pollen and soil samples from under the banks (Crampton 1966). Heathland and peat developed in the uplands from the Bronze Age

onwards; Crampton felt that the amount of clay and silt weathered into the peaty podzol was a good indicator of the age of the ground and so could be used to date the banks that overlay such soils. An analysis of mollusca (snails or beetles) from archaeological deposits can also tell us if a dyke originally passed through open, marshy, dry or wooded areas. A series of excavations carried out by H. Stephen Green on Wansdyke in the late 1960s provided the first opportunity to apply both snail and pollen analysis to dyke studies (Green 1971). While the evidence for snails was largely inconclusive, the pollen samples (analysed by G.W. Dimbleby) suggested that central parts of the eastern half of Wansdyke passed through pasture. The pollen evidence from the eastern end of Wansdyke suggested the presence of nearby woodland (Savernake Forest), though it did not prove or disprove the hypothesis that it was an impassable barrier that protected the eastern flank of the dyke, as Fox had postulated (Fox and Fox 1958 2). The emergence of radiocarbon dating, dendrochronology and Optically Stimulated Luminescence (the limitations of which are discussed in detail later) has further helped us to date organic material. We can now see features below the ground surface using geophysical surveying techniques (resistivity and ground penetrating radar) which can help locate sections of dykes long since ploughed flat, though this technique is often useless through the tarmac of modern roads which cross earthworks (Gaffney and Gater 2003). One recent advance is LIDAR (Light Detection and Recognition) where highly accurate images of the ground taken from lasers mounted on low-flying planes. This technique allows us to make aerial photographs that not only revel surface remains in open country, but also to see the ground surface in wooded areas so even overgrown sections of earthworks are now detectable (Bapty 2007 24; Lennon and Crow 2009). The data obtained by this technique was unfortunately not publicly available at the time of writing.

Green's study demonstrated the need for dedicated experts to analyse the results of these new scientific techniques and recent advances in technology have increased the need for qualified specialists to interpret the plethora of technical data. Large and well-funded studies now produce much greater amounts of information not only using pollen and snail analysis, but also

geophysics and radiocarbon dating. A study carried out by the Archaeological Field Unit of Cambridgeshire County Council examined the four Cambridgeshire Dykes, as well as Worstead Street (a Roman road that some antiquarians had suggested was a fifth dyke), using careful excavation and the application of the full range of modern scientific techniques (Malim, Penn et al. 1996). The study helped clarify the dating of the dykes, the construction methods, past environmental conditions and possible evidence of maintenance. The age range suggested by the stratification and the radiocarbon dates (330 to 700 AD) are unfortunately still too wide to link them with specific political events, though the authors did suggest that the dykes protected the Germanic settlers of East Anglia from British cavalry coming up from the St Albans area. As archaeologists were unable to dig the tarmac roads that overlay the ancient thoroughfares through the dykes (though they excavated as near to the roads as possible), it was impossible to prove or disprove that gaps originally existed to allow the movement of goods and people through the dykes. This makes any analysis of the purpose of the structures less certain.

Despite the numerous advances in the science of archaeology in the last century, the methodologies used in the study of dykes have often not significantly changed. Scholars have often just concentrated on trying to prove that dykes were either longer or shorter than previous studies suggested, with endless discussions about whether certain hedgerows marked the course of the dyke or were a later feature. In 1977, Frank Noble's MPhil thesis rejected Fox's view that impassable forest in Herefordshire was the cause of gaps in Offa's Dyke (suggesting that there was little undergrowth under the canopy of mature woodland in medieval Britain) and proposed that many of Fox's hypothetical lost sections of the earthwork were actually later features (Noble and Gelling 1983 8-9). Noble unfortunately died soon after producing his thesis though his pioneering work did lead to the creation of Offa's Dyke long distance footpath and there was a posthumous publication of parts of his work (Noble and Gelling 1983). In Fox's day, Offa's Dyke was thought to consist of 130 kilometres of constructed earthwork, but, thanks partly to Noble, it is now considered to be less than a hundred kilometres in length (Fox 1955; Hill and Worthington 2003).

The study of Offa's Dyke was continued by David Hill. Hill used students from the Extra Mural Department of the University of Manchester to sustain a comprehensive survey of Offa's Dyke and test-dig sections, a task he was later aided in by Margaret Worthington (Hill and Worthington 2003 165-72). Rather than seeing it as an Anglo-Welsh border (especially as neither England nor Wales were united in Offa's day), they noted how the only portion of the dyke that was not in question, the central section, approximated to the Mercian-Powys border (Hill and Worthington 2003 108-10). They excavated many of the hypothetical gateways on Offa's Dyke, mainly where modern roads, paths and tracks cut through the dyke, and also pioneered the use of resistivity surveys to locate sections of earthworks ploughed flat by agriculture (Hill and Worthington 2003 89-97 and 165). When they excavated the ditch at hypothetical gateway sites, they found no evidence for causeways and decided that the dyke was defensible, rather than defended, designed to prevent raids from the Welsh kingdom of Powys. Their model of a military infrastructure behind the dyke of warning beacons and defended villages unfortunately relied more on conjecture rather than concrete evidence (Hill and Worthington 2003 126-28).

Ever since Asser's assertion that Offa's Dyke reached from sea to sea, the debates about the length of certain dykes have raged, especially over Wansdyke. Collinson claimed that Wansdyke was 129 kilometres or 80 miles long, Pitt Rivers estimated it to be just 97 kilometres or 60 miles long, Major and Burrows suggested it was 119 kilometres or 74 miles long while Fox's maps show only about 39 kilometres or 24 miles of built dyke (Collinson 1791 140; Major and Burrow 1926; Pitt Rivers 1926 146; Fox and Fox 1958). While the debates about the extent of individual dykes are important (for example if Offa's Dyke did not reach from sea to sea then it is more likely to mark the Mercian-Powys border than the Anglo-Welsh divide), recently historians have begun to go a little further in analysing dykes. Instead of merely describing them or asking against whom that the dyke builders were defending themselves, they have sought to explore the wider cultural, psychological and/or political reasons for both dyke construction and the consequences of their existence. As far back

as 1981, Richard Muir postulated that the Cambridgeshire Dykes might have no practical purpose but were merely enormous and empty displays of royal power (Muir 1981 149-63).

Since the 1980s, scholars studying Roman frontier defences (*limes*) have begun to interpret them as zones of interaction rather than watertight barriers (Curta 2005; Pohl 2005). At the same time scholars of early-medieval fortifications have increasingly been inclined to the view that rulers invested in earthworks less to ward off invaders than to unify their kingdoms (Curta 2005 4-6). In 1992, Christopher Scull postulated certain East Anglian earthworks defined early territorial units (Scull 1992 15). In 1999, Nicholas Boldrini postulated that the two branches of the Roman Ridge in South Yorkshire might mark not a border, but an attempt to create a liminal space perhaps for parleying in (Boldrini 1999a; Boldrini 1999b). Such developments reflect the post-processualist movement in archaeology that views variations in material culture as less reflective of the innate differences between tribes than as attempts to construct regional identities among rather cosmopolitan groups of people. Damian Tyler has proposed that Offa's Dyke was less a practical military structure than a symbol of Offa's imperial pretensions that attempted to copy what the Romans had done on their northern British frontier; it was part of a state-building exercise by which Offa portrayed himself as the protector of all the English (Tyler 2002 especially 229-37; Tyler 2011). Similar reasoning has been put forward for Wansdyke, with Reynolds arguing against recent suggestions that it was an unfinished British defence against the Anglo-Saxons (Fowler 2001 for example), instead suggesting that it was an attempt by the new kingdom of Wessex to define itself against the powerful Mercian kingdom to the north (Reynolds and Langlands 2006). Draper argued that on a smaller scale the existence of East Wansdyke stimulated the kings of Wessex to create the shire of Wiltshire (Draper 2006 59-60). For Stuart Laycock, however, some dykes, like the Cambridgeshire Dykes and Wansdyke, did not mark the border between British and English kingdoms, but were earlier cultural divides built in the period between the final years of Roman rule and the arrival of the Saxons as the country collapsed into tribal warfare (Laycock 2006; Laycock 2008). He

has argued that they marked the fragmentation of Britain along much older tribal lines during and after the end of Roman rule in a similar way to the situation in Yugoslavia in the 1990s.

Some recent scholars have been less certain about why the dykes were built. In her 2003 paper, Wileman looked at various hypotheses to explain the dykes, but came to no concrete conclusions (Wileman 2003). Meanwhile, one of the authors of the Cambridgeshire report, Tim Malim, who went on to analyse the Welsh Border dykes has argued that although they had 'ankle-breakers'[1] and so kept attackers out, they also helped kings to control both trade and also the movement of people in and out of their kingdoms (Malim 2007; Hayes and Malim 2008). In his 2010 article on Wansdyke, Malim proposed that the Cambridgeshire Dykes and Wansdyke had multiple functions controlling trade, preventing raiding and displaying the power of the state (Malim 2010 178).

The trend of analysing motives rather than measuring the length of dykes has led to the most wide-ranging analysis of the cultural, social and political reasons behind dyke building (as opposed to the building of individual dykes) carried out by Paolo Squatriti of the University of Michigan (Squatriti 2002). His study covered not only some of the major early-medieval dykes from across Europe, including the Great Fence of Thrace (Erkesia), Offa's Dyke and the Danevirke, but also Charlemagne's attempt to dig a canal between the Danube and the Main. As his paper is the only one with a comparable scope to this work, it is worth examining in some detail. Like the Tyler and the Reynolds/Langlands studies, Squatriti postulates more symbolic and political roles for dyke building where the act of building the earthwork is as important (or possibly even more so) than how the final structure was utilised on a daily basis. He dismissed utilitarian functions for dykes such as their use as a fighting platform or being a border marker so travellers would know where the edge of the kingdom lay. He pointed out several problems with the idea that dykes were just political

[1] An 'ankle-breaker' is a narrow slot dug into the base of a ditch designed to force the attacker's foot to turn sideways which twists or even breaks the ankle of an attacker. Attackers are also

boundary markers: they are unnecessarily large, later cultural or administrative boundaries rarely follow them, medieval kingdoms did not have sharp borders, and, finally, expansionist kingdoms like Mercia had little reason to fossilise their boundaries (Squatriti 2002 29-38). He also argued that the dykes had no real military functions as the kingdoms did not have the manpower to garrison them and there are gaps in the dykes (Squatriti 2002 21-24). He did not propose that they had a multiplicity of functions, but they were just theatrical features intended to enhance the prestige of kings and in turn, their kingdoms. Such theatricality was particularly apt when kings had only recently established themselves and wished to demonstrate both internally and externally that they had control over their territory, in particular over debateable border lands (Squatriti 2002 17-18). The diggers knew they served little utilitarian purposes, but showed their loyalty to the ruler by accepting false military reasons given by the kings for constructing the earthworks. People in border areas recently incorporated into the kingdom were required to do the digging as a labour service to their ruler; it was the easiest way a king could extract value from a people in an economy where monetary taxation was rare and it incorporated them in the power structures of the kingdom (Squatriti 2002 46-52). He returned to the themes of the monumentality of the earth-moving associated with dykes as royal propaganda in papers focused on earthworks in Bulgaria and Offa's Dyke (Squatriti 2004; Squatriti 2005). Other scholars like Rashev are less convinced the Bulgarian examples served no military purpose noting how forts replaced linear earthworks as the main type of defence (Rashev 2005).

Squatriti's suppositions contain weaknesses, some of which he acknowledged. He was unable to explain why, for example, if these earthworks were built to glorify individual kings, the name of the ruler who ordered them was so rarely remembered (Squatriti 2002 56-63). Without a comprehensive gazetteer of all dykes, his study was limited to the better-known and largest examples. He freely accepts that the smaller dykes in Britain may have had a military function as his idea about earthworks being non-practical exercises in the theatre of

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obliged to drop their weapon or shield to scramble out. However, it may also have served as a cleaning slot.

kingship only applies to the larger examples (Squatriti 2002 30-31 and personal communication). Additionally, although he mentioned local people maintaining and sometimes rebuilding dykes, he did not explain why they did this if the dyke had no obvious practical use for them (Squatriti 2002 41-43). The borders of the early-medieval kingdoms did not just move, but were amorphous zones with debatable marches as Higham has suggested and Squatriti himself acknowledges (Higham 1991a 11; Higham 1997 151; Power 1999; Squatriti 2002 30; Turner 2006 138). This would mean any king using the building of an earthwork to unite his kingdom would have an obvious dilemma when deciding where to construct it. If he built a dyke near his core of his kingdom, it would seem to exclude the marches and undermine his claims to a larger territory; if he built it near the fringes of his control, he would provoke neighbouring rulers and expose the workers to attack. A successful, warlike, predatory expansionist king would probably be more interested in expanding his kingdom than marking limits.

Although written primarily about a prehistoric earthwork, a 2005 report on Aves Ditch in Oxfordshire by Eberhard Sauer postulated that a dyke could have served a practical purpose (Sauer 2005). Despite a reluctance among many modern archaeologists to ascribe a military purpose to any earthwork or fortification (a process dubbed 'the pacification of the past'), prehistoric earthworks could easily have functioned as fortifications, ritual zones and tribal borders while medieval castle could have been status symbols as well as military structures (James 2003 1-2; Sauer 2005 37; Platt 2007). Today, many archaeologists are returning to the notion that war, raiding and slavery were fundamental parts of prehistoric and early historic societies (Armit 2001; Manley 2002 150 fn7). In 2007, the Landscapes of Defence Project hosted a conference entitled Landscapes of Defence in the Viking Age, the results of which have been published (Baker, Brookes et al. 2013). Although the period covered by this conference is slightly later than that covered in this study, the conference was a good opportunity for the author to hear how archaeologists from Spain and Sweden have approached the subject of defensive earthworks from the early medieval period. Recent works on the dykes of the Welsh

borders and Cambridgeshire suggested that they served a military purpose (Hill and Worthington 2003; Hayes and Malim 2008; Malim 2010 178; Storr 2013), which perhaps marks a return to more practical utilitarian interpretations of dykes, in contrast to hypotheses based on ritual or symbolism.

1.2 The methodology used to analyse dykes

The main difficulty for a researcher examining these dykes is the lack of reliable data as previous lists of dykes are incomplete, out of date and poorly referenced (O.S. 1938; O.S. 1939; Crawford 1953 240-51; M.O.W. 1953; O.S. 1966). The present study therefore began by establishing a gazetteer of dykes (the appendix), which includes those that are probably from this period, those mistakenly assumed to be of an early-medieval date, those that possibly date from the period and older dykes possibly reused during the early-medieval period. Obviously, such a list can never be comprehensive as new dating evidence for omitted earthworks may arise and the study may have missed smaller dykes destroyed, for example, by later agricultural activity. All the information found about each dyke or group of dykes while researching this work (usually photocopies of articles, sections from books, maps, emails from county archaeologists and unpublished reports) was gathered into folders. The final entries in the appendix are edited versions of much longer discussions about each individual dyke. Many dykes were visited during the course of this research and fieldwork helped answer questions about the dykes. During these visits, if adequate surveys of the dyke did not exist, measurements of the size and width of both the banks and ditch were taken to help ascertain the volume of earth moved to build the earthwork. Previous scholars often just give the height of the bank above the bottom of the ditch (the scarp) which, while demonstrating how impressive the earthwork might have been, gives us little idea of the volume of earth moved especially if the dyke is situated on sloping ground. The fieldwork also involved looking for signs of gateways, seeing how far a person patrolling the dyke could have seen and how easily the dyke could be seen from a distance. Some of the dykes are longer or shorter on the ground than is claimed by older written accounts (especially older antiquarian descriptions) and online aerial photographic databases coupled with fieldwork helped resolved these discrepancies.

The second major issue tackled was trying to date the earthworks. Since Pitt Rivers' excavation of Dane's Dyke, it has been obvious that dykes rarely produce effective artefactual dating evidence (Pitt Rivers 1882; Fox 1929 147-48). Few written records exist from this period (especially for the first half though after the Anglo-Saxon conversion to Christianity there are more) and some sections of the population like Christianised Britons who did not use grave goods are difficult to see archaeologically. Early medieval and prehistoric dykes are often confused as both come from periods where there are few, if any, contemporary coins to help with dating; as there are no forts or watchtowers along dykes from both these periods, there is also no occupation debris to examine.

An examination of the variety of methods used by previous scholars to date dykes was necessary before deciding on dating criteria. Fox concluded that because Offa's Dyke cuts Roman deposits, it logically must be post-Roman in date (Fox 1955 282) and while such stratigraphic evidence of dykes slicing through earlier dateable features is useful, it does not give an absolute date for an earthwork. As with coins or pottery sherds found under the bank of a dyke, this method only tells us that the earthwork postdates these finds (a *terminus post quem* date), but not by how much. The common assumption among scholars that Bokerley Dyke dates from around the end of Roman rule in Britain arose because Pitt Rivers found late Roman coins while excavating it (Burrow 1926; Rahtz 1961; Bowden 1991 119). As it cuts across a Roman settlement next to a major road (where no doubt there was monetary trade with passing travellers) the coins could have entered the ground long before construction making the dyke much later in date (Eagles 1994 17; Draper 2006 27-28). It is unlikely that the Roman authorities would have sanctioned a dyke slicing across a road especially as there is evidence that sites in Wiltshire continued to import pottery from Dorset, presumably using this route, into the fifth century (Rahtz 1961 67; Gerrard 2004; Draper 2006 33-34). Seeing if dykes overlay or cut Roman or even prehistoric archaeology was employed in this study to identify which dykes could be early medieval, but was used critically.

The introduction of radiocarbon dating, dendrochronology and Optically Stimulated Luminescence has drastically improved the accuracy of dating archaeological features. Rather than the relative dating of stratification, archaeologists can now date organic material without reference to what is below or above, but the banks of dykes are generally made of earth and not of the kind of organic material that can be easily scientifically dated, so these techniques are of limited use. A plateau in radiocarbon calibration right in the middle of the period under examination (450-530) makes close dating even more difficult (Dark 1996 26; Petts 2002 27). Unfortunately, organic remains taken from the ditch fill will always postdate the digging of the ditch and organic material from under a bank could predate the construction by centuries. Unless we find organic material within the bank we are not directly dating the building of the dyke and even then the matter could have come from the ground surface and so predate the construction of the earthwork. Archaeologists who studied the Cambridgeshire Dykes in the 1990s took great care to overcome these difficulties. They made sure samples from the ditch of Fleam Dyke were from the primary and secondary fills of the first phase (as the dyke was remodelled soon after it was dug these samples probably date from soon after construction) and their bank samples were taken from the upcast from the primary ditch (Malim, Penn et al. 1996 95-98). As no known prehistoric or Roman features existed in the immediate area, the samples were unlikely to be from an older settlement, but such methods still only give a range of probable dates and scholars do not always exercise appropriate caution when using such scientific data.

Many of the records of radiocarbon dates from excavations of dykes did not give sufficient detail to allow them to be recalibrated to be completely comparable to radiocarbon dates from other earthworks. A single radiocarbon date from the remains of a fire found beneath the bank of Wat's Dyke suggested the dyke was much older than previously thought, only for another radiocarbon date eight years later to suggest it was much younger (Nurse 1999; Anon. 2007; Hayes and Malim 2008 149). It should be noted that three different scientific dating procedures applied to the ramparts of a hillfort at Finavon in

Scotland, a very similar structure to the bank of an early-medieval rampart, gave very different results (Alexander 2002). Radiocarbon dating suggested that the hillfort dated to 800 to 410 BC (recently recalculated as 1000 to 100 BC), archaeomagnetic sampling gave dates between 180 and 90 BC while thermoluminescence dating gave a figure of 570 to 710 AD (Alexander 2002). We must not dismiss all scientific data just because it does not fit our theories though, a trap many famous pre-historians fell into when radiocarbon dating was first introduced before they later hurriedly back-tracked (Renfrew 1974 23). The figures given with these methods often give a false sense of accuracy. When taken as an aggregate, all the Optically Stimulated Luminescence and radiocarbon dates provide a date range for the probable peak of dyke building in early medieval Britain, but this study generally avoided linking individual earthworks with specific events or people.

As well as residual finds from pre-existing features, radiocarbon or Optically Stimulated Luminescence dating there are some early medieval finds from some of these dykes. Apart for a cow pelvis and half a loom weight, all the finds were weapons or burials whose skeletal remains suggested a violent death. While some finds may relate to the original functions of the earthwork, others could be evidence of later secondary functions. These functions could be where people used abandoned dykes as a convenient location for furnished graves, as somewhere to bury victims of war or a place where the condemned could be both executed and buried. The contamination of a structure with earlier or later deposits make it necessary to know the context of each excavated artefact and finds made without proper records (for example, casual finds of weaponry from the entrance of rabbit holes or records of eighteenth-century excavations by enthusiastic antiquaries) were used with caution.

One major problem with dating dykes is that these earthworks were often reused in later periods, though of course evidence of reuse can help provide dating evidence. We know Iron-Age hillforts like South Cadbury were reoccupied in the early-medieval period and many early-medieval dykes were probably reused long after their builders were dead. Bokerley Dyke possibly

started life as an Iron-Age or Roman earthwork and the same seems likely for many of the Norfolk dykes (Bowen 1990; Ashwin, Flitcroft et al. 1999; Bates, Hoggett et al. 2008). If an early-medieval ruler extended an Iron-Age dyke to block a Roman routeway, an excavation near the road may lead us to assume incorrectly an early-medieval date for the whole dyke, while an excavation further away would suggest an Iron-Age dyke. For unexcavated dykes, when fieldwork suggests that a dyke varies in form or size along its length that should lead us to explore the possibility of later reuse and/or rebuilding. If a dyke has been reused or rebuilt, it may of course have been given a different function so a prehistoric earthwork used to demark territory might be rebuilt in the early medieval period to provide a defence line against enemy raiders for example. This study therefore included not only earthworks built in the early medieval period, but also earlier structures reused or rebuilt at that time.

Calculating how many people were needed to build the dykes gives us estimates of the amount of labour available to early-medieval rulers like Offa. Some historians have used early-medieval administrative documents to do this (like the Tribal Hidage and Burghal Hideage, documents discussed in detail in part three) while others have produced estimates by dividing the volume of earth moved by the amount of soil a man can shift in a set period of time. These different methods have produced very different results: Tyler used the latter to calculate that just 10,000 men could have built Offa's Dyke in 68 days while Hill used the former to estimate that 125,000 Mercians took two years to build the earthwork (Hill 1985 142; Hill and Worthington 2003 113-19; Tyler 2011 153). If the higher estimates were accurate, it would mean that early-medieval kingdoms had the administrative ability to mobilise a large percentage of the population, but the Tribal Hidage is not direct evidence of how many people built the dykes and Tyler's estimate of the earth-moving capacity of an early medieval worker was probably insufficiently researched. Therefore, an accurate estimate of the volume of earth moved to build the dykes was made and a plausible figure of the amount of earth a man can move in a fixed amount of time was calculated. The dimensions of the dykes given in the appendix formed a basis for then calculating the volume of earth moved by the builders of the

dykes; various estimates including some from the modern building trade, nineteenth-century navvies and experiments by archaeologists using replica medieval equipment were used to estimate how much earth an early medieval worker could have moved. This present study has produced estimates of the labour needed to dig the dykes that is arguably far more robust than those in previous works.

As already mentioned, it is probably unwise to try to link individual dykes with events in early-medieval sources. Some scholars have even criticised any attempt to link archaeological with written evidence, suggesting that we should treat early-medieval archaeology as prehistoric (Scull 1995 71; Lucy and Reynolds 2002 10; Draper 2006 27-28, 35 and 54). The sources for the early-medieval period (usually written long after events) often dramatise and simplify events in a way that contrasts with the more nuanced approach of modern scholars. The *Adventus Saxonum*, for example, is simplistically described in medieval sources as a bloody process involving boatloads of Germanic invaders; some scholars have therefore approached such sources with caution while others have simply dismissed them (Lucy and Reynolds 2002 10; Draper 2006 27-35; Halsall 2013 71-75; Higham and Ryan 2013 69-70). While linking individual events mentioned in written sources to archaeological evidence is highly speculative, to ignore written sources when there is so little other information about dykes is foolish. Even if a medieval source needs careful examination because it exaggerates, simplifies, has an obvious agenda or the surviving copy postdates the events, it still can give us background information about the period. This study has consulted a variety of documents (charters, law codes, annals and poetry for example) in a variety of languages (including Latin, Old English and Old Welsh). They gave background information as to the societies that built the dykes, gave earlier names for the earthworks and sometimes described how they were later reused.

Early-medieval references to dykes are rare and this near silence is something that any hypothesis about dyke building needs to acknowledge. The most common medieval references to dykes come from charters. While they did not

record the date of the construction of the earthwork, if a dyke is recorded in one the earthwork must predate the document which provides a *terminus ante quem* date, though how much older it is we cannot be certain. Charters therefore were also used to help date dykes.

A brief examination was made of British dykes from other periods and similar earthworks from abroad. Such studies gave interesting insights into the methods employed by scholars working in similar fields. The Chinese structures gave detailed contemporary descriptions of how the dykes were used and how much manpower was employed to build them, while the Danish examples demonstrated that if a wooden palisade is present, there should be some physical evidence of it (Waldron 1990; Jørgensen 2003).

The final stage of the study was to produce hypotheses as to how the dykes functioned and why they were built. Hypotheses as to why dykes were constructed had to be made on the basis of sound reasoning using a variety of evidence as there is little contemporary documentation (Draper 2006 57). While the dykes themselves exist as physical evidence, mere fieldwork is insufficient, we need to postulate some hypotheses then decide how we can test them. The calculations of the size of the labour force needed mentioned above helped with understanding the logistics of building the dykes. Archaeological finds and written evidence provided both dating evidence and clues as to the functions of the earthworks. Before making conclusions, any hypotheses had to be synthesised into known historical processes (for example the rise of kingdoms or the spread of Anglo-Saxon culture). In particular, this study noted how most of the dykes could have been used to counter raiding. This study attempted to avoid prejudging the conclusions, though as with all research, by necessity there was a selection of evidence. Various hypotheses as to the purposes of early-medieval were tested; including some proposed by other scholars like Wileman, who suggested a number of possible roles for dykes with likely indicators (Wileman 2003).

One possible purpose of the dykes was to control trade: Fox certainly believed that deliberate original gaps left in Offa's Dyke allowed merchants to pass through; more recently Malim has claimed that the Welsh Border dykes controlled trade as well as the movement of people (Fox 1955; Malim 2007). An example of an earthwork clearly designed specifically as a trade barrier is the Salt Hedge built across India in the nineteenth century (Moxham 2001). If this hypothesis were accurate, we would expect to find archaeological evidence of gateways and toll booths where roads crossed the dykes. Such evidence was not found.

Another motivation that has caused people in the past to build large edifices is spiritual and perhaps dykes fulfilled a ritual and/or religious purpose such as delimiting a sacred space. If this purpose did motivate dyke builders, we would expect to find a name for the dyke that suggested a ritual purpose, the existence of entrances to allow access to the space to carry out rites and evidence for religious and/or ritual activity within the space enclosed by the earthwork. Alternatively, the dyke may not originally define a sacred space, but later become a focus for ritual activity; if this involved burying items at the earthwork, it should be detectable in the archaeological record. At a few dykes there is some evidence of later execution sites.

Many early-medieval dykes have been interpreted as barriers constructed by the Britons to fend off Anglo-Saxon attack, or vice versa, though in recent years, historians and more particularly archaeologists have begun to question such simplistic divisions of early-medieval people (Lucy 2000). The study not only examined the idea they were ethnic borders, but also tested the idea that British dykes were engineered differently to Anglo-Saxon dykes. V-shaped ditches, as they are difficult to construct without the sides collapsing, might signify an early British dyke built while Roman military techniques were still common knowledge, while later Anglo-Saxon earthworks might be characterised by a more simplistic u-shaped ditch (Fowler 2001 192). No such evidence was found.

We know in the later medieval period that earthworks were sometimes dug to provide a physical reminder of where ecclesiastical, political or administrative boundaries lay. The form of an earthwork designed to be an agreed frontier is likely to be distinctively non-military, require gateways to allow communication between the two kingdoms or estates and influence later borders. Some earthworks had these characteristics, but they were few.

The period covered by this study follows the end of the Roman Empire in the west and the rise of new kingdoms; some have suggested that dykes boosted the power of kings or helped unify and strengthen their realms (Squatriti 2002; Tyler 2002; Pohl 2005; Reynolds and Langlands 2006). The very act of gathering a workforce, digging the dyke and perhaps even manning it to stop raids from neighbouring kingdoms would help forge bonds within a community. If dykes were designed to define kingdoms then they may influence later borders and any king that built a dyke to assert his power or unify his kingdom might possibly boast of it upon inscriptions set up near the earthwork, on coins and/or in written texts. If dykes were named after ambitious kings or the nations they were trying to forge, this would have suggested this hypothesis was more likely, but this present study suggests they were rarely so named. If this theory were to be viable, we would have to explain why such gigantic propagandist gestures went largely unrecorded in early medieval written records and if kings or kingdoms were associated with earthworks, why their names are so rarely attached to dykes. The theory can be applied to some of the larger dykes, but evidence to support it is strangely lacking.

Proving or disproving a military purpose for dykes is difficult, as we have seen some historians like Fox and Squatriti have even argued that a ruler may build a symbolic barrier in a military style to demonstrate that he is fulfilling his duty to protect his subjects. If a dyke did have the attributes to act as a military barrier, for example evidence of a rampart and a walkway along the bank to allow defenders to patrol the earthwork or use it as a fighting platform, we should not rule out a martial purpose. If early-medieval dykes had been garrisoned in the same way as, say, Hadrian's Wall, we would have found archaeological

evidence for accommodation for the troops, forts built along their length or perhaps signs of occupation at the Iron-Age forts incorporated into such earthworks as Wat's Dyke and Wansdyke. Dykes such as Offa's were not garrisoned, but probably best defensible lines set back from the frontier and patrolled by scouts who could summon local levies to man the earthwork during times of war (Burne 1959 126-28; Higham 1997 151; Hill and Worthington 2003 108). This study concludes that many of the dykes were possibly built as stop lines against raiders.

While the building of similar monuments across Britain suggests a common factors or factors at work, humans make decisions based on numerous assumptions. A king who decides to build an earthwork for his own glory may tell his nobles it is necessary to stabilise the kingdom and then persuade the peasants to dig the ditch by talk of the dyke preventing raids from outside the kingdom (Squatriti 2002 17-18). A dyke could fulfil multiple roles, perhaps controlling trade, forming a practical defensive line against invasion, preventing cattle theft and being a symbolic boundary marker between kingdoms.

2 THE CHARACTERISTICS OF THE DYKES

This section summarises the data from the gazetteer (see appendix) in order to estimate the dimensions of the dykes. There then follows a discussion of the number of people needed to build the dykes, the archaeological evidence and the typical characteristics of an early-medieval dyke.

2.1 Identification and classification

There is an understandable propensity for historians to link the dykes with written historical sources and more particularly known invasions (by the Belgae, Romans, Anglo-Saxons or Vikings, for example) or battles. In the nineteenth century, Guest linked Wansdyke with the invasion of the Belgae while recent scholars have linked dykes in Yorkshire with Mercian-Northumbrian disputes (Guest 1883; Blair 1955 119-20; Hart 1977 53; Higham 1997 151; Feryok 2001 (2011 ed) 181-83; Rollason 2003 26; Higham 2006). This investigation into dykes is more circumspect and merely groups the dykes according to the probable period assigned to them in the gazetteer (see appendix), though there is also a discussion of the timeframe within the early-medieval period when dyke building was more prevalent. Where possible, the study tries to avoid the use of analogy (that is if one dyke is from a particular period then a similar looking dyke must be) unless there are multiple similar features or the proximity of known dateable features (for example prehistoric burial mounds) seems more than coincidental.

The focus of this study is the period between the end of Roman rule and roughly the time when Scandinavian attacks began to make an impact on life in Britain (roughly 400 to 850). There does seem to be a propensity to build dykes in this timeframe and to extend it to cover more of the medieval period would have made the scope of the study unmanageable. There is no simple term for this period without concocting a rather clumsy phrase (like ‘post-Roman and pre-Viking period’) or using the term ‘Anglo-Saxon’ that is incongruous across some parts of Britain like Wales or the decades immediately after the end of Roman rule. When classifying the dykes covered by this study the term ‘Early Medieval’ is therefore used for simplicity’s sake to define those from 400 to 850. While most historians would still class it as early medieval, the period 850 to 1066 is here termed ‘Viking’ as although it is inaccurate (technically it should only apply to Scandinavian raiders and therefore is not applicable to the natives or peaceful settlers of Scandinavian origin) it is readily understood by a wide

audience and again avoids a clumsy phrase. The period after 1066 to 1485 is simply referred to as ‘Later Medieval’. If the evidence does not point to a single period when it was initially constructed, then it is classed as a *possible* early-medieval dyke; as the focus of this work is the early-medieval period that term is used, but note that such dykes could equally be possible prehistoric, Roman, Viking or later medieval dykes. Similar criteria are used to define dykes that are prehistoric but are either probably or possibly rebuilt or reused in the early-medieval period. This present work groups the dykes into the following categories:

- **Probable prehistoric/Roman/early-medieval/Viking/later-medieval or modern dykes.** Some of these dykes have good documentary or direct archaeological evidence that suggests they are of a certain date. For the rest, there is evidence that brackets their construction to that period, for example, a dyke mentioned in a Saxon charter cannot be later medieval and if it cuts a Roman feature, is probably post-Roman, so it is defined as a probable early-medieval dyke.
- **Possible early-medieval dykes.** These are dykes with no good dating evidence so could be early medieval, but equally they could date from another period.
- **Probable rebuilt prehistoric or Roman dykes.** These have evidence of Roman or prehistoric construction and good evidence (like radiocarbon-dated deposits within the bank) of an early-medieval rebuild.
- **Possible rebuilt prehistoric or Roman dykes.** These dykes show signs of rebuilding with some evidence either of a prehistoric/Roman construction or an early-medieval rebuild.
- **Probable reused prehistoric or Roman dykes.** These are dykes with evidence suggesting Roman or prehistoric construction and good evidence of use in the early-medieval period (for example there is archaeological evidence that a nearby early-medieval dyke would need this pre-existing earthwork to form a complete system), but no sign of rebuilding.

- **Possible reused prehistoric or Roman dykes.** These dykes show no sign of rebuilding, but there is some evidence of early-medieval reuse.

This study identified 118 potentially early-medieval dykes, 24 dykes probably built in the early-medieval period, 85 possible examples and 9 earlier dykes that people in the early-medieval period may have reused or rebuilt. Arnold recorded just 23 early-medieval dykes, the various Ordnance Survey maps of the Dark Ages mark around 30 and Crawford lists 74 linear earthworks in a gazetteer that covers the prehistoric to the late medieval period (O.S. 1938; O.S. 1939; Crawford 1953 240-51; O.S. 1966; Arnold 1988 187). Even if we take into account the fact that this study subdivides some dykes (like Offa's, the Swaledale Dykes and the East Hampshire Dykes), this is a significant increase in the number of potentially early-medieval earthworks even though it also eliminates a number of dykes erroneously ascribed to this period by earlier scholars. This increase is not due to the age of the previous studies as, apart from the odd discovery, like Cowlod Dyke in 1992, the only significant numbers of new dykes discovered in modern times were those found in Wales during fieldwork for the Ordnance Survey in the late nineteenth century. This significant increase in the number of recognised probable/possible early-medieval dykes in Britain allows us to generalise about their size, form, length and location from a far more representative sample.

2.2 Tables

As this investigation does not try to analyse individual earthworks, but surveys early-medieval dykes in general, the information contained in the gazetteer in the appendix is summarised below in a series of tables. Tables are given for each date range group (probable early medieval, possible early medieval, probable prehistoric/Roman and so forth) with columns for the following:

- Name. In the order it appears in the gazetteer (see the appendix).

- Length metres. This is an estimate of the probable length in metres of the earthwork (this is not necessarily the length of the surviving remains or a previous scholar's estimate of the possible greatest extent to the dyke).
- Boundaries. The percentage of the dyke contiguous with parish boundaries (if the figure is not 100% or 0% the length of the contiguous section is given in brackets in metres). Contiguity with Anglo-Saxon estate and hundred is not given because the written evidence is patchy and it would skew the results in favour of areas where more charters survive (like Wessex). For clarity, figures for other administrative boundaries (county, diocesan or national) are given in the text below each table, as such contiguity is too rare to justify additional (largely blank) columns, though with the probable early medieval dykes the total for county boundaries is also given at the bottom of the table.
- Excavated (abbreviated to Exc.). If there is a 'yes' in this column archaeologists have excavated the earthwork and produced a profile of the dyke, in which case the information on the size of the dyke comes from the excavation report. Note that archaeologists have investigated some dykes but not produced a detailed section, for example at Crugyn Bank where the archaeologists merely dug enough of the bank to obtain deposits for radiocarbon dating.
- Structure. This is the number of banks/ditches that make up the earthwork with the lowest feature always given first. For example, CDB means there is a single counterscarp bank downhill of a single ditch which is downhill of a single bank. BDB means a single ditch is sandwiched between a pair of banks.
- Ditch size. The depth and width of the main ditch in metres.
- Bank size. The height and width of the main bank in metres. Where there is a range of measurements for both ditches and banks, the figure given is an average. Sometimes workers or farmers quarry the banks to make roads or fill ditches and over time banks will collapse; therefore measurements were taken from what seem like un-mutilated sections.

- Berm. Whether or not there is evidence of a berm, though without excavation it is difficult to see if the front of a bank has slumped obscuring a berm. For this column and for the next two if there is no evidence either way it is left blank, if there is contradictory evidence there is a question mark.
- Revetment. Whether there are signs of a revetment, though without excavation it is rare to find evidence especially if the revetment was wooden.
- Ankle-breaker. Whether there is evidence of an ‘ankle-breaker’ or ‘cleaning slot’.
- Shape. Whether the ditch is u or v shaped and the slope of the ditch sides in degrees.
- Volume. This is a calculation of the volume of earth in cubic metres moved to make the original structure calculated by multiplying the probable length by a cross section of either the ditch or bank. If an excavation profile is available the ditch is used as when the silt is removed from a ditch something approximating to the original profile is revealed, but the eroded parts of a bank are lost forever. If archaeologists have not excavated the dyke or they have not published the results then this investigation uses either the height of the bank or the depth of the ditch (whichever seems to best preserve the original profile). As the profiles of earth banks and ditches are irregular semi-circles (even a v-shaped ditch is not perfectly triangular), this study found by experimentation that the area of the cross section of a ditch or bank is usually 60% of the width multiplied by the depth or height respectively. The final figure was produced by multiplying the length of the dyke by the width of the bank/ditch by the depth of the ditch/height of the bank by the multiplier 0.6. Later spreading of the bank or utilisation of the ditch (say as a road or for drainage) can widen them resulting in abnormally high average width figures. So the largest figures are not always used if this was thought to be the case as it would result in unrealistically large calculations for the volume.

The following rows appear at the bottom of the tables (note there is a separate table summarising all the probable/possible rebuilt/reused dykes, as there are too few in each of these categories for any meaningful statistical analysis):

- Mean. This gives the mean average of the data in each column.
- Total. Totals for each column for numeric features like length and width.
- Range. The range of values of the data in that column.
- Median. This gives the median length and volume; this row only appears in the probable early-medieval dykes table because some of the dykes are so much larger than others that mean averages are skewed.

Evidence of a marker bank, gateways, palisades, branches and other phenomena only rarely found or the evidence of which cannot be succinctly summarised in a table are discussed after each table rather than having columns with almost no entries.

2.3 Probable early-medieval dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape	Volume metres³
Becca Banks	4200	0%	DB(?D)	YES	3.25/8	2.4/10	NO	?	NO	U 50º	65520
The Rein	1900	100%	DB		2/8	2/9.8					22344
Rudgate Dyke	100	0%	BDD	YES	1.45/3	?			NO	U 40º	261
Heron--bridge	550	0%	BD	YES	3/5.8	1/6	NO	YES	NO	U or V 45-50º	5742
Grey Ditch	1200	0%	DB	YES	2.2/6	1.6/7.4	NO	?	NO	V 40º	9504
Clawdd Mawr (Llanfyllin)	450	18% (80)	DB	YES	1.8/2.5	1.6/3.8					1215
Crugyn Bank (inc. Two Tumps)	2720	0%	CDB		0.6/2	1.2/6				V	11750
Giant's Grave	250	0%	CDB	YES	1.3/4	0.7/4.3	NO	NO	YES	V 30º	780
Short Ditch	640	16%(100)	CDB(D)		1.8/1.5	1/3					1152
Upper Short Dyke	500	0%	DB	YES	1.5/3.5	0.9/6					1575
Offa's Dyke	95000	22% (21200)	DB (or CDBD)	YES	2/7	2.5/7	NO	NO	NO	V 30º	798000
Rowe Ditch	3750	0%	DB	YES	2.5/5	1.5/6	NO	NO?	NO	V	28125
Wat's Dyke	59000	4% (2200)	(C)DB	YES	2/6	2/6.4	NO?	YES?	YES	V 40-50º	424800

Bran Ditch	5000	100%	DB	YES	1.95/6	2.1/8.5	YES	YES	NO	U 40º	35100
Devil's Ditch	12000	90% (10800)	DB	YES	4.5/17	5/22	YES	YES	NO	U 60º	550800
Fleam Dyke	5200	100%	DB	YES	4.5/12	5/15	NO	?	NO	V 35º then U 60º	168480
Fossditch	9000	100%	DB	YES	1.4/8	1/10.5	YES	NO	NO	U 15º-40º	60480
Pear Wood	400	0%	CDB	YES	1.8/5.7	1.2/8	NO	NO	NO	V 35º-40º	2462
Aelfrith's Ditch	5000	100%	(D?)DB	YES	0.5/2.9	0.8/8	YES			U	4350
Bica's Dyke	400	100%	DB	NO	0.45/2	0.45/2					216
Bury's Bank	1500	0%	DB	YES	2/9	1.2/9	NO	NO	NO	V 30º	16200
West Wansdyke	13500	1.5% (200)	CBD	YES	2.2/5	1.7/12	YES	YES	YES	U and V 45º	89100
East Wansdyke	20400	8.9% (1800)	CBD	YES	2.5/8	2.5/9.5	NO?	NO	YES?	U and V 40º	244800
Bokerley Dyke	5295	81% (4220)	DB	YES	3/10	3/11	NO	NO	NO	V 40º	95310
Mean	10331	27% with parish boundaries (5% with county boundaries)	DB (33% with C)		2.1/6.2	1.8/8.3	NO	NO	NO	V 41º	109919
Total	247955	67100 with parish boundaries (13295 with county boundaries)			50.2/ 147.9	42.35 /191.2					2638066
Range	100-95000				0.45-4.5 /1.5-17	0.45-5 /2-22					216-798000
Median	3235										19272

When looking at the characteristics of early-medieval dykes we should remember that the probable (as opposed to possible) early-medieval dykes might be unrepresentative as archaeologists are more likely to investigate larger and more famous dykes for dating evidence. Note the figure for parish boundaries contiguous with Wat's Dyke is far lower than given in many other studies. This is mainly because this calculation does not count sections where the builders, possibly to save on labour, used a convenient river (which happens to be contiguous with parish boundaries) to fill a gap in the dyke (Feryok 2001 (2011 ed) 186 for example). The East Wansdyke totals include 400 metres of the central section, all of which is contiguous with parish boundaries. Note that apart from just two examples, the figures for contiguity just equates to parish boundaries; the two expectations are Bokerley Dyke where 81% is also contiguous with county boundaries and the central section of

Offa's Dyke where 9,075 metres (or slightly less than 10%) is also contiguous with county borders that mark the Anglo-Welsh border.

There is some sign of rebuilding and reuse for some of the dykes in this category, but there is not sufficient evidence to tell if this was widespread. Fleam Dyke was rebuilt at least three times and the figures for the dyke given above are from Phase Three of the earthwork as the earliest phases may have been Roman. A 1993 excavation suggested Bran Ditch was cleaned out, but the recuts were probably related to later attempts to improve drainage for agricultural purposes (Malim, Penn et al. 1996 38). Bokerley Dyke and both West and East Wansdyke show signs of rebuilding, but the ditch of Offa's Dyke was not recut. Archaeological evidence suggests the ditch of the Giant's Grave in Powys was recut; with no berm or revetment to prevent the bank of this earthwork falling into the ditch this is perhaps unsurprising (Hankinson 2003 3). Bokerley Dyke is the only dyke in this section that has a branch, though even that is probably just an unintentional by-product of later builders extending it past the point of a turned-back terminus. While Becca Banks was cut through rock, the rest were dug through soil.

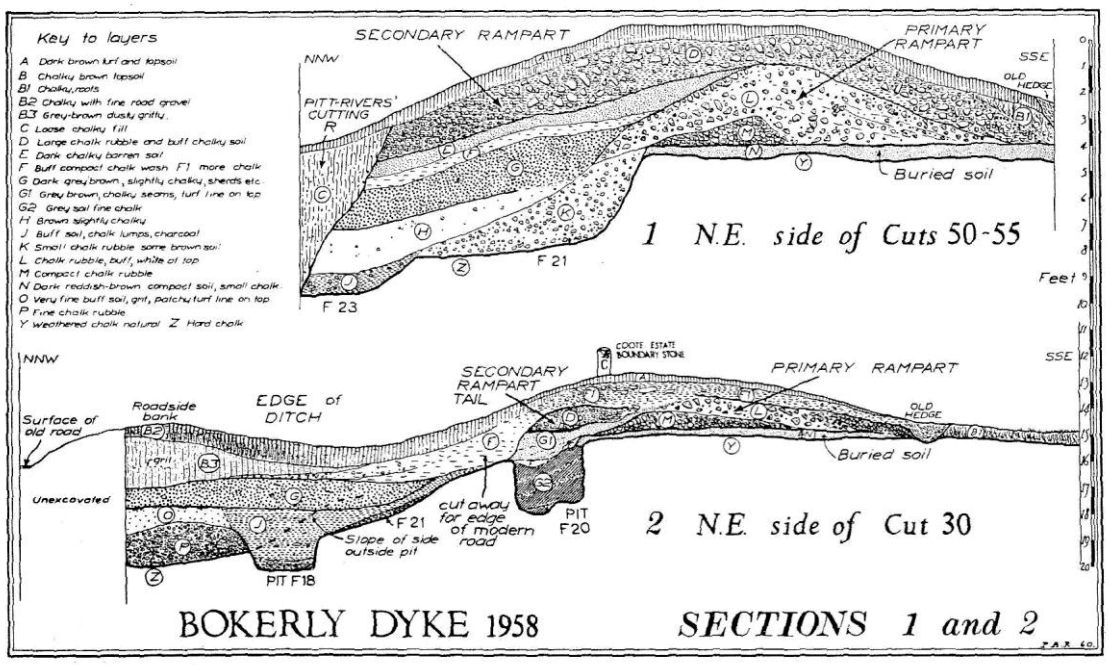


Figure 1 Rahtz's 1958 section of Bokerley ('Bokerly') Dyke showing clear signs of phasing (Rahtz 1961 72)

There is evidence of a marker bank at Fleam Dyke, Bran Ditch, Devil's Ditch, Offa's Dyke and Wat's Dyke (Hope-Taylor 1975-6 125; Malim, Penn et al. 1996 37 and 65; Hill and Worthington 2003 87-89; Hayes and Malim 2008 156). The remains of a pit found in 2006 under the bank of Wat's Dyke suggest the builders removed a tree and then they built a marker bank before the main work on the dyke started (Hayes and Malim 2008 156). The marker bank on Wat's Dyke probably contained a larger stone every 1.6 metres, perhaps delimiting the area given to each man to construct the earthwork (Hayes and Malim 2008 165).

Archaeologists usually excavate damaged or threatened parts of dykes (often where they are not scheduled monuments) so it is possible that evidence for palisades had already been destroyed (Hill and Worthington 2003 125-26). Even where there is some sign of a palisade, for example the postholes found on top of the bank of Rowe Ditch, a small posthole at Fleam Dyke or the 'twigs and boughs' found in the ditch at Heronbridge, the evidence is not conclusive (Youngs 1981 184; Malim, Penn et al 1996 67; Hill and Worthington 2003 141-42; Mason 2003). The evidence for a trench for a palisade at Bran Ditch may only relate to the northern end of the dyke or not be a contemporary feature (Malim, Penn et al. 1996 39 and 111).

Despite many archaeological investigations specifically searching for gateways and excavations carried out where the dykes cross Roman or prehistoric roads, there is no conclusive proof of a single original gap or gateway in any of the dykes in this category. Unfortunately, later gaps made in earthworks by farmers can look like original features. A 1967 excavation of Grey Ditch did suggest that a gap in the dyke, wide enough to allow a wagon to pass through, was an ancient entrance, though it was not strengthened by a timber gateway (Wild 1967). As this gap is above and to the east of the Roman road in the valley, it was possibly built later by a farmer though the archaeologist thought it very neatly constructed for agricultural purposes (J. Wild, personal communication). Fox postulated that the builders of Offa's Dyke constructed a series of gates to

allow trade with the Welsh and Noble also suggested there were wooden gateways, but targeted excavations have found no trace of them (Fox 1955 105; Houghton 1957-60; Noble 1970; Youngs 1981 185; Tyler 2002 227; Hill and Worthington 2003 89-97; Malim 2007 26-28; Tyler 2011 155). At the Devil's Ditch the HER record mentions an inconclusive resistivity survey in 1988 at Cambridge Gap (TL601629), which suggested there was an original causeway through the ditch, but without archaeological investigation this cannot be proved (Malim, Penn et al. 1996 73). There is no evidence for a causeway or any other signs of an original gateway at Fleam Dyke despite both Fox and the archaeologists of the 1992 excavation digging as close as they could to modern roads or other gaps through the dykes (Fox 1921-2; Malim, Penn et al. 1996 58-72). Fowler assumed lots of the gaps in Wansdyke (many of which are attested in tenth-century documents) were gateways spaced at regular intervals like a Roman earthwork (Fowler 2001). The major problem with Fowler's work, as he himself admitted, is that without any archaeological investigation all may prove to be later features (Fowler 2001 188-89). The channelling banks in front of the gaps that Fowler noted might not be original features, but rather dumps of material taken from the bank by later Saxon farmers cutting access routes through the earthwork (Reynolds and Langlands 2006 18-19). Excavations carried out on East Wansdyke between 1966 and 1970 used resistivity surveys to see if causeways across the dyke were original and concluded some possibly were (Green 1971). Green's excavation of East Wansdyke suggested that a causeway set at an oblique angle may have taken the Ridgeway across the ditch, but the excavation accompanying was inconclusive (Green 1971 129 and 133). Without further excavation, none of Green's or Fowler's gateways can be proved to be original. The evidence for gateways as for palisades, even where there have been targeted investigations using modern archaeological techniques, is inconclusive at best; if these features were part of the original design of the dykes, archaeologists would probably have found evidence for them.

The similarities in the construction methods of Offa's Dyke and Wat's Dyke possibly suggest the same group of people built them. Excavations of both

earthworks have revealed evidence of a marker bank, a layer of stones at the base of the bank and a counterscarp in hillier sections to emphasise the ditch, with no evidence of gateways or revetments (Hill and Wilson 1975 95; Hill 1985 141; Hill and Worthington 2003 87-89 and 101; Malim 2007 22-23). We should note archaeologists did not find these characteristics at every site, but this may be due to later damage to the earthwork or different gangs using different building techniques at different sections.

Almost all of the dykes face downhill for the majority of their length. Heronbridge and Rudgate face uphill, but the area is flat and the proximity of the River Dee in the former case and the Roman road used as a base for the latter probably had more influence on choosing the location than the slight slope. Rowe Ditch faces upstream, but a slight rise in the river valley here means that for most of its length it effectively faces downhill. Aelfrith's Ditch bisects a ridge so it does not face up or downhill.

2.4 Possible early-medieval dykes

Name	Length Metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Bardon Mill	188	0%	DB		?	?					2000?
Catrail (Picts' Work Ditch)	4000	0%	D		0.9/6						12960
Catrail proper	9500	0%	BDC		0.6/2.7	0.3/2.9					9234
Wallace's Trench	500	0%	DB		1.25/4.6	1.8/5.5					2970*
Heriot's Dyke (Haerfields)	1000	0%	B			1/2					1200
Heriot's Dyke (Greenlaw)	2000	0%	CDB		0.85/3.25	1/4					4800*
Military Way	5000	0%	DB		1.9/8.3	2/2					12000
Bank Slack	2000	0%	(C?)BD		3/6	3/14				V 40º	21600
Bar Dyke	500	0%	DB		1.8/7	1.5/7					3780
Broomhead Dyke	1200	0%	DB		2/3	1/3				V	4320
Dane's Dyke	4000	100%	DB	YES	2/10	4.2/20.5	NO	YES	NO	V	48000
Gilling Wood	500	100%	DB		1.1/6.4	2.3/12				40º	2112
Park Pale	650	0%	DB		2?/0.5?	1.5/4					2340*
Swaledale western group	960	0%	CDB		1.4/7	2/14	NO	YES			5645
Swaledale middle group north	580	0%	DB		?/?	1/8	NO				2784*
Swaledale Hodic	580	0%	DB		1.2/9	2/15	NO				3758
Swaledale Ruedic	680	0%	DB		1.25/7	1.6/10	NO				3570
Swaledale southern	390	0%	DB		?/?	2/7	NO				3276*
Tor Dike	2000	100%	DB		3/6	1/3	YES			V 35-55º	21600
Nico Ditch	6000	55% (3300)	D(B?)	YES	2/3.75	(1.3/5?)			NO	U 30-40º	27000
Calver Dyke	500	100%	DBD		1/2.5	0.5/3					1500
Aberbechan	1200	0%	DBDB		?	2/7.5					21600*
Abernaint	545	0%	BD		2/7	3.5/8					9156*
Bedd Eiddil	94	0%	DB		0.5/2.75	0.4/2.5					78
Bwlch y Cibau (west)	900	0%	DB		?/3.7	1.5/7					5670*
Bwlch y Clawdd	180	0%	B(D?B?)		?/?	1.5/4.3					697*
Bwlch yr Afan	192	0%	DBD		1/1	1.25/3					230
Clawdd-trawscae	90	0%	DB		0.6/3	1/3					162*
Tyla-Glas	180	0%	DB		0.6/3	1/3					324*
Cefn Eglwysilan and Tywn Hywel dykes	1540	0%	DB		?/?	0.5/4.3					1987*
Cefn Morfydd	400	0%	DB(D?)		0.6/4.3	1/5.8					1392*
Cefn-y-Crug	304	0%	DB		0.6/5.8	0.6/5					635
Clawdd Llesg	170	0%	BD		1/7	1.5/7					1071*
Clawdd Mawr (Dyfed)	1400	0%	DB		1.2/7.5	1.5/8					10080*
Clawdd Mawr	700	0%	BD		?/?	1.75/6					4410*

(Foel)											
Clawdd Mawr Glyncorrwg /Bwlch Garw	1300	0%	DB		?/?	1/(1.5?)					1170*
Clawdd Seri	750	100%	(CDB)D		0.8/7	0.3/2.1					2520
Cowlod	108	0%	B(D)		?/?	1.2/4.5					350*
Ffos Toncenglau	1200	0%	(D)B		?/4	1.2/4.2		YES			3629*
Fron Hill Dyke	400	(100%?)	(D)B		?/?	1.9/7.3					3329*
Lower Short Ditch	750	100%	DB(D?)		1.3/4	1.5/8					5400*
Pen y Clawdd	260	0%	BD		0.9/6.8	1.9/8.5					2519*
Red Hill	110	100%	BD		1.6/3.3	0.8/4.7					349
Shepherd's Well	140	100%	DB(C)		1.2/4	1/4					403
Tor Clawdd	800	0%	DB	YES	1.2/4.5	0.3/4.5				U	2592
Ty Newydd	900	0%	DB		0.9/6	2/6					6480*
Vervil Dyke	188	100%	DB	YES	2.5/9	1.2/8	YES	NO	NO	U 20-30º	2538
Wantyn Dyke (northern)	3000	0%	DB		0.5/4	0.7/7					8820*
Beachley Bank	1400	0%	DB	YES	1.5/4	2/10	NO	NO	NO	V 30-50º	5040
Offa's Dyke in Herefordshire	8250	19% (1600)	DB		2/4	2/15					39600
Offa's Dyke in the Wye – English Bicknor	1200	0%	(CD)B	YES	1.5/5	2.1/11	YES	YES			5400
Offa's Dyke in the Wye – St Briavel's	14000	0%	CDBD	YES	0.6/4	1/10	YES	NO			20160
Minchin-hampton Bulwarks	2300	0%	DB	YES	2.3/7	1.2/4.9	YES	YES	NO	V 45º	22218
High Dyke	2000	0%	DB	NO	0.6/15	1/18					10800
Bunns' Bank	3000	100%	DB	NO	?/?	0.7/6					7560*
Horning	800	0%	DBDB	NO	?/13	2/12					11520*
Panworth	500	0%	DB	NO	0.5/4	1/6					1800*
Black Ditch Snelsmore	1000	0%	DB	NO	1.75 /4.5	1.75 /4.5					4725
Crookham Common earthworks	1550	0%	DB and BDB	NO	0.3 /1.8?	0.6 /1.8?					1004*
Grim's Bank Padworth	4600	0%	DB	YES	1.5/7.5	1.3/6	YES	?NO	NO	V 20-30º	31050
Bedwyn Dyke	2800	0%	DB	NO	2/9	2/6.3					30240
Mount Pleasant dyke	250	100%	B?	NO		?/?					?
Inkpen Dyke	500	0%	?	NO	?/?	?/?					?
Bolster Bank	3300	0%	DB	NO	1.4/6	3/6					35640*
Dodman	600	0%	CDB	NO	4.5?/?	2/6					4320*
Giant's Grave	350	0%	DB	NO	?/7	2/5					2100*
Giant's Hedge	11000	0%	DB	YES	0.8/5.5	1.5/3.3	NO	YES	NO	?	29040
Stepper Point	300	0%	DB	NO	?/?	?/?					?
New Ditch	800	0%	DB	NO	1.5/7	2.3/9					5040
Ponter's Ball	1050	19% (200)	DB	YES	2.4/8	3.5/27	NO		NO	U 40°	12096
Battery Banks	2240	0%	DB		1.5/8	1/7.5				U	16128
Devil's Ditch Doles Wood	2100	0%	DB		0.7/6	0.5/3					5292
Devil's Ditch Pepper Hills Firs	2000	0%	CDB		1.7/12	1.2/8					11520*
Devil's Ditch Wonston	3050?				?/?	?/?					?
East Tisted-Colemore	4000	2% (80)	(C)DB		3/13.5	3/13.5					97200
Froxfield short dyke A	274	0%	DB		2.4/12	2.4/12					4735
Froxfield short dyke B	100	0%	DB		2.4/12	2.4/12					1728
Froxfield short	100	0%	DB		2.4/12	2.4/12					1728

dyke C											
Froxfield short dyke D	100	0%	DB		2.4/12	2.4/12					1728
Froxfield Long Dyke	5350	5% (290)	DB		2.5/9	2/9					72225
Hayling Wood (including branch)	2900	0%	B or BDBD		?	2.2/5					19140
Festaen Dyke (Hartley Witney)	2200	13% (300)	DB		1/7	1/7	YES				9240
Faesten Dyke (Kent)	2400	39% (950)	DB	YES	1.8/6	1.5/7	NO	NO	NO	V 40º	15552
Fullinga Dyke	20000	100%	DB		0.8/4	0.5/4					38400
Surrey-Kent Dyke	320	100%	DB		1.5/9	3/16					2592
Mean	1990	23%	DB (13% with C)		1.5/6.3	1.6/7.4	NO (59%)	YES (55%)	NO	V (62%) 38º	10748
Total	169213	39628			95.5/ 425.45	123.45 / 582.4					870601
Range	94-20000				0.3-4.5/ 0.5-15	0.3-4.2/ 1.5-27					78-72225

Note that while in the past Tor Dike has also been a wapentake and county (or rather Riding) border while the Surrey-Kent Dyke marks the frontier between those two counties, all the other figures for contiguity with borders relates to parish boundaries. The Calver Dyke and Blwch yr Afan volumes are double the ditch figure as there are two ditches; with the Aberbechan Dyke, it is double the bank figure. There is evidence that Clawdd Mawr (Dyfed), Shepherd's Well, Ponter's Ball and Faesten Dyke in Kent were refurbished. The ditches of Broomhead Dyke, Beachley Bank, Clawdd Mawr Foel, Clawdd Mawr Llanfyllin and Minchinhampton Bulwarks were dug through rock, the rest through soil. There is evidence of a marker bank at Vervil, which also has stones lining the front of the bank that may have acted as a guideline for the builders. The Hayling Wood dyke is the only one in this section that has a branch from the main dyke. Faesten Dyke (Kent) and Hayling Wood dyke both have dogleg sections. Note how those dykes often thought to be part of Offa's Dyke (including Beachley Bank) are much smaller than Offa's Dyke proper, suggesting that they are separate earthworks.

There is little conclusive evidence for gateways at any of these dykes. There are three possible gateways in Dane's Dyke, a gap in Wallace's Trench where

the banks slightly overlap, which possibly suggests an original entrance, and a possible re-entrant entrance in Bank Slack where a footpath (Jonah's Lane) crosses the dyke (SE210545). Clawdd Seri, Cefn Morfydd, Ffos Toncenglau Dyke and Tor Clawdd also have gaps that might be original gateways (Fox 1936 281; Fox and Fox 1939 370). None of these possible entrances have been excavated to see if they are original features, but an excavation at Ponter's Ball was carried out at the site of a possible gateway, though even here the evidence was inconclusive (Rahtz and Watts 1993 30).

While most of the dykes face downhill, Abernaint, Catrail proper, Clawdd Mawr (Foel), Red Hill Cross Dyke and Hayling Wood all distinctly face uphill. Blwch y Clawdd faces uphill though this may be due to the steepness of the slope forcing the builders to quarry from the uphill side. Cowlod and Cefn-y-Crug do not have a distinctive uphill or downhill aspect as they are in saddles of land between two slopes. Clawdd Llesg faces slightly uphill, but has flanks 'guarded' by streams and it has a hill behind it.

2.5 Probable rebuilt prehistoric or Roman dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Devil's Ditch Garboldisham	2800	100%	DB?	YES	1/6	1/1.8			NO	U 60º-40º	10080
Combs Ditch	4500	56% (2500)	DB	YES	1.8/7	1.4/7.3	NO	?	NO	U 40º	34020
Mean	3650	73%	DB		1.4/6.5	1.2/4.6			NO	U 40º	22050
Total	7300	5300			2.8/13	2.4/9.1					44100
Range	2800-4500				1-1.8 /6-7	1-1.4/ 1.8-7.3					10080-34020

Note that the volume figures for these and the possible rebuilt dykes unfortunately includes the amount of earth moved to build the original prehistoric/Roman dyke as without highly detailed excavation results it is impossible to estimate just the early-medieval refurbishment figure. Though only 56% of Combs Ditch is contiguous with parish boundaries, mapping of

administrative borders recorded in the Domesday Book suggests almost the whole length was then contiguous with a hundred boundary (Mills 1980 70-71). The Devil's Ditch at Garboldisham does not face up or downhill as it is located in a dip between two ridges.

2.6 Probable reused prehistoric or Roman dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Harrow-Pinner Grim's Dyke	7000	29% (2000)	DB	YES	1.7/5.7	2.4/15		NO		V	40698
Mean	7000	29%	DB		1.7/5.7	2.4/15		NO		V	40698
Total	7000	2000			1.7/5.7	2.4/15					40698

Note that while for most of its course the Harrow-Pinner Grim's Ditch faces downhill, at Old Reading this is reversed (Braun 1937 381). In this case the boundaries mean both parish boundaries and the old boundary of Middlesex.

2.7 Possible rebuilt prehistoric or Roman dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Bichamditch	5000	100%	DB	YES	2.7/6	2.5/7				40-90º	48600
Launditch	5000	60% (3000)	DB	YES	1.8/5	1.5/8.5	YES	NO	NO	U 30-40º	27000
Black Ditches Suffolk	7000	25% (1750)	DB(D?)	YES	2/8.5	2/6.5	NO?		NO	U 30º	71400
Mean	5667	57%	DB		2.2/6.5	2/7.3			NO	U 43º	49000
Total	17000	9750			6.5/19.5	6/22					147000
Range	5000-7000				1.8-2.7 /5-8.5	1.5-2.5/ 6.5-8.5					27000-71400

The Black Ditches in Suffolk have an irregular ditch profile probably caused by recutting; the ditch figure for this earthwork is taken from the 1992 excavation (Caruth 1992).

2.8 Possible reused prehistoric or Roman dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Black Dyke	4000	37.5% (1500)	BD		1.8/4.3	1.4/4					18576
Scot's Dyke	12000	25% (3000)	CDB	YES	1.5/5.5	1.65 /11.75	NO	NO	NO	U 40º	59400
Bwlch y Cibau (north)	450	0%	DBDBD		?	?					?
Mean	5483	27%	?		1.65 /4.9	1.5/7.9	NO	NO	NO	U 40º	38988
Total	16450	4500			3.3/9.8	3.05/ 15.75					77976
Range	450-12000				1.5-1.8 /4.3-5.5	1.4-1.65/ 4-11.75					18576-59400

The only evidence for a gateway for the dykes in this section is on Scot's Dyke. According to the NMR entry (Monument number 1034723), the Ordnance Survey recorded an original entrance just east of Whitefield's Farm (NZ186012) in the southern end of the dyke near Richmond. On either side of the entrance, the dyke was much larger (30 metres wide and 4.5 metes high) and there was a level platform ten metres across sunk two metres deep into the crest of the bank.

2.9 All probable/possible reused/rebuilt dykes

	Length metres	Boundaries	Structure	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Mean	3606	63%	DB	1.8/6	7.7	NO	NO	NO	U 43º	38722
Total	32450	20550		14.05/ 48	14.2/ 61.85					309774
Range	450-12000			0.7-2.7 /2-8.5	0.3-4.8 /1.8-12.65					10080-71400

2.10 Probable prehistoric or Roman dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
Grim's Ditch (Leeds)	8800	23% (2000)	DB	YES	2.2/4.5	2.1/ 12.65	YES	NO	NO	V 35-50º	52272
South Dyke	2700	0%	DB	YES	1.5/7	1.5/ 11.5	NO	NO	NO	U 40-50º	17010
Roman Rig	25200	24% (6000)	DB(D?)	YES	1.7/2	2/4.5	?	NO	NO	V 45º	51408
Whitford Dyke	10000	4% (400)	DBD	YES	1.6/4.2	0.3/5.4				U	80640
Devil's Mouth	140	0%	DBD	YES	0.7/5	1.5/6				U	756*
King Lud's	1500	100%	DBD, BDB or BDBDB		1.9/8	1/4.5				U and V	27360
Foulding Dykes	1300+	0%	?		?	?					?
Miles Ditches	3000	0%	DBDBD?	YES	1.2/3.5	?			NO	V 30º	22680
Bucks-Herts Grim's Ditch	8591	24% (2100)	BD	YES	1.2/ 5.75	1.2/6	NO	NO	NO	V 30-50º	35567
Aves Ditch	5000	60% (3000)	DB	YES	1/3.5	1.8/4	NO	NO		V 40º	10500
Berks Downs Grim's Ditch	15000	29% (4400)	BD?	YES	1.25/ 5.75	1.1/5.5	NO	NO	NO	V 45-50º	64688
Hug's Ditch	3000	100%	DB		?	?					?
Reading - Oxford Road	300	0%	B			4.8/10					8640*
South Oxfordshire Grim's Ditch	6000	17% (1000)	DB	YES	2.75/ 5.7	0.7/5	YES	YES	NO	U 50º	56430
Cranborne Chase Grim's Ditch	20000	25% (4900)	DBD		1/6	0.5/2					72000
Tisted cross valley dyke (n)	170	0%	DBDB		1/5	1/3					1020
Tisted cross valley dyke (s)	200	0%	DB		1/5	1/3					600
Riddlesdown Dyke	200	0%	DBDB		?	?					?
Mean	6172	25%	DB		1.4/5.1	1.5/5.9	NO	NO	NO	V 42.5º	33438
Total	111101	28300			20/ 70.9	20.5/ 83.05					501571
Range	140-25200				0.7-2.75/ 2-8	0.3-4.8/ 3-12.65					600-80640

The figure for boundaries relate only to parochial examples, except 9000 metres (or 4½%) of Cranborne Chase Grim's Ditch that is also contiguous with county borders. The volume figure for King Lud's, Whitford and the northerly Tisted cross-valley dyke is double the ditch figure as there are two ditches while the figure for Miles Ditches is tripled as it has three ditches. For the Devil's Mouth, the bank figure is used as because it is rock-built so probably retains the original profile. Roman Rig, Cranborne Chase Grim's Ditch and South Oxfordshire Grim's Ditch have branches. Hug's Ditch, Oxford Road and the northerly Tisted cross-valley dyke have a dogleg plan while the Northern Rig (Roman Rig) and the Grim's Ditches in Buckinghamshire-Hertfordshire, south Oxfordshire, Berkshire Downs and Cranborne Chase have numerous right-angled changes in direction.

While parts of many of these dykes are contiguous with parish boundaries, the Foulding Dykes were unlikely to be used as they are parallel to the adjacent King Lud's that is contiguous with parish boundaries. The reason the Miles Ditches are not contiguous with parish boundaries is possibly that this prehistoric earthwork, which was only recently discovered through aerial photography, may not have been visible when parish boundaries were established.

There is little evidence of gateways at any of these dykes. In August 1946, an excavation was undertaken to find a possible original entrance through the Northern Rig of Roman Rig at Greaseborough (SK404951), but the archaeologists concluded that the earthwork had originally had no break at this point (Riley 1951). There is very little evidence of re-cutting or refurbishment at any of these dykes.

While many face downhill, Aves is located on flat ground and both the Berkshire Downs Grim's Ditch and Buckinghamshire-Hertfordshire Grim's Ditch face uphill.

2.11 Probable later-medieval dykes

Name	Length metres	Boundaries	Structure	Exc.	Ditch size	Bank size	Berm	Revet-ment	Ankle-breaker	Shape ditch	Volume metres³
King's Wicket	200	0%	DB		?	1/3					360*
Deil's Dyke	25300	0.8% (200)	B			2/1.7					86020
Sengh-enydd Dyke	12000	29% (3500)	DB		1.5/4.1	1.2/4.9					44280
Double Banks	2000	100%	DBD		1.8/2.4	?/6					10368
Reading – Coombe Bank	300	100%	DB		?/?	?/?					?
Mean	7960	15%	DB		1.7/ 3.25	1.4/3.9					35257
Total	39800	6000			3.3/6.5	4.2/ 15.6					141028
Range	200-25300				1.5-1.8 /2.4-4.1	1-2/ 1.7-6					360-86020

When calculating the volume of Deil's Dyke the 60% multiplier was not used as it was a wall of stacked turves rather than an earthen bank so had a rectangular rather than a curved profile. The volume figure for the Double Banks is double the ditch figure as it has two similar sized ditches. Though the beginnings of the parochial system predates some of these dykes, sections of earthworks are contiguous with parish boundaries either because the latter are not as fixed in the landscape as often thought or the dyke followed a pre-existing boundary.

2.12 Estimates of numbers needed to build the dykes

Any estimate of the numbers of people needed to build these earthworks will be based on assumptions. Most dykes are intermittent, probably because agriculture, urbanisation, industry or natural erosion has destroyed sections; while many scholars assume they were originally continuous, it is possible some were not. Likewise assuming the section where the bank is highest or the

ditch deepest represents the best-preserved section may also be false if the earthwork, as built, was not uniform in design. A description of a dyke by an antiquarian suggesting it was originally much larger in scale before the ravages of modern agriculture may be erroneous if the antiquarian was either exaggerating or failed to measure the earthwork accurately. We can mitigate some of these errors by calculating the amount of earth moved when constructing a dyke by excavating the ditch, but when a dyke is many kilometres long and there are only one or two recorded excavations, it is impossible to know if those sections are typical of the whole earthwork. Despite these caveats, by having figures based on averaging out the measurements given in all the available published studies of these earthworks it is possible that the totals are accurate enough to be useful.

One method of crosschecking the volume figures in this study is to compare them with those given by other scholars; this is especially useful if others used a different methodology. As three dykes, Offa's, Wat's and the Devil's Ditch in Cambridgeshire, are disproportionably larger than all the rest (these three probably make up two thirds of the total volume of all the probable early-medieval dykes), over- or underestimating the size of these three will skew the results. Fortunately, there are published estimates of the volumes of these dykes with which we can compare. Two studies quote a figure of 500,000 metres³ for Wat's Dyke, though neither source says how this was calculated or if it is taken from yet another study (Fitzpatrick-Matthews 2001 10; Lewis 2008 12). This figure is very close to the figure given in this thesis (424,800 metres³, which is 85% of the Fitzpatrick-Mathews/Lewis figure) and as this study did not discover the methodology behind the Fitzpatrick-Mathews/Lewis figure, they are certainly independent of each other. A published calculation for Offa's Dyke (750,933.32 cubic yards or roughly 574,130 metres³) is 72% of the figure, 798,000 metres³, from this study (Tyler 2011 152). Richard Muir calculated the weight of earth moved to build the Devil's Ditch in Cambridgeshire was 1,360,090,000 kilograms (Muir 1981 160). According to experiments carried out at Overton Down, which Muir himself uses for calculating the man hours needed to build the dyke, 5 feet³ (or 0.142 metres³) of earth weights 5 cwt (or 254

kilograms) therefore his figures translates to 760,365 metres³ which is just 38% more than the present study's figure of 550,800 metres³ (Ashbee and Jewell 1998 491). Perhaps more significantly, the total of the estimates for the volumes of these three dykes given in the preceding tables is 1,773,600 m³, which is just 3% less than the total from these other studies for these dykes (1,834,495 metres³). The similarity of this final total (despite the differences in methodology) and the fact they are based on measurements of surviving monuments suggests that we can give some credence to them as it would be very unlikely that the various scholars using different methodologies would produce similar but entirely inaccurate estimates.

Before discussing how many people could have built these dykes it is worth briefly comparing the size of them to other major earth-moving projects from before the Industrial Revolution so we can better understand the scale of the undertaking.

The probable early-medieval dykes dwarf the vast majority of prehistoric earthworks. Four probable early-medieval dykes are even larger than Silbury Hill, which at 239,000 metres³ is the largest prehistoric artificial mound in Europe (Dames 1976; Leary and Field 2010 (2011 ed.) 75). The next largest prehistoric mounds in Britain are probably the Great Barrow at Knowlton Rings in Dorset (38.1 metres in diameter and 6.1 metres high) and Maeshowe on the Orkneys (7 metres high and 35 metres wide); assuming they were regular cones they were just 2,319 and 2,246 metres³ respectively (Dames 1976 127; Foster 2006 16). The volume of the ditch of the large prehistoric enclosure called Durrington Walls has been calculated to be 1,751,750 cubic feet which is 49,604 cubic metres (Wainwright 1971 196). The Dorset Cursus at 10 kilometres long is comparable in length to some of the longer early-medieval dykes; having twin ditches just over 9 metres wide and only 1.7 metres deep about 116,970 metres³ of earth was moved to create this monument making it smaller than five of the probable early-medieval dykes. The volume of earth in the ramparts of a typical hillfort in Britain, Camps Tops at Morebattle in the Scottish Borders is just 900 metres³, that for a larger hillfort, for example the

unfinished hillfort at Ladle Hill in Hampshire (assuming it had been completed) would have been 11,000 metres³ (Hogg 1975 56-57 and 234). Both are smaller than the majority of probable early-medieval dykes.

The largest earthen structure built between the end of the period of this study and the start of the canal age is probably Castle Hill, the huge motte of Thetford Castle built in the twelfth century. It is 100 metres wide and nearly 20 metres high above the natural making it approximately 52,000 metres³ (note there is no need to include the volume of the bailey ramparts as they are a reused Iron-Age hillfort). Nine probable early-medieval dykes are larger than Castle Hill.

The only ancient monuments larger than all of the probable early-medieval dykes are the Fenland ditch called Car Dyke and Hadrian's Wall. With the possible exception of the Roman road network, prior to the building of the canal network Car Dyke and Hadrian's Wall were probably the largest engineering projects in Britain. Car Dyke, which like early-medieval dykes is hard to date definitively and whose purpose is unclear, is usually assumed to be Roman; it is 92 kilometres long, 12-17 metres wide and 3.6-4.4 metres deep; using the published excavation profiles this study concludes the volume of the ditch was about 3,300,000 metres³ (Simmons and Cope-Faulkner 2006). Hadrian's Wall was 120 kilometres long; estimates of the height of the wall vary from 3.5 to 6 metres and the width between 2.4 and 3 metres wide, while the earthen Vallum, was around 6 to 9 metres wide and 3 metres deep (Graham and Embleton 1984 14-19; Johnson 1989 41-42; Woodside and Crow 1999 36-37; Breeze 2007 39). With the wall 1,300,000 to 1,700,000 metres³ (a Victorian engineer estimated the size of the wall to be 1,702,115 cubic yards or 1,301,360 metres³) and the Vallum around 1,300,000 metres³ the whole structure is up to 3,000,000 metres³ (Breeze and Dobson 2000 82). Peter Hill estimated the ditch in front of the wall (which was probably the source of only a small percentage of the stone used in the wall) was 1,071,846 metres ³ (Hill 2006 40 and 127). The Antonine Wall was 63 kilometres long 3.35 metres high and 4.5 metres wide; using the same methodology already used to calculate the volume of the dykes it was about 569,835 m³ (Breeze 2007 55-56). Hanson and Maxwell, however, quote a

figure 68% higher for the Antonine Wall, 955,000 metres³, claiming this equates to 250,000 man days; they also estimate that with the associated roadways, fortlets, timber breast work and stone base this would be multiplied by up to 7 giving 1,730,000 man days (Hanson and Maxwell 1983 132-33). We should remember that there is no credible archaeological evidence from any of the numerous excavations of any early-medieval dykes had any of these additional features though some did have a simple revetment. This suggests that prehistoric and post-850 medieval societies did not have the need, capability or urge to undertake projects on a scale of the larger early-medieval dykes, but only Offa in the early-medieval period could match the achievements of the Roman Empire.

Below: A table comparing the size of probable early-medieval dykes with other large ancient earthworks (the latter are in bold italics).

Name	Volume in metres³	Length in metres
Car Dyke	***3300000***	***92000***
Hadrian's Wall (wall and vallum)	***3000000***	***120000***
Offa's Dyke	798000	95000
Antonine Wall (ditch and bank)	***569835-955000***	***63000***
Devil's Ditch	550800	12000
Wat's Dyke	424800	59000
East Wansdyke	244800	20400
Silbury Hill	***239000***	***158***
Fleam Dyke	168480	5200
Dorset Cursus	***116970***	***10000***
(Mean dimensions of probable early-medieval dykes)	109919	10331
Bokerley Dyke	95310	5295
West Wansdyke	89100	13500
Becca Banks	65520	4200
Fossditch	60480	9000
Thetford Castle motte	***52000***	***100***
Durrington Walls ditch	***49,604***	***1173***
Bran Ditch	35100	5000
Rowe Ditch	28125	3750
The Rein	22344	1900
(Median dimensions of probable early-medieval dykes)	19272	3235
Bury's Bank	16200	1500
Crugyn Bank (inc. Two Tumps)	11750	2720
Ladle Hill hillfort (if completed)	***11000***	***750***
Grey Ditch	9504	1200
Aelfrith's Ditch	4350	5000
Heronbridge	3654	350
Pear Wood	2462	400
Great Barrow at Knowlton Rings	***2318***	***38***
Maeshowe	***2246***	***35***
Upper Short Dyke	1575	500
Clawdd Mawr (Llanfyllin)	1215	450
Short Ditch	1152	640
Camps Top hillfort near Morebattle	***900***	***1000***[1]
Giant's Grave	780	250
Rudgate Dyke	261	100
Bica's Dyke	216	400

It is worth looking next at evidence for the organisation of the labour needed to build the dykes before trying to calculate the numbers involved. Higham wondered if the local rulers who ordered the construction of some of the earlier dykes might have used Roman tax assessments to decide how many labourers each community should supply (Higham 1992 94-95 and 149-52). Perhaps before the collapse of the monetary economy shortly after the end of Roman rule, a paid workforce could have been hired using the revenue from a Roman-type taxation system. While these scenarios are plausible for those built in the early fifth century, tax assessments, even if they survived, would soon become

[1] As this hillfort is bivallate, that is has two ramparts, the length figure is twice the circumference of the fort.

hopelessly out of date as settlements moved or were abandoned and new ones founded. Slavery was a common source of labour and practiced throughout the period though few individuals probably had sufficient slaves to build a dyke. In the medieval period, people owed obligations to their lord whether it was a peasant to the local lord of the manor or a king to a stronger king. If these obligations were to provide labour service for a set amount of days of the year (for peasants this often meant working in the lord's fields), the aristocracy could choose to redirect this by obliging their tenants to help build an earthwork. From the eighth century, Anglo-Saxon sources specifically cite obligations that include repairing bridges, building fortifications and military service (Brooks 1996 129; Brooks 2000 32-47; Zaluckyj 2001 (2011 edition) 208). These obligations and the documents they are recorded in are discussed in detail later. The earliest references are just from Mercia which is unsurprising as that kingdom probably built the largest dykes, but perhaps they reflect older more widespread customs that obliged the peasantry to help build or repairs earthworks. Labour to build an earthwork could also have been given voluntarily by local communities especially if they thought the dyke would benefit them; this scenario seems most likely with the smaller earthworks. Presumably, there had to be some form of organisation to coordinate the building of the dyke whether that was a king, a local leader or an ad hoc group of local farmers, but at present, we can only really speculate how they gathered a workforce.

The workers needed to build an earthwork must have been housed, fed and equipped with tools. For the smaller earthworks, local farms and agricultural implements might have sufficed, but for the larger examples, there must have been some logistical organisation. While the workers could have supplemented their diet by hunting or foraging, the numbers needed to build the larger dykes like Offa's probably would have required additional food (perhaps from nearby royal or aristocratic estates possibly as part of the tribute paid to the leader building the dyke). The line of the dyke needed to be surveyed and marked out; excavations of some of the dykes have provided evidence for marker banks under the main bank perhaps built by a small group in advance of the main construction party. The larger dykes (Offa's, Wat's, Devil's Ditch, Fleam Dyke

and Bran Ditch for example) seem to have marker banks, unsurprising as they needed more planning. It is estimated that it took 30 men a month to survey Hadrian's Wall; the Mercians could have been less exacting so could have taken less time to survey Offa's Dyke though equally they were also probably less experienced than Roman engineers so may have taken slightly longer (Hill 2006 36-38). On Offa's Dyke changes in direction and construction methods suggests that different gangs worked different parts while evidence from East and West Wansdyke suggests that the builders initially built small quarry pits and spoil heaps before linking them to form continuous earthworks (Hill 1985 141; Fowler 2001 191-93; Erskine 2007 97-98). The water levels encountered during excavation of the earthworks of the Welsh borders suggest that the builders must have limited the main construction to the summer months when the ground was drier and this is consistent with studies of the construction of Hadrian's Wall (Hill 1985 141; Hill 2006 110-11). There is some evidence of the clearance of any unwanted undergrowth or trees using fire; this was probably best done in Spring, before the vegetation became so dry the flames would get out of control (Squatriti 2004). We do know from epigraphic sources that Hadrian's Wall took 6 years to build (or would have if war had not interrupted the work) and the Antonine to between two and twelve years due to changes made during the construction work (Breeze 2007 49 and 62).

What is surprising is that, overall, apart from marker banks, there is little evidence either written or archaeological of the bureaucracy, workforce or tools involved in dyke building. There is no evidence of camps for the workers or supply roads built to bring in supplies which would be essential to mobilise workers from areas outside the immediate vicinity of the earthwork (Feryok 2001 (2011 ed) 185). Presumably, the Anglo-Saxons, like their predecessors, used wooden spades and wicker baskets, neither of which usually survives well though there is some evidence of both at sites other than dykes (Morris 1980a; Ashbee and Jewell 1998 490). There is evidence that the Anglo-Saxons used iron-tipped shovels to move earth: two eleventh-century Anglo-Saxon calendars in the British Library (BL Cotton Julius A. vi and BL Cotton Tiberius B. v) show people in the March illustrations digging the soil with such shovels (Karkov 2010

157 and 167). While the shafts may not survive, the iron tip should, yet this study uncovered no credible evidence of one associated with an early-medieval dyke. This lack of evidence suggests that the labour force is more likely to have been relatively small and/or local perhaps farmers using their own tools that they made sure they did not break or loose. A much larger workforce would have needed a logistical infrastructure (perhaps even being supplied with tools) and it is logically more likely they would have left debris (such as broken tools) noticeable in the archaeological record.

Scholars have attempted to calculate the number of people needed to build the larger of the probable early-medieval dykes. Wormald claimed Offa could have built his dyke with just 5,000 if the construction was spread over the whole reign, though tens of thousands would have been needed if it was built in a single year; he did not say how he obtained these figures (Wormald 1982 122). If the stones found every 1.6 metres in the marker bank of Wat's Dyke represent the section allocated to each labourer then it would presumably take 36,875 to finish the dyke (Hayes and Malim 2008 165). Hill used two written sources to make his calculations how many people Offa employed. Firstly, the Burghal Hidage which says four men were needed for every pole of the perimeter of a fortification, which equates to a man every 4.125 feet (or 1.257 metres), so 76,000 would have been needed to man Offa's Dyke (Hill 1985 142; Hill and Worthington 2003 113-19). Secondly, he turned to the Tribal Hidage, which implies that Mercian kings could call on 125,000 heads of household. Hill calculated that as the central section was 98 miles long (roughly 157 kilometres, which is about 65% longer than the estimate in this work) and is divisible into 125,440 units each 4.125 feet long, the Mercians could have used a person from every Mercian household to lay out the dyke one year and finish it the next. Reynolds also used the Burghal Hidage to suggest that it took over 15,000 to build the whole of Wansdyke (Reynolds and Langlands 2006 41). As Tyler correctly points out though, the Burghal Hidage tells us how many people are needed to man a town wall not how many people are needed to build it (Tyler 2011 152). Far more people are needed to build a fort or a railway than to staff one. Equally, the Tribal Hidage gives us a glimpse of how many households the kings of Mercia could tax, not how many they could or did use as labourers.

Some scholars have used work carried out at Overton Down to make estimates of the numbers of people involved in building the dykes. The work of the Experimental Earthwork Project at Overton Down started in 1960 and the data still forms the basis for many modern archaeological assumptions (Jewell 1963; Hutchinson and Stuart 2003). The archaeologists estimated that, at best, a man using prehistoric tools can move 5 cwt per hour (5 feet^3 or 0.142 metres^3); though it was doubted this rate could be maintained for long, early-medieval peasants were more used to hard labour than archaeology students (Jewell 1963 51; Hutchinson and Stuart 2003 490-91).

Muir tried to estimate the numbers needed to build the Devil's Ditch in Cambridgeshire using the Overton evidence, which he claimed demonstrated a man with a pick and a shovel could move 750 kilograms of solid moist chalk in an hour (Muir 1981 160). He estimated the soil moved to build Devil's Ditch weighed 1,360,090,000 kilograms, that is 1,813,453 man-hours' of work or 181,345 ten-hour man-days. After adjusting for loss of material from the bank through erosion, he calculated it would have taken 500 labourers 400 days (or 1,000 men 200 days) to build the dyke. The Overton dig rates for a man using ancient methods (antler picks, deer shoulder blades as scrapers and wicker baskets) suggest he could dig just 5 cwt in an hour, which works out at just 254 kilograms far less than the figure Muir used. The diggers at Overton only achieved figures comparable to Muir's, 750 kilograms when using modern steel tools making Muir's calculations questionable.

Fowler likewise used the Overton data to estimate the number of people needed to build East Wansdyke, but gave no calculations; he claimed it would have taken 1,000 men 23 to 30 days to build the dyke (Fowler 2001 192-93). Tyler uses the 5 foot^3 (or 0.142 metres^3) an hour figure from the Overton study to calculate the size of the labour force needed to build Offa's Dyke (Tyler 2011 152-53). He calculated the dyke was 750,933.32 cubic yards in volume (or 574,130 metres^3) therefore given a six-hour day (meaning each worker could

daily move 30 feet³ or 0.85 metres³) it would have taken 675,839.99 man days to build so 10,000 people could have built it in 68 days. Erskine suggested a Roman soldier could shift a massive 20 metres³ in a day, which would presumably mean 20 men could easily have built West Wansdyke in a year, though he did not make this final calculation (Erskine 2007 98). Lewis claimed a man can move a cubic metre of earth in just twenty minutes and calculated it would have taken 100 men to build Wat's Dyke in a year (Lewis 2008 12).

There also have been some attempts to calculate the number of workers (or rather soldiers pressed into labouring duty) it would have taken to build the Roman frontier walls of Britain. In 1885, an engineer called Rawlinson estimated 10,000 labourers could have built Hadrian's Wall in 240 days using the assumption a Roman worker could move 8 cubic yards (6.1 metres³) a day (Breeze and Dobson 2000 82). Hanson and Maxwell claimed a fit Roman soldier could move 3.8 metres³ of earth a day (far less than Erskine's estimate) and therefore the ditch and bank of the Antonine Wall would have taken 250,000 man-days to dig; with the associated infrastructure, it would take 1,730,000 man days (Hanson and Maxwell 1983 132-33). Though they do not make the following calculation themselves, this presumably would mean that just for the construction of the bank and ditch, assuming construction took place over half a year (therefore avoiding the wetter months), it would have taken about 1,500 labourers. Peter Hill claimed a force of 1,800 men could have dug the ditch of Hadrian's Wall in a season and a force of about 7,200 legionaries plus some auxiliaries built the whole structure (Hill 2006 115-16 and 127).

Scholars have also tried to calculate how many people it would have taken to construct Silbury Hill; Richard Atkinson in 1968 said that it would have taken 500 people 10 years while Mike Parker Pearson in 1993 wrote that 1,000 could do it in two years (Pearson 1993 71; Leary and Field 2010 (2011 ed.) 116). These figures presumably would equate to 5,000 and 2,000 respectively if it was constructed in a single year. Richard Atkinson devised a complex formula for calculating how many 'man' hours it would take to move earth from a ditch given the depth and width of the ditch and the width and height of the bank

constructed from the earth moved (Atkinson 1961). Briefly, the calculation is $H = V(120+8L+2F)/1000$ where H is the total 'man' hours, V the volume of the ditch, L and F are the vertical and horizontal distance respectively the earth has to be moved from the middle of the ditch to the middle of the bank. Both Atkinson and others like Geoffrey used the formula to calculate how much labour it would take to construct prehistoric earthworks like Avebury and Durrington Walls (Wainwright 1971 196-97).

Below: A table giving the different estimates for the labourers needed to build various earthworks in a year.

Name of scholar	Date of study	Dyke	Estimate of number of labourers needed
Rawlinson	***1885***	***Hadrian's Wall***	***10,000***
Atkinson	***1961***	***Avebury***	***325***
Atkinson	***1968***	***Silbury Hill***	***5,000***
Wainwright	***1971***	***Durrington Walls***	***190***
Muir	1981	Devil's Ditch	1,000
Wormald	1982	Offa's Dyke	Tens of thousands
Hanson & Maxwell[1]	***1983***	***Antonine Wall (ditch only)***	***1,500***
Hill	1985	Offa's Dyke	76,000
Pearson	***1993***	***Silbury Hill***	***1,000***
Fowler	2001	East Wansdyke	1,000
Reynolds	2006	East and West Wansdyke	15,000
Hill	***2006***	***Hadrian's Wall (just the ditch)***	***1,800***
Hill	***2006***	***Hadrian's Wall***	***7,200+***
Erskine	2007	West Wansdyke	20?
Lewis	2008	Wat's Dyke	100
Hayes & Malim[2]	2008	Wat's Dyke	36,875
Tyler	2011	Offa's Dyke	5,000-10,000

Below: A table comparing this study's estimates for the volume of various earthworks with those made by other scholars. Note that neither of the two estimates for the same earthwork is less than half or more than double than the other.

Earthwork	This study's estimate for the volume in metres³	Other estimates	Difference (this study's figure as a percentage of the other estimate)
Offa's Dyke	790,000	574,130 (Tyler 2011 152)	139%
Wat's Dyke	424,800	500,000 (Fitzpatrick-Matthews 2001 10; Lewis 2008 12)	85%
Devil's Ditch	550,800	760,365 (Muir 1981 160)	72%
Antonine Wall (bank and ditch only)	567,000	955,000 (Hanson and Maxwell 1983 132-33)	59%

While as the tables above show the different estimates made by various scholars for the size of both the early-medieval dykes and the Roman frontier works are broadly similar, the estimates of the numbers of people needed to

[1] They do not give this final figure, this is the present author's extrapolation from their estimates.
[2] They do not makes this final calculation themselves, but this is based on their assumption that the stones in the marker bank 1.6 metres apart represent the section allocated to each labourer.

build these structures are quite clearly incompatible. If the ditch of the Antonine Wall only took 1,500 men to dig then it is unlikely it took 50 times that number to build Offa's Dyke when the two earthworks are of a similar size. With different digging rates forming the basis for these figures it is unsurprising scholars have produced such varied estimates. It is therefore necessary to investigate further the amount of earth a man can move in a day's work.

Previous studies have usually relied on a single estimate for the volume of earth a man can move in an hour or day. By finding as many different estimates for this figure as possible as well as looking at the reasoning behind the calculation, we can make a more informed and balanced estimate. Note that while the ditches of one possible early-medieval dyke, Becca Banks, and five possible early-medieval dykes (Broomhead Dyke, Beachley Bank, Clawdd Mawr Llanfyllin, Clawdd Mawr Foel and Minchinhampton Bulwarks) were cut through rock, the rest were dug through what we can loosely term soil.

As we have seen, experiments at Overton Down suggested an archaeology student using prehistoric methods (that is antlers as picks, the shoulder blades of deer as scrapers and wicker baskets to move the material) could move 4.9 to 6 cwt per hour and that 1 cwt equated to 1 foot^3 or 0.028 metres^3 (Jewell 1963 50-8). Pitt Rivers managed better results and got his diggers to move 9 cwt an hour (roughly 0.25 m^3) using antler picks (Ashbee and Jewell 1998 491). At Overton Down archaeology students using modern tools found they could each move up to 17 cwt every hour (0.48 metres^3). Erskine, using data from Roman military handbooks (like *Epitoma Rei Militaris* by Vegetius) and evidence from Roman camps, claimed a Roman soldier on manoeuvres could daily move 0.75 to 1.5 metres^3, but a man unencumbered by military duties could move 10 to 20 metres^3 in a day (Erskine 2007 98). Bachrach claims that the workers Charlemagne employed in 793 on his failed attempt to dig a canal from the Danube to the Rhine would have had to move 0.3 metres^3 a day, but gives no source for this figure (Bachrach 1993 67). From the nineteenth-century one oft-quoted figure is that a navvy could move 20 cubic yards (15.3 metres^3) a day (Hanson and Maxwell 1983 132; Breeze and Dobson 2000 82). The Victorian

engineer Rawlinson though assumed a labourer could only move 8 cubic yards a day (6.1 metres³) when estimating the labour force needed to build Hadrian's Wall (Breeze and Dobson 2000 82). Dixon, in the excavation report on the Anglo-Saxon settlement at Mucking, claimed a man could move 0.5 metres³ an hour in gravel soil, but gives no supporting evidence and it is unclear if he meant an Anglo-Saxon labourer or was quoting from his experience as an archaeologist (Dixon 1993 147). Lewis asserted a man can excavate a cubic metre and pile it up in twenty minutes suggesting he could move three metres³ an hour, but like Dixon gives no source (Lewis 2008 12). A modern archaeologist estimated that, using steel equipment, he could dig a cubic metre of soil in an hour, but once into the sub-soil, the rate diminishes dramatically, probably even halves, dropping to about 0.4 metres³ an hour in glacial till (Nick Higham, personal communication). While the Atkinson formula already discussed has merit, the other methodologies discussed here unfortunately do not include the same variables and it does not give a simple hourly dig rate, but his figures seem to be largely based on the simple volume per hour of labour produced at Overton (Atkinson 1961 295).

The British Army's standard guide to engineering matters, The Royal Engineers Pocket Book, estimates the amount of earth a man can move in an hour to be 0.3 metres³ (Anon. 2008b 9-1-1). This booklet does add the caveat that this rate is halved in chalk or rock (this would produce a rate less than that Pitt Rivers managed using prehistoric techniques); it also notes the rate decreases if the troops are tired, inexperienced or digging in the dark. Peter Hill looked at records from World War One and estimated troops could move 90 cubic feet of earth in a four-hour period when digging a trench under fire which works out as 0.65 metres³ per hour (Hill 2006 126). Since 1873, architects and builders have habitually used a reference source called 'Spon's Estimating Costs Guide to Minor Works' when costing building work; this includes estimates for excavating different types of ground by hand (Spain 2001 5). Recent editions estimates a labourer would take 0.6 hours to dig through a square metre of topsoil to a depth of 25 centimetres, which gives a rate of 0.4 metres³ an hour. The Spon's rates for digging a narrow trench are lower, approximately 0.29 metres³, and for

digging through rock it drops to 0.1 metres³ per hour, but as the ditches of early-medieval dykes are much wider and rarely cut through rock the rate for digging a pit 1.5 metres deep of 0.3 metres³ an hour, is probably most relevant.

By putting the information from the various studies in a table, the data is easier to compare; because some estimates are hourly and others daily it is necessary to calculate one figure from the other to make them comparable. As the studies used here have variously estimated the average working day to be 6, 8 or even 10 hours, the figures in square brackets are extrapolations made by this study that give a range of figures from that of a six-hour day to that of a ten-hour day (Hill 2006 111).

Study	Type of equipment	Hour rate in metres³	Day rate
Overton	Prehistoric	0.14-0.17	[0.84-1.7]
Pitt Rivers	Prehistoric	0.25	[1.5-2.5]
Erskine	Roman	0.75-1.5	10-20
Bachrach	793	0.3	[1.8-3]
?Navvy	Nineteenth-century	[1.53-2.55]	15.3
Rawlinson	Nineteenth-century	[0.61-1.02]	6.1
Hill	World War One	0.65	[3.9-6.5]
Dixon	?	0.5	[3-5]
Lewis	?	3	[18-30]
Spon's	Modern	0.3	[1.8-3]
Royal Engineers	Modern	0.3	[1.8-3]
Overton	Modern	0.48	[2.9-4.8]
Higham	Modern	0.4-1	[2.4-10]

The figure given by Lewis seems abnormally high and as he cites no reasoning behind the figure, it is probably best to lay it aside. It is clear that the rates using prehistoric methods are far lower than those using Roman, nineteenth-century or modern methods. Roman soldiers and nineteenth-century navvies were possibly better organised, trained and equipped (usually with mass-produced

tools) than medieval peasants; modern steel shovels are undoubtedly stronger and more efficient that a medieval wooden spade, but an early-medieval labourer would probably have access to far better equipment (like iron-tipped spades and iron axes) than prehistoric antler picks. Therefore, the early-medieval rate logically should fall somewhere between the prehistoric rates (0.14 to 0.25 cubic metres an hour) and the figures for those using Roman/nineteenth-century/modern methods (0.3 or more cubic metres an hour). This means early-medieval labourers could probably move 0.25 to 0.3 metres^3 per hour or 1.5 to 3 metres^3 a day, a figure surprisingly close to the estimate for Charlemagne's labourers, which is the only estimate originating from the period covered by this study.

With this more trustworthy digging rate, it is possible to estimate the numbers of labourers needed to build the probable early-medieval dykes. As already mentioned it is unlikely that the builders of a dyke would work throughout the year. It is difficult to dig the soil in the wetter months and in a pre-industrial society it is probably unlikely a ruler would divert peasants into non-productive projects during the harvest (Hill 1985 141). Therefore, in the table below, it is assumed the working season is the conveniently round figure of 100 days, if the reader thinks that figure is too low and, say, 200 days is a more likely figure, then just halve the figures in the third column.

This table applies a different digging rate for dykes with rock-cut ditches, but here this is only applicable to Becca Banks. Spon's and the Royal Engineer's Pocket Book give hourly digging rates through rock as 0.1 and 0.15 metres^3 respectively so this study uses the lower of those two rates giving a daily rate of 0.6 to 1 metres^3.

Dyke	Volume in metres^3	Labourers needed to build it in a single season	Range of estimates by other scholars
Offa's Dyke	798000	2660-5320	5000-76000
Devil's Ditch	550800	1836-3934	1000
Wat's Dyke	424800	1416-2832	100-36875
(East and West Wansdyke together)	333900	1113-2385	15000
East Wansdyke	244800	816-1749	1000
Fleam Dyke	168480	562-1123	
Becca Banks [through rock]	65520	655-1092	
Average	***168480***	***397-785***	
Bokerley Dyke	95310	318-635	
West Wansdyke	89100	297-594	20
Fossditch	60480	202-403	
Bran Ditch	35100	117-234	
Rowe Ditch	28125	94-188	
The Rein	22344	74-148	
Median	***19272***	***64-128***	
Bury's Bank	16200	54-108	
Crugyn Bank (inc. Two Tumps)	11750	39-78	
Grey Ditch	9504	32-63	
Aelfrith's Ditch	4350	15-29	
Heronbridge	3654	12-24	
Pear Wood	2462	8-16	
Upper Short Dyke	1575	5-11	
Clawdd Mawr (Llanfyllin)	1215	4-8	
Short Ditch	1152	4-8	
Giant's Grave	780	3-5	
Rudgate Dyke	261	1-2	
Bica's Dyke	216	1-2	
Total	***2638066***	***8794-17587***	

These figures suggests that for the larger dykes, thousands of labourers were needed, not tens of thousands as in some previous estimates (though they are still major undertakings), but for half of the probable early-medieval dykes a hundred men or less would have sufficed. If the dykes were built over many years, even fewer labourers would have been working at any one time. These relatively low figures would explain why it is only on Offa's Dyke that there is clear evidence of different gangs working different sections; on most of the dykes, the workforce would be sufficiently manageable to make piecemeal construction unnecessary. A marker bank of the type found at Fleam Dyke, Devil's Ditch, Offa's Dyke and Wat's Dyke demonstrates the planning and preparation needed when organising a force numbering over a thousand. It is perhaps a little surprising the builder's of Bran Ditch felt the need to build a marker bank when the labour force was possibly between 117 and 234; for the majority of the dykes such a feature would be unnecessary with such small workforces, which is arguably why evidence of marker banks is absent at most dykes. For most dykes the organisers could easily draw the workforce from

local settlements with no need for temporary housing, again explaining the absence of evidence of camps for the workers in the archaeological record (Feryok 2001 (2011 ed) 185).

Overall, while these estimates are very similar to those of Muir, Fowler and Tyler (for the Devil's Ditch, East Wansdyke and Offa's Dyke respectively), generally they are less than those given by other scholars. The most notable discrepancies are the estimates for West Wansdyke and that for Wat's Dyke, which are far higher than Erskine's and Lewis's calculations, but their estimates for how much earth a man can move in a day are unusually high.

Documents from the construction of the Great Wall of China demonstrate a man could build a rampart 18 feet long (roughly 5.5 metres) in a month; as Offa's Dyke is about 95,000 metres long this would suggest 5,278 Chinese labourers could have built Offa's dyke in 100 days (Waldron 1990 26). This figure, based on actual experience rather than a historian's guesswork, is reassuringly far closer to this study's figure of 2660-5320 than Hill's 76,000 or Wormald's tens of thousands; though the final stone Great Wall seen on tourist poster is obviously different from the earthen bank built by Offa, many of the earlier structures built by the Chinese are similar.

While our knowledge of the administration of early-medieval kingdoms makes it difficult to know how many people the kings of, say, Mercia could mobilise for a civil engineering project, we can compare these estimates from the known figures of armies from other periods. When the Romans invaded Britain their force probably numbered 40,000; by the end of Roman rule it had declined to just 10,000 to 20,000 (Millett 1995 14 and 78; Breeze 2007 22-24). Figures for the size of armies in the Anglo-Saxon and Viking periods are more problematic as chroniclers often exaggerated the size of enemy forces. It is likely that most Viking armies numbered between just a few hundred and a few thousand men (Sawyer 1962 117-28; Brooks 1979 2-7; Lawson 1984). Estimates of the size of the English army at the Battle of Hastings in 1066 average around 7,000 and in

the thirteenth century most armies numbered just a few thousand because they could not support more through foraging (Douglas 1964 (1969 edition) 198; Crouch 2002 203). Figures for the numbers of workers that the Angevins could put to work building fortifications survive from around the year 1000 and suggest a ten-hour day was the norm (Bachrach 1993 65). The core of their territory contained 60,000 people (roughly half that of Mercia), but they could only spare 140 men at any one time to build fortifications and those people had to be supported by 460, over three times as many, to provide the necessary food. According to one scholar, Charlemagne mobilised 60,000 to work on his failed Rhine-Danube canal though others give a much lower (and more realistic) estimates of just 4,700 to 6,000 (Bachrach 1993 67; Squatriti 2002 41). These figures suggest it is highly unlikely that early-medieval kings who only ruled a part of England or Wales could have gathered ten of thousands of labourers. The population of Wales in the late thirteenth century was only about 300,000 and in the early-medieval period probably considerably lower; if, as Hill suggested, Offa could put the 125,000 men in the field, the Mercians would surely have destroyed the Welsh rather than wasted time building a dyke (Williams-Jones 1976 xxxv-lix; Hill 1985 142). These figures give further credence to the estimates for the numbers needed to build early-medieval dykes given above.

2.13 The structure and location of early-medieval dykes

After estimating the numbers of diggers needed to build the dykes, we can now examine the structure of early-medieval dykes. The average length for probable early-medieval dykes is 10,331 metres though because this is skewed by a few very large earthworks we should note that the median length is just 3,235 metres. For possible early-medieval dykes the figure is even lower, the average being just 1,990 metres, but as smaller dykes are less likely to be excavated or securely dated, shorter dykes are more likely to be in the possible rather than the probable category. Dykes from other periods are generally longer than most probable early-medieval dykes; the reused/rebuilt prehistoric/Roman dykes average at 3,606 metres in length, the prehistoric/Roman dykes at 6,172 metres and the later medieval dykes at 7,960 metres. The range of lengths for probable early-medieval dykes is unusually large at 94 to 95,000 metres while the range for all the others is 100 to just 25,300 metres.

In terms of volume, the average for probable early-medieval dykes is very high (109,919 metres^3), again because of the larger earthworks, but the median figure is just 19,272 metres^3. The volume estimates for possible early-medieval dykes, 10,748 metres^3, is even lower. The volume figures for reused/rebuilt prehistoric/Roman dykes (38,722 metres^3), prehistoric/Roman dykes (33,438 metres^3) and for later medieval (35,257 metres^3) are all very similar to each other, but much higher than for most early-medieval dykes. In summary, probable early-medieval dykes are usually quite small in scale, but a minority, notably Offa's and Wat's, are unusually long and large in scale, so distorting the average.

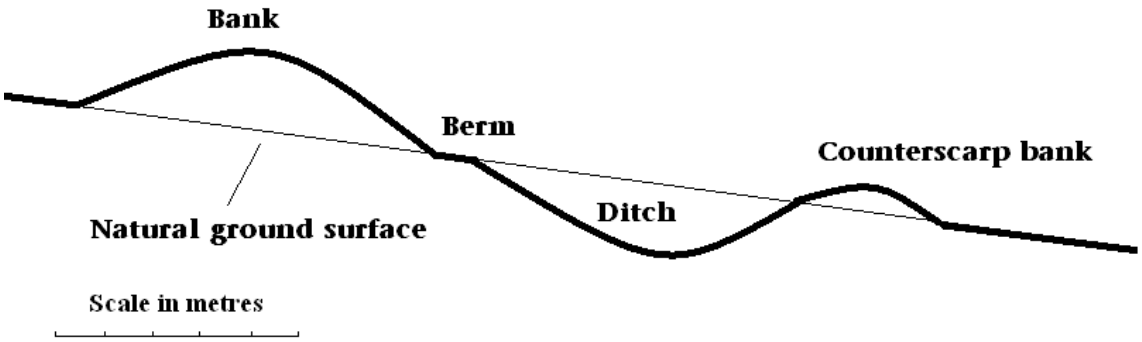


Figure 2 A profile of a typical early-medieval dyke (a hypothetical model based on an aggregate of numerous profiles of different earthworks)

The probable early-medieval dykes generally have a single bank and ditch both of which are relatively large, whereas prehistoric dykes often have multiple banks and ditches which are usually much smaller. The ditches of probable early-medieval dykes are on average 2.1 metres deep and 6.2 metres wide and the banks average at 1.8 high and 8.3 metres wide; the size of these features seems to vary less than prehistoric dykes. The ditches of prehistoric/Roman and later-medieval dykes average only 1.4 and 1.7 metres deep respectively and 5.1 and 3.25 metres wide. Only the banks of reused/rebuilt prehistoric dykes attain the same average height as probable early-medieval ones, suggesting that they were reutilised as they were of a suitable size to fulfil the functions required of an early-medieval dyke or built up to match other earthworks of the period. A recent study of the earthworks of lowland Scotland found the dimensions of what were presumably surviving later medieval features are much smaller than probable early-medieval dykes (Barber, Lawes-Martay et al. 1999). The average depth of the ditches of agricultural boundaries was 0.412 metres, of head dykes was 0.23 metres, of park pales was 0.23 metres and woodbanks 0.27 metres with widths and bank sizes equally significantly smaller than probable early-medieval dykes (Barber, Lawes-Martay et al. 1999 147). While there are two notable exceptions (Bica's Dyke and Aelfrith's Ditch whose ditches are just 0.45 and 0.5 metres deep respectively), the banks and ditches of probable early-medieval dykes generally dwarf those from earthworks of other periods.

The ditches of probable early-medieval dykes are more likely to have v-shaped ditches than prehistoric dykes where the spilt between v and u-shaped ditches is more even. The angle of the sides of ditches is roughly similar for dykes of all time periods (between 38 and 43º) suggesting the angle is more a factor of how steep a ditch can be dug without it immediately collapsing than changing practices over time. The differences between the two different styles of ditch may be significant. A u-shaped ditch needs less maintenance and it is perhaps significant that none of the probable or possible early-medieval dykes with evidence of a counterscarp bank have an unequivocally u-shaped ditch, which suggests the counterscarp may be a product of clearing out a v-shaped ditch.

Many (though by no means the majority) of probable early-medieval dykes have features like counterscarp banks, marker banks, berms, revetments and ankle-breakers (features rare or unknown on prehistoric or later medieval dykes). Though berms and revetments usually fulfil the same purpose, that is stopping the bank slipping into the ditch; the Devil's Ditch and West Wansdyke have both. While many of the prehistoric dykes have right-angled corners and branches (the prehistoric dykes of Dorset and Hampshire form a spidery network), these features are lacking from probable early-medieval dykes. Even the branch in Bokerley Dyke, the Epaulement, is more likely a turned-in terminus, rendered obsolete when the dyke was extended, than a branch.

There is no clear evidence for any gateways in any of the probable early-medieval dykes and even less evidence of palisades. Some have argued that palisade evidence has eroded away (Bachrach 1993 67; Hill and Worthington 2003 126; Tyler 2011 149). We do have evidence from prehistoric earthworks like North Oxfordshire Grim's Ditch (where a slot dug as a foundation for a palisade was found during excavation) that clearly demonstrates that original gateways or palisades can be detected by excavation (Copeland 1988 283-84).

The surviving remains of any earthwork may not be indicative of what the original designer envisaged if they were unfinished, but while it is easy to

speculate that a dyke was originally planned to be longer, it is difficult to prove. If there was archaeological evidence of a marker bank or ditch extending beyond the built sections it would indicate an unfinished section, but such a feature has not yet been recorded. Excavation evidence suggests we have found the north end of Rowe Ditch so the builders did not plan to extend it further in that direction (Youngs, Clark et al. 1986 152; Hill and Worthington 2003 142). Fowler claimed his fieldwork demonstrated that East Wansdyke was unfinished because some sections of the ditch look either unexcavated or remain as a series of unconnected quarry pits (Fowler 2001 186-87). Without an archaeological excavation, his theory remains unproven as later fill can mask the uniform profile of a finished ditch.

Early-medieval dykes vary enormously in length and volume. When plotted on a graph the magnitude of some probable early-medieval dykes becomes obvious: three dykes, Offa's, Wat's and Devil's Ditch (four if we count the two halves of Wansdyke as one) stand out. However, the graph suggests a graduation in scale rather than there being two distinct groups separated by a clear gap suggesting the larger and smaller dykes are part of the same phenomenon. Most early-medieval dykes that cannot be shown with any clarity on a graph, as they would be bunched in the bottom left-hand corner of the graph. The biggest later medieval dyke in this study, Deil's Dyke, has a volume only about a third that of Fleam Dyke.

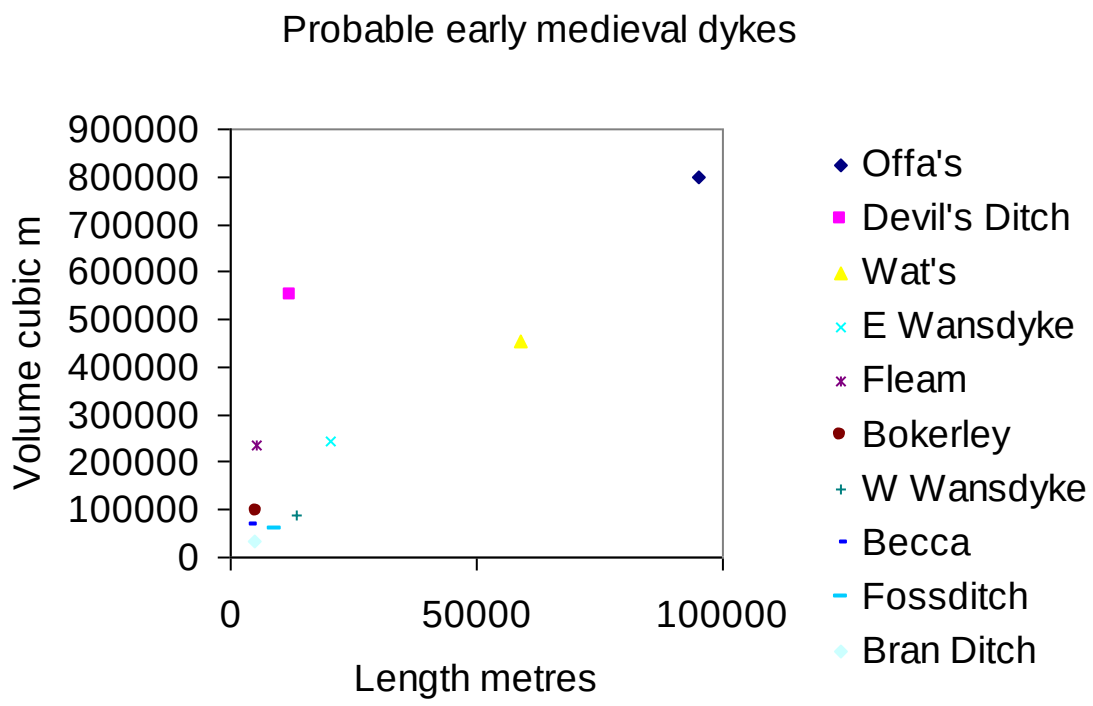


Figure 3 The relative sizes of early-medieval dykes

The ten largest probable early-medieval dykes (Offa's, Devil's Dyke, Wat's, East Wansdyke, Fleam, West Wansdyke, Bokerley, Becca, Fossditch and Bran Ditch) are not only longer, but also larger in scale than the smaller dykes. The ditches of the largest ten average at 2.7 metres deep, whereas the rest of the probable early-medieval dykes average just 1.6 metres; the banks of the ten largest are on average 2.6 metres high, whereas the rest of the probable early-medieval dykes have banks on average just a metre. Half of the top ten largest probable early-medieval dykes have signs of a marker bank (Offa's, Devil's Ditch, Fleam Dyke and Bran Ditch), possibly because their length made such a feature essential when laying them out. Other features are more evenly distributed among the earthworks, though the larger ones often seem more sophisticated. Only one of the fourteen smaller probable early-medieval dykes by volume has a revetment (Heronbridge), but four of the top ten (Devil's Ditch, Wat's Dyke, West Wansdyke and Bran Ditch) have this feature. Of the four probable early-medieval dykes with good evidence of an ankle-breaker, only one, Giant's Grave, is outside the top ten largest probable early-medieval dykes. While the shorter examples may be more hastily constructed, all sizes

generally have the same number of banks and ditches as well as little evidence of palisades, forts or original gateways suggesting a similarity of construction and purpose.

Perhaps we can now suggest which of the possible early-medieval dykes are probably not early medieval. The Black Ditches at Snelsmore and Hayling Wood both have branches while Hayling Wood and Faesten Dyke (Kent) both have dogleg sections typical of prehistoric dykes. Aberbechan, the sections of Offa's Dyke at St Briavel's, Horning, Hayling Wood and Fullinga Dyke are comparatively small or have multiple banks, again suggesting a prehistoric date. Perhaps future excavations are more likely to demonstrate that these dykes are prehistoric than early medieval, though for the present they remain in the possible early-medieval dyke category.

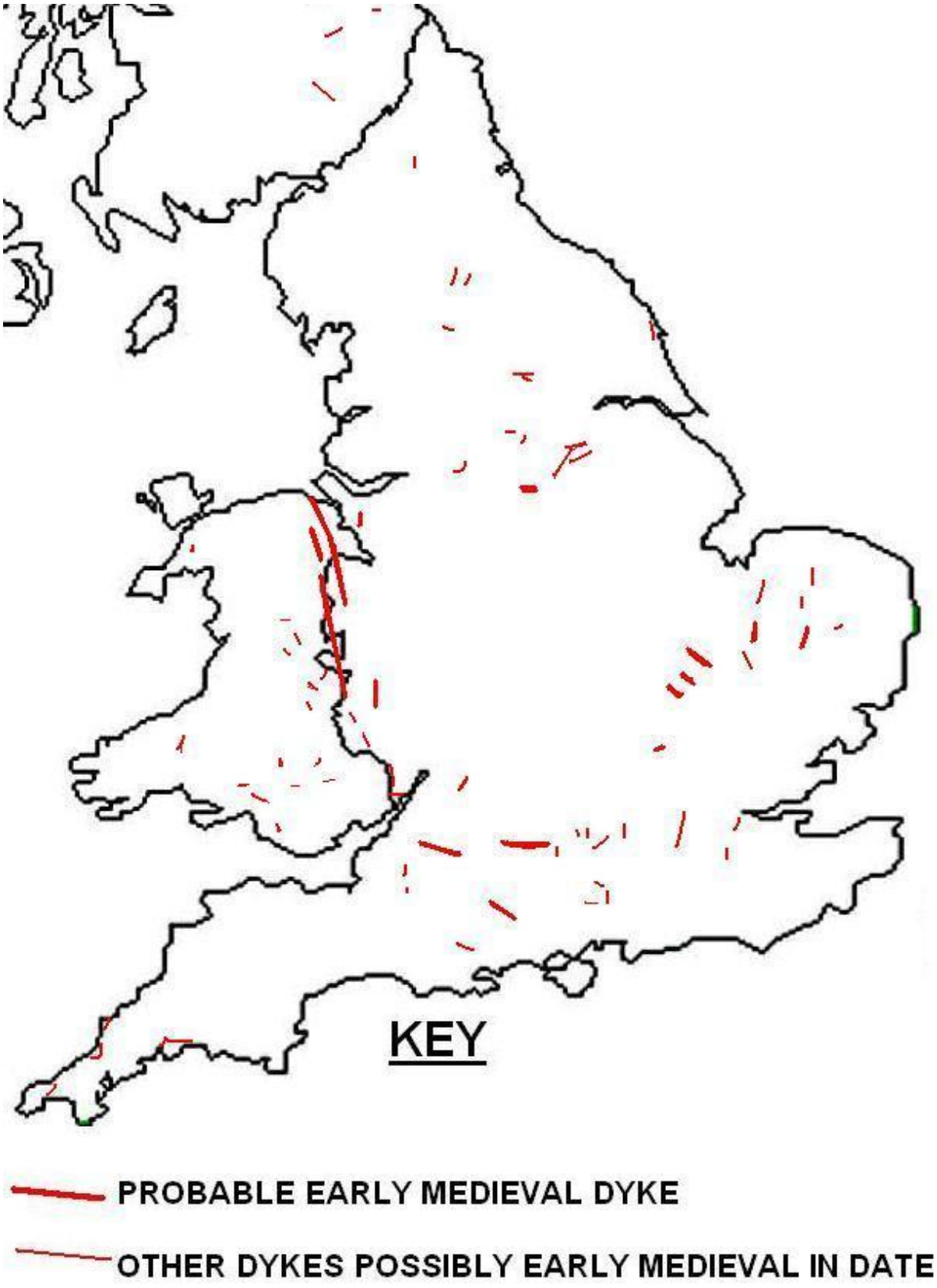


Figure 4 The general distribution of early-medieval dykes in Britain (simplified for clarity)

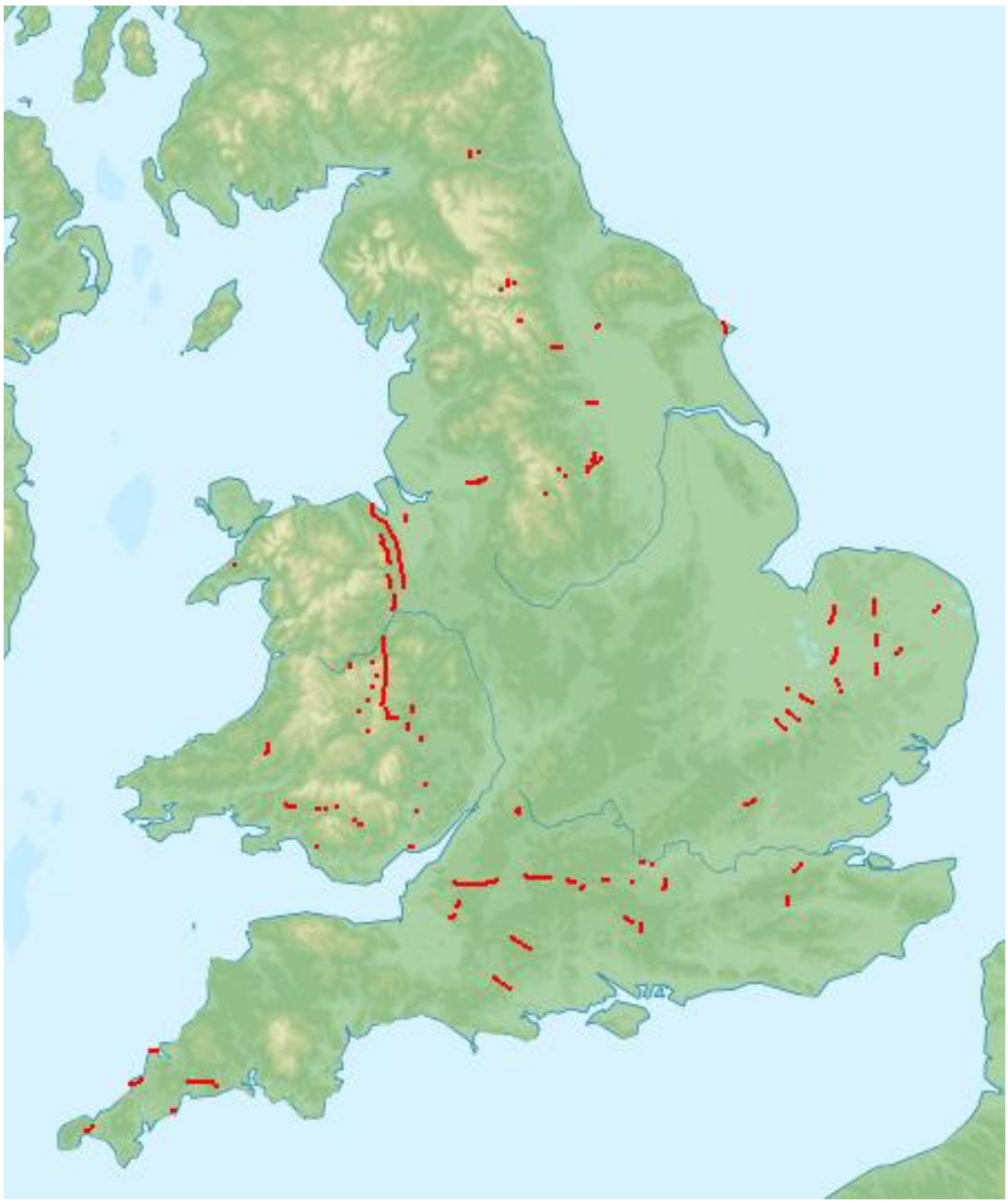


Figure 5 Early-medieval dykes mapped against topography

When the distribution of early-medieval dykes is mapped on a national scale against the geology or topography, there are some patterns of note. There are few dykes in granite areas, possibly because it is harder to dig a ditch there or because such areas are usually upland with very low population densities. Alluvial areas also contain few dykes, possibly because of the difficulty of constructing an earthwork where there is such a high water table or because there was no need to build such earthworks in marshy areas. The lower Cretaceous areas of the Weald contain no dykes, possibly because the local

clay makes the ground hard to dig as did the roots of the trees that grew there in the early medieval period. The Cretaceous chalk hills of lowland England contain many dykes, which is probably unsurprising as such areas are free draining with a relatively soft geology. Dykes are to be found scattered along the length of the Pennines usually blocking narrow valleys that are still used as routeways across the hills. There are also many dykes along the Anglo-Welsh border, but although on a topographical map they seem to mark the interface between lowland and highland areas, it is probably more significant that they mark the cultural, political and linguistic border between English speaking Mercia to the east and Welsh kingdoms to the west. Any student studying an individual earthwork should not only compare the location to the topography and geology, but also the surface deposits that may have exerted an influence on where the builders decided to build their dyke.

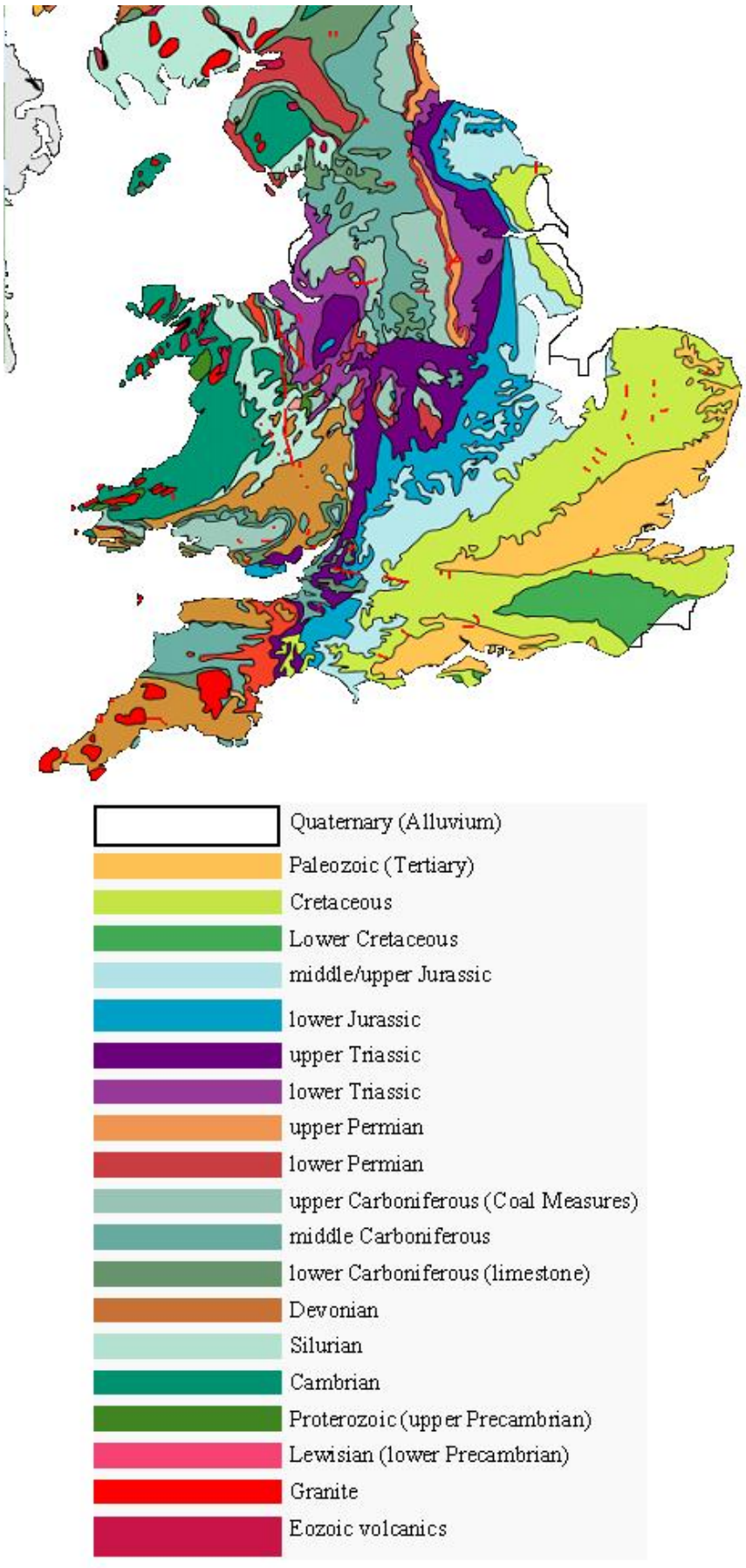


Figure 6 Early-medieval dykes mapped against geology

Generalisations about the location of early-medieval dykes are worth making, though we should remember they are likely to be subjective assessments based on general impressions. With modern software, it is possible to produce viewsheds, which are maps to show what features are visible from a location. Unfortunately, this technology was beyond the resources of this study and as dykes are linear features either thousands would have to be produced or a single point on the earthwork would have to be arbitrarily chosen. During fieldwork, it was noticeable that views across the landscape from most early-medieval dykes are panoramic, often spectacularly so; even for those built across valleys there is usually a nearby hill that gives good views (the views from Lose Hill near Grey Ditch are stunning). Conversely, the dykes are often difficult to locate even with a good map (Storr 2013 48); this is in sharp contrast to prehistoric hillforts, burial mounds and cross-ridge dykes that are invariably located in prominent locations that make finding them much easier. Two dykes are notably easy to find: Offa's Dyke snakes across a series of hills so if one part is hidden in the lee of a hill then another section is in view and Devil's Ditch in Cambridgeshire is a tall monument in a flat landscape. Later damage to earthworks (for example by ploughing) may have exacerbated the lack of visibility of many of the dykes, but it might be a part of the design; even those near prominent natural escarpments are rarely located on the skyline.

Views from the dykes were probably even better when they were in use. If the builders of these dykes excavated them through woodland archaeologists should find evidence sealed under the bank, but, apart from the evidence of a solitary tree removed during the building of Wat's Dyke, such evidence has not been found (Hayes and Malim 2008 156). Pollen evidence (discussed in more detail below) suggests that the builders constructed early-medieval dykes across open ground (Crampton 1966 376; Green 1971 136-41; Nenk, Margeson et al. 1992c; Malim, Penn et al. 1996 72-78, 88-90 and 101; Roberts, Burgess et al. 2001 236). East Wansdyke was built across chalk, yet excavations suggest that the builders kept the turf taken during the digging of the ditch to one side and used it to cover the bank; this stabilised the bank but also meant that it did not stand out as a white line across the green downland (Green 1971

132-33). Though the banks of most dykes were simply made by piling the quarried material on the grass next to the ditch, there is evidence that the builders of Offa's Dyke stripped turves from behind the earthwork or stacked turves at the front to stabilise the bank (Feryok 2001 (2011 ed) 167; Hill and Worthington 2003 54, 81 and 101). The main reason for covering the bank with turves was probably structural and it was used by the Romans on their frontier works in Northern Britain (Hill 2006 109). It would also help camouflage the earthwork; this evidence plus the topographical location of most dykes suggests that they were not designed to be seen, but were meant to see from.

Most dykes face downhill, that is the ditch is downhill of the bank, though there are a few exceptions. Some dykes, like that at Rudgate and Heronbridge as well as many of the Norfolk dykes are on flat or gently undulating ground; perhaps the builders could not find a suitable slope or good views. Bapty has noted that sections of Offa's Dyke in Radnorshire and south Shropshire have ditches on the east (that is it 'faces' Mercia not Wales); Stanford suggested this is because it faces such a steep slope as to make a western ditch both unnecessary and hard to dig without the bank falling into it (Stanford 1980 187; Bapty 2003). Fieldwork, however, demonstrates that there is a large section four kilometres south of Knighton on Hawthorn Hill (SO285680) where the dyke was on a relatively shallow slope, yet the ditch seems to be on the eastern side. There are a number of possible explanations, perhaps as simple as some of the gangs building Offa's Dyke not following the plan. Feryok plausibly suggests the eastern ditch was where the builders had stripped turves from the rear of the dyke and the western ditch has long silted up; this present research found no example of an excavation that proved the existence of an eastern ditch (Feryok 2001 (2011 ed) 167).

Most of the dykes seem to cut routeways: either ancient ridgeways (like the Cambridgeshire Dykes and many of the Welsh dykes) or Roman roads (Fossditch, Bran Ditch and Rowe Ditch for example). In order to cut such routes, dykes usually bisect a ridge in the landscape though some (the Grey Ditch and Rowe Ditch) cut valleys. The termini of many of the dykes are next to

wide rivers or streams in steep-sided valleys. Often the dykes are in parallel rows, all facing in the same direction (Offa's/Wat's, the Cambridgeshire Dykes, Bury's Bank/Crookham Common earthworks or Giant's Grave/Crugyn Bank/Upper Short Ditch). The longer dykes that snake across the landscape usually run parallel to an escarpment rather than perpendicular to it (as with prehistoric cross-dykes for example). Some of these longer dykes have gaps where large rivers link the sections, suggesting the rivers could perform whatever functions the dykes served.

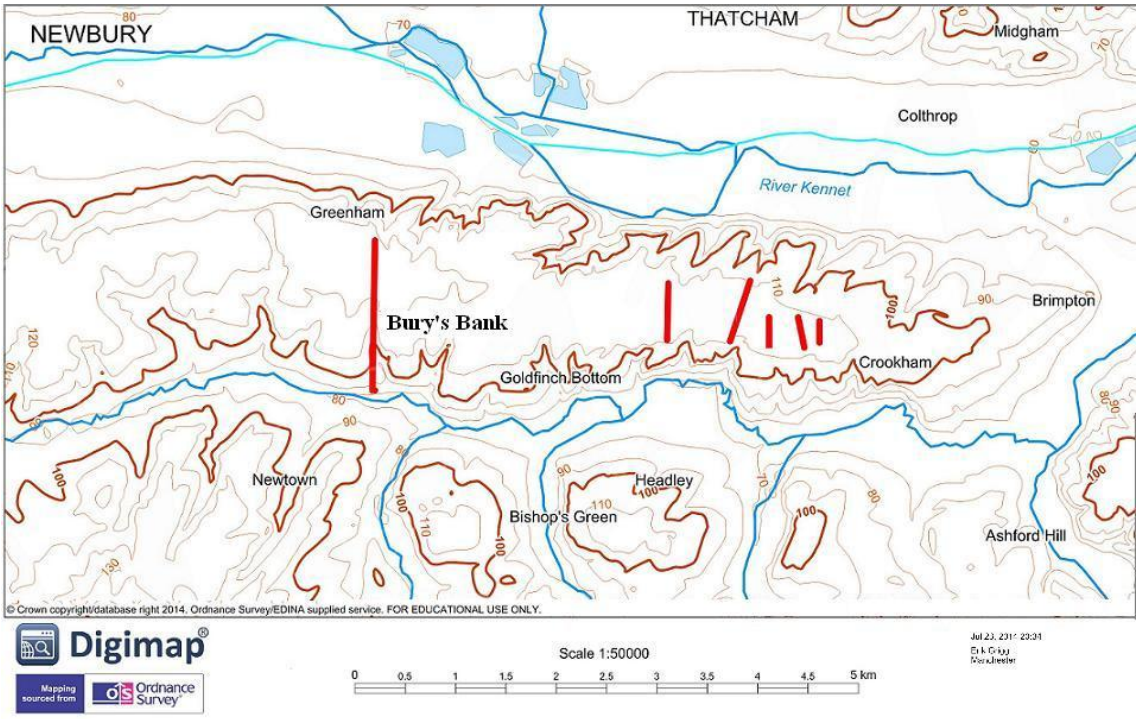


Figure 7 Bury's Bank and the Crookham Common earthworks, clearly showing they bisect a ridge between two river valleys

Only about a quarter of the total length of all the probable and possible early-medieval dykes is contiguous with parish boundaries or other administrative boundaries. This figure is much higher with reused/rebuilt prehistoric/Roman dykes (63%), either because they functioned as boundary markers or because, being features noticeable in the landscape over a long period of time, they were more likely to be adopted as boundaries. The figure for prehistoric/Roman dykes covered by this study is 25% while that for later medieval dykes, at least some of which must postdate the establishment of the parochial system, is 15%. The problem with analysing these figures is we do not know when

parishes were established especially as they could have been based on earlier territorial units (such as Saxon estates) as boundaries do have a great continuity in the English landscape (Hart 1977 47-49). As with their size, Bica's Dyke and Aelfrith's Ditch are unusual among probable early-medieval dykes in being contiguous with parish boundaries along their whole length.

In terms of general distribution, it is noticeable that probable early-medieval dykes are not distributed randomly or evenly across Britain. They are mainly concentrated on the fringes of Mercia (with the exception of Bokerley Dyke); perhaps the dykes facing Mercia were reactions to the creation of a strong expansionist central Anglo-Saxon kingdom while those facing outwards are evidence of Mercia's power (Hart 1977 53). There is a noticeable lack of dykes within Mercia, perhaps the subkingdoms of Mercia acted as buffers so the central core of the kingdom did not need defending or defining (Zaluckyj 2001 (2011 edition) 85).

There are other significant groupings among early-medieval dykes. Nearly half of the rebuilt prehistoric dykes are in East Anglia and, rather than being in parallel lines facing in the same direction like many early-medieval dykes, these often face each other. They seem to subdivide the kingdom of East Anglia and perhaps mark stages in the creation of that polity. Unfortunately, there are few written sources from Anglo-Saxon East Anglia to help us understand these earthworks and historians tend to rely on archaeological evidence to fill the gap between the fall of the Roman Empire and Bede's day when East Anglia was already a single entity (Scull 1992 3). There is a also a series of undated dykes across southern Wales that face north blocking ridgeways giving access to the lowlands and a group of dykes in Cornwall that seem to defend peninsulas.

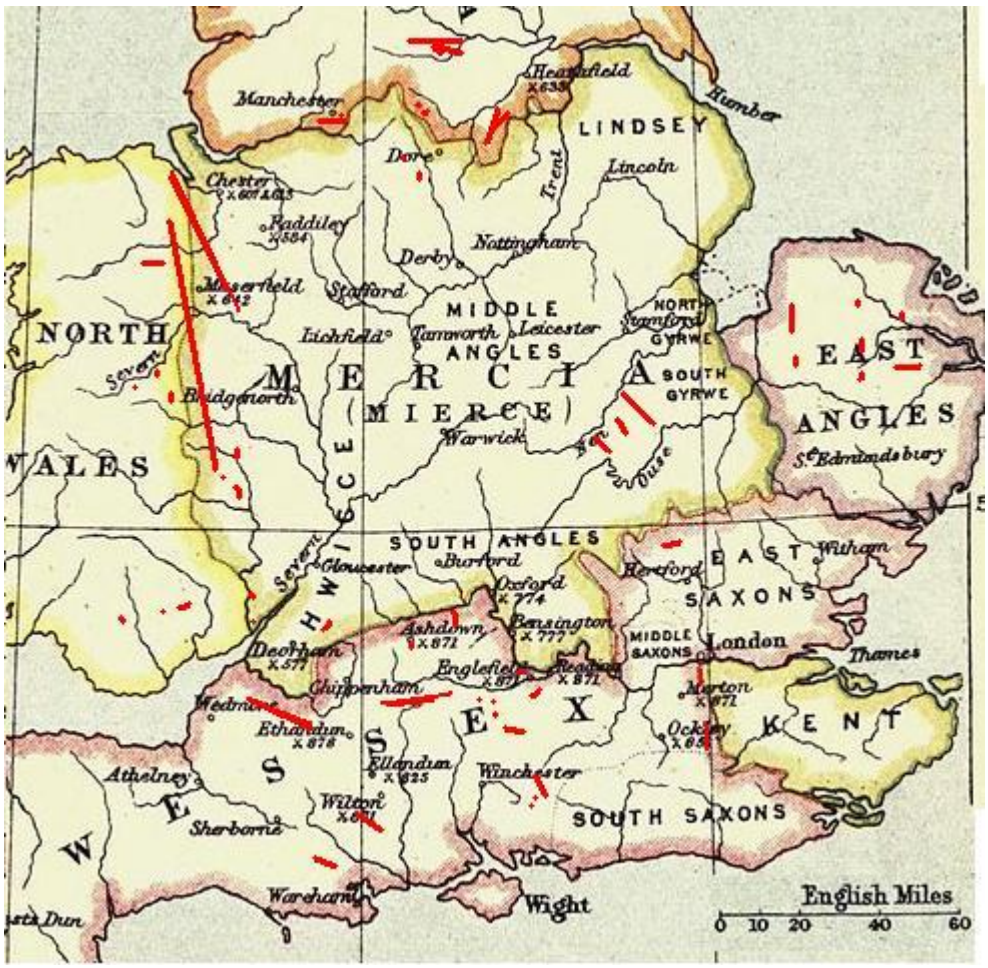


Figure 8 A simplified map of early-medieval dykes plotted on a map of Anglo-Saxon kingdoms

As well as central Mercia, there are other areas where there are no early-medieval dykes. Devon, Sussex, Essex, most of western Wales, Cumbria and northern Scotland have no early-medieval dykes. This suggests that dyke building was not a universal phenomenon in early-medieval Britain and perhaps the inhabitants of some areas had no need to build them. Some of these areas are infertile and the population density was probably low, so perhaps the circumstances that lead people to build dykes only occurred where there were either sufficient people or some population pressure, but there are dykes in central Wales, which was probably sparsely populated. Sussex is hardly infertile, especially the coastal plain, but the large number of prehistoric hillforts reoccupied in the early-medieval period in the county (like Highdown, Cissbury Rings and Mount Caburn) possibly fulfilled the role taken by dykes elsewhere. If dykes were built to help stabilise newly created kingdoms, perhaps they were

not necessary in places like Sussex, Gwynedd, Devon and northern Scotland where kingdoms with obvious natural frontiers formed very early after the end of Roman rule.

It is possible that one stimulus for building dykes in the early-medieval period was the existence of similar earlier structures in the locality. Devon has neither prehistoric dykes nor early-medieval dykes while many of the early-medieval dykes in Norfolk and Suffolk are rebuilt prehistoric examples. There are numerous prehistoric earthworks in Dorset including one rebuilt in the early-medieval period (Combs Ditch) which may have provided inspiration for the builders of Bokerley Dyke. In Cornwall, there was a long history of digging earthworks to defend peninsulas from Iron-Age cliff castles to the ditch defending the early-medieval settlement at Tintagel; these examples possibly stimulated the builders of the dykes that defended Cornish peninsulas like the Giant's Hedge. There are many prehistoric dykes in Yorkshire and many examples of probable/possible early-medieval dykes in the county.

2.14 The timeframe of dyke building

This section is an attempt to narrow the timescale of dyke building, though this study has avoided trying to pin exact dates on individual early-medieval dykes as this would lead to unsupportable speculation. Historians are fairly certain that Offa's Dyke was built during his reign (757-796) despite a recent radiocarbon dates suggests a least one section is older. From the information in the Appendix, we can build a table of the various results given by radiocarbon and Optical Stimulated Luminescence dating of deposits and finds associated with the dykes. Note that these results have not all been achieved using the same calibration formula (though five Welsh examples are), but as there is insufficient evidence from some of the earliest and latest results to attempt a recalibration the raw data is given here with that caveat in mind.

Name of dyke	Date range	Mid point of the range	Material dated, original calculation (where given and calculated differently) and source
Becca Banks (Radiocarbon)	559-674	637	Cow pelvis from ditch fill (Wheelhouse and Burgess 2001 144)
Scot's Dyke (Optically Stimulated Luminescence)	420-600	510	Top layer of silt AD 510 +/- 90 +/- 135 (O.A.N. 2008)
Clawdd Mawr, Llanfyllin (Radiocarbon)	630-710	670	Charred organic remains sealed under the bank 1360+/-40BP or calculated 630-710 Two Sigma (Hankinson and Caseldine 2006 266; Malim 2007

			22)
Crugyn Bank (Radiocarbon)	650-780	715	Charcoal samples sealed under the bank 1310+/-40BP or calculated 650-780 AD Two Sigma (Hankinson and Caseldine 2006 266; Malim 2007 22)
Giant's Grave, Powys (Radiocarbon)	340-530	435	Peat samples found sealed under the bank 1640+/-40BP calculated 340-530 AD Two Sigma (Hankinson 2003; Hankinson and Caseldine 2006 266-68; Malim 2007 22)
Short Ditch, Powys (Radiocarbon)	410-590	500	Organic samples from the turf-line sealed under the bank 1560+/-40BP or calculated 410-590 AD Two Sigma (Hankinson and Caseldine 2006 266-68; Malim 2007 22)
Offa's Dyke (Radiocarbon)	430-652	541	Re-deposited turf underneath the bank laid down as part of the

			construction process[1]
Upper Short Ditch (Radiocarbon)	540-660	600	Charcoal sealed under the bank 1460+/-40BP or 540-660 AD Two Sigma (Hankinson and Caseldine 2006 266-68; Malim 2007 22)
Wat's Dyke (Radiocarbon)	268-630	449	The site of hearth sealed under the bank (Fitzpatrick-Matthews 2001 5-7; Hayes and Malim 2008 149)
Wat's Dyke (Optically Stimulated Luminescence)	682-852, 792-1002, 747-927 and 742-952	767, 897, 837 and 847	Ditch silt samples (Malim 2007 20-21; Hayes and Malim 2008 174-75)
Fleam Dyke (Radiocarbon)	340-640	490	Organic matter, mainly pieces of bone, found in the ditch fill (Malim, Penn et al. 1996 65-67 and 96)
Devil's Ditch, Garboldisham (Optically Stimulated Luminescence)	660-980 and 650-930	820 and 790	Ditch silt (Bates, Hoggett et al. 2008 17)

[1] No further details given in this preliminary not fully published result. See: http://us6.campaign-archive2.com/?u=5557bc147d34993782f185bde&id=b587d981eb&e=005096e2b1#mctoc8

Harrow-Pinner Grim's Ditch (Radiocarbon)	60-340	200	Charcoal within the banks (Bowlt 2008 111)
East Wansdyke (Radiocarbon)	890-1160	1025	Charcoal deposits from flint rubble found at the bottom of the ditch (Smith and Cox 1986 20-21; Reynolds and Langlands 2006 25)

The result from East Wansdyke probably represents material dumped into the ditch long after the abandonment of the dyke while the Harrow-Pinner Grim's Ditch material is probably much older material incorporated into a later structure. Setting aside those last two results, the range of these results suggests the dykes could date from as far apart as 268 to 1002 AD, but as these represent the extremes of the ranges of these dates this is highly unlikely. Statistically, it is more likely that the dykes date from nearer the middle of the date ranges which for all these dykes (bar the last two results) is between 435 and either 715 (if we take Wat's Dyke's radiocarbon date) or 897 (if we use the later Optically Stimulated Luminescence result from Wat's Dyke). As this study concentrates on dykes from 400 to 850 AD it is perhaps unsurprising that the scientific evidence for these dykes suggests they were built in the middle of this date range, though this study only found evidence of two dykes from the later Anglo-Saxon period both of which were rather small (Danby Rigg and Combs Bank in Reading). If we set aside the rather late Optically Stimulated Luminescence dates for Wat's Dyke (which are probably ditch silt that postdates the earthwork) and the last two results in the table, all the dykes potentially date from the very late sixth and the first half of the seventh century (590-650 AD). This tentatively suggests that the period 590-650 was possibly the peak period of early-medieval dyke construction. This would make Offa's Dyke not only exceptional in scale, but also at the tail end of the dyke building boom.

2.15 Archaeological evidence from the dykes

By the far the most common archaeological evidence from dykes are residual sherds of Roman and prehistoric pottery, but while these give a useful *terminus post quem* date for the earthworks, they do not tell us why they were dug. Equally burials cut by earthworks, for example, the late-Roman burials from Bokerley Dyke that Hawkes noted that the dyke truncated, can help with dating but cannot tell us why it was constructed (Pitt Rivers 1892 214-15; Hawkes 1947 66; Rahtz 1961 67). The table below gives a list of all the possible early-medieval finds from the dykes. Finds that predate the earthworks such as the Roman coins and pottery sherds from under the bank of the Devil's Ditch are not included, though the Bran Ditch brooches and pot, which are discussed in detail later, are (Hughes 1913 148-49; Fox, Palmer et al. 1924-5; Hope-Taylor 1975-6).

Dyke	Human remains	Weapons	Other finds
South Dyke (Aberford)			Cow pelvis bone and late Saxon sherds
Heronbridge	200 bodies displaying sword injuries		
Grey Ditch		Swords and spears	Spurs and bridle bits
Offa's Dyke	400 skulls		
Wat's Dyke			Broken loom weight
Beachley Bank		Lance head	
Bran Ditch	50 bodies including a baby, most beheaded	Knife	Brooches, clasps, pot sherds and a broken pot
Devil's Ditch	Male whose hand had been amputated	Two throwing axes, iron spearhead and two other spearheads	Spur and stirrup
High Dyke		Sword, pommel, various spearheads, two shield bosses and a knife	
Bedwyn Dyke	Skeletons slain in battle		
Bokerley Dyke	Eight burials		

Leaving aside finds that predate the earthworks, most finds from early-medieval dykes (as can be seen from the table above) are quite clearly weapons or bodies; note no early-medieval coins were found. The exception is the loom weight from Wat's Dyke found near the bottom of the ditch and on its own unlikely to be an indicator of the original function of the earthwork (Varley 1975-6; Malim 2007 17; Hayes and Malim 2008 149). The burials are not just dating evidence, but might give evidence of purpose and it is striking how many of those burials suggest a violent death (Reynolds 2009 220 and 249-50). These include many 'deviant' burials, a term that is applied to burials that often lay outside organised cemeteries whose graves are often shallow, the bones often have signs of injury and the bodies are often hunched up in what we would regard as a rather undignified manner (Reynolds 2009). When Morris mapped early Anglo-Saxon burials with evidence of weapons trauma (sites he interpreted as 'massacres') it is perhaps telling that they were concentrated near Wansdyke and the dykes of Cambridgeshire (Morris 1973 101-06). There are some Anglo-Saxon burials far from dykes whose bones show clear evidence of weapons injuries, like the six male skeletons dating from the seventh or eighth century found at a Roman villa near Eccles in Kent (Wenham 1989; Reynolds 2009 40). It is worth further examining the evidence to see if there is a significant geographic correlation between dykes and either 'deviant' or otherwise unusual burials. Unfortunately, the archaeological investigation of most of the burials associated with earthworks predated modern scientific methods.

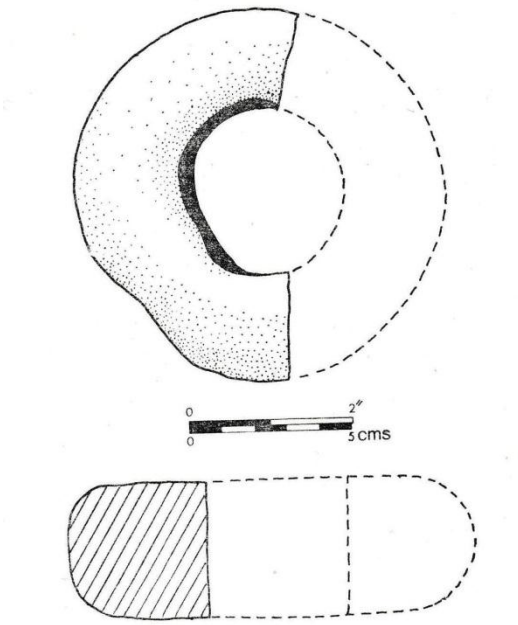


Figure 9 Loom weight found at Wat's Dyke at Mynydd Isa in 1957 (Varley 1975-6)

There are finds that are suggestive of typical furnished early Anglo-Saxons burials at three possible early-medieval earthworks in Cambridgeshire, though significantly none at Miles Ditches or Brent Ditch, which this study concluded were not early-medieval dykes. In 1822, workmen levelling a section of the Devil's Ditch at Newmarket Heath found two throwing axes, an iron spearhead, spur and a stirrup possibly from a disturbed Anglo-Saxon furnished burial, though the exact relationship of the finds to the dyke is not known (Lethbridge 1938 309; Phillips 1948 9). About seven kilometres north of the nearby Devil's Ditch archaeologists at Fordham uncovered four skeletons dating from the mid-eighth to the tenth century aged 8 to 15 years of age that had been decapitated (Reynolds 2009 46). In the Museum of Archaeology and Anthropology in Cambridge is a sixth-century spearhead found in 1918 during levelling of the racecourse next to the Devil's Ditch (catalogue number Z 27370) and another Saxon spearhead was found in 1972 in a rabbit hole (at TL621613) in the inner edge of the ditch (Webster 1973). A skeleton dating from about 1000 -1300 of a male in his early 20s whose right hand had been amputated was found in the fill of the Devil's Ditch in 1973 (Hope-Taylor 1975-6 124; Reynolds 2009 217). Skeletons and Anglo-Saxon weaponry (sword, pommel, various spearheads,

two shield bosses and a knife) from the High Dyke in Cambridgeshire might be a disturbed furnished cemetery burial in the fill of an abandoned ditch but, in the absence of a scientific excavation of the area, they might be victims of war (Lethbridge 1957 1-2; Biddle 1962-3; R.C.H.M.E. 1972 147). As well as these examples found within the structure of individual dykes, there are numerous Anglo-Saxon burials (both inhumations and cremations) especially from the sixth century found around the dykes in Cambridgeshire (Taylor 2000).

Outside Cambridgeshire, there is burial evidence (some of which is 'deviant') and finds of weapons associated with other possible/probable early-medieval dykes, though most were not excavated using modern methods. Where Bokerley Dyke crosses the Roman road eight burials (unrelated to the Roman cemetery previously mentioned) were excavated in the fill of Roman ditches which may mark the location of an Anglo-Saxon execution cemetery (Reynolds 2009 145-47). At a site visible from the dyke and just over three kilometres to the southwest, Pitt Rivers excavated 17 skeletons (most decapitated) inserted into Wor Barrow, a Neolithic burial mound (Reynolds 2009 113-14). In 1838, at Buttington, where Offa's Dyke reaches the Severn near Welshpool, 400 skulls were found while in 1930 Fox found a 'lance head' on the 'floor' of the ditch of the fort at the western end of Beachley Bank near the mouth of the Wye (Fox 1955 204-05; Feryok 2001 (2011 ed) 188; Hill and Worthington 2003 152-53). The Buttington remains could be related to a battle with the Vikings recorded there in 893 in the *Anglo-Saxon Chronicle*, though recent scientific analysis by the National Museum Wales on two of the skulls suggests they were more recent in origin (Bately 1986 57; C.P.A.T. 2009). Bray in 1783 says locals found pieces of swords, spears, spurs and bridle-bits at the Grey Ditch in Derbyshire, perhaps the remains of furnished burial (Bray 1783 206). In 1892, skeletons 'slain in battle' were found at Great Bedwyn near the Bedwyn Dyke (Burne 1950 403; Reynolds 2009 59). At Poulton Down near Mildenhall a female skeleton with associated sixth- or seventh-century objects was found thrown down a well just six kilometres north of the eastern end of East Wansdyke (Reynolds 2009 48). A knife carved with an indecipherable ogham inscription was found about 270 metres east of the southern end of Fossditch in Norfolk, by the far the most

easterly ogham object found in England and perhaps evidence of Scottish raiders in East Anglia (Clarke 1955 184-87). At Heronbridge the dyke respects (and therefore is broadly contemporary with) a cemetery that contains over 200 bodies of robust males half of which had head injuries (some even had no skulls); these possibly date from the Battle of Chester *c*.605-13 (Petch and Davies 1932 46-48; Petch 1987 189; Mason 2003 56; Burnham, Hunter et al. 2005 423; Mason 2005). Note that the written evidence of the battle is discussed in more detail later. In 2004, two bodies were removed for paleo-pathological examination which demonstrated they have suffered multiple head injuries probably from a sword; radiocarbon dating suggested that they were from the late sixth or early seventh centuries (Burnham, Hunter et al. 2005 423). The bodies are probably those of Northumbrians as the neatness of the burials suggests the victors interned them and isotope evidence suggests they came from northeast England or southeast Scotland, which is broadly Bernicia, the heart of the kingdom of Aethelfrith, the victor of the Battle of Chester (David Mason personal communication). This suggests his army was unusually large as it could afford to lose 200 men yet still win a battle and have sufficient manpower to bury their dead.

In 1923 and 1931, archaeologists investigating Bran Ditch in Cambridgeshire found the remains of over 50 bodies in the berm buried not in a pit, but in individual graves (Fox, Palmer et al. 1924-5; Lethbridge and Palmer 1927-8; Gray 1928-30; Reynolds 2009 57 and 106-08). The berm was unusually wide at this point, though it was impossible to tell if this was because the dyke respected an existing cemetery or the bank had been moved to accommodate the burials. Only two of the burials were female and the report estimated the age of the rest from 12 to ‘old men’ as well as a possibly unassociated new-born baby buried near a posthole (Lethbridge and Palmer 1927-8 84-88). The burials also contained finds that seemed approximately between fifth to seventh century in appearance to the archaeologists at the time such as fastenings, pot sherds, brooches, a broken pot and a knife. The knife was found at the hip of a body suggesting it was hanging from a belt; the body was twisted, the head thrown back and the hands seemingly clasping the neck. The pot was broken

and the pieces placed round the head of a body (Palmer and Leaf 1930-1 55). The finds have not survived or have been lost and the interpretation of the objects, having been done in the 1920s, is possibly suspect. The author showed the pictures of the finds to Adam Daubney (the Finds Officer of the Lincolnshire Heritage Environment Services) and Antony Lee (the archaeology expert at The Collection Museum in Lincoln) without telling them the context of the items to not prejudice their conclusions. They concluded that the brooches illustrated in the dig report (see the picture below) look like they date from the late Iron Age or possibly early Roman periods, the knife with its angled back looks Anglo-Saxon and the broken pot is probably late Roman as the original archaeologists suspected. Many of the bodies were lying in a twisted posture, some had no skull or their skull lay at an angle to the body often with cut marks on the upper vertebra and damage to the jaw, suggesting they were beheaded. One body had facial wounds probably caused by a spear. Although they were in separate graves, there were also some loose skulls and graves containing more than one skull. Most of the bodies showed clear evidence they were buried long after death (the lower parts of the body seem to have become separated, possibly when they were moved into the grave, and then placed with the rest of the body).

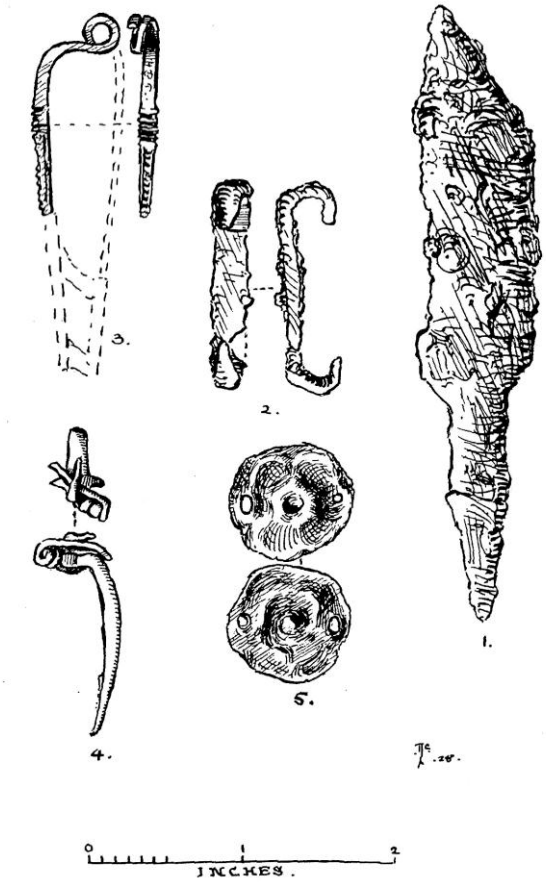


Figure 10 Finds from the burials at Bran Ditch (Lethbridge and Palmer 1927-8)

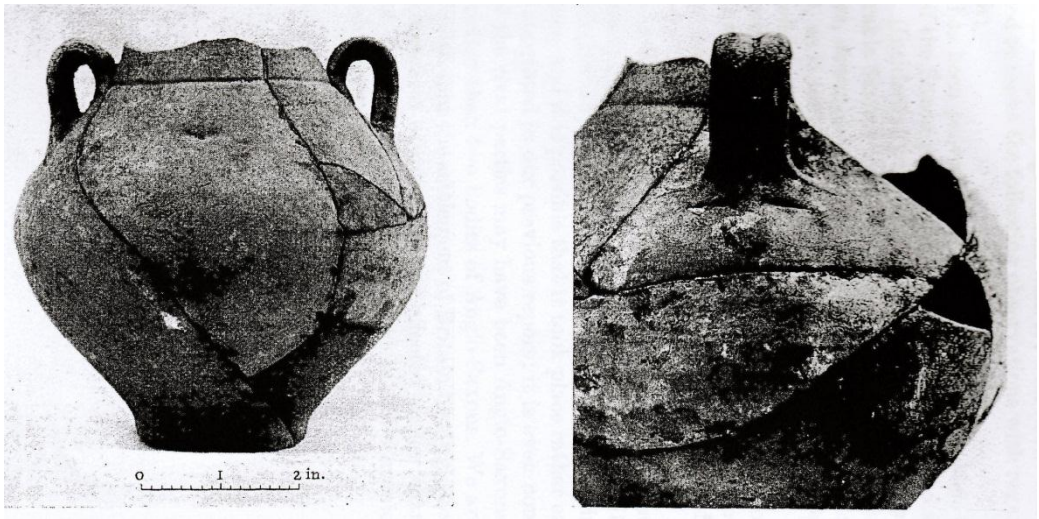


Figure 11 The pot found with the Bran Ditch burials (Palmer, Leaf et al. 1930-1)

The initial assessment that they were buried piecemeal by a small group of gravediggers who were not sure which head belonged to which body seems

plausible (Lethbridge and Palmer 1927-8 88). The fact they were buried with some care suggests the locals held them in affection, so they are less likely to have been criminals or invaders; perhaps they were people who fell defending the area. Recently this view has been challenged and as with many other deviant burials recent scholars are far more likely to classify them as ritual or judicial executions than victims of warfare. While Gray thought that the Bran Ditch skeletons were from a Viking massacre and Lethbridge speculated that they were defeated invaders, Hill, noting how the burials had separate graves, thought them executed criminals from the period 900-1080 (Lethbridge and Palmer 1927-8 91-93; Gray 1928-30; Lethbridge 1933-4 95; Lethbridge 1938 310; Lethbridge 1957 3; Morris 1973 101-06; Hill 1975-6). There is some evidence from other dykes that may corroborate Hill's ideas as archaeologists have uncovered evidence for postholes that could be evidence of a gallows at Rowe Ditch and Combs Ditch, though of course these may postdate the earthwork by centuries (R.C.H.M.E. 1970b 313-14; Youngs 1981 184). A charter dated 957 (S 647) for Stanton St Bernard possibly also records a gallows on Wansdyke though the wording is ambiguous (Grundy 1919 214; Reynolds 1999 84). Evidence for capital punishment might be a reflection of the rise of kings with the growth of a justice system that executes transgressors, being an embodiment of regal power, especially as two execution cemeteries were found close together at Sutton Hoo (Carver 2005 347-48; Reynolds 2009 51-52, 131-34 and 237-38; Carver 2014 137-47).

Some have been more sceptical of the gallows theory as an explanation for deviant burials (Malim, Penn et al. 1996 111-13; Reynolds 2009 39-40). Prior to the invention of the long-drop, hanging caused death by strangulation that caused little or damage to the neck vertebra; the bodies at Bran Ditch and other sites suggest beheadings. The dating of the finds from Bran Ditch suggests a much earlier date than that proposed by Hill; the only certain Anglo-Saxon find was the knife, an unusual object to be carried by a condemned man to his place of execution. Unfortunately, it is difficult to differentiate between people executed, massacred, killed in battle, suicides and sacrificed (Reynolds 2009 53-54 and 56-57). It is hard make firm conclusions about deviant burials even

with modern forensic techniques: with some deviant burials there is a suggestion the victims' hands were tied before death (especially if there are no marks of defensive cuts on the hands and arms), but such binding is inferred as no material evidence for them has survived (Reynolds 2009 38-40). With the Bran Ditch burials, it is possible to make convincing cases for the bodies being beheaded criminals buried by a long-abandoned earthwork, alternatively they were victims of a massacre buried piecemeal by the few survivors or even that they were people publicly beheaded at a newly built dyke that carried the death penalty for crossing without permission. As so few dykes show signs of refurbishment (Fleam Dyke, Bokerley Dyke and Wansdyke being the notable exceptions) even a burial added soon after the construction of an earthwork may reflect the reuse of a short-term structure that had already lost its original purpose.

As some of the burials look like executions, if the dykes were borders then perhaps they would be seen as the perfect place for the disposal of the bodies of outcasts instead of in the community's cemetery (Reynolds 2002 249-50). Four burials that seem to have been executions found in the fill of the ditch of the prehistoric South Oxfordshire Grim's Ditch might be evidence that Saxons (if these burials were Anglo-Saxon) did reuse older dykes to bury criminals sentenced to death (Hinchcliffe 1975 126-28; Reynolds 2009 130-31). At Aves Ditch, another prehistoric Oxfordshire dyke, archaeologists found a burial lacking most of the skull which radiocarbon dated to the Anglo-Saxon period (670-870) in the bottom of the ditch (Sauer 2005 47-57). In East Yorkshire the Anglo-Saxons reused prehistoric dykes to bury their dead as well as barrows; in Wiltshire they also used barrows for high status burials (Lucy 1998 85-86; Semple 2003). A correlation between borders and burials in the early-medieval period is specifically mentioned in early-medieval Irish law though this was not of outcasts but a way of claiming ownership of the adjacent territory (Charles-Edwards 1976 84-85; Reynolds 2002).

The burial evidence is rather confused partly because of the unscientific recording of many early finds. Some may represent secondary purposes for the

dykes: furnished burials or hanged criminals inserted into earthworks that were significant local landmarks. The mass burials are slightly different as the cut-marks on the skeletons found at Heronbridge and at Bran Ditch argue conclusively against hanging though the later could be victims of judicial beheadings; these mass graves could relate to the primary purpose of the dykes but without clearer excavation evidence, this is uncertain. There does seem to be an association between the dykes and violent death. Perhaps the dykes were in areas of conflict and acted as a method of controlling the violence as a defence against raiding, by demarking territory where crossing the border without permission carried the death penalty or they could have acted as convenient places to execute those who perpetrated violence long after the earthworks were abandoned.

As well as physical finds, archaeologists can use pollen evidence from earthworks to ascertain what the principle vegetation was in the past (this method and how we can reconstruct wider changes in the British landscape in this period are discussed in further detail later in this study). Although we do not have environmental evidence from all early-medieval dykes, the published studies (like those from Cambridgeshire Dykes) suggests that most were built across open grassland (Nenk, Margeson et al. 1992c; Malim, Penn et al. 1996 78-95; Squatriti 2004). Partly this may be because it is hard to dig a ditch through a wood and crossing arable land causes an unacceptable loss of farmland. Samples from Bran Ditch for example suggest that although the land was originally woodland and later farmed for cereal crops (probably in the Iron Age and the Roman periods respectively), it was open, possibly grazed, grassland when the builders of the dyke started their work. Macrofossil samples taken from the ditch fill near the northern end of the dyke suggest an area of wetland that presumably ‘guarded’ the northern flank of the earthwork. Crampton carried out an analysis of the soils and the pollen buried under four dykes, Bedd Eiddil, Ffos Toncenglau, Bwlch yr Afan and Clawdd Mawr Glyncorrwg (Bwlch Garw) in South Wales and found all four were constructed across grassy heathland (Crampton 1966). Pollen analysis from excavations of East Wansdyke, Becca Banks and Grim’s Bank (Padworth) demonstrated that

the builders constructed the dyke across open pastureland with no arable and few trees in the vicinity (Green 1971 138; Astill and Sheddon 1979-80 61-63; Wheelhouse and Burgess 2001 141). While there is evidence from West Wansdyke that sections of the dyke cut through areas of former cereal cultivation as well as pastureland, there is no evidence of nearby woodland; the secondary ditch fill does have evidence of shrubs and trees suggesting the area was less open after the abandonment of the earthwork (Erskine 2007 92-95).

We can compare the evidence from early-medieval dykes with that from prehistoric earthworks to see if their builders also predominantly dug them across pastureland. Dogleg sections are probably an indicator that a dyke snakes across an agricultural landscape respecting field boundaries; it is noticeable how they are found on numerous prehistoric dykes (like the Buckinghamshire-Hertfordshire Grim's Ditch, South Oxfordshire Grim's Ditch, Berkshire Downs Grim's Ditch and Cranborne Chase Grim's Ditch), but rarely on early-medieval earthworks (Crawford 1953 113; Darvill, Timby et al. 2002 287). The numerous changes in direction of the Northern Rig (Roman Rig) and pollen evidence from a 1993 excavation suggest the builders constructed it across an agricultural landscape respecting existing field boundaries (Boldrini 1999a 29; Cronk 2004a 107, 184 and 188). Pollen evidence from the Grim's Ditch near Leeds suggests that the builders of that earthwork dug through grassland, but they grew barley nearby (Wheelhouse and Burgess 2001 128). Mollusc evidence and analysis of prehistoric field boundaries suggest some of the prehistoric dykes on the Berkshire Downs Grim's Ditch do respect arable fields, but others go through a landscape of pastoralism with either free grazing or livestock rearing contained in fields (Ford 1981-2 1, 4 and 11-15; Ford 1982 32-35; Mees and Ford 1993). Two prehistoric dykes have good evidence that there were trees growing in the vicinity during construction. Pollen analysis of the Scot's Dyke ditch silt samples taken during the 2007 excavation suggest that it was dug through pastureland but with nearby woodland mainly of alder and hazel (O.A.N. 2008 and Elizabeth Huckerby of O.A.N. personal communication). Environmental evidence from an excavation of the Devil's Mouth earthwork on Long Mynd suggested ash and hazel trees in the vicinity

(Dinn, Greig et al. 2004 75). Therefore, early-medieval dykes were probably dug across open grassland (either grazed or unutilized) whereas the builders of prehistoric dykes dug them between fields that had patches of woodland in the vicinity. The early-medieval builders possibly needed good lines of sight whereas prehistoric dykes seem to be demarking an intensively utilized landscape.

The archaeological evidence does suggest dykes were places were there were violent confrontations (like battles or executions), they were built across open grassland and some were later utilised as places to bury the dead.

3 WIDER EVIDENCE

So far this study has examined the previous approaches that scholars have taken in the study of early-medieval dykes, looked at individual earthworks, summarised their characteristics, examined archaeological evidence from the dykes and attempted to estimate plausible parameters for the numbers of people needed to build them. Knowing their physical dimensions has given some clues as to their uses, but this basic physical data is on its own unlikely to be sufficient to re-evaluate the existing explanations of early-medieval dyke purposes.

Rather than just continuing to excavate the dykes (especially as this very rarely produces finds), it is necessary to turn to other evidence before further analysis is practicable. The wider evidence available includes written sources, place-name analysis, other archaeological evidence of the same date, scientific evidence (for example from pollen samples) and some brief comparisons with other earthworks, both abroad and from other periods.

This section tries to find evidence capable of bearing on (either supporting or contradicting) the various hypotheses proposed to explain why dykes were built (warfare, controlling trade, demarking estates and promoting kingship). After this wider evidence is evaluated, it is possible to combine it with the summary of the characteristics of early-medieval dykes as already established in the previous section to analyse the strengths and weaknesses of each hypothesis to reach conclusions about early-medieval dykes.

3.1 Written evidence

As well as written references to individual earthworks (mainly from charters), this sections examines other sources; as they are few and brief, any hypothesis needs to explain why early-medieval authors generally fail to mention the dykes.

3.1.1 Administrative documents

3.1.1.1 Charters

In the appendix and elsewhere in this work when an Anglo-Saxon charter is mentioned (perhaps when it records a dyke) the Sawyer number is cited, for example S 176 refers to the charter with Sawyer number 176 (Sawyer 1968).

While charters can act as dating evidence for individual earthworks (if a dyke is recorded in a document the earthwork must have existed when the scribe was writing), they can also potentially provide wider evidence. It would though be unwise to presume that the authors of later medieval charters, like one dated 1185-91 that mentions Hodic (or How Dyke) in Swaledale, were privy to lost early-medieval sources (Fleming 1994 18 and 28). This section primarily focuses on Anglo-Saxon charters (as they are more numerous than other charters from this period); it examines the authenticity of early-medieval charters, some individual examples, dykes as estate borders, possible evidence in Anglo-Saxon charters of an obligation to build dykes, evidence for trade in charters, the naming of dykes in charters and then some Welsh examples.

The charters utilised to date individual dykes in this study are documents that specifically mentioned the earthwork when describing the bounds of an estate. These documents invariably give the earliest recorded name of the dyke and tell us if it either formed an estate boundary or was merely a landmark. The survival of such documents is patchy: no early charters record dykes from Scotland or northern England. Though a tiny number of charters purportedly date from as far back as the early seventh century, most survive only as later (often modified) copies; some were forged or modified and even the authentic charters were not written verbatim as the king granted the land, but probably compiled later in a monastery (Brooks 1974 217). It is difficult to differentiate between later accurate copies and deliberate forgeries especially as there is no sharp dividing line between the two, as later copyists often ‘improved’ the document they

transcribed. Some embellishments were designed to give the document more authority like additions to the list of witnesses or changes in the donor; scribes usually copied the estate boundaries from older documents with care but studies of the language have shown that they were also not immune from modification (Brooks 1974 223-34; Reynolds 1999 83; Campbell 2000 94; Reynolds 2002 175). Hitherto for the sake of simplicity this study has presumed the date given on the charter was the date that the original scribe wrote the document (as it is often impossible to discuss concisely the known or conjectural textual history of each individual document). In the following section some mention is given where the authenticity of a particular document is in doubt. The earliest charter record of each dyke is summarised in the table below.

Name of dyke	**Charter Sawyer number**	**Purported date of issue**	**Given name of dyke**	**% of dyke contiguous with estate boundary or relationship between dyke & the estate boundary**
Probable/possible early-medieval dykes:				
Fullinga Dyke	**S 69**	**672-4**	**Fullingadich**	**100%**
Bedwyn	**S 264**	**778**	**Vallum**	**43% (1200 metres)**
Faesten Kent	**S 176**	**814**	**Fæstendic**	**39% (900 metres)**
Wandsyke (East)	**S 272**	**825**	**Ealdandic**	**Bisects dyke**
Inkpen	**S 336**	**863**	**Readan dic**	**Bisects dyke**
Wandsyke (East)	**S 1513**	**900**	**Ealdandic**	**Bisects dyke**
Devil's Ditch Andover (Wonston)	**S 360**	**900**	**Greatean dic**	**Bisects dyke**
Wansdyke (East)	**S 368**	**903**	**Wodnes dic**	**Bisects dyke**
Combs Ditch	**S 485**	**942-3**	**Cunucces**	**?**

			dich	contiguous with dyke for a distance?
Combs Ditch	S 490	942-3	Cunnucesdic	? contiguous with dyke for a distance?
Bokerley Dyke	S 513	944-6	Lang dich	81% (4220 metres)
Bica's Dyke	S 564	955	Bican dic	100%
Beachley Bank	S 610	956	Dic	? uncertain
Aelfrith's Ditch & Short Dyke	S 828	956	Ælfredes beorh & dic	100%
Aelfrith's Ditch, Short Dyke & Old Dyke	S 603	956	Ælfðryþe dic, scortan dic and dic	100%
Rowe	S 677	958	Dic	11%
Wansdyke (West)	S 694	961	Wodnes dic	Bisects dyke
Aelfrith's Ditch & Short Dyke	S 829	965	Ælfredes beorh & dic	100%
Aelfrith's Ditch, Short Dyke & Old Dyke	S 758	968	Ælfþryðe dic, sceorton dic & ealdan dic	100%
Festaen Hampshire	S 1558/S 1559	973-4	Festaen dic	13% (300 metres)
Fleam	S 794	974	Dic	58% (3000 metres)
Bichamditch	S 1108	1053	Bichamdic	100%
Vervil	N/A	?	Crug	100%
Probable prehistoric dykes:				
Great Ridge Grim's Dyke	S 336	860	Ealden dic	
Berkshire Grim's Ditch	S 354	878-99	Grim gelege	
Cranborne Chase Grim's Ditch	S 513	944-6	Strete dich	
Great Ridge Grim's Dyke	S 612	956	Grimes dic	

Some Anglo-Saxon charters do suggest certain early-medieval dykes functioned as estate boundaries even if this was not their original purpose. A charter dated 1053 (S 1108) cites Bichamditch in Norfolk (*Bichamdic*) as one boundary of an estate though this example is possibly a prehistoric earthwork recut in the early-medieval period (Williams 1923; Clarke and Clarke 1925 85; Clarke 1941 180; Sawyer 1968 330-31). Four charters (S 603 dated 956, S 758 dated 968, S 828 dated 956 and S 829 dated 965) record Aelfrith's Ditch, '*ælfredes beorh*', and two other dykes, Short Dyke*, 'scortandic*', and Old Dyke, '*ealdan dic'* as the edge of estates at Kingston Bagpuize and Fyfield (Hunn 1993 313). These charters only exist in later copies and scholars are dubious about the authenticity of the wording, although scribes probably did take sections from genuine charters (Grundy 1925 106-8). Another less dubious charter of 971 (S 1216) records the grant by ealdorman Ælfheah to ealdorman Ælfhere of 20 hides at Kingston Bagpuize though it does not mention the dyke (Russell 1924 349-50).

A charter of 955 (S 564) mentions Bica's Dyke ('Bican dic') and although, like Aelfrith's Ditch, the whole earthwork is contiguous with the estate boundary, it only demarks a small proportion of one side of the estate where it bisected the ridgeway (Grundy 1925 88). As with Aelfrith's Ditch there is another dyke recorded on the bounds of the estate, the now lost (and therefore presumably small-scale) Readen Dyke. A charter of 778 (S 264, which incidentally also records Bedwyn Dyke) records the grant of land to a Bica about 20 kilometres away from Bican Dyke at Little Bedwyn, while 37 kilometres to the northeast there is a Bica's burh recorded in 1005 AD at Shipton-On-Cherwell (Grundy 1919 150-55; Stenton 1954 281; Cooper 1990 255; Lennon 2010b 269).

Fullinga Dyke in Surrey is recorded in a charter dated to 672-4 (S 69, one of the earliest authentic Anglo-Saxon charters) in the bounds of an estate granted by a sub-king called King Frithuwold as an ancient ditch 'which is Fullinga Dyke': '*antiqua fossa id est Fullingadich*' (Birch 1885 55-59; Collingwood and Myers 1937 406; Whitelock 1955 440-41). The description of the dyke as an ancient ditch suggests that the middle Saxons reutilised an older earthwork.

Walker claims that an ‘old dic’ that cuts the Cobham-Esher parish boundary recorded in an eleventh-century document is possibly Fullinga Dyke, but this location is about four kilometres too far east (Walker 1971; Dyer 1990; Brants 2007b).

The depth of the ditches and the heights of the banks of Aelfrith’s Ditch, Bica’s Dyke and Fullinga Dyke are approximately a third of the size of other early-medieval earthworks; this slightness in scale coupled with the charter evidence suggests that these earthworks were mere estate marker boundaries. These dykes formed just one side of their estates, suggesting that just a small part of the estate needed defining by an earthwork.

In the tenth century, large Anglo-Saxon estates (sometimes known as multiple estates) were broken up in a process called estate fragmentation and the new estates were often recorded in charters that recorded the bounds in more detail than previously (Turner 2006 148). Perhaps the small dykes like Aelfrith’s Ditch which mark the edges of estates are part of this process to define estates with greater accuracy than before. The new smaller estates often form the basis for subsequent parishes, making them easy to locate today (Reynolds 1999 83). While some of the oldest charters record the larger estates, far more Saxon charters are products of this reorganisation process. Though some early-medieval dykes (or parts of them) are contiguous with estate boundaries, many are not; perhaps dykes like Offa’s often ignore parish boundaries because they predate the process of estate fragmentation (Feryok 2001 (2011 ed) 186). As estate fragmentation often involved the breaking up of units, rather than the establishment of a new pattern on completely new lines, the new internal divisions of the old estates might post-date early-medieval dykes, but the perimeter of the older estates often continued to function as estate boundaries. In such cases if dykes were originally contiguous with the boundaries of the older estates, they should continue to be so, but in most cases, only small sections of most earthworks are contiguous with estate boundaries. Some of these new estates were laid out in marginal land suggesting increased exploitation of the land (Turner 2006 149). Perhaps dykes like East Wansdyke

originally ran through rough pasture on the edge of a kingdom that centuries later the West Saxons parcelled up creating new estates that largely ignored the now redundant dyke.

As we can be seen from the previous table, in most charters only parts of most earthworks are contiguous with the estate boundary. A charter dated 974 (S 794) records that the easternmost three kilometres of Fleam Dyke (that is 58% of the total length of the dyke) was the boundary of an estate that is now coterminous with the modern parish of West Wratting (Fox and Palmer 1921-2 32-34; Reaney 1943 35). The whole of the dyke once formed the northern boundary of the hundred of Flendish and today it is contiguous with parish boundaries for the entire length. Large parts (though not all) of two dykes in Dorset form sections of Anglo-Saxon estates. The earliest charter reference to Bokerley Dyke (S 513 dated 944-6) calls it long ditch (*lang dich*), the modern name Bokerley (*Bockedic*) is not recorded until 1280 (Grundy 1924 65-71; Mills 1980 235-36; Bowen 1990 15). Combs Ditch in Dorset appears in two authentic-looking Anglo-Saxon charters as *Cunucces dich* and *Cunnucesdic* (S 485 and S 490) both dated around 942-3 (Forsberg 1950 204-5; Mills 1980 70-71). This name possibly derives from a personal Celtic name 'Cunuc' or 'Conec', but it could also be a form of *cynig*, the Anglo-Saxon word for king so making the name King's Dyke (Crawford 1951 63).

Two charters dated 973-4 (S 1558 and S 1559) record the Festaen Dyke in Hampshire as *festaen dic*; *festaen* is Old English for stronghold, bulwark or fortification suggesting a military purpose rather than a boundary marker (Birch 1893 631-33; Grundy 1927 48-55; Gover, Mawer et al. 1934 172-73; Hogg 1935 70-73; Hogg 1941 25). Recently however it has been suggested that the name means overgrown (Barker 2008). The dyke forms only a small part of the estate boundary possibly suggesting that the earthwork was an older feature used for convenience. The similarly named Faesten Dyke in Kent is first recorded as *fæstendic* in the boundary clauses of a charter (S 175) dated 814, probably a tenth-century forgery based partly on another charter (S 176) dated 814 that does not record the dyke (Birch 1885 483-84; Hogg 1941 23-25; Keynes 1993

114 fn 23 and Nicholas Brooks personal communication). Note that only a small part of the earthwork forms just part of an estate boundary in the former charter.

In the case of many Wessex dykes, the estate boundaries cited in charters bisect the earthwork without deviating, for example East Wansdyke slices straight through the middle of the estate defined by the charter dated 957 (S 647) at Stanton St Bernard suggesting that the dyke was then being treated as a mere landmark (Bonney 1972 174-76; Reynolds 1999 82). The earliest surviving written reference to East Wansdyke is in an Anglo-Saxon charter (S 272) dated 825, though it only survives in a much later copy and the bounds look copied from a later document (S 1513) dated 900 (Grundy 1919 159-64; Fox and Fox 1958 14; Bonney 1973 478; Fowler 2001 188). The first charters merely call it *ealdandic* or 'old dyke' (Taylor 1904 139-41). The next charter dated three years later, 903, gives the name of Woden (or rather *Wodnes dic*) to East Wansdyke (S 368), though it says the grant was first made by Aethelwulf (839-56); it is followed by a series of tenth-century charters (S 424, S 449, S 647 and S 685) that also use the name (Grundy 1919 190, 213-14 and 241; Gover, Mawer et al. 1939 17). Reynolds suggests that one of these charters (S 647, dated 957), records a wrongdoer's gallows (*wearh roda*) on the East Wansdyke suggesting that the dyke was a place of execution, but this interpretation is uncertain (Grundy 1919 214; Reynolds 1999 84). West Wansdyke is recorded in a series of tenth-century charters, the earliest of which dates to 961, as *Wodnes dic* (S 694, S 711, S 735 and S 777). Reynolds and Langlands used charter evidence to try to date Wansdyke noting how Mercian kings (or their under-kings of the Hwicce) granted estates at Bath in *c*.675 (S 51) and southern Gloucestershire in the 680s (S 73, S 71 and S 1169) so therefore their control extended south of the Thames around that time (Reynolds and Langlands 2006 36-37). The dyke, they concluded, was a late eighth-century West Saxon response to further Mercian expansion under Offa. Many of the land units in West Saxon charters continued to function as estates or parishes for a thousand years or more so the lack of correspondence between the earthwork and estate boundaries suggests that the dykes were never borders (Muir 1981 150-51; Reynolds 1999 83). Bonney suggested some

estates might pre-date the Saxons, so perhaps the dykes sliced through pre-existing land units, or perhaps the estates that bisect the earthwork were completely reorganised or laid out on what had previously been rough marginal land between the building of the dyke and the writing of the charters (Bonney 1972; Turner 2006 149).

The Anglo-Saxon charters that record Bedwyn Dyke (S 264 dated 778) and the dyke at Inkpen (S 336 dated 863) do not refer to them as Wansdyke suggesting that the ascription postdates their construction possibly by centuries (Grundy 1919 150-55 and 184-87; Fox and Fox 1958 19-20; Reynolds 1999 83; Lennon 2010b 269-74; Lennon 2010a). Though the Bedwyn estate follows the earthwork some length, the Inkpen earthwork is bisected by the estate boundary. Two other charters dated 958 (S 756) and 961 (S 688) also record estates at Bedwyn, but neither record the dyke (Grundy 1920 62-65 and 75-80). The Wonston section of the Devil's Ditch near Andover was recorded in a charter dated 900 (S 360) as *greatean dic*; it is merely used as a landmark as the bounds of the estate twice bisect the earthwork (Grundy 1927 305-07).

Scholars have linked two charters with earthworks in the Welsh borders. The earthwork at the mouth of the Wye, Beachley Bank, is mentioned as a landmark in a charter dated to 956 (S 610) rather than forming the border of the estate. Fox makes much of this charter claiming that because part of the Beachley peninsula was let to Welsh boatmen (*scipwealan*), this confirms his theory of an agreed frontier with concessions to the Welsh (Fox 1955 216-18; Feryok 2001 (2011 ed) 189). As this charter postdates Offa by 160 years, it is possible that so too does the agreement and as the earthwork is merely recorded as '*dic*', it was probably not part of Offa's scheme. Rowe Ditch is mentioned (though not named) in a charter (S 677) dated 958 and only part is an estate boundary (Whitelock 1955 514-16; Finberg 1961 142; Hill and Worthington 2003 143).

A Saxon charter giving the bounds of Brimpton (S 500) dated 944 records a *herepath* (or army path) along the ridge that Bury's Bank and the Crookham

Common earthworks cut (Birch 1885 802; Crawford 1915 251-53). Note that the estate boundary follows the road, and bisects the earthworks that the charter does not mention. One of the charters that records Combs Ditch (S 485) mentions a nearby *herepath*. The Anglo-Saxon charters granting land around the East Hampshire dykes do not mention the nearby earthworks though again they record *herepaths* (Aldsworth 1973). Froxfield is called a 'haga' or game reserve in late Saxon Meon charters (S 283 dated 924), but the dykes are too big to be mere park boundaries and do not enclose a discrete area (Shennan, Gardiner et al. 1985 89). Charters also record *herpaþes* (*herepaths*) in the vicinity of Wansdyke, S 449 records one about 5 kilometres north of East Wansdyke near Avebury and others like S 711 and S 735 record such roads near West Wansdyke (Grundy 1919 189 and 243; Grundy 1920 240-44). While this tenth century evidence postdates the construction of the dykes by a few centuries, routeways (especially along obviously ridges) have a great longevity in the landscape suggesting many dykes cut tracks in areas traditionally used by marching armies, though those routes possibly could have been established after the earthworks were constructed.

There are a few relevant charters in Wales. Clawdd Seri is recorded in the Aberconwy Charter of 1200 as a township boundary, but this is relatively late and as Gresham points out, the fact that the dyke already has a name suggests it is an pre-existing feature (Gresham 1982 342). A charter in the twelfth-century Book of Llandaff (which possibly draws on older sources) probably records but does not name Vervil Dyke calling it a *cruc* or 'crug' which is the Welsh for 'mound' (Evans and Rhys 1893 213; Grimes and Randall 1944-5 243). As this charter also refers to other ditches in the bounds (usually termed a *clawd*) it seems that the earthwork was merely a convenient landmark; interestingly, approximately a quarter of all Llandaff charter boundary clauses mention banks and/or ditches (Evans and Rhys 1893 214; Davies 1978 7-22; Davies 1998 107). This suggests that the Welsh were using existing earthworks as landmarks when defining an estate rather than digging new ones to delimit specific areas. Some of the Llandaff charters suggest south Wales was an area that suffered from widespread fighting and slavery was common (Davies 1978

46-47). One charter dated 740 mentions a possible captured Saxon woman while another dated *c*.745 implies an area near Hereford was devastated in border warfare (Davies 1978 56, 174 and 176; Zaluckyj 2001 (2011 edition) 167).

A few Anglo-Saxon charters record prehistoric dykes and we can compare how earthworks not built in the early-medieval period were viewed by early charter writers. We can never know if the charter writers knew which were early medieval and which were prehistoric earthworks (it is still not an exact science today): records or local memories of the building of the former and the increased weathering of the later might have given charter writers insights. The Berkshire Grim's Ditch is first recorded in a charter (S 354) dated *c*.878-899 (Gelling 1971-2 6). The Great Ridge Grim's Dyke (also called Groveley Grim's Ditch) in Wiltshire, is recorded in Saxon charters (S 612 dated 956 and S 336 dated 860) while the charter that mentions Bokerley Dyke (S 513 dated 944 or 946) also records the Cranborne Chase Grim's Ditch (Grundy 1919 181-83; Grundy 1924 65-70; Gover, Mawer et al. 1939 15-16). In all three cases, the estate boundary only follows the earthworks for a short distance suggesting that like early-medieval dykes, when the charters were composed they were landmarks rather than administrative borders.

As well as providing evidence of the use of dykes as borders and boundaries (or the lack of) when charters were written, these documents can give us an insight into how labour was organised. As mentioned before, Mercian charters from the eighth century onwards often cite military obligations (or exemptions from such obligations) required from the people on the estate recorded (Brooks 1996 129; Brooks 2000 32-47; Zaluckyj 2001 (2011 edition) 208). The obligations include bridge work (either building or maintaining them), fortification work (often called *burh* work) and military duty; a charter dated 961 for land at Kilmeston in Hampshire (S 693) for example grants an exemption for bridge and *burh* work (Whitelock 1955 516-17). There is a debate as to when these obligations, or the practice of exempting recipients of charters, became

established. Evidence for these obligations also comes from an early eleventh-century estate management document called *Rectitudines singularum personarum* or the Rights and Ranks of People (Douglas and Greenaway 1981 875-77). Squatriti has suggested that older obligations to build dykes and the organisation of such work formed the basis for the later practice of *burh* work (Squatriti 2002 151). Unfortunately, neither the charter obligations, nor '*Rectitudines singularum personarum'* mentions dyke repair or building. '*Rectitudines singularum personarum'* does mention slaves and the lack of references to dyke building in the obligations associated with estates could be due to them undertaking the work. With no clear written evidence to connect slave labour or *burh* work obligations with dykes, connecting them with constructing earthworks is mere speculation.

One possible use of a dyke is to control trade. Though Anglo-Saxon charters, S 86 for example, mention tolls, other documents, such as Charlemagne's correspondence with Offa, usually refer to tolls in the context of maritime not overland trade and perhaps significantly no charter records any dyke as a place where tolls were collected (Whitelock 1955 197; Wormald 1982 101; Kelly 1992; Hindley 2006 109).[1]

When discussing the names given to dykes in early-medieval charters it is worth reiterating that many of the earliest charter references date to approximately two to three hundred years later than the average radiocarbon dates for early-medieval dykes. Indeed the words '*ealdandic*' and '*antiqua fossa*' suggest that scribes thought that the dykes were already old. Some of them were given monikers like *greatean dic*, *festaen dic* and *fæstendic* (assuming the later two mean fortification not overgrown as John Barker has suggested) suggesting that people realised that dykes were no mere hedgerows, but others are not named merely called a *dic* or *vallum* (Barker 2008).

[1] Offa's correspondence with Charlemagne is an example of Offa promoting his power on a European stage; possibly his dyke was another example of his self-promotion.

Though the earliest charters referring to Wansdyke are rather suspect it is noticeable that in them the earthwork is not named after Woden. In fact, many dykes have no names in the earliest charters especially those that came to be named after Grim, the Devil and Woden. Perhaps the process of naming dykes (in particular after supernatural figures) occurred long after the building of the earthworks or the earliest scribes had no need to record their name.

As we have seen, charters can be highly useful in providing a *terminus ante quem* for dykes, but with so many documents only surviving as later copies even this evidence must be approached with caution. As charters only record dykes when describing the extent of an estate and possibly postdate most earthworks by centuries they are of limited use in understanding why they were built. The charter evidence demonstrates that early-medieval people wished to subdivide and demark land especially in the ninth century onwards when numerous charters survive, but the dykes are often unnamed and seem to be earlier features reused merely as landmarks. If dykes were border markers, most had lost this role when the charters were written. Charters do suggest that a few (Clawdd Seri, Fleam Dyke, Fullinga Dyke, Aelfrith's Ditch and Bica's Dyke) might have been built originally as administrative boundary markers. The numerous references to *herepaths/herpaþes* (or army paths) seems to suggest that many of the dykes cut routeways perhaps to keep out other (hostile) groups. There is no evidence to link dykes to the control of trade and though later obligations (like *burh* work) may have evolved out of a duty to help build dykes, this cannot be proved.

3.1.1.2 Other administrative documents

It is worth further examining what other administrative documents can tell us about early-medieval society, though unlike charters, they rarely mention dykes. Unfortunately, it has already been necessary to mention the first two Anglo-Saxon administrative documents discussed below when estimating the labour force needed to build early-medieval dykes.

The Tribal Hidage is a document thought to date from the seventh or eighth centuries; the earliest surviving copy is a tenth-century text in Old English, but the later texts are in Latin (Hart 1977 43-54; Campbell 1982a 59-61; Dumville 1989; Higham 1995 74-111; Rumble 1996a 18-23; Zaluckyj 2001 (2011 edition) 17-21). It lists communities (kingdoms, tribes and regions) according to the number of hides each was assessed at (broadly speaking, a hide was an area of land large enough to support a family of free and law-worthy status). The lists seem concerned mainly with the Midlands and the South; it does not list Northumbria so it is either a Mercian administrative document or one drawn up by a Northumbrian overlord listing the areas that owed him tribute (Brooks 1989; Higham 1995 76, 84 and 97).

The largest group is the West Saxons calculated at 100,000 Hides (a figure that seems suspiciously rounded), but there are many smaller units like the *Spalda* of Lincolnshire at 600 Hides and the *East Wixna* at just 300 Hides. As we have seen in the previous section many early-medieval dykes seem to fringe Mercia and the Tribal Hidage suggests Mercia is surrounded by smaller communities that later disappeared from history becoming absorbed into the central kingdom.

The Tribal Hidage can be used when calculating the number of people in each kingdom and the number of possible labourers each king can call upon. The obligation clauses in Anglo-Saxon charters suggest the practice was that one man per hide was obliged to help build fortifications and bridgework, but only one man per five hides was obliged to turn out for army duty (Brooks 2000 33; Halsall 2003 103). Using this formula and cross-referencing with the Tribal Hidage, the kings of, for example, the East Angles could summon 30,000 labourers and 6,000 troops, but as we have seen in the previous section, just three to six thousand men could have built the Cambridgeshire Dykes. The West Saxons could easily build Wansdyke with 100,000 families to draw labour from, with 30,000 hides the Mercians could easily have built Wat’s and Offa’s

dyke; as most dykes needed a 100 or fewer labourers the smaller communities could easily have managed the logistic of building the lesser dykes.

The Burghal Hidage is another Anglo-Saxon administrative document that can possibly help understand the logistics of building an early-medieval dyke. It survives in seven different texts the earliest of which dates to the eleventh-century, but they all seem to be copies of a West Saxon document from about 910-20 AD; it lists the number of hides attached to various *burhs* (Hill 1969; Wormald 1982 152-53; Hill and Rumble 1996 2; Rumble 1996b; Brooks 2000 114-37; Reynolds and Langlands 2006 39-40). A *burh* (or burgh) was a fortified settlement or fort; though some have earlier origins, the main impetus for their construction was ninth-century Viking attacks (Higham 1988; Zaluckyj 2001 (2011 edition) 207-14; Baker 2013; Brookes 2013). As previously discussed, this document gives a calculation of how many men were needed for a given length of a fortification that equates to one every 1.25 metres (Hill 1969 84 and 90-91; Rumble 1996a 30 and 34). It does takes more people to dig an earthwork than man it so the document is of little use in calculating the amount of labour needed for construction and if they were never permanently garrisoned, it is little use when decided how many people manned them (Hill 1985 142; Hill and Worthington 2003 113-19; Hayes and Malim 2008 165). There is good evidence that the majority of Mercian burhs date to after the construction of the dykes; if the earthworks were military then perhaps the burhs took over their role making further dyke-building redundant (Bassett 2008).

Some burhs, like Chisbury (near the eastern end of Wansdyke and the northern end of Bedwyn Dyke), were reused Iron-Age hillforts. It was probably the Alfredian burh of Cissanbyrig, Tyssanbyrig or Tysanbirig in different versions of Burghal Hidage; the twelfth-century chronicles of Abingdon Abbey claim it was the stronghold of a Saxon leader called Cissa (Stevenson 1858 268; Fox and Fox 1958 20; Brooks 2000 96-98). Alfred may have chosen to reuse Chisbury hillfort as it was flanked by an existing earthwork and perhaps we are seeing in this example an older form of early-medieval defence, a linear earthwork, succeeded by a later type, a burh.

In 926, King Athelstan met with the various Welsh rulers and made a series of agreements including the Ordnance of the Dunsaete which sought to regulate cross-border disputes in the lower Wye Valley (Feryok 2001 (2011 ed) 172-73; Hill and Worthington 2003 46 and 175-77; Squatriti 2004 paragraph 21). Noble, who translated and brought the document to the attention of modern scholars, claimed it confirmed his theory of Offa's Dyke as a patrolled frontier (Noble and Gelling 1983 59 and 104-9). Unfortunately, it dates to over a century after Offa and does not mention the earthwork; it does suggests the area was lawless (the very first clause deals with cattle rustling) and inhabited by two mutually mistrustful nationalities, thereby undermining Fox's idea of a mutually agreed frontier. Like many early-medieval documents, it neatly divides people into the Welsh and the English assuming that this was so obviously a clear divide that no definition was necessary.

Surviving early-medieval law codes can perhaps give us some insights into the societies that built the dykes. The earliest Anglo-Saxon law code dates from the middle of the period of dyke building (that of Ethelbert of Kent *c*.602-3) and the following generalisations about such codes are taken from seventh-century laws rather than those written after the floruit of dykes (Whitelock 1955 357-372; Griffiths 1995). These law codes are very different to modern law; we cannot be sure how they were used, they may even have been a written ideal and not actually put into practice (Griffiths 1995 16; Oliver 2002 14-20). Though the early written law codes are in English, they are inextricably linked with the Latin-based literacy associated with Christianity; it is possible pagan Anglo-Saxons built some of these dykes and we cannot be sure that their oral law was the same as the surviving written codes (Griffiths 1995 11). Despite being evidence for the rise of kingship, literacy and Christianity, the early law codes stress the control of violence and regulate compensation rather than punish guilt. They suggest Anglo-Saxon society was one of retribution where kings tried to control feuds, vendettas, the theft of mobile property (like cattle and slaves) and raiding (John 1982 180; Griffiths 1995 10 and 17).

The late seventh-century laws of the West Saxon Ine defines a group of up to seven people crossing into the kingdom with hostile intent as thieves, up to 35 as a band and 36 or more as an army (Whitelock 1955 366). The figure for an army seems rather low and, though this may be a deliberate ploy to bring a higher penalty down on small groups of outlaws, it does suggest relatively small groups attacked other kingdoms. As we have seen, fewer than 100 men could have built most of the early-medieval dykes so if they are defensive perhaps many raiding armies were equally small. Law codes suggest deep mistrust existed towards strangers (whether traders or travellers) especially towards those not on roads assuming that if they did not announce their presence, they were thieves; Vikings often switched seamlessly from raiding to trading and the Byzantine Empire used traders as spies (Whitelock 1955 361-62 and 366; Lyon 1977 28; Symonds 2003 28-29; Curta 2011 29-30). As these law codes suggest small-scale raids by small groups of armed men were common, it was probably very dangerous for traders to move unannounced into neighbouring kingdoms.

There are numerous references to slaves in Anglo-Saxon law codes (Whitelock 1955 363-64 and 369; Pelteret 1981 99 and 104; Griffiths 1995 42). In West Saxon law codes and similar documents the word for a Briton and the word for a slave become synonymous perhaps because the West Saxons absorbed large British areas (Whitelock 1955 367-68; Pelteret 1981 107). Slaves could be a by-product of raiding other communities and possibly were a source of labour to build dykes.

Unfortunately, for the study of early-medieval dykes, law codes from the rest of Britain only survive from a much later date. The earliest surviving (and the most influential) Welsh law code is that traditionally associated with Hywel Dda (who died around 950 AD). Though it probably draws on older Welsh laws, the earliest surviving copies are thirteenth century in date and probably include many later revisions (Carr and Jenkins 1985 9-13 and 20; Jenkins 1986 xxi). Like their Anglo-Saxon equivalents, the Welsh law codes mention slaves

(probably obtained through raids) and give a great deal of attention to compensation with heavier penalties for theft than murder (Carr and Jenkins 1985 30; Jenkins 1986 xxxi). The law codes mention gangs of thieves or marauders, the king's bodyguard raiding other kingdoms and there is a large section on aliens; this also suggests a society where warfare and small-scale cattle raids were common and strangers were distrusted (Jenkins 1986 9, 114-19 and 164-66; Iverson 2001 11). Like Anglo-Saxon sources, there is a mention of tolls, but again it is on ship trade. The Welsh codes do mention Offa's Dyke, suggesting that the earthwork, or rather which side of it a person lived, defined whether or not they were Welsh, but this definition could have entered the law codes over three centuries after Offa died (Barnes 1883 55; Jenkins 1986 116).

One of the earliest laws issued in Scotland is the seventh century 'Law of the Innocents' issued by Adomnáin of Iona; it specifically sought to protect women and children from the ravages of war (Márkus 2008). Other surviving law codes from Scotland and Strathclyde date from the eleventh century and are probably far too late to make any certain links with dyke construction though they have similarities to early Welsh and Anglo-Saxon law codes. A code written in the early eleventh century shortly after the Scottish capture of Strathclyde called *Leges inter Brettos et Scottos* makes reference to fines (what the Anglo-Saxons would term a wergild) paid in compensation for murder or injury (Jackson 1955 88; Wormald 2009 195-96 and 204). Like English and Welsh law codes, these suggests early-medieval Scotland was prone to endemic violence, not large armies fighting set-piece battles, but small-scale disorders (feuds, harrying and raiding) where non-combatants were often harmed.

There are references in Irish and Welsh law codes to burials at borders; these seem to be the burial mounds of ancestors located at the edge of an estate to give legitimacy to ownership rather than the mass graves found at say Bran Ditch in Cambridgeshire that are described in detail later (Lethbridge and Palmer 1927-8; Gray 1928-30; Charles-Edwards 1976).

The two volumes of William the Conqueror's 1086 survey of the landholding of England commonly known as The Domesday Book were compiled roughly 300-600 years after most early-medieval dykes were probably built, but some points are worth making about the survey (Hinde 2004). Intriguingly, a local hundred called Concresdic named after Combs Ditch is recorded in The Domesday Book as is a hundred named after Fleam Dyke in Cambridgeshire called Flamingdice (Sumner 1931 59; Reaney 1943 140; Mills 1980 70-71; Thorn and Thorn 1983). These two examples may possibly suggest certain dykes had administrative areas attached to them; perhaps the inhabitants of these hundreds had responsibilities to build, maintain and man the dykes. With Combs Ditch, almost the whole earthwork forms part of the northeast boundary of hundred and as the dyke faces northeast, it 'protects' the hundred (Mills 1980 71). Although Fleam Dyke formed the northern boundary of Flamingdice, the earthwork faced southwards so does not 'protect' the hundred (Reaney 1943). As there are only two hundreds named after dykes in The Domesday Book yet many more dykes, these particular earthworks may easily have just been convenient landmarks used to subdivide an area when the hundreds were laid out. The Domesday Book shows that Wat's Dyke in Cheshire forms the boundary between those areas organised into hides and those that are not, suggesting it formed the boundary of those areas administered in an Anglo-Saxon manner (Worthington 1993 308; Fitzpatrick-Matthews 2001 3). It is not certain exactly when this hidation occurred so it is possible the division of shires along the Welsh border or in East Anglia into hundreds possibly happened when Wessex captured these areas in the tenth century (Zaluckyj 2001 (2011 edition) 257-58).

The Domesday Book survey provides the earliest national population picture so may provide insights into the distribution of dykes. Although the survey of the northwest seems incomplete, the data for Lancashire suggests it was very sparsely settled (this is confirmed by pollen data and archaeological finds) which may explain the lack of dykes there (Higham 1986 242-50; Mackay and Tallis 1994 579-80; Higham 2004a 23; Hinde 2004 151). The population of Essex and Sussex, areas also lacking dykes, was higher, but heavily wooded areas on the borders of these shires may have acted as a buffer making dykes

unnecessary or impossible to construct with the tree roots (Hinde 2004 97 and 270).

3.1.2 Annals, chronicles and histories

Early-medieval sources, like the ninth-century *Historia Brittonum*, the *c*.1010-1016 Sermon of the Wolf to the English by Wulfstan and early-medieval biographies of saints rarely mention dykes, but confirm early-medieval society was dominated by kings, warfare, raiding and slavery (Colgrave 1927 37; Colgrave 1956 80-81 and 108-11; Hood 1978 24 and 43; Morris 1980b 1, 37 and 78; Pelteret 1981 109-10; Campbell 2000 86-92; Zaluckyj 2001 (2011 edition) 84; MacQueen 2005 94; Thompson 2008 2). The reasons for their silence regarding dykes may be significant. The initial stimulus for recording events with chronological accuracy was the need to calculate the moveable feast of Easter so records that purport to predate the establishment of monasticism in an area probably derive from less reliable oral sources (Copley 1954 35-52; Yorke 1995 32-45; Swanton 2000 xi; Grigg 2009 23).

The *Anglo-Saxon Chronicle* is a series of related texts (A, A2, B, C, D, E and F) that probably have their origins in late ninth-century Wessex and though some entries were contemporaneous with events, earlier ones often drew on older sources (Kirby 1965 10-14; Yorke 1993; Swanton 2000 xi-xxxv; Zaluckyj 2001 (2011 edition) xi; Jørgensen 2010; Higham and Ryan 2013 271-76). The two texts that mainly concern us are A (the entries of which are up to 891 in a single hand so that section was probably compiled in the late ninth century) and E, a twelfth-century copy from Peterborough (Swanton 2000 xxi-xxvii).

In general, the *Anglo-Saxon Chronicle* makes much of kings as well as the kingdoms they forge and while we would expect a source probably founded by the West Saxon kings to promote the kings of Wessex, other Anglo-Saxon kingdoms also feature (Brooks 2010). It contains numerous references to

battles and raids between kingdoms, but the almost total absence of references to dykes in a document that records the great deeds of kings must weaken any suggestion that they were built to promote kings or unify kingdoms.

The *Anglo-Saxon Chronicle* makes only one direct specific reference to dykes (specifically the Cambridgeshire Dykes). The 904 entry in the A text records King Edmund harrying between the River Wissey and the Cambridgeshire Dykes (*dicum*) in retaliation for a raid by Vikings based in East Anglia; it is repeated by Mathew Paris in the thirteenth century though he uses the word *fossata* (Bately 1986 62; Malim, Penn et al. 1996 98-99; Swanton 2000 94 fn 1). The entry seems to use the dykes as a geographic reference point that needed no explaining to the reader rather than fortifications used in the fighting; the radiocarbon dates for Fleam Dyke suggest the events of 904 almost certainly postdate the dykes by some centuries (Malim, Penn et al. 1996 65-67 and 96).

Historians have tried to tie individual dykes with other events recorded in the *Anglo-Saxon Chronicle*, for example, Hughes who, in 1931, linked the Chiltern Grim's Ditch with the events it records dated 571 though this earthwork is almost certainly prehistoric (Hughes 1931; Dyer 1963; Davis 1981; Bately 1986 25; Sauer 2005 especially 33 and 42). Other examples of possible links are equally unconvincing. Bulmer claims an 'old writer' says Edred received the troth of Wulfstan at Topcliffe in close proximity to the earthwork Park Pale, but the D text instead records the event many miles away at Tanshelf in 947 (Bulmer 1890 835; Cubbin 1996 44; Swanton 2000 112). The location of the battle recorded in 894 in the *Anglo-Saxon Chronicle* between the Saxons and the Vikings is more likely to be Buttington near Shrewsbury than the mound called Buttington Tump by Beachley Bank (Fox 1955 90; Bately 1986 57; Swanton 2000 87 fn 13). These examples demonstrate why it is inadvisable to link earthworks to specific events especially as we cannot date dykes with any certainty. One exception is the fighting recorded between Alfred and a group of Vikings who encamped in Reading 871-2 which is probably related to Coombe Bank in Reading (Bately 1986 48-49; Swanton 2000 70 fn 6).

Historians have linked various dykes (Nico Ditch, Grey Ditch and Roman Rig for example) with the Mercian-Northumbrian border using the *Anglo-Saxon Chronicle*, but though we know the name of the Mersey derives from the word for border, we are less sure of where the rest of the frontier lay (Blair 1955 121-22; Hart 1977 53; Higham 1993 143; Higham 1997 151; Feryok 2001 (2011 ed) 181 and 183; Rollason 2003 25-28; Higham 2006). The A text records a visit by King Edward in 919 to Manchester which the text claims is in Northumbria; possibly indicating Nico Ditch to the south was located at the Mercian border (Bately 1986 69). Dore about 10 kilometres south of the southern end of Roman Rig is recorded as the border of Northumbria in 827 and 942 in the A text, but, even if Dore was on the border, we do not know if the border then snaked towards Roman Rig or lay south of the earthwork (Bately 1986 42 and 73). The Mercian-Northumbrian frontier was probably more of a zone than a fixed line and borders may have moved especially after the Viking invasions making these ninth- and tenth-century references unhelpful (Blair 1955 124; Rollason 2003 25-28; Higham 2006 405-08).

We are on safer ground linking the archaeological evidence of the burials (as discussed earlier) Heronbridge with events recorded not only in the *Anglo-Saxon Chronicle*, but also in Bede and the Welsh Annals (Petch and Davies 1932 46-48; Laing and Laing 1985 17 and 52-53; Petch 1987 189; Burnham, Hunter et al. 2005 423). They may be casualties of the Battle of Chester which is recorded in 605 in the E text of the *Anglo-Saxon Chronicle*, 606 in the A text and 613 in the Welsh Annals (Thompson 1965 64; Morris 1980b 46 and 86; Laing and Laing 1985 41; Bately 1986 26; Irvine 2004 22-23). According to Bede, Aethelfrith of Northumbria massacred 1,200 British monks who had come to pray for a British victory at the battle, though the *Anglo-Saxon Chronicle* puts the number at just 200 (Colgrave and Mynors 1969 2:2). The earthwork is only two kilometres south of Chester so a distant chronicler would probably record any major event at Heronbridge under the name of the better-known Roman city.

Scholars have often tried to link Wansdyke to events in the *Anglo-Saxon Chronicle* despite its lack of any references (Clark 1958 283; Fox and Fox 1958 42-44; Grinsell 1958 283; Myres 1964 10; Draper 2006 59-60). It is remarkable that a source that probably started as an official chronicle for the West Saxons kings does not mention the largest earthwork in Wessex. If it was a defence against the West Saxons, they do not claim to have overcome the earthwork, if West Saxons built it, they fail to mention the fact and if the West Saxons had nothing to do with it they could easily have claimed it as an act of propaganda. The *Anglo-Saxon Chronicle* mentions the Woden's Barrow near Wansdyke previously mentioned in the charters as the site of two battles in 592 and 715; the name of the dyke and the barrow are considered in more detail later in this study (Bately 1986 25 and 33; Irvine 2004 22 and 35). This suggests that the barrow, which is just 1.2 kilometres south of East Wansdyke, was on an obvious invasion route into Wessex or near a contested border area.

There are a series of Welsh annals/chronicles, the earliest of which is the Latin *Annales Cambriae* (the earliest surviving text dates to about 1100, but was probably composed around 955 and draws on older sources) while later versions, like *Brut y Tywysogyon* and *Brenhinedd y Saeson*, are in Welsh (Dumville 2002; Grigg 2009). Most entries relate to political events (like the English sources these are often violent such as raids, the devastation of enemy territory, battles and the deaths of kings) and though two entries record Offa attacking the Britons (in 778 and 784) the earliest texts make no mention of dykes (Morris 1980b 47 and 89; Dumville 2002 6-7; Grigg 2009 27). Offa's Dyke is mentioned in one version of these annals (specifically the version of *Brenhinedd y Saeson* found in the fourteenth-century Black Book of Basingwerk, BM. Cotton Cleopatra MS. B v.), but this reference postdates the earliest texts by some centuries and is probably a later interpolation (Griscom 1925 106). The authenticity of the entry is further undermined by the fact that it describes the north end of Offa's Dyke being near Basingwerk (Ddinas Basing) which matches Wat's Dyke not Offa's (Fox 1955 225).

Asser was a Welsh monk who wrote a biography of King Alfred of Wessex who appointed the Welshman bishop of Sherborne in 893 (Keynes and Lapidge 1983; Hill and Worthington 2003 35). While some scholars (in particular Smyth) have raised doubts about the authorship and veracity of Asser's work in the past, most scholars accept it as genuine (Smyth 1995; Asser and Smyth 2002; Tyler 2002 192-94; Hill and Worthington 2003 35-38; Abels 2004). He records Vikings fortifying their base at Reading which, as already mentioned, might refer to the digging of Coombe Bank (Brooks 1979 10; Keynes and Lapidge 1983 78). He also records that Offa constructed a great dyke between Mercia and Wales from sea to sea as a way in order to establish who Offa was to the reader (Keynes and Lapidge 1983 71; Hill and Worthington 2003 38; Bapty 2007 22). His claim that the earthwork ran from sea to sea is false, though it could be an echo of a boastful piece of Mercian propaganda designed to reinforce Offa's imperial pretensions (Bapty 2007). This would fit with the theory that Offa's Dyke was more about demonstrating the power of the king than a utilitarian feature. Asser's description though could have been a plagiarism of Bede's or Gildas' description of the Roman frontier works or merely a generalisation by a scholar who had not travelled the length of the earthwork (Colgrave and Mynors 1969 1:5 and 1:12; Winterbottom 1978 22 and 94; Hill 2000 204; Tyler 2011 154). Asser saw the dyke as an Anglo-Welsh divide, not a Mercian-Powys one as Hill proposed, but in Asser's day the Welsh kingdom of Powys no longer existed having been broken up after the death of Cyngen in 854 (Jones 2009).

Gildas was a British writer who probably wrote in the early sixth century; his book is more of a sermon than a straight historical account, but the introduction contains an outline of recent historical events (Winterbottom 1978 1; McKee 2006 34). He is the only British source from the early part of the floruit of dyke building and while he does not mention dykes, he does recount the building of the frontier works by the Romans in Britain (Higham 1991a; McKee 2006 18-19). Bede was an English writer already mentioned in connection with the Battle of Chester who wrote a history of the English Church and peoples in 731 who utilised Gildas when discussing the Roman frontier walls so it is worth

examining the two sources together. Like many other early-medieval sources already mentioned, the works of Gildas and Bede contain numerous references to warfare (plunder, raids and battles), the growth of Christianity and to kings (Colgrave and Mynors 1969 1:22 for example; Winterbottom 1978 29 and 99 for example).

Gildas incorrectly assigns the Roman frontier works to near the end of Roman rule and has the first built by the natives of turf (note not merely earth) and the second built of stone by the Romans (Winterbottom 1978 21-22 and 93-94). He is scathing of the turf wall, which some scholars have suggested demonstrates that Gildas (and Bede) were aware of the earthen dykes of the early-medieval period and thought them inadequate (Higham 1991a; Squatriti 2002 26-27). This could be reading too much into the reference: a turf wall suggests Roman engineering rather than the simply excavated early-medieval dykes. To any visitor of the northern Roman walls Hadrian's is far more impressive than Antonine Wall so Gildas may have merely guessed different groups built them. He may have assumed that the turf wall was of native construction as this fitted into his narrative (which has a strong moral message) that everything the British did was of a poorer standard than anything done by the Romans (Higham 1991a 13). While Higham may be correct when he postulates Gildas was aware of early-medieval dykes, the evidence is far from clear so linking Gildas with an individual earthwork, as Higham tentatively does with Wansdyke, is probably pushing the evidence too far (Higham 1991a 13-14).

The way Gildas (and Bede) describe the building of the Roman frontier works may offer clues as to how early-medieval writers thought earthworks were built (Winterbottom 1978 21-23 and 93-94; Higham 1991a 9-11; Bachrach 1993 66-67; Erskine 2007 103-04). He talks of earthworks funded publicly and privately, the Romans leaving military manuals, a crowd or mob of labourers building them in the 'usual manner' and how they were meant to keep the enemy at a distance suggesting they were sited back from the frontier. They were possibly patrolled by the *speculatores* Gildas mentioned earlier in his text assuming they are watchmen not bishops (Winterbottom 1978 15 and 89; Higham 1991a 11).

The idea of private and public funding seems more Roman than early-medieval, but the reference to military handbooks could be the previously mentioned *Epitoma Rei Militaris* by Vegetius which we know was used later in the medieval period (Bachrach 1993 64; Bennett, Bradbury et al. 2005 175). When Gildas wrote of large gangs of labourers he probably meant Roman frontier works that required thousands to construct rather than early-medieval dykes which probably only required about a hundred men to build. The reference to the 'usual methods' of construction suggests building earthworks was such a common occurrence that there was no need to describe the methodology.

Incidentally, Bede mentions *Ingetlingum*, where Northumbrian king, Oswine, murdered his rival, Oswy, in *c*.651 and it is sometimes identified with Gilling, the village adjacent to Gilling Dyke, though others identify it with Collingham (Smith 1928 288; Sherley-Price and Latham 1955 164; Colgrave and Mynors 1969 3:14). Even if it is Gilling, Bede's account makes no mention of an earthwork.

3.1.3 Poetry

Surviving Anglo-Saxon and Welsh poetry also contain few references to dykes, but they can provide evidence of early-medieval warfare, though most date to after the period under study (Hooper 1989).

One Anglo-Saxon poem, *Widsith*, may give us clues as to Offa's motivation in building a dyke and a possible explanation as to why the name of the adjacent dyke is Wat's (Krapp and Van Kirk Dobbie 1936 149-53; Malone 1962; Niles 1999). The surviving poem is a fragment of an older work that lists various famous Germanic heroes, mainly kings and folk heroes. Lines 35 to 44 mentions an earlier Continental king of the Angles called Offa who marked with his sword the boundary with the Myrgings (an otherwise unknown German tribe) at Fifeldor (the river Fivel lay in the north-eastern part of the Netherlands): "*Ane sweorde merce gemærde wið Myrgingum bi Fifeldore*" (Malone 1962 24).

Perhaps the earlier Offa built a border defence or dyke inspiring the later Offa to try to emulate his namesake by marking the western border of Mercia with a dyke (Fox 1955 289; Wood 1981 80; Squatriti 2002 59). The reference to Offa in *Widsith* is much longer than the references to other heroes suggesting that the poem's English audience was especially interested in this character perhaps because of the parallels to the Mercian Offa (Malone 1962 39-41). Fixing a boundary with a sword though does not necessarily mean building a dyke and there is no surviving evidence of a defensive dyke built by the Angles near Fifeldore.

Intriguingly, the legendary Germanic folklore character Wade who gave his name to the adjacent Wat's Dyke is associated with the continental king Offa in both the poem *Widsith* and in the twelfth-century writings of the Welshman Walter Map (Wright 1850 86-87 for example; Griscom 1925 100; Fox 1955 288; Malone 1962 23). In *Widsith*, Wade is merely described as the ruler of the Hælsingas (line 22 "*Wada Hælsingum*"), but this tribe is listed between the Swabians and the people the continental Offa fixed a boundary against, the Myringas, though the Hælsingas lived not in northern Germany but in central Sweden (Malone 1962 158; Yorke 2001 16). Walter Map refers to Wade as Gado king of the Vandals, a name also found in Chaucer's Merchant's Tale and in place-names like the Roman road known as Wade's Causeway in North Yorkshire (Fitzpatrick-Matthews 2001 1; Nurse 2001 8). This association between Offa and Wade may be coincidental or an echo of a lost longer legend linking these two characters which inspired the Mercians to build and/or name dykes after these characters, but with such fragmentary evidence theories are easy to make, but difficult to substantiate.

The great Anglo-Saxon epic *Beowulf* does not mention dykes, but as the action is not set in Britain, that is perhaps unsurprising (Wrenn and Bolton 1953 (1996 ed)). Like *Widsith*, it also mentions the continental Offa (lines 1949 and 1957) saying he was a king renowned for the defence of his homeland "eðel sinne" (line 1960), though here there is no record of a Wade (Yorke 2001 16). There is a sequence when Beowulf lands in Denmark where he encounters a coast-

watcher on a wall (line 229); perhaps similar figures patrolled the dykes. Like many other written sources the poem gives an impression that raiding was commonplace (Hygelac dies on raid and Hrothgar gives out treasure after a career of raiding) and the fact that Beowulf's crew from a single boat was considered a war party helps confirm the idea that raiding parties were not large.

Unlike Anglo-Saxon poetry, early-medieval Welsh poetry does contain some references to dykes. Though the references to dykes in early-medieval Welsh poetry relate to fighting, this may not necessarily confirm a military purpose for dykes as warfare was the major theme of these works so locations mentioned in them are likely to be referenced in terms of battles and war.

The works of the sixth-century poet Taliesin makes a reference to the British king Urien of Rheged fighting at a dyke: *Ossid uch yng Hlawd, neud Urien a blawd* 'If there be groaning in the dyke, it is Urien who is smiting' (Evans 1915 113-14; Pennar 1988 70; Fleming 1998 29). The Welsh border dykes are possibly mentioned (though not named) in Welsh poems about a British king called Llywarch Hen (Nurse 2001 3). It recounts a fight '*ar glawd gorlas*' on Gorlas dyke (possibly a slip for Morlas, a stream that crosses both Offa's Dyke and Wat's near Selattyn) and elsewhere cryptically refers to the dykes enduring but those that built them being no more (Williams 1935 3 and 42). Although the language used in the text does seem to suggest a ninth-century date for the composition, the surviving texts (the thirteenth century Black Book of Carmarthen and the fourteenth century Red Book of Hergest) are much later (Ford 1970 442). Llywarch Hen was a northern British king who, according to early Welsh sources, was driven out by the English and fled south to Powys (therefore lived near the Mercian dykes), but as he was a sixth-century figure he possibly predates the earthworks in the Welsh borders (Ford 1970 442). At best, this source suggests Welsh poetry associated the dykes with conflict against the English and exile, though we should note that there is no reference here to Offa. A ninth-century poem called Marwnad Cadwallawn (The Elegy of Cadwallon) records a battle between Cadwallon and Edwin of Northumbria at

Caer Digoll which is the Long Mountain near Welshpool close to the line of Offa's Dyke (Kirby 1977 32). Such a battle suggests the dyke was built in a contested frontier zone, though the battle predates Offa by over a century.

Y Gododdin, written by the early-medieval British poet Aneirin about an unsuccessful British raid on Anglo-Saxons based at Catreath (possibly Catterick), describes in lines 567-69 a warrior who 'trampled on spears in the day of battle in the alder-grown dyke:

'*Sengi waywawr, Yn nydd cadiawr, Yng nghlawdd gwernin*' (Faull 1974 24; Jarman 1988 38; Higham 1993 82-83; Cessford 1997).[1]

Perhaps the dyke mentioned in the poem was Scot's Dike near Richmond. The earthwork might be five kilometres from Catterick, but it is not implausible that a battle fought at Scot's Dyke could have been given the name of a nearby town when it is seven kilometres between Senlac Hill, the site of the 'Battle of Hastings', and the actual town of Hastings. Today there are numerous alder trees at the southern end of Scot's Dike and pollen analysis of the ditch silt samples taken during a 2007 excavation found alder was one of the dominant species (O.A.N. 2008 and Elizabeth Huckerby of O.A.N. personal communication). Though the dyke is possibly a little far from Catterick, Higham once postulated Catreath was in fact Richmond Castle which is within sight of the southern end of the dyke, though as Padel rightly states, directly linking archaeology with early-medieval poetry is usually best avoided (Higham 1986 263; Padel 1998 51).

Y Gododdin seems to provide further evidence of the mutual antagonism between the Britons and the English, though some historians have cast doubt on the idea that it was a simple battle with the English on one side and the British on the other (Fleming 1994 27; Koch 1997; Padel 1998 46; Lowe 1999 13-16). One of the British warriors of Gododdin has a father with the very Saxon name of Golistan (probably a mutation of the English name Wolston, line 951)

[1] Jarman's translation uses the word 'moat' instead of 'dyke', but as can be seen from the names of the Welsh dykes in the gazetteer, 'clawdd' (or 'nghlawdd' as it is in the poem because the initial consonant is mutated by the preceding word) invariably means dyke.

suggesting the sides were racially mixed. It is worth remembering that names do cross the ethnic divide in the early-medieval period: Anglo-Saxon sources record Englishmen with very British names like Cadwalla, Chad, Cedric and Cedd (Colgrave and Mynors 1969 3:22-23, 3:28 and 4:16; Bately 1986 23-24 and 32). There are clear references to the heroes as Britons (lines 204, 209, 637 and 923) and the enemy as Saeson or Saxons (126 and 532) coming from Lloegr or England (451 and 899): without arbitrarily discounting large sections of the poem it is clear that Aneirin thought the battle was a British defeat at the hands of the Anglo-Saxons (Padel 1998 47-48).

Y Gododdin gives us interesting evidence about early-medieval warfare. It is a poem of warriors, death and glory (like those written by Taliesin or those about Llywarch Hen) suggesting that raiding and warfare were common and praiseworthy among the elite. Only 333 warriors embark on the raid, but perhaps we should not take this to be a typical number as it seems a rather artificially symbolic figure. The poem contains some references to axes, swords, shields and chain mail, but the description of the fighting suggests spears were the most common weapon in battle. The poem shows the English standing on a dyke using spears to counter an attack by British cavalry. A dyke is an advantageous structure for getting infantry to stand their ground and would slow or even break up a cavalry charge (Muir 1981 159; Malim, Penn et al. 1996 114).

A great corpus of medieval Irish poetry survives and though most of the surviving manuscripts date from the twelfth to the fifteenth centuries, the language of the earliest stories is dateable to the eighth century while the events referred to date to the seventh century (Gantz 1981). Although little directly relates to Britain, it does give a flavour of what early-medieval society was like. In these poems wealth is reckoned in cattle and warfare, unsuprisingly, mainly takes the form of cattle raids.

3.1.4 Inscriptions

Although there are numerous examples of stones bearing images and inscriptions from the period when the dykes were built, none is clearly associated with the earthworks. If the dykes were built to bolster the power of kings, it is noticeable that there are no surviving inscriptions claiming which king or kingdom built any earthwork. One piece of epigraphic evidence often quoted in association with early-medieval earthworks is the Pillar of Eliseg. It was erected during the reign of Concenn of Powys (or Cynan who died in 854) about seven kilometres west of Offa's Dyke and is dedicated to the memory of his great-grandfather, Eliseg, king of Powys, who presumably ruled at the same time as Offa (Hill 2000 202-3; Hill and Worthington 2003 108-10 and 178-80; Jones 2009; Tyler 2011 156). The inscription mentions Eliseg taking land from the power of English with his sword 'by fire': '*E potestate Anglo/Rum in gladio suo parta in igne*' (Hill and Worthington 2003 178; Jones 2009 43). This is a frustrating source that merely tells us there was fighting on the border between Powys and the English to the east. Interestingly, Clawdd Llesg, a Welsh earthwork 34 kilometres to the south may once have been named Clawdd Eliseg (Elisedd).

3.1.5 Later-medieval and early-modern sources

Later references to dykes must be used with caution as we do not know if the scribes used their imaginations to explain mysterious features in the landscape or if their observations were based on lost sources (Zaluckyj 2001 (2011 edition) xi-xii). A biography written at least 300 years after Offa died claims he built his earthwork during a Christmas truce in 775, but even if we suspected this information came from an older source it is unlikely to be accurate as digging earthworks in winter when the ground is either frozen or too wet is highly unlikely (Swanton 2010). Higden in the thirteenth century thought Offa built his dyke to mark the Anglo-Welsh border, but his writings do not suggest

he was privy to any lost knowledge about the Mercian king and this idea probably comes straight from Asser (Given-Wilson 2004 132). Some observations from later medieval writers and early modern antiquarians are useful in ascertaining the size of dykes before the ravages of modern agriculture or the Industrial Revolution or as a *terminus ante quem* for the building of the dyke. Unfortunately, there are some poorly referenced claims (in both the HER/SMR records and works by recent scholars) that later medieval writers refer to local earthworks when in fact no such record exists. While with some it may be that this study failed to uncover a lesser work by the antiquarian or the reference was not in an obvious location in their work, but for others, the original references probably never existed. The creation of false antiquarian references probably came about through a combination of wishful thinking, the use of poor translations and a failure to check references. Both the relevant Hampshire HER entry and Crawford claim that Aubrey recorded a rampart and ditch crossing the London Road two miles east of Sutton, presumably Sutton Scotney, which is the location of the Wonston section of the Devil's Ditch near Andover in Hampshire, but extensive research found no such reference in Aubrey's work (Crawford 1920-4; H.H.E.R. 2008c). The antiquarian Leland makes two reference to Offa's Dyke, one of which seems to refer to a section of Wat's, as well as possible references to other dykes like Dane's Dyke and Dodman that are far too vague to make any positive identification (Cornish 1906 458-60; Smith 1964b 201 and 322-23; Smith 1964a 13). Although Sumner claims both Leland and Stukeley mention Combs Ditch, but there are no obvious references to either in their respective works (Stukeley 1776 189; Sumner 1931 60; Fowles 1982 908-9). Even when Leland makes clear references to dykes like those for Aberford and Offa's Dyke, because he was a sixteenth-century antiquarian, it is unlikely his observations can help us understand the original purpose for their construction.

An examination of two references, one medieval and the other Tudor, to the Cambridgeshire Dykes demonstrates the perils of relying on written evidence that postdates the earthworks. William of Malmesbury in his 1125 *Gesta pontificum Anglorum* (Deeds of the English Bishops) describes a trench built by

Cnut that formed the limit of the legal powers of the abbots of St. Edmunds while Camden implies that the East Angles built the dykes as a defence against their enemies (Camden 1586a 435 and 487; R.C.H.M.E. 1972 144; Preest 2002 101). Despite William of Malmesbury's reference being the older, it seems the less plausible as the reference to the dykes in the *Anglo-Saxon Chronicle* predates Cnut by a century. Oddly, William of Malmesbury makes no mention of Cnut digging a trench or dyke in his *Gesta regum Anglorum* (Deeds of the kings of the English) despite including long passages dealing with Cnut's actions in East Anglia (Mynors 1998 (2006 edition) 316-25).

As well as direct records of dykes, some more oblique references may help us to understand the motives behind dyke building. A thirteenth-century chronicler, Matthew Paris, describes the wooded part of Hampshire where the east Hampshire dykes are located as the most infamous for robberies and murders in England (Vaughan 1986 169-72). Perhaps these dykes were built to prevent raids or lawlessness in this part of east Hampshire, but it is not certain that these dykes are early medieval or that conditions in the thirteen century matched those when the dykes were built.

The complete lack of evidence for forts or barracks at dykes means that they almost certainly had no permanent garrison so there would need to be a mechanism to summon locals to man the dyke in times of unrest. The Orkenyinga Saga, written around 1200, talks about the extensive system of warning beacons set up around the Orkneys to warn of raiders and to signal the locals to prepare to defend their land and we know the West Saxon kings developed a system to warn of Viking attack (Pálsson and Edwards 1978 123-24 and 131-32; Hill and Sharp 1997). Perhaps a similar set of beacons summoned people to man the dykes as imagined by Tolkien in Lord of the Rings.

If some dykes served a religious purpose, for example defining a sacred space, Horning Dyke is the best possible candidate for such a scenario as it delimits a

peninsula containing a monastery, St Benedict's Abbey. If the monastery was early medieval in date then it would coincide with the period most dykes were built, but the accounts of this monastery's founding are rather confused (Licence 2004; Licence 2006; Pestell 2008 20). According to the 'Chronicle of John of Brompton' (written between 1340 and 1377) and the late thirteenth-century 'Lesser or Little Chronicle', an Anglo-Saxon hermit called Suneman founded the community on land given by an otherwise unknown monarch named Horn; subsequently the Vikings destroyed it before a certain Wulfric re-established the monastery during the time of Cnut. There are no other Anglo-Saxon records that mention a Suneman and another thirteenth-century chronicle, the *Chronica Johannis de Oxenedes*, significantly completely omits Suneman and only mentions Wulfric suggesting Suneman and Horn were fabricated to give the abbey greater antiquity (Ellis 1859 291; Licence 2004 367; Pestell 2008 20). White in 1854 claimed the monastery was so well defended (by the dyke perhaps) it held out for some time against William the Conqueror, but no source was found to corroborate this (White 1854 544).

3.1.6 Roman and early continental sources

Although they would obviously have no knowledge of dyke building in early-medieval Britain there are Roman and early-medieval continental writers whose works may give us some relevant insights. We have already mentioned the *Epitoma Rei Militaris* by Vegetius, a Roman military handbook, when calculating the number of labourers needed to build dykes and suggested that similar books may have been one of the military manuals Gildas claimed the Romans left for the Britons: '*exemplaria instituendorum armorum relinquunt*' (Winterbottom 1978 22 and 94; Erskine 2007 98).

If the Britons did have this manual (or similar ones), then their dykes should display more evidence of Roman sophisticated military techniques (like the

ankle-breaker/cleaning slots, revetments and v-shaped ditches[1] found on some early-medieval dykes) and Anglo-Saxon earthworks should be more primitive. Archaeologists have only found good evidence for all three of these techniques at Wat's Dyke and West Wansdyke, while East Wansdyke, Heronbridge and the Giant's Grave in Wales display two of these three features. Trying to decide which dykes are 'British' and which 'Anglo-Saxon' is highly problematic; the Britons could have built Wansdyke and the Giant's Grave, but Wat's and Heronbridge are west-facing earthworks on the Mercian-Welsh frontier. If the majority of v-shaped ditches faced east and the u-shaped ditches faced west then perhaps we could conclude the Britons used more sophisticated engineering techniques, but the majority of probable early-medieval dykes with v-shaped ditches faced west. Interestingly, the v-shaped ditches original to Roman town defences often gave way to u-shaped ones and that seems to be the case with Fleam Dyke. Perhaps it was a border between two British kingdoms later turned by the English into a less sophisticated dyke marking the western frontier of the East Angles, but this probably stretches the evidence.

Erskine and Fowler have both claimed that excavations of West and East Wansdyke demonstrate that they were built in a Roman tradition possibly using *Epitoma Rei Militaris* (Fowler 2001 197; Erskine 2007 98-105). Fowler asserted that there are gaps in East Wansdyke situated at regular intervals (every 800 yards or 730 metres, roughly half a Roman mile) that were perhaps 'gateways' which worked rather like the milecastles on Hadrian's Wall while the hillforts in West Wansdyke (notably Maes Knoll and Stantonbury) functioned like the forts of Roman frontiers. However, even his map has the 'gateways' at far more irregular intervals, none have been excavated so they may be later cuts by farmers and none of the hillforts have any evidence of early-medieval occupation so they might have been incorporated merely to save on labour while Erskine found no similar gaps in West Wansdyke (Fowler 2001 180). Without proof that the 'gateways' are original features spaced at regular intervals Wansdyke looks no more Roman in style than, say, Wat's Dyke.

[1] The most difficult shape of ditch to dig effectively without it collapsing is a v-shaped ditch; this type of ditch is also the most effective barrier and the hardest to maintain (suggesting that they were designed to be a short-term structure).

Without the forts, milecastles and turrets of Roman frontiers, early-medieval earthworks do not look particularly Roman and ‘British’ dykes look very similar to ‘Anglo-Saxon’ dykes, though we should allow for the possibility that early-medieval dyke builders thought or intended that their works emulated those of the Romans.

According to a recent book by Blake and Lloyd, when the Augustan History (written about 297) records that the Emperor Septimus Severus built a wall across Britain from sea to sea it is referring to Offa’s Dyke (Blake and Lloyd 2000 60-67; Tyler 2002 192-94). Archaeological evidence such as an excavation (at SO258896) that clearly demonstrated the dyke cuts a Roman road with no evidence of a gateway suggests Offa’s Dyke is correctly ascribed to after the end of Roman rule (Houghton 1957-60). The Romans used mass produced pottery, coinage and inscriptions; their frontier works have associated forts, gateways, watchtowers and milecastles yet Offa’s Dyke has not produced any such evidence. As well as the archaeological evidence that Offa’s Dyke postdates the Romans, Blake and Lloyd’s theory contains numerous basic errors and sweeping assumptions riddle their book (Parkins 1876 277; Godsal 1913 12-13; Fox 1955 40-44; Matthews 2001a; Matthews 2001b; Hill and Worthington 2003 82-85 and 100). They assert archaeologists have found Roman artefacts within the body of Offa’s Dyke, but this has no basis in fact and that the Anglo-Saxons have no history of building huge earth banks which is palpably false (Blake and Lloyd 2000 65). We know that Hadrian’s Wall was heavily refurbished by Severus and that he was fighting in northern, not western, Britain so it is likely that the author the Augustan History meant that structure (Graham and Embleton 1984 11; Woodside and Crow 1999 46-50). Offa’s Dyke is quite clearly not a wall and does not reach from sea to sea so we have no good reason to abandon King Offa as the architect.

3.1.7 Maps

Though this study consulted many maps during the compilation of the appendix for evidence of destroyed sections, cartographic images of dykes are usually too recent to help date them. The earliest map to show a possible early-medieval dyke is John Speed's map of Flintshire from around 1600 which purports to show the course of Offa's Dyke, though from the location it seems he confused it with Wat's Dyke (Hill and Worthington 2003 38-39). Cranborne Chase Grim's Ditch is shown on a 1618 map, the Black Dyke on Warburton's 1716 map and Nichols' 1795 map shows King Lud's, but even Moule's 1830 county maps only show Offa's Dyke and Devil's Dyke in Cambridgeshire (Nichols 1795 305; Spain 1922 122; Gover, Mawer et al. 1939 16; Gelling 1971-2 248; Moule 1990 27 and 95). Often it is not until Ordnance Survey maps from the 1880s that we can get clear cartographic evidence of most dykes and this, of course, is after the Agricultural Revolution and the Industrial Revolution.

Map evidence does have some use. It is often assumed that the boundaries of the historic shires and parishes of England remained largely unchanged prior to 1974, but the Victorians undertook major reorganisations (for example the 1888 Local Government Act) which is why this study used the earliest versions of Ordnance Survey maps when calculating which sections of dykes were contiguous with parish boundaries.

Just three kilometres south of the Grim's Bank, Padworth, the parish boundaries of Silchester and Mortimer West End form a circle 4.5 kilometres in diameter around the abandoned Roman city of Silchester (Biddle 1976 334; Cleary 1989 198). Perhaps this cartographic evidence demonstrates some continuity in the administrative organisation around the town and supports the claim that the dyke formed part of the outer defences in the post-Roman period. The north half of this circle forms a northward bulge or salient in the otherwise largely straight west-east northern border of Hampshire (on either side of this bulge the country border follows Roman roads that radiate west and east out of

Silchester). Hinton claims this salient only appeared in 1894 when Mortimer West End was detached from another parish, Stratfield Mortimer, which is based across the border in Berkshire (Hinton 1981 57). The name of this parish was derived from an Anglo-Saxon estate whose name, (Stratfield or stony field), suggests an area where the old Roman road passed though fields or even heathland, not a surviving bustling settlement (Gelling 1976 809; Hinton 1981 57). Although Mortimer West End only became a parish in the late nineteenth century, Stratfield Mortimer used to be split between two shires so the county border always bulged northward around Silchester. This bulge can clearly be seen in Moule's 1830 map of Hampshire and less obviously in Speed's 1611 map (Moule 1990 51). There is, however, a long gap between the end of Roman rule and the earliest maps showing this bulge so the two may not be related; the dyke and the salient could even relate to the oppidum that the Roman built their town on.

3.1.8 Summary of written sources

Medieval sources suggest this was a time of small-scale warfare (often raids designed to capture slaves or cattle). Though the scribes record the deeds of kings, they rarely associate them with dykes. As charters record dykes as mere landmarks when describing estates, it seems the earthworks were earlier in date and had fulfilled a short-term purpose that was largely forgotten.

3.2 Place-names and names of dykes

This section will look at place-name evidence, a subject reliant on written evidence but worthy of a separate study as the names of the various earthworks (and some nearby place-names) could have some bearing on the origins of early-medieval dykes.

Place-names can possibly help us both date an earthwork and descriptive names could gives us indications as to how they functioned. If a name is not recorded until relatively recently but seems to be derived from Old English this might suggest that the dyke was early medieval; for example, the name Bury's Bank is probably from the Old English 'burh' though it was not recorded until the eighteenth century (Gelling 1971-2 248). Gelling proposed that series of *–sæte* place-names along Offa's Dyke (for example Alcester near Church Stoke, which is a later corruption of *Halhsæte*, and Tempister, a corruption of *Temesæte*) might mark a reorganisation of the border areas into districts each with a responsibility to maintain a section of the earthwork (Gelling 1989 199-201). While such theories are interesting, they are difficult to prove or disprove and such names are found in Wessex; the earliest form of Dorset ends in –saete (Hinton 1998 44).

The name of Combs Ditch has forms that look early medieval and seem original (Cunucces dich, Cunnucesdic, Concresdic and then Combs Ditch) but they have drastically different meanings, so we should treat even early names with some caution. The name superficially appears to derive from the old English for a valley ('cumb'), but the local hundred is recorded in the Domesday Book as Concresdic, Old English for King's dyke (Sumner 1931 59; Mills 1980 70-71; Thorn and Thorn 1983). As we have seen though, the name is given as Cunucces dich/Cunnucesdic in Anglo-Saxon charters (Forsberg 1950 204-5; Crawford 1951 63; Mills 1980 70-71). 'Cun' is often found as a British name element and means chief/lord or hound in Cornish (the nearest Brythonic

tongue to Dorset) while the –uc is probably derived from the ak/ek suffix used to make a noun into an adjective thus Cunuc means 'lordly' (Jackson 1982 30; Morton-Nance 1999 33 and 192). In early-medieval British languages, 'dog' was considered a creature of status associated with hunting, fighting and loyalty. Unfortunately, we do not know who Cunec was; there is no sufficiently similar name in the written or epigraphic evidence from southwest Britain though he was probably a local leader. Alternatively, Cunec may never have existed and the scribe merely used a rather eclectic spelling of the Anglo-Saxon word for king: *cynig* (Crawford 1951 63).

Some dykes have multiple names that are not simply mutations of a single original and we cannot be certain which name came first. Sources give four different names to Bichamditch in Norfolk. It is Bichamdic in a charter dated 1053 (S 1108), in the Hundred Rolls of 1275 it is Micheldick ('great dyke' in Old English), in a 1332 Subsidy Roll it is Bynne Ditch while in the eighteenth century it is called Devil's Dyke (Williams 1923; Clarke and Clarke 1925 85; Clarke 1941 180). Though the first two names appear Anglo-Saxon, we cannot be certain which was the original and as the meaning of the names Bichamdich and Bynne Ditch are uncertain.

We do know the identity of one person whose name is attached to a dyke, King Offa. As we have seen, the first written record, Asser's, postdates Offa by a century. It is impossible to tell if written references that postdate Asser which also call the dyke Offa's, for example an 1184 Pipe Roll (Pipe Roll 30 Hen. II) and a thirteenth-century deed to land near Rhiston, are independent and can be used as corroborative evidence of the ascription of the Mercian king to the dyke (Fox 1955 1 and 281; Noble and Gelling 1983 40). Griscom's survey noted how most early references to the earthwork, like Symeon of Durham's in the twelfth century, blatantly copied Asser, but the life of St Oswald (written about 1165) which claims the dyke was built to stop Welsh raids, is only partly based on Asser (Griscom 1925 98-99). There are references from the eighteenth century to parts of Offa's Dyke in Shropshire being called Devil's Ditch (Parkins 1876 275; Hill and Worthington 2003 38). The written evidence from Wansdyke

possibly suggests that even this thoroughly Anglo-Saxon name was not original. As we have seen, the earliest surviving written reference to Wansdyke (the charter dated 825) calls it 'the old dyke' (*ealdandic*) though it does record the nearby prehistoric burial mound as '*wodnes beorge*' or Woden's Barrow (Grundy 1919 159-64; Fox and Fox 1958 14; Bonney 1973 478; Fowler 2001 188). The barrow is also recorded under that name in the *Anglo-Saxon Chronicle* in entries dated 592 and 715 neither of which mentions the dyke (Bately 1986 25 and 33; Irvine 2004 22 and 35). As the earliest charters to call the earthwork Wansdyke (or rather *Wodnes dic*) date to the tenth century, perhaps the earthwork acquired the moniker Woden from the nearby barrow around that time (Grundy 1919 190, 213-14 and 241; Gover, Mawer et al. 1939 17; Fox and Fox 1958 40-42; Myres 1964 10).

Some dykes were named after pagan gods prompting scholars to link such names with the date of the introduction of Christianity in the local area. Since the days of Camden writers have assumed that because the name Wansdyke derives from the name Woden, the earthwork must predate the conversion of the West Saxons in the 630s (Camden 1586a 101; Myres 1964 9; Bonney 1973 478). Godsal claimed Wansdyke was named after Woden as crossing it and invading was an act of blasphemy punishable by death (Godsal 1913 21-22). If the name is tenth century and long postdates the building of the earthwork, then theories linking the dyke with the conversion to Christianity are unfounded. Dumville thinks the West Saxon association with Woden is a late phenomenon and the original primary Saxon god was Saxnot (Dumville 1977 77-79). Indeed, the name Woden did not immediately drop out of use after the conversion as he became associated with royalty and is recorded as the mythical ancestor to the West Saxon kings without comment both by the *Anglo-Saxon Chronicle* and by Bede (Colgrave and Mynors 1969 1:15; Bately 1986 1 and 25; Reynolds and Langlands 2006 33-34).

Perhaps early Christians renamed earthworks with pagan monikers after the Devil in order to discredit the old religion suggesting such names are possibly early medieval (Whitlock 1979 7 and 16). Unfortunately, references to

Bichamditch and Offa's Dyke as Devil's Dyke/Ditch are relatively recent. Evidence of the association of the Devil with Devil's Ditch in Cambridgeshire dates to 1574, the mid-twelfth century account of Hereward the Wake called it *fossum de Reche* (or Reach Dyke) while thirteenth-century sources simply called it the big dyke or '*magnum fossatum*' (Gray 1928-30 85-86; Reaney 1943 34; Malim, Penn et al. 1996 98-100). Rather than dating to the conversion, an association between a dyke and a supernatural figure seems more likely to have arisen much later when locals ascribed the name to a feature they did not understand. Perhaps dykes were given names associated with pagan gods or the Devil because there were in a border zone, a sparsely inhabited liminal area between settled regions, areas where the new Christian God did not hold sway (Turner 2006 188). This argument is possible, but like all theory-led arguments is impossible to prove or disprove. It is entirely possible they postdate the initial construction of the dyke so while they may give insights into later perceptions of some of the earthworks, they may tell us nothing about why they were built.

While some stories of the origins of a dyke's name may have far greater antiquity than the first manuscript they appear in, later people, for example in the eighteenth or nineteenth centuries, were more than capable of fabricating explanations of enigmatic features. The origins of the name Bolster Bank demonstrates how quickly a name rendered incomprehensible by changes in the language can attract stories fabricated to explain a feature. The dyke is first recorded as Bothlester in 1398: a rather apt description as in Cornish *both* is a protuberance, *lester* a boat and the dyke does indeed resemble the shape of an upturned boat (Johnson 1980 79; Padel 1985 246; Morton-Nance 1999 13 and 98). Writers record other prosaic descriptive names for the earthwork. Borlase in 1740 said it was also called *Gorres/Gollet/Gullet* and *Kledh* (meaning 'weir/dam' and 'dyke' respectively in Cornish) while Carew in 1602 mentions a nearby mine called *Whilancleuth*, a corruption of *Wheal an Cleth* or 'dyke-mine' (Carew 1602 92; Lysons and Lysons 1814 ccxlvi; McLaughlin 1847 28; Douch and Pool 1975 203; Morton-Nance 1999 23 and 27). Presumably, the popular stories recorded by Borlase in 1769 of a giant called Bolster building the dyke grew up after Cornish died out in the area (which probably happened between

1650 and 1700), which rendered the place-name incomprehensible (Borlase 1769 314; Hunt 1908 73-75; Douch and Pool 1975 203-4; George 1986). If, within a century of their appearance, a writer like Borlase can repeat such stories claiming they are of great antiquity, this should make us cautious of presuming folk tales are of much age. The construction of other Cornish earthworks is also credited to giants or their killers. Dodman is reputed to be the work of a giant, but is also given other largely more prosaic descriptive names like Thica Vosa, Balk, The Bulwark, The Vallum, The Deadman and the Hack and Cast (Lysons and Lysons 1814 ccxlvi; Cornish 1906 458-60; Crawford 1936b 174). The story of Tom the giant killer being responsible for filling the Giant's Grave with one of his victims seems to be yet another story fabricated to explain an ancient earthwork (Crawford 1936b 171-74). It is perhaps significant that none of the elements of the stories surrounding the Giant's Grave contain any Brythonic words suggesting that this legend may not date back to before the eighteenth century when Cornish was the vernacular in the area. Graeme Kirkham, an archaeologist for Cornwall County Council, thought the locals mythologized the names relatively quickly because these earthworks were built as a reaction to relatively short-term conditions (personal communication).

Some scholars have tried to find feasible figures behind the more legendary figures associated with dykes. While discussing King Lud's and The Three Dykes, Nichols in 1795 claimed that according to 'tradition' Lud was killed here, Lud being the legendary pre-Roman king of Britain from Geoffrey of Monmouth's *Historia Regum Britanniae* (Nichols 1795 305; Cox 1998 104). Hoskins suggested Lud might in fact be the Ludeca who became king of Mercia in 826 (Hoskins 1946 8-9; Bately 1986 42; Cox 1998 104; Zaluckyj 2001 (2011 edition) 236; Irvine 2004 45). As the dyke is probably prehistoric, the association with 'Lud' is not recorded before the late eighteenth century and the earliest reference to the earthworks dated 1162 merely refers to *tres fossas* 'three ditches', there is probably no real association with Lud or Ludeca (Hoskins 1946 8).

The name of Hug's Ditch is another example of a name that a scholar has suggested refers to a genuine Anglo-Saxon ruler. Peake wrote that there were local legends which claimed Hugo, king of the Mercians, dug the dyke, but he cited no authority (Peake 1906 275; Peake 1924 234; Peake 1931 122). There is an online reference to a late ninth-century earl of Mercia called Hugh or Hugo 'the great' allegedly the father of Aethelred II, an Ealdorman recorded in the *Anglo-Saxon Chronicle* between 886 and 911 (Bately 1986 53).[1] The earthwork is probably prehistoric so the name is more likely to derive from the Old English 'hoc' (it is recorded as Hokkeddych in 1385), meaning hook or angle; this is apt as the earthwork has dogleg course (Gelling 1973 326).

Interestingly, many prehistoric dykes (or at least dykes that are probably prehistoric) including Leeds Grim's Ditch, Buckinghamshire-Hertfordshire Grim's Ditch, Berkshire Downs Grim's Ditch, South Oxfordshire Grim's Ditch and Cranborne Chase Grim's Ditch were named after Grim (Gover, Mawer et al. 1939 15-16; Crawford 1953 116 and 244-46; Gelling 1953 5; Gelling 1971-2 6; Fine 1976; Copeland 1988). Grim was the Anglo-Saxon god of war, perhaps suggesting that the Anglo-Saxons saw these prehistoric dykes as military structures, but it also became an alternate name for both Woden and the Devil in the tenth century (Gelling 1971-2 6; Zaluckyj 2001 (2011 edition) 49). The earliest reference to an earthwork (in this case the Berkshire Grim's Ditch) being named after Grim is in a charter already mentioned dated *c*.878-899 (S 354). The earliest record of most other Grim names postdate the tenth century and many early charter references to dykes that now bear the name Grim (S336 dated 860 and S 513 dated 944-6 for example) often give the dykes quite different names. This raises the question, which it is impossible to answer, of whether people in the ninth and tenth centuries deliberately gave prehistoric earthworks the moniker Grim and so could differentiate between a prehistoric and, say, a sixth- or seventh-century dyke. This seems unlikely as we find it incredibly hard even with our modern excavation methods to date them.

[1] http://www.geni.com/profile/index/6000000000424707419 and http://fabpedigree.com/s060/f161138.htm

3.2.1 Tables of dyke names

The proportions of the different types of dyke names are expressed in tables below in order to gain further insights into their possible functions. To eliminate later names, only the earliest form is given while those dykes whose name seems to postdate the earliest surveyors of the Ordnance Survey are not classified. Names are classified as personal names (those named after people), descriptive names (names that describe physical aspects of the earthwork), supernatural (named after gods, legendary figures or the Devil), tribal (named after tribes or kingdoms) and topographical (named after nearby features). The descriptive names are further subdivided into military (those that suggests a military purpose), large (names that emphasis the magnitude of the dyke like Large Dyke) and rough (names that mean ‘rough’).

3.2.1.1 Probable early-medieval dykes

Dyke's name (as it appears in the appendix of this study)	Date and form of earliest name with earliest date of alternate names	Meaning of name(s)	Type of name
Becca Banks	?1538 Bekhay	? Back dyke	Descriptive
The Rein	? Rein	Boundary strip	Descriptive
Rudgate Dyke	Modern	N/A	N/A
Heronbridge	Modern	N/A	N/A
Grey Ditch	1661 Grey Ditch	Grey ditch	Descriptive
Clawdd Mawr (Llanfyllin)	? Modern	(Big dyke)	N/A
Crugyn Bank (inc. Two Tumps)	? Modern	Mound-like	N/A
Giant's Grave	Modern	Giant's grave	N/A
Short Ditch	Modern	Short ditch	N/A
Upper Short Dyke	? Modern	Upper short ditch	N/A
Offa's Dyke	893 Offasdic	Offa's dyke	Personal
Rowe Ditch	958 Dic/ 1216-1272 Rogedich	Rough dyke	Descriptive (Rough)
Wat's Dyke	1431 Clauwdd Wade	Wade's dyke	Supernatural
Bran Ditch	1279 Branedich	Steep ditch	Descriptive (Large)
Devil's Ditch	Mid 12th century fossum de Reche/ 13th century magnum fossatum/ 1574 Devil's Ditch	Dyke of the reach/ Big ditch/ Devil's ditch	Descriptive/ Descriptive/ Supernatural
Fleam Dyke	974 Dic/ 1086 Flamingdice	Dyke/ Fugitive dyke	Descriptive
Fossditch	15th Century Burghdyk (or Burdike)/ 1739 Fossdyke/ Late 18th century Devil's Dyke	Fortification dyke/ Bank dyke/ Devil's dyke	Descriptive (Military)/ Descriptive/ Supernatural
Pear Wood	Modern		N/A
Aelfrith's Dyke & Short Dyke	956 Ælfredes beorh & Scortandic	Aelfrith's fortification & Short dyke	Personal & Descriptive (Military)
Bica's	955 Bican dic	Bica's dyke	Personal
Bury's Bank (Crookham Common)	18th century Bury's Bank	Fortification dyke	Descriptive (Military)
West Wansdyke	961 Wodnes dic	Woden's dyke	Supernatural
East Wansdyke	825? Ealdandic/ 903 Wodnes dic	Old dyke/ Woden's dyke	Descriptive/ Supernatural
Bokerley Dyke	944-6 lang dich/ 13th century Blakedounes ditch/ 1280 Bockedic	Long dyke/ Black Down dyke/ Buck dyke	Descriptive (Large)

3.2.1.2 Possible early-medieval dykes

Dyke's name (as it appears in the appendix of this study)	Date and form of earliest name with earliest date of alternate names	Meaning of name(s)	Type of name
Bardon Mill	Modern	N/A	N/A
Catrail and Picts' Work Ditch	1727 Catrail/ 1727 Picts' Work Ditch	War fence/ Picts' work ditch	Descriptive (Military)/ Tribal
Wallace's Trench	?	Wallace's trench	? Personal
Heriot's Dyke	1834 Herriot	Herriot's dyke or army gap	Personal or Descriptive (Military)
Military Way	Modern	N/A	N/A
Bank Slack	?	Stream bank	Topographical

Bar Dyke	**1819 Bar Dyke**	**Barrier dyke**	**Descriptive (?Military)**
Broomhead Dyke	**?1280 ?Bromyheued[1] / 1855 The Side**	**Broom shrub headland/ The side**	**Descriptive**
Dane's Dyke	**1392 Flaynburghdyk**	**Flein's fortification dyke**	**Topographical[2]**
Gilling Wood	**Modern**	**N/A**	**N/A**
Park Pale	**Modern**	**N/A**	**N/A**
Hodic	**1185-91 Hodic**	**Spur dyke**	**Descriptive**
Ruedic	**12th century Ruedic**	**Straight dyke**	**Descriptive**
Tor Dyke	**1485 Teedike**	**?**	**?**
Nico Ditch	**1190-1212 Mykelldicke**	**Big dyke**	**Descriptive (Large)**
Calver Dyke	**Modern**	**N/A**	**N/A**
Aberbechan	**Modern**	**N/A**	**N/A**
Abernaint	**Modern**	**N/A**	**N/A**
Bedd Eiddil	**Modern**	**N/A**	**N/A**
Bwlch y Cibau (west)	**Modern**	**N/A**	**N/A**
Bwlch y Clawdd	**? Modern**	**Pass of the dyke**	**N/A**
Bwlch yr Afan	**Modern**	**N/A**	**N/A**
Clawddtrawscae	**Modern**	**N/A**	**N/A**
Tyla-Glas	**Modern**	**N/A**	**N/A**
Cefn Eglwysilan and Tywn Hywel dykes	**Modern**	**N/A**	**N/A**
Cefn Morfydd	**Modern**	**N/A**	**N/A**
Cefn-y-Crug	**Modern**	**N/A**	**N/A**
Clawdd Llesg	**? Modern**	**Dyke of Eliseg?**	**Personal?**
Clawdd Mawr (Dyfed)	**1891 Clwadd Mawr/ 19th century The Line**	**Big dyke/ The line**	**Descriptive (Large)**
Clawdd Mawr (Foel)	**? Modern**	**Big dyke**	**N/A**
Clawdd Mawr Glyncorrwg/Bwlch Garw	**? Modern**	**Big dyke of Glyncorrwg/ Large pass dyke**	**N/A**
Clawdd Seri	**1200 Clawdd Seri**	**Causeway dyke**	**Descriptive**
Cowlod	**Modern**	**N/A**	**N/A**
Ffos Toncenglau	**Modern**	**N/A**	**N/A**
Fron Hill Dyke	**13th century Rugedich**	**Rough dyke**	**Descriptive (Rough)**
Lower Short Ditch	**Modern**	**N/A**	**N/A**
Pen y Clawdd	**Modern**	**N/A**	**N/A**
Red Hill	**Modern**	**N/A**	**N/A**
Shepherd's Well	**Modern**	**N/A**	**N/A**
Tor Clawdd	**Modern**	**N/A**	**N/A**
Ty Newydd	**Modern**	**N/A**	**N/A**
Vervil Dyke	**Early 12th century Crug**	**Mound**	**Descriptive**
Wantyn Dyke (northern)	**? 19th century Wanten**	**Weak dyke**	**Descriptive**
Lyonshall Bank	**1388/1840 Rowditch**	**Rough ditch**	**Descriptive (Rough)**
Beachley Bank	**956 Dic**	**Dyke**	**Descriptive**
Minchinhampton	**Modern**	**N/A**	**N/A**
High Dyke	**Thirteenth century Heydich**	**High dyke**	**Descriptive**
Bunns' Bank	**1854 Burn's bank**	**Burn's bank**	**Descriptive**
Horning	**Modern**	**N/A**	**N/A**
Panworth	**? Devil's Dyke**	**Devil's dyke**	**Supernatural**
Black Ditch Snelsmore	**?**	**Black ditch**	**Descriptive**
Crookham Common earthworks	**Eighteenth century Berry's Bank**	**Fortification bank**	**Descriptive (Military)**
Grim's Bank Padworth	**1840 Grimmer Bank**	**Grim's bank**	**Supernatural**
Bedwyn Dyke	**778 Vallum**	**Dyke**	**Descriptive**
Mount Pleasant dyke	**Modern**	**N/A**	**N/A**
Inkpen Dyke	**863 Readan dic**	**Red Dyke**	**Descriptive**
Bolster Bank	**1398 Bothlester**	**Boat-shaped mound**	**Descriptive**
Dodman	**? Sixteenth century Dudman**	**Dodman**	**Personal**
Giant's Grave	**? Modern**	**Giant's grave**	**Supernatural**
Giant's Hedge	**1758 Giant's Hedge**	**Giant's hedge**	**Supernatural**
Stepper Point	**Modern**	**N/A**	**N/A**
New Ditch	**? Modern New Ditch**	**New ditch**	**N/A**

[1] The name Broomhead is probably derived from the name for the local area rather than specifically applied to the earthwork.
[2] This name is topographical not personal as Flein's earthwork refers to a nearby earthwork, not the dyke.

Ponter's Ball	**1230-55 St Dunstan's Ditch**	**St Dunstan's ditch**	**Personal**
Battery Banks	**? Napoleonic Battery Banks**	**Battery banks**	**N/A**
Devil's Ditch Doles Wood	**? Modern**	**Devil's ditch**	**Supernatural**
Devil's Ditch Pepper Hills Firs	**? Modern**	**Devil's Ditch**	**Supernatural**
Devil's Ditch Wonston	**900 Greatean dic**	**Great dyke**	**Descriptive (Large)**
Hayling Wood (including branch)	**Modern**	**N/A**	**N/A**
Festaen Dyke (Hartley Witney)	**973-4 Festaen dic**	**Fortification dyke or overgornw dyke**	**Descriptive (Military)**
Faesten Dyke (Kent)	**814 Fæstendic**	**Fortification dyke or overgornw dyke**	**Descriptive (Military)**
Fullinga Dyke	**672-4 Fullingadich**	**Fullinga's dyke**	**Tribal**
Surrey-Kent Dyke	**Modern**	**N/A**	**N/A**

3.2.1.3 Rebuilt/reused prehistoric or Roman dykes

Dyke's name (as it appears in the appendix of this study)	**Date and form of earliest name with earliest date of alternate names**	**Meaning of name(s)**	**Type of name**
Black Dyke	**1303 Black Dyke**	**Black dyke**	**Descriptive**
Scot's Dyke	**? The road dyke**	**The road dyke**	**Descriptive**
Bwlch y Cibau (north)	**? Modern**	**N/A**	**N/A**
Bichamditch	**1053 Bichamdic / 1275 Micheldick/ 1332 Bynne Ditch**	**?/ Big dyke/ ?**	**?/ Descriptive (Large)/ ?**
Black Ditches	**? Modern**	**N/A**	**N/A**
Devil's Ditch Garboldisham	**? Modern**	**N/A**	**N/A**
Launditch	**1203 Lawendich**	**Lawa's dyke**	**Personal**
Harrow-Pinner Grim's Dyke	**1306 Grymesdich**	**Grim's dyke**	**Supernatural**
Combs Ditch	**942-3 Cun(n)ucesdic**	**Cunuc's dyke**	**Personal**

This final table summarise the evidence (if a dyke has a name or names that fall into two different categories each meaning is counted as a half which is why some totals are not whole numbers).

	Probable early-medieval dykes	Possible early-medieval dykes	Rebuilt or reused prehistoric dykes	Total
All descriptive	9½ (59%)	23 (62%)	3 (50%)	35½ (60%)
Descriptive (Military)	2 (13%)	3-5 (8-14%)	0	5-7 (8-12%)
Descriptive (Large)	2 (13%)	3 (8%)	1 (17%)	6 (10%)
Descriptive (Rough/Overgrown)	1 (6%)	2-4 (5-10%)	0	3-5 (5-8%)
Personal	2½ (16%)	4½ (12%)	2 (33%)	9 (15%)
Supernatural	3 (19%)	6 (16%)	1 (17%)	10 (17%)
Tribal	0	1½ (4%)	0	1½ (3%)
Topographical	0	2 (5%)	0	2 (3%)
Total	16	37	6	59

This table demonstrates that while the actual percentages change within each subgroup, the proportions of each different type is roughly similar (for example Descriptive is the largest group with Tribal/Topographical the smallest).

Some of the descriptive names are very vague and concise (two are just named *dic*) suggesting that the purpose of the dyke or the builder was either unimportant or soon forgotten. While nearly a quarter of dykes have names that either suggest a military purpose or stresses the enormity of the earthwork, later people may have made an incorrect assumption about the role of an earthwork which had long fallen out of use. Just two descriptive names stress the slightness of the earthwork (Wantyn Dyke possibly means ‘weak dyke’ and Scotandic is Short Dyke) while only two possibly suggest a barrier or trade barriers (Bar Dyke and The Rein); none suggest a religious purpose. The ‘rough’ names are concentrated in and around Herefordshire and according to Freeman, the English Place-Name Society editor for Herefordshire, the Anglo-

Saxons gave the name ‘rough ditch’ (Old English *rūh-dīc*) to earthworks they found abandoned and overgrown (personal communication). There is Row or Rue Ditch in Hereford, a thirteenth-century document calls Fron Hill Dyke in Wales Rugedich and documents apply the name Row Ditch to Lyonshall Bank. The name is also recorded in an Anglo-Saxon charter dated 964 (S 725) for an earthwork dyke in Berkshire not included in this study and to the Ditch Bank in Wales (Noble and Gelling 1983 51). The name could mean the dyke was an older British structure abandoned long before the Anglo-Saxons arrived or just a roughly built dyke; both explanations suggests these dykes had temporary purposes.

There are surprisingly few dykes named after people and even when they are, often the names are later inventions rather than the personal name of the actual builder of the earthwork; similarly, Crawford has noted the names given to barrows may not be people buried there, but the owner of the land (Crawford 1951 63). If dykes were built to unify and consolidate kingdoms, place-name evidence can be used to support this hypothesis in a few cases. Offa’s Dyke clearly defines the western border of the kingdom ruled by that king while Clawdd Llesg may defend the heartland of Powys, a kingdom ruled over by Eliseg who may have given his name to that earthwork. It is also certainly possible local leaders called Aelfrith and Bica ordered the building of the (boundary) dykes that bear their names. While Offa, Lawa and Eliseg also may have ordered the construction of earthworks named after them, the names of Wallace’s Trench and the Picts’ Work Ditch are less useful as evidence of the original builders and are probably later inventions. As Combs Ditch is a rebuilt prehistoric earthwork, Cunec (if that was his name or if it just refers to an unnamed king) may have merely been an early-medieval leader who ordered the refurbishment of an existing structure not the original builder. If dykes were designed to assert the power and prestige of a ruler, kingdom or tribe, it failed in the long term in the case of Aelfrith, Bica, Cunuc, Lawa and the Fullingas who have faded from history, but Offa, from the time of Asser onwards, has always been associated with the earthwork that bears his name.

3.3 Scientific and archaeological evidence

3.3.1 Archaeological evidence

As well as the excavations of individual dykes already mentioned, wider archaeological evidence such as burials, coinage and pollen evidence gives us further insights into the societies that built them.

Unfortunately, the period 400 to 850 is notorious for the lack of archaeological evidence; while pagan Anglo-Saxon burials have produced numerous finds, the Britons are particularly hard to detect archaeologically (Campbell 1982b 27-29 and 41; Higham 1992 80-82; Brickstock 2000; Dark 2000a 53-57; Evans 2000; Faulkner 2000 174-75; Härke 2011 6). While this could represent a catastrophic decline in population and living standards caused by the end of Roman rule, it is also possible it is a symptom of the use of less durable materials. Changes from, say, mosaics to ornate rugs and from ceramic to wooden bowls would cause the same apparent decline in material culture (Dark 1994 53-57 and 174-75; Dark 2000a 56). Historians should be cautious of arguing from a lack of evidence, but perhaps a lack of finds from an excavation of a dyke may even be considered evidence in favour of an early-medieval date given the paucity of pottery and coins from this period

Coin evidence is particularly problematic as the minting and importation of large amounts of coinage ceased around the same times as the collapse of Roman rule (Dark 1994 200-06; Brickstock 2000; Cleary 2000 91; Williams 2008 11-13; Higham and Ryan 2013 50-51). The growth of metal detecting and the Portable Antiquities Scheme has increased the numbers of coins recorded from the fifth and sixth centuries, but they are usually high-value imported examples valued for their precious metal content (as jewellery or talismans) rather than used as tokens for exchange (Campbell 1982a 62; Dark 1994 200;

Dark 2000a 54; Williams 2006; Williams 2008 12-13 and 25-26). The lack of a monetary system of exchange from the fifth to the seventh centuries makes it unlikely that there was enough internal trade to justify building huge earthworks to control it especially as only one Mercian coin has been found in Wales (Arnold and Davies 2000 178).

Anglo-Saxons started to mint high-value gold coins in the early seventh century and in the late seventh century trading settlements emerged with lower denomination silver coins appearing in sufficient numbers to suggest widespread commerce, though this was mainly restricted to south-east England (Sawyer 1977 140; Campbell 1982a 62-63; Ulmschneider 2000 63; Zaluckyj 2001 (2011 edition) 193-94; Hindley 2006 113; Pestell and Umlschneider 2007; Hodges 2008; Williams 2008 14-28). Coinage became an expression of royal authority and a medium for royal propaganda; Offa reintroduced the minting of gold coins and was the first king to mass produce royal coinage, portraying himself as a Roman emperor (Williams 2008 9, 15-15, 31 and 35-40). Interestingly, neither Offa's nor any other coins picture a dyke or give the ruler an epithet related to dyke-building (king X 'the dyke builder' for example).

If the main purpose of early-medieval dykes was to create or reinforce a sense of identity, we perhaps should be able to map the distribution patterns of culturally distinctive artefacts and correlate the pattern with the earthworks. Anglo-Saxon material culture is very distinct from that of the native Britons, though historians argue about how much this is a reflection of a cultural affinity or of ethnicity (Higham 1992; Härke 2011). The debate as to whether the Anglo-Saxon settlement (or *Adventus Saxonum*) was a mere cultural change, a takeover by a group of warriors or a mass migration is large and complex so best laid aside for the purpose of this study (Härke 1998; Hills 2003; Russel 2007; Härke 2011; Winney, Boumertit et al. 2012). British inscribed memorial stones are found overwhelmingly west of either Offa's Dyke or Bokerley Dyke; equally all finds of Anglo-Saxon pagan burials, early brooches and early coins come from east of Offa's Dyke (Campbell 1982a 62; Campbell 1982b 36; Higham 1992 94 and 170; Härke 2011 3). This suggests there is some

correlation on a macro scale between the location of those dykes and the distribution of culturally significant artefacts.

Historians in the past have followed Bede in dividing the early-medieval English into Angles, Saxons and Jutes, but this approach is now largely out of fashion (Campbell 1982b 29-30; Higham 1992 176-78; Williamson 2010 148-49). There are some definite regional variations in Anglo-Saxon archaeological finds for example there are more cremations in northern and eastern England and more inhumations in the south while brooches tend to be saucer-shaped in the south and cruciform in the north (Higham 1992 163 and 170; Williamson 2010 148). Unfortunately, this division through the central midlands and along the Essex-Suffolk border is not marked by any earthworks, though it is possible to argue that the dykes in Cambridgeshire may be a rather inexact match for a small part of the divide. The dykes near the western border of Kent (the Surrey-Kent Dyke and the Faesten Dyke) could mark the western border of the Jutes of Kent, but neither earthwork is properly dated, so the location may be coincidental.

If the dykes do not match the general divisions in material culture in the English zone then perhaps they do mark subtler regional divides and scholars have tried to match the dykes of East Anglia against the distribution of archaeological material or features. Green *et al* suggested the distribution of Anglo-Saxon Illington-Lackford pottery was limited on the west by the Cambridgeshire Dykes, though the map they produced does show a very limited distribution east of the earthworks, there was also one find spot west of the dykes and another between two of the earthworks (Green, Milligan et al. 1981 224). Scull claimed that the distribution of different styles of early-medieval pottery was limited by the various Norfolk dykes, which probably reflected an expression of a transient hegemony that did not become a permanent territorial division, but gave insufficient supporting evidence to make this claim convincing (Scull 1995 75). Anglo-Saxon funerary customs on both sides of the Black Ditches in Suffolk are too similar to suggest they marked a cultural frontier (West 1985 170; West 1988). This inconclusive evidence makes it very difficult to sustain a case for

any dyke other than those along the Anglo-Welsh border and possibly those in Dorset marking distinct cultural or even ethnic borders.

While written sources suggest a society plagued by raiding, this could be clerics trying to give a moral message either by pointing out the terrors of secular society or lauding the bellicosity of a king so it is necessary to examine the archaeological evidence for corroboration. If dykes had a defensive role, then perhaps enclosed defended settlements like burhs replaced them. Enclosed Anglo-Saxon settlements generally date to after or at least near the end of the main period of the dyke construction though in western Britain there is a propensity for the fifth/sixth-century elite to reoccupy Iron-Age hillforts (Burrow 1981a 123; Reynolds 2003 117).

If war leaders and kings often carried out raids for cattle as suggested by the written sources we should be able to detect this in the bone finds from elite settlements. At Dinas Powys the bones assemblage initially led Gilchrist to suggest the source was local dairy production, but more recently it has been reinterpreted as evidence of raiding (Gilchrist 1988; Arnold and Davies 2000 166). As well as the theft of cattle there is evidence, in particular from the Staffordshire Hoard, that raiders took high-status metalwork from their defeated enemies (Zaluckyj 2001 (2011 edition) 275-76; Leahy and Bland 2009; Klemperer, Greaves et al. 2013). The hoard, dated to 650-700, was found near Lichfield in Mercia; it contained numerous ornate fittings stripped from many swords, knives and shields as well as jewelled crosses.

What is striking about Anglo-Saxon burials is the numbers of weapons found with them and these can possibly tell us about early-medieval warfare (Härke 1989; Lucy 2000; Lucy and Reynolds 2002). This phenomenon could relate to status rather than reflect what equipment a person regularly carried: not every person buried with a spear was necessarily a warrior (Härke 1989 59; Reynolds 2009 34-35). These buried weapons do look functional and the Anglo-Saxons must have manufactured sufficient arms to allow them to often place one in the

ground whenever a loved-one passed away; about 47% of Anglo-Saxon pagan male inhumations contained a weapon (Hawkes 1989 158; Härke 2011 6-7). 86% of weapons burials contained a spear, 45% shields, 11% swords, 4% a *seax* (or hunting knife), 4 % axes and 1% arrows; helmets and chain mail are extremely rare (Härke 1989 54-55; Underwood 1999 23-106). These proportions probably reflect the range and proportions of weaponry in Anglo-Saxon society though bows, being composed entirely of organic material are possibly underrepresented (Underwood 1999 26). The burial evidence suggests that not only are swords rare, but also, like helmets, they are usually found in high status burials. The balance of an Anglo-Saxon sword is halfway down their heavy blade suggesting it was designed for hacking downwards on the head of an enemy; Viking and later swords have a balance point nearer to the hilt to allow thrusting and parrying (Bone 1989; Lang and Ager 1989; Underwood 1999 50). Most weapon injuries detectable on a skeleton from Anglo-Saxon burials are from the head and shoulders consistent with the downward sweep of a heavy sword rather than a thrusting motion (Wenham 1989; Underwood 1999 62; Reynolds 2009 40-46).

It is worth briefly examining the archaeological evidence of weaponry in the Netherlands, northern Germany, Denmark and southern Sweden, the traditional ancestral home of the Anglo-Saxons (Hines 1989 35-39; Anderson 2003; Ilkjær 2003; Jensen 2003). In addition to the normal furnished cemeteries, there are mass deposits of weapons in bogs that probably represent the ritual deposition of the equipment of defeated armies. By analysing the numbers of weapons at each deposit, we can see the relative size of armies (with the proviso that we cannot know how many weapons the victors kept for themselves or left on the battlefield). At Esjbøl-North archaeologists uncovered the remains of 60 swords, 150-175 shields, 203 throwing spears tips and 191 ‘lanceheads’ (tips for heavier spears that were not thrown) suggesting any army of a little over 200. Other sites produced assemblages in similar proportions suggesting armies between 20 and 300 strong (finds with more than 300 weapons were almost certainly multiple deposits). These relatively small numbers of soldiers armed predominately with spears but led by small elites with swords is comparable

with the evidence from England, though powerful kings like Penda could probably mobilise a much larger force when necessary (Colgrave and Mynors 1969 3:24; Hawkes 1989 3).

3.3.2 Pollen and other environmental evidence

General regional or national trends in environmental evidence may give background evidence of the societies that built the dykes and samples taken either from immediately under the bank or in the lowest fill of the ditches of individual earthworks can tell us what kind of landscape they were built across. Our inability to accurately date early-medieval dykes though, renders largely futile any attempt to use pollen and other environmental evidence from nearby sites to reconstruct the general local environmental conditions. There is good pollen evidence from near the Black Ditch on Snelsmore Common and near Bunn's Bank in Norfolk, but as there is no clear dating evidence for these dykes matching them to specific changes in the adjacent landscape is not possible (Rippon 2010 57-58). Offa's Dyke presumably dates to sometime during his reign (756-797), but the order for the construction of such a long dyke may not relate to circumstances unique to the immediate vicinity of any particular location along the dyke.

Modern archaeologists can use various types of environmental evidence to ascertain what local conditions were like in the past. One of these methods is pollen evidence, a branch of Palynology, where the surviving pollen (which is usually only found at waterlogged sites) is analysed in order to ascertain what was the principle vegetation in the past. Archaeologists take samples from different depths (dated using radiocarbon dating if there are no dateable finds) and then use a microscope to count the different types of pollen. They must be cautious of certain factors for example the propensity for certain species to produce more pollen per plant or to be able to spread it wider than other species so a standardised multiplier is needed. When presenting the evidence archaeologists can either use absolute numbers of pollen in each layer or percentages (though the percentage method cannot tell us if the total amount of vegetation declines or rises if the overall proportions of different species remains the same). As well as pollen evidence, archaeologists use other

evidence such as macrofossils of large plant remains, the remains of insects, mollusc shells (in particular snails) and evidence of alluvial deposits. Some species of insects and snails thrive in specific environmental conditions so can be very useful indictors of the past environment.

The published summaries of the pollen evidence from the early-medieval period all paint a broadly similar picture across Britain (Higham 1992 77-80; Dark 1996; Straker 2008; Rippon 2010). There is no significant increase in tree pollen suggesting no wholesale abandonment of agricultural land after the breakdown of Roman rule, though was some expansion of woodland in marginal areas in northern England, lowland Scotland, the Forest of Bowland, Bodmin Moor and some less fertile lowland areas (Higham 1992 77-78; Mackay and Tallis 1994 579; Tyers, Hillam et al. 1994; Huntley 2000; Straker 2008 167-68). This is partly explained by the withdrawal of Roman troops from the frontier zones which removed a ready market for agricultural produce in areas ill-suited to arable production so farming was either abandoned or the locals reverted to pastoral activities (Dark 2000b 85). There also initially seems to be a move to pasture and away from cereal production; then both pollen evidence and alluvial deposits suggest an intensification of agriculture in the eighth century especially in areas like the east midlands and East Anglia probably linked to the growth in trade and nucleated settlements (Rippon 2010 57-58).

3.3.3 Geophysics

One scientific advance that archaeologists have already used to increase our understanding of dykes is geophysics (Gaffney and Gater 2003). The earliest recorded uses on British dykes were an attempt to find evidence of a gateway in Wansdyke (the published report gives no exact date but suggests it occurred between 1966 and 1970) and a resistivity survey in 1976 of Grim's Ditch in Yorkshire (Green 1971 134; Wilmott 1993 61). Geophysics can find sections of dykes that farmers in the past have ploughed flat, but care should be taken with this technique. Farmers often utilise dykes as field boundaries and may construct a hedgerow that continues on the same alignment past where a dyke originally ended so, unless we excavate, a geophysics reading that suggests a dyke was originally much longer may just be showing a later field boundary.

3.4 Comparisons with dykes from other periods and places

This section will compare British early-medieval dyke building with dykes from other periods (prehistoric, Roman and later medieval) as well as examples from other countries. While it is dangerous to assume that dykes from other countries or even British dykes from different periods fulfilled similar purposes, a study of a phenomenon that treats it in isolation is surely flawed. It was impossible to go into the same level of detail, especially with foreign dykes, as was undertaken on early medieval dykes so only those directly relevant are discussed.

3.4.1 Earlier and later British walls and dykes

As we obviously have no written records we are probably even less likely to understand the purposes of prehistoric dykes than those of an early-medieval date. Witness Sauer's study of Aves Ditch that contains fifteen pages discussing the issue with numerous comparisons with other earthworks, but can only tentatively conclude it was possibly a tribal boundary and even then adds a question mark to the statement (Sauer 2005 30-45). Some earthworks may have been trackways or cattle droveways, others probably demarked land divisions or were at the edge of wasteland to delimit a group's cultivated territory; some look like they fulfilled a defensive role while many appear to be territorial boundary markers (Spratt 1978; Spratt 1989 v). It is perhaps significant that while there are few finds from excavations of prehistoric dykes, they have produced contemporary pottery sherds and metal objects (Hinchcliffe 1975 133-34; Davis 1981 23; Mackie and Morgan 1993 7-13; Cracknell and Hingley 1995 54). Pottery finds from early-medieval dykes are invariably prehistoric or Roman pottery sherds sealed under the bank or residual material incorporated into it. As already mentioned, early-medieval sites in general produce little pottery and the pollen evidence does suggest prehistoric dykes cut through more intensively cultivated areas, which may explain the contemporary finds.

Comparisons with securely dated prehistoric earthworks can help date the more enigmatic possible early medieval dykes. One distinct group of prehistoric dykes is the extensive system of double or triple prehistoric dykes first identified by Pickering in 1978 and dubbed by him the 'Jurassic Spine' that extend intermittently from Northamptonshire to the Humber (Pickering 1978). The Three Dykes (which includes King Lud's Entrenchment) are probably part of this network as are the triple dykes discovered through aerial photography between Lincoln and Nettleham in Lincolnshire, the Miles Ditches in Cambridgeshire as well as other examples in Northamptonshire, Leicestershire and Rutland (Everson 1974; Burleigh 1980; Mackie and Morgan 1993; Boutwood 1998; Mellor 2007 3).

The Roman frontier works of northern Britain were highly visible features in the medieval landscape so may have been an inspiration to early-medieval dyke builders (Breeze and Dobson 2000; Breeze 2006 (2011 edition); Hill 2006; Breeze 2007). There are some obvious differences with the early-medieval dykes. Hadrian's Wall and the Antonine Wall have features not found on early-medieval dykes: forts, gateways, a wall or palisade and clear evidence of a resident garrison.

In turn, early medieval dykes could have influenced later earthworks. As we have already discussed, the end of dykes probably coincided with the rise of the burh and the arrival of Viking raiders who the burh walls were designed to keep out. The Vikings did build some dykes in England, but these were short features designed to defend a tongue of land like the one on Danby Rigg in the North Yorkshire Moors or the bank between the Thames and the Kennet recorded by Asser (Brooks 1979 10; Keynes and Lapidge 1983 78; Harding and Ostoja-Zagorski 1994). Prior to the rise of the burh, the only earthworks of a comparable design in early-medieval Britain to the dykes were the ramparts of hillforts; in the early-medieval period in lowland Scotland these were often new constructions while in lowland Britain they were reoccupied Iron-Age structures

(Dark 2000b 85-86). Like the burhs, both Iron-Age and early-medieval hillforts have palisades and gateways of which archaeologists have found abundant evidence (Alcock and Ashe 1968 139-40; Cunliffe 1974 241-42; Hogg 1975 58-65; Hill and Rumble 1996 196-97; Lowe 1999 17-18; Zaluckyj 2001 (2011 edition) 209; Bassett 2008). This adds credence to the supposition that early-medieval dykes did not originally have palisades or gateways as the numerous excavations of these earthworks would surely have uncovered evidence of them. There are also numerous more agricultural earthworks built in the later medieval period and some of these, like prehistoric dykes, have occasionally been misdated as early medieval. As already discussed, Barber's study of agricultural boundaries, head-dykes, park pales and woodbanks in lowland Scotland suggests that the ditches and banks were smaller in scale than those of early-medieval dykes, so we can assume that they did not perform the same purposes (Barber, Lawes-Martay et al. 1999 147).

3.4.2 Europe

British dykes are not unique as there are prehistoric and medieval dykes across Europe with examples in Ukraine, Hungary, Apulia in Italy, Sweden (Götavirke) and Spain (the four kilometre-long El Muro near Teverga) and Rumania (Crawford 1953 184-85; Collins 2004 127-30; Sauer 2005 40-45; Mayor, García et al. 2007a; Mayor, García et al. 2007b; Póo, Gancedo et al. 2010). The nearest are a series of long south-facing earthworks in Ireland that in scale match some in Britain; they run from Bundoran on the west coast to near Armagh effectively dividing Ulster from the south (Crawford 1953 121 and 184; Evans 1966 58-59 and 140-41; Muir 1981 162; Waddell 1998 358-60). The largest are the Dane's Cast, Black Pig's Dyke and the Dorsey, but differentiating between them, especially the first two, is difficult as locals use the two names unchangeably and all three lie on a similar alignment.

While Irish contacts with northern Britain may have influenced dyke building on either side of the Irish Sea in the early medieval period, earthworks found

across area traditionally thought of as the Anglo-Saxon homelands (Denmark and northern Germany) might reflect cultural contacts across the North Sea. One European earthwork that British archaeologists have drawn parallels with since Pitt Rivers took a (borrowed) spade to it over a century ago is the Danevirke (Pitt Rivers 1880 460). This south-facing earthwork runs for 30 kilometres along the base of Jutland blocking access into Denmark from Germany (Crawford 1953 184; Wilson 1978 3-6; Griffith 1995 157-59; Jansen 1999 122-23; Hill 2000 205; Squatriti 2002 15-16 and 20-29). It was built in at least seven phases and though the Royal Frankish Annals attribute it to King Godfred in 808, dendrochronology suggests the earliest phases of building occurred shortly after 737. Interestingly, the Royal Frankish Annals also claim that it ran from sea to sea, a statement that is as inaccurate as Asser's assertion that Offa's Dyke performed the same feat as the ends of the Danevirke lie on rivers (Hill and Worthington 2003 106). Even with a twelfth-century rebuild that clad the front in stone, the evidence for a wooden palisade in the earlier phases is obvious. The dyke had a main gateway where the Hærvej, or army road that runs along the spine of Jutland from Germany, crossed the earthwork. The written evidence suggests the builders intended it as a military structure and though there are no records of actual battles at the earthwork, the Danish army used to muster along the earthwork during times of international uncertainty up to the nineteenth century.

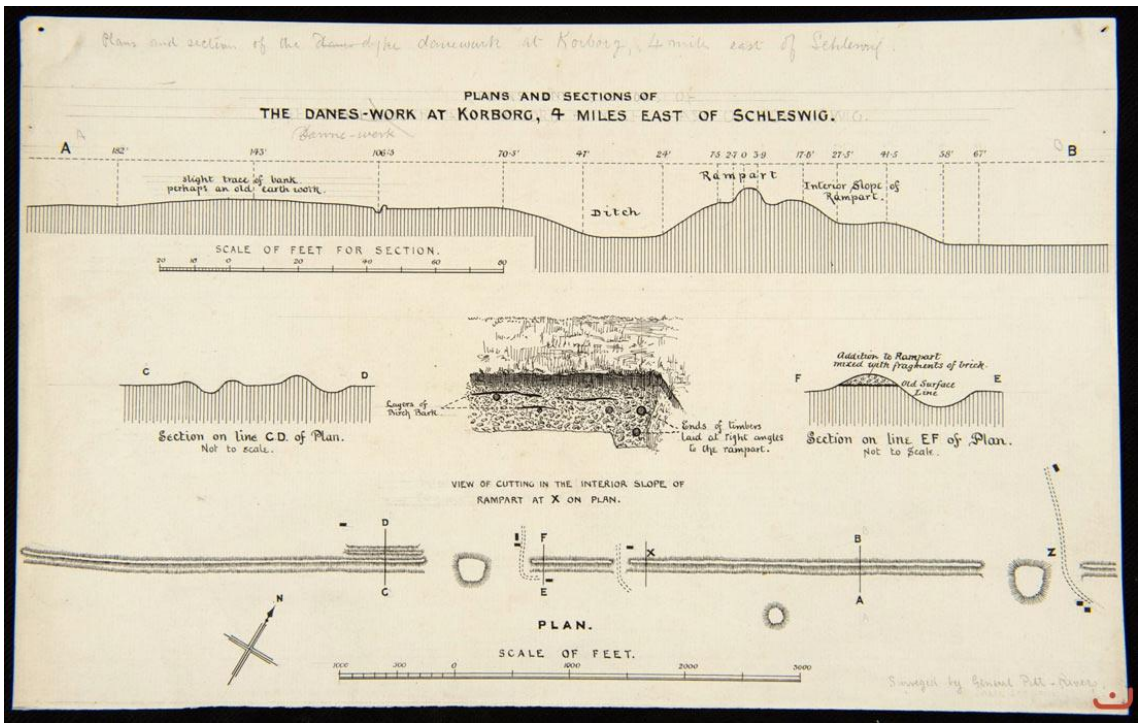


Figure 12 Pitt River's plan of the Danevirke (kindly provided by Jeremy Coote, Curator at the Pitt Rivers Museum and recently published in Morton, 2014)

To the north of the Danevirke, there are at least 28 earthworks in Jutland many of which cut routeways as well as six tree barriers built across narrow belts of sea (Hines 1989 34; Jørgensen 2003). The most elaborate is the Olgerdiget: this was a 12-kilometre-long stockade made up of large poles, though a two-kilometre section has a ditch (1.6 metres deep and 4 metres wide) with a bank that is dated to 219 by dendrochronology. It was not garrisoned, but possibly patrolled with defenders mobilized in time of war and seems to mark the dividing line between the Jutes and the Angles. This means that the Anglo-Saxon and Jutes had a history of building dykes before they gained control of England. Interestingly, this study found no records of dykes in Brittany where so many other aspects of British culture were imported in the fifth and sixth centuries though there is a Bronze-Age dyke in Normandy west of Cherbourg called Le Hague Dicke cutting off a small peninsula (Crawford 1953 186; Marcigny 2009). This possibly suggests dyke building in early-medieval Britain was initiated by Germanic incomers rather than being a part of native British culture, though prehistoric British dykes might also have been an inspiration.

3.4.3 Asian dykes

With the Great Wall of China, there survives documentary evidence that tells why the Chinese built it and how (this study has already used evidence from China to calculate the labour needed to build linear earthworks). The earliest walls were anonymous, practical structures built when the Chinese Empire was weak or their diplomacy particularly unsuccessful to counter raiding by nomads to the north (Waldron 1990 36-37 and 47). Many of the dykes of southern Wales like Tor Clawdd and Bedd Eiddil seem to block access to the coastal plains from the mountains (where people lived a more pastoral and possibly nomadic lifestyle) while Offa's Dyke and Wat's Dyke possibly fulfilled the same purpose keeping Welsh raiders out of Mercia. Perhaps his dyke represents a breakdown under Offa of Mercia's diplomatic relations with the Welsh; relations that had been much closer when the Mercian king Penda was a close ally of the Welsh king Cadwallon. Alternatively, like the later Chinese walls, whose remains we see today on tourist posters and which were often symbolic rather than anti-raiding defences, Offa's Dyke merely reflected Offa's imperial pretensions. These two different very different functions, though not mutually exclusive if these structures were multi-functional, do highlight the danger of cherry picking analogous examples from other countries or periods.

3.5 Summary of the written and archaeological evidence

Early-medieval written sources and archaeological evidence provide few direct clues to the purpose of early-medeival dykes or the identity of their builders. Charters and other written sources suggest that dykes had a short-term primary function and many were soon relegated to anonymous landmarks in the countryside. There is some written evidence that dykes were associated with warfare especially in Welsh poetry, but little archaeological evidence of sufficient land trade especially in the early part of the period under study to suggest controlling commerce was a concern. Despite attempts to suggest this period was more peaceful than the sources suggest, there is no doubt that early-medieval authors and the archaeological evidence suggest a time plagued by raiding, where kings began to hold sway over the populace and Christianity gradually defeated paganism (Reynolds 2009 34-35 and 54).

Linear earthworks in other countries and periods have controlled trade, delimited territory and protected areas from raiders, but while it is possible to make analogies with early-medieval British dykes, we should be cautious as people can build similar structures in response to dissimilar circumstances. Such comparisons do suggest that gateways and palisades would leave obvious traces on early-medieval dykes in Britain and therefore we can possibly dismiss the suggestion that they were ever there.

4 CONCLUSIONS: THE FUNCTIONS OF DYKES

In this section, there is a discussion of which features scholars often mistakenly classify as dykes, this is followed by an examination of the possible original functions the actual dykes fulfilled. There follows a longer discussion of how many dykes possibly were designed to counter raiding as this seems to have been the primary function of many of the earthworks and is frequently summarily dismissed as a credible theory. Then the evidence of what functions dykes later fulfilled after their initial purpose had become redundant is followed by an attempt to group the earthworks into different subgroups based on their size/design.

4.1 Multiple purposes and functions of early-medieval dykes

When making conclusion about how people used dykes we should note that over time this probably varied from the function envisaged by the original builders. They originally possibly also had multiple purposes. Changes in functions may have not just occurred over time, but even along the length of the longer earthworks. Stanford thought that the reason why he detected differences in design along the length of Offa's Dyke was because some sections faced friendly regions of Wales whilst others were designed to deter raiders from hostile areas (Stanford 1980 191-98). Malim suggested that the Cambridgeshire Dykes had multiple purposes: an Anglo-Saxon defence against British counterattacks, a display of royal power and a method of controlling trade along the Icknield Way (Malim 2010 176-78). When the Clwyd-Powys Archaeological Trust tried to split dykes in their Short Dykes project into those that were simply defensive (larger earthworks situated on defensible positions) and those designed as boundary markers (slighter earthworks contiguous with probable borders), they found no clear-cut divide (Hankinson 2002 4; Silvester and Hankinson 2002 8-9). An earthwork may fulfil multiple functions even if this was not was the designer intended; a dyke built solely for the glorification of a king may also have served as a reminder of the subjugation of a new conquered border area.

Despite variations in length of early-medieval dykes, the uniformity of the basic structure (a single large ditch downhill of a single large bank with no palisade or discernable gateways) may imply they served similar functions, at least when initially designed. It seems unlikely that so many dykes would have been built across Britain in this period each with a unique reason for its construction. Perhaps a single stimulus or similar set of circumstances was the primary cause in starting this rash of early medieval dyke construction and so finding what this was will help us understand a poorly documented but pivotal period of history. With this in mind, the possible explanations that fit fewer dykes are discussed

first before theories that cover greater number of dykes (primarily that they were stop-lines against raids) is analysed in more detail. With some earthworks, it is a matter of differentiating between dykes and other features with clearly different purposes (like roads, forts and forest boundaries) and so these are tackled first before theories as to why dykes were built are discussed.

4.2 Features confused with dykes

4.2.1 Natural features

With the one exception, excavations and fieldwork suggest that all of these dykes are man-made structures rather than geological features. Bwlch Aeddan near Guislfield in Powys may look like a ploughed-out dyke but it is probably a natural feature though it is possible that it was utilised as a dyke and perhaps a future archaeological investigation may prove it was modified.

4.2.2 Head dyke

Head dykes (which were usually built in the later medieval period onwards) can look similar to early-medieval dykes and Joseph Train in 1824 erroneously postulated that a series of head dykes in Dumfriesshire and Galloway was a single early-medieval earthwork called Deil's Dyke (Chalmers 1889 237; Graham 1951; Graham and Feacham 1956). They do have a distinct form that can be easily distinguished through observations in the field or by consulting maps. They run parallel with contour lines at the head of valleys, are usually found where there is a change in land quality and their ditches usually face towards the uplands to keep free-roving livestock out of arable fields. A survey of head dykes in southern Scotland found that although they generally have a single bank and ditch like early-medieval dykes, head dykes were generally much smaller with ditches on average just 0.23 metres deep and only 1.83

metres wide with banks 0.5 metres high and 2.15 metres wide (Barber, Lawes-Martay et al. 1999 147).

A few of the possible early-medieval dykes examined by this study could have been head dykes. The location of Tor Dyke in Yorkshire at the head of a valley means that superficially it resembles a head dyke, but as the ditch is downhill of the bank and about 3 metres deep and 6 metres wide this earthwork is quite clearly very different to most head dykes. There are dykes in Glamorganshire like Bedd Eiddil Dyke and Cefn Morfydd Dyke that face towards the uplands like a head dyke. If they were designed to keep cattle on the open uplands to the north and off arable land to the south, they should run along contour lines where there is a change in land quality, but they do not. Instead, they cut ridges often at narrow bottlenecks suggesting the builders designed them to keep humans rather than animals out of the coastal plains.

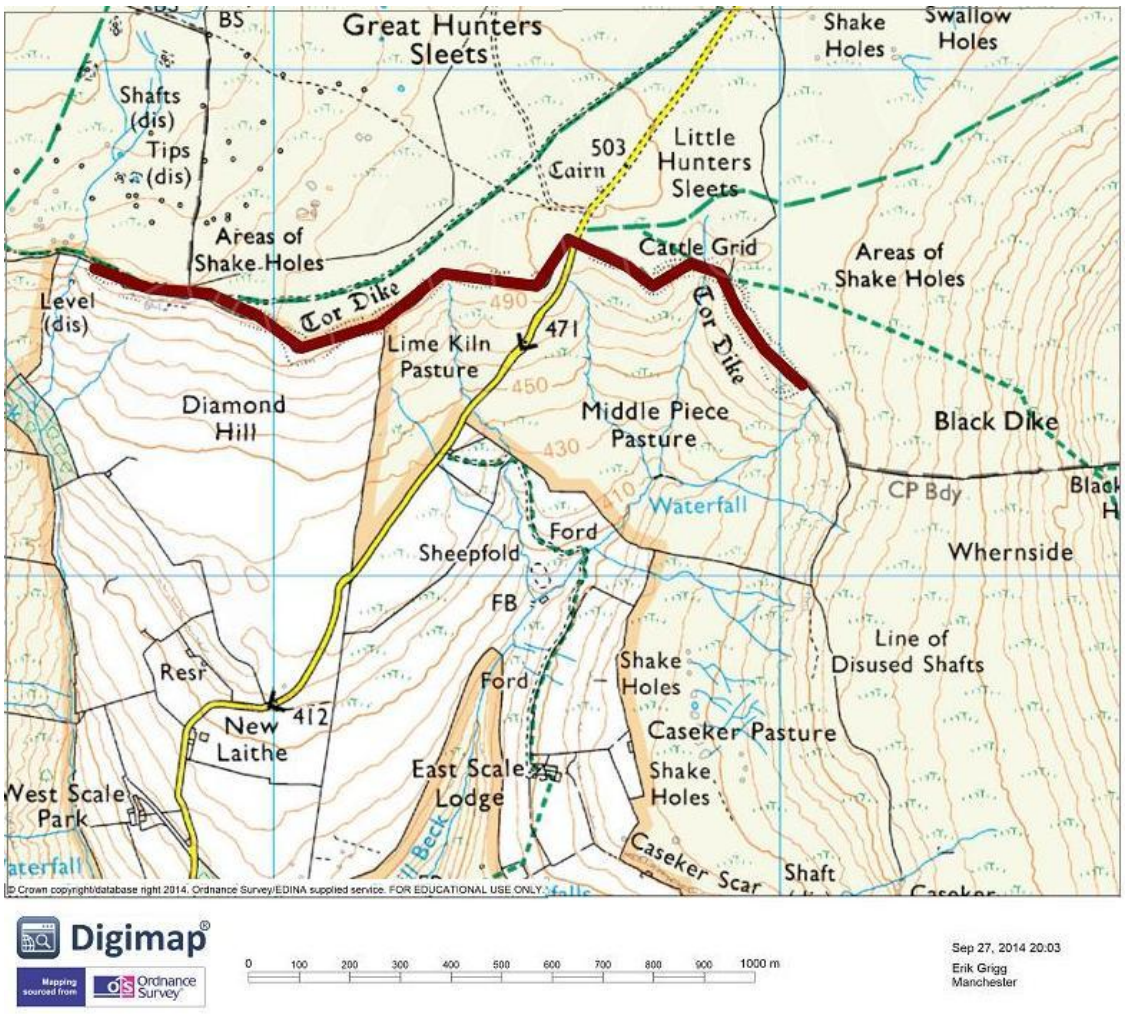


Figure 13 Map of Tor Dike showing how it defines the head of a valley

Abernaint Dyke and Clawdd Mawr (Foel) in Powys do have ditches that face uphill and therefore may have functioned as head dykes, though their banks and ditches seem abnormally large for such structures and neither is securely dated (Silvester and Hankinson 2002 13). While it is possible to mistake a later head dyke for an early-medieval dyke their differences suggest that they served very different purposes.

4.2.3 Park pales and wood boundaries

As already discussed, these earthworks have distinct forms so that we can distinguish them through fieldwork or using detailed maps. They usually enclose

a discrete area (even if it is no longer a wood or a park); some have no ditch as they were constructed from stones found on the surface or from stacked turf though others have ditches that face inwards (Braun 1937 72-73 and 374-80; Cantor and Hatherley 1979 71 and 84; Burton 1989 29-35; Hindley 1990 90; Barber, Lawes-Martay et al. 1999 113-14; Hill 1999 197-98). Barber's 1999 study of earthworks in southern Scotland found park pales and woodbanks usually had banks only 0.27-0.39 metres high (Barber, Lawes-Martay et al. 1999 147). Deil's Dyke in the Nith Valley, for example, has a single bank with no ditch, but here the earthwork only marks one side of a private forest (Barber, Mate et al. 1982). Fieldwork for this study suggests the forest boundary of Exmoor was a bank 1.6 metres high and 2.1 metres wide with no ditch that surrounded the royal forest on three sides, though on the fourth side, which ran across open moors, a line of rocks was deemed sufficient. This style of construction gives a much more rectangular profile to the bank than found on early-medieval dykes making identification easier. Unlike early-medieval dykes, the Exmoor bank is also completely contiguous with a parish boundary as it definitely functioned as an administrative boundary of Exmoor Forest. Senghenyd Dyke surrounded a private estate and still completely encloses an area; it has a single bank and ditch like an early-medieval dyke that interestingly faces inwards.

Scholars have postulated some of the earthworks in this study are park or wood boundaries. Though earlier he had suggested a prehistoric date for the Minchinhampton Bulwarks, Darvill later argued that the prehistoric pottery finds were residual and the earthwork was a medieval forest boundary (Darvill 1987 167-69; Darvill 1998 12-15). There are written records dated 1276-1306 of a private wood in the vicinity (Watson 1932 in particular 275). The earthwork seems far too large for a park boundary; the ditch was over 2 metres deep and 7 metres wide and unlike known wood boundaries, the bank had a dry stone revetment. Froxfield near the East Hampshire Dykes is called a 'haga' or game reserve in the late Saxon Meon charters, but the dykes seem far too big to be mere park boundaries and do not surround a discrete area (Shennan, Gardiner et al. 1985 89). Though Barber's study classified the southern section of the

Catrial as a prehistoric or medieval political boundary, it defined the northern section as a ‘woodbank’ possibly built in the sixteenth century; as it lies across a change in soil quality it could indeed mark the edge of a wood (Barber, Lawes-Martay et al. 1999 75-76, 79-81 and 116-17). Park boundaries seem to be very different structures from early-medieval dykes that suggest that they fulfilled different purposes and with careful examination of the evidence, it is possible to distinguish the two types of earthworks.

4.2.4 Roads

Scholars have suggested that The Catrail, Rowe Ditch, Roman Rig and the Giant’s Hedge were roads and the same suggestion has been made for the prehistoric Aves Ditch (Herden 1970 275-76). As well as distinguishing between dykes and roads, it is also worth examining the possibly that there was an overlap in function between them. Three types of roads that have caused particular confusion all have distinctive characteristics: Roman Roads usually have a metalled surface between two drainage ditches, medieval causeways are usually found crossing marshy areas and medieval hollow ways usually consist of a sunken roadway with no associated banks.

Later road builders certainly reused sections of a few dykes, but fieldwork for this study found it was only occasionally possible to drive along the course of a dyke and then it was usually only for a very short distance before it became necessary to continue on foot. This suggests that only short stretches of dykes are of use for road building as the general route of most is not one travellers wish to follow. Parts of Offa’s Dyke for example climb up hillsides far too steep for any road (Noble and Gelling 1983 47). Despite the confusion among earlier scholars between roads and dykes, the two structures look quite different when excavated. As early-medieval dykes usually have a single bank and ditch with no metalling on the bank, they were probably not designed as routeways especially as one common characteristic of early-medieval dykes is the way

they bisect valleys or ridges rather than follow them. Many dykes also start and finish at a marsh or ravine and so are very unlikely to be roads.

Some earthworks were quite clearly dykes, but later reuse of sections of them as roads has caused some confusion in the past. Though the Military Way in Scotland was traditionally thought of as a road and some sections now resemble one with multiple ditches as they were reused in the later medieval period as hollow ways, it was probably originally a dyke consisting of a single bank and ditch (Crawford 1936a 346; R.C.A.H.M.C.S. 1956a 72; Barber, Lawes-Martay et al. 1999 83-85). Smail thought The Catrail in Scotland was too small to be much use as a defensive structure so postulated it was a secret road used to avoid marauders (Smail 1882 119-21). Lynn, after an extensive survey, had trouble fitting the numerous stretches of earthwork into a single scheme and thought it might be a series of roads built piecemeal by the 'Ancient Britons' (Lynn 1898 88-89). Some sections of the Catrail actually incorporate streams and parts often end with an abrupt terminus far from any settlement, so it is likely that sections were incorporated into later roads (Barber, Mate et al. 1982 79-83). Later road builders used sections of other dykes like the Inkpen section of Wansdyke and the High Dyke in Cambridgeshire as platforms for roads but the charter evidence from the former and the size of the ditch of the latter demonstrate they were quite clearly originally dykes.

Borlase assumed that the Giant's Hedge in Cornwall was a Roman road, but later writers rightly dismiss this idea; the sinuous earthwork has none of the features of an Imperial highway (Borlase 1758 325; Lysons and Lysons 1814 ccxxviii and ccxlvi; Cornish 1906 472; Andrew 1935 215-17; Crawford 1936b 174). An unpublished study of the Pembridge area by Allan McKinley of the University of Birmingham suggests Rowe Ditch was an early-medieval causeway constructed across a waterlogged valley (personal communication). Excavations have found no trace of a roadway along the top of the bank even though a section is now a farm track (Hill and Worthington 2003 139-43). The builders of roads across marshes usually quarry from higher land and dump at the end of the causeway, but the dyke has a single quarry ditch along the whole

length. Though the excavations found some waterborne particles in the ditch and the water table was often near the surface, it would have taken more sophisticated engineering to dig a deep ditch across a marsh without it collapsing. Sections of the southern end of the earthwork run across high ground where a causeway is unnecessary and, unlike most causeways, the dyke does not cut the narrowest point of the marshland making the causeway theory highly unlikely.

Many early writers thought Roman Rig was a Roman road and though the theory is now discredited, there is still confusion in the local area between the earthwork and a nearby section of Ermine Street between Doncaster and Adwick-le-Street called the Roman Ridge (Hunter 1819 15; Cronk 2004a i and 5-7). Ferns claimed Roman Rig was a raised bridleway built by the 'Celts' to transport Iron Ore, but his article was poorly written and betrayed no knowledge of the archaeological investigations of the earthwork (Ferns 1980). Such a 'Celtic' industrial bridleway is unheard of and medieval routes used by packhorses were invariably sunken trackways not raised banks. There is also no evidence of ancient iron working in the area making the theory extremely unlikely (Boldrini 1999a 28-29; Cronk 2004a 8-9).

While early-medieval dykes were probably not roads, some ancient thoroughfares may have been erroneously classified as dykes. Recent excavations of Brent Ditch in Cambridgeshire have found no evidence of a bank suggesting it was not a dyke but a hollow way (Malim, Penn et al. 1996 39-50 and 81). The steep sides of the ditch were probably not original; the published profile suggests a road deliberately cut into the ground; traffic flowing along it increased the depth causing the steep sides to the ditch.

Worstead Street in Cambridgeshire lies between and on a similar alignment as the other Cambridgeshire Dykes but scholars have long realised it was a Roman road (Hughes 1913 145). Lethbridge thought the road was a patrol road associated with the dykes, but there is no archaeological, historical or place-

name evidence to substantiate the idea and it is almost certainly a typical Roman road (Lethbridge 1933-4 96; Malim, Penn et al. 1996 50-58 and 115-16). Scholars once thought a section of the Roman road from Bath to Mildnehall was a dyke linking to two sections of Wansdyke (Stukeley 1776 142; Major and Burrow 1926 90; Crawford 1927 251; Crawford 1953 254). Most scholars now accept it was merely a road though the westernmost 400 metres of East Wandsyke does overlay it (Annable 1957-8; Fox and Fox 1958 6; Myres 1964 4; Reynolds and Langlands 2006 17-18; Webster 2008 183). As with park boundaries, some scholars have confused roads with early-medieval dykes, but the two are very different structures.

4.2.5 Forts

One possible reason people built the dykes was to surround and protect garrisoned forts or settlements. Temporary forts and dykes built to defend the approaches to a transitory encampment like the one the Vikings dug near Reading (Coombe Bank) in 871-2 are by their very nature very similar.

Though there is no written evidence that Heronbridge was an Anglo-Saxon burh, the archaeologists who carried out the recent excavations like David Mason consider it a fort (Laing and Laing 1985 48-51; Higham 1988 and personal communication; Higham 1991b; Mason 2003 75-79 and personal communication). There is no evidence of early-medieval gateways in the earthwork or signs of occupation at the site apart from the burials, so this study defines it as a dyke. It probably blocked access to a ford across the river, but we cannot be certain if it was a temporary defence as part of a campaign or had a long-term use. If Heronbridge is a fort then Park Pale in Yorkshire could also be one, but again here there is no evidence of gateways, occupation or written evidence to support the idea.

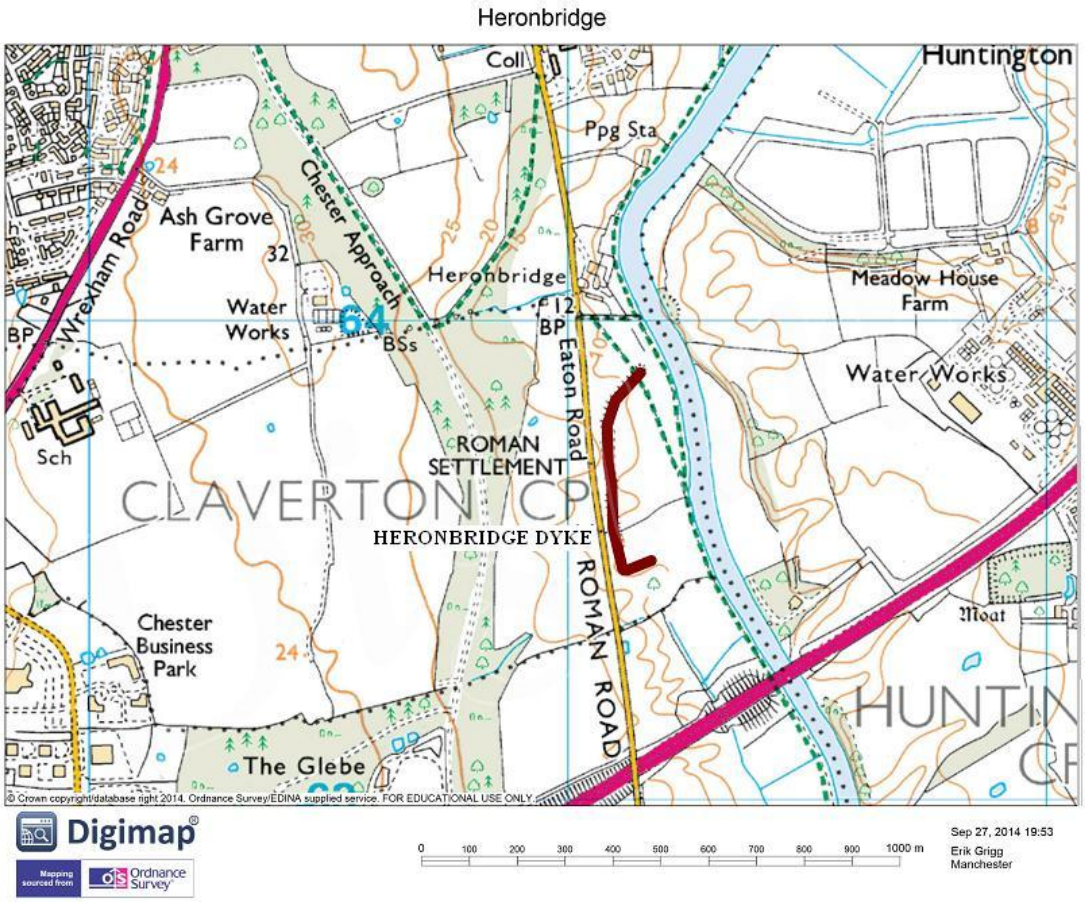


Figure 14 Heronbridge Dyke with the River Dee to the east

It has been argued that Minchinhampton was an Iron-Age oppidum, but even if it did surround an area (which at present there is no evidence to support) as the ditch is on the inside of a c-shaped earthwork it seems on the 'wrong' side (Clifford 1937 295; Verey 1979 74-75). Again, the lack of supporting evidence such as archaeological evidence of occupation or gateways suggests the idea that it functioned as a fort is unlikely.

4.3 Possible functions of dykes

Now we have distinguished between early medieval earthworks and similar features, we can now turn to the reasons why dykes were built and what functions they fulfilled.

4.3.1 Trade as a stimulus for dyke building

As many of the dykes cut roads it is possible they might have controlled trade, as some historians have claimed (Feryok 2001 (2011 ed) 186; Malim 2007 31-32; Jones 2009 70-71). As we have seen for most of this period, there is probably insufficient evidence of inland trade to prove that the primary stimulus for the construction of such large earthworks was to control commerce. There is no evidence from early-medieval charters that dykes were trade barriers and none of the dykes has a name that reflects such a role. Apart from the Roman coins found at Bokerley Dyke that probably predate the earthwork in its final form, no excavation has provided evidence of gateways with attached buildings for customs officials or any small denomination coins dropped when collecting tolls (Pitt Rivers 1892 13 and 23; Rahtz 1961; Bowen 1990 38). Written evidence from this period suggests most long-distance trade was by boat and the mistrust of strangers manifest in law codes suggests that itinerant traders were rare (Whitelock 1955 361-62 and 366; Symonds 2003 28-29). In an interesting twist on this theory Reid postulated that although the Minchinhampton Bulwarks were probably designed to prevent raiding, they were deliberately not insurmountable so allowing trade to continue along the ridgeway (Reid 1999 7-8). It is probably highly unlikely that a dyke could stop a mobile group of raiders yet allow a heavily laden cart full of goods to pass.

We must also consider the idea that dykes became places to carry out trade as a secondary function. No medieval coins have been recorded at any dyke and

this study found no early medieval trade centres (wics like Ipswich, productive sites like Cottam in Yorkshire or coastal trading sites like Meols in the Wirral) located in the vicinity of any dyke (Higham and Ryan 2013 248).

Like Roman frontier works, a dyke could have acted as a trade barrier as an ancillary purpose, but it is highly unlikely that there was enough trade to stimulate the boom in dyke building. Perhaps the rise of trade we see reflected in the growth of the minting of coins in the late seventh century onwards could even have hastened the end of dykes that blocked trade routes. After their primary function became obsolete, they may have become a focus for commercial transactions or market places, but the total lack of coins, pottery or metalwork commonly associated with trading sites makes it highly unlikely.

4.3.2 Ritual and dyke building

One possible use for dykes is ritual, but apart from items buried within the earthworks (such as bodies and weapons) it can leave little trace for archaeologists to find. Many earthworks are named after supernatural figures, but this may be due to the original builders being long forgotten rather than being structures associated with gods or religion. Ritual activity includes any repetitive action including religious or ceremonial functions and may be associated with structures that had quite different original purposes. There are four types of ritual activity that are possibly associated with dykes, delimiting a sacred space, a meeting place, a site for execution and an agreed location for battle; these four are discussed in turn in this section.

While those dykes that cut off peninsulas of land could hypothetically demark an area set aside for a ritual purpose, the areas enclosed by such earthworks (like Dane's Dyke or the dykes of Cornwall) contain no significant religious sites apart from the occasional humdrum parish church. Bu'lock unconvincingly suggested the Heronbridge dyke marked the vallum of an early monastic site and the burials were those of a monastic community noting how the nearby

Eccles name of Eccleston was possibly indicative of an early Christian site (Bu'lock 1972 8). This theory seems highly unlikely as the bodies are of people who died violently, there is no evidence of any religious buildings nearby and the earthwork seems unusually large for a monastic vallum (Williams 1932; Laing and Laing 1985 44-48; Petch 1987 189; Burnham, Hunter et al. 2005 423).

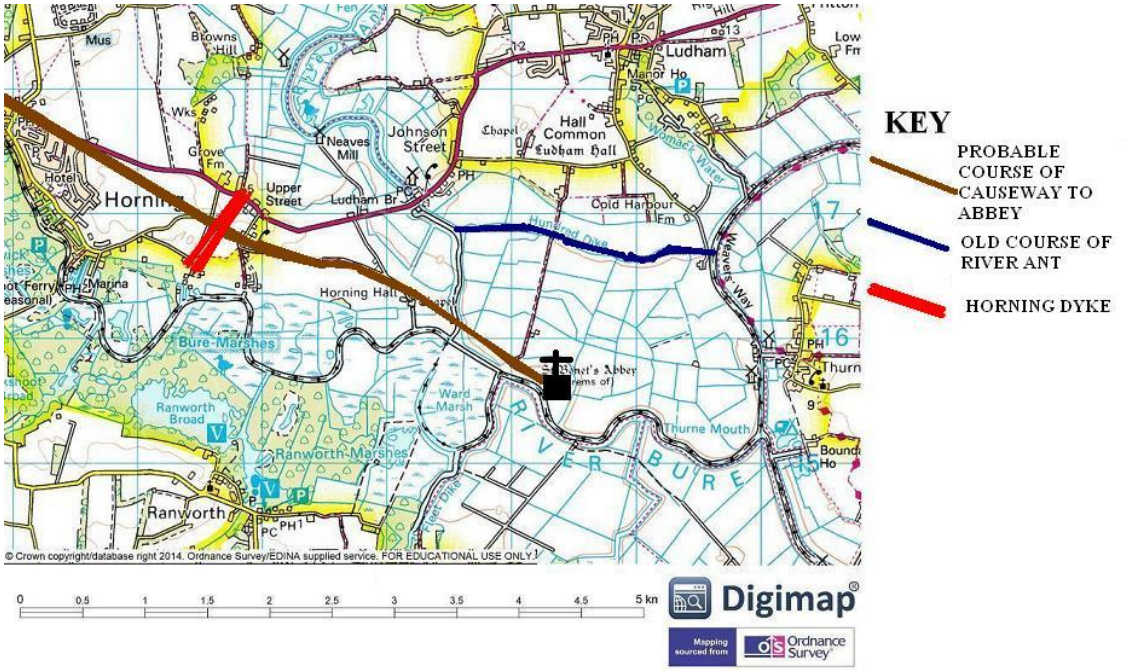


Figure 15 Horning Dyke showing how it could have defined a peninsula containing an abbey

The case for two others earthworks delimiting religious sites, one in Cornwall and another in Norfolk, are more compelling but still not conclusive. In Norfolk, the Horning earthwork once cut the causeway that gave access to St Benet's Abbey. As prehistoric finds were made in the vicinity it could predate the Roman occupation, though it is possible that the monks re-dug an earlier dyke as a boundary marker or a defence for the monastery (Lawson 1980; Pevsner and Wilson 1962 563; Rose 1982 35 and 38-39). The monastery was probably established by Wulfric in the time of Cnut (the Suneman foundation story previously mentioned is probably a fabrication) after the period covered by this study (Licence 2004; Licence 2006; Pestell 2008 20). The Cornish example is equally problematic. Medieval documents from the Priory of Bodmin and a 1694 map indicate that a chapel to St Sampson (a Byzantine saint not to be confused

with the Welsh St Samson) once stood on the headland defined by the Stepper Point earthwork (Henderson 1955). While it is impossible to prove that either of these earthworks was built to protect or demark these sites, they could easily have been reused for such a purpose.

Another possible ritual function for an earthwork is as a meeting place. When writing about the Roman Rig, Boldrini did favour the traditional interpretation that the earthwork was a defence thrown up against the Roman invasion, but rather than thinking of the dyke as just separating two distinct territories, he concluded the area defined by the two northern branches might be significant (Boldrini 1999b; Boldrini 1999a). Boldrini suggests it was creating a 'liminal space', but what this meant in practice or what functions the builders carried out in the space between the two branches he did not explore in any of his published articles merely hinting it might have functioned as a demilitarised zone for parleying and negotiation. As well as being insufficiently developed, the argument has other major flaws. For half of its length the earthwork is a single dyke so it did not delimit a space, there are no gateways into the 'delimited' space, there is no evidence for any activity in the space between the branches, it is uncertain that the two branches ever met and they do not face each other (Cronk 2004a 11). A similarly unconvincing case can be made for Park Pale as a meeting place. As we have seen, there could have been an important meeting between King Edred and Wulfstan near the earthwork around 947, but even that reference is dubious and that is the only recorded early medieval meeting at a dyke (Bulmer 1890 835; Cubbin 1996 44; Swanton 2000 112). If dykes were meeting places, we simply have no evidence for it.

One possible ritual function was a place to execute those who transgressed the laws and as we have seen there is a possible reference to a gallows on East Wansdyke and a possible execution site at Bran Ditch (Grundy 1919 214; Fox, Palmer et al. 1924-5; Lethbridge and Palmer 1927-8; Gray 1928-30; Reynolds 1999 84; Reynolds 2009 57 and 106-08). The propensity of Anglo-Saxons to reuse earlier structures like the high-status burials inserted into prehistoric

barrows in north Wiltshire and the possible Anglo-Saxon execution victims found at the prehistoric Aves Ditch and South Oxfordshire Grim's Ditch suggest that such graves are unrelated to the original purpose of the earthwork (Hinchcliffe 1975 126-28; Reynolds 2009 130-31; Semple 2003; Sauer 2005 47-57). It is possible dykes had meanings now lost to us so they were associated with power, punishment and execution. Equally, it could be that the ditches of dykes were convenient holes for bodies and banks prominent places for execution (whether gallows for hanging or a block on which a person was beheaded) or for the display of the dead. Most excavations of dykes have found no evidence of burials suggesting that, although some were later used as a place to deposit bodies, being a depository for the dead probably was not their original or main purpose.

The final ritual activity to discuss is fighting at dykes examining whether earthworks were places where rivals would meet to engage in battles. There are records in early medieval sources of battles near the Cambridgeshire Dykes in 904, Heronbridge in 605/613 and East Wansdyke in 592 and 715 (Morris 1980b 46 and 86; Bately 1986 25, 26, 33 and 62; Swanton 2000 94 fn 1; Irvine 2004 22-23 and 35). Four battles hardly qualifies as repeated or frequent activity when there are over a hundred possible early medieval dykes, especially as some of these battles are not at but near the earthworks. If dykes were located at the margins of kingdoms or at zones of conflict even these cases may be coincidental. As with all the ritual activity discussed here there seems to be only limited evidence; if dykes were a focus for ritual, there is simply not enough evidence to suggest it was anything but infrequent and unrelated to their primary functions.

4.3.3 Dykes as an Anglo-British Divide

Scholars have often thought of dykes as tidemarks in the Anglo-Saxon conquest of England and, as we have seen, the authors of Welsh law codes used Offa's Dyke to divide the Welsh from the foreigners to the east (Hughes

1931; Jenkins 1986 116; Malim, Penn et al. 1996 117). Laycock contradicted this idea by claiming that conflict between purely British kingdoms was the primary stimulus for the building of dykes in the immediate post-Roman period (Laycock 2006). The dating evidence though, uncertain though it is, does suggest that kingdoms that identified themselves as Anglo-Saxon (or rather English and/or Saxon) were firmly established when many dykes were constructed in Britain. The dykes on the Welsh borders do seem to separate two groups with very distinctive and mutually antagonistic cultures. While it is rarely contiguous with the national border, on a large-scale map Offa's Dyke and some lesser works like Wat's Dyke, Upper Short Dyke and Lower Short Dyke lie fairly close to the Anglo-Welsh border (or the Mercian-Welsh border as it would have been in the early-medieval period). As we have seen, Wat's Dyke seems to mark the western edge of 'hides', the typically Anglo-Saxon method of land organisation, but few other dykes fit the criteria for such a purpose (Worthington 1993 308; Fitzpatrick-Matthews 2001 3).

As stated in the introduction this study has put aside the debate as to whether the Anglo-Saxon settlement involved a mass migration of Germanic migrants into lowland Briton or if it was more of a change in culture. That said, the most Anglicised parts of Britain lay on the east of the island whilst those areas that either never fell under Anglo-Saxon control or did so very belatedly (Wales, Cumbria and Cornwall) lay on the west side of the Britain. Although most historians see the Anglo-Saxon settlement as a far more piecemeal and haphazard process than a simple wave moving from east to west, probability would suggest dykes that mark an Anglo-British divide are more likely to run north south, but many, like Wansdyke, run west east (Halsall 2013 219-20 and 249-52; Higham and Ryan 2013 196-07). In Wales and the border areas, there are dykes that clearly make no sense as Anglo-Welsh divides. The dykes of south Wales like Cefn Morfydd and Bwlch y Clawdd seem to divide the Welsh uplands from the equally Welsh lowland plains while dykes like Clawdd Mawr in Dyfedd and Vervil Dyke were surely too far west to be Anglo-Welsh divides. The attacks of the West Saxons may have stimulated the Cornish to build their dykes, but we would expect them to run roughly parallel to the River Tamar if

they were designed to mark a cultural, linguistic or ethnic divide which they manifestly do not. Some dykes could mark stages in the invasion or acculturalisation process for example the Cambridgeshire Dykes could represent a border between the territory of the East Angles and areas to the west that were still under the control of British rulers.

A good example of how linking dykes to Anglo-British divisions is often unconvincing and problematic is the western border of Kent. While the Feasten Dyke in Kent and the Surrey-Kent dyke may have marked a fourth-century border between the Germanic kingdom of Kent and Britons to the west, they might as easily have marked the later Kentish-Mercian border. These two earthworks may be near the modern western border of Kent, but prior to the creation of the County of London in 1888 only one was as the map below clearly demonstrates. Unfortunately the county border of Kent may not even mark the western border of the kingdom of Kent. Without accurate dates for the dyke or secure knowledge of the where the frontiers of the kingdom of Kent lay, we can never know if these earthworks did indeed mark an Anglo-British frontier.

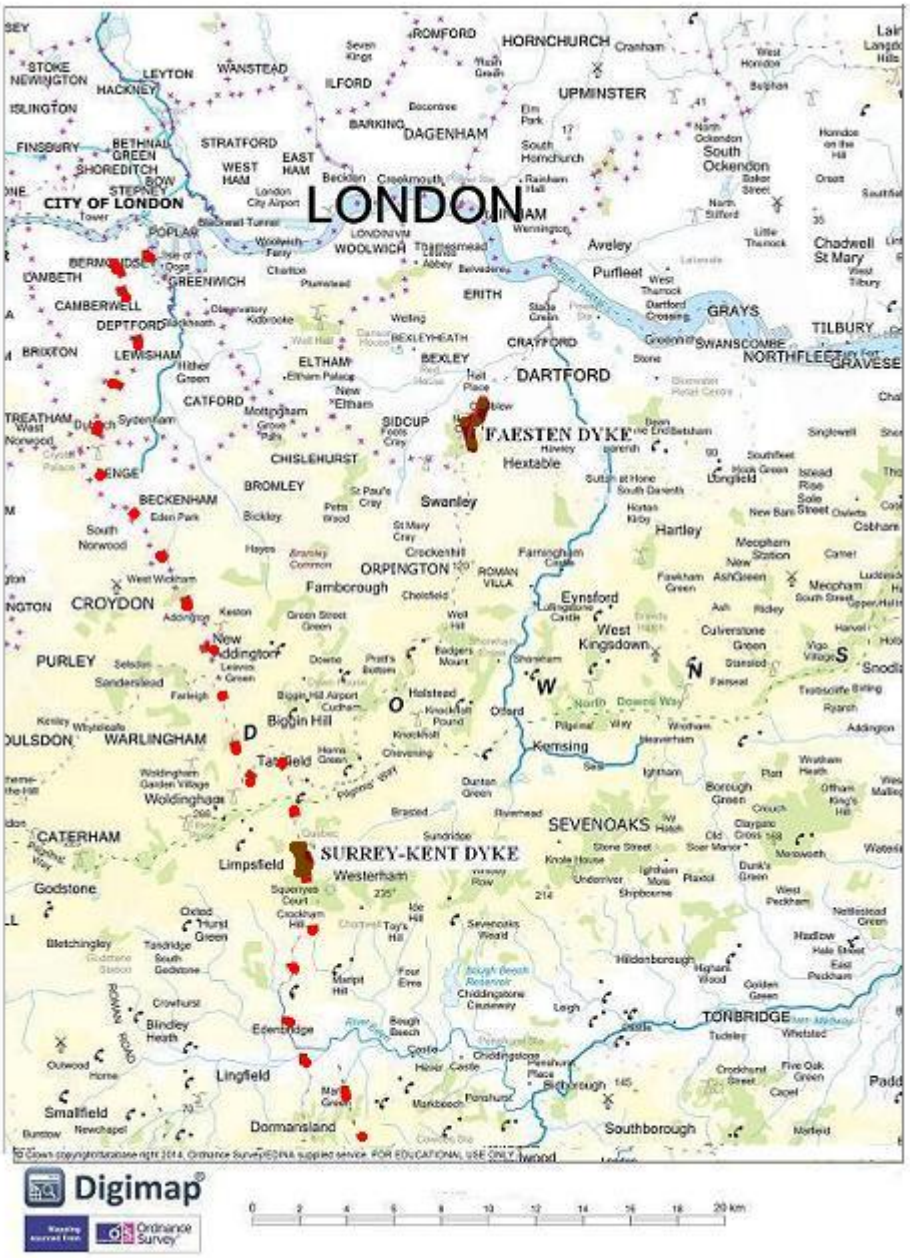


Figure 16 Two dykes in western Kent and the old county border of Kent (red dotted line)

Difficulties in dating dykes makes it even harder to match them to nearby Anglo-Saxon settlement, place-name or burial evidence. East of Wales, Cornwall and Cumbria there are very few settlements with a British place-name to make a case that a dyke formed a linguistic barrier in the past. Scholars have suggested the Grey Ditch in Derbyshire was an early-medieval Anglo-British divide claiming Anglo-Saxon graves and place-names are found predominately south of the earthwork while Celtic place-names are to the north (Hart 1981 111

and 116; Barnatt and Smith 1997 53-54). Unfortunately, Brotherton has identified a series of Celtic place-names south of the earthwork in the 'Anglo-Saxon' zone like Mouldridge Grange (SK200593), Crich, Pentrich, and Chevin near Belper (Brotherton 2005). White and the Yorkshire Dales Park Authority website both suggest Tor Dyke was the boundary between the early-medieval British kingdom of Craven to the south and Anglian settlements to the north (White 1997 46). Although Craven is Brythonic (the root of the name, *craf*, means either garlic, a reference to wild garlic in the area, or scrape, referring to the limestone scars), the first reference to this name being applied to this area is in the Domesday Book; it is entirely possible it was never a kingdom (Smith 1961c 1-2; Wood 1996). Fleming suggests that like the Swaledale dykes and Scot's Dyke it marks the eastern edge of the early-medieval British kingdom of Rheged; while Craven could be a district or sub-kingdom of Rheged we have little idea about the organisation or even the extent of either (Fleming 1994 27). Bunns Bank is typical of the problem of matching an earthwork to an ethnic divide: the NMR and HER entries assume it was a Saxon work while Pevsner and Westgate thought that it was built by Britons as a defence against the Saxons (Westgate 1937 23; Pevsner 1962 102).

While it is possible that Offa's Dyke and Wat's Dyke fulfilled the role of an ethnic, linguistic or cultural divide, we cannot be certain that this was their primary purpose, but most dykes are probably too short or in the wrong location to have served as Anglo-British divides. With closer dating of the dykes and a better understanding of the process whereby lowland Britain became English we may be able to match dykes with this process, but at present that is not possible. Linear features can define nations without that being their prime purpose; Scottish and Cornish people often define themselves with reference to Hadrian's Wall and the River Tamar respectively, the former structure is totally unrelated to the creation of Scotland, while the latter is entirely natural. The theory that British dykes were distinctively more sophisticated is also probably false as Offa's and Wat's both have v-shaped ditches and marker banks.

4.3.4 Dykes as border markers

One possible purpose of a dyke is to mark a border, but before discussing this theory, it is necessary to define types of border (Symonds 2003). Borders can be amorphous zones or narrow lines drawn by political leaders to define the edge of a territory; they can mark an area of separation or of contact and they can be artificial or utilise natural features such as rivers or forests (Power 1999 2-3). The can be manned or unmanned, than can mark the edge of kingdoms, regions, estates or ecclesiastical units. The paucity of archaeological evidence of forts, garrisons and palisades makes the theory that dykes acted as fortified frontiers untenable, but does not rule out the idea they were markers indicating the edge of an estate, kingdom, tribe or other political unit.

There is a suggestion that for much of the early-medieval period political borders were zones, rather than lines, with kingdoms having heartlands where the king's lands and kin were concentrated surrounded by frontier zones from which they extracted tribute (Rollason 2003 22-24; Curta 2011 16). The boundary clauses in early-medieval charters do suggest that by the end of the period covered by this study there existed clearly defined administrative areas that dykes could have defined. If they were border markers, we should perhaps expect them to a name like 'border dyke' and they should either still be contiguous with administrative borders or fulfil such a role in early documents like charters. We have already noted in this study how borders are relatively stable in the English landscape and even when they become redundant, for example when they cease to mark the edge of a kingdom, they become reutilised as parochial or county boundaries; Anglo-Saxon estates for example often became parishes (Reynolds 2002 83; Malim 2005 244-45; Reynolds and Langlands 2006 26). Border marker dykes need only to be large enough to define a line in the landscape rather than form a barrier to movement. This study has already noted how charters suggest some dykes were indeed designed to mark the borders of estates.

The best example of a possible estate marker dyke is Aelfrith's Dyke and the associated earthworks Old Dyke and Shirt Dyke. They are too small in scale to form a physical barrier to movement. They are recorded as estate boundaries in Anglo-Saxon charters (S 828 dated 956, S 829 dated 965, S 603 dated 956 and S 758 dated 968) and lie extremely close to modern parochial boundaries. Though the bank found in archaeological excavation was far wider than that of a modern hedge this was possibly due to later damage, the ditch at 0.57 metres deep and 1.7 metres wide is similar in scale to those found round many modern fields (Hunn 1992). Perhaps disputes about ownership of the land in this fertile agricultural area prompted people to dig an earthwork to mark the limits of the estates. The idea that this area was one were there were land disputes is perhaps bolstered by the fact that these charters are considered to be of dubious authenticity suggesting people were tampering with documents to gain advantage.

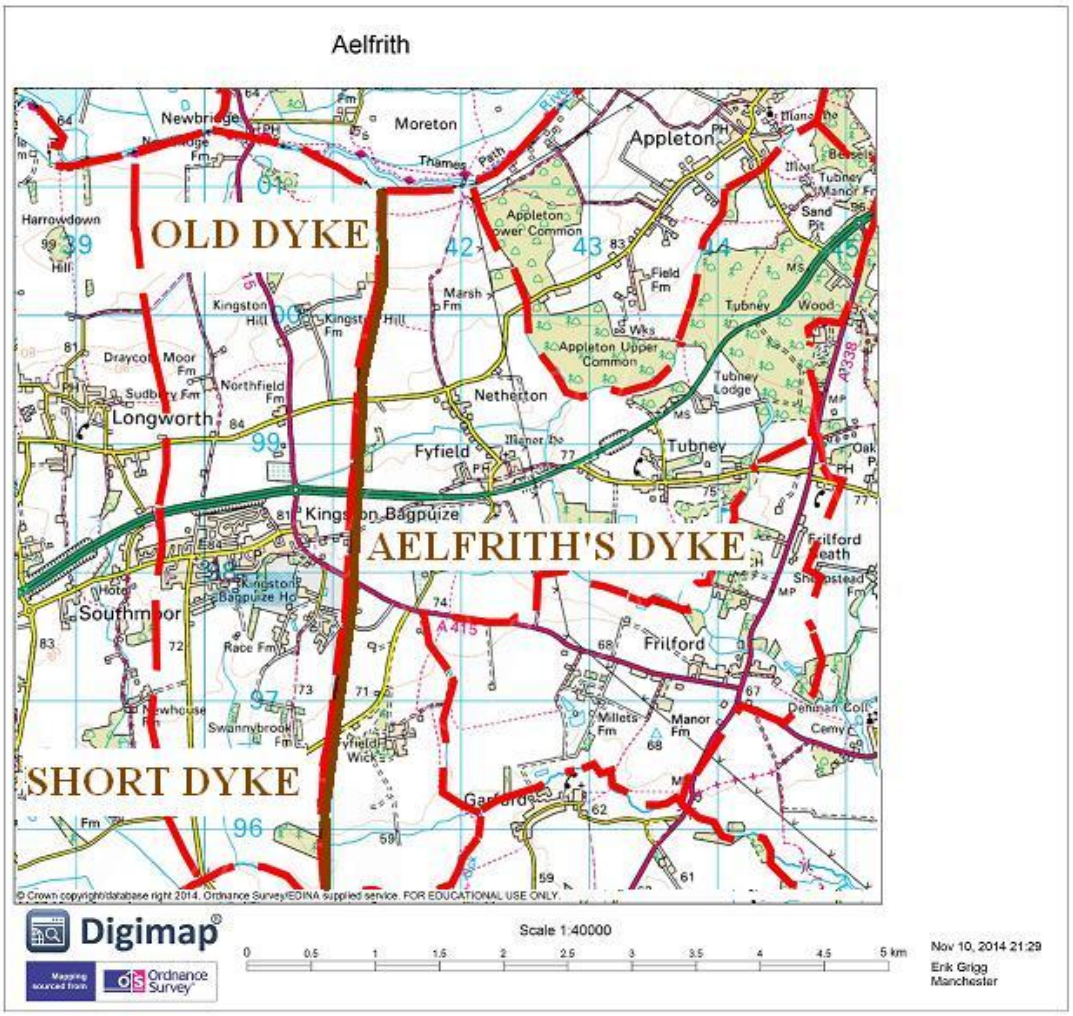


Figure 17 Map showing Aelfrith's Dyke and associated earthworks as well as selected parish boundaries (red intermittent lines)

The Rein in Yorkshire has a name which means ‘border’ and the dyke is contiguous with parochial boundaries, but as the ditch is 2 metres deep and 8 metres wide it seems unnecessarily large for a border marker though it may have later fulfilled such a role. Aelfrith’s Ditch, Bica’s Dyke, Calver Dyke, Fullinga and Clawdd Seri all have ditches much smaller than the average (0.45 to 1 metre deep) and all but Calver are cited in charters as borders. Hill suggested Whitford Dyke was a medieval border marker dyke as it consisted of a low bank between two small ditches caused by the inhabitants of the two sides digging a ditch and throwing the earth in the centre to form the central bank (Hill and Worthington 2003 125 and 163). Long Mynd has a similar

structure and so may be a border marker; Bwlch yr Afan has a central ditch flanked by two small banks so may be a slight variant on this style. It is possible the Devil's Ditch at Garboldisham in Norfolk had banks on either side of a central ditch, but without an archaeological investigation, it is impossible to tell whether it was a boundary mark with two banks or the dyke was modified to face in the opposite direction (Malim 2005 245). It is noticeable that the views forward from these dykes are not particularly good and unlike most early-medieval dykes, they do not face down a clearly defined slope.

While Aelfrith's Ditch probably merely defined an estate, Fullinga Dyke, which like Aelfrith's Ditch has a ditch less than a metre in depth, could have been a tribal boundary. The name seems to relate to the Fullingas, a folk-group of Anglo-Saxons who lived in northwest Surrey who gave their name to Fulham (Collingwood and Myers 1937 406 fn1; Blair 1989 100). To the west were other tribes (the Wocingas, Sunningas, Readingas) which like the Fullinga we know almost nothing about. That the Fullinga alone felt the need to define just one of their borders and neither they nor their neighbours built dykes to mark the other frontiers suggests that dykes acting as tribal border markers were the exception rather than the rule.

The evidence of other dykes being borders is far less convincing. Williams-Freeman suggested that the Froxfield dykes in East Hampshire marked the frontier of the South Saxons and noted that Mere Pond (or 'border' pond) lay near the northern end of one of the dykes (Williams-Freeman 1915 33). It has also been suggested that the north-facing East Tisted-Colemore Dyke was the frontier of a Jutish tribe based in the Portsdown area while other early-medieval tribes built the Froxfield dykes and possibly the Hayling Wood dykes against them (Coffin 1975 81; Hinton 1981 61). As the northerly East Tisted-Colemore Dyke faces north and the Hayling Wood Dyke to the south faces south they do not face each other so if hostile tribes built them, they cannot have been contemporary. As the Hayling Wood Dyke is smaller in scale, follows a more tortuous course and passes Marlands Farm (the name possibly means 'border lands' farm) it is perhaps more likely to be an estate boundary ditch than have

had a military purpose (Coffin 1975 79-81). Allan McKinley of the University of Birmingham (personal communication) thought a pre-Anglo-Saxon political unit called Lene (immortalised in the name Leominster and the local hundred) was responsible for the construction of Rowe Ditch, but none of the dyke is contiguous with parish boundaries and only 11% with an Anglo-Saxon charter boundary (S 677 dated 958). Scholars have argued that the Swaledale dykes and Scot's Dyke mark the eastern edge of the early-medieval British kingdom of Rheged or Tor Dyke marked the boundary of the early-medieval British kingdom of Craven (Fleming 1994 27; White 1997 46).

One prehistoric earthwork, North Oxfordshire Grim's Ditch, actually encircled an area, but this configuration is unknown with early medieval dykes (Copeland 1988). Clawdd Llesg, Ty Newydd, Bwlch y Cibau Dyke, Abernaint and the Clawdd Mawr (Llanfyllin) do seem as a group to surround and face out from the cantref of Mechain, the district that forms the heartland of Powys (though if Abernaint is a head dyke it can be removed from this group). They may have been boundary markers for Mechain, but also could be defensive structures designed to protect the heartland of Powys (Hankinson 2002 7-8; Hankinson and Caseldine 2006 269). Many 'short dykes' of the Welsh borders are possibly too easily outflanked to fulfil a defensive purpose so perhaps were territorial markers (Hankinson and Caseldine 2006 268-69; Malim 2007 31). They often joined natural features such as rivers that possibly were utilised as borders, but conversely if the dykes were defensive the rivers could be guarding the flanks of the earthworks.

Figure 18 A map of Cornwall showing the relationship between the longer dykes and the hundred boundaries

There are two earthworks in Cornwall which can be used as examples of how people in the past have tried to fit earthworks to kingdoms. Scholars have suggested the Giant's Grave and the Giant's Hedge possibly delimit areas possibly large enough to be subkingdoms and so these earthworks could possibly be border markers (Lysons and Lysons 1814 ccxxviii and ccxlvi; Weatherhill 1985 32; Preston-Jones and Rose 1986 139; Todd 1987 259; Payton 1996 72). If the Giant's Grave did extend north parallel to the course of the modern A30 as Peter Herring has suggested, it would delimit the whole west Penwith peninsula (Crawford 1936b 174; Crawford 1953 242; Herring 1991). This peninsula contains a 'lys' place-name: Lesingey (such names signified a court or early-medieval administrative centre) and the old Penzance market cross possibly recorded a local tenth-century ruler, king Ricatus

(Macalister 1929 188; Macalister 1949 180-82; Holmes 1983 8; Preston-Jones and Rose 1986 139; Soulsby 1986 25; Sims-Williams 2003 210). If this is correct, the dyke could have been built to delimit the land frontier of a subkingdom based on the Penwith peninsula. Unfortunately, this reading of the inscription is probably an error and both these Cornish earthworks delimit fractions of local hundreds, which, like the cantref in Wales, most historians have usually assumed preserved the outline of earlier sub-kingdoms (Padel 1985 226; Preston-Jones and Rose 1986 137; Soulsby 1986 25; Okasha 1993 198; Dark 1994 155; Payton 1996 72; Turner 2006 113-16). There is no 'lys' pace-name in the area delimited by the Giant's Hedge and both earthworks are ignored by parish boundaries (Padel 1985 150-51; Preston-Jones and Rose 1986 139). If these two dykes do delimit sub-kingdoms, it seems unusual that these hypothetical subkingdoms could afford to 'wall' their borders when other Cornish (and English) polities did not. The idea that dykes marked the borders of half-forgotten tribes or subkingdoms is hard to disprove, but equally it is unconvincing in these cases.

Attempts to match better-documented kingdoms with dykes have been equally unconvincing. Blair postulated that the rulers of Northumbria built Grey Ditch and the Roman Rig as a defence against Mercia while other scholars have included Nico Ditch in the list of possible Northumbrian-Mercian border dykes (Blair 1955 121-22; Hart 1977 53; Higham 1993 143; Rollason 2003 27-28). Scholars have increasingly cast doubts on this theory; as this study assumes a prehistoric date for Roman Rig and as Grey Ditch actually faces towards Northumbria, it is highly unlikely that Northumbrian kings constructed these dykes to mark their borders (Rollason 2003 25-28; Higham 2006). When drawn on a map of England and Wales, Offa's Dyke does seem to define the western border of Mercia if not of England itself. Just the central section of Offa's Dyke covers 75% of a line drawn along the Anglo-Welsh border from the River Dee to the River Wye and more than half (53%) of the distance from the Dee to the River Severn. Perhaps it marks the culmination of the process whereby the smaller territories of Anglo-Saxon kin groups and tribes coalesced into larger kingdoms. Offa's Dyke is oddly not specifically called a boundary by any early-

medieval source nor is it quoted in any land dispute while references to it as a border in Welsh law codes postdate Offa by many centuries (Barnes 1883 55; Noble and Gelling 1983 91; Jenkins 1986 116). Perhaps West and East Wansdyke were discontinuous parts of a similar attempt to mark the border of a major Anglo-Saxon kingdom, in this case Wessex. Reynolds is adamant the two earthworks are related, both were built by the West Saxons and it defines Wessex; every other recent study is either far more circumspect on these matters or flatly disagrees (Fowler 2001 179; Reynolds 2006; Erskine 2007 105; Webster 2008 183; Malin 2010 167). The northern border of Wessex from the Bristol Channel to the western edge of Surrey would have been 145 kilometres long, but the two Wansdykes (assuming they are both West Saxon earthworks) cover less than a quarter of this distance (23%); they can hardly be said to 'define' Wessex.

As we have already mentioned attempting to match dykes (in particular Faesten Dyke and the Surrey-Kent Dyke) with the western border of Kent is equally problematic. Early-medieval sources suggest the western border of the kingdom of Kent fluctuated and Kentish kings often ruled much of Surrey; this suggests that the modern correlation between a dyke and the border of the county is possibly coincidental (Bassett 1989 100-02; Yorke 1990 47-49; Keynes 1993).

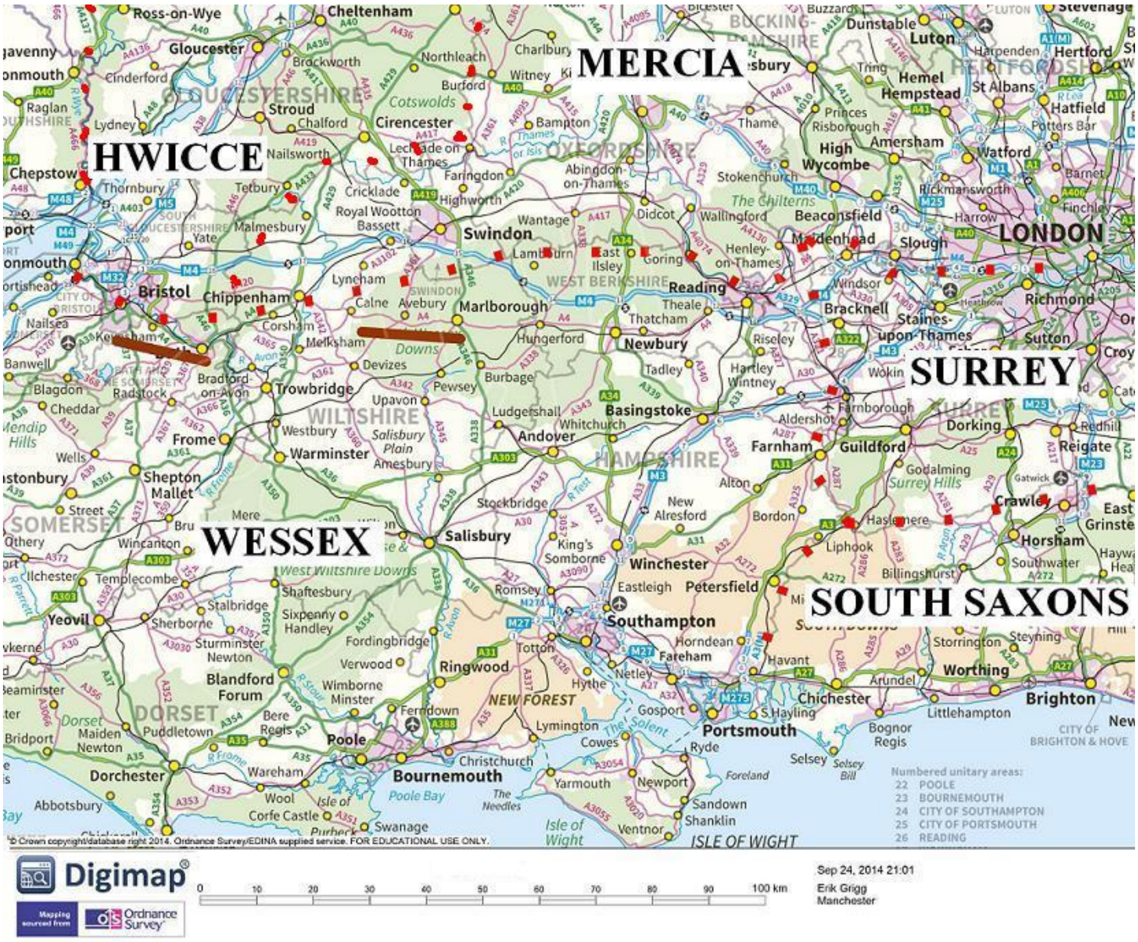


Figure 19 West and East Wansdyke in relation to the possible borders of Anglo-Saxon kingdoms (note how these two earthworks could only be said to define a small proportion of the West Saxon/Mercian border)

If we accept the argument that borders in England have a great longevity (often due to their reuse for different purposes), it is surprising how rarely early-medieval dykes are contiguous with medieval and/or modern administrative borders. Only a quarter of the length of all the probable and possible early-medieval dykes is contiguous with parish boundaries, the same proportion as for Roman and prehistoric dykes examined by this study. The percentage of early-medieval dykes contiguous with diocese, county and national boundaries is negligible. Even in areas where there is some correlation it is probably coincidental. In Cambridgeshire the dykes cut across the grain of the geology of the region as do parish boundaries in order to give all villages access to different types of land (fen, land suitable for arable cultivation and heathland). As they are convenient markers in an otherwise flat featureless landscape it is unsurprising that those who laid out the parochial boundaries utilised them, but

this does not mean that this was their original purpose. Lower Short Ditch is completely contiguous with parish boundaries, but the Anglo-Welsh border cuts perpendicularly across the centre of the dyke completely ignoring it. Both parish boundaries and Anglo-Saxon estates bisect East and West Wansdyke seemingly ignoring the existence of the earthworks. This is unlikely to be because the estates postdate the dykes as the Roman road between them is consistently contiguous with parish boundaries (Taylor 1904; Mellor 1945; Shaw Mellor 1945; Green 1971 141-42; Bonney 1972; Muir 1981 150-51; Reynolds 1999 82; Draper 2006 71; Reynolds and Langlands 2006 26). As one of these charters (S272 dated 825) refers to the dyke as the old dyke it seems inconceivable that the dykes postdate the creation of the Anglo-Saxon estates.

While some dykes (notably Aelfrith's Ditch, Bica's Dyke, Calver Dyke, Long Mynd, Clawdd Seri, Bwlch yr Afan and Fullinga Dyke) may have originally been border or frontier markers, this theory does not convincingly work for the vast majority of early-medieval dykes. It is probable that the desire to parcel up and delimit the landscape reflected in charters largely postdates most early-medieval dykes (Reynolds 2002 174). When people used early-medieval dykes as borders or estate markers, which is surprisingly rare, it is probably because they were convenient landmarks whose original purpose had become redundant as they did with prehistoric earthworks.

4.3.5 Dykes and nation building

The most popular theory among recent papers discussing dykes is that they did not serve a practical utilitarian purpose, but a largely symbolic (though equally useful) one helping to forge a nation (Squatriti 2002; Squatriti 2005; Reynolds and Langlands 2006; Bapty 2007; Higham 2011 2; Tyler 2011). The theory holds that dykes are symptoms of the rise of kingdoms and their construction was a way a king could exert power over his subjects and make a statement in the landscape. Early-medieval kingdoms were not blocks of territories as often crudely portrayed in historical atlases, but social constructs (Pohl 2005). The

assertion and definition of the extent of these new political entities was part of their creation: “The formalization of territories was of course key to the formation of early kingdoms….every community needs to establish a territory in order to keep neighbouring communities at a distance and preserve resources” (Hamerow 2002 100). The very act of digging the dyke bonded the kingdom together and was a way for the king extracting labour service from his subjects. By building long linear frontier markers, they were emulating the Romans and giving their reign a quasi-imperial image. The building of some groups of earthworks in East Anglia may have helped bond people together and these communities may have then coalesced to become the kingdoms we know from such sources as Bede and the *Anglo-Saxon Chronicle* (Scull 1992 15). Although many early-medieval dykes are quite small, the Devil’s Ditch in Cambridgeshire is monumental in scale and Muir suggested that this was a demonstration of royal might by the East Anglian rulers who we know from Sutton Hoo were not averse to displaying power (Muir 1981 157-61). If this theory holds true, we should perhaps expect rulers to boast about dykes, name them after themselves or their kingdom (though we should note kings probably built many structures they do not append their own name to), the earthworks should be imposing features on the landscape and fringe a kingdom.

The evidence for this theory is probably strongest in the case of Offa’s Dyke, which is why recent authors have frequently applied these ideas to this earthwork. Bapty, for example, has criticised the simplistic idea that we can find the one simple way that the dyke ‘worked’ suggesting that Offa was not building a defended frontier, but was trying to overawe his opponents by the sheer monumentality of the structure (Bapty 2003; Bapty 2007). This earthwork certainly seems monumental in scale and the fact that there is no evidence of recutting of the ditch suggests that the building of the dyke was more important than its maintenance (Feryok 2001 (2011 ed) 192). The reference to it reaching from sea to sea in Asser could be an echo of a Mercian boast and is one of the few direct references to dykes in early-medieval texts (Keynes and Lapidge 1983 71). Tyler argued that Offa built his dyke partly to emulate the Roman achievements in northern Britain as had Aethelbald, the Mercian king whom

Tyler presumed had Wat's Dyke built (Tyler 2011). The Angles who ruled Mercia could have been seen as pagan illiterate usurpers while the Britons were the inheritors of Roman Latin Christian culture and legitimacy; building monumental earthworks changed that as the dyke emulated the Roman frontier works and gave the Britons the status of barbarians beyond the pale much as the Picts had been during Roman rule. The name Mercia derives from the Old English word for a border and, in the same way as the idea of the frontier defined Americans in the nineteenth century, this idea of being frontiersmen could have prompted the Mercians to mark the Anglo-Welsh divide with a monumental earthwork (Turner 1920). Squatriti postulated that Offa built the huge earthwork to demonstrate his mastery over the land and people; it was a way of altering the flora to create a bio-diverse barrier separating the highland Welsh from the agricultural lands of Mercia (Squatriti 2002 65; Squatriti 2004).

Wansdyke may have been built to unify the kingdom of Wessex, but the evidence is less persuasive than it is for Offa's Dyke. Reynolds and other scholars have claimed that the rulers of Wessex built Wansdyke to promote themselves and unify their kingdom, noting how the royal family of Wessex claimed descent from Woden, therefore the name of the dyke was chosen specifically to associate it with them (Pollard and Reynolds 2002 189; Draper 2006 59-60 and 75; Reynolds and Langlands 2006 31-34). As the written evidence of the name Wansdyke postdates the conversion of Wessex to Christianity, Reynolds claimed that Woden in Saxon genealogies had turned from a deity to a founding father (Reynolds and Langlands 2006 33-34). Reynolds thought the dyke helped bound the peoples of Wessex together before they recaptured territory to the north so the River Thames could serve as a frontier with Mercia. Unfortunately for this theory, most other Anglo-Saxon royal families also trace themselves back to Woden so perhaps the name did not especially associate the earthwork with the West Saxon royal family (Dumville 1977 77-79). It is noteworthy that neither does the *Anglo-Saxon Chronicle* nor Asser's biography of Alfred (two documents designed to laud West Saxon kings, the former that records a battle near Wansdyke and the latter that records Offa building a dyke), make no mention of the earthwork. The

two sections of Wansdyke were constructed using different techniques (East Wansdyke is much larger in scale whilst only West Wansdyke has a berm and a revetment) suggesting they were not built as part of a single scheme. While it could be an incomplete work completed in stages by different groups using different techniques, it does not seem like a single project designed by a single ruler. As already discussed, the charter evidence possibly suggests that the original name of the dyke was not Wansdyke as an early charter calls it the old dyke (*ealdendic*) suggesting they were unsure of the earthworks origins. As a nearby prehistoric burial mound was recorded as Woden's Barrow, perhaps the locals began to associate the dyke with this deity or even named it after the barrow.

Though this theory of earthworks as manifestations of growing royal power sounds far more sophisticated and seductive than simplistically proposing that the dykes were mere border markers or just fighting platforms, there is little evidence to support it. Most early-medieval dykes were surely too short to have added to the prestige of a king and even Squatriti, one of the leading proponents of this theory, does not think it a likely explanation for the smaller dykes (personal communication). Rather than representing the labour of an entire kingdom, calculations for this study suggest that the inhabitants of just a few villages could have built most of the dykes though the largest were still major endeavours that certainly had a monumental importance. Nor do the names given to most dykes seem to support this theory and we have little evidence that kings ordered their construction. Aside from a single remark in Asser, there is no written evidence associating any of the dykes with any known ruler. As there is little correlation between dykes and administrative borders, they probably never lay along frontiers. Archaeologists have not found inscribed stones near any dyke declaring who built it and none of the charters that mention dykes give any hint that they reinforced the power of kings. The lack of references may be a product of the paucity of contemporary written sources, but it is odd that when the West Saxon kings inaugurated the *Anglo-Saxon Chronicle*, they felt no need to thread Wansdyke into the narrative of the founding of Wessex. It could be argued it was omitted as the earthwork defines

a smaller area than Alfred's Wessex, but the whole narrative describes the gradual expansion of the West Saxons from a small enclave on Southampton Water to cover all of England making such an argument unlikely. Many different versions of this document survive and events are recorded near the dyke like the battles at Woden's Barrow in 592 and 715, yet none mentions the earthwork (Bately 1986 25 and 33; Irvine 2004 22 and 35). The omission can hardly be because of brevity as entries as early as those dealing with the seventh century are at least biannual. Even the structure of the dykes does little to support this theory. As well as no stone inscriptions, the dykes did not have monumental gates designed to overawe people entering the dominion of a king who ordered their construction. None of the dykes seems to have been sited in particularly prominent positions to advertise them and there is some evidence that turf was used on some dykes to stabilise the bank, which would have further camouflaged them (Green 1971 132-33; Feryok 2001 (2011 ed) 167; Hill and Worthington 2003 54, 81 and 101). If these dykes were built to bring lasting glory to their builder or the kingdom they defined, all but Offa's failed and even with that earthwork, the evidence to support this theory is, at best, very thin.

4.3.6 Dykes a defences against raiding

The suggested purposes for dykes outlined so far only cover a small proportion of early-medieval dykes. Only one is probably natural, only two are definitely head dykes (Abernaint Dyke and Clawdd Mawr Foel), Horning possibly enclosed a ritual area and Heronbridge may have been part of a fort. While sections of some were reused as roads, only Brent Ditch seems built to fulfil that purpose. A few of the longer ones (Offa's Dyke, Wat's Dyke and possibly the two Wansdykes for example) may have served as an ethnic divide or a way of promoting the power of a king while bonding his kingdom together. A case for dykes being boundary markers can be made for more earthworks, but only for nine does it seem convincing including three which (Calver Dyke, Long Mynd and Fullinga Dyke) could possibly be prehistoric (the others are The Rein, Bwlch yr Afan, Clawdd Seri, Whitford Dyke, Aelfrith's Dyke and Bica's Dyke).

This leaves most of the probable and possible early-medieval dykes as yet unexplained suggesting that this study has yet to consider a major stimulus for dyke building.

One theory often associated with dykes is that they fulfilled a military purpose and there does seem to be evidence to support this thesis despite most recent studies dismissing it (Curta 2011 23 for example). It is noticeable for example that when the ditches of prehistoric dykes in Norfolk were recut in the early-medieval period (Bichamditch, Launditch and the Devil's Ditch at Garboldisham are possible examples) the inner face of the ditch was near vertical and the outer side flatter. This would accentuate the face of the earthwork and might have drawn people into a killing zone. As we have seen, there is abundant archaeological evidence of both weaponry and bodies that have suffered injuries at the dykes (beheadings at Bokerley Dyke and Bran Ditch, a battle cemetery at Heronbridge, odd weapons from the Devil's Ditch in Cambridgeshire, skeletons of men 'slain in battle' at Bedwyn Dyke and so forth). All of these cannot be merely explained away as later execution sites or disturbed furnished graves; while some of these burials may postdate the dyke and perhaps do not relate to its primary purpose, this archaeological evidence suggests dykes were places associated with violence. We have seen that some early-medieval Welsh poems associate dykes with fighting. If the slots found in the ditches of a least four dykes were ankle-breakers, they suggest that the earthworks were designed to repel and injure those who tried to cross them. The scale of the banks/ditches is suggestive of military structures especially as most give good views vital to defenders of a military feature. Most face downhill which makes them much harder to storm but more difficult to build: on sloping ground the easiest way to construct a simple delimiting mark in the landscape is to throw the soil from the ditch downhill (Williams-Freeman 1915 34). The dykes often end at features like marshes, ravines, estuaries or rivers that would hinder any attempt to outflank them. The names of some dykes suggest a military purpose, especially those that incorporate the Old English word 'fæsten' suggesting that the Anglo-Saxons believed some dykes had this purpose, though the name could also mean it was overgrown (Bosworth 1838 107; Birch 1885 483-84; Hogg 1941 25; Barker 2008). Written sources like Law Codes,

chronicles, charters, poetry and saints' lives all suggests this was an age of raids and warfare (Feryok 2001 (2011 ed) 167). These physical features, the written evidence and the lack of credible alternate explanations suggest that many dykes had a military purpose.

As well as lying across the path of modern roads, as we have seen there is charter evidence that numerous dykes cut routes in the Anglo-Saxon period (or more particularly *herepaths* or army paths, routes commonly used by raiders or invaders) like those near Wansdyke (S 711 and S 735 for example). Evidence for the organisation of *herepaths* suggests them to be a later phenomenon, but many probably lie along routeways used by armies in the past in particular those that run along prominent ridgeways. If the dykes had any gateways, blocked a route while leaving a nearby one open or were laid out in a 'v' pattern we might suppose they funnelled movement rather than blocked it. This study found no such evidence of funnelling (possibly apart from the Cornish dykes which seem designed to keep a raider out of certain headlands) so such an idea is unlikely.

Bury's Bank cut an ancient ridgeway which a Saxon charter (S 500) records as a *herepath* (Birch 1885 802; Crawford 1915 253). The Black Ditch on Snelsmore Common probably originally cut the same routeway in Berkshire, though today the surviving remains of the earthwork fall just short of the edge of the Icknield Way (King 1872-5 186). The East Hampshire dykes (especially the Froxfield earthworks) cut access along vegetation-free stony valleys while their flanks are guarded by thickly wooded clay lands (Williams-Freeman 1915 288-89; Grinsell 1958 148, 280 and 287; Aldsworth 1973 76-77). Many of the dykes in Glamorganshire seem to block routes along ridges that give access to the lowlands to the south (Fox and Fox 1935b; Fox and Fox 1935a; Fox 1936; Crawford 1953 248-49; Crampton 1966 377). Tyler suggested that if Offa had designed his dyke to stop the Welsh running off with stolen Mercian cattle then the ditch should be on the other side (Tyler 2011 157). Mercian farmers though would surely have preferred the earthwork to prevent the Welsh getting into Mercia than having the bother of chasing the raiders to a dyke then rounding up

their animals. The lack of evidence for gateways and the fact that many cut routeways suggests that the purpose of early medieval dykes was to rebuff intruders.

One criticism often levelled at any theory that suggested the dykes fulfilled a military purpose is any attacker could simply go round the dykes (Muir 1981 157-61; Malim 2010 177). The Clwyd-Powys Archaeological Trusts' Short Dykes project suggests many dykes in Wales were not defensive as some end abruptly before reaching any natural feature (Hankinson and Caseldine 2006 266-68). This is not true of all the dykes of the Welsh border: the southern end of Giants Grave for example is at a steep gully while there is a bog to the north and both ends of the Lower Short Ditch are at steep gullies. While some of the short dykes of Wales do not reach such natural features, without archaeological investigation it is impossible to tell if the visible terminus of an earthwork is the original one and many of these dykes are in groups; circumnavigating one would just mean an invader faced yet another. No raider could simply go round Dane's Dyke or the Cornish dykes as the sea or estuaries were the termini of these dykes; the Giant's Hedge, for example, terminates below the lowest fordable point of the estuaries at either end (Borlase 1758 325).

Fox postulated impassable forests guarded the gaps in Offa's Dyke, but medieval forests were probably relatively open as large numbers of mammals like deer would keep undergrowth clear so dyke builders probably just avoided woodland because tree roots hugely increase the amount of labour needed to dig a ditch (Fox 1955 283-84; Noble and Gelling 1983 11). Navigating through any wood (or marsh) in good order is undoubtedly not as easy as open country. The ends of many dykes (like Bokerley Dyke, the Surrey-Kent Dyke, Minchinhampton Bulwarks, the southern end of the central section of Offa's Dyke and the eastern end of the central section of the Grey Ditch in Derbyshire) are hidden from the ditch side by either turning back on themselves or being behind a small rise. To a historian with an Ordnance Survey map it is obvious how to circumnavigate a dyke, but if early-medieval invaders approached even a very short dyke where trees, marsh or a rise in the ground obscured the ends,

they would not know how to go round it without sending out patrols. Even if a raider could go round a dyke, this would cause delay and possibly involve the splitting up of the invading force to reconnoitre a route.

The best example of dykes cutting routeways is probably the Cambridgeshire Dykes which seem to block access to East Anglia along the Icknield Way (Fox 1923 143-47). They lie across a narrow band of chalk about five kilometres wide that runs southwest-northeast flanked by what were then fens on the northwest side and what is thought to have been ancient woodland on chalky boulder clay to the south-east (Martin 1999 82 and 88-90; Malim 2005 242-43). An enemy who successfully circumvented one of the earthworks would be then faced with the problem of getting past the next.

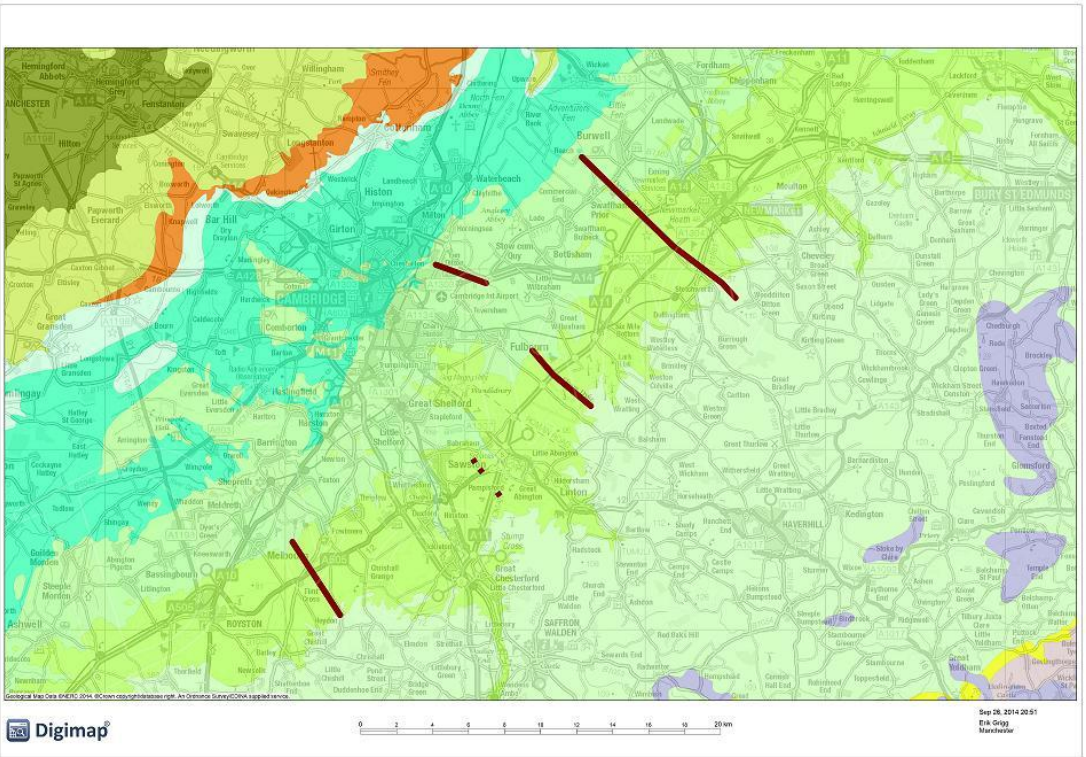


Figure 20 Geological map showing how the Cambridgeshire Dykes (marked in brown) block access along a narrow band of chalk

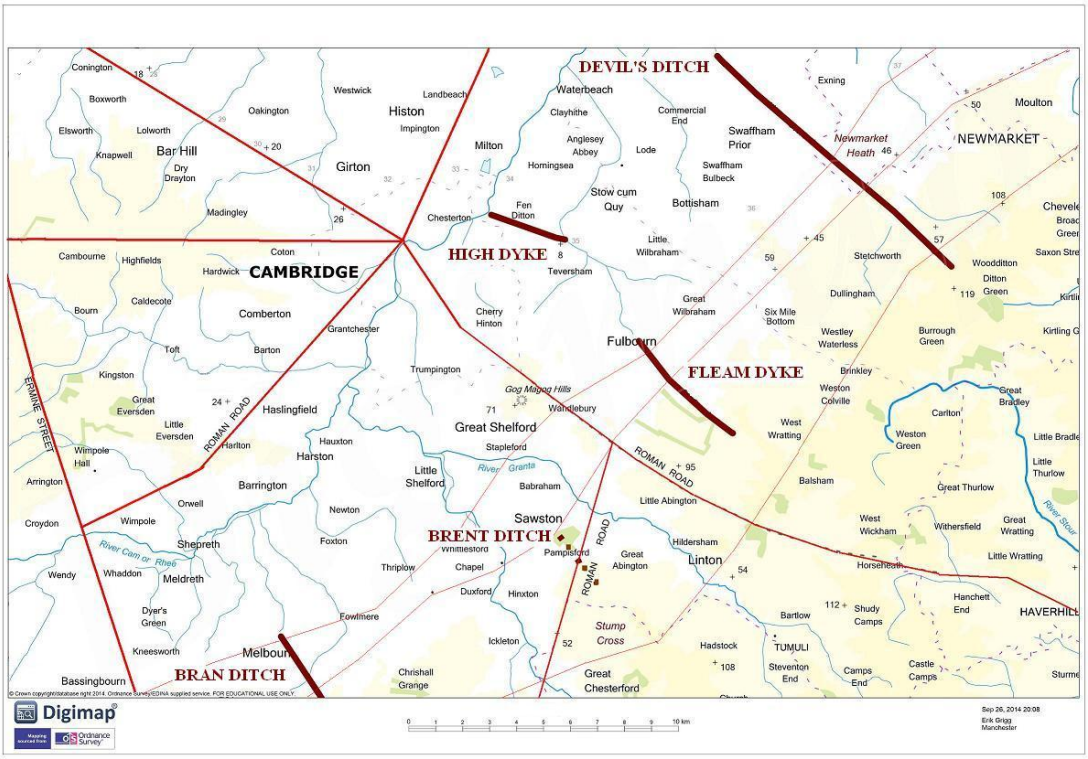


Figure 21 The relationship between the Cambridgeshire Dykes and various roads (the Roman roads are marked with a thick red line and ancient trackways with a thin red line); note how the dykes cut the trackways leading into East Anglia rather than the Roman roads that do not

Some scholars have noted that long sections of many of the dykes are located on a good defensive line, though this term is unfortunately vague and hard to quantify. Some sections of longer earthworks like Offa's Dyke are unquestionably overlooked or lack good views forward (Hughes 1893 471; Noble and Gelling 1983 48, 62, 78 and 82). This is probably because of their length; they have occasionally to cross areas where the local topography is ill suited for a defensive earthwork, but they usually face down steep slopes often with a counterscarp bank to emphasis the ditch. Wat's Dyke often has a river or a water course on the west side and at one section it seems a small stream was canalised to add further protection (Hannaford 1998 6; Hayes and Malim 2008 173-78). The twists and turns in Offa's Dyke that sometimes create dead ground in the front of the earthwork do not invalidate a military purpose as the builders were avoiding streams and areas of boggy ground; without artillery an early-medieval attacker would gain little advantage if sections of the dyke were

overlooked (Hill and Worthington 2003 50). The northern section of Offa's Dyke does seem to occupy a worse defensive line and seems less skilfully chosen than Wat's Dyke; if his dyke is the later, it seems strange that Offa did not merely refurbish all or part of Wat's Dyke then connect the two (Hannaford 1998 6). The gaps in Offa's Dyke would need explaining if it was an Anglo-Welsh border, but if it was designed to prevent raids only from Powys and Wat's Dyke was designed to prevent raids from Gwynedd then the location of the two dykes seems more logical, especially if having overlapping defences made the second dyke more defensible.

One obvious argument against a military purpose is the lack of archaeological evidence of forts, towers, palisades or a standing garrison on the dykes while sections of dykes, notably Offa's, are probably far too steep to allow watchmen to patrol them (Noble and Gelling 1983 47; Tyler 2011 156-57). This argument assumes a manned barrier and it is unlikely early-medieval societies were able to resource permanent garrisons. As the dykes do not seem to have been on the actual border, they could have been deliberately set back from the frontier so once an attack had started defenders could rush to the earthwork; such temporary occupation would explain the lack of evidence of forts or garrisons.

We must remember that a dyke could be a failure at repulsing cattle rustlers, raiders or invaders and yet still be designed with that purpose in mind. A ruler would be expected to protect his people so by building a defensive structure he would be seen to be fulfilling such a role (Abels 1988 11). Similarly, a community may collectively decide to dig a dyke to stop attacks only to find the raiders were undeterred. By examining the nature of early-medieval warfare, it is easier to understand how a dyke could function in this context.

4.4 The nature of early-medieval warfare[1]

4.4.1 Why discuss dykes and warfare in detail?

One scholar described those who defined castles as defensive structures as members of the rape-and-pillage school of history and while it is true castles perform other roles as centres of administration and symbols of power, to ignore their military role because it is 'simplistic' is extremely short-sighted (Stocker 1992). Before discussing how the dykes could play a military role it is necessary to clarify the main characteristics of medieval warfare (in particular widespread raiding) as many recent scholars have either ignored the role of violence in the past or made inaccurate assumptions about its nature (Abels 1988 1; Cleary 2000 89; Armit 2001; Bachrach 2001 57). The role larger earthworks may have played in the creation of kingdoms or asserting regal power has been examined in detail by Squatriti and others (Tyler 2001; Squatriti 2002; Squatriti 2005; Reynolds 2006), but how the dykes could have defended against raids has received less attention in recent years (Hill and Worthington 2003 113-28). This study makes no apology for going into detail of the mechanics of early medieval warfare, or for discussing how dykes could have played a part in such conflicts. This does seem to have been a primary purpose for many earthworks of this period. It does not mean that such earthworks did not have other roles (both envisioned by the builders or unforeseen later functions) as this study has consistently stressed the multifunctional nature of earthworks.

[1] A draft of this section was shown to two friends of the author (one military expert and the second experienced in using Anglo-Saxon weapons) who commented very favourably on the conclusions made about the nature of early-medieval warfare and on the role dykes could play in it. The first, A. Noble, is a retired Colonel in the Royal Artillery and now a security consultant who has an MSc in Defence Technology as well as a MA in War Studies. He has commanded at platoon, company and regimental level on operations; has extensive experience of planning and constructing military engineering works in support of both offensive and defensive operations. The second, J. Alcock-Brown, is a re-enactor who has taken part in numerous mock battles using Anglo-Saxon and Viking replica weapons. However, any mistakes in this part of the thesis are entirely my own.

4.4.2 Raiding in early-medieval warfare

Many saint's lives, chronicles and histories contain references to 'battles', but this is possibly because decisive set-piece actions were of more significance to chroniclers than small-scale forays (Underwood 1999 122). Although there are examples of indecisive battles, engaging in one is a highly risky strategy as one side will be defeated and the leader could even be killed; raiding carried less chance of a catastrophic defeat and was probably more widespread. There are clear references to raids in early-medieval sources like the *Anglo-Saxon Chronicle* and many 'battles' were possibly merely successful raids (Pelteret 1981 111; Wormald 1982 119; Bately 1986 28-31; Higham 1986 246-56; Underwood 1999 126-27; Iverson 2001 30). As most early-medieval armies were relatively small, raiding would be within their capabilities but mass invasion probably would not (Abels 1988 35-36).

While it is impossible to quantify the amount of raiding, even on a small scale, raiding could have a widespread psychological impact (the fear of something can often have more effect on people than the likelihood of it occurring). If the dykes were designed to counter raiding, perhaps it was the fear of raids that prompted people to build them; you do not wait until a burglary before fitting secure locks on your windows and doors. The struggle against violence, in particular small-scale raids often involving cattle rustling, is a clear theme of all early-medieval law codes (Jackson 1955 88; Whitelock 1955 366; John 1982 180; Carr and Jenkins 1985 30; Jenkins 1986 9; Griffith 1995 10 and 17; Wormald 2009 195-96 and 204). The collapse of the Roman Empire brought to an end the use of professional armies in much of Europe and the militarization of the civilian population (Underwood 1999 126-27). The spears found in Anglo-Saxon graves may have had a symbolic meaning, but probably also signify a society where the need for personal protection was a daily concern (Halsall 1989 158; Underwood 1999 39; Härke 2014). As very small groups of people could have built most early-medieval earthworks, perhaps communities constructed dykes to deter or repel raids.

Without detailed written descriptions of raiding in early-medieval sources, it is essential if we are to understand how it could affect societies to examine small-scale military raids from other periods and places to see how dykes could have functioned as a deterrent. Archaeologists have speculated that cattle raids plagued Bronze-Age British society usually in autumn when the harvest was gathered in (Pryor 2002 213-14). There is good evidence like the *Orkneyinga Saga* of raiding from the Viking period; this source suggests raiders usually went elsewhere when they faced fortifications (Pálsson and Edwards 1978 55, 123-24, 131-32 and 146). Evidence from the later medieval period especially the Anglo-Welsh/Anglo-Scottish borders, nineteenth-century East Africa and the trenches of World War One suggests raiding has often been an integral part of war (Fraser 1971; Nunneley 1998 46-48; Ashworth 2000 176-210; Iverson 2001; Crouch 2002 204-5). Halsall's anthropological study of warfare in societies with a similar technology to early-medieval Britain (Sudan, South America, New Guinea and the Maoris of New Zealand) suggests there was a great deal of raiding that involved the theft of goods rather than mass invasions to steal land (Halsall 1989). Even though these raids were often ritualised, in certain locations they could lead to a large number of fatalities.

Raiding is often carried out by more nomadic societies against more settled agrarian communities (for example Berber raids on the Roman Empire, Mongol raids on China and Taureg raids on their neighbours to the south). As well as the largest early-medieval dykes, a great many earlier hillforts lay along the Anglo-Welsh border. This is possibly because this is the interface between higher land to the west (which supported a more pastoral economy) and the lowlands (mainly arable society) to the east. Perhaps the dykes of the Anglo-Welsh border and southern Wales are also examples of earthworks designed to prevent attacks by highland raiders on settled communities.

4.4.3 Early-medieval raiding techniques

People were not constantly attacking their neighbours in the early medieval period and they were mechanisms in place to prevent uncontrolled violence (Reynolds 2009 34-35). Raiding though did occur and such low intensity conflict (or at least the fear of it) was probably widespread enough to be a major stimulant in the construction of most dykes. Perhaps using evidence from early-medieval Britain and elsewhere we can recreate the mechanics of a typical raid then discuss how a dyke could counter such a threat. The period under study was one that saw fundamental changes (Britain in AD 400 was very different from the situation in AD 850), but as we cannot accurately date the dykes, the following scenarios are broadly based on evidence appropriate to the probable peak of dyke building in the late sixth and early seventh centuries.

While farmers could have attacked their neighbours they were usually probably too busy to do so warriors would be more likely to carry raids out though there was probably no clear division between the two classes for much of this period. The leaders of raiding warbands could have been kings or, especially in the early stages of the period, merely successful warriors; as well as choosing warriors from among their kin, the most successful leaders would attract warriors from other communities (Abels 1988; Scull 1993 75; Underwood 1999 107-10; Bachrach 2001 158). Those who made their living from war would become well armed with shields, swords, helmets and possibly even chain mail. The quickest and easiest way to travel to war would be on horseback; without detailed maps of neighbouring kingdoms, raiders would probably use Roman roads and ancient ridgeways to penetrate deep into enemy territory without the fear of getting lost or making unnecessary deviations. It is noticeable that along many Roman roads, villages with names of an Anglo-Saxon derivation are located a few miles away rather than on the road (Scull 1993 75; Scull 1995 74). This suggests that raiders did not stray far from these routes, possibly out of fear of ambush or loosing their way. It is perhaps significant that the Anglo-

Saxon word *rád* not only meant ‘to go riding on a horse’, but also ‘to go raiding’ and ‘a road’ (Pollington 1994 53).

As we have seen, in other cultures the ideal raid would be one that met no resistance, or failing that one which swiftly overcame any defenders. Raiders would try to make the enemy break and run (most casualties in battle occur when one side is in flight), but if this was not quickly achieved the attackers might beat a hasty retreat (Keegan 1976 (2004 ed) 71; Bennett, Bradbury et al. 2005 83). If raiders targeted farms, the defenders would be local peasants or *ceorls* armed possibly with spears and tools such as axes, knives or hunting bows (Underwood 1999 26-35 and 68-75). If they targeted religious sites, their opposition would have been unarmed priests or monks. While the Anglo-Saxons travelled to war on horses, it is uncertain whether or not they actually fought on horseback as they did not have purpose-bred warhorses and may not have had the stirrup, essential when using a horse as a fighting platform (Davis 1989; Bennett, Bradbury et al. 2005 73-75). The Anglo-Saxons did pursue a fleeing enemy on horseback often for many hours after a battle, though during a raid a quick getaway was probably more advantageous than chasing after an enemy (Iverson 2001 28-29; Bennett, Bradbury et al. 2005 17-19). After the raid, the attackers would gather up their stolen goods and head back home along the most direct route (probably a ridgeway or Roman road) then spend the evening feasting, boasting and drinking in their hall. Raids ignite vendettas that trigger revenge attacks and a cycle of counter raiding; when kings emerged they tried to curb this partly through the use of written law codes (Griffiths 1995 10).

A raid could have various objectives: to demoralise an enemy, to reduce their ability to fight back and to obtain booty. These goods could be cattle that raiders could herd back to their own community; the animals would then sustain the raiders (Hooper 1989 193; Underwood 1999 111). The burning down of a victim’s farms and food stores would reduce their strength and ability to strike back. The raiders could take slaves and high value goods (such as jewellery) and the leader of the raid could use such goods to reward his followers (Pelteret

1981). This would attract warriors to the leader who raided while the victims may turn on their leaders for failing to protect them (Abels 1988 11; Underwood 1999 108). If rape is involved this would further burden the raided area with unwanted young mouths to feed who may be looked on with suspicion as their fathers would be enemies. The wealthy and well educated that were less able to fight (priests, teachers, lawyers and poets for example) would flee a community suffering raids that would further destroy its culture.

4.4.4 How a dyke could counter raiding

In 1959, Lieutenant-Colonel Alfred Burne published a paper arguing that Offa's Dyke was more likely to be a military structure than an agreed frontier as Fox had suggested (Burne 1959). Burne suggested that the reason why there were English settlements west of the dyke was that as an unmanned defensive structure, the Mercians needed sufficient warning to man the earthwork during a Welsh attack while the various dykes of the Welsh borders were forward and rear lines of an integrated defensive system. It is easy to dismiss Burne as he was not an archaeologist, but he was a respected military historian who knew more about warfare than most scholars who have examined early-medieval dykes. If we accept that many dykes may have had a military purpose and that most fighting during this period was raiding, it is necessary to see how a dyke could prevent enemy forays entering the heart of a community.

Dykes could probably function in various ways in a society subject to raiding or the fear of raids. They could deter attack say, by being so monumental in size a potential attacker would deem the force needed to overcome the earthwork would outweigh any benefit from doing so. They could also provide a fighting platform where defenders could defeat raiders; monumental dykes that failed to deter an attack could also be a place where defenders could make a stand. Communities could also dig smaller dykes that were not a visible deterrent, but where they planned to ambush attackers. Raiders resting before returning home could also dig an earthwork across a neck of land to defend a discrete area (like

a peninsula) against counterattack. Similarly, defenders could make a peninsula defensible by use of an earthwork in order to have a refuge during a period when their community was under incessant attack; these last two functions potentially would give rise to very similar earthworks. If we examine these different functions in turn we can suggest which dykes if any could have fitted these four various scenarios.

The largest dykes are the most likely candidates for earthworks designed to deter attackers. The Devil's Ditch, for example, is monumental in scale rising up to five metres above the otherwise flat Cambridgeshire countryside. Kingdoms and communities to the west would undoubtedly have noticed such an earthwork so while it would not have taken an attacker by surprise; it would certainly have made potential raiders think twice before attacking East Anglia. Equally, the sheer length of Offa's Dyke means that potential Welsh raiders must have been aware of it, but equally would have known that a king that could build an earthwork on such a scale was likely to have the resources to punish any attack on his territory. When the Welsh Annals record Offa devastating the British in 784 it was possibly a retaliation against Welsh raiding (Morris 1980b 47 and 88).

If these dykes failed to deter attack, they could also have provided a platform to defeat raiders. Anyone who has tried to scale the Devil's Ditch is aware how if manned it would be hard to overrun. We can probably dismiss Muir's claim that it would require too large a force to man as the view from the top means a relatively small force guarding the dyke could easily send men along the bank to block any attempt to outflank them by raiders attacking at more than one point (Muir 1981 158-59). Such a strategy would not work with Offa's Dyke as its sheer length would surely make it easier for raiders to creep across an unguarded point. Perhaps Offa's Dyke was deliberately set back from the border so it could not be overrun by surprise (which is why English place-names are found to the west) and some scholars have suggested mounted guards could have patrolled it (Hughes 1893 467; Noble and Gelling 1983 49, 58 and 60; Gelling 1989 199; Hill and Worthington 2003 113-28). Hill suggested a mere

100 mounted men in three shifts could patrol Offa's Dyke and beacons could summon defenders from nearby villages when they spotted Welsh raiders (Hill and Worthington 2003 126).

As the majority of dykes were much smaller than Offa's or the Devil's Ditch, they were less likely to deter attack, but communities may have built them as stop-lines where raiders could be defeated (dykes like Grey Ditch, Rowe Ditch, Pear Wood and Bury's Bank for example). Most dykes are some way back from an actual frontier so raiders could not easily overrun them, allowing defenders to assemble on the earthwork and plan their strategy before the attackers arrived (Higham 1997 151). Many dykes cut Roman roads or what charters tellingly refer to as *herepaths* or army paths, the very routes taken by raiders and invaders. The dykes in Glamorganshire for example seem to block ridges that give access from the uplands to the coastal plains (in an early-medieval context this would mean keeping warriors from Brycheiniog out of Glywysing) often cutting ridges at narrow bottlenecks (Fox 1936 4; Hill and Mathews 2004). As many of the smaller dykes required very few people to build them and some are called 'rough dykes', they therefore were probably temporary measures thrown up at comparatively little notice. The need to build new dykes quickly to counter the threat of raids is possibly why the builders did not bother with a palisade. Raiders who successfully raided an unguarded community may have been surprised by a newly constructed earthwork blocking their progress when they traversed the same route the following year.

We know from the complete lack of archaeological evidence of forts, watchtowers or fortified gateways that early-medieval dykes were not permanently garrisoned, but, as scholars have suggested when discussing Offa's Dyke, watchmen (like those as mentioned in Beowulf or the *speculators* Gildas records) may have patrolled them (Wrenn and Bolton 1953 (1996 ed) 119; Higham 1991a 11). These watchmen could then use beacons, flags, horns or messengers to warn the local people of the attack (if the raiders were burning farms as they came the smoke may have made other warnings unnecessary). We know from later Anglo-Saxon documents that there was a system in each

shire where the local lords could call on the services of their tenants to fight invaders called the *fyrd* and earlier similar local organisations possibly existed across early-medieval Britain (Abels 1988 11-37; Iverson 2001 21-23). As the local men and the watchmen gathered at the earthwork messengers could have sought out the local ruler and his warriors.

Previous scholars who have examined the dykes have not discussed the psychological influence of a dyke during a fight. It is likely that the defenders would be a group of (possibly terrified) locals lined up along the earthwork whereas the attackers would more likely be warriors. Morale is incredibly important in any battle; the local farmers protecting their land would be likely to react with panic and the biggest problem with inexperienced troops is they tend to flee in the face of a determined attack (Bachrach 2001 165-73 and 201). The attackers would probably travel on horseback to raid and dykes are very effective against cavalry so would have inhibited the ability of mounted raiders to quickly rout the defenders (Muir 1981 159; Malim, Penn et al. 1996 114). As the majority of casualties in battle happen when one side is in an uncontrolled flight, a ditch in front of the dyke which keeps the enemy at a safe distance would be a comfort to the defenders while the bank would be a safety zone from which the defenders would be reluctant to flee (Keegan 1976 (2004 ed) 71). We know from the Battle of Hastings that manoeuvres like having the cavalry feign a retreat could draw out defenders from a secure position upsetting defensive formations like a shield wall (Bachrach 2001 236). Being on a dyke would discourage defenders leaving their position. Perhaps the decapitated burials found at some dykes may have been the remains of defeated defenders who panicked or were overwhelmed by superior numbers by raiders. The defences of burhs later helped comparatively amateur defenders see-off attacks by semi-professional Viking raiders. In modern battles, most conscript soldiers never use their weapon; it is likely that in an early-medieval context the defenders would probably hope that the enemy would simply go home (Keegan 1976 (2004 ed) 73). It probably takes four times as many troops to storm a defended position as to hold it so the raiders would have to considerably outnumber the attackers before they dared attack (Bachrach 2001 ix).

If the raiders decided to press on with their attack, a dyke would have many advantages for the defenders. The ditch would initially keep the raiders at a distance. Missile weapons (arrows, throwing axes and javelins) would potentially drive off an attacker without the need for the more terrifying prospects of close quarter fighting. The defenders, if local farmers, would be less likely to own a shield and modern re-enactors state that it is difficult to wield a shield as well as the rather heavy Anglo-Saxon spear so perhaps they did not form a shield wall on top of the dykes (Siddorn 1998). Projectile weapons are far less effective when thrown or fired uphill as the loss of momentum makes them easier to dodge and they will do less damage if they hit. If raiders were more likely to be warriors who made their living from war they were more likely to be armed with swords and, as we have seen, the downward sweep of a heavy early-medieval sword would be hard to manage against a defender raised up on a bank.

A dyke could also help defeat as well as just repel an attack. While the raiders, deep in hostile territory, were sustaining casualties assaulting the earthwork, messengers warning of the attack could be bringing more men to the aid of the defenders. If the defenders felt they had sufficient numbers they could even use the earthwork to destroy the attackers; the men on the dyke could send out forays of more mobile and better-trained troops round the flanks of the raiders then crush them against the dyke. Individual earthworks have particular characteristics that would help defeat an attacker. Minchinhampton Bulwarks cuts a ridgeway and the ends are located where the land slopes down to a valley; rather than being straight, the ends curve forward to form a reverse ‘c’ shape effectively drawing raiders into the centre where the defenders will outflank them. Bokerley Dyke cuts a Roman road, but runs parallel to it for some distance so it can be used as a missile platform against attackers approaching from the north (Pitt Rivers 1892 59-60).

If the raiders sensibly avoided a frontal assault, then outflanking the dyke may not have been as easy as modern fieldwork suggests. As most early-medieval dykes faced downhill and pollen or other environmental evidence suggest they ran across open country defenders would have a good panorama of the ground in front. This would not only give them good warning of attack, but during the fighting allow them to react quickly to any outflanking manoeuvre by the attackers. If the raiders tried to go round one dyke and rejoined the road they may have faced another dyke as many are found in groups like those on Crookham Common (O'Neil and Peake 1943). As the ends of many dykes are not obvious, a raider either had to send out patrols or guess which way was the best route round the earthwork. If a dyke deflected raiders off the *herepath* they were following so that they had to ford a large river or cross a deep gully, this would provide an ideal opportunity for an ambush. If a raider entered the wood or marsh on the flanks of a dyke, he would be entering an environment where the locals hunted and they could pick off the stragglers. As losses mounted (as raiders were wounded, killed or deserted) the leader of the raid would soon be forced to return to safety. It is likely many raids were made at night making it even harder to see the ends of the dyke or navigate once the raiders left the road (Iverson 2001 15).

The areas where there are no dykes are possibly ones where there was no need to build linear defences against raiders. The lack of dykes in central Mercia might be because the written sources and archaeological evidence such as the Staffordshire Hoard suggest the Mercians raided the most. The border subkingdoms recorded in the Tribal Hidage that surrounded the core of the Mercian kingdom may have absorbed raids from other kingdoms. There are no dykes in northwest Wales as mountains and hard to ford tidal rivers block access into the kingdom of Gwynedd (Iverson 2001 9-10). Large forests lay to the north of both Essex and Sussex (two shires devoid of early-medieval dykes) and large tidal rivers or marshes cut their coastlines where defenders could ambush invaders as they attempted to ford these water obstacles. There were no dykes in the Highlands of Scotland as there are few land routes worth cutting and most raiders would travel by boat.

If raiding caused the building of many dykes then perhaps some were dug as a defended beachhead by attackers on raids that required at least one overnight stop in hostile territory. We know that the Vikings raiders used dykes to protect themselves from counterattack by digging earthworks across a narrow neck of land to make a safe haven like Coombe Bank near Reading. Perhaps Park Pale is a Viking beachhead dug by Vikings attacking the kingdom of Northumbria (Butler 1967 99). It is possible that Anglo-Saxon raiders constructed earthworks to protect themselves when resting during a raiding expedition either before they settled in Britain or after. On the east coast of England Dane's Dyke is the only earthwork that looks like a possible beachhead constructed by raiders from abroad and the twelfth century Symeon of Durham claims a seventh-century Anglo-Saxon king landed there (Arnold 1882 338-39). The source is unfortunately rather late, the site is extremely well chosen and the earthwork's massive scale makes it unlikely it was a hurriedly built defence for a group of raiders. The earthwork at Heronbridge may have been a refuge or bridgehead for a marauding Northumbrian army, but again it looks very well made for a hurried defensive measure (in particular the careful reuse of Roman material in the revetment). There are no dykes on the west coast of Britain that look like beachheads for Scottish or other Irish raiders, possibly apart from those in Cornwall which are surely too long for a hastily erected defence. Therefore, though the Vikings may have used dykes as beachheads, there is little evidence earlier raiders did, perhaps because their raids were swiftly concluded.

A possibly better explanation for the Cornish dykes and Dane's Dyke is that they were refuges not for the raiders, but for those being attacked. Perhaps Cornish dykes like the Giant's Hedge and Bolster Bank protected peninsulas because that is where the locals (with their cattle) could retreat to when their enemies (the West Saxons for example) attacked, as they did in 813 (Bately 1986 41). The West Saxon kings could maraud up and down the length of the spine of Cornwall as a great show of power burning buildings, but once the danger was over, the locals could emerge from behind the dykes and rebuild their settlements. Of all the areas conquered by the West Saxons, Cornwall was

the only one that retained its native language and culture; perhaps their dykes provided safe havens that protected their people. Large cliffs guard the seaward side of Dane's Dyke and late Roman signal towers along the coast to the north could have provided a warning of raiders allowing the locals to gather their families and animals before retreating behind the dyke.

To go through each individual dyke not covered by the other theories to see if it may have had a military purpose would be rather repetitive, but the explanation that many dykes were built as a response to raiding seems to cover the majority of dykes.

4.4.5 Who ordered their construction?

It is likely that people from the estate that was delimited constructed those dykes that were boundary markers probably under direction of the estate owner, but it is less certain who ordered the construction of those earthworks that had a broadly military purpose. It is tempting to link dykes with the rise of kings and certain kingdoms. It is fairly certain Offa ordered the construction of one earthwork and as we have seen, Aelfrith, Bica, Lawa and Eliseg (if Clawdd Lesg is named after him) may have ordered the building of smaller dykes. Without precise techniques for dating dykes, attempts to connect other dykes with individual kings are foolhardy. Geographical location suggests a Mercian king possibly ordered the building of Wat's Dyke, an East Anglian king those in Cambridgeshire and a king of Wessex possibly ordered Wansdyke, but connecting other dykes with kingdoms let alone individual kings is highly speculative.

Scholars have linked dykes like the Swaledale Dykes, Tor Dike and the Giant's Hedge with suspected lost British kingdoms (Fleming 1994 26-27; Payton 1996 72; White 1997 46; Fleming 1998 18-32; Higham 1999). This approach does run the risk of assuming a later administrative region was definitely once a

kingdom then fitting that hypothetical realm to a nearby, possibly unrelated, earthwork. The larger dykes certainly looked planned by an authority with wide-ranging powers (as we have noted the larger dykes were more likely to have marker banks, ankle-breakers and revetments), but most early-medieval dykes are small, simple structures built by a hundred men in a single season. The vague descriptive names of many dykes as well as the supernatural monikers all suggest the original builders were soon forgotten; the 'rough dyke' names of some confirm the idea they were hurriedly built. Perhaps kings did not order the construction of the majority of the earthworks and small agricultural communities built them to defend themselves against the predatory warlords whose descendants probably became kings. Dykes are exercises in earth moving, they are a typical farmers solution to a problem as peasants are always digging the earth for example for drainage, to get at root crops, to make hedgerows to control cattle, to terrace land for ploughing, removing tree stumps, digging out large stones or burying the dead (Squatriti 2002 43-46). Digging the earth was probably not the natural action of an early-medieval war leader.

4.4.6 Evidence for the 'stop-lines' theory

One possible problem with the theory that people built dykes as a reaction to raiding is the lack of evidence; we have no written source that directly confirms this idea. Conversely, despite attempts by recent scholars like Squatriti to claim there is no proof early-medieval dykes had a military purpose and they were in fact assertions of kingly power, the only written evidence confirming his theory from the British Isles is a single line in Asser (Squatriti 2002 28). The analysis of the size of labour force needed to build these dykes in this study suggests most were not the grandiose gestures of a king. This study has gathered abundant written and archaeological evidence that this was a time of incessant raiding and the dykes were related to (and most likely a response to) those attacks. There are numerous burials associated with dykes that suggested people met a violent end at them. Many of the dykes have names that suggest a military purpose. The only time a dyke is mentioned in the *Anglo-Saxon Chronicle* is

when an Anglo-Saxon king is carrying out a raid in retaliation for a Viking attack on his territory (Bately 1986 62; Swanton 2000 94 fn 1). There may be no battles recorded at Wansdyke, but there are battles recorded in the vicinity including two at the barrow that possibly gave its name to the dyke (Bately 1986 25 and 33; Semple 2003 73; Irvine 2004 22 and 35; Reynolds and Langlands 2006 31-32). The dyke and the 200 burials at Heronbridge may be associated with the Battle of Chester recorded in both English and Welsh sources (Morris 1980b 46 and 86; Bately 1986 26; Irvine 2004 22-23). As well as the other references to fighting at dykes in Welsh poetry, the subject of *Y Gododdin* is a raid that is defeated and part of the fighting happened at a dyke (Jarman 1988 38).

If we take Bokerley Dyke as an example, other nearby earthworks suggest that cattle raiding was a problem in the early-medieval period. About two kilometres to the east of the southern section of Bokerley Dyke (and therefore unprotected by it) is the Soldier's Ring, a 10½-hectare polygon enclosure surrounded by double banks that is probably at least late Roman in date (Sumner 1913 39; Hawkes 1947 71; Crawford 1953 93; Sumner 1987 166-67; Bowen 1990 52-57 and 94-95). There is another similar enclosure five kilometres further east at Rockbourne of 39 hectares; it overlays Roman fields and may also be a cattle enclosure (Sumner 1913 38; Bowen 1990 67-73 and 94-95). Pitt Rivers found numerous animal bones (a mix of ox, sheep and horse) while digging the nearby Romano-British settlements (Pitt Rivers 1892 233). These earthworks probably reflect a move from arable to pasture coupled with a wish to protect cattle from raiders, processes that must have some bearing on the motivation for the construction of the nearby dyke (Hawkes 1947 71).

The lack of more explicit direct evidence for dykes as defences against raiders is perhaps understandable in an age when few sources survive. Early-medieval sources tend to laud victories (or heroic defeats) so if the dykes were defensive rather than offensive, perhaps early-medieval writers would not think farmers protecting their cattle worthy of record. If some dykes worked as a deterrent, there may have been no fighting to record or bodies to bury; there are

numerous forts and pillboxes across Britain designed to repel invasions that never materialised. At some of these modern forts there is little sign of occupation as they were never fully manned; Britain usually had a small standing army so volunteer forces would be expected to garrison the forts during time of crisis.

It is usually inadmissible to argue from negative evidence so without a direct source implicitly stating that the purpose of dykes was to counter raids we must find another method to test this theory. If dykes were not manned, as archaeology suggests they were not, there must have been some kind of signalling system to alert people to danger so they could assemble at the dyke. If we can find evidence for a prominent location with good lines of sight at a large number of the dykes then we can be more confident that the theory dykes were designed to counter raids is plausible.

4.4.7 Evidence for signal points

We know the Vikings and their enemies used systems of beacons to warn of the arrival of Viking raiders and the Romans used scouts (*exploratores* and *areani*) to warn of attack (Pálsson and Edwards 1978 123-24 and 131-32; Woolliscroft 1996; Hill and Sharp 1997; Finlay 2004 63-64; Breeze 2006 (2011 edition) 142 and 220). Though Hill postulated that beacons were used both to lay out Offa's Dyke and Wat's Dyke as well as warn of Welsh raiders, attempts to locate them through excavation have proved fruitless (Youngs, Clark et al. 1986 150-51; Hill and Worthington 2003 4, 99, 121 and 127). This may suggest that beacons were not used in association with early-medieval dykes, but as these dykes are very long Hill could easily have selected the wrong location to excavate and if a warning beacon was never set alight there would be little evidence of it in the archaeological record. A substantial watch tower, especially if the foundations were sunk into the ground, would leave archaeological evidence, but more flimsy structures could leave no trace (Sauer 2005 30). A roving scout using flags or a horn would leave little or no evidence. If the fires from burning barns gave abundant evidence of a raid in progress perhaps beacon fires were not needed (obviously, if the raid occurred at night it would be these fires that warned people of attack and flags would be useless as a signalling method). Even so, we should find a prominent hill or similar landmark near every dyke that gives good views towards the area the earthwork faced if they were designed to combat raids.

Development near some dykes like Faeseten Dyke in Kent makes it impossible to tell if there are any good candidates for a nearby signal point while at Heronbridge and some of the East Anglian dykes the flat landscape means there are no obvious candidates we can identify. Significantly, at most other dykes there are good sites for possible beacon sites or signal points. Despite housing developments (and on Ockham Common forestry) obscuring much of Fullinga Dyke, St George's Hill near the north end gives good views while the hill on which a semaphore tower was built in 1822 at Ockham Common just to

the east of the dyke (at TQ089585) is a clear candidate for a signal point. Bolster Bank defines a peninsula dominated by a hill tellingly called St Agnes Beacon (at SW710504) which affords superb views across the Bristol Channel and inland. While lines of sight from Tor Dike down the steep valley to the south are obscured, the high hills that flank the valley on either side would make excellent signal points. An observer on the Swaledale Dykes cannot see anyone approaching from the east until they are quite close, but people on the adjacent hills can. Similarly, the views northwards from Grey Ditch are rather poor, but Lose Hill (SK153853) four kilometres to the north commands spectacular panoramic views over a vast area and the hill of Crungoed (SO185711) to the north of Pen y Clawdd dyke is an excellent candidate for a signal station. To the north of the dykes in south Wales are the Brecon Beacons, they are so named because of the warning fires erected on them to warn of English raiders. An observer stationed on the hills near Black Dyke and the Bardon's Mill dykes (like Catton Beacon at NY822592 and Bell Crags at NY772729 where there is actually a fire watch tower today) could have given warning of imminent attack (Spain 1922 155). At Lanreath, near the middle of the Giant's Hedge, a bulge in the course of the dyke encompasses a hill that gives superb prospects to the north. Today, the River Severn forms a rather formidable barrier across a gap in Offa's Dyke between Rhos and Buttington, but before modern flood defences rivers meandered across their floodplains so it would be much easier to ford. There are two large hills on the eastern side (Breidden Hill at SJ295144 and Middleton Hill at SJ305133) that give commanding views so a few watchmen with a beacon fire stationed on the hills could easily warn of any attempt to ford the river by raiders.

For some dykes the evidence is less circumstantial. The views forward from some sections of East and West Wansdyke are hardly panoramic, but the two hillforts incorporated into West Wansdyke (Maes Knoll and Stantonbury) or the Downs just to the north of East Wansdyke (Barbury Hill at SU156761 or Cherhill at SU048694 in particular) overlook large areas (Fox and Fox 1958 26 and 37; Reynolds and Langlands 2006 16). There is evidence of beacon sites across Wessex used to warn of Viking raids (Elizabethans reused many of the sites for

Armada beacons) which may have originated in warning systems related to early-medieval dykes (Hill and Sharp 1997; Shemming and Briggs 2007). To the north of Wansdyke the late Saxon fort on Silbury Hill or even the burh at Avebury could have replaced an older early warning system for people living near East Wansdyke (Reynolds 2001; Reynolds 2005).

The hill of Glastonbury Tor overlooks Ponter's Ball and evidence for early-medieval occupation at the site possibly suggest that it was a signal point (Rahtz 1968 120-22; Rahtz 1970 4; Rahtz 1982 177; Rahtz and Watts 1993 30-31, 67-78 and 71-78; Clark 1995 94-95). Hills obscure the views to the south of the nearby New Ditch, but two kilometres west of that earthwork is the Iron-Age hillfort of Dundon Hill in the southeast corner of which is a mound called Dundon Beacon which overlays the Iron-Age ramparts (Bothamley 1911 490-91; Alcock and Ashe 1968 126; Burrow 1981b 214; S.H.E.R. 2008a; S.H.E.R. 2008b). It may be a windmill mound (though that would be better placed on the western side of the hill to face the prevailing winds) or an aborted attempt to build a motte and bailey castle, but the name suggests that the mound was built as a beacon perhaps working in conjunction with the earthwork. Dundon Beacon overlooks land to the south of the dyke so if watchmen were stationed there and at Glastonbury Tor, it would be almost impossible to cross the area unobserved.

Near Bar Dyke and Broomhead Dyke are two hills surmounted by what are assumed to be Norman fortifications (Bailey Hill at SK312726 NMR 312726) and Castle Hill at SK271923 NMR 312710), but both could be possible older beacon sites (Mitchell 1855 73-74; Armitage and Montgomerie 1974 26-29).

Along the coast to the north of Dane's Dyke was a line of at least five signal stations which were probably the last Roman military structures built in Britain (Ottaway 1996). There is evidence of post-Roman occupation at the Filey station and excavations at the Goldsborough signal station found bodies of people who seemed to have died violent deaths dating to just after the end of

Roman rule in Britain (Hornsby and Laverick 1932; Dark 2000b 84). Flamborough Head itself would have been an ideal site for a signal station as later use of the headland clearly shows. Three beacons were built there in 1588, while in 1674 a lighthouse (the first post-Roman British lighthouse) was built at Flamborough and in 1796 a flag station was built there (Nicholson 1887 34-37; Purdy 1974 153). Though there is no surviving evidence of a Roman or early-medieval signal station at Flamborough, quarrying and erosion could easily have destroyed the evidence; nevertheless, the Roman signal stations to the north could easily have given early-medieval people enough warning of seaborne raiders (Picts or Angles) so they could gather behind the safety of the earthwork.

This topographical, archaeological and place-name evidence from so many dykes though not conclusive, certainly suggests signal stations could have been used near dykes complimenting the theory they were used to warn people of imminent attack.

4.5 Dykes and developments in early-medieval society

Though it would be highly speculative to try to match specific dykes to individual entries in Anglo-Saxon or Welsh chronicles, we can suggest how they could fit into long processes like the Anglo-Saxon conquest or the rise of kingdoms. Laycock has suggested that dykes are a symptom of the breakdown of Roman rule across Britain and its Balkanisation into small British and Anglo-Saxon kingdoms (Laycock 2006). It could be that it was the incessant raiding that the vast majority of the dykes were designed to combat that caused this fragmentation of the Roman diocese of Britain. Raiding and the coming together of people to build dykes to combat raids could respectively destroy and build new identities; dykes could have been crucial on the formation of kingdoms. Booty from raids may have helped warlords become established kings and the concentration of dykes around the border of Mercia could mark a reaction to the

growth of that kingdom. Those earthworks around the heartland of Powys may have helped maintain the power of their kings. The very act of building, maintaining and occasionally fighting at the Cambridgeshire Dykes may have helped create cohesion among the local people that lead to the growth of the East Anglian kingdom. The building of the earthworks on the western border of Kent may have helped reinforce the power of Kentish kings. The act of building and using dykes in Cornwall to counter West Saxon raids probably helped unite the Cornish and maintain their identity in the face of growing Anglicisation. The incessant raids of the immediate post-Roman period may have died down by the ninth century possibly thanks to the dykes though they were soon replaced by the incursions of the Vikings (Wormald 1982 121). We should note that kingdoms could form without any need to build dykes such as the Scottish kingdom of Argyll as well as the East Saxon and South Saxon kingdoms.

The theory that the fifth to ninth centuries was one of widespread raiding complements the various theories about the nature of the Anglo-Saxon settlement of England (and possibly also the Scottish takeover of Pictish territory) though as already been stated the debate about the nature of the *Adventus Saxonum* is outside the scope of this study. If parts of that process involved the replacement of the native population with Germanic incomers then aggressive raiding would help explain how they could drive out the indigenous population. Alternatively, a culture of raiding by a warrior class is also consistent with the theory that the *Adventus Saxonum* was a takeover by a small elite group of warriors with very little change in the composition of the majority of the population. The theory that it was merely a cultural change does not, on its own, explain why the native Britons adopted new Germanic modes of dress, language and religion, but raiding by small groups of aggressive Germanic incomers could have destroyed the indigenous culture and eliminated the native elite. In the Roman period across Cornwall and much of Wales native settlements do not seem archaeologically particularly ‘Roman’; after 400 AD, although there is evidence of site continuity, building plans change from round to rectangular, Latin inscriptions appear and there is evidence of Christianity (Soulsby 1986 20-25; Dark 1994 181-84; Johnson and Rose 1997 9-12; Dark

2000a 191). Perhaps the educated Romanised Christian elite (priests, lawyers and teachers for example) from the lowlands fled raiding Anglo-Saxons to the highland areas of western Britain as is recorded in Gildas, Bede and the Life of St Wilfred (Colgrave 1927 37; Colgrave and Mynors 1969 1.13 and 2.2; Winterbottom 1978 27-28 and 98). Those left behind would perhaps want to adopt the cultural identity of the most hostile raiders (their mode of dress and language) in the hope they would be spared from attack. Not only can all three models (population replacement, an elite warrior takeover and cultural change) complement the idea of widespread raiding, they are not mutually exclusive. While the evidence for violence from Anglo-Saxon cemeteries is rare, this does not preclude victims of raids being less likely to be carefully buried in organised cemeteries or violence being rare but unpredictable and sporadic. The Anglo-Saxon settlement was probably a complex process so that at different times and in different areas any of these three theories could best describe the process (Halsall 2013).

4.6 The chronological framework of dykes

Like most human phenomena, the rash of early-medieval dykes building probably had a beginning, a peak, a decline and then an end, but with so little unambiguous dating evidence we can only make very tentative conclusions about chronology. Sadly, we have the more evidence for later reuses than for their original functions and the end of dyke building is probably easier to date than the origins due to the lack of written evidence from the beginning of this period. For these reasons the framework is discussed in reverse chronological order.

Later people often reuse earthworks in very different ways to how their builders envisioned. Modern walkers use some dykes as footpaths (Offa's Dyke and the Devil's Ditch). Fieldwork has clearly demonstrated that farmers often use sections of dykes as field boundaries and this has probably gone on for

centuries. The medieval scribes who wrote charters often use dykes as landmarks when describing estates. Early medieval people reused dykes as places to bury the dead, perhaps after their abandonment they occupied a liminal area outside the control of kings and God where the condemned were executed; this would explain why so many are named after the Devil or pagan gods. Archaeologists have found execution burials at some dykes (including probable prehistoric earthworks like South Oxfordshire Grim's Ditch), victims of battle at others (Heronbridge and possibly Bedwyn Dyke) and at a few mundane furnished burials (the High Dyke). There is little evidence they were used reused as meeting places, but equally we cannot be certain they were not.

Those that demarked estates were possibly some of the last to be built and they presumably predate the charters that describe them. They probably reflect an end of primitive chiefdoms and the establishment of settled kingdoms with more sophisticated landholding systems that needed clearly defined estates. It is likely that the ability to delimit areas of land in written documents made digging earthworks to define estate boundaries less necessary. These border dykes, like other early-medieval earthworks, then became local landmarks recorded in various charters (the use of which largely made digging border markers redundant) and were occasionally reused as field boundaries. After the Norman Conquest the introduction of private hunting parks, like that at Senghenydd, revived the need to define estates using earthworks and the sixteenth century saw the digging of Scot's Ditch to demark an international border, but there is no evidence of continuity between these earthworks and the early-medieval dykes.

As has already been speculated, the raids of the Vikings probably ended the use of dykes as military structures though the establishment of more stable kingdoms may have also been a factor. Viking raids were unpredictable; the first account of an Anglo-Saxon murdered by a Viking was at Portland in Dorset, hardly the nearest British landfall from Scandinavia (Bately 1986 39; Griffith 1995 73-104). Without obvious land routes to block people ceased to excavate dykes across routeways and instead constructed them round burhs in the ninth

century; those dykes that already existed probably then became a nuisance to traders travelling along the roads the earthworks blocked. There does seem to be evidence that the Vikings carried on digging dykes like that at Reading, but they designed theirs to protect raiding parties rather than oppose them.

The radiocarbon and OSL (Optically Stimulated Luminescence) dates suggest early-medieval dyke construction peaked across the very late sixth and the first half of the seventh century. As Offa ruled 757-796, his dyke was probably constructed during the dying days of early-medieval dyke building, but with a small coastline the Mercians would be less affected by Vikings than Welsh raids prior to the mass invasion of 867 (Zaluckyj 2001 (2011 edition) 211). The massive scale of his dyke and the labour involved could have outweighed any benefit it may have had in deterring Welsh raids. Perhaps this king (whose coinage and whose letters to Charlemagne demonstrate he wished to be seen as a quasi-imperial ruler) made a massive and grandiose version of a common practical type of earthwork as a demonstration of his power. With better dating techniques, in the future we might discover that the larger earthworks are later in date and reflect the rise of kingdoms. Dyke building may have helped create clearly defined kingdoms, but such stability may have signalled the end of the need to the shorter dykes to counter localised raiding.

The origin of early-medieval dyke building is more problematic. As this study found no early-medieval dykes in the Highlands of Scotland, all the early-medieval dykes were probably located in areas that at some point had been part of the Roman province of Britain. Presumably, the imperial authorities would not have allowed locals to build earthworks that blocked the Roman road network so the dykes must postdate the end of Roman rule in Britain. If people could not predict the direction Vikings attacks would come from then presumably the same would be true of the early Anglo-Saxon raids from across the North Sea or other seaborne raids from the north or west (the Irish, Scots or Picts). There is evidence that Iron-Age hillforts were reoccupied in the immediate post-Roman period and perhaps these functioned much the same way as burhs later did later as strongpoints against seaborne raiders. We

should be cautious in assuming every hillfort was reoccupied for military reasons; their association with the pre-Roman elite could also have been a draw (Dark 1994 40-44; Underwood 1999 138; Dark 2000a 145-49). Once the raiders from across the seas had established themselves in Britain and local people knew the direction their raids would take along known land routeways then dykes coupled with signal points would be the best form of defence. There is a great deal of debate as to when the Anglo-Saxons firmly established themselves in Britain, but from Bede onwards most historians have given a mid-fifth century date and we know from the Anglo-Saxon Chronicle that the Viking raids on Britain started in earnest in the ninth century (Colgrave and Mynors 1969 1:15; Bately 1986 17 and 42-62). This gives a date range of roughly 450-850 for dykes to work against overland Anglo-Saxon raiding (though the British could have raided each other prior to this) and this is in fact a close match for the archaeological dates of early-medieval dykes. The transition from refurbished hillforts to dykes then to burhs can be summarised in the following diagram. Note this diagram is partly based on one made by Stuart Brookes and first publicly shown at a 2007 conference at U.C.L. (Brookes 2013).

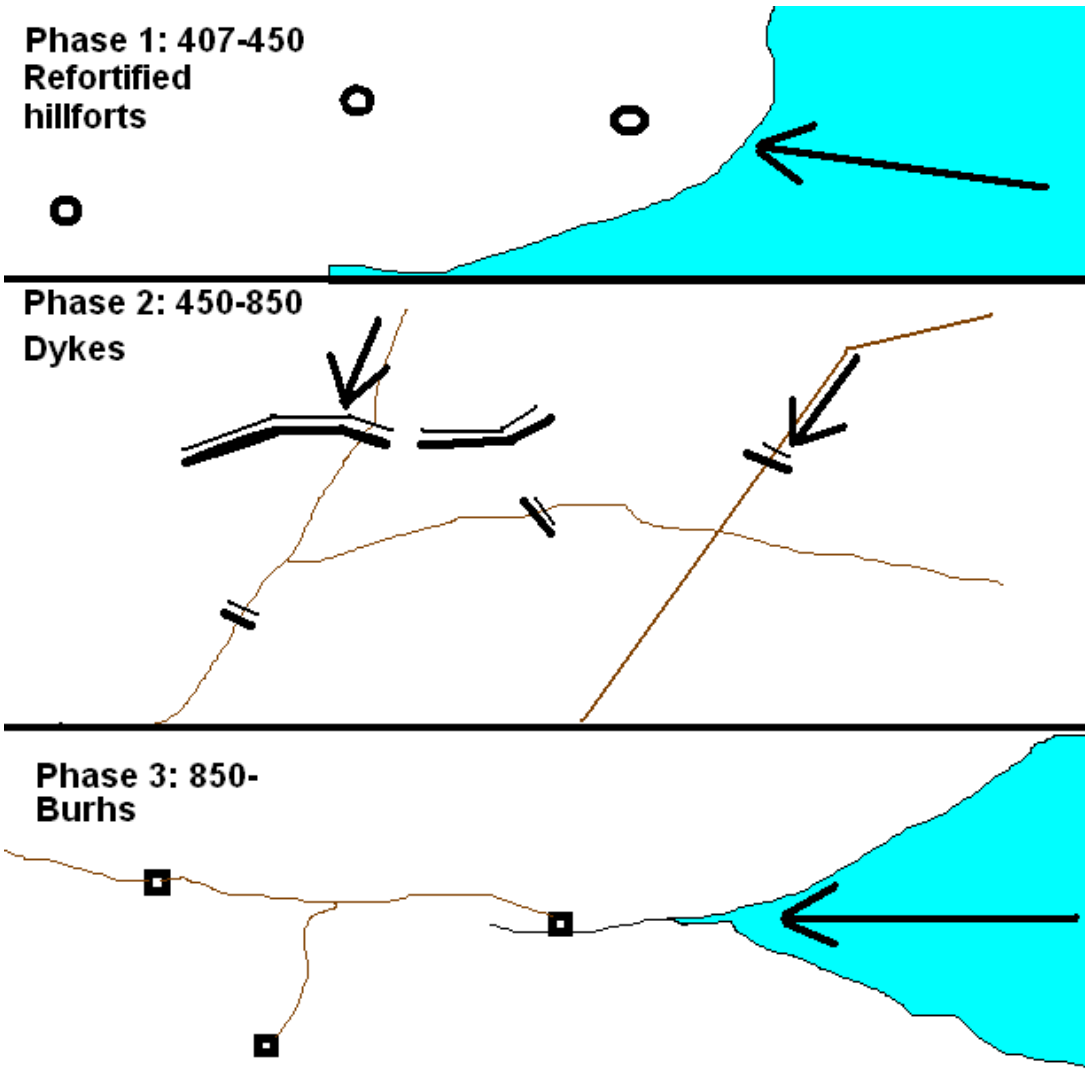


Figure 22 Changing military reactions to raiding in the early-medieval period

There are at least three possible inspirations for early-medieval dyke building. This rash of dyke building may have been initially inspired by prehistoric earthworks; there are perhaps significantly no prehistoric or early-medieval dykes in Devon while in Norfolk early-medieval people seem to have reused the widespread pre-Roman earthworks. The fact the Anglo-Saxons gave the name Grim (a god associated with war) to many prehistoric earthworks suggests that they thought such dykes had a military purpose. The second possible inspiration (and the one most likely to have inspired the Britons) was the northern frontiers of Roman Britain. Roman signal towers in particular those on the Yorkshire coast may have inspired the signalling sites we have postulated were associated with many early-medieval dykes. The third possible source of

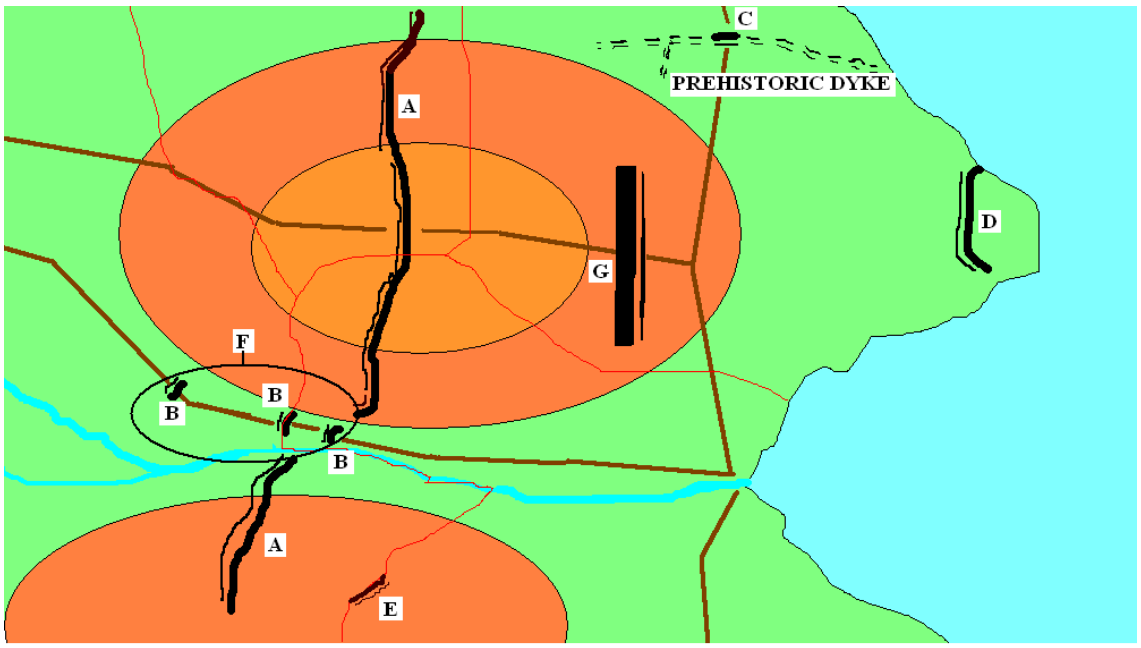
inspiration for early-medieval dyke building (and the structures most likely to have inspired Anglo-Saxon dyke builders in particular) was the numerous dykes found in Jutland just prior to the Anglo-Saxon conquest (Jørgensen 2003).

4.7 A hypothetical model of early-medieval dykes and their subtypes

The preceding analysis allows us to propose a typological model of an early-medieval dyke that may help identify new examples. While some early-medieval dykes are very long, most are less than three kilometres in length. They generally have a single ditch and bank which at about 2 metres in depth/height and 6 to 8 metres wide; they are larger in scale than similar features on prehistoric or later medieval dykes. There is no evidence they had gateways or palisades, but the longer examples often had revetments, marker banks and sometimes ankle-breakers in the base of their generally v-shaped ditches. They generally do not, or only partially, run on the same alignment as administrative boundaries. They usually face downhill, cut ridges and their terminals are generally located by rivers. They cluster around the fringes of Mercia and though there are numerous possible examples from other parts of the country, few occur in northern Britain or west Wales. They usually date from the first half of the seventh century, though at least one example, Offa's Dyke, dates from the late eighth.

Early-medieval dykes can be subdivided into different subtypes based on their size, features and location in the landscape; while there are certain characteristics exclusive to certain groups of dykes, many fit in more than one category. By definition, all the multiple dykes (type F) and large dykes (G) fall into one of the other categories (A-E). Offa's Dyke clearly falls into category A (sinuous) and G (large), but if it is coupled with Wat's Dyke or some of the dykes of Powys could also fit in category F (multiple); therefore Offa's Dyke is a large sinuous dyke possibly in a multiple group. The Devil's Ditch in

Cambridgeshire is a large route-blocking dyke in a multiple group while the Crookham Common earthworks are route-blocking dykes in a multiple group. A table classifying all the earthworks is given later in the conclusion to this study. Note that the following subsections list all the probable early-medieval dykes, but only a few examples of possible early-medieval earthworks are given.



KEY
A: SINUOUS DYKES
B: ROUTE BLOCKING DYKES
C: REUSED PREHISTORIC DYKE
D: PENINSULA DYKE
E: MARKER BOUNDARY DYKE
F: MULTIPLE (THREE ROUTE-BLOCKING DYKES IN A GROUP)
G: LARGE DYKE

Figure 23 A hypothetical landscape showing the different types of dykes

4.7.1 Type A - Sinuous

The probable early-medieval dykes in this category are Becca Banks, The Rein, Offa's Dyke, Wat's Dyke, Crugyn Bank, Fleam Dyke, Fossditch, East and West Wansdyke and Bokerley Dyke. Possible early-medieval dykes in this category include Fullinga and both sections of the Catrail.

These dykes snake across the landscape often for many kilometres and seem to be best described by the word 'sinuous', a term scholars have already applied to sections of dykes (Grinsell 1958 281). Fox used the terms 'travelling, running or linear', which are apt in describing the rambling route of many dykes though travelling does unfortunately imply a start point and a destination for the earthwork (Fox 1929 135; Fox, O'Neil et al. 1946 177). Though some, like Wat's and Offa's, have sections with a straight alignment, the sinuous dykes have multiple slight changes of directions (though none has the dogleg sections reminiscent of prehistoric dykes like Hug's Ditch). Hannaford claimed Offa's Dyke was more sinuous than Wat's Dyke, but Fox's surveys show they both used a similar mixture of straight and sinuous alignments (Fox 1955 117-20 and 272; Hannaford 1998 6). While these dykes all have a sinuous plan they generally run in roughly a similar alignment along their length (Offa's runs north south, or vice versa, and Wansdyke east-west) and certainly do not encircle an area as if marking the outline of a political unit like a kingdom. There are suggestions that some are unfinished (Erskine's study of West Wansdyke and Fowler's of East Wansdyke suggest this; the absence of Offa's Dyke in parts of Herefordshire may imply the same), but this may be due to these being larger and possibly overambitious earthworks rather than a characteristic of this subtype (Fowler 2001; Erskine 2007 101).

4.7.2 Type B – Route-blocking dykes

The probable early-medieval dykes in this category are Becca's Bank, The Rein, the Rudgate dyke, Grey Ditch, Rowe Ditch, the Cambridgeshire Dykes, Pear Wood, Bury's Bank and various dykes in Wales such as Clawdd Mawr near Llanfyllin, Crugyn Bank, Giant's Grave, Short Ditch and Upper Short Dyke. In the possible category are Tor Dyke, the Surrey-Kent Dyke and all the dykes that cut ridgeways in south Wales such as Bedd Eiddil, Tor Clawdd and Cefn Morfydd.

These dykes seem to cut (and the lack of gateway evidence suggests they probably 'cut' rather than 'control') routeways like Roman roads, ancient ridgeways and valley routeways. In Cambridgeshire for example, the dykes cut a corridor of chalk grassland along which travels the Icknield Way between the fens to the west and the clay to the east. These dykes often end at steep slopes or waterways. The Rudgate dyke is possibly an anomaly as, although it is built on a Roman road, it is parallel to rather than cutting it, but as we do not know how long the dyke was, it is impossible to ascertain its topography.

4.7.3 Type C - Reused prehistoric

The probable early-medieval dykes in this category are Black Dyke, Scot's Dyke, Bwlch y Cibau (north), various examples in East Anglia (such as Devil's Ditch Garbodlisham, Bichamditch, Launditch and the Black Ditches), Harrow-Pinner Grim's Dyke and Combs Ditch. Possibly Fossditch in Norfolk is an example if the southern end, which has Roman pottery sherds under the bank, is a later extension of an earlier earthwork.

Early-medieval people possibly reused or rebuilt prehistoric earthworks because there was insufficient labour or time to build new dykes or there just

happened to be an existing one of a suitable alignment that could easily be re-dug. They are more often contiguous with parish boundaries than other early-medieval dykes.

As already mentioned, there does seem to be a concentration of possible reused prehistoric dykes in East Anglia. We know the East Angles reused Roman and prehistoric enclosures when building churches, though whether that practice influenced the reuse of prehistoric dykes or vice versa is difficult to prove (Hoggett 2010 200-01). Often the extremities of the East Anglian dykes are difficult to locate (a typical characteristic of prehistoric dykes as they are generally smaller and by definition more eroded than their early-medieval counterparts), but where probable Roman roads cut these dykes, the banks are more substantial. Roman engineers may have punched a hole through a dyke and piled the earth either side, but fieldwork suggests the sections that look heightened go on for a considerable distance on either side of the road. Sometimes Roman roads have slight deviations in their course as they pass through a dyke as if later medieval workers imperfectly reconnected the Roman road after early-medieval inhabitants had extended an existing prehistoric dyke to cut the route. The ditches of Bichamditch, Devil's Ditch Garboldisham and Launditch have a much steeper slope on the side adjacent to the bank and a shallower slope on the other side. This irregular profile suggests a recutting of the ditch designed to make the earthwork more of a physical barrier. This reuse of prehistoric dykes in East Anglia was probably not just carried out by a single group as these dykes often seem to face each other. The propensity to reuse prehistoric earthworks perhaps suggests that the borders between social units in the region remained stable from the prehistoric to the early-medieval period. Perhaps the undulating landscape of East Anglia, which has no clearly defined ridges or steep escarpments, there were no obvious locations for a new dyke so the locals possibly just saved on labour by reusing the nearest convenient redundant prehistoric earthwork.

4.7.4 Type D - Peninsula

The only probable early-medieval dyke in this category is Heronbridge, out of the possible early-medieval dykes Park Pale, Dane's Dyke, Beachley Bank, High Dyke in Cambridgeshire, Horning and all the Cornish dykes (Bolster Bank, Dodman, Giant's Grave, Giant's Hedge and Stepper Point) potentially fall into this category.

These dykes face towards the mainland and define peninsulas of land; they are surrounded on the other three sides by rivers, estuaries, marshes, the sea or a combination of these features. Bank Slack and Calver Dyke both cut off tongues of higher land that, although not surrounded by water, are flanked by low-lying land on three sides so they could also possibly fit in this category. Beachley Bank and Vervil Dyke are not included in this section as although on a map they apparently define peninsulas, they face *away* from the mainland towards a landing point that potentially gave raiders, invaders or traders access to coastal plains so therefore are route-blocking dykes. There are examples of Anglo-Saxon forts that consist of a bank and ditch which cut-off a peninsula of land (Burpham in West Sussex for example) that could cause confusion with this class of dyke. This present study has tried to eliminate such enclosures by dismissing anything that has an obvious gateway or signs of permanent occupation, but there is no sharp dividing line between a temporary fort and a dyke hastily thrown up across a narrow neck of land. While this study defines Heronbridge and Coombe Bank near Reading as dykes, a perfectly viable case can be made for them being forts or at least bridgeheads protected by a dyke.

Iron-Age coastal forts (called cliff castles or promontory forts) share some of the characteristics of these dykes so it is necessary to establish the distinctive features of these two forms of earthwork. Cliff castles, like Treryn Dinas (NMR SW 32 SE 46 Monument 421380) and Trevelgue Head (NMR SW 86 SW 1 Monument 429322) in Cornwall, are often multivallate whereas early-medieval dykes usually have a single bank and ditch (Cotton 1958-9). Unlike early-

medieval dykes, cliff castles have obvious gateways that often have outer defences and in-turned sections to add strength. Iron-Age cliff castles enclose small areas of land, usually less than ten hectares, which often contain signs of Iron-Age hut circles. The possible early-medieval dykes in this category all enclose larger areas (though Dodman encloses just 20 hectares): the Giant's Hedge in Cornwall for example encloses an area 13 kilometres long and 6 kilometres wide.

Some scholars postulate High Dyke in Cambridgeshire is part of Fleam Dyke as it is on a similar alignment and the Little Wilbraham River links the two; this would make it a route-blocking dyke not a peninsula one (Malim, Penn et al. 1996 108). As the High Dyke does not block a routeway as the peninsula it defines would have been a 'dead end', this study considers it a distinct earthwork defining a peninsula that was about five kilometres long and on average two kilometres wide (R.C.H.M.E. 1972 146-47).

4.7.5 Type E – Marker boundaries

The probable early-medieval dykes Aelfrith's Ditch and Bica's Dyke as well as the possible early-medieval dykes Calver Dyke, Fullinga and Clawdd Seri all fall into this category.

All these dykes have unusually small ditches (0.45 to 1 metre deep), small banks, are contiguous with administrative boundaries along their entire length and give poor views across the neighbouring countryside. These earthworks are clearly too small in scale to act as much of a deterrent to the movement of hostile forces so are unlikely to have had a military purpose. They are just large enough to act as marker banks, to be a physical landmark delimiting a line on the ground. As Anglo-Saxon charters actually cite three of these earthworks as estate boundaries, they were probably dug as boundary markers for estates or other administrative areas.

4.7.6 Type F – Multiples

The dykes in this category include the Aberford Dykes, the dykes in Swaledale, most of the dykes of the Welsh borders, the Cambridgeshire Dykes and those on Crookham Common.

It is a noticeable that many early-medieval dykes are grouped in parallel lines facing in the same direction.

4.7.7 Type G – Large

The probable early-medieval dykes definitely in this category are Offa's Dyke, Devil's Ditch and Wat's Dyke. There is some justification for adding East Wansdyke, Fleam Dyke, West Wansdyke, Bokerley Dyke, Becca Banks, Fossditch and Bran Ditch, though there is no clear dividing line between these dykes and the rest.

As already discussed, they often have marker banks (unsurprisingly considering their length) and more often display more sophisticated engineering techniques (revetments and ankle-breakers), though these features are not unknown among smaller earthworks.

4.8 Summary

The following table summarises the possible date; if the dyke is possibly early medieval (or reused in that period) the typology and possible purpose for the earthwork is given.

	Dyke in gazetteer order	Date and, if early medieval, classification
	Bardon Mill	Possible early-medieval route-blocking (Type B) stop line dyke
	King's Wicket	Probable later medieval stock enclosure
	Black Dyke	Possible sinuous route-blocking reused prehistoric (Type ABC) stop line dyke
	Catrail (Picts' Work Ditch)	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Catrail proper	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Wallace's Trench	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Heriot's Dyke (Haerfields)	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Heriot's Dyke (Greenlaw)	Possible early-medieval route-blocking (Type B) stop line dyke
	Military Way	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke later reused as a road
	Grim's Ditch (Leeds)	Probable prehistoric dyke
	Becca Banks	Probable early-medieval sinuous route-blocking multiple large (Type ABFG) stop line dyke
	South Dyke	Probable prehistoric dyke
	The Rein	Probable early-medieval sinuous route-blocking multiple (Type ABF) stop line dyke or sinuous marker (Type AE) boundary dyke
	Bank Slack	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Bar Dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Broomhead Dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Danby Rigg	Probable Viking defensive dyke
	Dane's Dyke	Possible early-medieval peninsula (Type D) refuge dyke
	Gilling Wood	Possible early-medieval sinuous route-blocking or sinuous boundary marker (Type AB or AE) stop line or boundary dyke
	Park Pale	Possible early-medieval peninsula (Type D) refuge dyke
	Roman Rig/Ridge	Probable prehistoric dyke
	Rudgate Dyke	Probable early-medieval route-blocking (Type B) stop line dyke
	Scot's Dyke	Possible reused prehistoric sinuous route-blocking (Type AB) stop line dyke
	Swaledale western group	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Swaledale middle group north	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Swaledale Hodic	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Swaledale Ruedic	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Swaledale southern	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Tor Dyke	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Heronbridge	Probable early-medieval peninsula (Type D) refuge dyke or fort
	Nico Ditch	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Calver Dyke	Possible early-medieval peninsula (Type D) refuge dyke or marker (Type E) boundary dyke
	Grey Ditch	Probable early-medieval route-blocking (Type B) stop line dyke
	Aberbechan	Possible early-medieval or prehistoric sinuous route-blocking (Type AB) stop line dyke
	Abernaint	Later-medieval head dyke
	Bedd Eiddil	Possible early-medieval route-blocking (Type B) stop line dyke
	Bwlch Aeddan	Natural feature
	Bwlch y Cibau (north)	Possible reused prehistoric route-blocking (Type B) stop line dyke
	Bwlch y Cibau (west)	Possible early-medieval route-blocking (Type B) stop line dyke
	Bwlch y Clawdd	Possible early-medieval route-blocking (Type B) stop line dyke
	Bwlch yr Afan	Possible early-medieval marker (Type E) boundary dyke
	Clawddtrawscae	Possible early-medieval route-blocking (Type B) stop line dyke
	Tyla-Glas	Possible early-medieval route-blocking (Type B) stop line dyke
	Cefn Eglwysilan and Tywn Hywel	Possible early-medieval route-blocking (Type B) stop line dyke

	dykes	
	Cefn Morfydd	Possible early-medieval route-blocking (Type B) stop line dyke
	Cefn-y-Crug	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Clawdd Llesg	Possible early-medieval route-blocking (Type B) stop line dyke
	Clawdd Mawr (Dyfed)	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Clawdd Mawr (Foel)	Later-medieval head dyke
	Clawdd Mawr Glyncorrwg/Bwlch Garw	Possible early-medieval route-blocking (Type B) stop line dyke
	Clawdd Mawr (Llanfyllin)	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Clawdd Seri	Possible early-medieval marker (Type E) boundary dyke
	Cowlod	Possible early-medieval route-blocking (Type B) stop line dyke
	Crugyn Bank (inc. Two Tumps)	Probable early-medieval sinuous route-blocking multiple (Type ABF) stop line dyke
	Ffos Toncenglau	Possible early-medieval route-blocking (Type B) stop line dyke
	Fron Hill Dyke	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Giant's Grave	Probable early-medieval route-blocking multiple (Type BF) stop line dyke
	Lower Short Ditch	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Pen y Clawdd	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Red Hill Cross Dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Senghenydd Dyke	Probable thirteenth-century park boundary
	Shepherd's Well	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Short Ditch	Probable early-medieval route-blocking multiple (Type BF) stop line dyke
	Tor Clawdd	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Ty Newydd	Possible early-medieval route-blocking (Type B) stop line dyke
	Upper Short Dyke	Probable early-medieval route-blocking multiple (Type BF) stop line dyke
	Vervil Dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Wantyn Dyke (northern)	Possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Wantyn Dyke (southern section or Upper Wantyn Dyke)	Probable prehistoric or later-medieval field system
	Beachley Bank	Possible early-medieval peninsula (Type D) refuge dyke
	Offa's Dyke (central section)	Probable early-medieval sinuous large (Type AG though in places part of multiple system therefore AFG) route-blocking dyke that may have acted as an ethnic divide to promote the power of a king
	Offa's Dyke in Herefordshire	Possible early-medieval route-blocking (Type B) stop line dykes
	Offa's Dyke in the Wye – English Bicknor	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Offa's Dyke in the Wye – St Briavel's	Possible prehistoric dyke or possibly an early-medieval sinuous route-blocking (Type AB) stop line dyke
	Rowe Ditch	Probable early-medieval route-blocking multiple (Type BF) stop line dyke
	Wat's Dyke	Probable early-medieval sinuous route-blocking multiple large (Type ABFG) stop line dyke
	Whitford Dyke	Probable prehistoric dyke
	Devil's Mouth	Probable prehistoric dyke
	King Lud's	Probable prehistoric dyke
	Foulding Dykes	Probable prehistoric dyke
	Minchinhampton Bulwarks	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Bran Ditch	Probable early-medieval route-blocking multiple large (Type BFG) stop line dyke

	Brent Ditch	Probable prehistoric road
	Devil's Ditch	Probable early-medieval route-blocking multiple large (Type BFG) stop line dyke
	Fleam Dyke	Probable early-medieval sinuous route-blocking multiple large (Type ABFG) stop line dyke
	High Dyke	Possible early-medieval peninsula (Type D) refuge dyke
	Miles Ditches	Probable prehistoric dyke
	Worstead Street	Roman road
	Bichamditch	Possible route-blocking rebuilt prehistoric (Type BC) stop line dyke
	Bunns' Bank	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Double Banks	Probable twelfth-century park boundary
	Devil's Ditch Garboldisham	Probable rebuilt prehistoric route-blocking (Type AB) stop line dyke
	Fossditch	Probable early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Horning	Possible prehistoric dyke or early-medieval peninsula (Type D) refuge dyke or ritual enclosure
	Launditch	Possible sinuous rebuilt prehistoric route-blocking (Type ABC) stop line dyke
	Panworth	Possible sinuous route-blocking (Type AB) stop line dyke
	Black Ditches Suffolk	Possible rebuilt prehistoric (Type C) stop line dyke
	Buckinghamshire-Hertfordshire Grim's Ditch	Probable prehistoric dyke
	Pear Wood	Probable early-medieval route-blocking (Type B) stop line dyke
	Harrow-Pinner Grim's Dyke	Probable sinuous reused prehistoric route-blocking (Type ABC) stop line dyke
	Aelfrith's Dyke	Probable early-medieval marker (Type E) boundary dyke
	Aves Ditch	Probable prehistoric dyke
	Berks Downs Grim's Ditch	Probable prehistoric dyke
	Bica's Dyke	Probable early-medieval marker (Type E) boundary dyke
	Black Ditch Snelsmore	Possible prehistoric dyke or possible early-medieval route-blocking multiple (Type BF) stop line dyke
	Bury's Bank	Probable early-medieval route-blocking multiple (Type BF) stop line dyke
	Crookham Common earthworks	Possible early-medieval route-blocking multiple (Type BF) stop line dykes
	Grim's Bank Padworth	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Hug's Ditch	Probable prehistoric dyke
	Reading - Coombe Bank	Probable Viking defensive dyke
	Reading - Oxford Road	Probable prehistoric dyke
	South Oxfordshire Grim's Ditch	Probable prehistoric dyke
	Western extension Wansdyke	Probable disconnected later medieval field boundaries
	West Wansdyke	Probable early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Bathampton section	Probable disconnected prehistoric and later medieval field boundaries
	Central section[1]	Roman road
	East Wansdyke	Probable early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Bedwyn Dyke	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Mount Pleasant dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Inkpen Dyke	Possible early-medieval route-blocking (Type B) stop line dyke
	Bolster Bank	Possible early-medieval sinuous peninsula (Type AD) refuge dyke
	Dodman	Possible early-medieval peninsula (Type D) refuge dyke

[1] The easternmost section of the central section is considered part of East Wansdyke.

	Giant's Grave	Possible early-medieval peninsula (Type D) refuge dyke
	Giant's Hedge	Possible early-medieval sinuous peninsula (Type AD) refuge dyke
	Stepper Point	Possible early-medieval peninsula (Type D) refuge dyke
	New Ditch	Possible early-medieval route-blocking (Type B) stop line dyke
	Ponter's Ball	Possible early-medieval route-blocking possible peninsula (Type B or BD) stop line dyke
	Battery Banks	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Bokerley Dyke	Probable early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Combs Ditch	Probable sinuous rebuilt prehistoric route-blocking (Type ABC) stop line dyke
	Cranborne Chase Grim's Ditch	Probable prehistoric dyke
	Devil's Ditch Doles Wood	Possible early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Devil's Ditch Pepper Hills Firs	Possible early-medieval sinuous route-blocking large (Type ABG) stop line dyke
	Devil's Ditch Wonston	Possible early-medieval route-blocking (Type B) stop line dyke
	East Tisted-Colemore	Possible early-medieval route-blocking (Type B) stop line dyke
	Tisted cross-valley dyke (n)	Probable prehistoric dyke
	Tisted cross-valley dyke (s)	Probable prehistoric dyke
	Froxfield short dyke A	Possible early-medieval route-blocking (Type B) stop line dyke
	Froxfield short dyke B	Possible early-medieval route-blocking (Type B) stop line dyke
	Froxfield short dyke C	Possible early-medieval route-blocking (Type B) stop line dyke
	Froxfield short dyke D	Possible early-medieval route-blocking (Type B) stop line dyke
	Froxfield Long Dyke	Possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Hayling Wood (including branch)	Possible prehistoric dyke or possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Festaen Dyke (Hartley Witney)	Possible early-medieval route-blocking (Type B) stop line dyke
	Faesten Dyke (Kent)	Possible prehistoric dyke or possible early-medieval sinuous route-blocking (Type AB) stop line dyke
	Fullinga Dyke	Possible prehistoric dyke or possible early-medieval sinuous marker (Type AE) boundary dyke
	Riddlesdown Dyke	Probable prehistoric dyke
	Surrey-Kent Dyke	Possible early-medieval route-blocking (Type B) stop line dyke

While roads, later medieval park boundaries and the odd natural feature have been mistaken for early-medieval earthworks, there are over a hundred possible dykes from the period 400-850 AD. Most were built in lowland areas or at the interface between highland and lowland zones. In particular they seem to fringe the kingdom of Mercia; while the rulers of that kingdom built some, the neighbours and/or enemies of the Mercians almost certainly constructed others. While some may have prevented trade between areas, this does not seem to be the primary stimulus for dyke building in the early-medieval period and a convincing ritual explanation for the building of most of the dykes is hard to formulate (though they may have later taken on ritual functions). Some

(Aelfrith's Dyke, Bica's Dyke, Bwlch yr Afan and Clawdd Seri) are small border markers built by just a few men to distinguish between administrative units, but they make up less than 7% of the total.

The builders of most of the dykes seem to have primarily designed them to prevent or combat raids, over 80% as stop lines and over 10% as refuges. Many are short, quickly-built structures with no gateways set back from borders and cutting routeways; a hundred labourers could have built most of these earthworks in a summer. While it is likely most either deterred raids or caused raiders to turn elsewhere, there are hints from Welsh poetry and archaeological evidence that a few raiders tried to overcome these defences. The building and manning of these earthworks probably helped bind communities together possibly reinforcing local hierarchies and allowing the growth of small kingdoms in the lee of these earthworks. Towards the end of the dyke-building period, King Offa built an extremely long version of this type of utilitarian military feature along much of the length the western border of Mercia. While the earlier dykes were simply designed to turn back raids, Offa's Dyke could have been a reflection of his imperialist ambitions, an attempt to manifest his power in the landscape and a way of unifying his people in opposition to the 'foreigners' (the *wealas*) to the west. It probably marked the end of this age of dyke building. Highly mobile Viking raiders could use their ships to attack anywhere along the coast and up major rivers; no longer could the path raiders would take be predicted and blocked, so dykes just became landmarks when laying out new estates.

The raids these dykes tried to prevent probably had a major effect on early-medieval Britain, but we should remember raiding was sporadic rather than prevalent in all regions and at all periods in early medieval Britain. Farms would be burnt, communities would starve, people would be taken as slaves, women would be raped, artefacts of value stolen and political groupings destroyed. Aggressive and persistent Anglo-Saxon raids were possibly one of the major causes of the Anglicisation of lowland Britain. Wealthy members of British society who were less able to defend themselves, like clerics, priests,

administrators and teachers would be obvious targets for raiders so would flee westward or oversees as Gildas records. This would undermine British culture and allow the Anglicisation of areas with a predominately British population. There is little evidence of Christianity in the western portion of Roman Britain; after the arrival of the Anglo-Saxons, there is good evidence for Christianity (such as stones carved with crosses and bearing Latin inscriptions) in early-medieval Wales, Cornwall and Strathclyde. This is possibly because raiding pushed the Romanised Christian literate elite westward. Not all dykes were defences built by the Britons purely against the Anglo-Saxons; raiding was probably endemic at times between and within all groups. The conversion to Christianity and the emergence of stable kingdoms in the seventh-century onwards in England was probably widely welcomed as the clergy condemned raiding (Márkus 2008). Booty from raiding (like the Staffordshire Hoard) may have helped establish kingdoms especially Mercia and collective attempts to stop such raids by building dykes like the Cambridgeshire Dykes may have helped unify kingdoms like East Anglia (Leahy and Bland 2009; Klemperer, Greaves et al. 2013). Kings continued to go to war, the Welsh would continue to raid western Mercia and Vikings attacks would restart the cycle of raiding, but by the mid ninth century, localised raiding in England had declined sufficiently to allow the growth of nucleated settlements and trade. Critics may say that the emphasis on raiding made by this study when explaining the purpose of early-medieval dykes is a simplistic ‘rape and pillage’ view of history, though claiming earthworks are ‘symbolic’ is not intrinsically a more sophisticated theory and does not explain how the earthworks functioned. By ignoring the evidence of low intensity conflict in the past, we are in danger of creating models that tell us very little about the lives of our ancestors and more about the concerns of modern scholars.

4.9 The future of dyke studies

While this study has gone a long way in codifying the evidence for early-medieval dykes, there is a great deal of scope for future scholars to do more. What follows is a list of suggestions to bring further understanding to the study of early-medieval dyke, some of these are ideas this study could not undertake because of time limits or a lack of resources.

In terms of scientific methods, archaeologists need to obtain radiocarbon or Optically Stimulated Luminescence dates from a much wider sample of early-medieval dykes. Though the Environment Agency has mapped large areas of the country using LIDAR, this data is only just beginning to become available. It could help find lost sections of dykes or help clarify if hypothetical sections really did exist. LIDAR can map the edges of medieval marshland or river plains, which would help put the dyke into a clearer landscape context; it might even be able to find medieval field systems, roads and settlements. Geophysics could also help find lost sections of dykes, but as with LIDAR, it cannot differentiate from a later hedgerow built by a farmer that carried on from a dyke on the same alignment. The bones from burials found associated with early-medieval dykes, especially those from Cambridgeshire, need re-evaluating using modern scientific techniques to explore the causes and circumstances of death.

Work on written sources for early-medieval dykes is also not complete; in particular, the work on Anglo-Saxon charters and their relationship to dykes carried out by this study is by no means exhaustive. Scholars have not mapped all the estates mentioned in Anglo-Saxon charters that record dykes. In addition, where charters mention dykes no longer visible in the landscape we should investigate these possible earthworks through archaeological investigation or non-intrusive means (like LIDAR or geophysics). For English dykes, this study was reliant on English Place-Name Society volumes for the

earliest record of the dyke's name, for English counties where no EPNS volume exists as well as Wales and Scotland, the study utilised HER records, the appropriate Victoria County History volume or county survey by the Royal Commission for Historical Monuments. For some dykes, the earliest references were possibly not found, perhaps in a local archive or in the writings of an antiquarian, there are references not located by this study that might give clues to the original name, extent and size of an early-medieval dyke.

We live in an age of increasing access to information and even while this study was in progress more became available online (journal articles, HER records and old maps) while some (like LIDAR data) was not yet fully accessible. The author could use mapping programmes to see how dykes fitted into the landscape and simulate the views from them without leaving his chair. This increasing access to data will mean future scholars will be able to find out even more information even quicker. Predicting how this will affect future scholarship is impossible.

On a practical level, it might be an illuminating exercise for a group of students to try to build a section of dyke using early-medieval methods and tools. This would give an insight into the difficulties involved and the amount of labour needed.

With this first comprehensive study available, it is likely that scholars will use this data to find new ways of looking at these dykes and no doubt draw different conclusions. Perhaps students will apply new methods used to study dykes in other countries or from other periods to early-medieval dykes. When writing this study the author was acutely aware of the list of illustrious scholars who have studied dykes: William Stukeley, Sir Richard Colt Hoare, Pitt Rivers, O.G.S. Crawford, Sir Cyril Fox, Sir Mortimer Wheeler, T.C. Lethbridge, Leslie Alcock, Phillip Rahtz and David Hill. To have stood on the shoulders of such giants was a huge privilege.

5 APPENDIX

This appendix lists the possible early-medieval dykes of Britain and is influenced by the methodology of surveying linear earthworks published by the Research Committee of the Society of Antiquaries under the chair of Cyril Fox (Fox, O'Neil et al. 1946). Although an effort has been made to limit the entries to the period 400 to 850 AD, it not only includes every example for which there is positive evidence that it may be from that date range, but also those which scholars have commonly assumed date from that period.

This list of earthworks has a variety of sources. These include Crawford's list of defensive linear earthworks in the appendix of his study of field archaeology, the Ministry of Works 1952 list of ancient monuments, the Victoria County Histories series, various Ordnance Survey maps of the Dark Ages, county records (HER or SMR) and personal communications with various county archaeologists (O.S. 1938; O.S. 1939; Crawford 1953 240-51; M.O.W. 1953; O.S. 1966). Note that although the Ordnance Survey maps purport to show all the Dark Age dykes of Britain, many earthworks were missing, probable prehistoric dykes were often mistakenly identified as being of early medieval construction (like King Lud's Entrenchment) and the accompanying comprehensive list promised in the booklet attached to the 1966 edition never appeared (O.S. 1966 18-19). National archaeological databases were also consulted (English Heritage's National Monuments Register or NMR for England, for Scotland the Canmore database of the Royal Commission on the Ancient and Historical Monuments of Scotland and for Wales Corflein, the records of the Royal Commission on the Ancient and Historical Monuments of Wales). The HER (Heritage Environment Report) records are the successors of the SMR (Sites and Monuments Record) which record every ancient site or monument in a county. Not all counties have turned their SMRs into HERs; the records in South Yorkshire at the time of writing are still called the SMR. When they shut their archaeology department in 1982, the Ordnance Survey sent the

card indexes produced by their field inspectors to the various counties and which then formed the basis for the SMRs.

This study does not list the dykes alphabetically as some do not have names and many share the same moniker (often with the ‘Devil’ or ‘Grim’ in the name), but they are instead broadly divided into geographic groupings mainly based on counties. Within England, the study uses the pre-1974 counties, though in areas where the county boundary has moved or dykes straddle the border, it groups the two counties together like ‘Surrey and Kent’. Some dykes are listed separately as they straddle several county borders (like Wansdyke) while the Anglo-Welsh border dykes that repeatedly cross back and forth between counties and over a national border are all listed together. In some counties, dykes that might be associated with each other are in a subgroup. At the beginning of each section there is a paragraph explaining the reasoning behind the grouping.

For the majority of the dykes the entries are based on every excavation report and all the scholarly studies of that earthwork published and unpublished that it was possible to locate as well as fieldwork carried out for this study. It was not possible to locate every passing reference to the more famous dykes (like Offa’s Dyke for example). One could produce many volumes with the information gathered, but instead this appendix contains a standard brief summary for every dyke containing the following:

- The name of the dyke (including any alternate names).
- If the dyke has them, the county H.E.R. (formerly S.M.R.) number and the National Monuments Register number (or Corflein for Wales and Canmore for Scotland). The county archaeologist allocates the H.E.R. or S.M.R. number as part of the scheduling process whereby the monument obtains statutory protection under the Ancient Monuments and Archaeological Areas Act. Researchers can use this number to find the report lodged with the county archaeologist when the dyke is scheduled.

- The general location of the earthwork, which way it faces, the length of the dyke with the grid references of each end (giving north before south and west before east) and any alternative views about the possible size of the dyke.
- Whether the dyke is contiguous with parish or other boundaries.
- The structure of the dyke. The number of banks and ditches, their size (drawn from measurements of the surviving earthwork, the figures given by antiquarians before it was ploughed out and/or from excavation reports) and any indications of gateways. Any sign of a berm is noted and whether or not evidence of a palisade was recorded during any archaeological excavations. If an excavation profile exists or if the original profile of the ditch is obvious during fieldwork (that is if the ditch is largely unaffected by silting) the shape of the ditch (V or U shaped) with the angle of the sides is recorded.
- A brief discussion of the name (with possible etymologies) and if possible a reference to the earliest mention of the dyke.
- The evidence of the date of the dyke. Brief notes on the most important research carried out on the dyke and a summary of any excavation with any possible dating evidence found. Also included are any relevant notes (if not otherwise attributed taken from fieldwork carried out as part of this study) on the relationship between the earthwork and both the natural landscape and other nearby ancient sites.
- An assessment of the possible date of the dyke using the criteria used throughout this study which are: **Probable prehistoric/Roman/early-medieval/Viking/later-medieval/modern dykes; possible early-medieval dykes; probable rebuilt prehistoric/Roman dykes; possible rebuilt prehistoric/Roman dykes; probable reused prehistoric/Roman dykes; possible reused prehistoric/Roman dykes**. Dykes are very difficult to date and any conclusions about the age of an individual dyke are always best considered provisional.

This study assumes the face of the dyke is the side with the ditch (a dyke with only a bank or a ditch, or a bank with a ditch on both sides obviously does not face in any direction).

With parish boundaries and dykes the word contiguous is used to denote that the dyke and the parish boundary is on the same line; the word ‘follows’ might imply we could be certain which of the two came first. Please note that it is often mistakenly believed that the boundaries of the historic shires of England remained largely unchanged prior to 1974, but the Victorians undertook major shire and parish reorganisations (for example in the wake of the 1888 Local Government Act that introduced elected county councils).

Regarding estimates of the size of the monuments, the given depth of the ditch of archaeologically investigated dykes is probably more accurate than the height of the bank as we can never know how much of it has eroded or slumped. Others have measured dykes from the bottom of the ditch to the top of the bank, but this exaggerates the size of dykes that lie across natural slopes. Where there are published profiles of an earthwork, a line was drawn showing the probable original land surface before calculating the size of the banks and ditches. This study uses metric measurements throughout, unless quoting older sources where a metric figure would seem anachronistic. A few figures have been included with permission from unpublished reports or studies to aid other researchers. Maps showing the dykes in each region are included, but for clarity the earthworks (in particular the shorter ones on the larger scale maps) are not drawn to scale; the thicker lines mark actual earthworks and the thinner lines possible lengths of earthworks postulated by other scholars.

5.1 NORTHERN BRITAIN

Though this region covers all of Britain north of Hadrian's Wall including the whole of Scotland, the only known dykes are in Northumberland or lowland Scotland. Stephen Driscoll (Professor of Historical Archaeology at the University of Glasgow), Christopher Bowles (Archaeology Officer for the Borders), Liz Williams (the HER Officer for Northumberland) and Andrew Nicholson (the HER officer for Dumfries and Galloway) were all consulted regarding early-medieval dykes in this area. Earthworks in northern Britain, especially in the border, are noticeable due to the lack of urbanisation, though agriculture and forestry have damaged many of the dykes (Barber, Lawes-Martay et al. 1999 63-64). In the eighteenth and nineteenth centuries, antiquarians drew maps and wrote surveys in which they were inclined to connect various shorter earthworks together with hypothetical lost sections to form border defences of ancient kingdoms. Usually the observations of antiquarians are useful in piecing together lost sections of dykes, but James Craw, Angus Graham and John Barber have carried out surveys of some Scottish dykes pointing out how previous scholars had erroneously connected unrelated and unconnected earthworks (Craw 1924; Craw 1928; Graham 1951; Graham 1964; Barber, Mate et al. 1982; Barber, Lawes-Martay et al. 1999). This section includes six earthworks that credible scholars have ascribed to this period. Dykes for which there is only a passing reference to a possible early-medieval date, like the unnamed dyke near Campville (at NT947021 HER reference N1153) which local archaeologists are certain is Bronze Age, are not included even though this example is marked on the 1938 Ordnance Survey map of the Dark Ages (O.S. 1938).

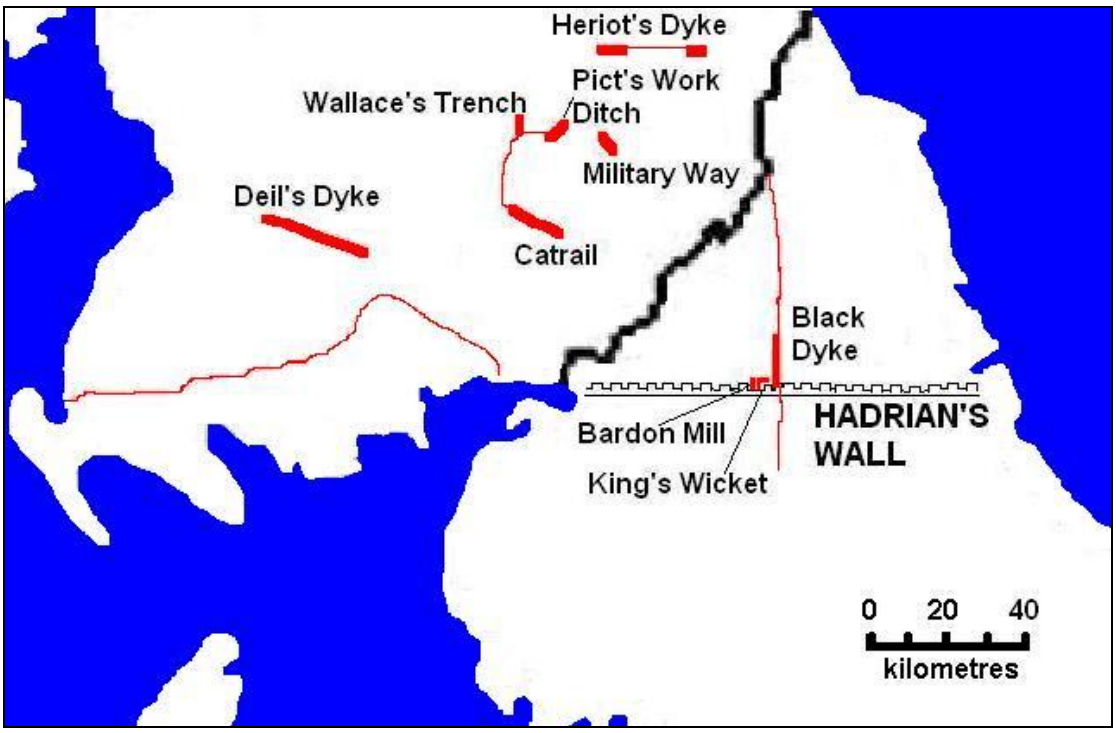


Figure 24 The dykes of Northern Britain

5.1.1 BARDON MILL DYKE AND KING'S WICKET

Northumberland HER N12388 for Bardon Mill Dyke and N6597 for King's Wicket. NMR NMR NY 76 NE 373 (MONUMENT 1406624) for the Bardon Mill Dyke and NMR NY 76 NE 47 (MONUMENT 15278) for King's Wicket.

These two west-facing dykes run between Bromlee Lough and Hadrian's Wall. The Bardon Mill Dyke is 188 metres long (NY797696 to NY797694) and the western bank of King's Wicket is about 200 metres long (NY797695 to NY798693). Neither is contiguous with parish boundaries, though the nearby Hadrian's Wall is. Both consist of a ditch with a bank on the east side. As the Bardon Mill Dyke is unexcavated and too eroded for meaningful measurement on the ground it is impossible to give any dimensions except the banks and ditch combined seem about 13 metres in width on aerial photographs. The name Bardon Mill Dyke is recent; King's Wicket means an enclosure used for royal grazing stock; Bruce's 1863 study does not record the name, but it is on an 1866 Ordnance Survey map (Bruce and Daniels 1863; Graham and Embleton 1984 129). Medieval ridge and furrow to the east of Bardon Mill Dyke respect and therefore post-date the earthwork so it is possibly early medieval though it possible it was part of the nearby prehistoric Black Dyke (Woodside

and Crow 1999 28 and 81). The eastern side of King's Wicket is formed by Hadrian's Wall (confirming it is post-Roman). However, the western side is parallel to, just 70 metres east of and faces the same direction as the Bardon Mill Dyke suggesting the two are related, but as aerial photography shows it overlays medieval ridge and furrow it is probably a later medieval stock enclosure.

Figure 25 Looking north from Hadrian's Wall with the Bardon Mill Dyke on the left and the King's Wicket on the right

5.1.2 BLACK DYKE

Northumberland HER N6951. NMR LINEAR 110, NY77SE70 (MONUMENT 1066037) and NY86NW38 (MONUMENT 1445106).

This is a west-facing dyke that runs north (with a convex curve to the west) from a point on Hadrian's Wall just east of Housesteads Fort. Warburton's 1716 map suggests it ran for about 60 kilometres from the Scottish border to Allenheads (Spain 1922 122). Spain, Frank Graham and Crawford thought the dyke ran from the North Tyne at Tarset to Moralee (now Morralee) on the South Tyne (NY788846 to NY806647) making it about 20 kilometres long (Spain 1922

121, 131 and 151; Crawford 1953 121; Graham and Embleton 1984 127). However, surveys by the Royal Engineers in 1850-60, engineers building a railway cutting in 1921 and modern aerial photography have all found no sign of the dyke south of Hadrian's Wall (Spain 1922 124 and 127-28). This study concludes the earthwork was about 4 kilometres long from Whitelee Cleugh to Sewingshield Crags (NY780737 to NY799700) with probably 2 kilometres unmade where the builders utilised natural features (Spain 1922 126; Crawford 1953 121). About 1.5 kilometres of the dyke (NY791714 to NY799699) is contiguous with parish boundaries. The earthwork has a ditch up to 1.8 metres deep and 4.3 metres wide and a bank on the east side up to 1.4 metres high and up to 4 metres wide (Spain 1922 121 and 133; Woodside and Crow 1999 131). The first reference to the name Black Dyke is in 1303 and the name is used for numerous earthworks on both sides of the border (Spain 1922 167; Craw 1928). As Hadrian's Wall and associated works probably destroyed the southern end, the dyke is probably prehistoric, despite suggestions it was Anglo-Saxon (Bruce and Daniels 1863 137; Lynn 1898 89; Spain 1922; Crawford 1953 121; Graham and Embleton 1984 126-27; Woodside and Crow 1999 28-29 and 56). However, the builders of the nearby Bardon Mill dyke possibly chose the site for their earthwork as the Black Dyke and a north-south section of Hadrian's Wall would form a parallel defensible rear line. The dyke is therefore a probable prehistoric dyke possibly reused in the early-medieval period.

5.1.3 CATRAIL (INCLUDING WALLACE'S TRENCH)

Picts' Work Ditch or northern section Borders HER 2170082, HER 2070056, HER 2030060 and HER 2170103, the southern section or Catrail proper HER 3040112, Wallace's Trench HER 2030034. CANMORE references for the southern section or Catrail proper NT40SE 21, NT41SW 30, NT40NW 35 and NT40NE 58, the only reference for the northern section is NT43SE 12. CANMORE reference for Wallace's Trench NT33SE 1.

Scholars once thought the Catrail was a continuous earthwork but modern scholars consider it three distinct structures. The northern section (also called

the Picts' Work Ditch) is a 6 kilometre-long ditch that runs southwest from Linglie Hill near Galashiels (NT475305) to Mossilee near Selkirk (NT479358), but, as it is not continuous, was probably only 4 kilometres long (Craw 1924 43; Barber, Lawes-Martay et al. 1999 81-83). The southern section of the Catrail faces southwest and runs from near Hoscote Burn (NT378123) to Roberts Linn (NT538026), a distance of some 19 kilometres, though this is not continuous and the lengths of scheduled monument cover approximately half the distance (Craw 1924 42-43; R.C.A.H.M.C.S. 1956 479-80). Scholars once thought the east-facing Wallace's Trench that runs north-south on Minch Moor for about 500 metres (NT386327 to NT386323) was part of the Catrail, so is included in this section. None of these earthworks is contiguous with parish or other boundaries.

The ditch of the northern section of the Catrail (the Pict's Work Ditch) is about 0.9 metres deep and 6 metres wide (Lynn 1898 68; Barber, Lawes-Martay et al. 1999 116-17). The southern section of the Catrail has a ditch 0.35 to 1.2 metres deep (the average being 0.6 metres) and 1.8 to 3.7 metres wide (the average being 2.7 metres) and a bank on the northeast, downhill side 0.25 to 0.5 metres high and 2.4 to 3.4 metres wide (Lynn 1898 81; R.C.A.H.M.C.S. 1956 480; Barber, Lawes-Martay et al. 1999 81-83). The Canmore records and Barber's 1999 survey suggest there is also a counterscarp bank on the southwest side 1.6 metres wide and 0.1 metres high. Wallace's Trench consists of a ditch 1 to 1.5 metres deep and 4.3 to 4.9 metres wide with a bank on the west side 1.8 metres high and 5.5 metres wide (Crawford 1953 251; Barber, Lawes-Martay et al. 1999 104). There is a gap in Wallace's Trench and the banks slightly overlap suggesting it is an original entrance. Alexander Gordon in 1727 referred to the earthwork as both the Catrail and the Picts-Work-Ditch, the former name Smail thinks derives from the Brythonic words for war and fence, *Cat* and *Rhail* (Gordon 1727 101-04; Smail 1882 117-19). William Wallace (executed 1304) is presumably the person referred to in the name Wallace's Trench. Gordon thought the Catrail a unitary work built by the Romans as a defensive line and this idea was followed by later scholars like Smail and Lynn, though Murray was sceptical about the existence of large sections of this dyke (Gordon 1727 101-

04; Murray 1864; Smail 1882 105-06; Lynn 1898; Craw 1924 41). Craw in the 1920s demolished the theory of a unitary Catrail (Craw 1924; Craw 1928 359-60; Barber, Lawes-Martay et al. 1999 79). Crawford, this study and both the HER records of the Borders and those of Canmore treat Wallace's Trench as a distinct monument (Smail 1882 111; Lynn 1898 71; Craw 1924 43; Crawford 1953 251). A survey by the Royal Commission on the Ancient and Historical Monuments of Scotland and Angus Graham postulated that the Catrail was probably Anglo-Saxon though Barber classified the southern section as prehistoric or medieval and the northern section as a possible sixteenth-century woodbank (R.C.A.H.M.C.S. 1956 483; Graham 1964 236-37; Barber, Lawes-Martay et al. 1999 75-76, 79-81 and 116-17). All three are undated and so are possibly early-medieval dykes.

5.1.4 DEIL'S DYKE

Dumfries and Galloway HER reference MDG11235, MDG12838, MDG20966. CANMORE reference NS61SE 8, NS61SW 16, NS80NW 17, NS80SW 21, NS71SE 36, NS70NE 42, NS71SW 25.00, NS71SW 25.01, NS71SW 25.02, NS71SW 25.03, NS71SW 25.04, NS71SW 25.05, NS71SW 25.06, NS71SW 25.07, NS71SW 25.08, NS71SW 25.09, NS71SW 25.10, NS71SW 25.11 and NS71SW 25.12.

This dyke was thought to run from the southwest coast of Scotland eastward to surround Galloway before turning south to the Solway Firth, but this earthwork seems to a figment of the imagination of nineteenth-century scholars (Chalmers 1889 237; R.C.A.H.M.C.S. 1914 195-96; Graham 1951 174-75; Crawford 1953 122; Graham and Feacham 1956 137-38). There is an actual surviving 25.7 kilometre-long (NS617114 to NS839051) bank called The Celtic or Deil's Dyke in the upper Nith valley that runs from just south of New Cumnock south-southeast to Burnmouth (Graham 1951 184; Barber, Mate et al. 1982 29; Halpin 1984 28-31). Apart from a possible 200-metre long section marked on an 1869 Ordnance Survey map (NS872053 to NS875053), none of Deil's Dyke near the River Nith is contiguous with parish boundaries. It consists of a bank up to 2 metres high and 1.4 to 2 metres wide (Graham and Feacham 1956 140-46;

Barber, Mate et al. 1982 42-45). There is sometimes a ditch on the north side, but excavations suggest that this was a later drainage ditch; there is no need for a quarry ditch as builders stripped turves on both sides to form the bank. The name probably derives from the Old English *dæl* or *dal* meaning portion, part, share or lot and is a common name for boundary markers in the area (Graham 1951 185; Barber, Lawes-Martay et al. 1999 83). In 1981, John Barber excavated eight sections (centred on NS721144) which found thirteenth to fifteenth century pottery in the core of the bank (Barber, Mate et al. 1982; Youngs and Clark 1982; Barber, Lawes-Martay et al. 1999 85). This earthwork was probably a medieval forest boundary perhaps from when Walter Steward delimited the *foresta de Senecastre* (Sanquhar) in 1214.

5.1.5 HERIOT'S DYKE

Borders references Greenlaw Moor section HER 1160003, Haerfields section HER 2100012. CANMORE NT65SW 25, NT74NW 40, NT74NE 30, NT64NE 31, NT64NW 46, NT85SE 80, NT95SW 105, NT84NW 109, NT84NE 73 and NT55SE 29.

This dyke was once thought to run from near Lauder east to the Blackadder Water in what was once Berwickshire (now Borders). Most authorities, including this study, consider it two separate structures. The first is a sinuous kilometre-long wall at Haerfields (NT575500 to NT584500) which is not contiguous with administrative boundaries (R.C.A.H.M.C.S. 1915 117-23; Graham 1964 230-31). The second a straight two kilometre-long south-facing dyke across Greenlaw Moor (NT704485 to NT721484) which again is not contiguous with administrative boundaries (R.C.A.H.M.C.S. 1915 95-96; Graham 1964 234-35). The Haerfields section consists of a boulder-built wall 0.8 to 1.2 metres high and in the best preserved sections around 2 metres thick with no sign of a ditch (R.C.A.H.M.C.S. 1915 117; Graham 1964 230-31). The Greenlaw section consists of a v-shaped ditch 0.5 to 1.2 metres deep and 2 to 4.5 metres wide with a bank on the north side up to 1 metre high and 3 to 5 metres wide with a counterscarp bank to the south (possibly the result of later clearing of the ditch) up to 2 metres wide (R.C.A.H.M.C.S. 1915 96; Graham 1964 234; Barber,

Lawes-Martay et al. 1999 83). The first record of the name (spelt 'Herriot') was in 1834, it has also been recorded as Herrit and Harrit all of which are variations of the surname Heriot first recorded in 1164-74 as Heriet (R.C.A.H.M.C.S. 1915 95; Graham 1964 229-30). It is possible a person whose surname was Heriot (probably whose ancestor hailed from Heriot in Midlothian) gave their moniker to the dyke (Craw 1928 360). Alternatively it could be from Old English: *here-geat* army gap or *here-geatu* wergeld pass (Nicolaisen 1976 (1986 ed) 18). John Spottiswoode who thought it ran for up to 37 kilometres possibly as far as Berwick-Upon-Tweed, but the Royal Commission on the Ancient and Historical Monuments of Scotland survey and Craw only found evidence of two small sections (R.C.A.H.M.C.S. 1915 95-96 and 117; Craw 1928 361-64; Graham 1964 227-28). Angus Graham, as well as demolishing the long-dyke theory of Deil's Dyke, argued that only the two short sections were the real earthwork and that old roads made up much of the rest of Spottiswoode's dyke (Graham 1964). Like Craw, Graham concluded that the dyke was not any use for defensive purposes even to provide an obstacle for raiders and was more likely to be a boundary marker, though neither was able date the earthwork (Craw 1928 360; Graham 1964 236). The wall near Haerfields is possibly late medieval or early modern, but with no clear dating evidence both are possibly early medieval.

5.1.6 MILITARY WAY

Borders HER 2020044.

This southwest facing earthwork runs for about 5 kilometres (NT512320 to NT549285) between Selkirk and Bowden though Crawford suggested it extended a further kilometre northward (to NT506327) to Faldonside Loch (Crawford 1936a 347-48; R.C.A.H.M.C.S. 1956 71-73). It is not contiguous with parish or other borders. Large sections of this earthwork have been mutilated, the bank spread out and new ditches cut so without excavation evidence it is impossible to ascertain accurate measurements of the original monument. The earthwork has a ditch 1.5 to 2.3 metres deep and 7.6 to 9 metres wide usually with a bank 2 metres high and 2 metres wide on the east side; at some points

there are two or even three ditches with a bank or banks in-between (Crawford 1936a 346; R.C.A.H.M.C.S. 1956b 71; Barber, Lawes-Martay et al. 1999 84). It is probable that the sections with multiple banks and ditches derive from later trackways that follow the dyke (Barber, Lawes-Martay et al. 1999 84). The name suggests it was a Roman road, but this study found no record of the name prior to 1845 (Crawford 1936a 346; Barber, Lawes-Martay et al. 1999 83). Although traditionally thought to be a Roman road, this is unlikely idea as small lochs like Lady Moss cut it (Crawford 1936a; R.C.A.H.M.C.S. 1956b 71; Barber, Lawes-Martay et al. 1999 83-85). With no recorded excavations or any other dating evidence, the earthwork is at best a possible early-medieval dyke.

5.2 YORKSHIRE

Yorkshire is a large county; if it is subdivided (for example into the historic Ridings, the modern unitary authority boundaries or the areas covered by the various HER archives), this creates organisational problems as some of the dykes cross these boundaries. The other major problem with Yorkshire is deciding which dykes to include or exclude. There are many dykes on the Yorkshire Wolds and the North Yorkshire Moors, some of which Pitt-River attempted to link with Dane's Dyke, but modern dating techniques and surveys of prehistoric landscapes suggest they are undoubtedly prehistoric (Pitt Rivers 1882 459-63; Spratt 1978; Spratt 1989). There is a dyke on Danby Rigg in the North Yorkshire Moors excavated in 1986 that produced an early-medieval radiocarbon date, but as that date is ninth century and the area has produced Viking evidence it is outside the scope of this study (Harding and Ostoja-Zagorski 1994).

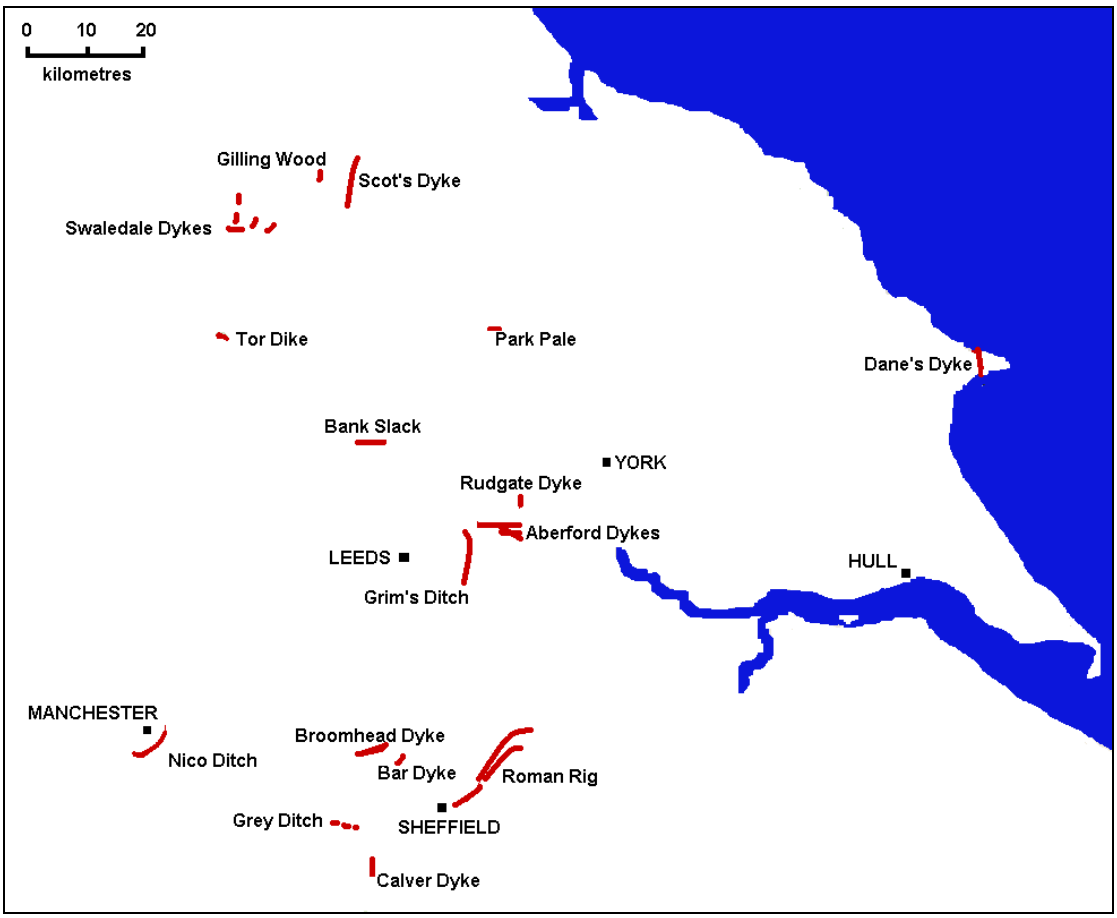


Figure 26 The dykes of Yorkshire and Derbyshire

5.2.1 ABERFORD DYKES AND GRIM'S DITCH

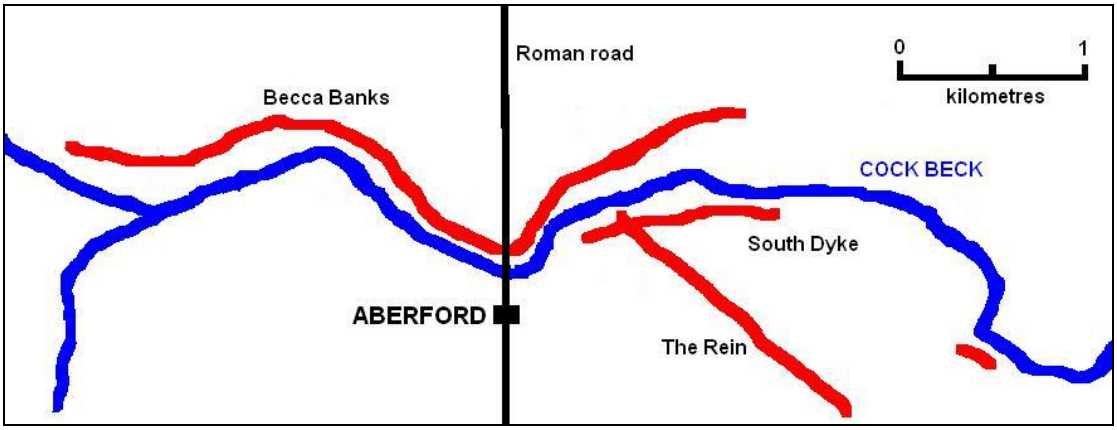


Figure 27 Aberford Dykes

West Yorkshire HER Becca Banks (The Ridge) is 1968, 6900, 6902, 6903, 6904 and 6905, Grim's Ditch is 1978, 5006 and 4694. North Yorkshire HER South Dyke is 10639 and 10640, The Rein is 10638 and 10793. NMR references for the Aberford Dykes are Linear 75 (Monument 1035019), SE 43

NE 10 (Monument 54517), and the possible eastern fragment of the South Dyke is SE 43 NE 31 (Monument 1035037).

To the east of Leeds are a series of earthworks; in the valley of the River Cock near Aberford are a group of dykes that run east-west known as the Aberford Dykes (Becca Banks, also called The Ridge, South Dyke and The Rein) and about 5 kilometres to the west between Leeds and Garforth is the east-facing Grim's Ditch. This study discusses them as a group before giving details about the individual earthworks as other scholars often link them.

Leland first recorded the Aberford Dykes in the sixteenth century and Alcock proposed that they formed a Brigantian defence against the Romans (Alcock 1954; Smith 1964b 42). However, most other writers associate these dykes with the early-medieval kingdom of Elmet (Crawford 1953 187 and 247; Armitage and Montgomerie 1974 57; Anon. 2002). Although Becca Banks seems to cut a Roman road, development at that point makes any investigation of the relationship between the two structures highly problematic. Crawford, Kenyon, Faull, Butler, Fleming and the Ordnance Survey all postulate an early-medieval date for all or some of the Aberford Dykes (Crawford 1935 282; O.S. 1939; O.S. 1966; Butler 1967 97; Hart 1977 53; Faull and Moorhouse 1981 Map 11; Kenyon 1991 78; Fleming 1998 28). Ramm (H. Ramm unpublished lecture given at York 22nd November 1975) suggested that as the south-west-facing Becca Banks faces towards the traditional location of Elmet, therefore it was a Northumbrian construction against the Mercians (Kenyon 1991 78). Faull's unpublished 1979 thesis first identified Grim's Ditch as a dyke and brought it to the attention of modern scholarship and since then most scholars have grouped it with the Aberford Dykes as part of the defences of Elmet (Faull and Moorhouse 1981 Map 11; Kenyon 1991 78; Fleming 1998 28).

During 1996 and 1997 archaeologists made a series of excavations on Grim's Ditch, Becca Banks and South Dyke (though not The Rein) in advance of a new M1-A1 link road (Roberts, Burgess et al. 2001). The archaeologists concluded that all three were probably prehistoric (Wheelhouse and Burgess 2001 144-

48). This study also concludes that Grim's Ditch and South Dyke are probably prehistoric. However, they did not excavate The Rein and as it faces in the opposite direction to South Dyke and seems to cut this prehistoric earthwork (at SE439376) it is probably an early-medieval dyke. Becca Banks overlays an Iron Age enclosure and possibly cut a Roman road. In the bottom of the ditch fill archaeologists found second-century Roman sherds, halfway up was a cow pelvis that returned a radiocarbon date of 559-674 AD and near the top of the ditch fill was some possible late Saxon sherds and thirteenth-century pottery. This study concludes the Roman sherds were possible residual material that found their way into a ditch the other finds suggests was open in throughout the medieval period and therefore Becca Banks is probably early medieval.

5.2.1.1 Grim's Ditch

This is an east-facing earthwork that runs south for 8.8 kilometres from Whinmoor (SE358380) almost to the banks of the River Aire (SE374295) southwest of Swillington (Wilmott 1993 55). Parish boundaries are contiguous with the earthwork for about 2 kilometres (SE376336 to SE375313). Excavations suggest the earthwork consists of a ditch 1.83 to 2.6 metres deep and 4 to 5 metres wide, on the west side of which was a bank 1.8 to 2.4 metres high and 7 to 18.3 metres wide. The dyke is far from uniform and the various excavations suggest that the ditch was v-shaped with sides of 35º, 45º or 50º sides. There is no sign of an ankle-breaker, revetment or a palisade, but there is a berm about 0.5 metres wide (Pope 1958; Wilmott 1993 65). Though Faull first identified the dyke in 1979, the name is probably much older because there are farms and a watercourse near the northern end of the earthwork called Grimes Dike and a deed dated 1257-85 refers to a Grymisdyk on Manston Moor (Brown 1914 104; Wilmott 1993 55-57). Agriculture has heavily damaged this earthwork and scholars as late as 1967 thought it a Roman road (Margary 1967 409; Wilmott 1993 55; Roberts 2001). Excavations in 1957 (at SE375316), in 1979 (at Whinmoor SE363377 and Barwick Road South SE378349 to SE378351) and in 1983 (at SE375323) failed to find any conclusive dating evidence (Pope 1958; Wilmott 1993). In 1996-7, archaeologists excavated at two points

(SE375328 and SE375310), the dateable organic material in the ditch fill which (along with samples from a 1999 excavation) produced Iron Age and Roman radiocarbon dates (990-800 BC, 790-400 BC, 777-396 BC, 33-321 AD and 230-550 AD) though the only finds were seventeenth and eighteenth century (Wheelhouse and Burgess 2001).

5.2.1.2 Becca Banks (also called The Ridge)

Becca Banks is south-facing earthwork that runs for 4.2 kilometres from Barwick to east of Aberford (SE403382 to SE445382) on the north bank of Cock Beck and is not contiguous with any parish boundaries. There is a bank with a ditch on the south side. However, the 1965 excavation suggests the builders might have quarried some material for the bank from the north side (Alcock 1954 147; Brooks 1967-70; Armitage and Montgomerie 1974 57). The ditch was of 3 to 3.5 metres deep, rock-cut, u-shape with 50º sides about 8 metres wide and no sign of an ankle-breaker. The bank is up to 2 to 2.8 metres high and 7 to 13 metres wide with no berm separating the bank from the ditch. Crawford and the 1965 excavation report both suggested that it had a stone revetment, but the 1996-7 excavations failed to find any evidence of it so it may be a natural outcrop of limestone (Crawford 1953 247; Brooks 1967-70; Wheelhouse and Burgess 2001 139 and 141). There is no early record of the name Becca Banks, but there is a nearby Beccamor Wood recorded as Bekhay in 1538 (Smith 1961a 98). If the name is Anglo-Saxon could relate to a pick or mattock, or it could mean ‘back dyke’. A 1965 excavation found no dating evidence, but suggested the dyke was hastily built (Brooks 1967-70). A 1996-7 excavation unfortunately found little suitable organic material in the ditch fill for radiocarbon dating or environmental analysis, though they did discover that the dyke was built over open grassland (Wheelhouse and Burgess 2001 137-44).

5.2.1.3 South Dyke

The South Dyke is a north-facing earthwork that runs along the south side of Cock Beck for 1.1 kilometre (SE437375 to SE447376); there is similar earthwork 132 metres long on the same alignment (SE459367 to SE460367) nearly 1.5 kilometres to the east suggesting it was originally 2.7 kilometres long. It is not contiguous with parish boundaries. It consists of a u-shaped, rock cut ditch with 40-50º sides 1.5 metres deep and 4.5 to 9.5 metres wide, on the south side of which is a stony bank 1.5 metres high and 11.5 metres wide. There is no sign of a revetment, berm or ankle-breaker. The excavation in 1996-7 (at SE437376) found organic material from the secondary ditch fill that produced a radiocarbon date of 104 BC – 112 AD and found evidence of recutting of the ditch organic samples of which yielded later dates of 141 – 404 AD and 212-413 AD (Wheelhouse and Burgess 2001 131-37). They found in the recut material a single amphora sherd of the first to third century while the uppermost fill of the ditch contained eleventh to thirteenth century.

5.2.1.4 The Rein

The Rein is a south-facing earthwork that runs for 1.9 kilometres (SE438376 to SE452365); for the entire length is contiguous with parish boundaries. The earthworks consists of a ditch 2 metres deep and 8 metres wide and to the north a stony bank 2 metres high and 9.8 metres wide. The etymology of the name for Reins near Farsley on the other side of Leeds is given as ‘boundary strip’, but this study found no such word in an Anglo-Saxon dictionary (Smith 1961b 230). Evidence in 1975 four third- and fourth-century coins were found on the surface near the north end of the earthwork (Thorp 1975).

5.2.2 BANK SLACK

MNY19251 and MNY21570. NMR SE 25 SW 1 (Monument 51823).

Bank Slack south-facing dyke that runs for about 2 kilometres (SE205546 to SE220548) following a sinuous route on the edge of a valley. A parish boundary cuts the dyke at right angles (SE216546); otherwise no boundaries are contiguous with the dyke. It consists of a v-shaped ditch 3 metres deep and 6 metres wide with sides angled at 40 º and a bank on the higher, northern side up to 3 metres high and 8 to 20 metres wide while to the south of the ditch is a slight possible counterscarp bank. The ditch cuts through shale and the bank unsurprisingly seems to be of the same material. There is a possible re-entrant entrance where a footpath (Jonah's Lane) crosses the dyke (SE210545), but without excavation, it is impossible to prove whether it is original. The word Slack is probably from the Norse 'slakki' and refers to a stream (Beaverdyle) that flows in front of the eastern section, but this study found no early references. There are good views to the south; a small river in a steep-sided valley in front of the dyke, Worstall Crags to the west and Oak Beck to the east; perhaps the builders were blocking a corridor between the Pennines and the River Nidd. The dyke is unexcavated; Butler postulates Bank Slack is an early-medieval dyke while Cowling and North the Yorkshire HER record postulates it is a prehistoric earthwork theories (Crawford 1935 282; Cowling 1946; Butler 1967 97-98). It is undated and therefore a possible early-medieval dyke.

5.2.3 BAR DYKE

South Yorkshire SMR 98. NMR SK 29 SW 2 (Monument 312757).

Bar Dyke is northwest-facing earthwork that runs for about 500 metres (SK245944 to SK247948); the southern end finishes abruptly on a steep slope (Hunter 1819 15 and 269; Preston 1950 308; Armitage and Montgomerie 1974 57). Parish or any other boundaries are not contiguous with the earthwork. It consists of a ditch 1.8 metres deep and 7 metres wide bank with and a bank on the southeast side up to 1.5 metres high and 7 metres wide. Although the name is probably from the Middle English barre (or 'barrier'), it is first recorded in

1819, though the nearby Barrholme is mentioned in 1559 (Smith 1961a 230). The dyke is unexcavated and sources that do mention Bar Dyke including the SMR and NMR entries suggest it is either a British defence against the Anglo-Saxons or a prehistoric territorial marker (Hunter 1819 269; Preston 1950 308; Armitage and Montgomerie 1974 57; Barnatt and Smith 1997 53-54). The dyke cuts two small roads, one of which is a routeway known as Mortimer's Road that the Broomhead Dyke, which faces in the same direction, may also cut suggesting they share a common purpose and date. Without dating evidence from either, this study concludes they are both possible early-medieval dykes.

Figure 28 Looking north along Bar Dyke

5.2.4 BROOMHEAD DYKE

South Yorkshire SMR 97. NMR SK 29 NW 11 (Monument 312644).

Broomhead dyke is a north-facing dyke that runs for at least 1,200 metres (SK229961 to SK241965) along a ridge overlooking the ravine of Ewden Beck on the moors southwest of Stockbridge (Preston 1950 308-9; Armitage and Montgomerie 1974 57). A partially destroyed field boundary which follows the alignment to the east as far as Mortimer's Road (SK244966) might mark a

further 200 metre-long eastward section and a similar field boundary to the west possibly marks a 800 metre-long westward section (to SK223957). Parish or any other boundaries are not contiguous with it. There is a v-shaped rock-cut ditch up to 2 metres deep and 3 metres wide with a bank made up of rock from the ditch on the south side up to 1 metre high and 3 metres wide. The name Broomhead is first recorded about 1280 as Bromyheued and probably derives from the Old English Brom-heafod, meaning headland covered in broom shrubs, but this name is given to the general area not the dyke in particular (Smith 1961a 223). Mitchell gives the name of the dyke as The Side (Mitchell 1855 74). Addy and Hunter presumed the dyke to be pre-Roman in origin while other references to the dyke do not speculate on a date or purpose (Hunter 1819 15; Addy 1893 54; Preston 1950 308-09). The SMR records suggest the dyke is a Bronze Age territorial division as the eastern end passes through a Bronze Age barrow cemetery, though an excavation is needed to establish the relationship between the two features. It is a possible early-medieval dyke.

Figure 29 Looking south towards Broomhead Dyke (arrowed)

5.2.5 DANE'S DYKE

SMR 966. NMR TA 27 SW 3 (Monument 81836).

Dane's Dyke is a west-facing earthwork that runs from coast to coast for four kilometres (TA213732 to TA216692) cutting off 13 square kilometres of Flamborough Head from the mainland (Pitt Rivers 1882; Hawkes 1951 264; Crawford 1953 186 and 247; Butler 1967 98-99; Armitage and Montgomerie 1974 54-55; Ramm 1984; Ramm 1988; Ottaway 1996 20; Rahtz 2000 Darvill, Timby et al. 2002 142). The parish boundary of Flamborough is almost contiguous with the dyke for its entire length. As the builders cut the ditch though chalk and the bank had a revetment of turf, the dyke was probably much steeper in profile when built. There are three possible original entrances: at Dikes Plantation (TA213722), where the Bridlington to Flamborough Road passes through the dyke (TA214701) and another gap near the southern end (TA215694) may mark where a Roman road cut the dyke (Ramm 1984 37; Hirst 1985 12-15). For most of the length of the earthwork there is a v-shaped ditch on the west side 2 metres deep and usually 8 to 12 metres wide and a bank 3 to 5.4 metres high and 18 to 23 metres wide. In some sections, there is some evidence of a small counterscarp bank or a parallel line of bank and ditches. There is no sign of an ankle-breaker or berm. Though the name Dane's Dyke perhaps suggests Vikings built it, it is a later name so may be relevant; the earliest surviving recorded name for the earthwork is from 1392, Flaynburghdyk, like the first element in Flamborough Head this contains the Scandinavian name Flein (Smith 1937 105-06).

Pitt Rivers excavated the monument in October 1879 (at TA213712) concluding it was early Bronze Age because of flints found in the structure and thought it was related to other dykes further inland that recent archaeological surveys suggest are almost certainly prehistoric (Pitt Rivers 1882; Rowntree 1931 34-39; Spratt 1989). Later scholars also usually assume the earthwork is prehistoric (Cole 1893; Cole 1894; Sheppard 1919; Hawkes 1951 264; Crawford 1953 186 and 247; Brearly 1971 2-5; Armitage and Montgomerie 1974 54-55 and 60; Darvill, Timby et al. 2002 142). Observations made by Thomas Sheppard in 1919 during road widening suggest the upper part of the

bank was made with sods of turf, which may explain how horizontal residual flint finds became incorporated into the dyke so Ottaway and some other surveys postulate an early-medieval date (Sheppard 1919 38; Anon. 1963-6; Ramm 1984; Ottaway 1996 20). The twelfth-century chronicles of Symeon of Durham states the seventh-century Anglo-Saxon king Ida landed at Flamborough with sixty ships, though no earlier sources record this event (Arnold 1882 338-39; Cole 1893; Ramm 1984; Ramm 1988 63; Rahtz 2000 2). There are only two small havens (North Landing and South Landing) behind the dyke and the perilous cliffs that fringe the headland claimed 174 ships between 1770 and 1806 so the well-selected location suggests local knowledge rather than the cursory reconnaissance of an invader (Purdy 1974 153).

Various finds near the earthwork possibly relate to the construction of the dyke, though all may be unrelated. There include a Neolithic axe head (at TA213694, HER 865), a Corieltauvian gold coin (at TA215716, HER 18058), a late Iron Age to early Roman settlement (at TA214692, HER 557), a third or fourth-century coin (at TA213727), Roman pottery (at TA217695, HER 8995) and at TA206691 a mid-sixth to mid-seventh century Anglo-Saxon cemetery (Hirst 1985; Steedman 1991; Anon. 1994a 12). With no conclusive dating evidence, it is a possible early-medieval dyke.

Figure 30 Dane's Dyke

5.2.6 GILLING WOOD

MYD47173.

This is 500 metre-long west-facing dyke (NZ151047 to NZ153051) about four kilometres north of Richmond runs along the western edge of Gilling Wood and for the whole length is contiguous with a parish boundary. There is a ditch on the west side 1.1 metres deep and 6.4 metres wide with sides of about 40º and

a bank 2.25 metres high and 11 to 13 metres wide (though later slumping may account for part of the width of the bank) with no berm. This dyke has no name of its own; Gilling Wood is named after the nearby village first recorded in the Domesday Book (1086) as Ghellinges, which derives from the Old English personal name Gyll (Smith 1928 288-89). It is unexcavated so with no clear dating evidence, it is a possible early-medieval earthwork.

Figure 31 Gilling Wood dyke

5.2.7 PARK PALE

MNY13. NMR SE 47 NW 10 (Monument 55362).

Park Pale is a straight north-facing earthwork that runs for about 650 metres (SE404754 to SE411755) cutting off a tongue of land about 800 metres by 650 metres between the River Swale and Cod Beck; it is not contiguous with any parish boundary. It consists of a heavily silted ditch on the north side and a heavily damaged bank that the NMR records suggest was once up to 1.5 metres high and 4 metres wide. Though there is no mention in the English Place Name Society volumes for Yorkshire, the name suggests a park boundary and the dyke did once form part of a boundary of Little Park. On the

1856 Ordnance Survey map it is unnamed, on the 1892 map it is merely called ‘Ditch’ and on the 1978 map it is marked as Park Pale. It is unexcavated, but Butler suggests it is a Danish defensive dyke and the North Yorkshire HER entry says dates anywhere between 1066 and 1900 (Butler 1967 99). The remains of a manor house called Cock Lodge lies within the peninsula protected by the dyke and this manor house seems to have replaced an early motte and bailey structure (Maiden Bower). Descriptions of the estate by William Humbertson in 1569-70 and Bulmer in 1890 do not mention the earthwork (Bulmer 1890 835-36; Skaife 1902-3 142). With no clear dating evidence, the dyke is possibly an early-medieval earthwork later reused as a park boundary.

Figure 32 Looking west along Park Pale

5.2.8 ROMAN RIG/RIDGE

South Yorkshire SMR 99, 100, 101, 102, 105, 107, 112, 113, 115,116 and 3451. NMR 1032945 (SE 40 SE 30), 1032958 (LINEAR 39), 1032962 (SK 49 SW 53), 1032972 (SK 49 SW 54), 1032985 (SK 39 SE 83), 1032999 (SK 39 SE 84), 1033050 (SK 39 SE 85), 1033149 (SK 39 SE 86), 1033302 (SK 49 NW 30), 1033312 (SK 49 NW 31), 1033339 (SK 49 NW 32), 1033346 (SK 49 NW 33),

1033363 (SK 49 NW 34), 1033368 (SK 49 NW 35), 1033369 (SK 49 NW 36), 1033496 (SK 49 NW 37), 1033500 (SK 49 NW 38), 1033501 (SK 49 NW 39) and 1033504 (SK 49 NW 40).

This is an east-facing dyke that runs on the ridge above the River Don from Sheffield northeast to Mexborough (Crawford 1953 248; Armitage and Montgomerie 1974 55; Cronk 2004a). South of the M1 there is only one dyke, the Single Rig, which runs from the centre of Sheffield (SK356880) about 5.7 kilometres northeast to near junction 34 of the M1 (possibly SK391916, though the exact location is uncertain). To the north, there are two roughly parallel dykes. The northwestern one is termed the Northern Rig and is about 10.5 kilometres long. It runs north-north-east then just before crossing the B6089 (SK422984) it turns east-northeast to end in Mexborough (SE465000). The easterly branch, the Southern Rig, is about 9 kilometres long and runs north-north-east for just over a kilometre before turning east to finish just west of Kilnhurst (SK457975). Modern development make it impossible to see on the surface if the three earthworks joined up (Cronk 2004a 72-90). Two sections are contiguous with parish boundaries, the southern Rig for about a kilometre (SK418962 to SK424968) while the final 5 kilometres of the Northern Rig were contiguous with parish boundaries, though later boundary changes mean only about 1.2 kilometres (SK422984 to SK432987) are now.

The various published sections and profiles vary in size though it is unclear if this was an original feature or caused by later damage. There is a v-shaped ditch 1.7 to 2 metres deep and 4 metres wide with 45% sides and a bank on the west side 1.5 to 2.5 metres high and 3 to 6 metres wide. Preston's fieldwork suggested the existence of a small 'inner' ditch to the west of the bank at a few locations (Preston 1950 289). Many excavations revealed signs of a berm, for example the 1947 Hill Top excavation and the 1953 excavation, but some others, like the 1947-8 Meadow Hall Lane excavation, found the dyke abutted the edge of the ditch (Greene and Preston 1951; Ashbee 1956 260). There is no clear evidence of rebuilding, gateways, revetments or a palisade (Ashbee 1956 264; Boldrini 1999a 24). The earliest written record of the dyke (Camden in 1586) calls it Danes Bank while the second reference in 1602 calls it Kempe

Ditch (Camden 1586b 847; Cronk 2004a i and 65). The use of the adjective Roman in the name started in the nineteenth century, though parts are also termed Scotland Balk, and Barber Balk and The Balk (Addy 1893 254; Smith 1928 182-83; Greene 1947 95; Cronk 2004a 4-6 and 73-74). Early scholars like Mitchell and Camden thought the dyke connected with various hillforts, like Winconbank (at SK377909) where deposits found during a 1979 excavation produced Iron Age radiocarbon dates (Mitchell 1855 68; Beswick 1985). However, surveys and excavations have failed to prove or disprove a physical connection with the hillfort (Preston 1950 301; Armitage and Montgomerie 1974 55; Cronk 2004a 48-57). There is a possible branch from the Northern Rig to Caesar's Camp (at SK395952, NMR 314707), an unexcavated probable prehistoric earthwork (Cronk 2004a 108-10 and 121-26). In 1853, workmen found a hoard of 500-600 Roman coins at Swinton near the north end of the earthwork and during railway construction in 1891 workmen found a hoard of 19 Roman coins (Hadrian and Domitian) under a flat stone adjacent to the dyke (Mitchell 1855 69; Preston 1950 301-2; Cronk 2004a 69).

There have been a series of modern excavations of the dyke though most in the late 40s and 1950s failed to find dating evidence or even locate the earthwork (Greene 1947; Greene and Preston 1951 22-24; Riley 1951; Preston and Butcher 1951-7; Ashbee 1956). An excavation at Kimberworth in 1947 on the Northern Rig (SK398923) found a rim fragment of a third-century Roman mortarium in the secondary silting of the ditch (Greene and Preston 1951 20-22). An unpublished excavation in 1973 produced radiocarbon dates of *c*280 AD and *c*2090 BC, but the location of the samples was not properly recorded and pollen samples taken during another unpublished investigation in 1993 near Kimberworth (SK398924) were considered unsuitable for radiocarbon dating (Atkinson 1993; Boldrini 1999a 26 and unpublished correspondence). The numerous changes in direction of the Northern Rig and pollen evidence from the 1993 dig suggest the builders of the dyke constructed it across an agricultural landscape whose field boundaries they had to respect (Boldrini 1999a 29; Cronk 2004a 107, 184 and 188).

Early writers like thought that it was a Roman road and locals often still confuse it with a nearby section of Ermine Street between Doncaster and Adwick-le-Street which is also called Roman Ridge (Hunter 1819 15; Addy 1893 231-58; Cronk 2004a i and 5-7). Though Hawkes and Mitchell postulated that the Brigantes built the dyke, most other authors suggest an early-medieval date (Mitchell 1855; Crawford 1935 282; O.S. 1939; Hawkes 1951 275; O.S. 1966; Armitage and Montgomerie 1974 61; Cronk 2004a especially 12-14; Cronk 2004b especially 102-04). Blair in 1955 postulated that the early-medieval rulers of Northumbria built it as a protection against Mercia and some subsequent authors have followed this argument (Blair 1955 119-20; Hart 1977 53; Rollason 2003 26). Higham, who previously had followed Blair's thesis, later argued the Roman Rig predated the creation of the kingdom of Northumbria (Higham 1993 142-44; Higham 1997 151; Higham 2004b 405-08). In 1980, Ferns claimed that the dyke was a raised bridleway built by the 'Celts' to transport Iron Ore, but this theory has been thoroughly debunked (Ferns 1980; Boldrini 1999a 28-29; Cronk 2004a 8-9). Boldrini suggested the area defined by the two northern branches might be significant creating a 'liminal space' despite the fact that there is no proof the two dykes ever met up to create a defined area (Boldrini 1999b; Boldrini 1999a). The Roman finds from the dyke and the Roman and prehistoric radiocarbon dates suggests the earthwork it probably prehistoric or Roman.

Figure 33 The northeast end of the Southern Rig

5.2.9 RUDGATE DYKE

MNY16985 and MNY18152. NMR SE 44 SE 29 (Monument 54984).

Excavations in the 1960s on a north-south Roman road called Rudgate (the grid references given are SE459422 and SE45944223) revealed that someone had utilised the bank and ditch of the road for an east-facing dyke (R.C.H.M.E. 1963-6; Ramm 1976). However, a 1960 excavation 260 metres to the south (at SE45914197) on the same Roman road found no sign of a dyke neither did excavations to the north at the site of a nearby Roman fort and *vicus* suggesting the earthwork might only be about 100 metres long (Ramm 1976 8). The earthwork is not contiguous with Parish boundaries; it is just a few kilometres from the Aberford Dykes so may be related (Feryok 2001 (2011 ed) 181). Silting lines in the western ditch found during both excavations suggest the existence of a bank along the line of the road. On the eastern side of the road was a ditch 1.4 to 1.5 metres deep and 3 metres wide, about 4.9 metres to the east was another ditch 0.8 metres deep and 1.2 metres wide (Ramm 1976 8-9). The 1960 excavation found second-century Romano-British sherds in the ditch, but

these are probably residual deposits from a nearby Roman settlement. As the earthwork destroyed the Roman road surface it is probably an early-medieval dyke.

5.2.10 SCOT'S DYKE

MNY15324, MNY15380, MNY15388, MNY20691, MNY20692, MNY20693 MNY20694, MNY20695, MNY20698, MNY20699, MNY20700, MNY20701, MNY20702, MNY20880, MNY20925, MNY20950 and MNY21045. NMR LINEAR 42 (Monuments 625308, 1034721, 1034723, 1034727, 1034730, 1034744 and 1035177).

This is an east-facing dyke running for about 12 kilometres (NZ197107 to NZ182008) from near the late-Iron-Age Stanwick Camp south to just short of the banks of the River Swale just east of Richmond (Maclauchlan 1849; Crawford 1953 187 and 248; Armitage and Montgomerie 1974 55; O.A.N. 2008). There are uncertain sections so it is possible that it was not continuous. The southerly three kilometres (NZ187036 to NZ182008) are contiguous with parish boundaries. The earthwork has a ditch up to 1.5 metres deep and 5.5 metres wide with a flat bottom section about 2 metres wide and sides sloping at an angle of approximately 40% (O.A.N. 2008 figure 24). On the west side is a bank 0.8 to 2.5 metres high and 3.5 to 20 metres wide with no discernable berm or revetment. There is also some indication of a small counterscarp bank 2 to 9 metres wide and 0.7 to 1.6 metres high to the east of the ditch. According to the NMR record (Monument number 1034723), the Ordnance Survey recorded an original entrance just east of Whitefield's Farm (NZ186012) near the southern end of the dyke.

Warburton in 1716 erroneously postulated that this along with other dykes like Roman Rig and the Catrail were once a continuous feature that extended into Scotland, which may explain the name (Bulmer 1890 571; Spain 1922 122; Hawkes 1951 280; Armitage and Montgomerie 1974 55). Alternatively it could derive from Scotch Corner, a nearby road junction so named as northbound travellers to west or east Scotland would part ways at that point (Watts 2004

532). The ancient Boundary Rolls of the Borough calls it The Road Dyke (Bulmer 1890 571; Armitage and Montgomerie 1974 55). Crawford and other scholars have often assumed it was early-medieval (Crawford 1935 283; O.S. 1938; Crawford 1953 187 and 248; O.S. 1966 19; Fleming 1994 27; White 1997 46; Fleming 1998 28). A 2007 excavation (at NZ195063) examined ditch silt samples by OSL (Optically Stimulated Luminescence) and archaeomagnetic dating; one was late Iron Age, a second early Roman while the third sample, from the top layer of silt, dated to A.D. 510 (+/- 90) suggesting that the majority of the silting occurred prior to the early-medieval period (O.A.N. 2008). However, the archaeologist in charge, Fraser Brown, stated their “investigations were limited in scale” and this did not exclude “the monument being reused as a boundary in the early Medieval period” (personal communication). While the excavation evidence suggests it is probably prehistoric, the reference from Y Gododdin mentioned earlier suggest it was possibly reused in the early-medieval period.

Figure 34 The southern end of Scot's Dyke

5.2.11 SWALEDALE DYKES

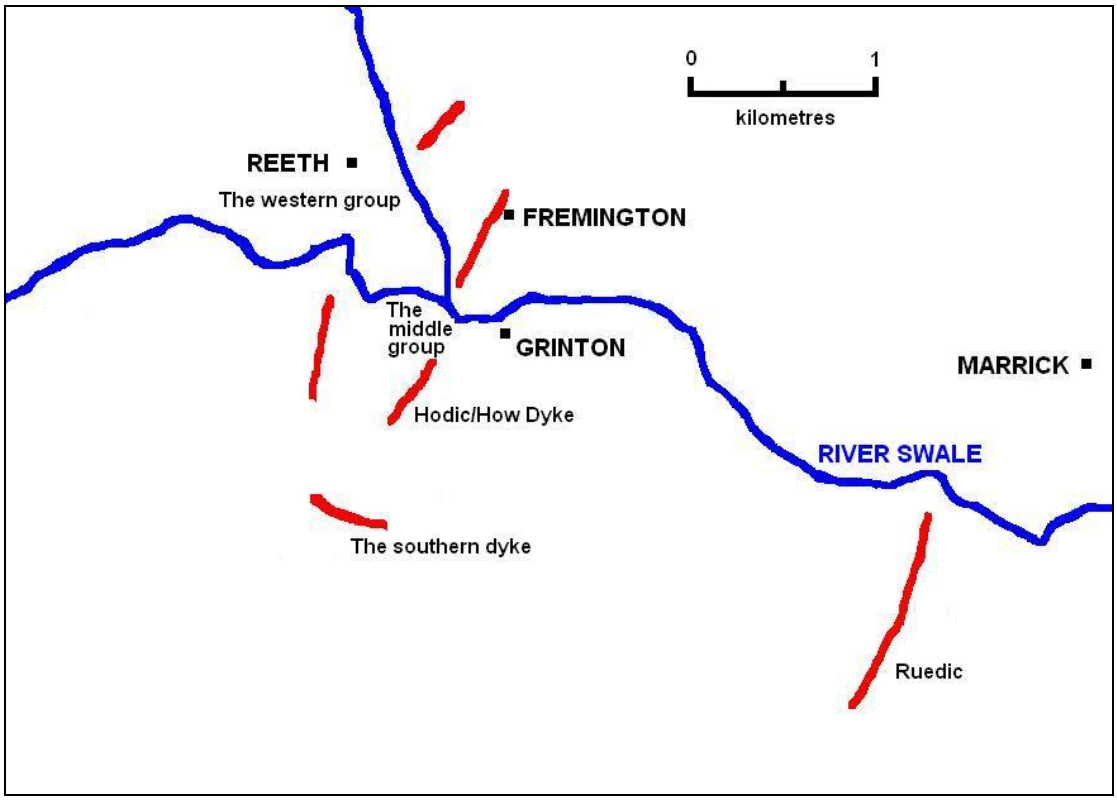


Figure 35 Swaledale Dykes

MYD4495, MYD4514, MYD4516 and MYD4517. NMR SE 09 NW 14 (Monument 48788), SE 09 NW 86 (Monument 560258) and SE 09 NW 312 (Monument 560484).

Centred on Reeth, Fremington and Grinton in the Yorkshire Dales are a series of generally east-facing dykes that block access up Swaledale (Fleming 1994; Fleming 1998 18-32). The dykes consist of a series of groups of dykes that in this study are termed the western group (near Reeth), the middle group (around Fremington), the eastern dyke (near Marrick) and the southern dyke (on Hakerside Moor). The structural details of the individual earthworks are given separately, but as they are probably related, their possible date is discussed collectively. The earliest written references are a charter dated 1185-91 that mentions Hodic or How Dyke and a late-twelfth-century document mentions the Ruedic (Fleming 1994 18 and 28). The name Hodic possibly comes from the word Hoh meaning spur of land or headland while Ruedic possibly means straight dyke (Smith 1961a 111; Fleming 1994 18 and 20).

There are no finds to help date these dykes apart from some ornaments of brass, inlaid with silver and a Roman coin found near Fremington and recorded by Bulmer in 1890, though his descriptions are unfortunately rather vague (Bulmer 1890 443). They have traditionally been seen as Iron Age, perhaps defences set up in 70AD against the advancing Romans (Maclauchlan 1849 344-45; Bulmer 1890 443; Raistrick 1968 64; Fieldhouse and Jennings 1978 3-4; Laurie 1985 155; Fleming 1994 18, 20 and 26). However, the westernmost dyke seems to cut the remains of a Romano-British farm so they may be early medieval (Fleming 1994 26-27; Fleming 1998 18-32 especially 21). The dykes are markedly larger than the prehistoric, medieval and modern field boundaries. Without any dating evidence, these dykes are possible early-medieval dykes.

5.2.11.1 The western group

The western group consists of two east-facing dykes, one north of Reeth about 290 metres long (SE043998 to SE040996) and ones south of Reeth 670 metres long (SE037987 to SE036980). Like all the Swaledale dykes, they are not contiguous with parish or any other boundaries. The southern dyke has a ditch 1.4 metres deep and 7 metres wide with a bank 2 metres high and 14 metres wide and a small counterscarp bank to the east of the ditch 1 metre high and 4 metres wide. There is a stone revetment, but no sign of a berm. The northern dyke is of a similar size, but on private land, so measurement was not possible.

Figure 36 Looking north along the southern earthwork of the western group of the Swaledale Dykes

5.2.11.2 The middle group

These two east-facing dykes include a 580 metres long dyke north of the river (SE046993 to SE044988) and the 580 metre long Hodic or How Dyke south of the river (SE043984 to SE040979). The dyke north of the river has a silted ditch with a bank 1 metre high and 8 metres wide; to the east there is evidence of a small counterscarp bank. The Hodic has ditch 1.2 metres deep and 9 metres wide and a bank 2 metres high and 15 metres wide. There is no sign of a berm on either earthwork.

Figure 37 Hodic looking south

5.2.11.3 The eastern dyke - Ruedic

The eastern dyke near Marrick just consists of an east-facing dyke south of the Swale called Ruedic about 680 metres long (SE069975 to SE066969); the valley north of the river is possibly sufficiently narrow to not need a dyke. The earthwork has a shallow ditch 1 to 1.5 metres deep and 7 metres wide and to the west a bank 1.6 metre high and 10 metres wide with no sign of a berm.

5.2.11.4 The southern dyke

This south-facing dyke runs for about 390 metres (from SE037975 to SE039973). This is the only dyke that faces uphill, though it is on a slight break on the slope, seemingly guarding the system from flanking attack across the hills to the south. The earthwork consists of a bank 2 metres high and 7 metres wide with a shallow ditch with no sign of a berm.

5.2.12 TOR DIKE

MYD4145. NMR 47039.

This south-facing dyke runs for about two kilometres across the head of Coverdale (SD976756 to SD 991754); it is contiguous with parish boundaries and in the past also acted as a wapentake and county (or rather Riding) border (White 1997 46). It had a v-shaped ditch 3 metres deep and 6 metres wide (the flattened bottom suggesting some silting) with sides of 35-55% on the north face and 40% on the south face. To the north, except where the steep natural scar makes it unnecessary, there is a bank 1 metre high and 3 metres wide. At approximately SD 989756 where the scar ends the HER suggests there is an original gap, but fieldwork as part of this study found no sign of a break in the earthwork. There is a berm about 3.4 metres wide. Though the word Tor is the rather apt Old English word for crag, the oldest reference to the dyke is Teedike from 1485 in the Patent Rolls, 'tee' does not seem to be an obviously Old English or British word (Smith 1961c 110). There is no major study of the dyke. Butler says the dyke could be early medieval or Iron Age, Raistrick assumed it was a defence against the Romans, Fleming and White suggests it was early medieval (Butler 1967 98; Raistrick 1968 63-64; White 1997 46; Fleming 1998 27-28). White suggests it was the border of a possible early-medieval British kingdom called Craven though the earliest surviving reference to this polity is in the Domesday Book (Smith 1961c 1-2; Wood 1996). As Tor Dike is unexcavated it remains a possible early medieval.

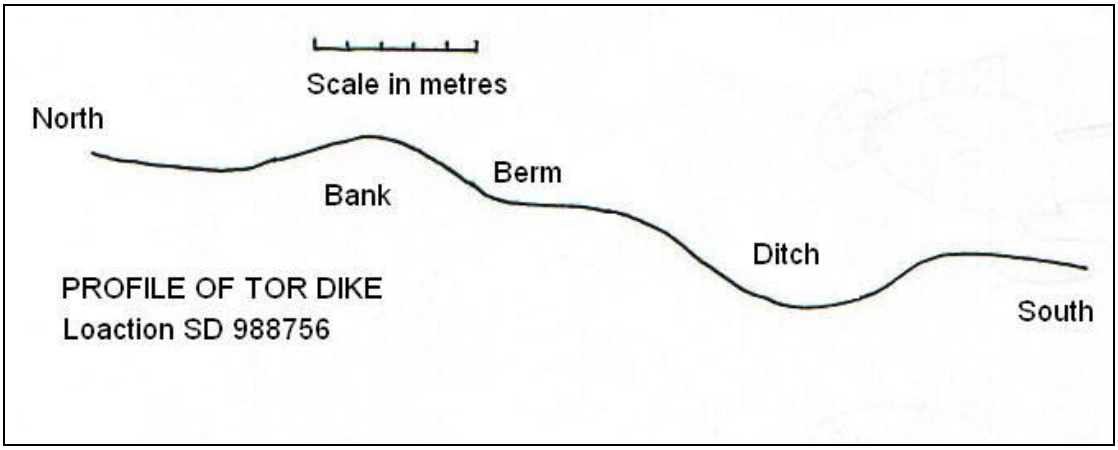


Figure 38 Profile of Tor Dike by the author

Figure 39 Looking west along Tor Dike

5.3 NORTH-WEST

This region covers the whole of northwest England from and including Cheshire up to the Scottish border (the pre-1974 counties of Cheshire, Lancashire, Westmoreland and Cumberland). There are two possible early-medieval earthworks in this region: Nico Ditch and Heronbridge. As the latter faces towards Wales and is less than 20 kilometres from and parallel to both Wat's and Offa's Dyke it could easily be included in the Welsh Borders, but has been included here as most the records of the dyke are in archives in the north-west. There are other dykes in Cumbria and Lancashire such as Dane's Pad, Lower Holker, Cark Mellor, Harrington's Dyke in Roeburndale, The Old Dyke near Cliviger, Red Lees near Cliviger and some earthworks near Crosby Ravensworth (Gardner 1908 555; Curwen 1913 201; Collingwood 1933; Crawford 1953 245; M.O.W. 1953 61). Peter Iles (the Specialist Advisor in Archaeology for Lancashire County Council), Jo Mackintosh (Historic Environment Records Officer for Cumbria County) and Eleanor Kingston (Archaeology and Heritage Adviser for Lake District National Park Authority) have all assured this study that these earthworks are in fact a mixture of

Prehistoric, Roman, Viking and later medieval features (personal communications).

5.3.1 HERONBRIDGE EARTHWORK

HER 1972/0/10 and 1972/0/4. NMR SJ 46 SW 60 (Monument 965212).

This earthwork near Heronbridge is sandwiched between Watling Street and the River Dee. It is a west-facing dyke that runs for about 100 metres southwest (SJ412639 to SJ411638) then curves south for a further 350 metres (to SJ411346) and then curves eastward (finishing at SJ412635) for a further 100 metres (Petch and Davies 1932; Williams 1932; Hartley 1952; Thompson 1965 63-64; Laing and Laing 1985; Petch 1987 189-90; Mason 2003; Mason 2005). No administrative boundaries are contiguous with the earthwork. There is a ditch up to 3 metres deep and 5.8 metres wide and a bank now up to 1 metre high (though originally possibly much higher) and originally 6 metres wide (Mason 2003 97). The ditch was probably v-shaped with no sign of an ankle-breaker or a berm (Petch and Davies 1932 8; Thompson 1965 63; Mason 2003 60). The bank had a stone revetment formed using rubble from the Roman settlement the dyke slices through (Petch and Davies 1932 8; Thompson 1965 63-64; Petch 1987 190; Mason 2003 75-77; Burnham, Hunter et al. 2005 423). There is no evidence of any original gateways, though a possible Civil War gate was later inserted into the earthwork (Mason 2003 79). Part of the ditch might have been later cleared out or recut (Williams 1932 114; Petch 1987 189). Recent excavations found part of the ditch was reutilised to soak flax for the production of linen and the archaeologists obtained eighth-century radiocarbon dates from these deposits.[1]

[1] Some details from excavation are taken from unpublished evidence given by David Mason at a conference on Heronbridge held at the Museum of Manchester (29 March 2012).

Figure 40 Looking south along the central section of the Heronbridge earthwork

The dyke's name is recent and derives from the local settlement of Heronbridge known as *pons ferreus* in 1354 and the Iron Brigge in 1355 (Dodgson 1981 54-56; Laing and Laing 1985 15-16). A medieval iron bridge is implausible; the name probably ultimately derives from the Old English word 'hyrne' for a corner. The earthwork along with the River Dee enclose an area of about 5.7 hectares and excavation evidence suggests there was a Roman quay here (Burnham, Hunter et al. 2004 281). Excavations in 1930-3 found the dyke overlay Roman features and found part of a cemetery that contained adult bodies many with wounds to the skull (Petch and Davies 1932 46-48; Williams 1932; Laing and Laing 1985 17 and 52-53; Petch 1987 189). A 1954-5 excavation uncovered a coin of Claudius 2nd (268-70) and third-century pottery in the ditch fill; it also found that the tail end of bank overlay part of the cemetery (Anon. 1955a 129-30; Anon. 1955b; Wright 1956 125-26). More thorough excavations in 2002-5 obtained radiocarbon dates for the burials from late sixth or early seventh centuries (Burnham, Hunter et al. 2003 281; Burnham, Hunter et al. 2004 281; Burnham, Hunter et al. 2005 422-23; Burnham 2006 402). The

archaeologists made no Viking finds, but in 2001 a small Viking hoard including a silver ingot were found 200 metres southwest (HER 2922). As the earthwork overlays Roman remains and archaeologists have obtained eighth-century radiocarbon dates from a secondary use of the ditch it is probably early medieval (Mason 2003 55).

5.3.2 NICO DITCH

SMR 1401.1.0 and 1401.1.11. NMR LINEAR 22 (Monument 1033812), also SJ99NW23 (Monument 78525) and SJ79NW5 (Monument 74996).

Development around Manchester has heavily damaged this earthwork, but it probably ran for at least 6 kilometres eastwards from Platt Fields (SJ849944) the curving north to end at Denton Golf Course (SJ905961). Audenshaw Reservoirs have possibly destroyed the earthwork further northeastwards and a 1765 Ashton Estate Plan suggests that it was 2 kilometres longer; it also possibly extended further west (Melland 1935-6 60; Nevell 1992 80-81; U.M.A.U. 1997 6). 3.3 kilometres of the earthwork (SJ869946 to SJ902959) is contiguous with parish boundaries on early Ordnance Survey maps and this probably marks the location of the Gorton-Denton Township boundary first recorded in 1190-1212 (Gardner 1908 554-55; Nevell 1992 82 and SMR record 1404.1.10). The earthwork consists of a u-shaped ditch 1.5 to 2.5 metres deep and 3 to 4.5 metres wide with sides at approximately an angle of 30 to 40°. The silt in the ditch showed evidence of numerous smaller re-cuts, but these probably relate to the later reuse of the earthwork as a field or estate boundary. The bank has almost completely been destroyed or replaced with later features. Place-name evidence does suggests there was a ‘wall’ (there is a Milkewall recorded in 1484 and a Miche Wall Diche from 1317) and fieldwork suggests there was a clay bank on the north side 0.5 to 2.1 metres high and up to 5 metres wide (Gardner 1908 555; Tindall 1982 1 and 4; Tindall and MacNeil 1990 1-2; Nevell 1992 78; Nevell and Walker 1998 40). The land to the south of the dyke is generally 0.5 metres lower than that to the north.

Figure 41 Looking east along Nico Ditch in Platt Fields

The name Nico is a recent corruption not derived from the Saxon name for water monster (Nicor) as Crofton thought (Crofton 1885 191; Nevell 1992 78). Two charters dated 1190-1212 record the name as Mykelldicke (big or great dyke) and the Latin equivalent *magnum fossatum* (Anon. 1892 218; Gardner 1908; Farrer, Litt et al. 1966 303 fn 8; Arrowsmith and Fletcher 1993 26; U.M.A.U. 1997 4). Most scholars assume this dyke is early medieval and built by the Britons, Northumbrians or the Vikings (Crofton 1885; Anon. 1892; Crawford 1935 282; Melland 1935-6; O.S. 1939; Crawford 1953 245; O.S. 1966; Hart 1977 53; Tindall 1982; Tindall and MacNeil 1990; Connor, Fagan et al. 1991 6-7; Kenyon 1991 78; Nevell 1992 83; Higham 1993 143; Feryok 2001 (2011 ed) 181 and 183; Rollason 2003 25-28; Ward 2006 27-28). However, Nevell thought that a prehistoric date was possible (Nevell and Walker 1998 41). There have been a series of archaeological investigations though none of which found any dating evidence. These excavations include an unpublished one in 1955 (at approximately SJ904960), another in 1978-9 (at SD892952) and in 1990-97 (at SD892952, SJ872947, SJ906962 and SJ854945) four further

investigations (Tindall 1982 4; G.M.A.U. 1990 6; Tindall and MacNeil 1990 2; Connor, Fagan et al. 1991 3-4; G.M.A.U. 1992; Nevell 1992 82; U.M.A.U. 1997; Nevell and Walker 1998 40-41; Ward 2006 27). With no clear dating evidence, Nico Ditch is a possible early-medieval dyke.

5.4 DERBYSHIRE

In Derbyshire, there is the Grey Ditch near Bradwell and a dyke on Longstone Edge called here the Calver Dyke.

5.4.1 CALVER DYKE

MDR 4055 and MDR 4123. NMR SK 27 SW 16 (Monument 312121).

This north-south dyke also known as Calver Cross Ridge Dyke and Longstone Edge Cross Ridge Dyke that if originally a continuous earthwork was nearly 500 metres long (SK225739 to SK226734) and is contiguous with the western parish boundary of Calver. Most sections consist of two v-shaped ditches with a central bank plus some indication of a further bank on the east side, though in many parts some of these features are missing. Hart's profiles suggest the main bank is 0.5 metres high and 1.5 to 4.5 metres wide while the ditches are up to a metre deep and about 2.5 metres wide (Hart 1981 76). The HER and NMR entries suggest the ditches are 4.5 metres wide, but these seem estimates whereas Hart accurately surveyed the earthwork. According to the HER entry (MDR 4055) about 40 metres from the northern end of the dyke is a gap in the earthwork and the ends of the banks are interned suggesting an original entrance. The name is recent and derives from the local village first recorded in the Domesday Book and probably means 'calf-slope', Calf-ofer, in Old English (Cameron 1959 54). Unfortunately, the earthwork is unexcavated and mineral extraction, notably an iron and fluorspar opencast working called the Deep Rake, has destroyed the central part of it. The HER record and Barnatt and Smith's book suggests an early-medieval date (Barnatt and Smith 1997 54). However, the NMR entry and Hart presume the dyke is prehistoric (Hart 1981 76-77). It is so slight even in places unaffected by later activity that a prehistoric

date seems likely, but in the absence of any conclusive dating evidence it is possibly early medieval.

5.4.2 GREY DITCH

MDR2326. NMR SK 18 SE 22 (Monument 309516).

This is a north-facing dyke near Brough (O'Neil 1945; Crawford 1953 186 and 242; Pevsner 1953 78; Hart 1981 118; Barrett 1998; Higham 2004b 411-12). It is in three sections, the western is about 200 metres long (SK167818 to SK169818), the central is about 900 metres long (SK171818 to SK179813) and the eastern section about 100 metres long (SK181812 to SK183812). None is contiguous with parish or other boundaries. It consists of a v-shaped ditch excavation evidence suggests was originally 1.8 to 2.6 metres deep and 6 metres wide with 40º sides and with no sign of a berm, ankle-breaker or a palisade. The 1967 excavation found some evidence of a rough stone revetment; the 1992 investigation found none, but found chert and limestone chippings crowned the bank perhaps to prevent erosion. The 1967 excavation revealed a gateway, which may not be original (J. Wild, personal communication and fieldwork for this study). The first reference to the 'Grey ditch' is in 1661 (Cameron 1959 48). It cuts a valley through which a Roman road runs and faces towards a Roman fort occupied late into the Roman period called *Navio* (SK182827, NMR SK 18 SE 7, Monument 309471) just over a kilometre to the north (Hart 1981 83-87). The earliest description by Bray in 1783 said it had once extended to Mam Tor four kilometres away though subsequent surveys dismissed this idea (Bray 1783 204-07; Cox 1905 359-60; O'Neil 1945 17). Bray said locals have found pieces of swords, spears, spurs and bridle-bits by the dyke. There are no recorded finds from the first recorded excavation of the earthwork in 1950 or from the University of Manchester one (at SK177815) in 1967 (Heathcote 1950; Wild 1967 and personal communication). An excavation in 1992 (at SK172818) found six possibly Romano-British or Iron Age sherds in the bank (probably residual) and an old plough soil sealed under the bank that contained thirteen Romano-British pottery sherds (Guilbert and Taylor 1992; Guilbert, Challis et al. 1995 79-80;

Guilbert 1996; Fleming 1998 21). Later medieval plough-soil partly covered the bank and prehistoric finds were under the buried plough soil. This excavation evidence suggests it is probably early medieval.

Figure 42 Looking east along Grey Ditch

5.5 WALES

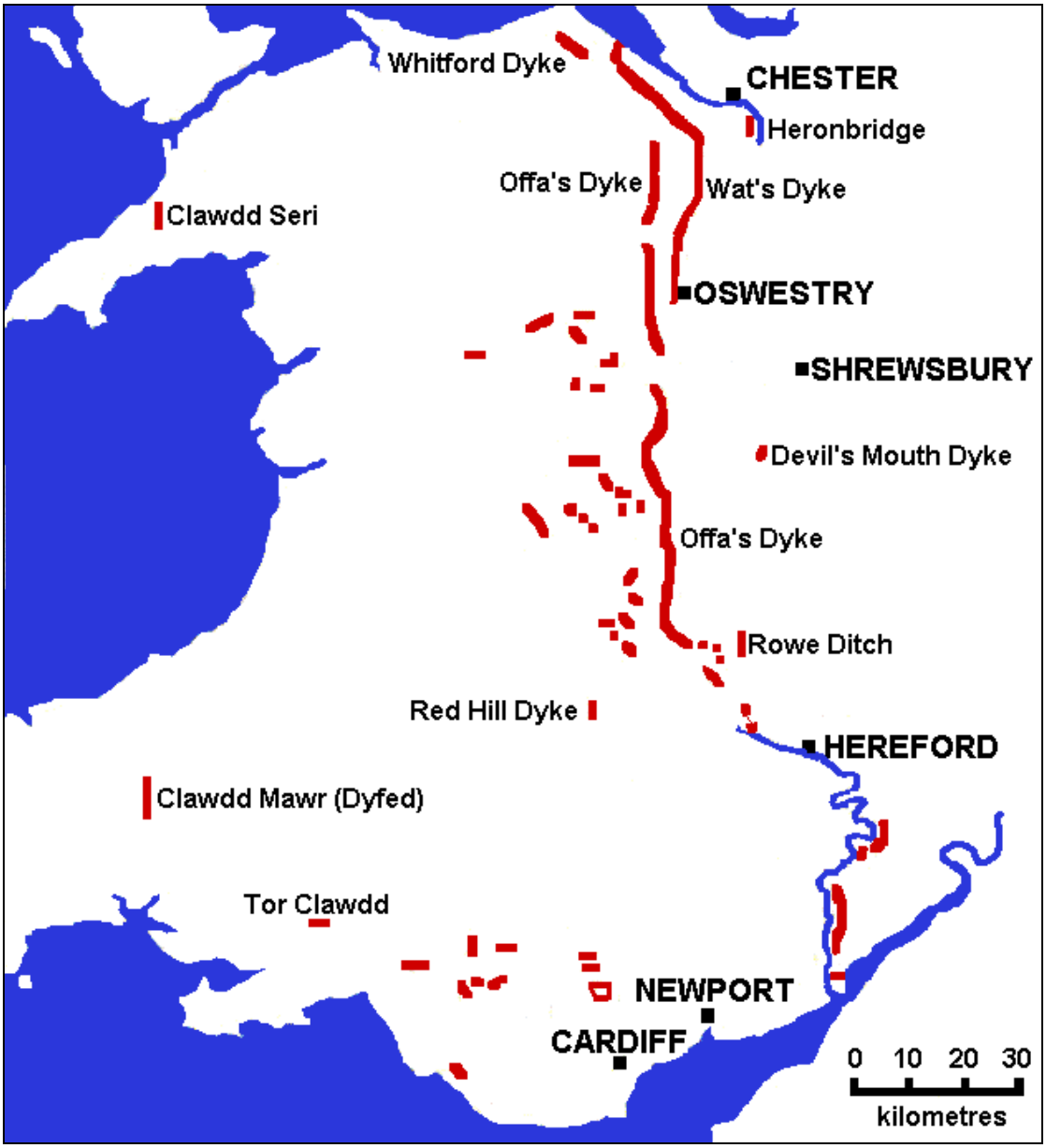


Figure 43 The dykes of Wales and the borders

This section does not contain the larger border earthworks like Offa's Dyke which have a separate section, but does contain some dykes that straddle the Anglo-Welsh border (like Lower Short Ditch). The possible and probable early-medieval dykes in Wales have a distinct distribution: most are in Powys and Glamorganshire; Clwyd has none while Gwynedd and Dyfed have just one apiece. This may be a product of geography (with dykes being of little use in the

mountainous west, though parts of southwest Wales are lower lying than many central and eastern parts) or politics (especially if dyke building was a product of Anglo-Welsh conflict).

Jerman first recorded many of these dykes in the 1930s (Jerman 1935; Jerman 1936; Jerman 1938). Fox thought a group of west-facing dykes near the English border (like Crugyn Bank, Fron Hill Dyke, Giant's Grave, Lower Short Ditch, Pen y Clawdd, Short Ditch, Ty Newydd, Upper Short Ditch and Wantyn Dyke) might be Mercian defences against Welsh raids (Fox 1955 164-68; Hill and Mathews 2004). The Clywd-Powys Archaeological Trust carried out a major study of the so-called 'short dykes' of Powys in 2002-6 visiting 21 of them and Sophie Watson kindly provided this study with a copy of the full unpublished reports (Hankinson 2002; Silvester and Hankinson 2002; Hankinson 2003; Hankinson and Caseldine 2006). Archaeologists from the Trust excavated five of the dykes obtaining samples from under the banks for radiocarbon dating and unsuccessfully augered others for palaeoenvironmental samples. Though there had been speculation that Fox's interpretation was wrong and that the dykes were either late medieval or prehistoric (for example by Hill), the five excavated dykes all produced early-medieval radiocarbon dates (Hill and Worthington 2003 161-63). The author's of the project's final report, Hankinson and Caseldine, postulated some of the dykes near Llanfyllin (Clawdd Llesg, Ty Newydd, Bwlch y Cibau Dyke, Aber-Naint and the Clawdd Mawr) defended the cantref of Mechain, the heartland of the early-medieval kingdom of Powys (Hankinson 2002 7-8; Hankinson and Caseldine 2006 269).

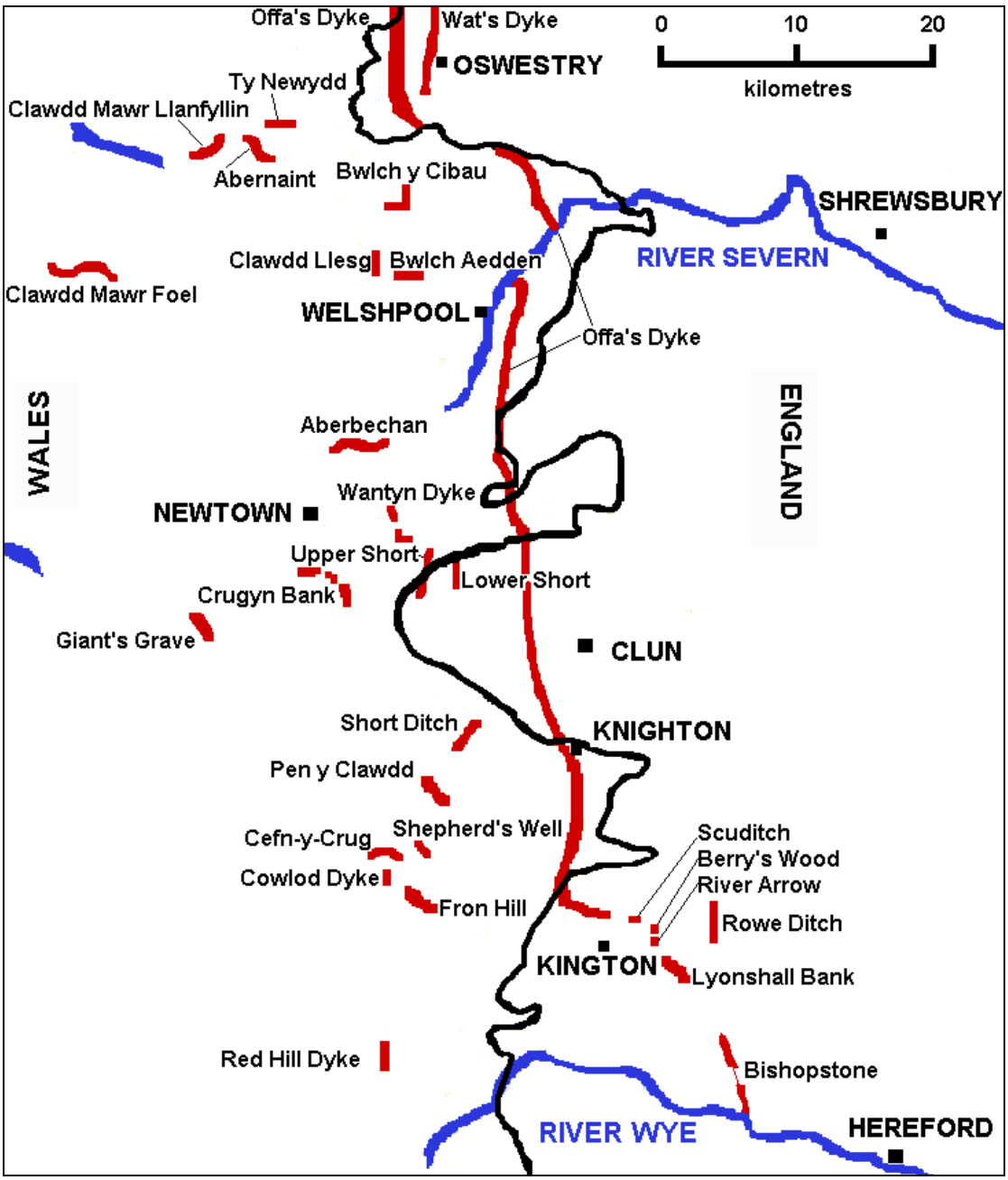


Figure 44 The dykes of central Wales

Though this study does not attempt to subdivide them, the Clwyd-Powys Archaeological Trust's Short Dykes Project did attempt to subdivide the dykes of Powys (Hankinson 2002 4-5). At first they split the dykes into defensive dykes and boundary markers, the former being the larger situated on defensible positions and the latter slighter earthworks contiguous with probable borders, but they found no clear cut divide (Hankinson 2002 4; Silvester and Hankinson 2002 8-9). Later they used topography, location and layout to divide the dyke. Topographical criteria produced four subtypes: cross ridge dykes (like Lower

Short Ditch), cross-valley dykes (like Fron Hill Dyke), dykes that cross interfluvial spurs (Clawdd Llesg for example) and dykes which cross complex terrain (like Bwlch Aeddan Dyke). They found the dykes are located in four areas: the Mechain Cantref Dykes, the Kerry dykes (Crugyn Bank, Lower Short Ditch, Upper Short Dutch and Wantyn Dyke), Radnor Forest dykes (Cefyn-y-Crug Dyke, Cowlod Dyke, Fron Hill Dyke, Pen y Clawdd Dyke, Shepherd's Well Dyke and Short Ditch) and Severn Valley dykes (Aberbechan Dyke and Giant's Grave Dyke). In terms of layout, the dykes varied between those that were merely a scarp, those with a single bank/ditch, and those with an additional counterscarp and complex dykes.

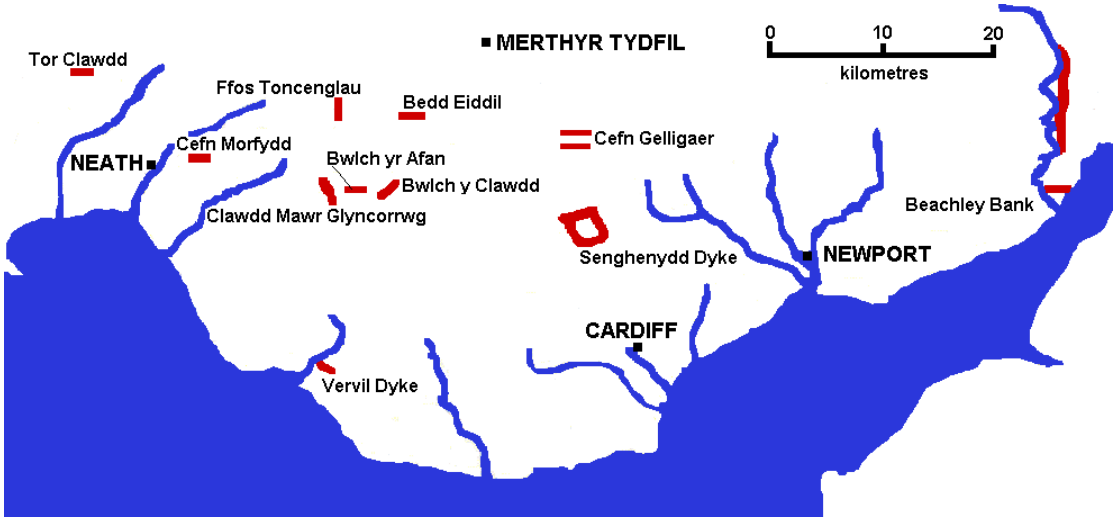


Figure 45 The dykes of south Wales

The dykes in Glamorganshire seem to block ridges that give access from the uplands possibly suggesting the builders designed them to keeping raiders out of the fertile coastal areas; in an early-medieval context, this would mean keeping warriors from Brycheiniog out of Glywysing (Fox and Fox 1935b; Fox 1936; Crawford 1953 248-49; Crampton 1966 377; R.C.A.H.M.C.W.M. 1976 5-6). As the uplands were largely cleared in the Bronze Age and peat developed, a study of the pollen and soils sealed under the banks of four Glamorganshire dykes by Crampton suggested they were probably medieval, though as this method rests on a series of assumptions it has not been taken as proof an early-medieval date (Crampton 1966).

5.5.1 ABERBECHAN DYKE

Clwyd-Powys PRN 1041. Coflein NPRN 306235.

This north-facing earthwork runs sinuously eastwards uphill from a stream for approximately 1,200 metres (SO127944 to SO135947) near Llanllwchaiarnin Powys and is not contiguous with any administrative boundaries. It consists of double banks between 10 and 25 metres apart about 2 metres high and 5 to 10 metres wide with shallow slightly narrower intermittent ditches on the north side. The earthwork first appeared on late nineteenth century Ordnance Survey maps and the name derives from a nearby settlement. According to the HER entry a small-scale excavation in 1996 failed to locate the earthwork, though as this was outside the scheduled area this is unsurprising. With no dating evidence, it is a possible early-medieval dyke.

5.5.2 ABERNAINT DYKE

Clwyd-Powys PRN 1479. Coflein NPRN 306792.

This 545-metres long northeast-facing dyke (SJ122220 to SJ126217) is near Llanfyllin in Powys 1½ kilometres south of Ty Newydd Dyke and is not contiguous with any administrative boundaries (R.C.A.H.M.C.W.M. 1911 126; Hill and Mathews 2004 74-75 and 120-29). The dyke is sinuous, suggesting it is following an early field boundary and as the ditch is uphill of the bank, it is unlikely to be defensive. It has a ditch up to 2 metres deep and 7 metres wide with a bank about 3.5 metres high and around 8 metres wide to the south on the downhill side of the slope. An 1880 Ordnance Survey map is probably the first record of the dyke, but it was merely marked as an ‘entrenchment’; recently HER surveyors have attached the name of the nearby farm of Abernaint. Though the Ordnance Survey proposed either an early-medieval or a post-Norman date and the HER record suggests an early-medieval date there is no dating evidence so it is possibly early medieval.

5.5.3 BEDD EIDDIL DYKE

Glamorgan-Gwent PRN 02266.0m. Coflein NPRN 307646.

Bedd Eiddil Dyke is a 94 metre-long north-facing earthwork cutting a ridgeway (SS969996 to SS972996) on the east side of the Afon Rhondda Fach valley about 5 kilometres southeast of Ffos Toncenglau and is not contiguous with any administrative boundaries (Fox 1936 282; Crawford 1953 248; R.C.A.H.M.C.W.M. 1976 9-11). It consists of a ditch about 0.5 metres deep and 2.5 to 3 metres wide with a bank on the south side 0.4 metres high and 2.5 metres wide. It does not appear on older Ordnance Survey maps and the surveyors who named it attached the name of a nearby burial mound (*bedd* being Welsh for grave). The HER entry mentions a watching brief but gives no detail, but Crampton's study of pollen buried under the bank suggested it was possibly medieval (though possibly later medieval); this study classifies it as a possibly early-medieval dyke (Crampton 1966 385).

5.5.4 BWLCH AEDDAN DYKE

Clwyd-Powys PRN 77. Coflein NPRN 275993.

This is a north-facing scarp 366 metres long (SJ169105 to SJ173106) near Guislfield in Powys not contiguous with administrative boundaries (Hill and Mathews 2004 80-83 and 220). It consists of two scarps 4 metres high separated by a 4-metre wide berm. The name is recent as the feature was first noted in 1911. The authors of the Coflein entry are convinced that it is a natural feature (a conclusion this study concurs with) and the HER entry states that if it is not a natural feature, the builders certainly utilised natural terracing.

5.5.5 BWLCH Y CIBAU DYKE

Clwyd-Powys PRN 64. Coflein NPRN 306764.

Bwlch y Cibau Dyke is near Meifod in Powys not contiguous with any administrative boundaries (Turrall and Silverberg 1998). In plan it is a backwards L facing south and east: the dyke runs for about 900 metres

eastward from the base of Moel hill (SJ178164) before turning north at Bidffald (SJ186167) and running for a further 450 metres to the edge of the Colwyn Brook (SJ186171). The western part of the earthwork is in some parts just a scarp up to 1.5 metres high, but in others there is a silted ditch about 3.7 metres wide and to the north a bank about 1.5 metres high and 5.5 to 8 metres wide (R.C.A.H.M.C.W.M. 1911 148). The eastern and northern section has a double bank while the central part has a triple ditches with two intervening ditches with an overall width of about 38 metres. The earthwork was first recorded in 1876 and named after the nearby village. The central part of the earthwork where it changes direction has multiple ditches and these are probably part of an earlier hillfort or enclosure incorporated into the dyke (R.C.A.H.M.C.W.M. 1911 149). The HER entry mentions a 1988 survey by undergraduate students from the University of Manchester, but this study was unable to locate any paperwork or anyone involved in the work. With no dating evidence, this study concludes the western branch is possibly an early-medieval dyke while the northern section is probably a reused prehistoric earthwork.

5.5.6 BWLCH Y CLAWDD

Glamorgan-Gwent 02267.0m. Coflein NPRN 307672.

Bwlch y Clawdd Dyke runs for 180 metres (SS940945 southwest to SS939944) cutting a narrow ridge just two kilometres east of Bwlch yr Afan and is not contiguous with any administrative boundaries (Fox 1936 283; Crawford 1953 248; R.C.A.H.M.C.W.M. 1976 11). The dyke consists of a main bank around 1.5 metres high (in some places the natural slope of the land make it 3 metres high) and 4.3 metres wide with a possible second bank on the northwest side. The Coflein entry says it faces northwest (the ground to the east is higher so this would make sense), but the HER entry says there is a shallow ditch on the east side, but perhaps the steep slope made it necessary to quarry material from uphill. The dyke was only recently named, but the pass it was named after means pass of the dyke. With no clear dating evidence, it is a possible early-medieval dyke.

5.5.7 BWLCH YR AFAN DYKE

Glamorgan-Gwent PRN 02265.0m. Coflein NPRN 307694.

This earthwork runs west to east for 192 metres cutting a ridge (SS919950 to SS921951) and is just two kilometres east of Clawdd Mawr Glyncorrwg and two kilometres west of Bwlch y Clawdd; it is not contiguous with administrative boundaries (R.C.A.H.M.C.W.M. 1976 9). The earthwork consists of a central ditch about a metre deep and a metre wide flanked by two banks of equal size 1 to 1.5 metres high and 3 metres wide (Fox 1936 283; Crawford 1953 249). The name is recent and merely refers to a nearby topographic feature. Crampton study of the soils under the bank suggested the dyke was medieval (though possibly later medieval) and this study concludes it is possibly an early-medieval dyke (Crampton 1966 382-84).

5.5.8 CEFN GELLIGAER (CLAWDDTRAWSCAE AND TYLA-GLAS)

Glamorgan-Gwent PRN 02264.0m. Coflein (Clawddtrawscae Dyke) NPRN 305947 and (Tyla-Glas Dyke) NPRN 305948.

These two north-facing earthworks cut a ridge about 2 kilometres west of Bargoed. The northern dyke, Tyla-Glas Dyke, is about 180 metres long (SO110012 to SO111013) while the southern dyke, Clawddtrawscae Dyke, is 90 metres long (SO116002 to SO117003); neither is contiguous with administrative boundaries (Crawford 1953 249; R.C.A.H.M.C.W.M. 1976 8). The banks of the dykes are made of stone and earth. The southern dyke has a ditch 0.6 metres deep and 3 metres wide with a bank on the southern side up to 1 metre high and up to 3 metres wide (Fox and Fox 1935a 418-19; Fox 1936 283). The northern dyke is very similar in scale. The names are recent and refer to nearby topographic features. They are both possibly early medieval.

5.5.9 CEFN EGLWYSILAN AND TYWN HYWEL DYKES

Glamorgan-Gwent for Cefn Eglwysilan Cross Dyke East PRN 02269.0m, Cefn Eglwysilan Cross Dyke West PRN 02268.0m and Tywn Hywel Cross Ridge Dyke PRN 02415.0m.

Three parallel north-facing cross ridge dykes run west from the west side of Senghenydd Dyke in Glamorganshire none of which are contiguous with any administrative boundaries (R.C.A.H.M.C.W.M. 1976 10-11). The HER records call the northerly one Tywn Hywel Cross Ridge Dyke, but does not name the middle dyke (here termed the middle dyke). A small stream divides the southern earthwork and the portion to the west is called Cefn Eglwysilan Cross Dyke West, while that to the east of the stream is Cefn Eglwysilan Cross Dyke East. Tywn Hywel Cross Ridge Dyke runs for about 440 metres (ST099999 to ST102912), the middle dyke is about 200 metres long (ST100908 to ST103909) while Cefn Eglwysilan Cross Dyke East and Cefn Eglwysilan Cross Dyke West are on the same alignment and, if originally continuous, would have been 900 metres long (ST098901 to ST104906). The total width of the bank and ditch of the Tywn Hywel Cross Ridge Dyke is 3.4 metres and the bank is 0.5 metres high. There are no recorded measurements of the central dyke. The Cefn Eglwysilan Cross Dyke East has a shallow ditch on the north side too silted for meaningful measurement and a bank 0.5 metres high and 3.4 metres wide. Cefn Eglwysilan Cross Dyke West has a bank 1 metre high and 5.2 metres wide with a shallow ditch on the north side that again is too silted for meaningful measurement. The earthworks are difficult to locate and one HER entry records the failure of a 2006 survey to locate Cefn Eglwysilan Cross Dyke East on the ground. They are all possibly early medieval.

5.5.10 CEFN MORFYDD DYKE

Glamorgan-Gwent PRN 02790.0w. Cofelin NPRN 307304.

This is a north-facing 400 metre-long dyke on a saddle of land between two small valleys (SS790980 to SS787982) and is not contiguous with any administrative boundaries. It consists of a shallow (possibly much silted) ditch about 0.6 metres deep and 4.3 metres wide and a bank to the south 1 to 2.5 metres in height and 5.8 metres wide with a second possible ditch to the south possibly a quarry for material for the bank (Fox 1936 281-83; Crawford 1953 249; R.C.A.H.M.C.W.M. 1976 8-9). The gap in the centre might be an original gateway, but without excavation, it is impossible to prove. The name is recent

derives from a local hill (it is also known as the Tona Cross Dyke after a nearby settlement). With no dating evidence it is possibly early medieval.

5.5.11 CEFN-Y-CRUG DYKE

Clwyd-Powys PRN 993. Coflein NPRN 306138

Cefyn-y-Crug Dyke is a south-facing dyke not contiguous with any administrative boundaries that runs across a saddle of higher ground near Penybont in Powys (SO160641 to SO163643) for about 304 metres (Zaluckyj 2001 (2011 edition) 178-79) (Crawford 1953 251). It is 2½ kilometres to the west of Shepherd's Well Dyke and 700 metres north of Cowlod Dyke. It consists of a ditch up to 0.6 metres deep and 5 to 6.5 metres wide with a bank up to 0.6 metres high and 5 metres wide on the north side. There are numerous gaps in the earthwork, but it is unclear if they are original. Jerman first identified the earthwork in 1935 and the name was taken from a nearby hill (Jerman 1935 285-87; Fox 1955 165 fn 2). The dyke is unexcavated and though Fox suggest that it is a later medieval boundary of Radnor Forest, it is possibly an early-medieval dyke (Fox 1955 165 fn 2).

5.5.12 CLAWDD LLESG

Clwyd-Powys PRN 78. Coflein NPRN 306769.

Clawdd Llesg is an east-facing 170-metre long dyke (SJ157112 to SJ157114) that cuts a ridge near Meifod in Powys and is not contiguous with any administrative boundaries (Hill and Mathews 2004). Though it does face slightly uphill, there is a prominence in the ridge to the west and the terminals of the earthwork are at the edge of steep sided streams making the position very defensible. The earthwork consists of a ditch about a metre deep and a bank 1 to 2 metres high; the better preserved sections are 15.4 metres wide making the bank and ditch both about 7 metres wide. Surveyors first noted the dyke in 1879 and named after the nearby settlement; however, the name contains the word for dyke ('clawdd') and the HER entry postulates also the name of Eliseg (or

Elisedd) the eighth-century king of Powys. With no excavation evidence it is a possibly early medieval.

5.5.13 CLAWDD MAWR (DYFED)

Dyfed PRN 2313. Coflein NPRN 303764 and NPRN 275686

Clawdd Mawr is an east-facing earthwork overlooking the Afon Cloddi in Dyfed for about 1.4 kilometres (SN376336 to SN377328), but a hedge line and a trackway continue south on the same alignment for another 1.5 kilometres (ending at SN373319) which may mark a lost section. It is not contiguous with any administrative boundary. It consists of a ditch 0.9 to 1.5 metres deep and 6 to 9 metres wide, with a bank on the west about 1 to 2 metres high and 7 to 9 metres wide (Bowen 1936 384; Crawford 1953 248). One survey mentions a cutting of the bank, but gives not date or location, merely noting the bank is made of material taken from the ditch covered with a small layer of peat then a layer of gravel (R.C.A.H.M.C.W.M. 1917 22). This may be why the HER entry refers to an unpublished section that seems to show a refurbishment, with an old turf line above the primary makeup of the bank, sealed by a layer of gravel. The name is Welsh for ‘big dyke’ though in the early nineteenth century it was usually referred to as The Line (Barnwell 1877 81). Despite a story put forward by Carlisle in 1811 that Earl Richmond constructed it on his way to the Battle of Bosworth, scholars usually assume it formed the eastern boundary of the early-medieval kingdom of Dyfed (Barnwell 1877 81-82; Bowen 1936; Crawford 1953 248; Laing and Laing 1975; Dark 1994 117; Lloyd, Orbach et al. 2006 172). It is indeed possibly early medieval in date.

5.5.14 CLAWDD MAWR (FOEL)

Clwyd-Powys PRN 497.

This is a south-facing 700-metre long sinuous dyke near Foel in Powys (SH974111 to SH980110) not contiguous with any administrative boundaries. It consists of a rock cut ditch on the uphill (south) side, but no survey gives any dimensions, and a bank 1.5 to 2 metres high and 6 metres wide. The name

means the big dyke, but this study could not even find reference to this name on older Ordnance Survey maps. The HER entry classifies it as early medieval, but, along with one of the reports of the Clwyd-Powys Archaeological Trusts Short Dykes Project, suggests that it is a head dyke (Silvester and Hankinson 2002 13). With no dating evidence it is possibly early medieval.

5.5.15 CLAWDD MAWR GLYNCORRWG/BWLCH GARW DYKE

Glamorgan-Gwent PRN 02791.0w.

Clawdd Mawr is an east-facing earthwork that runs roughly for 192 metres (SS894948 to SS895947) cutting a saddle of higher ground with the terminals located at the edge of steep slopes (R.C.A.H.M.C.W.M. 1976 8). It is not contiguous with any administrative boundaries. It faces towards Bwlch yr Afan two kilometres to the east. Crampton records a Bwlch Garw Dyke that is 1,300 metres long (which he excavated at SS894954) whose course would incorporate Clawdd Mawr (SS895957 to SS894944); Crampton's earthwork is not mentioned on Coflein or in the HER records, but presumably they are the same feature. The earthwork is 7.3 metres wide overall with a shallow ditch on the east side and a bank on the western side 1 metre high, but towards the southern end it is merely a shelf 1.5 metres wide; Crampton mentions a revetment (Crawford 1953 249; Crampton 1966 380-81). Clawdd Mawr Glyncorrwg means the big dyke of Glyncorrwg (a settlement five kilometres to the north) and Bwlch Garw Dyke means large pass dyke, but this study uncovered no older written records of the name. Crampton's soil samples suggested that it is possibly early medieval.

5.5.16 CLAWDD MAWR (LLANFYLLIN)

Clwyd-Powys PRN 54. Corflein NPRN 306545.

This northwest-facing earthwork runs across a ridge near Llanfyllin in Powys for approximately 450 metres (from SJ064216 southwest to SJ061213) with both ends adjoining streams in deep gullies (Fox 1955 166; Hill and Mathews 2004 98-107 and 221). The westernmost 80 metres is contiguous with a parish

boundary, but another parish boundary cuts the dyke (at SJ063214) running on a similar alignment yet ignoring the dyke. It consists of a rock-cut ditch 1.8 metres deep and 2.5 metres wide and a bank 1.6 metres high and 2.5 to 5 metres wide (Hill and Mathews 2004 100-01). The name is Welsh for the ‘large dyke’, but is probably of no great antiquity. The HER entry says a 'rapier' was found on the site in the 1880s, but no details are given. An excavation in 2004-5 by the Clwyd-Powys Archaeological Trust found charred organic remains sealed under the bank that gave a radiocarbon date of 1360+/-40BP or calculated 630-710 suggesting the dyke is probably early medieval (Hankinson and Caseldine 2006 266; Malim 2007 22).

5.5.17 CLAWDD SERI

Gwynedd PRN 86. NPRN 301073.

This north-south dyke cuts a ridge in the higher ground east of Llanaelhaearn in Gwynedd (Gresham 1982 342; Silvester and Hankinson 2002 4). About 750 metres of the earthwork are marked on Ordnance Survey maps (SH416466 to SH416461), but the HER entry suggests a further 660 metres has been traced running east and southeast. It is not contiguous with parish boundaries, but the dyke is recorded as a township boundary in a charter for Aberconwy Abbey dated 1200; the name means causeway dyke (Gresham 1982 342). There is a central gap 1.5 metres wide that is possibly an original gateway. The southern half consists of double ditches 1.68 to 1.83 metres wide and 0.15 metres deep a central bank 2.13 metres wide and 0.3 metres high in-between, north of the gap the bank fades away and the ditches merge into one 0.8 metres deep and 7 metres wide (R.C.A.H.M.C.W.M. 1960 45-46). There some evidence of a counterscarp bank 1.14 metres wide to the west of the southern section. It is possibly early medieval.

5.5.18 COWLOD DYKE

Clwyd-Powys PRN 6871.

This possibly east-facing earthwork near Penybont in Powys runs for about 108 metres (SO165634 to SO165635) and is not contiguous with any administrative boundaries (Hankinson 2002 3 and 7). It is just 700 metres southeast of Cefyn-y-Crug Dyke and 2½ kilometres west of Shepherd's Well Dyke so the three may be related, though they face in different directions. It consists of a bank up to 1.2 metres high and 4.5 metres wide; in the central section there is some evidence of a ditch to the east, but it is too silted for any meaningful measurement. A survey of Radnor Forest first recorded the earthwork in 1992, so the name is of no antiquity. With no dating evidence, it is possibly early-medieval dyke.

5.5.19 CRUGYN BANK/TWO TUMPS BANK/DOUBLE DEYCHES

Clwyd-Powys Crugyn Bank PRN 1882, Two Tumps Dyke PRN 4034 and PRN 6242. Coflein Crugyn NPRN 306185 and NPRN 309849. Coflein Two Tumps NPRN 309850, NPRN 306186, NPRN 309848 and NPRN 306187.

These three southwest-facing dykes, collectively known as the Double Deyches/Dyches, are just south of Dolfor in Powys. Crugyn Bank is the westerly earthwork while the two easterly dykes are termed Two Tumps Dyke after nearby tumuli (R.C.A.H.M.C.W.M. 1911 58-59; R.C.A.H.M.C.W.M. 1913 24; Crawford 1953 250; Fox 1955 168; Burne 1959 29-30; Noble and Gelling 1983 56; Hill and Mathews 2004 2-3, 140-61 and 189-202; Hankinson and Caseldine 2006 267). Crugyn Bank (meaning small heap) runs for about 500 metres (SO101858 to SO106856) while the Two Tumps runs in two sections, the first 600 metres long (SO115852 to SO119848) and the second 200 metres long (SO120844 to SO120842). All three are southwest-facing cutting the Kerry Ridgeway and of a similar size so if originally one continuous earthwork (as recent field surveys and aerial photography suggests), would have been about 2,720 metres long (SO101858 to SO120842). They generally consist of a central v-shaped ditch 0.6 metres deep and two flanking banks, but the

southwesterly bank is intermittent and probably a counterscarp bank. The width of the total monument is given as 12.5 metres in the HER entry and the main bank as 6 metres wide suggesting the ditch and counterscarp banks are both 2 metres wide. The north bank is 1.2 metres high while the counterscarp bank on the southwest side is 0.6 metres high. An excavation as part of this project in 2004-5 of Crugyn Bank uncovered charcoal samples sealed under the bank radiocarbon dated to 1310+/-40BP or calculated 650-780 AD (Hankinson and Caseldine 2006 266; Malim 2007 22). This study groups them together assuming they are the surviving fragments of a single sinuous feature and the radiocarbon date suggests they are probably early medieval.

5.5.20 FFOS TONCENGLAU (FFOS TON CENGLAU)

Glamorgan-Gwent PRN 02261.0m. Coflein NPRN 305643.

This east-facing earthwork four kilometres south of Hirwaun in Glamorganshire runs for about 1.2 kilometres (SN917030 to SN920022) cutting a narrow point in a ridge with both ends flanked by steep slopes (Fox 1936 280-81; Crawford 1953 249). It is not contiguous with any administrative boundaries. It is about five kilometres northwest of Bedd Eiddil Dyke. It consists of a bank up to 4.3 metres wide whose height is difficult to measure due to the sharp rise in the ground level, but there is a dry-stone revetment at the front 1.2 metres high (Fox 1936 281; Crawford 1953 249; R.C.A.H.M.C.W.M. 1976 7). Although no longer visible, a surveyors from the 1930s claimed there was a ditch to the east and gave the overall width of the earthwork as 8.2 metres suggesting the ditch was about four metres wide (Fox 1936 281). The Ordnance Survey assigned the name and it derives from an adjacent area of open land and means dyke of the grassland of Cenglau. Though an early Iron Age hoard was found in a lake north of the dyke, Crampton has analysed pollen evidence which suggested it is a possibly early medieval (Fox and Hyde 1939; Crampton 1966 384-85).

5.5.21 FRON HILL DYKE (DITCH BANK)

Clwyd-Powys PRN 2145. Coflein NPRN 306142.

This south-west facing earthwork runs northwest to southeast cutting a valley southwest of New Radnor in Powys (R.C.A.H.M.C.W.M. 1913 93; Crawford 1953 251; Fox 1955 162-63; Noble and Gelling 1983 51; Hill and Mathews 2004 48-51). For 300 metres the earthwork is obvious on the ground (SO196691 to SO198599), field boundaries that continue on same alignment suggest it was originally over 400 metres long (SO195601 to SO198598). The land immediately to the east of the dyke is higher than that to the west. It consists of a bank 1 to 2.8 metres high and 4.5 to 10 metres wide (the variation in size seems to be an original feature with the central section much larger). There are traces of a shallow ditch on the southwest side 1.5 to 2 metres wide (Hankinson 2002 10). The HER entry says Jordon Williams recorded the dyke in 1818, but it is also recorded in a thirteenth century document as Rugedich (or rough ditch in Old English), the same name as applied to Rowe Ditch in Herefordshire (Noble and Gelling 1983 51). Feryok suggested it might be associated with a late twelfth-century battle at New Rador Castle one and a half kilometres away, though as Rugedich is Old English this is unlikely (Feryok 2001 (2011 ed) 179). It is not contiguous with any administrative boundaries today though the charter evidence suggests it probably once was. With no dating evidence, it is a possible early-medieval dyke.

Figure 46 Looking northwest along Fron Hill Dyke

5.5.22 GIANT'S GRAVE

Clwyd-Powys PRN 3711. Coflein NPRN 305899.

This southwest-facing dyke runs for 250 metres (SO043864 to SO044861) across a ridge of high ground just east of Llandinam in Powys and is not contiguous with any administrative boundaries (Jones 1951; Fox 1955 165-66). The dyke consists a counterscarp bank 0.3 metres high and up to 4 metres wide (probably made up of material cleared out of the ditch), a v-shaped ditch 1.3 metres deep and 4 metres wide and a heavily eroded east bank 0.7 metres high and originally 3.8 to 4.8 metres wide (Hankinson 2003 3 and figure 1). The ditch has a 0.4 metre-wide slot cut into the base. Edward Hamer coined the name in 1868 confusing the dyke for a nearby burial mound (R.C.A.H.M.C.W.M. 1911 70). In 2003, archaeologists from the Clwyd-Powys Archaeological Trust as part of their Short Dykes Project trenched this dyke and peat samples found sealed under the bank gave a radiocarbon date of 1640+/-40 calculated 340-530 AD suggesting this earthwork is probably early medieval (Hankinson 2003; Hankinson and Caseldine 2006 266-68; Malim 2007 22). This date is slightly

earlier than the radiocarbon dates obtained for the other dykes in the project, but might be due to using a peat sample as opposed to charcoal used at the other sites.

5.5.23 LOWER SHORT DITCH

Clwyd-Powys PRN 235, Shropshire 01199. In England, the NMR reference is SO 28 NW 3 (Monument 105283), in Wales the Coflein reference is NPRN 275955.

This is 750 metre-long west-facing earthwork (SO223885 to SO222877) is located south of Sarn in Powys (R.C.A.H.M.C.W.M. 1911 58; Crawford 1953 250). Offa's Dyke lies less than four kilometres to the east, Wantyn Dyke lies about 1.3 kilometres to the northwest and Upper Short Ditch (which like Lower Short Ditch cuts the Kerry Ridgeway) lies 3.5 kilometres to the west. Though contiguous with parish boundaries, the Anglo-Welsh border bisects the middle of the dyke. Its consist of a ditch 1 to 1.5 metres deep and 3 to 5 metres wide, a bank 1.5 metres high and 8 metres wide and for some of its length, a shallower ditch on the eastern side 0.3 metres deep and 3 metres wide. The name is modern. Burne and Fox assumed it was a Mercian defensive dyke related to other dykes in the area (Fox 1955 106, 117 and 167; Burne 1959 29). Hill excavated it in 1985 (at SO222879, SO222878 and what he confirmed to be the southern terminus at SO222877), but unfortunately neither he nor the Short Dykes Project run by the Clwyd-Powys Archaeological Trust found any dating evidence (Youngs, Clark et al. 1986 152; Hankinson and Caseldine 2006 265 and 267). Therefore it is possibly early medieval.

5.5.24 PEN Y CLAWDD DYKE

Clwyd-Powys PRN 1986. Coflein NPRN 306166.

This southwest-facing earthwork near Llangunllo in Powys runs for 260 metres (SO187708 to SO187706) from the edge of a steep hill (Crungoed) south-southeast to a steep sided valley (R.C.A.H.M.C.W.M. 1913 96; Jerman 1935 279-82; Crawford 1953 251; Fox 1955 165; Noble and Gelling 1983 53-54).

There is a shallow ditch 0.9 metres deep and 4.5 to 9 metres wide and a bank, 1.2 to 2.7 metres high and 8.5 metres wide: the natural slope probably made a deep ditch unnecessary (Jerman 1935 281; Hankinson 2002 10). Though the name is recent (the dyke was first recorded in 1913) and is taken from a nearby hill, it means head (or hill) of the dyke. This earthwork is unexcavated so is possibly early medieval.

5.5.25 RED HILL CROSS DYKE

Clwyd-Powys PRN 35471.

This is 110 metre-long (SO150498 to SO150499) east-facing earthwork runs across a saddle of high ground near Paincastle in Powys. It is not contiguous with any parish boundaries (Hankinson 2002 3). It consists of a shallow ditch 0.7 metres deep and 2.5 to 4 metres wide with a bank 0.7 to 0.8 metres high and 4.2 to 5.4 metres wide. The name is of no antiquity as surveyors first noticed the earthwork during a survey of Radnor Forest in 1996-7. With no dating evidence, it is possibly early medieval.

5.5.26 SENGHENYDD DYKE

Glamorgan-Gwent PRN 04736m. Cofelin NPRN 400446.

This is a four-sided dyke roughly totalling 12 kilometres in length that surrounds and faces inwards towards a settlement of the same. The northwest corner is at ST101915, it runs east to ST126921 where it turns south to ST137900 where it peters out, it reappears at ST124884 where it runs west to ST120880 then turns north to the starting point. 2½ kilometres of the north side of the earthwork and a kilometre of the east side are contiguous with parish boundaries. It consists of a flat-bottomed ditch up to 1.5 metres deep and 2.7 to 5.5 metres wide with a bank on the external side 3 to 6.7 metres wide and up to 1.2 metres high. It is probably a deer park boundary built shortly after the annexation of Senghenydd Is Caeach by the lord of Glamorgan in 1267. However, the HER entry speculates it was originally the boundary of the early-medieval cantref of

Senghenyd, but gives no evidence to back this claim and it seems unlikely as a dyke facing inwards would keep in deer but not protect a cantref.

5.5.27 SHEPHERD'S WELL

Clwyd-Powys PRN 992. Coflein NPRN 136133.

This southwest-facing earthwork near Llanfihangel Rhydithon in Powys is up to 140 metres long (SO188649 to SO188651); it cuts a ridge and is flanked by steep ravines (Jerman 1935 282-85; Crawford 1953 251; Fox 1955 165-66; Noble and Gelling 1983 52; Silvester and Hankinson 2002 61). It is contiguous with the local parish boundary. It consists of a ditch up to 1.2 metres deep and 4 metres wide with a bank up to 1 metre high and generally 4 metres wide. The Coflein entry claims the profile of the earthwork suggests a relatively recently recutting of the ditch with the material cast on top of the bank and to the west of the ditch to form a shallow counterscarp bank 0.4 to 0.6 metres high and 2 metres wide. The name was first recorded in 1935 and comes from a nearby spring, presumably once frequented by shepherds. The proximity of this dyke to Cefyn-y-Crug Dyke (they are only 2½ kilometres apart) and Cowlod Dyke (just 700 metres to the west) suggests they may be related, but none are accurately dated so it is possibly early medieval.

5.5.28 SHORT DITCH

Clwyd-Powys PRN 1114. Coflein NPRN 306151.

This northwest-facing dyke near Beguildy and Llanlluest in Powys runs on a straight alignment across a plateau for about 640 metres with clear rounded ends (SO191750 to SO187746), the terminals of which are located at deep sided streams (dingles) that guard the flanks (R.C.A.H.M.C.W.M. 1913 24; Crawford 1953 251; Fox 1955 160-68; Burne 1959 30; Noble and Gelling 1983 54). Readers should not confuse it with the Lower Short Ditch or Upper Short Ditch. A parish boundary is contiguous with the dyke for about 100 metres (SO190749 to SO190747). It consists of a ditch 1.8 metres deep and only 1.5 metres wide and a bank 1 metre high and around 3 metres wide. In parts there

is a counterscarp bank on the northwest side of the ditch and another shallow ditch (described as a ‘scoop’ on the HER record) on the southeast side of the bank making it look like a central bank flanked by ditches. The northwestern ditch is too small to have produced all the material for the bank without material from the southeastern ditch. The name is modern; the first reference found by this study is on Ordnance Survey maps of the 1880s. The Short Dykes Project in 2004-5 (at SO187746) took organic samples from the turf-line from the old ground surface which gave a radiocarbon date of 1560+/-40BP, calculated 410-590 AD suggesting this is probably an early-medieval dyke (Hankinson and Caseldine 2006 266-68; Malim 2007 22).

5.5.29 TOR CLAWDD DYKE

Glamorgan-Gwent PRN 02789.0w. Coflein NPRN 303989.

About five kilomtres north of Clydach in Glamorganshire there is a north-facing 845 metre-long dyke (SN667062 to SN673063) curled in a northward bulging curve about northern summit of Tor Clawdd; it is not contiguous with any administrative boundaries (Fox and Fox 1939; Crawford 1953 249; R.C.A.H.M.C.W.M. 1976 6-7). It is just over 9 metres wide and consists of a bank and ditch that are presumably roughly equal in width. The exposure of a section in 1938 revealed the ditch was 1.2 metre deep with a flat bottom 0.9 metre wide (Fox and Fox 1939 370; Crawford 1953 249). The rampart is 2.5 to 3.5 metres above the base of the ditch so, minus the depth of the ditch, it is 1.3 to 2.3 metres high, but as the steep slope exaggerates the vertical elevation, the height of the bank above the natural is now probably just 0.3 metres. Fox speculates the gap in the middle is an original entrance, but without excavation it is impossible to prove (Fox and Fox 1939 370). The earthwork is first recorded in 1819 and though the name means hill of the dyke, it is modern and probably refers to the adjacent ringwork (Fox and Fox 1939 368). Coal diggings have mutilated the dyke. With no dating evidence it is possibly early medieval.

5.5.30 TY NEWYDD DYKE

Clwyd-Powys PRN 1478. Coflein NPRN 306793.

This is a 254-metre-long north-facing earthwork (SJ131232 to SJ133232) near Llanrhaeadr-ym-mochnant in Powys (Silvester and Hankinson 2002 11; Hill and Mathews 2004 74-75 and 108-19). However, aerial photography and surveys suggest it was once 900-metres long (SJ130233 to SJ137235). It cuts across a narrow point on a small plateau with the eastern end near a steep gulley and the western end close to a steep downward slope. It is not contiguous with any boundaries. It is just 1.5 kilometres north of Aber-Naint dyke so the two may be related. There is a ditch up to 0.9 metres deep and 6 metres wide and a bank 1 to 2 metres high (though in parts the slope of the ground make it seem up to 3.7 metres high) and 4.5 to 7.5 metres wide. Measurements of the ditch are hampered by silting or reuse as a drainage ditch. The Ordnance Survey first identified the dyke in the late nineteenth century and the name refers to a nearby farm (it means ‘new house’); Fox referred to it as Dyke Q and Clawdd Refel (Fox 1955 165-68; Hill and Mathews 2004 113-15). It was excavated by Hill in 1981 (at SJ133232, note the CPAT unpublished report states Anne Cookson, a student of Hill, carried out the excavation in 1979), but there is no record of any finds (Youngs 1981 185; Silvester and Hankinson 2002 82). It is a possibly early medieval.

5.5.31 UPPER SHORT DITCH

Shropshire PRN 01189. Clwyd-Powys HER reference 1003. In England NMR reference SO 18 NE 6 (Monument 104719), in Wales Coflein reference NPRN 306180.

This 500 metre-long earthwork (SO195872 to SO191867) west-facing dyke cuts the Kerry Ridgeway and the Anglo-Welsh border (R.C.A.H.M.C.W.M. 1911 58; Crawford 1953 250; Fox 1955 113-14 and 164-67; Burne 1959 29; Hill and Mathews 2004 52-55). Both ends of the dyke lay near the head of steep sided gullies. It is not contiguous with parish boundaries. Readers should not confuse it with the Short Ditch near Beguildy. It consists of a ditch (originally 1.5 metres deep and 3.5 metres wide) and a bank (probably about 0.9 high above the

natural land surface and 6 metres wide). The name first appears on an 1889 Ordnance Survey map. As the earthwork lies less than four kilometres from Lower Short Ditch and cuts the same ridgeway, they may be related. Hill excavated the earthwork in 1980 (at SO194872), but two further investigations in 1985 (at SO192867 and SO192864) failed to locate the earthwork suggesting it did not extend further south that the present visible remains (Youngs 1981 185; Youngs, Clark et al. 1986 152). A excavation in 2005-6 by the Clwyd-Powys Archaeological Trust (at SO194872) as part of their Short Dykes Project found charcoal sealed under the bank which gave radiocarbon date of 1460+/-40BP or 540-660 AD suggesting it is probably early medieval (Hankinson and Caseldine 2006 266-68; Malim 2007 22).

5.5.32 VERVIL DYKE

Glamorgan-Gwent HER reference PRN 02260.0m. Coflein reference NPRN 94715.

This 188 metre-long (SS888775 to SS889773) southwest-facing dyke cuts a narrow isthmus between the rivers Ewenny and Ogmore with river cliffs or marsh protecting the flanks (R.C.A.H.M.C.W.M. 1976 8). Not only is a parish boundary contiguous with the dyke, but to do so it crosses the river to create a 'bridgehead' for the parish of Merthyr Mawr on the east side of the River Ogmore. There is a ditch up to 2.5 metres deep and 9 metres wide with a bank up to 1.2 metres high and over 8 metres wide. Excavations found some large pebbles at the front of the bank, possibly marker stones, and a definite berm about 0.9 metres wide (Grimes and Randall 1944-5 244). The ditch is u-shaped with an angle of about 30º on the bank side, but much shallower, about 20º, on the outer slope. A charter in the Book of Llandaff probably records the earthwork, calling it a 'crug', which is Welsh for mound (Evans and Rhys 1893 212-14; Grimes and Randall 1944-5 243). Vervil is probably from the Norse for bend or curve ('*hverfi*') personal name, but there are no earlier references than a nearby farm called Vervil first recorded in 1631 (Paterson 1922 43; Grimes and Randall 1944-5 246). In a 1937 study, Grimes and Randall, who excavated two sections across the dyke, dismissed the idea of a prehistoric promontory

fort (because it faces the sea) suggesting it was a defence against Vikings raiders (Grimes and Randall 1944-5). During sewer construction in 1974-5 further examination was made of the earthwork (Vyner 1977). As none of these excavations uncovered any dating evidence it is possibly early medieval.

5.5.33 WANTYN DYKE

North section Clwyd-Powys HER reference 1053, Coflein reference NPRN 306184. Southern section Clwyd-Powys HER reference 1775, Coflein reference NPRN 306181.

This earthwork near Kerry in Powys consists of two sections. The main body of the earthwork, the north section, faces southwest and runs (SO184921 to SO197895) in a straight alingment for 3 kilometres (Crawford 1953 250; Fox 1955 162 and 168; Burne 1959 30; Fitzpatrick-Matthews 2001 4; Silvester and Hankinson 2002 3; Hill and Mathews 2004 162-73 and 224). The southern section (also called Upper Wantyn Dyke) on a hillside less than a kilometre further south is L-shaped running for 435 metres southwest-northeast (from SO200888) before changing direction (at SO203890) and running southeast for about 900 metres (to SO209884). Neither section is contiguous with parish boundaries though Noble suggested a nearby diocese boundary much subject to change may have once been contiguous with the dyke (Noble and Gelling 1983 57). In the northern section there is a heavily silted ditch up to 0.5 metres deep and 4 metres wide and a bank (parts of which are damaged by reuse as a hedgerow and a road) up to 0.7 metres high (though the natural slope makes it seem up to 3 metres high) and 4 to 10 metres wide. The southern section varies in size along the length, but is up to 7.5 metres wide, most of this being a flat-topped bank although there are also slight traces of a ditch on the northern side and in some places traces of a counterscarp bank. According to the HER entry, the first written record of the name Wantyn Dyke (sometimes spelt Wanten) is in a history of the parish of Kerry written by Morris in 1889. The name is probably Welsh, possibly the ‘feeble’ dyke (from *gwantan*) suggesting agricultural damage to the dyke predated the name. According to the HER entry, surveyors in the late nineteenth century first recorded the northern dyke and an early

twentieth century survey postulated the southern or Upper dyke was part of the same system. Hill carried out various excavations on the northern section (at SO189911 in 1980 and at SO187914, SO187913, SO193901 and SO194900 in 1985) and (at SO203891, SO203890 and SO196888 in 1985) in the southern section (Youngs 1981 185; Youngs, Clark et al. 1986 152; Silvester and Hankinson 2002 3). Although he found no dating evidence, he concluded the two were morphologically very different and the southern section was probably a later unrelated field system. The Clwyd-Powys Archaeological Trust as part of their Short Dykes Project unsuccessfully tried to obtain organic remains sealed under the bank (at SO189910) using augering (Hankinson 2003 4; Hankinson and Caseldine 2006 267). Without clear dating evidence the northern section is possibly early-medieval dyke, but the southern or Upper Wantyn is probably part of a later-medieval field system and therefore outside the scope of this study.

5.6 OFFA'S, WAT'S AND ROWE

This section encompasses three main dykes (Offa's Dyke, Wat's Dyke and Rowe Ditch) and some associated earthworks that run roughly parallel to the English-Welsh border. Some smaller dykes that may be associated with Mercian dyke building, the so-called 'short dykes', are in the Welsh section though the Devil's Mouth to the east is in the midlands section.

As these dykes face in the same direction and lie in close proximity, scholars usually examine them as a group. Early antiquarians like Aubrey and Leland often did not distinguish between the dykes considering them all part of Offa's Dyke even when they were describing sections of what we now know as Wat's Dyke (Smith 1964a 13; Fowles 1982 884-85; Lewis 2008 15). Since Ormerod in 1842, scholars have generally concluded Offa's Dyke and Wat's Dyke were separate earthworks (Ormerod 1842 13; Hughes 1893). Sir Cyril Fox, after his appointment as Keeper of Archaeology at the National Museum of Wales in 1925, carried out many surveys and excavations on the dykes and published the first comprehensive study (Fox 1955; Hill and Worthington 2003 75). Fox

thought Offa's Dyke ran from Prestatyn on the north coast of Wales to the River Severn. Frank Noble carried out the next major study of Offa's Dyke, though he died before he finished his study was posthumously published (Noble and Gelling 1983; Hill 2000 197). From 1972, David Hill, as head of the Offa's Dyke Project (part of the University of Manchester Department Extra-Mural Studies) carried out fieldwork (including pioneering resistivity surveys for locating lost parts of the earthwork) and excavated parts of the dykes (Hill 1974 309; Hill and Worthington 2003 165-72; Worthington 2005). In 2003, Hill published a book in which they claimed Offa's Dyke only consisted of the central section (from Treuddyn to Rushock Hill) and dykes known as Offa's Dyke to the north and south were a mix of earlier structures, later extensions and figments of the imagination of earlier scholars (Hill and Worthington 2003).[1] This subdivision of the dyke is followed by Feryok (Feryok 2001 (2011 ed)). Ian Bapty, the Offa's Dyke Archaeological Management Officer appointed by Clwyd-Powys Archaeological Trust, claims recent aerial photographs and LIDAR suggests the Gloucestershire sections are more continuous than Hill thought (Bapty 2003; Bapty 2007).

Even if Offa originally conceived the earthworks that now bear his name as a single continuous earthwork (which this study seriously doubts), the surviving sections do not now link so this study divides Offa's Dyke into sections. All scholars assume the central section is definitely Offa's Dyke (Fox 1955 5 and 278; Hill and Worthington 2003 107 and 129; Malim 2007 29). This study gives the various stretches of earthwork in Herefordshire commonly called Offa's Dyke (including Scuditch) a separate section. Those parts often referred to as Offa's Dyke in Gloucestershire have two separate sections: Offa's Dyke in the Wye Valley and Beachley Bank. The northerly section of what Fox defined as Offa's Dyke north of Treuddyn is under the heading Whitford Dyke, a term Hill coined (Hill 2000 198).

[1] Though this book is co-authored, this study refers to it as Hill's work for the sake of brevity and treats any ideas taken from it as Hill's. This is not meant to diminish the contribution of his colleague and the co-author of the 2003 book, Margaret Worthington, especially as she was most open and courteous when asked for aid in the production of this study.

5.6.1 BEACHLEY BANK

Gloucestershire SMR 500 (the fort is 5056). NMR ST 59 SW 86 (Monument 136156) and ST 59 SW 3 (Monument 198738).

This south-facing dyke runs for 1.4 kilometres in two straight sections from the Wye to the Severn (ST540943 to ST552928) with only a 4º difference in their alignments cutting the low-lying Beachley peninsula (Fox 1955 196; Feryok 2001 (2011 ed) 170; Hill and Mathews 2004 204-11). It is not contiguous with any administrative boundaries. It consists of a v-shaped rock-cut ditch 1.5 metres deep and up to 4 metres wide (the front face is 50º while the slope on the bank side is just 30º) and a bank at least 2 metres high and 10 metres wide (Fox 1955 fig 89; Lewis 1962; Hill and Worthington 2003 149-52; Hill and Mathews 2004 206-09; Malim 2007 25). It is mentioned in a charter dated to 956 (S 610) as a ‘dic’ or (Fox 1955 216-17). In title deeds dated 1638 it is 'fforce ditch'; Offa’s name was first attached to the dyke in 1840 (Ormerod 1842 17; Hill and Worthington 2003 146). At the western end of the dyke is a semi-circular enclosure, possibly a fort; in 1930 Fox excavated the northern defences (somewhere around ST540934) and found a ‘lance head’ on the ‘floor’ of the ditch, but the artefact was of an indeterminable date (Fox 1955 204-05; Stanford 1980 197; Hill and Worthington 2003 150-52). In 1644, royalists defended the line of the earthwork against parliamentary attack; no excavation has uncovered Civil War artefacts though a 1960 excavation (at ST547931) did record a deposit of top soil dumped on the back of the bank that mark a royalist refurbishment (Ormerod 1842 17; Fox 1955 197; Lewis 1962). Hill carried out a series of excavations of the dyke (at ST544932, ST542933 and ST541934) and one of the fort (ST540934), but this produced no dating evidence (Hill 2000 198-200; Hill and Worthington 2003 149-54). This study concludes the earthwork is possibly early medieval as references to it predate the English Civil War.

5.6.2 OFFA’S DYKE – CENTRAL SECTION

The Clwyd-Powys main HER reference number is 10000, in Shropshire the main reference number is PRN 01000 while in Herefordshire the SMR number is 717. In England, the NMR reference is LINEAR 33 (Monument 962984), in

Wales the Coflein reference is NPRN 306866. In all the local and national entries, there are numerous other references to sections of the earthwork and events (like surveys, aerial photographs and excavations).

This section covers the central portion of Offa's Dyke which runs almost due south from Treuddyn (SJ268577) to Rushock Hill (SO300595) for about 103 kilometres (Hill 2000 200; Hill and Worthington 2003 45-46). It was originally probably continuous apart from two gaps, one of about 1,350 metres (from around SJ292420 to SJ283410) filled by the River Dee and a second of seven to eight kilometres (SJ281155 or SJ278158 to SJ248086) covered by the River Severn making the built earthwork about 95 kilometres long (Hill and Worthington 2003 64-68 and 78-79). The dyke is rarely contiguous with administrative boundaries; even where it is, for example the 1,200 metre section between Stowe and Llanfairwaterdine near Kinsley Wood and on Furrow Hill, this is because of a nineteenth century readjustment (Fox 1955 301-02; Charles 1963 98; Noble and Gelling 1983 48-49; Gelling 1989 199). The sections filled by rivers are contiguous with parish boundaries, but this relationship probably would have existed without the earthwork. Ignoring the nineteenth century readjustments and the river sections, just 9,075 metres of the earthwork is contiguous with county borders (note these borders are also the national border between England and Wales) and 21,200 metres contiguous with parish boundaries. Usually there is a ditch usually on the west side 2 metres deep and 7 metres wide and a bank to the east up to 2.5 metres high and 7 metres wide (Hill and Worthington 2003 101; Malim 2007 22). Where the dyke runs across steep slopes often a counterscarp bank is included to emphasise the ditch and sometimes, especially where there was boggy ground in front of the dyke, a quarry ditch to the east provided material for the bank (Fox 1955 63-64 and 68-74; Stanford 1980 187; Hill and Worthington 2003 76). Excavations generally suggest a v-shaped ditch with 30º sides though a 1990 excavation near Rhostyllen (SJ299484) found a u-shaped ditch (Hill 1985 141; Nenk, Margeson et al. 1991 229). Many excavations found evidence of a marker bank; where this feature was not present, it might be because the marker bank was built on the line of the later ditch (Hill and Wilson 1975 95; Hill 1985 141; Hill and

Worthington 2003 87-89). No excavation revealed evidence of an ankle-breaker, palisade or revetment and there seems little or no evidence of a berm. Asser makes the first mention of Offa's Dyke in 893, though doubts have been raised about the authenticity of his work, it is now generally accepted as authentic (Keynes and Lapidge 1983 71; Tyler 2002 192-94; Hill and Worthington 2003 35-38; Tyler 2011 154). Near Ffrith, the earthwork cuts a Roman settlement and workmen found Roman finds near or under the dyke in 1828, 1870 and 1875 (Parkins 1876 277; Hill and Worthington 2003 100). Fox to carried out two excavations here in 1927 (at SJ288548 and SJ284553) where he found Roman pottery fragments (mostly abraded) in the material making up bank and pottery fragments in soil under the bank though none of sherds dated to later than second century (Fox 1955 40-44; Hill and Worthington 2003 82-85). A further excavation in area by Clywd-Powys Archaeology Trust (SJ285552 in 1990) found abraded pottery fragments dated to 160-190 AD in bank and the soil sealed under it (Hill and Worthington 2003 83). The dyke clearly cuts a Roman road near Crowsnest (SO258896) according to a 1950s excavation (Houghton 1957-60). A recent radiocarbon date obtained from a site near Chirk of 430 to 653 suggests that if Offa did order the construction of the earthwork he may have utilised parts of older earthworks, though they were also early medieval in date and therefore within the scope of this study. The written and archaeological evidence makes Offa's a probable early-medieval dyke[1].

[1] The results have not been published in full at the time of writing and were reported in the Society of Antiquaries online newsletter SALON (issue 318) which can be found at: http://us6.campaign-archive2.com/?u=5557bc147d34993782f185bde&id=b587d981eb&e=005096e2b1#mctoc8

Figure 47 Looking south along Offa's Dyke

5.6.3 OFFA'S DYKE IN HEREFORDSHIRE

Fox admitted that south of Rushock Hill there is little evidence of Offa's Dyke in Herefordshire (though south of Bishopstone the River Wye may have acted as a substitute) and efforts by local archaeologists to find a continuous earthwork across Herefordshire have proved fruitless (Fox 1955 172-82; Cooper 1970; Lowry 1975; Feryok 2001 (2011 ed) 172-74 and 190-1). There are some fragmentary stretches of earthworks on the correct alignment for Offa's Dyke that cover little over 8 kilometres of the 20 kilometre gap between Rushock Hill and the Wye (Hill and Worthington 2003 45 and 129-43). Since the 1990s, the analysis of new and old aerial photographs by the Royal Commission on the Historical Monument of England's Marches Uplands Mapping Project (known as the Marches Upland National Mapping Project since the RCHME became part of English Heritage) has filled in a few gaps, though many remain. However, hedgerows, old tracks and geological features can, from the air, look like a dyke (Fox 1955 214-15). Hill often excavated at locations where aerial photography seemed to clearly show the dyke yet found

no sign of Offa's Dyke (Hill and Worthington 2003 131-34). Fox assumed the large gaps were filled by patches of impenetrable forests, but Hill noted some of the woods were modern (Fox 1955 206-10; Hill and Worthington 2003 130 and 137).

5.6.3.1 Kennel Wood

NMR SO35NW68 (Monument 1396974).

According to Fox, a 170 metre-long part of Offa's Dyke (SO300596 to SO301596) lay east of Kennel Wood (Fox 1955 174-75). However, Hill carried out excavations along this line (for example at SO304596 in 1985), but found only geological features or unimpressive field boundaries, therefore this study concludes there is no dyke here (Youngs, Clark et al. 1986 150; Hill and Worthington 2003 132-34).

5.6.3.2 Scuditch

This earthwork lies to the east of Scuditch Wood and runs 250 metres east-west (SO306600 to SO308600) on the same alignment as the southern end of the central portion of Offa's Dyke which lies about one and a half kilometres to the west. It is not contiguous with parish boundaries. According to Fox the name means south ditch, but John Freeman, the editor of the English Place-Name Society volumes for Herefordshire, is modern dialect derived from *scutch* or 'couch-grass' (Fox 1955 175 and personal communication). Fox doubted the section of earthwork was part of Offa's Dyke suggesting it was a lynchet or a hollow way and this study concludes the same (Fox 1955 175-77; Hill and Worthington 2003 130-32).

5.6.3.3 Berry's Wood

There earthwork runs for about 150 metres south to a knoll in Berry's Wood (SO323587 to SO323586) and is not contiguous with parish boundaries (Fox 1955 175-6; Hill and Worthington 2003 134-35). Though Fox postulated the earthwork was originally longer, two sections excavated by Hill in 1985

(SO324588 and SO325583) on the suggested alignment found no evidence of a dyke (Youngs, Clark et al. 1986 150). Fox stated the earthwork consisted of a flattened bank 11 to 15 metres wide and a silted ditch on the west side, but because later agricultural activity has flattened the bank, it is impossible to give accurate dimensions without an excavation of the surviving earthwork. As with Hill, this study concludes this earthwork, along with the River Arrow earthwork, may form a cross-valley dyke and is possibly early medieval.

5.6.3.4 River Arrow

Herefordshire SMR 376. NMR SO 35NW 70 (Monument 1396983).

There is a section of earthwork running north-south from the south bank of the River Arrow for about 100 metres (SO324581 to SO324580) and is not contiguous with parish boundaries (Fox 1955 176; Hill and Worthington 2003 135). Fox wrote parts of this section of earthwork consist of a high bank with a ditch on the west side well defined and narrow, but along with the SMR entries gives no dimensions (Fox 1955 176). With no dating evidence, it is possibly an early-medieval dyke.

5.6.3.5 Lyonshall Bank

Herefordshire SMR 351, 352, 5577, 8224, 8225 and 30632. NMR SO 35 NW 71 (Monument 1396984).

This southwest-facing earthwork lies on the west side of the village of the same name (Fox 1955 177-79; Hill and Worthington 2003 135-36). The distance between the most northerly and southerly points spotted on aerial photographs (taken during the Marches Upland Mapping Project) is approximately three kilometres (SO326562 to SO348543); there are many gaps, but they may result from recent damage. No part is contiguous with parish boundaries. It consists of a heavily silted ditch up to 1.5 metres deep and 4 metres wide with a heavily flattened bank 0.5 to 2 metres high and up to 14 metres wide (Fox 1955 177). Like most of the Herefordshire earthworks, it is usually called Offa's Dyke, though Fox and Hill use Lyonshall Bank, a name of little antiquity, to distinguish this section. According to John Freeman, the English Place-Name Society

editor for Herefordshire, the original name was Rowditch (meaning ‘rough ditch’); a Tithe Award in 1840 names three nearby fields ‘Near Row Ditch’, ‘Far Row Ditch’ and ‘Upper Row Ditch’ while an adjacent meadow is recorded in 1388 as *Rowdiche* (personal communication). It is unexcavated, but a watching brief by Herefordshire County Council to the north of the dyke (SO326563) found no evidence of the earthwork so the earthwork is unlikely to have extended in that direction (Hill and Worthington 2003 136). It is possibly early medieval.

5.6.3.6 Bishopstone

Herefordshire SMR 947, 948, 949, 950, 7070 and 8226.

Running from just west of Yazor (SO394474) for five kilometres south southeast to the River Wye between Byford and Bridge Sollers (SO408427) is an earthwork (Fox 1955 179-82; Hill and Worthington 2003 136-39; Hill and Mathews 2004 10-29 and 214). At points, especially in the centre where the earthwork crosses the wooded Garnon’s Hill, there are no surface remains so it is uncertain without excavation if this dyke was ever continuous. The southern 1.6 kilometres of the earthwork (SO401441 to the Wye) is contiguous with parish boundaries. Fox reported the top of the bank was 3.9 to 4.9 metres above the bottom of the ditch suggesting the depth of the ditch and the height or the bank was around 2 metres (Fox 1955 179). Fieldwork by the archaeological Research Group section of the Herefordshire’s county archaeology society (the Woolhope Club) in the 1970s found earthworks along Fox’s line, though they were impossible to distinguish from later hedgerows (Cooper 1970; Lowry 1975). Fox excavated near the southern end (SO405434) in 1927, Hill carried out two excavations in the 1980s (at SO403439 and SO402444) and Herefordshire County Council carried out a watching brief (SO404437) in 1992 (Fox 1955 203-04; Youngs 1981 184; Nenk, Margeson et al. 1994 219; Hill and Worthington 2003 137-39; Hill and Mathews 2004 12-29 and 214). All these excavations were inconclusive and found no clear dating evidence so it is possibly early medieval.

5.6.4 OFFA'S DYKE IN THE WYE VALLEY

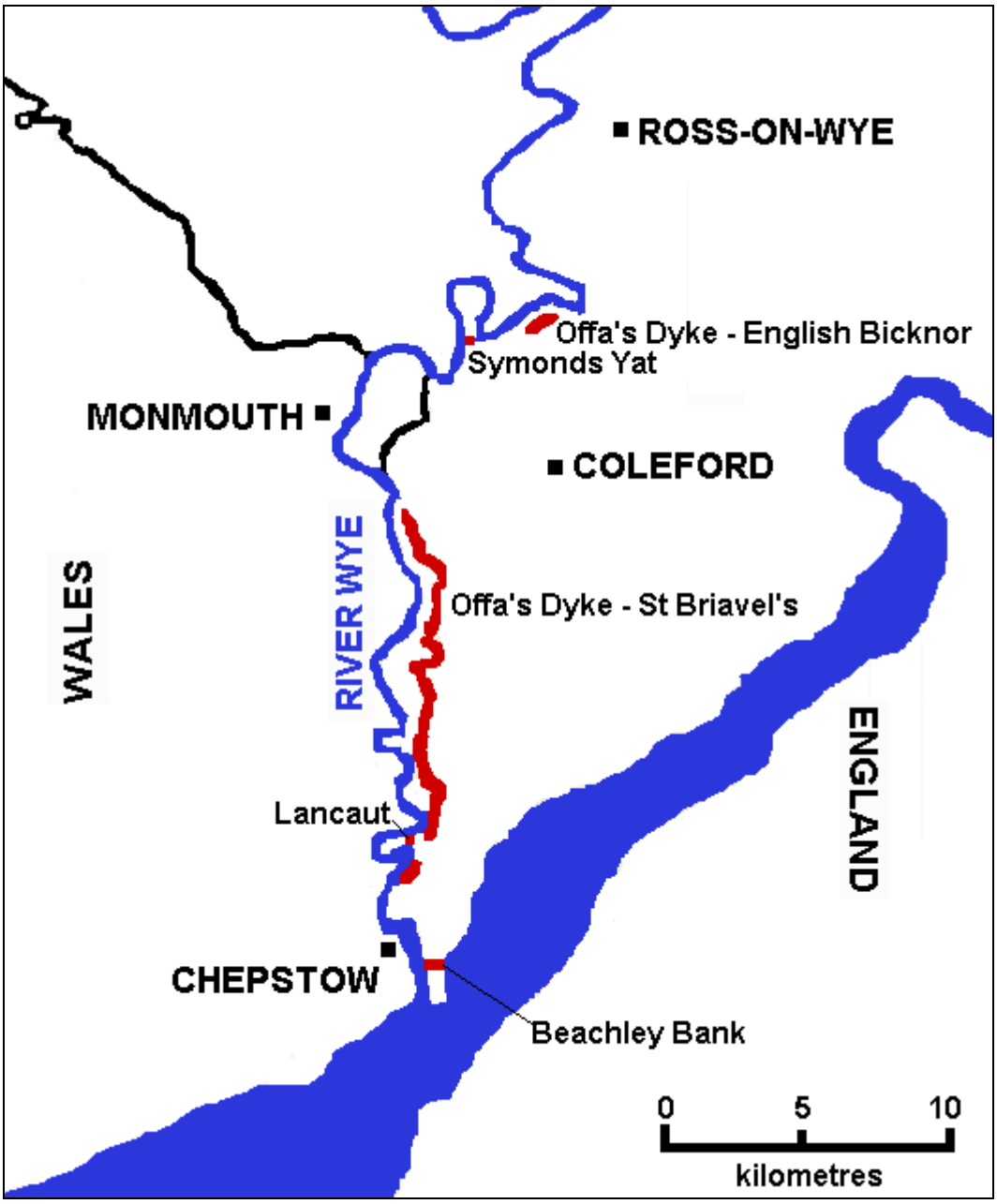


Figure 48 The dykes of the Wye Valley

The main Gloucestershire SMR references for Offa's Dyke run in a sequence starting at 501 for the earthwork in Tidenham up to 516 for Lydbrook and 517 for English Bicknor, but there are numerous other related references. In Lydbrook the NMR references are SO 51 NE 162 (Monument 1377068) and SO 51 NE 98 (Monument 1361885). In English Bicknor NMR SO 51 NE 99 (Monument 1361897). In Newland NMR SO 50 NW 54 (Monument 1387693), SO 50 NW 50 (Monument 1377274), SO 50 NW 51 (Monument 1377276) and

SO 50 NW 52 (1377278). In St Briavel's NMR SO 50 NW 53 (Monument 1387691), SO 50 SW 46 (Monument 1385658), SO 50 SW 51 Monument (1385824), SO 50 SW 52 (Monument 1385828), SO 50 SW 42 (Monument 1363486), SO 50 SW 43 (Monument 1376801) and SO 50 SW 45 (Monument 1377282). In Hewelsfield and Brookwier NMR SO 50 SW 54 (Monument 1377280). In Tidenham NMR ST 59 NW 48 (Monument 1363470).

Along the east bank of the River Wye there are earthworks, but they are smaller than the central portion of Offa's Dyke and often difficult to distinguish from quarries, lynchets, hollow ways, field boundaries and Iron Age forts (Fosbroke 1832; Hill 2000 198-200; Feryok 2001 (2011 ed) 171-2 and 189-90; Hill and Worthington 2003 45 and 143-47; Malim 2007 25). Fox, Hill, the Ordnance Survey, the NMR and the Gloucestershire SMR all dismiss or include sections the others do not. There are two main sections commonly called Offa's Dyke on the east bank of the River Wye in Gloucestershire, the northerly English Bicknor section and the St Briavel's section. Surviving sections of the northern earthwork are 800 metres long, but if originally continuous (from SO592173 southwest to SO584168) would have been 1.2 kilometres long (Fox 1955 184-86; Hill and Worthington 2003 45). The southern earthwork starts just south of Redbrook (SO539091) finishing in the parish of Tidenham (ST536951) 14 kilometres to the south; the course is about 16 kilometres long because it follows the river, but there is a gap (ST549976 to ST538953) of about two kilometres (Fox 1955 186-96; Hill and Worthington 2003 45). It was usually assumed where there is no earthwork it is because the builders utilised cliffs as well as older earthworks to save on labour (Stanford 1980 197). Neither earthwork is contiguous with parish boundaries, possibly because utilising the nearby River Wye was far more convenient. On loops in the east bank of the River Wye there are two multivallate promontory forts; though unexcavated, the NMR entries, the SMR entries and this study assume they are Iron Age. The first at Symonds Yat (SO564156, NMR SO 51 NE 3, Monument 109563) lies in the gap between the English Bicknor and southern section of Offa's Dyke (Fox 1955 186). The second at Lancaut (the ramparts run from ST542968 to ST541965, NMR reference ST 59 NW 3, Monument 198723) lies in the middle

of the gap in the southern section (Fox 1955 194-95). The earthworks in this section vary massively in structure and it is uncertain if this was a feature of the original earthwork, because of later activity or because we are examining unrelated features. For example, in some sections Fox mentions a wide berm, in others he says there is none (Fox 1955 187-88). In most sections there is a main bank and ditch, but where there is only one ditch, it varies from the east to the west side (Fox 1955 220; Hill and Worthington 2003 146). Eastern ditch are on the 'wrong' side for a Mercian dyke and Fox constantly dismisses them as quarries for the bank (Fox 1955 184, 187-88 and 191). The northern part of the English Bicknor earthwork in Lydbrook has no ditch, but sections of the front of the bank have a possible stone revetment. Parts of the southerly section of the earthwork in English Bicknor have a western ditch 1.5 metres deep and up to 5 metres wide; there is often a counterscarp bank. The bank varies from 7 to 15 metres wide and seems to be around 1.5 metres high, though Fox noted that where a 'recent' roadway cut through dyke, the bank was found to be 2.1 metres high (Fox 1955 184). The St Briavel's earthwork is more varied. Usually there are the following features with these average measurements (working from west to east): a counterscarp bank 0.6 metres high and 5 metres wide, a ditch 0.6 metres deep and 4 metres wide, a berm 2 metres wide, a bank a metre high and 10 metres wide and intermittent eastern ditches 0.7 metres deep and 4 metres wide. Hill implied it was Fox's book that attached Offa's name to these earthworks, but they are clearly marked as Offa's Dyke on nineteenth century Ordnance Survey maps, called Offa's Dyke by Omerod in 1842 and a 1321 document names an earthwork near St Briavel's as *Offedich* (Ormerod 1842 14-15; Herbert 1996 249; Hill and Worthington 2003 146-48). There have been a few excavations and watching briefs (often unpublished and the SMR entries contain inaccurate information about some), but not only have these produced no dating evidence, they often revealed no sign of a dyke (Hill and Worthington 2003 144 and 184). This is possibly because being a scheduled monument most archaeologists excavation at unscheduled 'gaps' in the earthwork where past activity has already destroyed the dyke. A 1965 excavation by Gloucester Museum (in Tidenham parish at SO540001) found a bank, a very shallow ditch and a counterscarp bank. A 1978-79 excavation by Gloucestershire County Council Archaeology Service (in St Briavel's parish at

SO535025) and another in 1993 (in St Briavel's Common at SO538031) found no evidence of a dyke, but a 1985 watching brief (near the Devil's Pulpit at SO542000) found the base of the bank and an infilled ditch. As well as these excavations, sections have been surveyed by Gloucestershire County Environment Department (for example in 1995 they started on the area north of Lydbrook, SO602183 to SO596170) and more recently this work has involved the use of LIDAR data (Nenk, Margeson et al. 1996 255; Bapty 2003; Bapty 2007 24). Though these surveys have filled many of the gaps in the earthwork, it is not proof the features are not a series of field boundaries or tracks on a similar alignment. With no conclusive dating evidence some of the earthworks along the Wye valley in Gloucestershire are possibly early medieval.

5.6.5 ROWE DITCH

Herefordshire SMR reference 356. NMR SO 53 NE 12 (Monument 106182) and SO 36 SE 50 (Monument 1396854).

This west-facing earthwork cuts the valley of the River Arrow and should not be confused with the Row Ditch, a later medieval earthwork that defends Hereford (R.C.H.M.E. 1934 169; Crawford 1953 244; Fox 1955 164, 182-83 and 207-08; Stanford 1980 191; Noble and Gelling 1983 51; Hill and Mathews 2004 61-67 and 217). An excavation in 1985 at Vallet Covert (at SO379612) found the northern terminus and fieldwork (including unpublished work by Allan McKinley of the University of Birmingham) suggests the southern end was near Pitfield Farm (SO382575) 3.75 kilometres to the south (R.C.H.M.E. 1934 xxxi and 169; Youngs, Clark et al. 1986 152; Hill and Worthington 2003 139-42 and McKinley, personal communication). It is not contiguous with parish or other boundaries (Noble and Gelling 1983 51). The earthwork has a v-shaped ditch up to 2.5 metres deep and up to 5 metres wide and a bank to the east up to 1.5 metres high and up to 6 metres wide (Hill and Worthington 2003 140-42; Malim 2007 24). Malim claims the bank is multi-phase, but this is possibly a mistaken assumption based on evidence recorded by the Offa's Dyke Project at the rear of the bank of later agricultural activity (Hill and Worthington 2003 141; Malim 2007 24). None of the excavations recorded a revetment or gateway and

though the initial reports of one in 1980 seemed to suggest a palisade, this idea was dropped in later reinterpretations (Youngs 1981 184; Hill and Worthington 2003 141-42). The dyke is first recorded in a charter dated 958 (S 677) though it is not named (Whitelock 1955 514-16; Finberg 1961 142; Hill and Worthington 2003 143). It is named as Rogedich in a document from the reign of Henry 3rd (1216-1272) while Aubrey in the seventeenth century refers to it as Rue-ditch; according to Freeman, the English Place-Name Society editor for Herefordshire, the name derives from the Old English *rūh-dīc* or 'rough ditch' (P.R.O. 1916 146-47 and 444; Fowles 1982 884-85 and personal communication). Excavations of Rowe Ditch by the Offa's Dyke Project under David Hill were carried out in the 1980s and 1990s (for example at Heathy Fields SO379605 and The Leen SO381587 in 1980) found the earthwork cut Roman remains therefore it is probably early medieval (Youngs 1981 184; Hill 2000 200; Hill and Worthington 2003 140-43).

5.6.6 WAT'S DYKE

The main Clwyd-Powys HER number is 17774, but there are also other references for each section and event (survey or a excavation). Shropshire's reference is PRN 01001. The English NMR reference is LINEAR 10 (Monument 1038816), in Wales NPRN 306867.

Wat's Dyke is a west-facing dyke that runs southward for 62 kilometres from Basingwerk (SJ195775) on the Dee to Lower Morton (SJ305238) just south of Oswestry (Fox 1955 261-67; Youngs, Clark et al. 1986 150; Youngs, Clark et al. 1988 309; Hannaford 1998 6; Hill 2000 198; Fitzpatrick-Matthews 2001 2; Hill and Worthington 2003 163). There is a 3 kilometre gap where the dyke builders utilised the River Dee and River Ceiriog (Fox 1955 245-246). Discounting sections filled by rivers, only about 2.2 kilometres (400 metres from SJ251658 to SJ255654, one kilometre from SJ323471 to SJ322462 and 800 metres SJ299284 to SJ300277) of the built earthwork is contiguous with parish boundaries (Fox 1955 303). It consists of a v-shaped ditch 2 metres deep and 4 to 8 metres wide with a bank to the east on average 2 metres high and averaging 6.4 metres wide (Fox 1955 258-59; Cane 1996 18; Gaimster, Haith et

al. 1998; Hannaford 1998 2; Malim 2007 22; Hayes and Malim 2008 147 and 168; Lewis 2008 10-12). Like Offa's Dyke, where the dyke runs across steep slopes often a counterscarp bank is included to emphasis the ditch. The ditch is quite steep sided with a slope on west side 40 to 50º and that on east side 40º (Hannaford 1998 1; Hayes and Malim 2008 147 and 170). Various excavations of the earthwork revealed found no evidence of a palisade or gateways; most suggested there was no berm except the Mile Oak one, which found a small 0.7-metre berm (Cane 1996 18; Gaimster, Haith et al. 1998; Hannaford 1998 5; Hayes and Malim 2008 156 and 165). A 1995 excavation did suggest a simple revetment of loose stones that subsequently collapsed into the ditch (Cane 1996 18; Gaimster, Haith et al. 1998; Malim 2007 23; Hayes and Malim 2008 165 and 171). There is some evidence under the earth bank of a marker bank or of stone cobbling forming the base (Hill and Wilson 1975 95; Cane 1996 17; Gaimster, Haith et al. 1998; Hannaford 1998 5; Malim 2007 23; Hayes and Malim 2008 147 and 156). The bank is a single-phase structure and there is no evidence of recutting of the ditch though there was an ankle-breaker or cleaning slot in the bottom (Cane 1996 18; Fitzpatrick-Matthews 2001 3; Hayes and Malim 2008 147, 156 and 160-62). Discerning the first reference to Wat's Dyke is difficult as early sources often confuse it with Offa's Dyke, like the fourteenth century chronicles of Ranulf Higden which record Offa's Dyke reaching the sea at Basingwerk (Griscom 1925 101). The first record of the name Wat/Wade attached to the dyke is a 1431 Welsh deed recording 'Clauwdd Wade' and the first definite description of it as a separate structure from Offa's Dyke is in 1587 (Fox 1955 226 and 288; Nurse 2001 4; Hayes and Malim 2008 172; Lewis 2008 15). The name probably derives from the mysterious Germanic folklore figure Wade (Griscom 1925 100; Fox 1955 288). Archaeologists have made numerous excavations of the dyke; Hill in 2003 listed 79 (Hill and Worthington 2003 184-87). At Mynydd Isa half a loom weight (the style is now thought to date from any time between the fifth and the eleventh century) was found near the bottom of the ditch fill (Varley 1975-6; Malim 2007 17; Hayes and Malim 2008 149). At Mile Oak, Oswestry (SJ300278) there were two excavations, first a preliminary evaluation in 1997 and then a main investigation the following year (Gaimster, Haith et al. 1998 150-51; Hannaford 1998; Malim 2007 19-20). The excavations uncovered few dateable finds (some 13th-century sherds from

the middle silts and three abraded Roman pottery sherds from under the bank); samples taken from the site of hearth sealed under the bank gave a radiocarbon date centred on 446 AD with a range of 268-630 AD (Varley 1976; Nurse 1999; Fitzpatrick-Matthews 2001 5-7; Hayes and Malim 2008 149). A 2006 excavation at Gobowen (SJ302332) found thirteenth to fourteenth-century pot sherds in soils behind the bank and the dates of ditch silt samples tested by Optically Stimulated Luminescence were 792-1002, 747-927 and 742-952 suggesting the earthwork is probably early medieval (Anon. 2007; Malim 2007 20-21; Hayes and Malim 2008).

Figure 49 Looking north along Wat's Dyke

5.6.7 WHITFORD DYKE

Clwyd-Powys HER references 67547, 17465, 106698 to 106711 and 106712 to 106719. Coflein references NPRN 275836, NPRN 275841, NPRN 275837, NPRN 275838, NPRN 275842, NPRN 275843, NPRN 275844 and NPRN 306868.

This earthwork runs northwest-southeast for about ten kilometres (SJ083799 to SJ153746), but it is not certain if it was continuous (Feryok 2001 (2011 ed) 176-

77 and 179-80). A possible 400-metre section of the earthwork is contiguous with a parish boundary (SJ106789 to SJ109785). It consists of a central bank flanked by u-shaped ditches, the western ditch is 4.2 to 4.5 metres wide, and the eastern ditch 3.7 to 4.5 metres; these variations in the measurements given for each are probably not significant (Hill and Worthington 2003 157-61). Both ditches contain about 0.5 metres of fill, but this may not be their true depth as Fox suggested the bottom was 1.3 to 1.9 metres below the natural (Hill and Worthington 2003 157). The bank is 0.3 metres high and when built was probably 5.4 metres wide. The name is of no great antiquity being derived from a nearby village and was given by Hill to differentiate this earthwork from Offa's Dyke (Youngs, Clark et al. 1986 151; Hill and Worthington 2003 107). Fox thought this earthwork was part of a northern section of Offa's Dyke that reached the sea and excavated this dyke in 1925 near where it met a Bronze Age barrow (SJ152753) called Ysceifiog Circle or Brynbella Mound, but unfortunately not at the actual junction of the two earthworks (Fox 1955 5-28). Hill excavated at a variety of locations where Fox postulated earthwork lay (SJ089798, SJ104790 and SJ112784 in 1976 and SJ133764 and SJ136759 in 1985), but like Hughes before him, found little evidence of a dyke north of Treuddyn (Hughes 1893 473; Webster and Cherry 1977 219; Youngs, Clark et al. 1986 151; Hill and Worthington 2003 158-60). Where Hill did locate a dyke, he noticed it was very different in scale and dismissed it as a separate monument he called Whitfield Dyke (Hill 1974; Hill 2000 198). In 2008-9, Clwyd-Powys Archaeological Trust commissioned ArchaeoPhysica to carry out a survey of the earthwork and at the site of one of Fox's excavations (SJ152753) the trust's archaeologists excavated the dyke (Anon. 2009a 8-9). Like previous excavations, they found no dating evidence, but concluded, as does this study, the earthwork is probably prehistoric as it incorporates prehistoric features like the cairn on Cop Hill and Ysceifiog Circle.

5.7 MIDLANDS

There are few possible early-medieval dykes in the except those that run parallel to the Welsh border (Arnold 1988 187). There is an earthwork called

The Long Dyke at Geddington in Northamptonshire (NMR monument 346036 and Northamptonshire SMR reference 3785/0/2 – MNN23771), but this is merely a trackway that cuts through medieval ridge and furrow. The Shore Ditch, also called Red Earl's Ditch (NMR SO 73 NE 9 and SO 73 NE 12), marks the border between Worcestershire and Herefordshire in the Malvern Hills may be medieval (Hill and Worthington 2003 125). However, the NMR entry, the Herefordshire SMR entries and Deborah Overton (an HER Officer for Worcestershire) cite evidence that it was built it in about 1287, (though sections reused older earthworks) putting the earthwork outside the scope of this study (personal communication). The Herefordshire SMR records two undated cross-valley ditches in very little detail (SMR numbers 31808 and 38408); these are not included as to do so would mean including every undated cross-ridge dyke in the country.

5.7.1 DEVIL'S MOUTH DYKE

Shropshire PRN 00251. NMR SO 49 SW 6 (Monument 109323).

This heavily eroded 140-metre long dyke runs northeast-southwest (SO440943 to SO440942) cutting a ridge on a plateau known as Long Mynd or 'long mountain', the second element being Welsh (Crawford 1953 246; Fox 1955 166; Gelling 2001 228-29; Hill and Mathews 2004 76-79, 175-81 and 218-19). It consists of a central stone bank 1.5 metres high and 6 metres wide with shallow u-shaped rock-cut ditches either side, the western one is up to 0.7 metres deep and 4 to 6 metres wide while that to the east is up to 0.4 metres deep and 2 to 3 metres wide (Dinn, Greig et al. 2004 75-76). However, a 1992 excavation uncovered a much smaller western ditch (0.35 metres deep and 0.95 metres wide) suggesting the earthwork varied in scale. The name is of no great antiquity as the dyke was not recorded until 1904, it was named after a nearby natural feature called the Devilsmouth Hollow (Wall 1908 409-10; Dinn, Greig et al. 2004 75). Radiocarbon dates of pollen samples from charcoal from a buried soil beneath the bank of the dyke taken during the 1992 excavation (3145+/-45 BP or Calculated 1530-1310 BC and 3105+/-45 BP or 1500-1210

BC) suggest the dyke is probably from the middle Bronze Age (Dinn, Greig et al. 2004 75-78; Hankinson and Caseldine 2006 267; Malim 2007 21-22).

5.7.2 KING LUD'S AND THE FOULDING DYKES (THE THREE DYKES)

MLE3552, MLE4094 and MLE4118. NMR SK 82 NE 1 (Monument 323540).

These dykes, collectively called The Three Dykes, run west-east and lie two kilometres northeast of Saltby (Crawford 1953 245). The most northerly, King Lud's Entrenchment, is about 1.5 kilometres long (SK858280 to SK873278) all of which is contiguous with parish boundaries, though field boundaries, crop marks and parish boundaries suggest it possibly once continued a further 3.2 kilometres to the west (SK828275). Nichols in 1795 drew a sketch map showing two other dykes, the Foulding Dykes, about 800 metres to the south, but Bateman in 1861 was unable to locate the southern dyke and today, even with aerial photography it is impossible to locate (Nichols 1795 305; Bateman 1861 109-11). The northerly Foulding Dyke can still be seen using aerial photography, it is about 1.3 kilometres long (SK866274 to SK879274), but it is not contiguous with any parish boundaries. Recent damage makes us reliant on antiquarians and these sources disagree as to the number of banks and ditches that made up King Lud's Entrenchment. Nichols said it consisted of a double ditch and a bank, Wall in 1907 wrote that in parts it had three banks with two ditches between them, Phillips in 1934 said it had two banks and a ditch (Nichols 1795 305; Wall 1907 271; Phillips 1934 136). On average the measurements from the various sources (including the NMR entry) suggests that, prior to recent damage, the ditches were on average 1.9 metres deep and 8 metres wide while the banks were on average 1 metre high and 4.5 metres wide. According to the NMR entry, in Cooper's Plantation the southern ditch is v-shaped while the northern one is u-shaped. The first recorded use of the names Foulding, King Lud's and The Three Dykes was in 1795, Lud being the legendary pre-Roman king of Britain from Geoffrey of Monmouth's *Historia Regum Britanniae* (Nichols 1795 305; Cox 1998 104). The name 'Foulding' could be of some antiquity perhaps related to the Old English word for foal ('Fola'), earth ('Folde'), or the English personal name *Foldberht*, but the only

earlier reference to the earthworks is a Croxton Abbey charter dated 1162 that refers to waste land *ad tres fossas* 'at the three ditches' (Hoskins 1946 8). The dykes pass through a prehistoric barrow field (NMR SK 82 NE 2) and both Nichols and Bateman recorded 'digs' (they were probably too haphazard to term them excavations) into the burial mounds finding bones and urns (Nichols 1795 305; Bateman 1861 109-11; Wall 1907 271-74). The NMR entry states organic deposits from the mounds found during an unpublished excavation in 1978 by Leicestershire Archaeological Unit produced Bronze Age radiocarbon dates. The Jurassic Way, an ancient routeway that dates back at least as far as the Bronze Age, passes close to the eastern end of the dykes (NMR LINEAR 77, Monument 1035203). Despite the evidence of nearby prehistoric activity, many later scholars assumed the earthworks were early medieval (Phillips 1934 135-36; O.S. 1939; Hoskins 1946 8-9; Dunning 1952 54; O.S. 1966). In 1978, Pickering published an article suggesting that there existed an extensive boundary system of double or triple dykes that extends from Northamptonshire to the Humber which he dubbed the 'Jurassic Spine' (Pickering 1978). Archaeologists have found evidence of such features in Rutland, Lincolnshire, Cambridgeshire, Northamptonshire and Leicestershire, most of which have been securely dated to the prehistoric (Everson 1974; Burleigh 1980; Mackie and Morgan 1993; Boutwood 1998; Mellor 2007). The proximity of prehistoric features to the Three Dykes, the slightness of the surviving remains and similarities with similar prehistoric monuments in the region suggests they are probably prehistoric.

5.7.3 MINCHINHAMPTON BULWARKS

Gloucestershire SMR 127 and 128. NMR SO 80 SE 4 (Monument 115007).

South of Stroud is an east-facing 2300 metre-long dyke (SO857003 to SO874010) that runs roughly northeast-southwest in a series of straight alignments that form a 'c'-shaped plan (R.C.H.M.E. 1976 83). It has a truncated V-shaped rock-cut ditch 2.3 metres deep and 7 metres wide which had sides that sloped at 45º, the flat section in the base of the ditch is 1.5 metres wide (Clifford 1937 295-96). A berm about 3.7 metres wide separated it from a bank

that had a dry stone revetment and was originally at least 1.2 metres high and 4.9 metres wide. The name is recorded as ‘The Bulwarks’ on an 1887 Ordnance Survey map; it was once the border of an area of woodland recorded in a dispute of 1620, but this might have been a reuse of an older structure (Baggs, Jurica et al. 1976 185; Herbert 1976 185). Clifford excavated Minchinhampton Bulwarks in 1936 along with other nearby earthworks at Rodborough and Amberley (Clifford 1937). She found Roman sherds found in the silt of the ditches of the other earthworks, but none at Minchinhampton (Clifford 1937 291 and 293). Minchinhampton Bulwarks were of a similar scale to these other earthworks and Clifford unearthed late Iron-Age pottery fragments from the old soil sealed under the bank and from the bank material itself so suggested the earthworks formed a large Iron-Age oppidum (Clifford 1937 296 and 304-05; Verey 1979 74-75). However, the earthworks do not surround a discrete area and there is no other evidence of Iron-Age settlement evidence near the Bulwarks (Clifford 1937 295; Darvill 1987 167-69; Darvill 1998 15). Darvill and Reid have both suggested the prehistoric finds were residual so the dyke is possibly either an unusually large later-medieval wood boundary (there are thirteenth-century records of woods in the area) or an early-medieval dyke (Watson 1932; Darvill 1998; Reid 1999 12-15).

Figure 50 Looking south along Minchinhampton Bulwarks

5.8 CAMBRIDGESHIRE

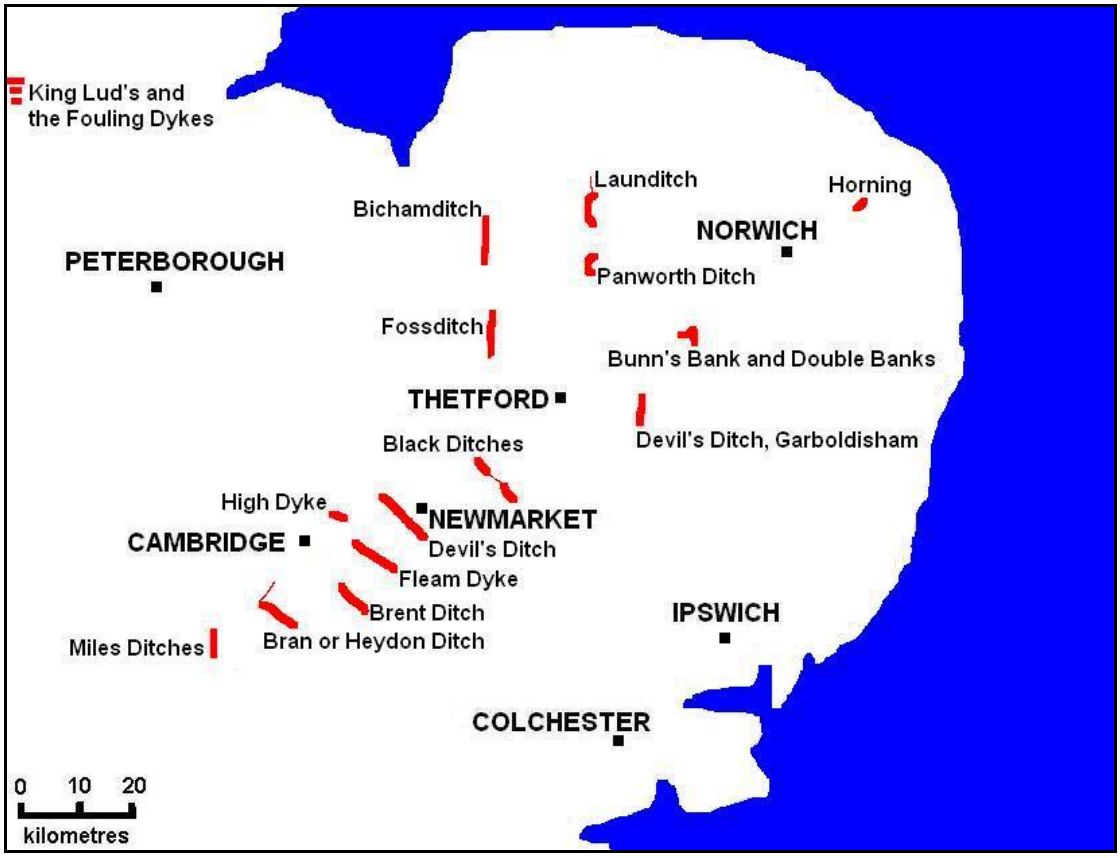


Figure 51 The dykes of East Anglia

Between Newmarket and Baldock are six dykes that run northwest-southeast. They bisect a narrow band of chalk about 5 kilometres wide flanked by the alluvial deposits of the fens on the northwest and mixed glacial tills made up of clay, chalk and gravel to the east, which were probably once heavily forested areas (Fox 1923 143-47; Fox 1947; Martin 1999 82 and 88-90; Malim 2005 242-43). Along this corridor of chalk runs the Icknield Way, an ancient routeway connecting the chalk downs of southern England with East Anglia. They are mainly in Cambridgeshire though parts of the Mile Ditches and Devil's Dyke lie in Hertfordshire and Suffolk respectively. Cyril Fox (with Palmer and Duckworth) excavated most of the dykes in the 1920s often making Anglo-Saxon finds so concluded that the East Angles built them as a defence against the Mercians (Fox 1923 292-93; Fox 1929 152-54). Scholars have generally concurred (O.S. 1939; Phillips 1948 5-13; Crawford 1953 184-85; O.S. 1966; R.C.H.M.E. 1972 144; Hart 1977 53; Taylor 2000; Storr 2013). In 1996, Malim with the help of

various colleagues wrote up a series of archaeological excavations from the 1990s, most of which were carried out in advance of the building of a second carriageway along the A11, which used a variety of modern archaeological techniques like pollen analysis and carbon dating (Malim, Penn et al. 1996). Malim concluded the dykes were sixth century defences built by the East Angles against raids from Britons living around St Albans, though in 2010 Malim proposed they could also have been symbols of royal power or controlled trade along the Icknield Way (Malim, Penn et al. 1996 116-17; Malim 2000; Malim 2005 243; Malim 2010 176-78). Note the names of Bran Ditch and Brent Ditch are often confused in early sources and on early Ordnance Survey Maps (Anon. 1854 393).

5.8.1 BRAN OR HEYDON DITCH

CHER 07802. NMR LINEAR 37 (Monument 1043124).

This southwest facing dyke runs from the edge of the fens south-southeast in almost a straight line for five kilometres (TL404449 to TL430405) and prior to 1974, the whole dyke was contiguous with parish boundaries (Fox, Palmer et al. 1924-5 26; Gray 1928-30 77). This single-phase earthwork has a u-shaped ditch 1.5 to 2.4 metres deep and about 6 metres wide with 40º sides and a bank 2.1 metres high and 8.5 metres wide; the 1920s excavations suggested the ditch was larger to the south (Fox, Palmer et al. 1924-5 27-29; Lethbridge and Palmer 1927-8 78; Taylor 1969 29; Malim, Penn et al. 1996 31-37). A 1993 excavation at the north end found evidence of a berm and a revetment; it also hinted that the builders had built a small marker bank immediately prior to construction (Malim, Penn et al. 1996 37-39 and 111). The earliest surviving record of the name is from 1279 as Branedich and it seems to derive from the Old English word brant for steep, deep or high, though fieldwork suggests over a millennium of erosion has made the name less apt (Gray 1928-30 85; Reaney 1943 33). Between 1923 and 1931 Fox, Lethbridge, Palmer and other local archaeologists excavated the dyke (Fox, Palmer et al. 1924-5; Lethbridge and Palmer 1927-8; Palmer, Leaf et al. 1930-1). They recorded residual Romano-British pottery fragments in the bank and third-century pottery fragments sealed

under the bank probably from a Roman-British settlement cut by the earthwork (Fox, Palmer et al. 1924-5 25 and 30-31; Lethbridge and Palmer 1927-8 80). Between 1927 and 1931, over 50 burials (at TL409439, HER reference CHER 04072) were found in the berm (Lethbridge and Palmer 1927-8; Gray 1928-30; Lethbridge 1933-4 95; Lethbridge 1938 310; Lethbridge 1957; Hill 1975-6; Malim, Penn et al. 1996 111-13; Reynolds 2009 57 and 106-08). Some scholars claim they represent a tenth or eleventh-century execution site though the finds could date from as far back as the fifth century and included a knife, brooches and a pot placed by the head of one of the bodies. It is uncertain if these finds predate the earthwork and the builders of the bank deliberately skirted round the burials or they postdate the dyke with the builders expanding the berm to accommodate them. An excavation in 1993 (at TL404449) proved the earthwork cut Iron Age features and found abraded Iron Age and Roman pottery in a layer sealed under the bank (Anon. 1994b; Malim, Penn et al. 1996 31-39, 79-81 and 93). The excavation evidence suggests it is probably early medieval.

Figure 52 Bran Ditch looking south

5.8.2 BRENT DITCH

CHER 06227. NMR TL54NW1 (Monument 374066).

Brent Ditch runs on a sinuous course near Pampisford (it can be traced from TL505485 to TL521465, though it was probably originally much longer) and is not contiguous with parish boundaries. The name was first recorded as Brundych in 1380 and derives from the Old English word brant for steep, deep or high (Gray 1928-30 85; Reaney 1943 33; Phillips 1948 10; Malim, Penn et al. 1996 41). It consists of a flat-bottomed ditch 2 to 3 metres deep and up to 10 metres wide with steep sloping sides at an angle of 50°; it was possibly flanked by two banks though excavations have found little evidence of them. An excavation in 1968 (at TL511480) found no dating evidence, but a 1992 one (at TL514474) uncovered five second-century Roman coins and a fragment of human pelvis that produced a late Iron Age radiocarbon date (2105 BP +or- 55) in the bottom of the ditch (Taylor 1969 30-31; Malim, Penn et al. 1996 39-50 and 81). The 1992 archaeologists concluded the steep sides of the bank were caused by erosion to the bottom of the ditch increasing the depth. Gray, Fox and Phillips all doubted it was a dyke, the 1992 excavation report and the NMR entry suggests it was a road (Fox 1923 123 and 126; Gray 1928-30 86-87; Phillips 1948 10-11; Malim, Penn et al. 1996 50). As a probable prehistoric road, this earthwork is outside the scope of this study.

5.8.3 DEVIL'S DITCH

CHER 0781. NMR LINEAR 122 (Monument 1043028).

Devil's Ditch is a large twelve kilometre-long (TL566662 to TL653583) almost straight south-facing earthwork (R.C.H.M.E. 1972 141). Almost uniquely among early-medieval dykes it appears on maps that predate the Ordnance Survey (R.C.H.M.E. 1972 143; Moule 1990 27). All but the westernmost 1,200 metres (to TL574653) is contiguous with parish boundaries and it once marked the limit of the authority of the Abbot of St Edmund's (Camden 1586a 435 and 487; Reaney 1943 43; Fowles 1982 890-91; Malim, Penn et al. 1996 100). It consists of a ditch and bank built in a single phase and so well constructed that it only has 0.75 metres of fill in the ditch despite the absence of a berm, rampart or

revetment (Malim, Penn et al. 1996 78). The R.C.H.M.E. study claims the ditch is v-shaped, but the excavated profiles generally show a ditch 4 to 5 metres wide and 15 to 19 metres wide with a flat bottom 7 metres wide and sides sloping up at about 60° to the surface (R.C.H.M.E. 1972). The bank is 4.5 to 5.3 metres high and 20 to 23 metres wide with evidence of a marker bank (Hope-Taylor 1975-6 125). The earliest possible written reference is in the *Anglo-Saxon Chronicle* dated 904 (Malim, Penn et al. 1996 98; Swanton 2000 94). The association of the Devil with the dyke was not recorded until 1574 and it is recorded as the big dyke (*magnum fossatum*) in thirteenth-century documents (Gray 1928-30 85-86; Reaney 1943 34; Malim, Penn et al. 1996 98-100). Excavations in 1884 (at TL575652), 1923 and 1924 (at TL575652 and TL582646 respectively) and 1973 (at TL600630) unearthed Roman coins and pottery sherds from under the bank (Hughes 1913 148-49; Fox, Palmer et al. 1924-5; Hope-Taylor 1975-6). In 1972, at the inner edge of the ditch (TL621613) a Saxon spear head was found while an excavation in 1973 found a body radiocarbon dated to 1190-1300 in the upper ditch fill (Webster 1973; Hope-Taylor 1975-6 124; Reynolds 2009 217). An excavation in 1991 (at TL585644) uncovered no finds (Nenk, Margeson et al. 1992c; Malim, Penn et al. 1996 72-78 and 88-90). The excavation evidence suggests it is probably an early-medieval dyke (Phillips 1948 9; R.C.H.M.E. 1972 144).

Figure 53 Devil's Ditch looking west

5.8.4 FLEAM DYKE

CHER 07889. NMR LINEAR 66 (Monument 1043634).

The dyke runs on a slightly curved southeasterly course for about 5.2 kilometres (TL536557 to TL572523) from low ground near Great Wilbraham to higher ground near Balsham. Hedgerows on a similar alignment suggest possible extensions to the north and south though an unpublished excavation in 1999 across a section of the hypothetical northern extension (HER reference CHER 08998 at TL537570) found only a small ditch and no sign of a bank (Fox and Palmer 1921-2 28). The dyke is contiguous with parish boundaries, was once the northern boundary of the hundred of Flendish and according to a charter dated 974 (S 794) the easternmost three kilometres were an estate boundary (Reaney 1943 35). It consists of a bank and ditch and has at least three distinct phases. In phase one, there was a v-shaped ditch 3 metres deep and 6 metres wide with 35° sides with a bank probably 3 metres high and up to 15 metres wide. Phase 2 had a larger flat-bottom ditch 4 metres deep and 7 to 8 metres wide. The final phase had a ditch with a flat bottom 7 metres wide up to 4.5 metres deep and up to 12 metres wide at the surface and steep sides of about 60° with a bank 4 metres high and 15 metres wide. There is no sign of a berm or ankle-breaker, but there is evidence of a marker bank and a counterscarp bank which might have developed when the ditch was recut (Smith 1972-3; Malim, Penn et al. 1996 62). The 1992 excavation found a posthole that could be part of a collapsed rampart or a revetment, but this was not confirmed (Malim, Penn et al. 1996 67 and 71). The earliest record of the name is as Flemesdich in 1260 and Flemigdich in 1279 (Gray 1928-30 86; Reaney 1943 35 and 140-41). The name Fleam is probably from the Old English for a fugitive (Stukeley in the eighteenth century calls it Flightditch) also found in the name of the local hundred of Flendish, which is called Flamingdice in the Domesday Book (Stukeley 1776 79). It is merely called *dic* in the 974 charter (Fox and Palmer 1921-2 32-34). Fox and Palmer undertook a series of excavations in 1921 and 1922 that found some pieces of bone and some Roman pottery sherds under the bank (Fox and Palmer 1921-2; Fox and Palmer 1922-3). Excavations in 1991 and 1992 (at TL548541) unearthed over 200 abraded sherds of first- and second-century pottery and a fourth century

coin sealed under the bank (Nenk, Margeson et al. 1992a; Malim, Penn et al. 1996 58-72, 85-90 and 95-98). Radiocarbon dates from organic matter, mainly pieces of bone, found in the ditch fill or the banks ranged from 340-640 AD, this suggested the initial phases of construction was between 330 and 560 AD and the final phase of rebuilding occurred prior to 620 (Malim, Penn et al. 1996 65-67 and 96). It is probably early medieval though it is possible the earliest phase predates the end of Roman rule (Anon. 1854 393; Godsal 1913 15; Phillips 1948 9-10).

5.8.5 HIGH DYKE

This south-facing dyke runs from the River Cam east-southeast to Quy Water for about two kilometres (TL481604 to TL509595) and is not contiguous with any parish boundaries. It consists of a ditch with a bank on the northern side. According to the 1972 R.C.H.M.E. study the ditch was 0.3 to 0.6 metres deep and 12 to 18 metres wide while the bank was 0.6 to 1.5 metres high, but the dyke's width varied widely possibly due to High Ditch Road built along the bank; a 760 metre-long 18-metre wide section might indicate the original dimensions (R.C.H.M.E. 1972 146). A map of 1825 records the road as High Ditch Lane and it is called a High Dyke Road in 1829, but there is a possible earlier reference from the thirteenth century to a Heydich (Reaney 1943 142; R.C.H.M.E. 1972 146). Presumably, the name refers to the dyke being noticeably higher than the surrounding low ground. Most authors assume it is part of Fleam Dyke so it has no separate NMR or HER entry (Fox 1929 139; R.C.H.M.E. 1972 144-47; Malim, Penn et al. 1996 58). It is on a similar alignment to Fleam Dyke and the Little Wilbraham River links the two earthworks, but High Dyke defends a peninsula of land rather than blocks a routeway. Where the Newmarket Road crosses the dyke (TL505595) a series of finds have been made which suggest armed Anglo-Saxon were buried after the dyke was built. These finds include a shield boss dug up in 1947, a group of skeletons with Anglo-Saxon goods (a sword, a sword pommel, various spearheads, a knife and some brooches) found in 1957 (NMR TL55NW2 Monument 374448) and a shield boss discovered in 1963 (Biddle 1962-3). The

exact relation between the finds and the dyke are unclear, but they do suggest it is a possible early-medieval dyke (R.C.H.M.E. 1972 146-47).

5.8.6 MILES DITCHES

CHER 03353. NMR TL34SW10 (Monument 368711).

This earthwork runs south for about 3 kilometres from low-lying ground south-west of Bassingbourn to the edge of an escarpment at Therfield Heath (TL328430 to TL333400) and is not contiguous with parish boundaries. It is difficult to locate without aerial photography and consists of three parallel ditches (presumably, banks once stood between them, but they have long since vanished). The western ditch was 1.2 metres deep and 3.5 metres wide, the central ditch was 0.75 metes deep and 2 metres wide while the eastern ditch 0.95 metres deep and 3 metres wide. The gap between the three ditches is 5 to 8 metres and the whole monument 26 to 30 metres wide. The ditches have a rounded v-shape profile with sides sloping at angles of approximately 30° with no signs of an ankle-breaker slot or recutting. Bedlam in 1868 first recorded their existence (Bedlam 1868 37-38). Scholars have noticed parallels between this earthwork and prehistoric features elsewhere in the region (Fox 1923 127-28; Crawford 1934; Phillips 1948 12-13; Pickering 1978; Burleigh 1980). An excavation in 1978 (at TL333403) found a horse mandible radiocarbon dated to 2040+/-80 BP (the result were unavailable when the excavation report was published but are in the county HER records), Roman coins and Roman pottery sherds in the ditch fill make this earthwork probably prehistoric (Burleigh 1980).

5.8.7 WORSTEAD STREET

Worstead Street, also called Wort's Causeway, runs south-eastwards from Cambridgeshire towards Colchester (Ridgeway 1893; Hughes 1913 145). Excavations by Fox in 1921 (at approximately TL495544 and TL500541) and by Malim in 1991 (at TL528519) clearly revealed the outline of a Roman road (Fox 1921-2; Fox 1923 129; Malim, Penn et al. 1996 50-58). Lethbridge thought it was a patrol road associated with the dykes, but there is no evidence to

substantiate this (Lethbridge 1933-4 96). This study concludes that it is a Roman road and therefore outside the scope of this study.

5.9 NORFOLK

There are six dykes in Norfolk traditionally ascribed to the early-medieval period (Fox 1929 144-45; Clarke 1941 180; Crawford 1953 245-56; Wade-Martins 1974; Malim 2005 244-45). Recently, archaeologists have often reclassified them as prehistoric, but there is evidence the occupants of early-medieval Norfolk were rebuilding prehistoric earthworks (Davies 1996 75-77; Ashwin, Flitcroft et al. 1999; Bates, Hoggett et al. 2008). Most of the dykes are in two north-south lines on either side of the A1065. There seems to be differences in prehistoric pottery between east and west Norfolk that might reflect the different groupings that built the dykes, though a short-term political groupings that built a dyke may not necessarily have material culture sufficiently unique to be noted in the archaeological record (Green, Milligan et al. 1981; Scull 1993 75).

5.9.1 BICHAMDITCH

3937. NMR LINEAR 89.

The east-facing Bichamditch (also called Devil's Dyke or Devil's Ditch) runs for at least 5 kilometres (TF751116 to TF740064; note the HER entry claims it is 11 kilometres long) south from near Narborough to a tributary of the River Wissey (Clarke and Clarke 1925 85; Clarke 1941 233-4; Crawford 1953 245; Wade-Martins 1974 23 and 35; N.H.E.R. 2008a). It is contiguous with the western boundary of the parish of Beachamwell (Clarke and Clarke 1925 86; Rogerson 1999 126). It is first recorded (as Bichamdic whose meaning is not certain) in a charter dated 1053 (S 1108) while the name Devil's Dyke probably dates from the eighteenth century (Williams 1923; Clarke and Clarke 1925 85; Clarke 1941 180; Sawyer 1968 330-31). It originally consisted of a ditch about 2.7 metres deep and 6 metres wide and a bank up to 2.5 metres high and 7 metres wide (Williams 1923; Clarke and Clarke 1925 85). The angle of the ditch on the

rampart side varied from 40 degrees to nearly vertical so it was once a formidable barrier. J. F. Williams cut a section in 1923 near Smeeth Wood, but found no dating evidence (Williams 1923). A probable Iron Age fort, Narborough Camp (H.E.R. 3975) lies near the northern end, but it is unclear if the dyke joins up with it (Wade-Martins 1974 35; Davies 1996 76; Ashwin, Flitcroft et al. 1999 251; Rogerson 1999 126). The camp is unexcavated but finds have been made of Iron Age, Roman and Saxon pottery within the ramparts (Cushion and Davison 2003 221; N.H.E.R. 2008g). For much of its course the dyke is only visible on aerial photographs, but it is a substantial feature on both sides of where a Roman road (the modern A1122) passes through it (TF746085). Fieldwork for this study noted at this point the road deviates slightly from its alignment and a few metres to the south of the road there is a shallow cut in the bank perhaps where travellers once made their way round an obstruction blocking the road. This and the charter evidence probably suggest that in the early-medieval period a prehistoric earthwork was temporarily rebuilt to cut a Roman road.

Figure 54 Bichamditch looking southeast

5.9.2 BUNN'S BANK AND DOUBLE BANKS

Bunn's Bank 9206, Double Banks 9201. NMR TM 09 SE 1 (MONUMENT 387611).

Bunn's Bank is a fragmentary south-facing earthwork southeast of Attleborough that runs in straight and sinuous alignments for about three kilometres (TM047929 to TM079947). The eastern end meets the top of the Double Banks earthwork that runs north-south for about 2 kilometres (to TM091936). Both are contiguous with parish boundaries. The bank of Bunn's bank is 0.7 metres high and 6 metres wide. The ditch has been reused as a drainage ditch, so a modern measurement is misleading though Westage suggested the bottom of the ditch is 3 metres below the top of the bank (Westgate 1937 23). The Double Banks consists of central bank 6 metres wide flanked by ditches 1.8 metres deep and 2.4 metres wide. White in 1854 calls the earthwork Burn's Bank, which could be a Saxon name as Burn is the Old English word for stream (White 1854 821). In the 1140s the D'Albini family abandoned the nearby Buckenham Castle and shortly afterwards they founded a new castle and increased the size of their deer park (Buckenham Park, HER 44620) utilising Bunn's Bank as the northern boundary and Double Banks as the eastern boundary (Cox 1906 376; Westgate 1937; Crawford 1953 190-91; Pevsner 1962 278; Remfry 1997). The HER entries suggests both earthworks possibly predate the creation of the park. There is a local unsubstantiated tradition first recorded in writing by White in 1854 that the earthwork was built by Edmund (died 869) the last king of the East Angles against the Vikings (Burgess 2005). The NMR entry records a find in 1975 of a scatter of Romano-British pottery sherds along southern side of Bunn's Bank. These finds suggest Bunn's Bank could predate the twelfth-century park and therefore possibly is early medieval, but as the Double Banks are very different in construction they are probably of a different date, possibly as the HER entries suggest, twelfth-century (Westgate 1937 23; Pevsner 1962 102).

5.9.3 DEVIL'S DITCH, GARBOLDISHAM

6115. NMR TL 98 SE 10.

This west-facing earthwork is at least 2.8 kilometres long (TL989842 to TL987814); field boundaries and parish boundaries on a similar alignment suggests it reached a further 400 metres south (to TL987807) to the Little Ouse (Clarke 1941 180; Crawford 1953 246; N.H.E.R. 2008c). All but the most northerly 750 metres of the dyke (to TL989835) is contiguous with parish boundaries (Clarke and Clarke 1925 86). The Ordnance Survey Map of the Dark Ages marked the ditch on the east side, but most sources suggest it is on the west though W. G. Clarke in 1925 pointed out in parts there are banks on both sides (Clarke and Clarke 1925 85-86; O.S. 1939; Clarke 1941 234; Pevsner 1962 167; N.H.E.R. 2008d). The earthwork in its final form consisted of a flat-bottom ditch just over a metre deep and 6 metres wide while the banks were possibly up to a metre high and 1.8 metres wide. The earliest reference to the dyke found by this study is on a 1880s Ordnance Survey map. An excavation in 2007 (at TL990827) only found residual prehistoric flints and some post-medieval scraps of metalwork in the upper ditch deposits, neither of which were related to building of the dyke (Bates, Hoggett et al. 2008). The archaeologists found no sign of a bank (fieldwork for this study also founds no evidence of banks) probably due to the bulldozing associated with forestry in the 1950s. The excavation suggested the dyke was recut to make the ditch slightly shallower on the west side (40º), but still quite steep on the eastern edge (60º) confirming the suggestion it faced west. Optically Stimulated Luminescence dating of the ditch deposits produced three dates: 590 BC (+/- 300), 820 AD (+/- 160) and 790 AD (+/- 140), the latter two from deposits just above the recut and the first from the silt above the lower, original cut. These results suggest the earthwork is probably a prehistoric earthwork recut in the late eighth or early ninth century.

Figure 55 Devil's Ditch looking north (picture by Helena Grigg)

5.9.4 FOSSDITCH

1089. NMR LINEAR 89.

This east-facing dyke is about 9 kilometres long (TL773958 to TL755869) and run sin eleven straight alignments (also called Fendyke, the Weeting Devil's Dyke and Devil's Dyke) from near the River Wissey south to the Little Ouse (Clarke and Clarke 1925 85; Clarke 1941 234; Crawford 1953 246; Clarke 1955; Pevsner 1962 23 and 163; Wade-Martins 1974 35; N.H.E.R. 2008e). It is contiguous with parishes boundaries (Clarke 1955 180). It consists of a u-shaped ditch 1.3 to 1.5 metres deep and up to 8 metres wide separated by a 2 metre berm from a bank a metre high and 10.5 metres wide (Clarke 1955). Fifteenth to early seventeenth-century sources refer to it as Burghdyk or Burdike (an Anglo-Saxon name probably meaning 'dyke of the fortification'), the first recorded use of 'Foss' being in 1739 and of the 'Devil' in the late eighteenth century (Clarke 1955 179). Archaeologists excavated two sections in 1949, the southern section (at TL755873) which showed the dyke cut through a Roman settlement (Roman coins found during the excavation dated to the 390s) and

that the dyke is probably early medieval (Clarke 1955 181-84; Wade-Martins 1974 35). A knife with an early-medieval ogham inscription was found about 270 metres east of the southern end of the dyke, the inscription seems nonsensical and is possibly a personal name or a charm (Clarke 1955 184-87).

Figure 56 Fossditch looking south

5.9.5 HORNING

14099 and 49282.

This northwest-facing dyke runs for about 800 metres southwest from the floodplain of the River Ant (TG359171) to slopes overlooking the River Bure (TG354166) cutting off a peninsula and is not contiguous with any parish boundaries (Rose 1982; N.H.E.R. 2008b; N.H.E.R. 2008d). The Ant used to flow into the River Thurne, thus making the peninsula twice the size it is now (Pestell 2008 20-21). It consists of a 6.5-metre wide ditch, an 11-metre wide bank, then a second ditch 11 to 22 metres wide and finally on the southeast side a 12-metre wide bank, but these can only been seen by aerial photography. Aerial photos suggest the northern section seems to be merely a single intermittent ditch, possibly because a dip in the ground makes digging a

second bank and ditch unfeasible and unnecessary (N.H.E.R. 2008a). It is now impossible to tell how high the banks were or how deep the ditch were because of damage done by the plough though there is a 2 metre high bank in a graveyard at the southern end of the alignment. There are no early references to the dyke or its name, but that of the nearby village of Horning probably relates to the old English word ‘horn’ and the peninsula is so shaped (Sandred 1996 163). To the east, now cut off by the River Ant, is the remains of St Benet’s Abbey. As the earthwork cut the causeway that gave dry access to the abbey, it is possible the monks either dug it or refurbished/reused an older earthwork to delimit the boundary of their monastery (Pevsner and Wilson 1962 563; Rose 1982 38-39; Licence 2006). According to a 1949 source, during grave-digging west of the pathway in the churchyard near the southern end of the dyke a layer of ashes was found (Carrodus 1949 49-50). Rose in 1982 and the HER entry record prehistoric and Roman finds as well as some Middle to Late Saxon pottery discovered by field-walking in the vicinity and in 1980 a hoard of fine Bronze-Age metalwork was found nearby (Lawson 1980; Rose 1982 35; N.H.E.R. 2008d). With no secure dating evidence the dyke is possibly early medieval.

Figure 57 The southern end of the dyke at Horning

5.9.6 LAUNDITCH

7235 (also 39682 and 1299). NMR TF 91 NW 6.

This west-facing dyke is about 5 kilometres long (TF936191 to TF924146) the southernmost three kilometres of which are contiguous with parish boundaries (southwards from TF923174); it possibly continued further south for another 2½ kilometres (to TF945132) to the River Scanning (Clarke 1941 233; Crawford 1953 246; Lewis 1957; Wade-Martins 1974 24-32; Ashwin, Flitcroft et al. 1999; N.H.E.R. 2008g; N.H.E.R. 2008h). The ends of the dyke bend away eastwards. It originally had a flat-bottomed u-shaped ditch (Ashwin and Flitcroft say v-shaped, but their published profile is clearly u-shaped), 1.8 metres deep and 4 to 6 metres wide (the west side slopes at approximately 30º, the east 40º) separated by a possible berm from a bank 1.5 metres high and 8 to 9 metres wide (Lewis 1957; Ashwin, Flitcroft et al. 1999 236-38). Like most Norfolk dykes, it is also known as Devil's Dyke, but Launditch seems the older name and the first surviving written reference to the dyke itself is as Lawendich (probably Old English for Lawa's Dyke) in 1203 (Lewis 1957 425). The dyke

passes through a possible Roman road (at TF923172), but the road is very sinuous so may be prehistoric or late medieval especially as a 1992 excavation at the road junction found little evidence of a typical Roman road surface (Ashwin, Flitcroft et al. 1999 236-39; Martin 1999 57). The most substantial surviving part of the dyke is adjacent to the road, suggesting the dyke was built or rebuilt to sever or control this route (Wade-Martins 1974 31; Ashwin, Flitcroft et al. 1999 251). A 1954 excavation at the road junction found heavily abraded sherds possibly seventh to ninth century in date in the primary ditch silt, though Wade-Martins later reassessed them as fourteenth century; it would be unlikely to find medieval pottery in the primary silts of a prehistoric dyke (Lewis 1957; Wade-Martins 1974 31). A series of excavations and watching briefs from 1978 to 1992 unearthed Iron-Age occupation evidence nearby including a possible palisade running parallel (Youngs and Clark 1981; N.H.E.R. 2008f). The prehistoric finds, the fact that only at the road junction it survives in the landscape, and the pottery remains suggests it is possibly a prehistoric dyke part of which was rebuilt in the medieval period to sever a road (Pevsner 1962 23 and 243-44).

5.9.7 PANWORTH DITCH

1082. NMR TF 80 NE 19.

This west-facing dyke runs roughly north-south for about 500 metres (TF893054 to TF894051, both ends tend to curve away slightly eastward) though crop marks on aerial photographs and hedgerows marked on old maps suggest it was originally longer (Wade-Martins 1974 32-33; Cushion and Davison 2003 120; N.H.E.R. 2008h). It is not contiguous with parish boundaries. In the best preserved sections the ditch is just over half a metre deep and nearly 4 metres wide while the bank is about a metre high and 6 metres wide (Wade-Martins 1974 33). It is first recorded, though not named, on a map dated 1581; though it is usually called Devil's Dyke, Wade-Martins proposed the name Panworth Ditch after the nearby deserted settlement to avoid confusion with other dykes in Norfolk (Wade-Martins 1974 23 and 32). The dyke lies at right angles to a possible Roman road and where it cuts the dyke there is a gap in

the earthwork which fieldwork suggests this does not reach the original land surface suggesting the bank is later than the road (Wade-Martins 1974 32-34; Reid and Wade-Martins 1980). However, in 1975 the ditch was cleared and a gravel spread of an old road was found uncut by the original ditch, so it is impossible to say if the road cut the earthwork or vice versa or be certain if this gravel marks a Roman road (Wade-Martins 1974 32-34; Reid and Wade-Martins 1980 307). An excavation to the east of the dyke in 1995 revealed some late Iron Age occupation (Davies 1999 35). A watching brief of the removal of some silt in 2005 observed a possible clay lining to the dyke (N.H.E.R. 2008h). It is possibly early medieval, though it could also be a prehistoric dyke rebuilt to cut a Roman road.

Figure 58 Looking east across a possible gateway in Panworth Ditch

5.10 SUFFOLK

There is only one possible early-medieval dyke in Suffolk; as it is near the border of Cambridgeshire it may relate to the dykes from that county.

5.10.1 BLACK DITCHES

RBY 002 (southern section), CAM 001, CAM 030 and CAM 032 (references for the northern section). NMR TL 76 NE 4.

The Black Ditches consist of two separate west-facing earthworks on the same alignment: north-north-west to south-south-east (Anon. 1911 623; Fox 1923 123-24, 132-34 and 146; Clarke and Clarke 1925 86; Crawford 1953 247; Caruth and Gill 1992 94; Malim 2005 244). The northern section extends across Cavenham Heath for about 1,800 metres (TL766727 to TL768709). The southern section is a couple of kilometres to the south on Risby Poor's Heath, though there is little to see on the ground; it is marked on Ordnance Survey maps for 1.9 kilometres (TL772694 to TL777677) but was originally possibly as much as 4 kilometres long (TL770698 to TL779660). If the two sections were originally part of a continuous earthwork, it would be up to 7 kilometres long. About 1.75 kilometres are contiguous with parish boundaries (TL770698 to TL775681). Both sections are very similar and excavation evidence suggests the ditch is 2 metres deep and 8.5 metres wide while the bank is up to 2 metres high and around 6.5 metres wide where later damage has not spread the material. A 1992 excavation in the northern section suggests the ditch has a deeper middle section with shallower sides, possibly representing a later recutting (Caruth 1992). The steeper middle section of the ditches has sides with an angle of 50º, while the shallower sections are only 30º. The excavation also discovered a parallel ditch 10 metres to the east of the main ditch 1.1 metres deep and 3.5 metres wide. The name is apt as the dark sand and heather make the earthwork seem black, but this study uncovered no evidence for the name prior to 1880s Ordnance Survey maps (Fox 1923 124). Many scholars, including the author of the NMR entry, have assumed the earthwork was Anglo-Saxon (Hughes 1913 146-48; Fox 1923 132-34; O.S. 1939; Pevsner and Radcliffe 1961 161; O.S. 1966; Wade-Martins 1974 23; Wade 1988; Warner 1996 67). More recently, studies have suggested a prehistoric date (Davies 1996 77; Martin 1999 82 and 88-90). The 1992 excavation (at TL767716) found seven sherds from a late Iron-Age Belgic jar in the parallel ditch, but as the bank at this point is totally destroyed it may have overlay and

therefore post-dated this earthwork (Caruth 1992; Caruth and Gill 1992 94). The finds suggests the earthwork was originally prehistoric, but the profile of the ditches suggest it was possibly rebuilt in the early-medieval period.

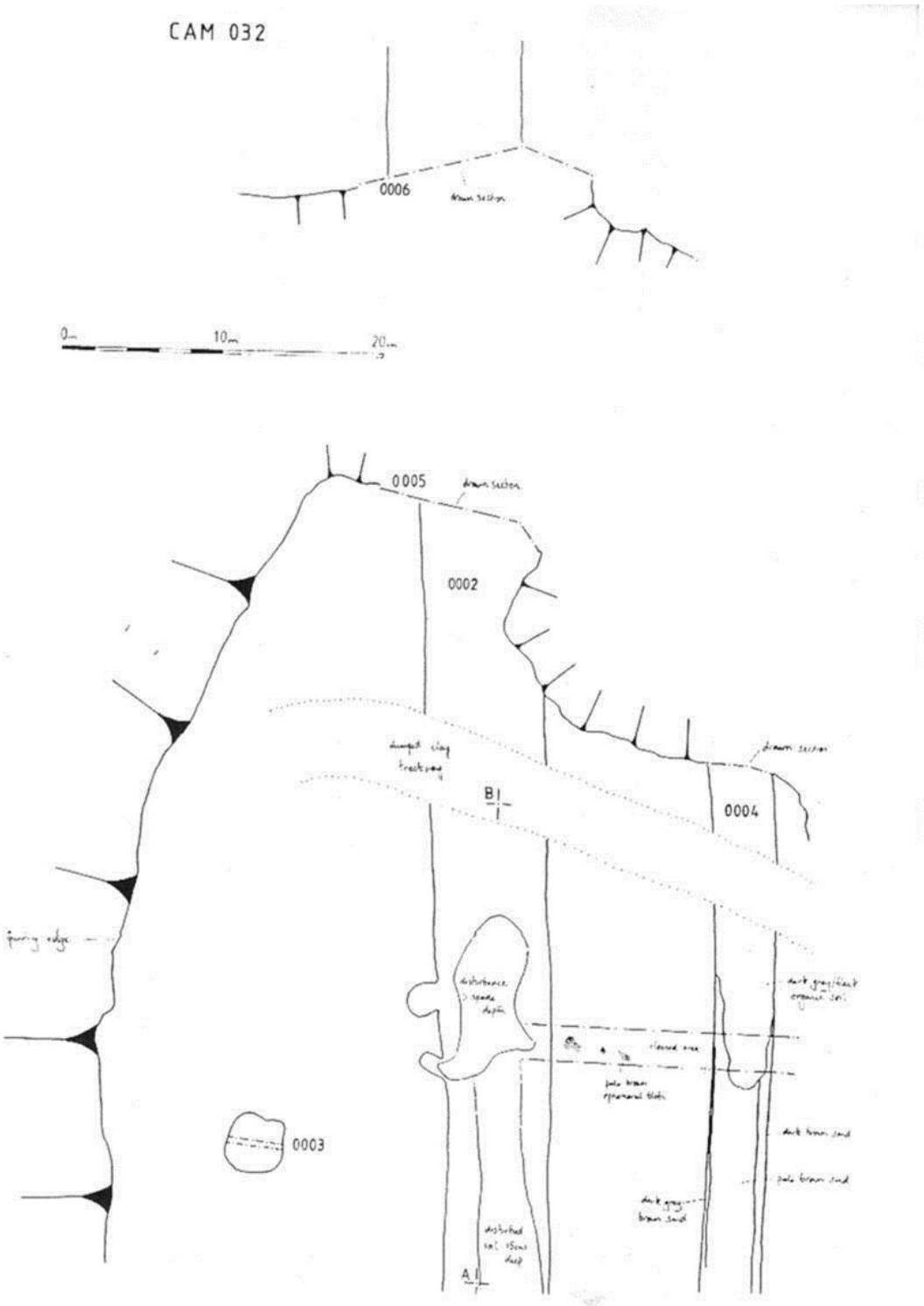


Figure 59 Plan of the unpublished excavation in the northern section of the Black ditch (CAM 032, copyright Suffolk County Council Archaeology Service, used with permission)

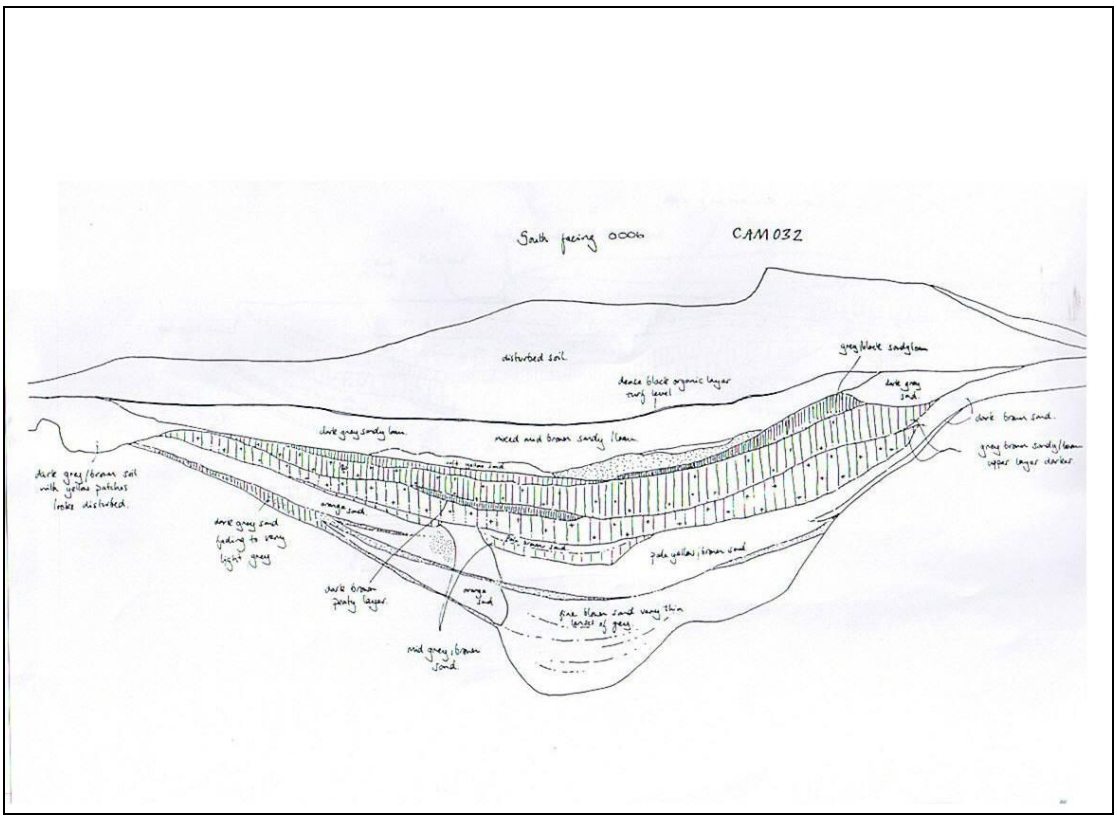


Figure 60 South-facing profile of the main ditch of the Black Ditches; note the original diagram has no scale (CAM 032, copyright Suffolk County Council Archaeology Service, used with permission)

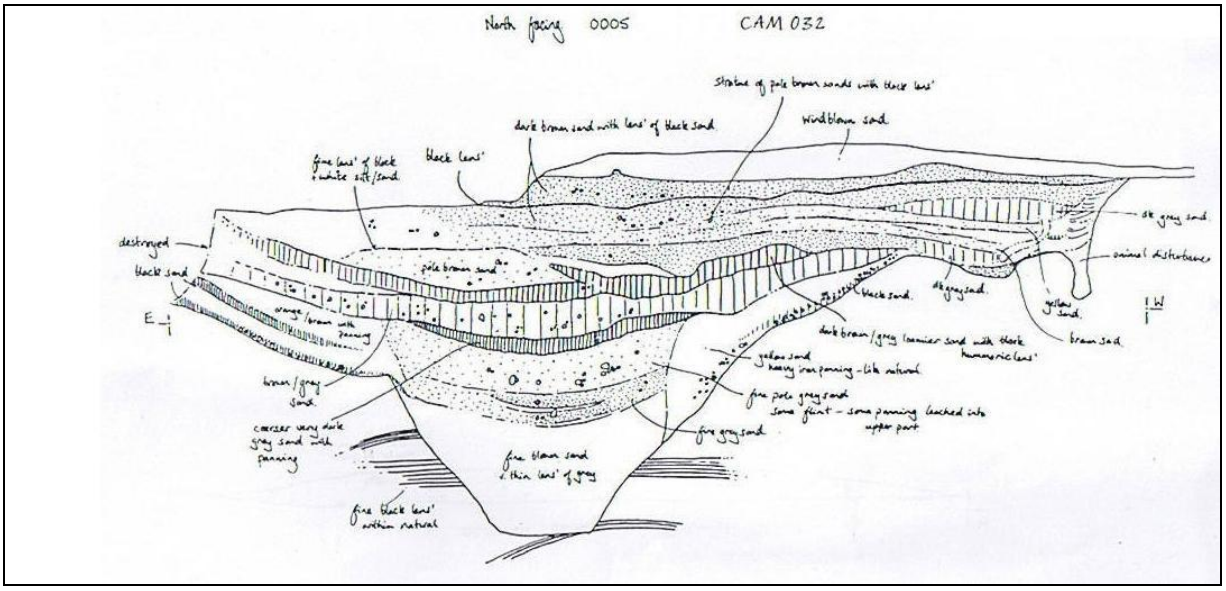


Figure 61 North-Facing profile of the main ditch of the Black Ditches taken from the unpublished 1992 excavation; note the original diagram has no scale (CAM 032, copyright Suffolk County Council Archaeology Service, used with permission)

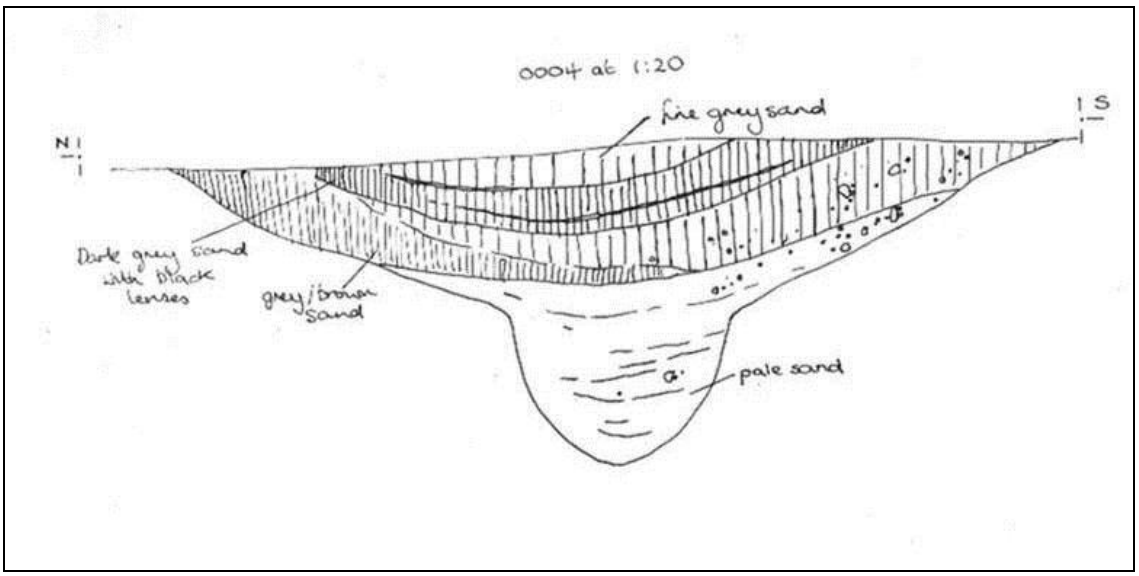


Figure 62 Profile of the smaller parallel ditch of the Black Ditches taken from the unpublished 1992 excavation; note the original diagram has no scale (CAM 032, copyright Suffolk County Council Archaeology Service, used with permission)

5.11 HOME COUNTIES

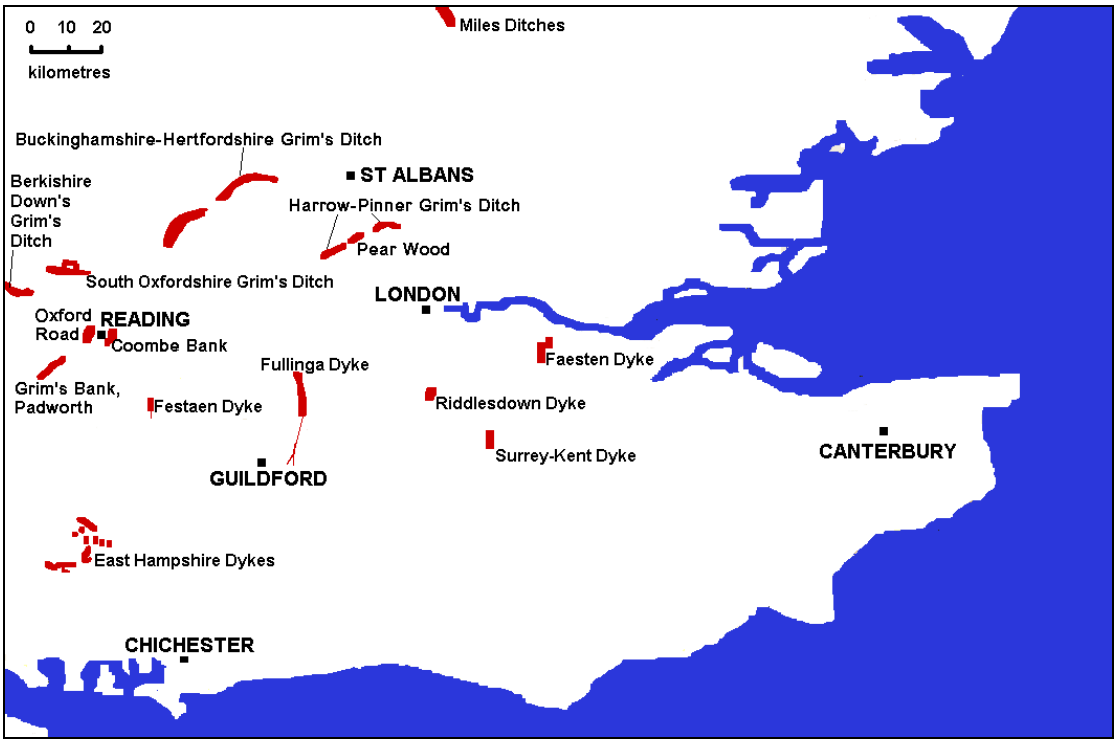


Figure 63 The dykes of southeast England

There are dykes in what was Middlesex running southwest to northeast facing downhill towards London. Scholars (including the Hertfordshire HER officer, Isobel Thompson) think they were the boundary of a post-Roman territory

based on *Verulamium* (St Albans), though as there is almost no evidence of activity in the London area for two centuries after 425 A.D. it is hard to imagine what purpose they served (Castle 1975 275; Bailey 1989 108; Cowie 2008 and personal communication). There is also a series of dykes along the downs of Buckinghamshire and Hertfordshire called Grim's Ditch.

5.11.1 BUCKINGHAMSHIRE-HERTFORDSHIRE GRIM'S DITCH

49, 50, 318 and 1479 in Hertfordshire. Each section of the earthwork has a different reference number in Buckinghamshire (0014000000 for example). NMR LINEAR 141.

This southeast facing earthwork runs from near West Wycombe northeast to near Dunstable (SU 833979 to TL 008203) along the north escarpment of the Chilterns (Clinch 1908 34-35; Crawford 1931 167-71; Wheeler 1934 257-58; Crawford 1953 244; Davis 1981). Although this is about 25 kilometres long as the crow flies, it was probably never continuous and the stretches cited in the NMR entry are 8591 metres long. Two sections are contiguous with parish boundaries, one 700 metres long (SP 828993 to SP 830987) and another (SP 905076 to SP 917086) 1400 metres long (Clinch 1908 34). The v-shaped ditch has sides of between 30 to 50º and is usually 1.1 to 1.2 metres deep and 2.5 to 9 metres wide while the bank is 0.6 to 1.8 metres high and around 6 metres wide (Dyer 1963 48; Davis 1981). There is usually no berm though archaeologists found a small berm at an excavation at Hatsoe (Davis 1981 29). The dyke is first recorded (as Grimesdic) in 1170-79 (Hughes 1931 294). Hughes, Ragg and Wheeler postulated an early-medieval date, but excavations in the 1970s and 1980s uncovered suggested sherds of Iron Age pottery in the core of the bank suggesting the earthwork is probably prehistoric (Ragg 1927 521-22; Hughes 1931; Wheeler 1934 262-63; Dyer 1963; Davis 1981; Sauer 2005 especially 33 and 42).

5.11.2 PEAR WOOD

MLO17282. NMR 39833 and 398315.

This is south-facing earthwork between Stanmore and Elstree is about 400 metres long (TQ170935 to TQ173936). Parish boundaries are not contiguous with the dyke. It is difficult to spot due to the growth of the suburbia and damage by medieval rabbet warrens, but if the trees were cleared there would be extensive views to the south (Anon. 1948). There is a ditch up to 1.8 metres deep and 4.3 to 7 metres wide flanked to the north by a bank about 1.2 metres high and 8 metres wide and to the south by a small counterscarp bank 0.3 metres high and 4 metres wide. The ditch is v-shaped with the sides rising at an angle of 35-40%. The oldest written record of it is as Grymesdic in 1535 (Castle 1975 267). Excavations focused on the nearby Roman settlement of Sulloniacae (in 1948-9, 1952-9 and 1973) found fourth-century Roman and early-medieval dating evidence from the bottom of the bank and in the ditch fill which included a Roman spearhead (Bloice 1974 134; Wilson, Wright et al. 1974 446; Castle 1975). This evidence suggests the earthwork is probably early medieval; it seems to fill a gap in the earlier Harrow-Pinner Grim's Dyke (Bowlt 2008).

5.11.3 HARROW-PINNER GRIM'S DYKE

052160/00/00. NMR TQ 19 SW 6 (Monument 398423), LINEAR 23 (Monument 1043166) and TQ 19 SW 7 (Monument 398424). The Barnet section is TQ 29 NW 13 (Monument 401579).

The main surviving part of this south-facing earthwork runs from near Cuckoo Hill (TQ111896) eastwards to Harrow Weald Common (TQ143929) for nearly 5 kilometres (Wall 1911 12-13; Braun 1937; Bloice 1974 134; Wilson, Wright et al. 1974 446; Castle 1975; Bowlt 2008; G.L.H.E.R. 2009). Bowlt speculated the western end may be a further 3 kilometres west (TQ082875). In Furze Hill near Borehamwood there is a further two kilometre-long section (TQ195953 to TQ206951) contiguous with the old county boundary of Middlesex. The Pinner and the Furze Hill sections lie on either side of the Pear Wood earthwork. Even

with major excavations, it would be difficult to prove if these three earthworks were originally a single continuous structure 14 kilometres long. It is possible that in the past more sections were contiguous with the county border as there are records of disputes as to the exact location as late as 1595 (Braun 1937 383-84). It consists of a v-shaped ditch 1.7 metres deep and 4.3 to 7 metres wide and a bank 1.85 to 3 metres high and up to 15 metres wide with no sign of a revetment (Darvill, Timby et al. 2002 312; Bowlt 2008 108). The dyke is first recorded (as Grymesdich) in 1306 (Castle 1975 274). Traditionally considered Saxon, but the 1957 and 1979 excavations found Iron Age pottery and a 1979 one produced radiocarbon dates of around 50 A.D. (Godsal 1913 5; Wheeler 1934 257-59; Pevsner 1951 59; Crawford 1953 245; Copley 1954 188; Richardson 1980 386; Ellis 1982). However, a recent recalibration of the radiocarbon result from charcoal within the banks suggests a date range of 60-340 A.D., the Iron Age finds could be residual material incorporated into a later structure and abraded Roman pottery was found in the bank of the Ruislip section (Bowlt 2008 111). Both the Grim's Dyke and the Pear Wood earthwork are of a similar size, on the same alignment and face the same direction. As the early-medieval Pear Wood Dyke deliberately fills a gap in the earthwork, the Harrow-Pinner Grim's Dyke was probably an earlier earthwork reused in the early-medieval period, but the bank was built in a single phase, so it was not rebuilt (Castle 1975 175-76).

5.12 BERKSHIRE AND OXFORDSHIRE

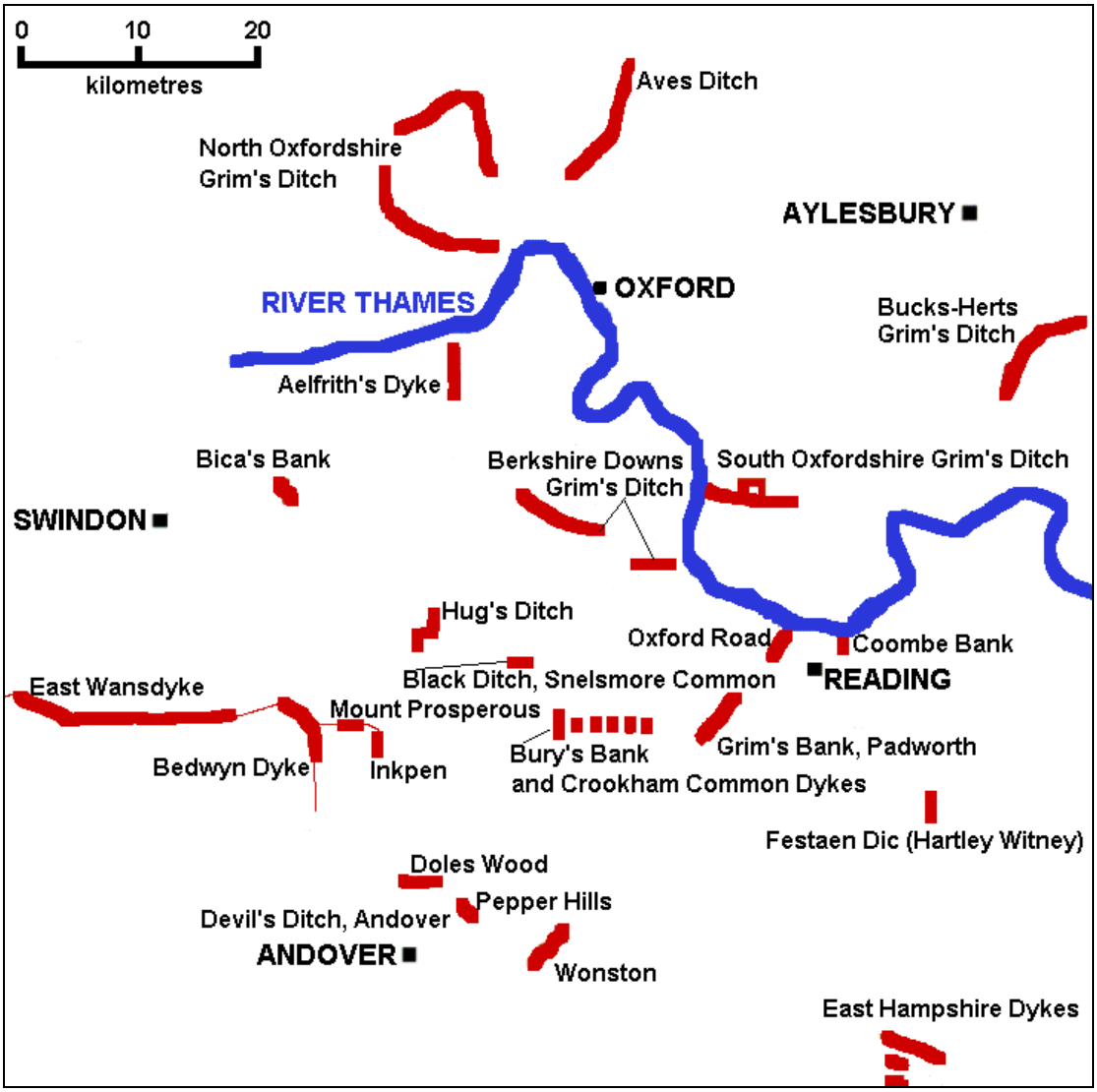


Figure 64 The dykes of Oxfordshire, Berkshire and part of Hampshire

There are numerous small dykes in these two adjoining counties, which are considered together as the only two dykes that now lie in Oxfordshire, Aelfrith's Dyke and Bica's, were in Berkshire until 1974 and so are often recorded in Berkshire archaeological journals and guides.

5.12.1 AELFRITH'S DYKE

9528 – MOX23485 and 15821 – MOX1176. NMR SU 49 NW 2 (Monument 243022).

Though the HER entry only records a kilometre-long section (SU411989 to SU411978), this west-facing dyke and associated earthworks (Old Dyke or Old Balk to the north and Short Dyke to the south) probably ran from the River Thames southwards for 5 kilometres (SP413009 to SU409954) to the River Ock (Bradford and Morris 1941; Crawford 1953 240; Hunn 1992; Hunn 1993). It is contiguous with a parish boundary. A 1992 excavation revealed a u-shaped ditch 0.57 metres deep and 1.7 metres wide that had been sealed and a second u-shaped ditch was dug about 10 metres to the east 0.5 metres deep and 2.9 metres wide (Hunn 1992). To the east of the second ditch, the archaeologists found traces of a partially levelled bank 0.8 metres high and 8 metres wide. There may have been a berm associated with the first ditch, but not the second. Two Anglo-Saxon charters which are probably later forgeries record Aelfrith's Dyke, Old Dyke and the Short Dyke (as 'ælfredes beorh', 'ealdan dic' and 'scortandic' respectively); S 828 dated 956, S 829 dated 965, though a third, S 1216 dated 971, that mentions the estate but not the dyke is probably genuine (Russell 1924 349-50; Grundy 1925 106-08; Hunn 1993 313). Excavations in 1941 (at SU410979) and 1992 (at SU412985) found no dating evidence, but as this dyke is an Anglo-Saxon estate boundary, is recorded in Anglo-Saxon charters and has a Saxon name it is probably early medieval (Bradford and Morris 1941; Hunn 1992).

5.12.2 AVES DITCH

PRN 8925. This study could not locate a NMR entry.

This west-facing dyke was originally at least five kilometres long (SP519248 to SP497211) three kilometres of which is contiguous with parish boundaries, however it may once have continued further north (to SP527286) for a further 4 kilometres (Sauer 1999; Sauer 2005). The ditch is 1 metre deep and 3.5 metres wide; it is v-shaped (with sides that slope at an angle of 40º) but has a flat bottom. There is no berm separating it from the bank, which is 1.8 metres high

and 4 metres wide with no sign of a revetment. The dyke is recorded as the 'greatan dic' in *c*.1250 and The Goblins Bank in 1679; the names Aves is not recorded until the seventeenth century (Gelling 1953 5). Sauer studies summarise the evidence from excavations in 1937 and 1997-8 which produced late Iron Age dating evidence so it is probably (if not certainly) prehistoric.

5.12.3 BERKSHIRE DOWNS GRIM'S DITCH

MWB1468 and MWB1565 in Berkshire. NMR LINEAR 57 (859144), SU 48 NW 74 (1303880), SU 48 SW 71 (1305965), SU 58 SW 94 (1311001), SU 58 SW 81 (1310879) and SU 57 NE 5 (Monument 237242).

Running along the northern edge of the Berkshire Downs are a series of dykes called Grim's Ditch (Bonney 1972 179 and 182; Malim 2010 150-55). Note that Malim confusingly refers to them as the South Oxfordshire Grim's Ditch (Malim 2010 150). The most obvious sections is a ten-kilometre section along the north escarpment of the White Hills (SU418842 to SU495839) and a five-kilometre section which runs near Aldworth (SU546785 to SU598796), though other similar earthworks exist in the area. Four kilometres of the White Hills section (SU466851 to SU495839) and the easternmost 400 metres of the Aldworth section (SU596795 to SU598796) are contiguous with parish boundaries. They generally have a v-shaped ditch with steep sides (around 45-50%) 1 to 1.5 metres deep and 2.5 to 9 metres wide with a bank usually to the north 0.5 to 1.7 metres high and 3 to 8 metres wide with no berm (Ford 1981-2 1, 8 and 15-16; Ford 1982 20-24; Henig, Booth et al. 2000 15-16; Malim 2010 161 and 169). However, according to fieldwork near Aldworth in 2009 by Tim Malim the bank and ditch often swap sides or perhaps there are multiple banks and ditches which is why different observers have reported the dyke faces in different directions (Malim 2010 155 and personal communication). The banks are often sited downhill from the ditches and there are gaps that seem to be original (Crawford 1953 114-17; Ford 1981-2 5-11; Malim 2010 155). The name is first recorded in a charter (S 354) dated *c*878-899 (Gelling 1971-2 6). Prehistoric finds (bone and pottery) were found under the bank and in the ditch fill during excavations in the 1970s and 1980s suggesting they are probably prehistoric

(Peake 1906 273-74; Crawford 1931 162-64; Peake 1931 121-22; Crawford 1953 114-17; Ford 1981-2; Ford 1982; Mees and Ford 1993; Malim 2010 165-66).

5.12.4 BICA'S DYKE

PRN 9764. NMR SU 28 NE 19 (225438).

This east-facing dyke southwest of Compton Beauchamp is nearly 400 metres long (SU276866 to SU280862) and is contiguous with a parish boundary. It is similar in scale to other field boundaries in the area; the ditch is about 0.9 metres deep and 4 metres wide with a 0.7-metre high bank to the west and a possible counterscarp bank to the east. The dyke is first recorded in a charter of 955 (S 564) as 'Bican dic' (Grundy 1925 88). The dyke is unexcavated, but the charter evidence suggests it is probably early medieval.

5.12.5 BLACK DITCH, SNELSMORE COMMON

MWB2209. NMR SU 47 SE 4.

There are two parallel north-facing dykes on Snelsmore Common (Peake 1906 275; Crawford 1915 253; Peake 1931 122-23; Crawford 1953 240). The larger dyke is 700 metres long (the western end being SU458712), the smaller 300 metres long (starting from SU461712), both converge before crossing the road north and peter out just east of it (SU4647101). Neither is contiguous with parish boundaries. Black Ditch is the name of the longer dyke while the smaller one seems unnamed, but this study could locate no earlier reference than Ordnance Survey maps of the 1880s. The larger dyke, Black Ditch, is 8 to 10 metres across (bank and ditch) with the bank 1.5 to 2 metres above the base of the ditch, the shorter dyke is smaller in scale. About a century ago Walter Money found small worked flints in the side of the bank (though these could be residual), but according to the HER entry, no finds were made when Southern Electric replaced electrical cabling posts across the dyke in 1996 (Money 1895-1911). King called them British defences against the Romans while Money suggested they were 'early British' in date (King 1872-5 186; Money 1895-

1911). The dykes face towards and Iron Age hillfort just 1.5 kilometres to the north so it seems unlikely they are of the same date, but with no positive dating evidence they are possibly early medieval.

5.12.6 BURY'S BANK AND CROOKHAM COMMON DYKES

MWB3726 (Bury's Bank) and MWB3703 (Crookham Common dykes). NMR SU 46 NE 61 (Bury's Bank).

On Greenham Common there used to be a west-facing n earthwork called Bury's Bank while on nearby Crookham Common to the east there also existed five parallel (probably west-facing) earthworks; all were destroyed by the extension to the airfield runway in the early 1950s (Money 1895-1911; Crawford 1915 251-53; O'Neil and Peake 1943; Crawford 1953 240-41). Bury's Bank was 1.5 kilometres long (SU490653 to SU490638), the Crookham Common earthworks, working from west to east, were 500 metres long (SU519648 to SU519643), 500 metres long (SU527649 to SU525643), 200 metres long (SU529645 to SU529643), 200 metres long (SU532644 to SU533642) and 150 metres long (SU534645 to SU534643). None are contiguous with parish boundaries. Bury's Bank had a v-shaped ditch with sides that sloped at an angle of 30º, 2 metres deep and up to 9 metres wide with a bank 1.2 metres high and 9 metres wide. There was no evidence of a berm or palisade and, despite attempts to find one, no evidence of a gateway (O'Neil and Peake 1943). Measurements of the other dykes on Crookham Common are incomplete. From west to east, the first had a ditch to the west and a bank that stood 0.6 metres above the base of the ditch, the second had a bank nearly 1 metre high, or possibly two banks with a central ditch. The third, the middle earthwork, was 5.5 metres wide consisting of a ditch between two banks 0.4 to 0.6 metres high. There are no measurements of the fourth earthwork and all that is recorded of the easternmost dyke was that it had a ditch and a bank about 0.6 metres high. The name Bury's Bank probably comes from the Anglo-Saxon word 'burh' meaning fortification, though the English Place-Name Society volume cites no examples of any early record; it is marked as Berry's Bank on an eighteenth-century map (SWB 12613) now in the Berkshire Record Office

(Gelling 1971-2 248). Peake, paraphrasing the Bishop of Cloyne's remarks in Lysons, claims Bury's Bank was comparatively modern, but this is a misunderstanding as the original quote in Lysons that implies they are Roman roads (Lysons and Lysons 1806 200-4; Peake 1906 275). Peake and O'Neil excavated at various points along Bury's Bank discovering two pieces of late Roman pottery in the ditch fill (O'Neil and Peake 1943 180). As the pottery sherds were quite large and the depth given for the finds closely matches the depth of the ditch possibly they were newly broken pieces that fell into a recently dug ditch therefore scholars presumed the dykes were post-Roman defences for Silchester (O'Neil 1944 144; Copley 1954 89; Wacher 1974 419). According papers attached to the HER records, no sign of the earthworks was noted during watching briefs by Thames Valley Archaeology Service during gravel extraction (possibly in 1999). The HER records include correspondence from Thames Valley Archaeology Service archaeologists suggesting the earthworks were Bronze Age, a view also given by David Peacock as there are Bronze Age burials nearby (Peacock 2006). However, the proximity might be coincidental and the excavation evidence suggests Bury's Bank is probably early medieval, but the others are only possibly early medieval (Crawford 1953 240-41).

5.12.7 GRIM'S BANK, PADWORTH

MWB 1349 and MWB 16272. NMR SU 66 NW 5.

This is a northwest-facing dyke about three kilometres northwest of the Roman town of Silchester (Hoare 1821 33; Peake 1906 274; Peake 1931 122; Crawford 1953 244). It runs southwest in a series of straight alignments for about 4.6 kilometres (SU609636 to SU634666), the only large gap is where Padworth Gulley, a steep sided stream that makes a dyke unnecessary. Parish boundaries are not contiguous with it. There is a v-shaped ditch with sides that slope at and angle of 20-30º 1.5 metres deep and 7 to 8 metres wide separated by a berm from a bank up to 1.3 metres high and 4.7 to 7.8 metres wide. Only O'Neil's excavation found evidence of a revetment, but none found sign of a rebuilding (O'Neil 1943 195; Gilyard-Beer 1954-5; Astill and Sheddon 1979-80).

The first record of the dyke is Grimmer's Bank in 1840, though the name is probably far older being a Germanic god (Gelling 1971-2 5-6). Historians often assumed it is early medieval, possibly defences built by the Britons of Silchester against the Saxons settlers in the Thames Valley (Godsal 1913 15; Crawford 1953 183 and 185-86; Grinsell 1958 287; Morris 1973 211; Boon 1974 79-80; Wacher 1974 276 and 419; Myres 1986 157-58; Dark 1994 150-51; Yorke 1995 27; Dark 2000a 101). Where the dyke crosses the Roman road from Silchester to Dorchester-upon-Thames O'Neil thought he could see the camber of the road pass through a gap in the earthwork, but that could either mean the road cut an existing earthwork or the builders of the dyke left a gap to allow traffic to pass (O'Neil 1943 190). O'Neil excavated the dyke in the 1940s (at SU622658) postulating it was a two-phase earthwork: Grim's Bank I and the eastern extension Grim's Bank II (O'Neil 1943; O'Neil 1944). The ditches of a possibly prehistoric defended hilltop (H.E.R. number MWB1356) confuse the junction between the two phases at Mortimer Common; here O'Neil thought Grim's Bank cut the defences, but Astill was sceptical of this interpretation (O'Neil 1943 192; Astill and Sheddon 1979-80 64). An inspector from the Ministry of Works documented a cutting through the dyke at Little Heath in 1952 (at SU610637) and in 1978 (at SU614642) Astill excavated a trench through the dyke (Gilyard-Beer 1954-5; Astill and Sheddon 1979-80). According to the H.E.R. entry, further archaeological evaluations occurred in 1991 (at SU612640) and 2004-5 (at SU644647). Apart from two abraded and undiagnostic sherds found in 1978, no archaeological investigation has produced dating evidence. Pollen analysis with the 1978 excavation suggested the builders dug the earthwork across open grassland with some hazel scrub with trees nearby suggesting the nearby town of Silchester was uninhabited. The lack of clear dating evidence means it is a possibly early medieval.

5.12.8 HUG'S DITCH

MWB3341. NMR SE 37 SU5.

This is a west-facing earthwork that runs in a doglegged fashion north to south. Only crop marks and hedgerows mark the course of the earthwork, but it was at

least three kilometres long (SU386746 to SU379734), though originally it was probably much longer (Peake 1906 275 and 282). The dyke once divided the parishes of East and West Shepherd that have since merged. As ploughing has destroyed the earthwork, no meaningful measurement is possible. Peake says local legends claim Hugo, king of the Mercians, dug the dyke, but cites no source (Peake 1906 275; Peake 1924 234; Peake 1931 122). The name of the earthwork is more likely to derive from the Old English 'hoc', meaning hook due to the dogleg course of the dyke and it is recorded as Hokkeddych in 1385 (Gelling 1973 326). Apart from Peake's short references, there are no studies of the dyke (Peake 1906 275; Peake 1924 234; Peake 1931 122). The southern end may have lain on the other side of a Roman road, but it is impossible to say without excavation which is earlier. It is of similar length and alignment to a series of prehistoric dykes on the Berkshire Downs and as the associations with early-medieval figures are dubious and late, so it is probably prehistoric (Ford 1981-2 2-4).

5.12.9 READING (OXFORD ROAD AND COOMBE BANK)

01630.00.000 – MRD365 (Coombe Bank) and 01746.00.000 – MRD368 (Oxford Road). NMR SU 67 SE 28 (Coombe Bank).

In Reading, there are two banks both about 300 metres long which lie on the southern side of the Thames at 90 degrees to the river (Guest 1883; Underhill 1938; B.A.H.E.R. 2008b; B.A.H.E.R. 2008a). The easterly bank is called Coombe Bank (SU698747 to SU698750), but the westerly dyke (SU681747 to SU678744 but with a sharp dogleg turn) is unnamed so for convenience is referred to as 'Oxford Road' dyke. Oxford Road dyke is not contiguous with administrative boundaries, but Coombe Bank once was. Coombe Bank consists of a bank with some reports mentioning a slight ditch to the east. Thames Valley Archaeological Services 2005 excavation of the Oxford Road Dyke consisted of a bank with no sign of a ditch at any point though the builders must have quarried the material from somewhere. The bank is 3.6 to 6 metres high and up to 10 metres wide. The name Coombe Bank probably derives from the Old English word for valley and according to Man in 1816 and Coates in 1802,

Coombe Bank (or Comb Bank) used to mark the western boundary of the borough of Reading (Coates 1802 73; Man 1816 5). Coates quotes a 1714 report that says hedges and ditches divided Reading from the Lordship of Tilehurst, but does not name the dyke (Coates 1802 73). Although Guest postulated many dykes in the area were Belgic and a Viking sword (late tenth or eleventh century) was found near the Oxford Road dyke in 1920, Underhill, producer of the only published study of the dyke, was adamant it was Saxon (Guest 1883 206; Underhill 1938 5). There is an undated rectangular camp in the woods near Tilehurst station which could be related (Peake 1906 264). Thames Valley Archaeological Services carried out a excavation at 885 Oxford Road in 2005 which recovered a flint and a pottery sherd both of which dated to the Neolithic/Bronze Age, but concluded they might be residual (B.A.H.E.R. 2008). The Oxford Road dyke is perhaps an extension of the prehistoric linear earthworks that extend across the Berkshire Downs, the doglegged plan of the dyke being very reminiscent of prehistoric earthworks and the HER entry suggests a prehistoric date (Ford 1981-2).

The easterly dyke, Coombe Bank, may relate to the fighting between Alfred of Wessex and a group of Vikings in 871-2 as Asser and Stukeley records the Vikings fortifying their position at Reading by building a bank between the Thames and the Kennet (Stukeley 1776 52; Brooks 1979 10; Keynes and Lapidge 1983 78). Though Man thought Coombe Bank was a Saxon boundary, the HER entry, Berkshire Archaeology and this study all presumes a Viking date is probably more likely (Man 1816 5).

5.12.10 SOUTH OXFORDSHIRE GRIM'S DITCH

Grim's Ditch is 8900, 8901, 8902, 7741, 7740, 9113, 7742, 12093, 16523 and 26113.

This south-facing earthwork (sometimes called the Mongewell Grim's Ditch) runs for about 6 kilometres (SU608882 to SU683687) from the Thames eastwards to Nuffield a kilometre of which is contiguous with parish boundaries (SU636875 to SU651873) with a branch that forms a rectangle in front of the

dyke (Fine 1976; Henig, Booth et al. 2000 26-30; Malim 2010 154). It has a u-shaped ditch 2.5 to 3 metres deep and 4 to 7.3 metres wide with sides at a 50% angle separated by a 2 metre wide berm from a bank 0.7 metres high and 5 metres wide possibly once fronted by a timber revetment (Hinchcliffe 1975 132-33; Malim 2010 161 and 169). Though Malim claimed the earthwork has no revetment or berm, this contradicts the excavation evidence. The first record of the name is Grimesdich *c*.1216 (Gelling 1953 5). Wheeler and Crawford postulated an early-medieval date, but Iron Age finds from various excavations suggests it is probably prehistoric (Crawford 1931 165-67; Wheeler 1934; Crawford 1953 246; Bradley 1968; Hinchcliffe 1975; Fine 1976; Sauer 1999 68; Henig, Booth et al. 2000 28-29; Sauer 2005 30-36; Malim 2010 166).

5.13 WANSDYKE

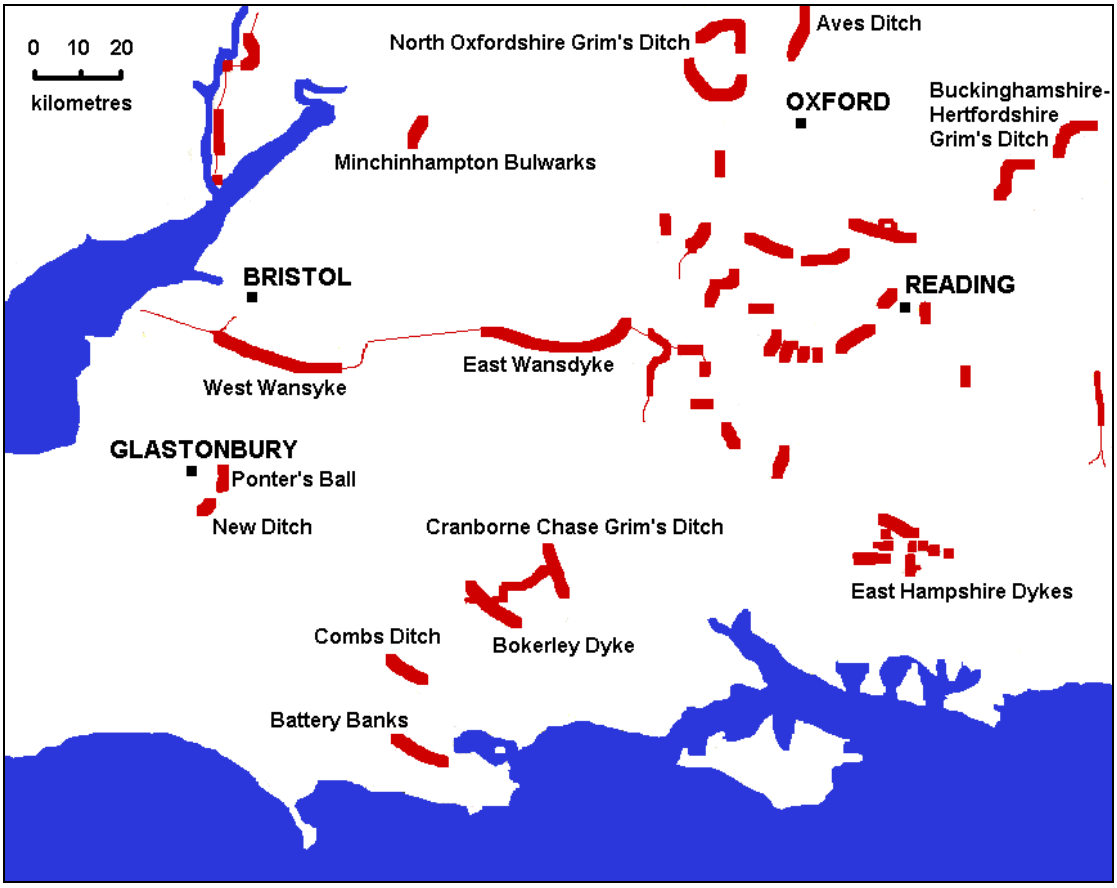


Figure 65 The dykes of southwest England

Wansdyke runs from near Bristol eastwards across Somerset and through the middle of Wiltshire to end near the western border of Berkshire, but large parts are either no longer visible or may never had existed (Passmore 1924; Major and Burrow 1926; Fox and Fox 1958; Myres 1964; Reynolds and Langlands 2006; Erskine 2007). Since the days of Camden, scholars have generally assumed the name derives from the pagan Germanic god Woden, though the earliest reference (an Anglo-Saxon charter, S 272, dated 825) does not name the earthwork (Camden 1586a 101; Grundy 1919 159-64; Fox and Fox 1958 14; Bonney 1973 478; Fowler 2001 188). As it is not clear if it is a single continuous earthwork, this study splits it into five parts. Firstly the possible section from the Bristol Channel to Maes Knoll hillfort (called here the western extension), secondly West Wansdyke (from Maes Knoll to the head of Horsecombe Brook just south of Bath), thirdly the Bathampton section (from

Horsecombe Brook to Bathford), the central section (from Bathford to Morgan's Hill) and fourthly East Wansdyke. East of Savernake Forest it is unlikely there ever was a single continuous earthwork, but the fifth section includes various earthworks often associated with Wansdyke; the Bedwyn, Mount Pleasant and Inkpen dykes (Lennon 2010a; Lennon 2010b). Conclusions about which sections of the earthwork actually existed and what date they might be are made at the end of the Wansdyke section.

5.13.1 West Extension

This section covers all the possible sections of the dyke west of Maes Knoll. According to Major, the western end of Wansdyke lay near Portbury (ST487766) 18 kilometres west of Maes Knoll (ST598662). He also believed there was a 2½ kilometres branch from Long Ashton to the River Avon (ST541711 to ST563729). Apart from a 1310 reference to a Wondesdich Lane at Long Ashton (Bristol Record Office, AC/D.1/15 and AC/D.1/16) there is no record of Wansdyke west of Maes Knoll until Collinson in 1791 claimed it reached the sea at Portbury (Collinson 1791b 140; Grinsell 1958 284; Gardner 1998). Excavations at a site on Major's hypothetical branch to the Avon in 1978-80 at Lower Court Farm (ST548703) found no sign of Wansdyke (Leech and Pearson 1986). Neither did a detailed magnetic susceptibility survey in 2009 by Cotswold Archaeology on a 252 hectare site in Ashton Vale nor a targeted gradiometry survey of 70 hectares (Anon. 2009b and Vince Russett, North Somerset County Archaeologist personal communication). Though Gardner did try to resurrect the idea of Wansdyke reaching the Bristol Channel, this study follows recent scholars in dismissing this section (Hoare 1821 20-21; Phelps 1926 167; Crawford 1927; Crawford 1953 252; Clark 1958 95; Gardner 1998; Reynolds and Langlands 2006 16; Malim 2010 178).

5.13.2 West Wansdyke

Bath and North-East Somerset SMR MBN6002-8, MBN10098, MBN30138, MBN6012, MBN11262, MBN10102, MBN 10101, MBN30139, MBN6026

MBN6014-35, MBN6029, EBN2613-5, EBN2636, EBN2648 and EBN2777. The SMR references for Erskine's excavations is 10732-10742. West Wansdyke NMR LINEAR 30 (Monument 1066087).

West Wansdyke runs from Maes Knoll eastwards to Horsecombe Brook (ST598662 to ST747619) with a 2½-kilometre gap between Publow Brook and the River Chew (ST622652 to ST648647) where rivers fill the gap making the earthwork 13½ kilometres in length. There is a 200-metre section (ST631653 to ST633653) with no surface remains, but a parish boundary deviates to run on a similar alignment (this is the only section contiguous with parish boundaries). The ditch is 1.7 to 2.8 metres deep and 3.5 to 6.5 metres wide (varying between u and v-shaped with 45º sides) with a bank (which shows signs of rebuilding) up to 1.7 metres high and up to 12 metres wide (Rahtz and Fowler 1972 198; Nenk, Margeson et al. 1992b; Erskine 2007 86-87 and 101; Malim 2010 171). There is usually a small berm (Erskine 2007 91; Malim 2010 171). In front of the ditch is a small counterscarp bank less than a metre high and up to 6 metres wide (Erskine 2007 86 and 101; Malim 2010 165 and 171). No report mentions an ankle-breaker, though Erskine recorded a slot in the bottom of the ditch he though a drainage feature (Erskine 2007 86). Excavations of the bank suggested in parts that there was a stone revetment, but in others a wooden one (Rahtz and Fowler 1972 198; Erskine 2007 89 and 101). There is no evidence of a palisade. The first written reference is from a charter dated 961 (S 694) to a 'wodnes dic' (Grundy 1919 192; Crawford 1953253; Fox and Fox 1958 32). In 2007, Erskine summarised the results of a series of excavations, some of which produced residual prehistoric and Romano-British finds (Erskine 2007). West Wansdyke incorporates two hillforts: Maes Knoll (MBN 658 NMR ST 66 NW 8 Monument 201029) and Stantonbury (MBN1306 and MBN11739, NMR ST 66 SE 11 Monument 201138) both of which have produced Iron Age finds (Rahtz and Barton 1963; Tratman 1963). Burrow's fieldwork suggested that the builders of West Wansdyke utilised the Iron Age ramparts rather than destroying or rebuilding them (Burrow 1981a 140-48; Burrow 1981b 81-84). An evaluation excavation in 1990 (ST647648) did found abraded pieces of Roman pottery in the bank (Nenk, Margeson et al. 1992b).

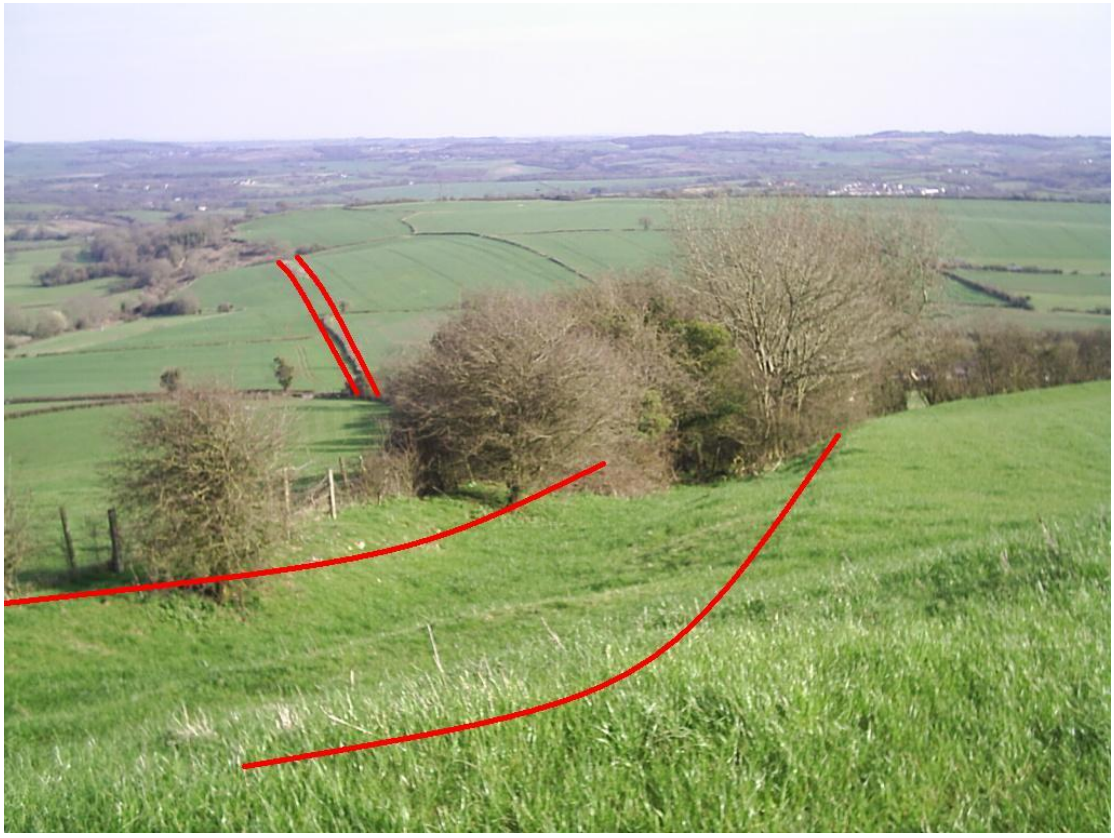


Figure 66 Looking east along West Wansdyke from Maes Knoll

5.13.3 Bathampton section

This section runs for about 8 kilometres in an s-shape southwest to northeast from the head of Horsecombe Brook along the western edge of Bathampton Down and eastward across the Avon to Bathford (ST747619 to ST805664), the final 1.4 kilometres (ST794659 to ST804665) is contiguous with both parish and district authority boundaries. A dyke named Wansdyke is clearly marked on Skirne's 1882 map and Tunstall in 1847 records an earthwork in Prior Park, Widcombe, that he thought was Wansdyke (Skirne 1882; Tunstall 1926). There is a large Iron Age enclosure, Bathampton Camp (MBN1735 NMR ST 76 NE 1 Monument 203244) and a field system on Bathampton Down; this study follows most recent scholars in dismissing this section as a mixture of these features (Crawford 1953 253; Annable 1957-8; Fox and Fox 1958 10 and 36; Reynolds and Langlands 2006 17-18).

5.13.4 Central section

A 22 kilometre-long section of the Roman road from Bath to Mildenhall (*Cunetio*) (ST805664 to SU022671) runs on a similar alignment to Wansdyke (almost all of which is contiguous with parish boundaries) so perhaps the builders of Wansdyke utilised it as a base for an earthwork linking West and East Wansdyke. However, Fox thought that they had only heightened a 400-metre stretch (SU019672 to SU023671) and, like most subsequent scholars, rejected the idea the rest of this section was anything other than a Roman road (Annable 1957-8; Fox and Fox 1958 6; Myres 1964 4; Reynolds and Langlands 2006 17-18; Webster 2008 183). Clark excavated a section of the road just west of Spye Park in 1956 (ST963675) that proved the road was unaltered by a later earthwork (Clark 1958). Apart from the easterly 400 metres best considered part of East Wansdyke, this section is a Roman road and therefore outside the scope of this study.

5.13.5 East Wansdyke

SU06NE744, SU06NW674, SU06SE618, SU16NE609, SU16NW694 and SU16SW657. NMR LINEAR 54 (Monument 1031565).

This striking earthwork runs for about 20 kilometres eastward from Morgan's Hill to the edge of Savernake Forest (SU023671 to SU195664). Only two short sections, a 400-metre section near the deserted village of Shaw (SU139653 to SU143654) and a kilometre long section near Clatford Park Farm (SU161664 to SU169664), are contiguous with parish boundaries. The ditch is 1 to 3.9 metres deep (either u or v-shaped with 40º sides) and 6 to 10 metres wide while the bank is 2 to 3 metres high and 9 to 10 metres wide (Green 1971 132-134; Smith and Cox 1986 20; Fowler 2001 186; Malim 2010 170). There was possibly a counterscarp bank too damaged by ploughing for accurate measurement (Crawford 1932; Green 1971 134). There are signs of a trench in the bottom of the ditch, which may be an ankle-breaker, but no sign of a revetment or palisade and very little of a berm (Fox and Fox 1958 25; Green 1971 130-32; Malim 2010 170). It was built by joining together roughly quarried sections of ditch with the dumps of material taken from the ditch formed into a bank (Fowler

2001 192). Green suggested the causeway where the Ridgeway crossed East Wansdyke was probably original and Fowler proposed there were numerous original gateways (Green 1971 129 and 133; Fowler 2001 193-94). However, Green did not excavate the causeway and none of Fowler's gates have been excavated (Reynolds and Langlands 2006 18-19). A dubious charter dated 825 (S 272) calls the dyke the old dyke or 'ealdandic' while another charter (S 368) dated 903 first names it as 'wodnes dic' (Grundy 1919 161 and 213-14). The first recorded excavation was by Hoare (approximately SU085646) which suggested the earthwork was heightened the earthwork some time after the initial construction (Hoare 1821 16-33). Pitt Rivers excavated three sections in 1892 (SU034668, SU067655 and SU071655) finding a Roman ironwork nail and knife as well as a fragment of Roman Samian ware on the old land surface under the bank of the dyke (Pitt Rivers 1892 24-31 and 254-55; Pitt Rivers 1926). Eagles suggested the shallow depth at which Pitt Rivers found Roman pottery sherds favoured a date close to the end of Roman rule (Eagles 1994 23-24). An excavation in 1966 at Red Shore (SU117648) also found Roman pottery sherds from under the bank (Green 1971). In 1985, charcoal deposits from flint rubble found at the bottom of the ditch (at SU186666), probably dumped after the abandonment of the dyke, returned a radiocarbon date of 890-1160 AD (Smith and Cox 1986 20-21; Reynolds and Langlands 2006 25). Fowler has proposed East Wansdyke is an unfinished earthwork built in a Roman style (Fowler 2001).

5.13.6 Bedwyn, Mount Pleasant and Inkpen dykes

Bedwyn Dyke SMR SU26SE635. NMR LINEAR 54a (SU 2802 6575 to SU 2982 5837). Inkpen or Red Dyke Berkshire HER record MWB 1597. NMR LINEAR 54b (SU 3223 6443 - SU 3524 6333) and SU 36 SW 63 (Monument 1127780).

Bedwyn Dyke is a northeast-facing 2.8 kilometre-long dyke (SU280658 to SU289637), although about 1.5 kilometres of which (SU284649 to SU293640) is now contiguous with parish boundaries, this is only because of a recent realignment in the parochial boundary (Lennon 2010b 272). Mount Prosperous is a 250-metre long west-east bank (SU338644 to SU341645, NMR reference

SU 36 SW 63, Monument 1127780) contiguous with parish boundaries. Further east near Inkpen there is a 500 metres long north-south earthwork (SU351640 to SU352636) not contiguous with parish boundaries. Bedwyn Dyke consists of a ditch 2 metres deep and 9 metres wide with a bank to the southwest up to 2 metres high and 5.5 to 7 metres wide with a low counterscarp bank to the northeast 5 metres wide (Fox and Fox 1958 18; Reynolds and Langlands 2006 20; Lennon and Crow 2009; Lennon 2010a; Lennon 2010b). As later lanes and hedgerows utilise the Inkpen and Mount Prosperous earthworks the original dimensions are now impossible to ascertain. Saxon charters record both the dykes at Bedwyn and Inkpen, but neither is named 'Wansdyke' (Fox and Fox 1958 19-20). Bedwyn Dyke is called a *vallum* in a charter dated 778 (S 264), later charters (S 756 dated 958 and S 688 dated 961) also record the dyke but give no specific name (Grundy 1919 150-55; Reynolds 1999 83; Lennon 2010b 269-74). The dyke at Inkpen is called *readan dic* (or Red Dyke) in a Saxon charter (S 336) dated 863 (Grundy 1919 181-87). A map of 1733 records a lane along the line of the Inkpen Dyke as Wans Dyke; this is the earliest record of the name Wansdyke applied to any of these three earthworks (Crawford 1953 257; Reynolds and Langlands 2006 21). None of these dykes has been excavated. Major identified what he thought were two branches of Wansdyke, one running south almost to Ludgerhsall, the other branching off from this just southeast of Great Bedwyn running east to Inkpen (Major 1920-2; Major and Burrow 1926 106-31; Burne 1951). Hoare, Peake and Grinsell also thought that the Bedwyn and Inkpen sections once linked up, but such a course would be tortuous (Hoare 1821 16-33; Peake 1906 275; Grinsell 1958 286). Crawford and Fox proposed that the short sections of earthworks still visible today were unconnected and unrelated to Wansdyke (Crawford 1927 251; Crawford 1951a; Crawford 1953 257-58; Fox and Fox 1958 16-20). At the northern end of the Bedwyn Dyke is the Iron-Age hillfort of Chisbury (NMR SU 26 NE 5 Monument Number 224649) that is possibly the Alfredian burgh of Cissanbyrig; the twelfth-century chronicles of Abingdon Abbey call it the stronghold of a Saxon leader called Cissa (Stevenson 1858 268; Fox and Fox 1958 20; Dodgson 1996 105-6; Brooks 2000 96-98). These early-medieval references to Chisbury may provide a context for the Bedwyn Dyke, but the NMR records no medieval finds from

Chisbury and the reference in the Abingdon chronicles is probably a later invention (Gover, Mawer et al. 1939 334).

5.13.7 Wansdyke conclusions

Archaeological evidence for the two main sections of Wansdyke (West and East) suggest a late-Roman date at the earliest and the charter evidence suggests both earthworks existed in the tenth century so they are probably early medieval. Differences in the construction between the two sections (in particular the existence of a revetment in West Wansdyke) suggest they may be unrelated and/or built at different times. There is no archaeological evidence for the western extension, the Bathampton section and all but the easternmost 400 metres of the central section so this study concludes they are probably a mixture of roads and hedgerows. The Bedwyn, Inkpen and Mount Prosperous earthworks are possibly early medieval, but the various structures that Major thought linked these eastern dykes are probably hedgerows, prehistoric earthworks and roads.

5.14 CORNWALL

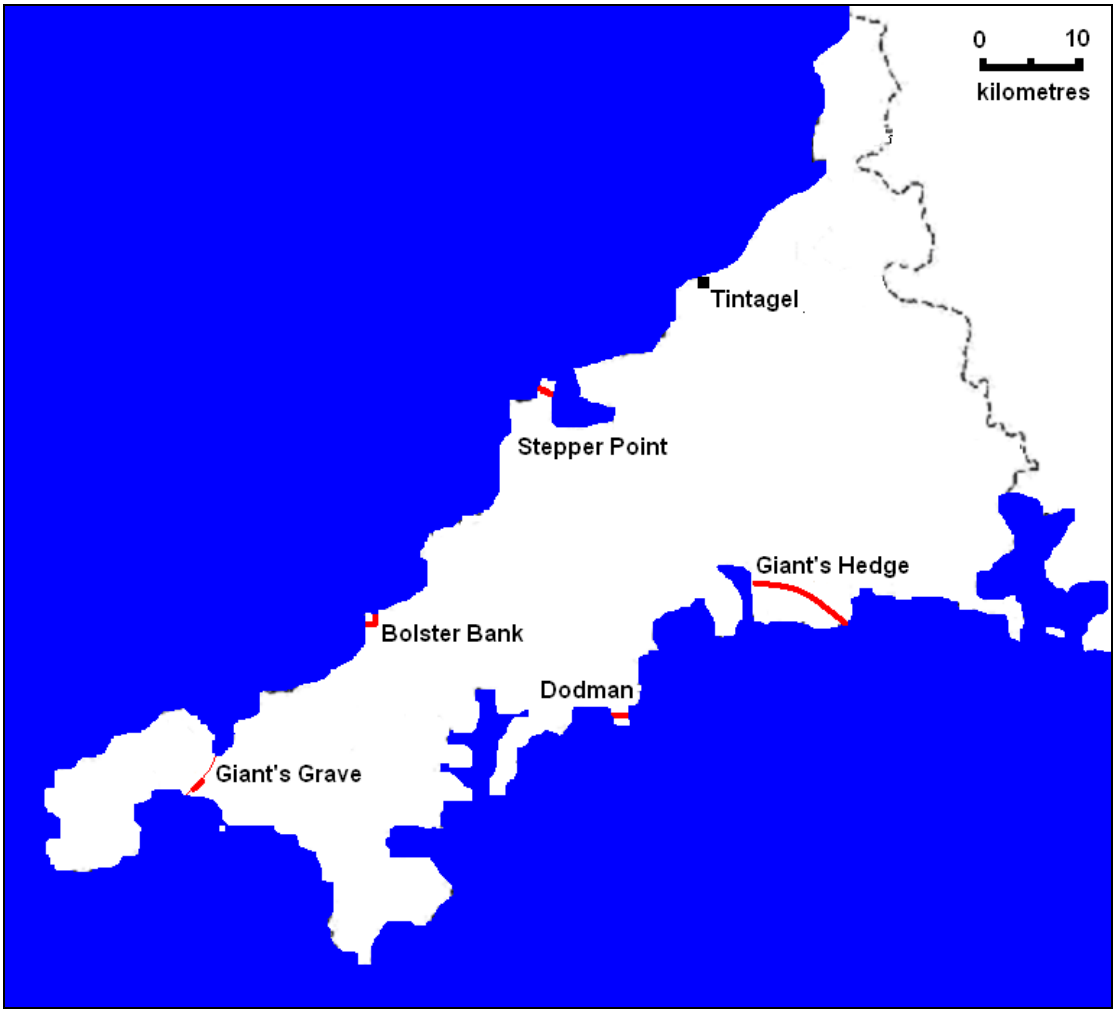


Figure 67 The dykes of Cornwall

The convoluted coastline of Cornwall means that anyone building a dyke that defines an area of land is likely to build it from inlet to inlet or bay to bay leaving a monument that resembles an Iron Age cliff castle. This section therefore includes earthworks that cut off a headland, but seem too large to be an Iron Age cliff castle and where there is no sign of prehistoric settlement within the banks. As this study does not include defended settlements, Tintagel has been excluded, but that site confirms early-medieval Cornishmen were digging earthworks to defend headlands (Dark 1985 13; Thomas 1993 58-59; Morris 1998). The English Place-Name Society volume for Cornwall only gives the possible meanings of the Cornish language elements rather than listing the oldest usage. As Cornish dykes are often merely called ‘dyke’ in Cornish or

were named after mythical giants, it is unlikely the name will help identify the original builder.

5.14.1 BOLSTER BANK

19062. NMR SW 74 NW 11.

This south-facing earthwork runs for 3.3 kilometres (SW697495 to SW721508) cutting off a peninsula which includes the prominent hill St Agnes Beacon and is not contiguous with parish boundaries (Whitley 1881; Crawford 1953 242; Johnson 1980) (H.E.S. 1997). The ditch was probably between 0.7 and 2 metres deep, the bank 2.5 to 3.5 metres high and both about 6 metres wide (Borlase 1769 313; Newton 1847; Douch and Pool 1975 203; Johnson 1980 79; Weatherhill 1985 42; Cole 2004 9-10). The record of the name is first recorded as Bothlester in 1398, possibly as it resembles an upturned boat: *both* is a protuberance and *lester* a boat in Cornish (Johnson 1980 79; Padel 1985 246; Morton-Nance 1999 13 and 98). Borlase in 1740 says the dyke also bears the names *Kledh*, meaning 'dyke' and Carew in 1602 records a nearby *Whilancleuth*, 'Dyke-mine' (Carew 1602 92; Lysons and Lysons 1814 ccxlvi; McLaughlin 1847 28; Douch and Pool 1975 203; Morton-Nance 1999 23 and 27). Pre-Norman chapels lie near either end and there are late Roman coins were found in the peninsula (Borlase 1769 314; Douch and Pool 1975 203; Johnson 1980 87). A small excavation in 2004 (at SW714497) noted simple stratification in the cross-section suggesting the dyke was never rebuilt (Cole 2004). Most scholars favour an early-medieval date for the earthwork and with no dating evidence, this is possibly correct (Borlase 1769 313-14; Penaluna 1838 162; Cornish 1906 472; O.S. 1966; Johnson 1980; Weatherhill 1985 26 and 42-43; Preston-Jones and Rose 1986 139; Payton 1996 72).

Figure 68 Looking north towards St Agnes Beacon with Bolster Bank in the foreground

5.14.2 DODMAN

24047. NMR SX 03 NW 1.

This north-facing earthwork runs for 600 metres (SW999397 to SX003400) cutting off a steep headland and is not contiguous with parish boundaries (H.E.S. 1989a). It has a inner bank at least 2 metres high and 6 metres wide, a ditch the bottom of which is 6.5 metres lower that the top of the inner bank and a counterscarp bank 1.2 to 2 metres high (Cornish 1906 460; Weatherhill 1985 117; H.E.S. 1989a). Leland mentions which could be this dyke or Dingerein Castle to the west (Cornish 1906 458-60; Smith 1964b 201 and 322-23). It also called Thica Vosa, Balk, The Bulwark, The Vallum, The Deadman and the Hack and Cast (Lysons and Lysons 1814 ccxlvi; Cornish 1906 458-60; Crawford 1936b 174). The name may derive from *tomen*, Cornish for earth bank or dam, or a local person, as a Dudman was recorded living in the nearby in 1469 (Weatherhill 1985 117; Padel 1988 79; Morton-Nance 1999 166). It is unexcavated, but assumed to be an Iron Age fort (Forde-Johnston 1976 97 and 137; Johnson 1980 86; Johnson and Rose 1982 190) though it seems unusually large covering 22 hectares so local archaeologists have speculated it may be early medieval (Steve Hartgroves and Graeme Kirkham, personal communication). The larger Iron Age cliff castles of Cornwall tend to have multiple banks and complex fortified gateways, but these are lacking here suggesting it is possibly early medieval (Cotton 1958-9 114-15).

5.14.3 GIANT'S GRAVE

29118. NMR SW 53 SW 20.

This southeast facing dyke is about 350 metres long (SW508323 to SW505320) and not contiguous with parish boundaries (H.E.S. 1990a). There are suggestions it was once 6 kilometres long and followed the line of the A30 northeast to the River Hayle cutting the narrow neck of land (Crawford 1936b 174; Crawford 1953 242; Herring 1991). It consists of ditch about 7 metres wide but too silted for a depth measurement and a bank about 2 metres high and 5 metres wide (Crawford 1936b 174; H.E.S. 1990a; Herring 1991). The HER entry notes the name appears on an undated Tithe Award and there is a legend that Tom the giant killer filled the grave with one of his victims (Crawford 1936b 171-74). Lysons, Penaluna and other writers claim parliamentary forces besieging St Michael's Mount during the English Civil War threw up the earthwork, but give no source (Lysons and Lysons 1814 205; Penaluna 1838 34; Lach-Szyrma 1885-6 80). The bank is dissimilar to typical Civil War fortifications having no protruding artillery platforms, is too far away (over 2 kilometres) to effectively besiege the defenders and, contemporary sources suggest the siege was far briefer than popularly imagined (Fairfax 1646; Herring 1991). Professor Mark Stoyle, an expert on Cornwall in the Civil War at the University of Southampton, and Peter Harrington of Brown University Library, an expert on Civil War fortifications, are sceptical of a Civil War date (personal communications). As the bank is unexcavated, it is possibly early medieval.

Figure 69 the Giant's Grave looking west

5.14.4 GIANT'S HEDGE

10200. NMR LINEAR 113.

This dyke runs intermittently along a 11 kilometre-long course from the Lerryn River, a tributary of the River Fowey (SX136567) east to the West Looe River (approximately SX254528), facing inland and cutting off a territory up to 13 kilometres by 6 kilometres (Andrew 1935 212; Crawford 1953 242; Weatherhill 1985 32-33; H.E.S. 1990b). It is not contiguous with any parish or other boundaries. There is a ditch around 0.8 metres deep and 3 to 8 metres wide with a stone-fronted bank on average 1.5 metres high and 2.5 to 4 metres wide (Borlase 1769 333; Weatherhill 1985 32; H.E.S. 1990b). The earliest record of the name is from Borlase; he also claimed the dyke was a Roman road, though later writers dismiss this idea (Borlase 1758 325; Lysons and Lysons 1814 ccxxviii and ccxlvi; Cornish 1906 472; Andrew 1935 215-17; Crawford 1936b 472). Most authors assume it is early medieval, possibly the boundary of a petty kingdom (Lysons and Lysons 1814 ccxxviii and ccxlvi; O.S. 1966; Weatherhill 1985 32; Preston-Jones and Rose 1986 139; Todd 1987 259; Payton 1996 72). Crawford thought it was the beachhead defences of an invader, though he did not speculate which (Crawford 1953 186). The Cornwall Archaeology Unit (report number GRH 37/3) carried out an unpublished watching brief in 1984 at Kilminorth Road (at SX244542), but the ditch seemed very shallow at the this point and no dating evidence was found therefore it is possibly early medieval (H.E.S. 1984).

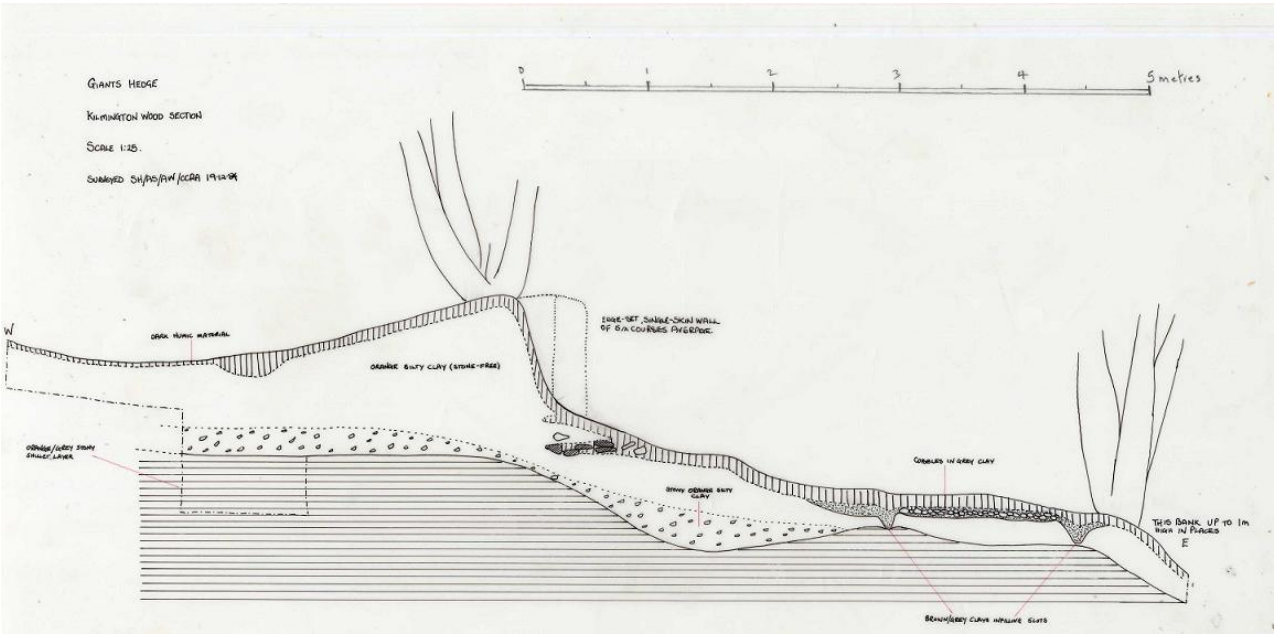


Figure 70 Section of Giant's Hedge at Kilminorth Wood from 1984 watching brief drawn by Steve Hartgroves of the Historic Environment Service Cornwall County Council (used with permission)

Figure 71 Looking east along the Giant's Hedge (at SX185574)

5.14.5 STEPPER POINT

26375 and 26375.1. NMR SW 97 NW 3.

The southwest-facing dyke has no name of its own and originally ran for about 300 metres (SW909778 to SW911776) separating Stepper Point from the mainland though there is little to see today (H.E.S. 1989c; H.E.S. 1989b). It is not contiguous with parish boundaries. It consists of a low bank with a wide shallow ditch on the southwest side, but accurate measurements are impossible without excavation. The name of the headland was originally Steppart according to the director of the nearby Padstow Museum (John Buckingham, personal communication), which possibly means high/steep barn (*stabel-ard*) in Cornish (Morton-Nance 1999 6 and 166). A 2007 Time Team excavation (aired 8 March 2008) of a settlement just outside the enclosed area, Lellizzick, uncovered pottery and other finds from the Iron Age and Roman period as well as high status fifth/sixth century Byzantine pottery; the presenters presumed the dyke was an Iron Age cliff castle (Anon. 2008a). Apart from some medieval ridge and furrow found during unpublished fieldwork there is little evidence of activity in the area enclosed by the dyke (H.E.S. 1989c). Medieval documents from the Priory of Bodmin and a 1694 map indicate a chapel to St Sampson once stood on the headland and there is a reference to a rabbit warren owned by the priory (Henderson 1955). St Sampson lived in Constantinople and was active in the early sixth century and it is tempting to link this chapel dedication to the Byzantine pottery. Without excavation of the dyke is possibly early-medieval dyke.

5.15 SOMERSET

There are two possible early-medieval dykes in Somerset, New Ditch and Ponter's Ball (though Wansdyke crosses the pre-1974 borders of Somerset it has a separate section). As the two dykes are just 4 kilometres apart on a similar alignment experts from Gray writing in 1925 to the modern Somerset Historic Environment Record presume they are related (Gray 1925; S.H.E.R. 1985b; Rahtz and Watts 1993 30-31). However, the dykes possibly face in opposite directions and Ponter's Ball is on a much larger scale.

5.15.1 NEW DITCH

23193. NMR ST 53 SW 20.

This earthwork runs for about 800 metres (ST503331 to ST502330) on a northeast-southwest alignment seemingly blocking a route along the ridge of the Polden Hills (S.H.E.R. 1985a). It is not contiguous with parish boundaries. The HER entry cites a survey of the northern half of the earthwork that recorded a ditch on the southeast side 1 to 2 metres deep and 7 metres wide with a bank 2.3 metres high and 9 metres. The 1978 Ordnance Survey Archaeology Division record card says the dyke has a south (that is southeast) facing scarp becoming a north facing scarp towards the southwest (O.S. 1978; S.H.E.R. 1985a). The northern section is in private woods and therefore inaccessible, but fieldwork for this study centred on the southern section in Combe Hill woods found the earthwork faced northwest. This study's fieldwork found a ditch on the northwest side just 2 metres wide and just under a metre deep, a bank less than a metre high and 2.6 metres wide plus a slight counterscarp bank on the far side of the ditch 20 centimetres high and 1.2 metres wide. The earliest written reference found by this study was an 1886 Ordnance Survey map. The village to the east is called in the Domesday Book Boduchelei, which may derive from the personal name Budeca (possibly 'spear messenger') plus the leah element (a woodland clearing) suggesting the area to the east was wooded in the early-medieval period (Hill 1914 201; Watts 2004 106). Most published authors suggests it the earthwork faces southeast, but without excavation it is impossible to be certain which section reflects the original design (Gray 1926 lvii; Rahtz and Watts 1993 31 for example). Peter Poyntz-Wright, who excavated Ponter's Ball, thinks eighteenth-century landscaping possibly modified the dyke (Poyntz-Wright personal communication), but an examination of the local topography makes a northwest-facing earthwork seem more likely. The ridgeway rises uphill towards the southeast so if it faced in that direction it would be overlooked; the ridge widens out at the south-western end of the dyke and the monument noticeably utilises a steep northwest-facing scarp. The report of the 1970 excavation of Ponter's Ball states Bulleid excavated New Ditch in 1909, but this is probably a misunderstanding as there is no record of it in Bulleid's or Gray's works nor in their surviving notebooks (Bulleid and Gray

1911 37; Gray 1925; Gray 1926; Hollinrake and Hollinrake 1993 11). New Ditch is possibly early medieval, but the confusion surrounding the direction it faced possibly suggests it was rebuilt.

Figure 72 New Ditch from the west

5.15.2 PONTER'S BALL

23564 (also 16693 and 18402). NMR ST 53 NW 3.

This is east-facing dyke is approximately 1050 metres long (from ST535382 to ST530373) and cuts what used to be the only dry route to Glastonbury (Bothamley 1911 523-24; Crawford 1953 247). The central 200 metres (ST534379 to ST533379) is contiguous with a parish boundary. It is unclear if the modern gap for the A361 is original, but It is more substantial where the routeways bisect it, possibly this is an original feature or the southern section could have suffered agricultural damage or been submerged in alluvial deposits (Hollinrake and Hollinrake 1993 16). The u-shaped ditch up to 1.1 to 3.7 metres deep and 8 metres wide with 40º sides 1.1 metres deep and 8 metres wide and the bank is 2.1 to 3.5 metres high and up to 27 metres wide (Bulleid and Gray

1911 37; Grinsell 1958 4; S.H.E.R. 1985b; Hollinrake and Hollinrake 1993 1-2). The name possibly comes from a nineteenth-century misreading of the name of a piece of land, Balle, owned by the hereditary porters of the Abbey, Portarius (Watkin 1952 257; Hollinrake and Hollinrake 1993 12-14; Rahtz and Watts 1993 28). The seventeenth-century antiquarian Aubrey mentions the dyke without naming it; thirteenth-century entries in the Glastonbury Chartulary probably refer to this earthwork (as St Dunstan's Ditch) suggesting they considered it a tenth-century work (Watkin 1952 272 and 303; Fowles 1982 894-95; Hollinrake and Hollinrake 1993 12-14; Rahtz and Watts 1993 120). The thirteenth-century chronicler John of Glastonbury records a Danish army turning back in 1016 at the gate at Havyatt, what is now Haggeat where a road cuts the dyke suggesting that the earthwork was already in existence (Carley 1978 146-47; Hollinrake and Hollinrake 1993 14). Arthur Bulleid excavated of the dyke just to the north of the road (approximately ST534380) in 1909, which found some pottery sherds (Bulleid and Gray 1911 37; Bulleid and Gray 1917 487; Gray 1926; Hollinrake and Hollinrake 1993 10; S.H.E.R. 2005). Sir Hercules Read suggested those found under the bank were Bronze Age in date while those from the bottom of the ditch were similar to those found at the Iron Age Glastonbury Lake Village (Gray 1926; Grinsell 1958 148; Rahtz and Watts 1993 26-27). In 1970, Peter Poyntz-Wright and the Glastonbury Antiquarian Society excavated the dyke about 80 metres to the south of the road (ST533378); they did not section the monument, but merely dug four test pits 1.5 metres wide and 3 to 6 metres long (Hollinrake and Hollinrake 1993; S.H.E.R. 2004). Rahtz, their pottery expert, deduced sherds found under the bank dated from the tenth to twelfth centuries (as well as a pieces of an Iron Age urn) so Poyntz-Wright concluded the earthwork dated from the chaotic reign of Stephen, 1135-54 (Hollinrake and Hollinrake 1993 6 and 24-25; Rahtz and Watts 1993 46 and Poytnz-Wright, personal communication). However, it possible the excavation was at the site of a filled-in entrance an earlier earthwork was rebuilt (the ditch looked recut) or the bank spread over later occupation (Hollinrake and Hollinrake 1993 7-9; Rahtz and Watts 1993 30 and Nancy Hollinrake personal communication). Fieldwork for this study suggested at the site of the 1970 excavation the dyke is much smaller, perhaps indicating the monks had filled in an old gateway during the twelfth century. Most scholars assume the Britons

built the dyke, though disagree if this occurred before or after the Romans controlled Britain (Radford 1968 102-03; Rahtz 1968 120-22; Rahtz 1970 4-5; Rahtz and Fowler 1972 198-99; Radford 1973 4; Fowles 1982 894-95; Rahtz 1982 177; S.H.E.R. 1985b; Hollinrake and Hollinrake 1993 10; Rahtz and Watts 1993 30-31 and 67-78; Clark 1995 94-95). The earthwork is possibly early medieval, though it may have been later rebuilt.

Figure 73 Ponter's Ball looking north

5.16 DORSET

As the three dykes in Dorset (Bokerley Dyke, Combs Ditch and Battery Banks) face northeast towards the heartland of Wessex they have usually been interpreted as British defences against the seventh-century West Saxons advance (Taylor 1970 43-45; Osborn 1976 11; Pearce 1978 58). Note that in Dorset the HER number of a dyke differs by parish.

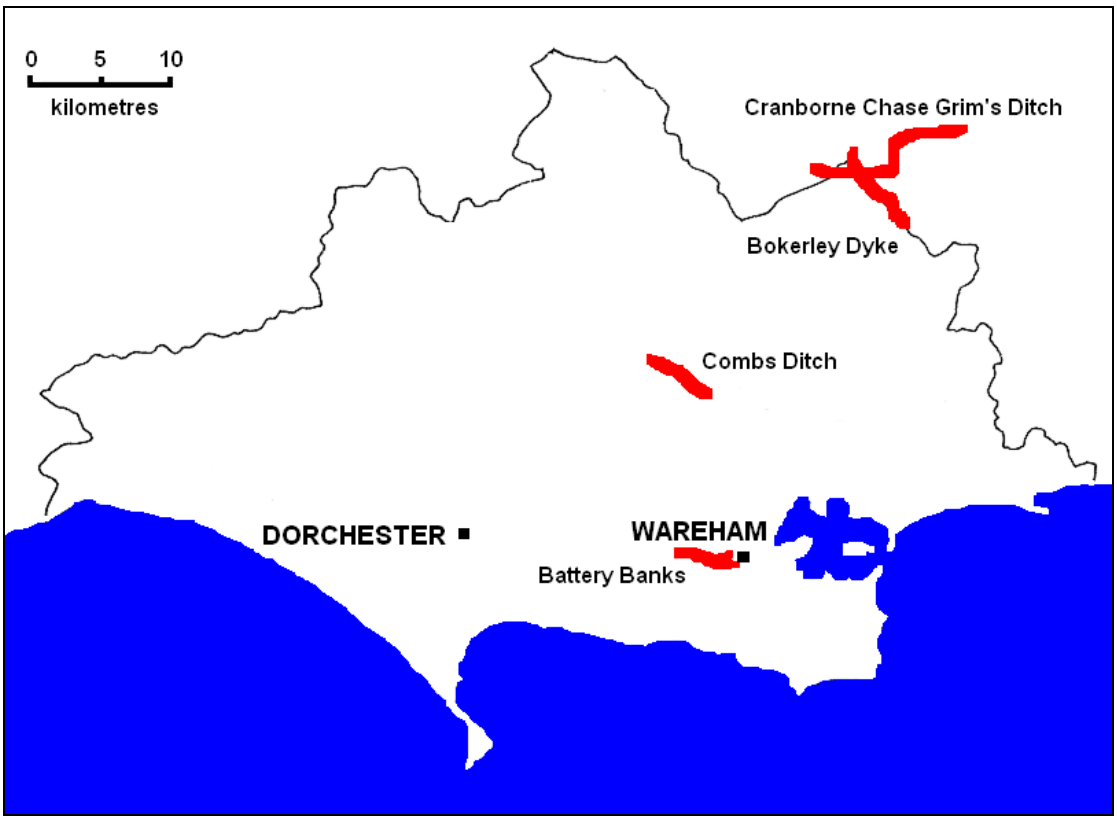


Figure 74 The dykes of Dorset

5.16.1 BATTERY BANKS

6 011 050 and 6 011 063, both sections in East Stoke parish, and 6 002 048 on Worgret Heath. NMR SY 88 NE 6.

This is a north-facing dyke that runs along a ridge of land west of Wareham (Crawford 1953 242; R.C.H.M.E. 1970a 516-18). It exists today in five sections, which add up to about 2240 metres; west to east they are a 1370 metre section (SY878880 to SY891874), a 200 metre section (SY876879 to SY877879), a 210 metre section (SY866883 to SY868883), a 185 metres section (SY858886 to SY859885) and a 275 metre stretch (SY844894 to SY847893). If it was originally continuous it would be about four kilometres long, but some sections do not align and would require an s-shaped bend to connect them (Pevsner and Newman 1972 198). No part is contiguous with parish boundaries. Between the eastern end of the dyke and Wareham there are a series of dykes on Worgret Common and Worgret Heath possibly related to Battery Banks (R.C.H.M.E. 1970a 516-17). Observations during pipeline construction cited in the HER records (in 1989 at SY845894) suggests the ditch of Battery Banks has a shallow sloping profile with an almost flat base up to 1.5 metres deep and up to

8 metres wide while the bank is up to a metre high and varies from 5 to 10 metres wide (R.C.H.M.E. 1970a 518). The name possibly dates from when it was used for training during the Napoleonic wars (N.M.R. 1997). There have been excavations carried out on Battery Banks and the Worgret Common dykes in 1955/6, 1989, 1990, 1991 and 1993, usually in advance of pipeline construction for the Wareham oilfield (Anon. 1956; Smith and Trott 1989; Smith 1990; Coe and Hawkes 1992; Hearne and Crockett 1993). None of the excavations produced any significant finds even in the ditch fills, probably because the area, being heath, has seen very little human activity (Coe and Hawkes 1992 39; Hearne and Crockett 1993 7). Some scholars assumed the dyke was an early-medieval British defence against the West Saxons (Taylor 1970 44; Osborn 1976 11-12). Other have suggested the Middle Bronze Age, Iron Age or Romano-British date (Grinsell 1958 148; Hearne and Crockett 1993 5; N.M.R. 1997). Without dating evidence, it is possibly early medieval. Despite fieldwork and excavation in 1989 and 1990 of the dykes on the Worgret Common and Worgret Heath they are equally undated and lacking in finds, but the assumption by the R.C.H.M.E. of a Romano-British date is unchallenged (R.C.H.M.E. 1970a 516-17; Coe and Hawkes 1992).

5.16.2 BOKERLEY DYKE

005 041 in Cranborne parish and 3 017 016 in Pentridge parish. NMR LINEAR 74.

This earthwork faces northeast and runs for about 5220 metres (SU023200 to SU063169); there is also a 75 metre-long branch (at SU037196) called the Epaulement (Hoare 1812 232-34; Warne 1872 4-10; Barnes 1883; Smart 1884; Pitt Rivers 1892 3-241 and 291-93; Crawford 1953 185 and 243; R.C.H.M.E. 1975 55-56; Sumner 1987 158-60). Pitt Rivers, Hawkes and Rahtz thought an adjacent earthwork, the Rear Dyke was related, but this is now thought to be earlier (Pitt Rivers 1892 22-23 and 291-93; Hawkes 1947 64-65; Rahtz 1961 65-68; Bowen 1990 17, 21 and 39). All bar the westernmost kilometre of the dyke is contiguous with parish and county boundaries (Bonney 1972 183; Hinton 1981 63). In its final form the dyke had a ditch up to 3 metres deep and

on average 10 metres wide with a bank up to 3 metres high and around 11 metres wide (Hawkes 1947 69 and 74; Bowen 1990 25-34). There is no evidence of a berm or an ankle-breakers; there are also no known gateways in the final phase of the monument (Bowen 1990 20). The ditch is v-shaped with a flattened bottom with sides that slope at approximately 40º (Pitt Rivers 1892 292). The earliest record of the dyke is a charter dated 944-6 to the end of the long ditch: 'ende lang dich' (S 513), the name is recorded as 'Blakedounes ditch' in the thirteenth century (this name now only applies to the southern section) and is first called Bockedic in 1280 (Grundy 1924 65-71; Mills 1980 235-36; Bowen 1990 15). The name possibly refers to a nearby late 13th or early 14th century deer park (Smart 1884 43). Pitt Rivers excavated the northern end of the dyke that cuts a Roman road between 1888 and 1891 and concluded, mainly from the coin evidence, it was late Roman (Pitt Rivers 1892 especially 13-14; Sumner 1913 54-55; Bowen 1990 5-6; Bowden 1991 117-19). A 1958 excavation by Philip Rahtz at the same site came to broadly similar conclusions to Pitt Rivers (Rahtz 1961). Pitt Rivers, Hawkes, Rahtz, Bowen and others all reach similar conclusions about the development of the dyke believing it was built in three phases which were named A, B and C (Hawkes 1947; Grinsell 1958 281-283; Rahtz 1961; Bowen 1990 39-41). The A section was the southern half of the dyke and reached as far as a turned-back section of the dyke called the Epaulement. The B section (which may have just been a late Roman boundary ditch) ran northwest from near the Epaulement across the road, but north of the road it is often called the Rear Dyke (Rahtz 1961 76; Bowen 1990 20-21). The C section (the Fore Dyke) extended the earthwork, enlarged the bank and recut the ditch; the B section was partly built over and the Roman road permanently cut (Rahtz 1961 72; R.C.H.M.E. 1975 55; Bowen 1990 25 and 39-41). As Pitt Rivers' excavation unearthed numerous late Roman coins, most assume the dyke predates the end of Roman rule (Burrow 1926; Copley 1954 68-70; Rahtz 1961; Bowden 1991 119; Webster Forthcoming 183). However, as it cut a Roman road and sliced through a Roman settlement that yielded over 1,200 mainly low-value coins discarded after the collapse of a monetary economy it is probably post-Roman (Pitt Rivers 1892 152-54; Rahtz 1961 68; Eagles 1994 17; Draper 2006 27-28). Therefore, the earliest phase of this earthwork may predate the end of Roman rule and the

latest phase probably postdates it (Godsal 1913 16-18; Crawford 1928 230-32; Pevsner and Newman 1972 104).

5.16.3 COMBS DITCH

2 070 041 in Winterborne Kingston parish and 2 072 019 Winterborne Whitechurch parish. NMR ST 80 SE 48.

This northeast-facing earthwork runs across the top of Charlton Down (ST851022 to ST877000) for at least 4½ kilometres (Crawford 1953 185 and 243; R.C.H.M.E. 1970b 313-14; Bonney 1972 183). Parish boundaries are contiguous with the easternmost 2½ kilometres (from ST854020). Sumner suggests the dyke originally was 2½ kilometres longer (Sumner 1931 60-68). It has a v-shaped ditch with the sides sloping at a 40º angle around 1.8 metres deep and on average about 7 metres wide with no sign of an ankle-breaker (R.C.H.M.E. 1970b 313-14; Sparey-Green 1991). The bank varies between 5.5 metres to 9 metres wide and now most parts are around a metre high though parts on East Down Plantation are 1.7 metres high (Sumner 1931 71; R.C.H.M.E. 1970b 313-14). The 1965 excavation recorded a posthole on the top of the bank, but it is not clear if this is a rampart or an isolated feature (R.C.H.M.E. 1970b 314). A local hundred recorded in Domesday Book, Concresdic, is named after the earthwork (though the dyke does not form a boundary); Sumner interprets this name as Old English for King's dyke (Sumner 1931 59; Thorn and Thorn 1983). However, it is recorded as Cunucces dich/Cunnucesdic in charters dated 942-3 (S 485 and 490); Cunuc is a Brythonic personal name (Forsberg 1950 204-5; Crawford 1951 63; Mills 1980 70-71). Archaeologists have carried out two excavations on the dyke in 1965 (at ST865007) and 1988 (at ST858018) which suggested the dykes was prehistoric but later rebuilt, probably in the post-Roman period (Sumner 1931; Fowler 1965; R.C.H.M.E. 1970b 313-14; Pevsner and Newman 1972 489; Bowen 1990 40; Sparey-Green 1991; Eagles 1994 238).

5.17 HAMPSHIRE

In this section, there are two isolated dykes (Festaen dic near Hartley Witney and Cranborne Chase Grim's Ditch) and two groups of dykes with their own subsections (the Devil's Ditch group near Andover and the East Hampshire group).

5.17.1 CRANBORNE CHASE GRIM'S DITCH

3 017 017 A, 3 017 017 B and 3 017 017 C in Dorset. 31769 and 57197 in Hampshire. SU12SW631 and SU125SW632 in Wiltshire. NMR LINEAR 76 (Monument 906402).

The Grim's Ditch in Cranborne Chase (often called Devil's Ditch) consists of an east-west dyke with another north-south dyke at the eastward end rather like a horizontal 'T' (with other minor earthworks branching off it not discussed here). The west-east section runs about 15 kilometres from just west of Bokerley Dyke (SU002211 to SU142232); the north-south section runs for about 5 kilometres (SU144239 to SU129199). About 4 kilometres of the west-east section is contiguous with parish boundaries (SU051220 to SU087228) while about 900 metres of the north-south section is contiguous with parish and county boundaries (SU136214 to SU130207). It has a ditch about 1 metre deep and 6 metres wide between two banks about 0.5 metres high and 2 metres broad (Sumner 1913 57-58; Piggott 1944). The name is first recorded as Gryms ditche in a map of 1618, though the dyke is possibly recorded in a charter (S 513) from the 940s as '*strete dich*' (Gover, Mawer et al. 1939 16). While earlier authors preferred a Saxon date, Sumner excavated the dyke finding prehistoric pottery sherds under the bank; as it is slighter than Bokerley Dyke and cut by it, this earthwork is probably prehistoric (Hoare 1812 232; Warne 1872 6-7; Sumner 1913 57-62; Burrow 1926 188; Piggott 1944; Hawkes 1947 65-67; R.C.H.M.E. 1975 56; Sumner 1987 161). Copley speculated Britons in the early-medieval period possibly reused the earthwork, but excavations have unearthed no evidence of refurbishment (Copley 1954 170).

5.17.2 DEVIL'S DITCH, ANDOVER

30569 (Pepper Hill Firs section), 28744 (Doles Wood section) and 17761 (Wonston section). NMR Linear 71 (Doles Wood section) SU 44 SE 15 (Wonston section). (Pepper Hill Firs section is not in the NMR).

There are three Devil's Ditches in Hampshire, all near Andover, though it is not certain they are related. The first is in Doles Wood, the second centred on a small wood called Pepper Hill Firs and the third section in the parish of Wonston about 13 kilometres to the east (Guest 1883 206; Shore 1886 23; Williams-Freeman 1915 239-40; Crawford 1953 120). Before Hoare's fieldwork proved these earthwork were distinct, scholars like Stukeley and Collinson assumed they were the eastern end of Wansdyke (Stukeley 1776 179; Collinson 1791a xxii; Hoare 1821 20). The earliest reference to these dykes being associated with the devil is an 1840 tithe map that shows a field called Devills Dyke near the Woston section; the Pepper Hill Firs section is marked as Devil's Ditch on an 1877 Ordnance Survey map. The Wonston section is recorded on a charter dated 900 (S 360) as 'greatean dic' cutting the western and eastern borders of the estate of Cranborne (Grundy 1927 306-07). Though Godsal assumed they related to the Anglo-Saxon conquest, none has been excavated so they are possibly early-medieval dykes (Godsal 1913 5).

5.17.2.1 Doles Wood

This south-facing dyke follows a sinuous path about 700 metres long (SU363512 to SU371513), but a crop mark continues in a similar alignment for a further 1,400 metres to the east (SU385513). It is not contiguous with parish boundaries. It has a ditch 0.7 metres deep and up to 6 metres wide with a bank up to 0.5 metres high and up to 3 metres wide (H.H.E.R. 2008a). It may have only ever been the slight feature it is today as it is in a thick wood so unlikely to have been ploughed (Williams-Freeman 1915 240).

5.17.2.2 Pepper Hills Firs

This west-facing earthwork runs for approximately 2 kilometres in a curve like a reversed 'c', the southern end is fairly obvious (SU399472), but the northern terminus is less so, it seems to be contiguous with a hedgerow, and where this hedgerow changes direction just north of the Roman road (SU396487) is

probably the northern end (Williams-Freeman 1915 239-40). Williams-Freeman quotes local saying they could trace it through the forest to the river Test (over 5 kilometres away), but dismisses such stories and Crawford could find no trace of this southern extension (Williams-Freeman 1915 240; Crawford 1922 64). All but the last 500 metres of the Pepper Hill Firs section is contiguous with a parish boundary. This dyke has a ditch up to 0.7 to 2.7 metres deep and 12 metres wide with a bank up to up to 1.2 metres high and about 8 metres wide with a counterscarp bank 4 to 6 metres wide and up to 0.3 metres high (Williams-Freeman 1915 240; H.H.E.R. 2008b). Usually when the Pepper Hill Firs section is mentioned in print there is the assumption it is post-Roman, but the HER entries favour a prehistoric date (Smith 1900 392; Grinsell 1958 286; H.H.E.R. 2008b; H.H.E.R. 2008c). Scholars have usually assumed the dyke related in some way to a post-Roman occupation of Silchester (Smith 1900 392; Williams-Freeman 1915 33; Crawford 1953 185 and 243).

5.17.2.3 Wonston

The Wonston sections exists today as a completely flattened crop mark 1,750 metres long (SU494429 to SU498413) making it impossible to give dimensions of the structure, but if it cut the western estate boundary of a Saxon estate as the charter suggests, it would need to run at least another 1,300 metres to the northeast (to SU483442). Parish boundaries are not contiguous with this earthwork. It must predate the boundaries laid down in the Anglo-Saxon charter, but there is no other dating evidence; Crawford presumed it was prehistoric (Crawford 1953 120). According to the Hampshire HER and a note written by Crawford, Aubrey records a rampart and ditch crossing the London Road two miles east of Sutton, presumably Sutton Scotney, but this study could find no such reference in Aubrey's work (Crawford 1920-4; H.H.E.R. 2008c).

5.17.3 EAST HAMPSHIRE DYKES

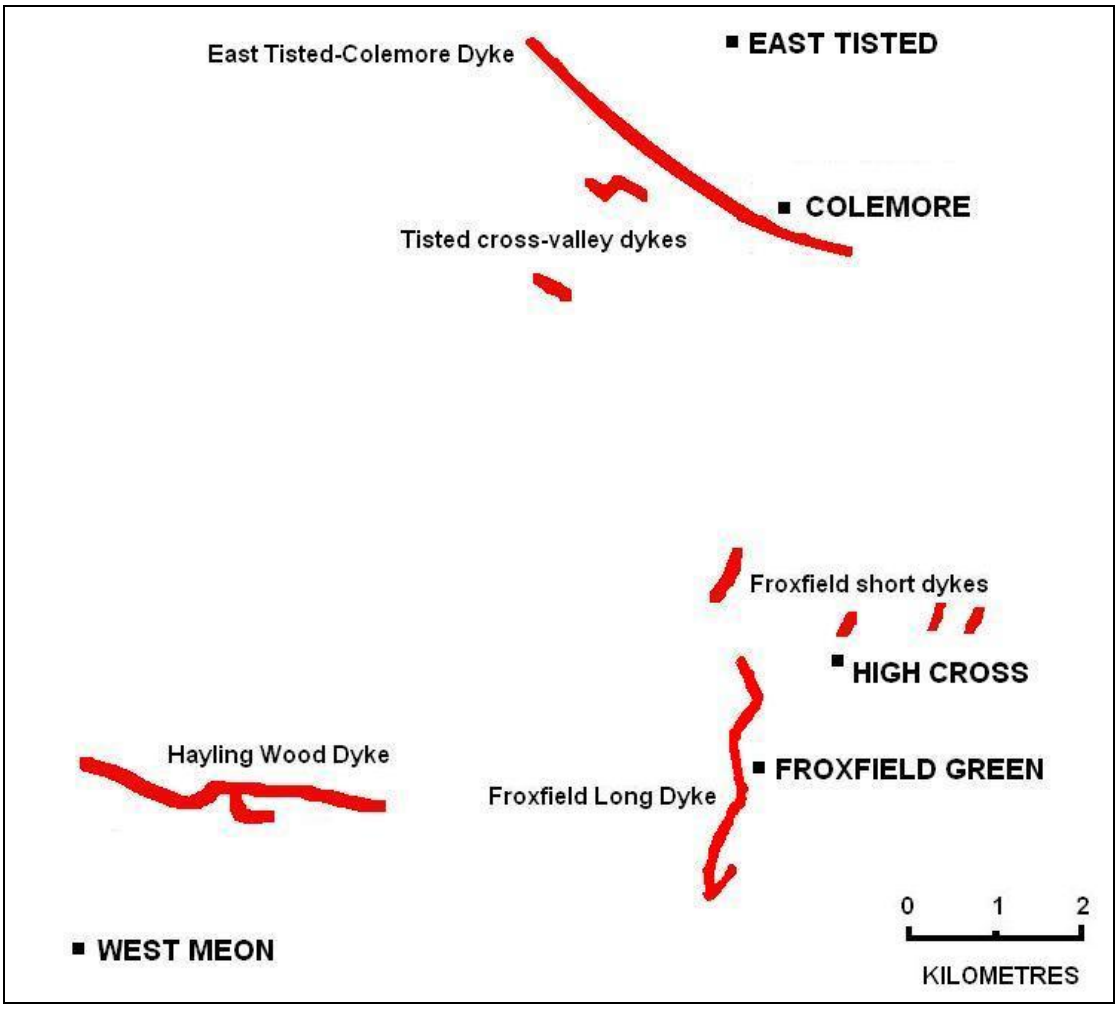


Figure 75 The East Hampshire dykes

18716, 18727, 18728, 18729, 18730, 19032, 19033, 19034 and 2935. NMR Froxfield SU 72 NW 4 and East Tisted-Colemore SU 63 SE 9 (monuments 242944 and 239665 respectively).

In eastern Hampshire, there are a series of dykes to the west of Petersfield (Williams-Freeman 1915; Williams-Freeman 1935-7 286-92 and 374-75; Coffin 1975). They are often collectively referred to as the Froxfield entrenchments or the East Hampshire dykes and have individually been given various names none of which is of any antiquity. Here they are termed the East Tisted-Colemore Dyke, Tisted cross-valley dykes, the Froxfield short dykes, the Froxfield Long Dyke and the Hayling Wood Dyke. Coffin divided them into three groups, group 1 being the Froxfield group, 2 the East Tisted-Colemore group

and group 3 the Hayling Wood Dyke (Coffin 1975). The three longest dykes form three sides of a square, the north-facing East Tisted-Colemore Dyke forms the north side, the west-facing Froxfield Long Dyke the east side and Hayling Wood Dyke the south side. As they face in different directions and the Hayling Wood Dyke has multiple banks, it is unlikely they are contemporaneous (Coffin 1975 81; Hinton 1981 61; Shennan, Gardiner et al. 1985 89).

Crawford surveyed these earthworks, but his notes were lost (Crawford 1953 244). There are reports of some finds of thirteenth to sixteenth century pottery at the Froxfield Long Dyke, but these seem to have been casual finds rather than from an excavation (Coffin 1975 79; Shennan, Gardiner et al. 1985 101). In 1985, there was a large-scale field-walking survey across large area of east Hampshire, parts of which covered the most northerly of these dykes, but there were few finds possibly because the area was sparsely inhabited woodland in the past (Shennan, Gardiner et al. 1985 89-103). According to Williams-Freeman, Aubrey recorded the East Tisted cross-valley dyke in the seventeenth century, but this study found no such reference (Williams-Freeman 1935-7 56). The Tisted cross-valley dykes are much shallower than the rest and the northern one produced an abraded piece of Iron Age pottery in the bank so they are probably prehistoric (Williams-Freeman 1935-7 56). The others are possible early-medieval dykes.

5.17.3.1 East Tisted-Colemore Dyke

The East Tisted-Colemore Dyke is a northeast-facing dyke stretching for four kilometres (SU683324 to SU711305) across the parishes of East Tisted and Colemore, 80 metres of which is contiguous with parish boundaries (SU694313 to SU695313). The eastern half is ploughed out or partly destroyed by lanes. There is a bank with a ditch on the northeast side sometimes with a slight counterscarp bank. The top of the bank is about 6 metres above the base of the ditch and the total width of the earthwork is about 27 metres.

5.17.3.2 Tisted cross-valley dykes

The northerly Tisted cross-valley dyke is a south-facing 170 metre-long doglegged earthwork (SU691311 to SU693310) about 230 metres to the southwest of the East Tisted-Colemore Dyke, though this dyke faces in the opposite direction (Williams-Freeman 1915 375; Williams-Freeman 1935-7 55-57). There is a second south-facing 200 metre-long cross-valley dyke just over a kilometre to the southwest (SU686302 to SU687301). Even with the natural slope exaggerating the vertical drop, the earthworks are not of any great height. The northerly one seems to consist of a pair of parallel banks and ditches, the ditches are about 1 metre deep and 5 metres wide while the banks are about a metre high and 3 metres wide. The southerly dyke consists of a bank and ditch of a similar size.

5.17.3.3 Froxfield short dykes

The Froxfield short dykes consist of four west-facing dykes the westernmost of which is 2.3 kilometres west from the most easterly (Shore 1886 24; Crawford 1953 244). Three were noted by Williams-Freeman, the fourth (the westernmost dyke) by Enock (Williams-Freeman 1915 286; Enock 1920-4). The westernmost is 274 metres long (SU702274 to SU700271). The others are all about 100 metres long (SU711269 to SU711268, SU719270 to SU719269 and SU723269 to SU723267). The dykes are all very similar in scale suggesting they are contemporary (Williams-Freeman 1915 289-09). According to a very brief report of a excavation in 1888, the banks are made of gravel with a layer of white clay lying on the natural though the report does not specify if this applies to all three dykes or just an investigation of one (Sylvester 1888). They have a ditch up to 2.4 metres deep and a bank up to 2.4 metres tall. The combined width of the bank and ditch is 24 to 27.4 metres.

5.17.3.4 Froxfield Long Dyke

This is a 4.8 kilometres long west-facing earthwork that runs sinuously north-south (SU702265 to SU700244) to the west of the village of High Green (Williams-Freeman 1915 290-92 and 374-75). At the southern end there is

another dyke nearly 550 metres long running almost parallel but veering slightly towards the east (finishing at SU703247) so the pair form a v. It is impossible to tell if this feature is a contemporary feature to strengthen the southern end or the two dykes are of different dates. The southern 290 metres of the smaller second bank of the Froxfield Long Dyke is contiguous with a parish boundary (Aldsworth 1973). It has a ditch up to 2.5 metres deep with a bank up to 2 metres tall; their combined width is around 18 metres.

5.17.3.5 Hayling Wood Dyke

This south-facing earthwork runs for 2.3 kilometres (SU642256 to SU666253) and is about 6½ kilometres south of the East Tisted-Colemore Dyke (Coffin 1975). Although for most of the course it runs almost in straight west-east alignment, in the centre of the dyke in Hayling Wood there is a doglegged section (a right-angled northward turn followed by a right-angled eastward turn) and then a short 600 metre long section of dyke branches off to the south that then turns sharply eastward (ending SU658251). On a map these twists in the dyke seem delimit on three sides two adjoining rectangles of land. The dyke consists of a single bank to the west of Hayling Wood, but multiple banks to the east all with a ditch to the south. The height of the top of the bank from the bottom of the ditch varies from a typical 1.2 metres to small stretches where the height is much higher at 4.6 metres. The overall width of the earthwork is 15 to 19.5 metres.

5.17.4 FESTAEN DIC (HARTLEY WITNEY)

27137. No NMR reference.

This west-facing earthwork is to the east of Hartley Wintney (Hogg 1935; Crawford 1953 243; Grinsell 1958 287). Only a 60-metre stretch survives (SU796585 to SU797584); the construction of an airfield in the 1940s destroyed a further 500-metre section to the north (to SU797590). This northerly section is contiguous with the boundary of a hundred; a parish boundary is contiguous with a 300 metre-long section that includes a short section of the destroyed northern part (SU797587 to SU796584). The county H.E.S. entry says it

extended further south and a gravel pit destroyed the southern end (possibly at SU798569); if such a southern extension existed, the dyke was originally about 2.2 kilometres long (SU797587 to SU795567). There is a ditch 1 metre deep and 7 metres wide separated by a berm 6 metres wide from a bank 1 metre high and 7 metres wide. At a gravel pit, the fabric of the bank has been exposed demonstrating it is made up of gravely sand (partly slipped onto the berm) resting on a sandy base with no indication of a former turf-line. The name is Old English for bulwark or fortification dyke and is first recorded on a charter dated 973-4 (S 1558-9) called the Crondall boundary survey (Birch 1893 631-33; Grundy 1927 48-55; Gover, Mawer et al. 1934 172-73). As the Anglo-Saxons gave it a name that suggests a military purpose not a border and as it is only contiguous with part of the estate boundary mentioned in the charter, it is possible the dyke predates the organisation of the estate and is therefore possibly early medieval (Hogg 1935 70).

5.18 SURREY AND KENT

These two counties are grouped together as two of the three dykes are along the western border of Kent.

5.18.1 FAESTEN DYKE

MKE 973 in Kent. 070588/00/00 in London. NMR TQ 57 SW 93 (Monument 411255).

This is a doglegged 2400 metre-long west-facing dyke (TQ507729 to TQ502709), though it is possible it once extended further south (Hogg 1941 19; Crawford 1953 245). 950 metres (from the northern end to TQ503722) are contiguous with parish boundaries; although today it is on the western border of Kent, prior to the creation of the County of London in 1888 the border lay much further to the west. The ditch was originally a flattened v-shaped with 40º sides 1.8 metres deep and 6 metres wide, the bank up to 1.5 metres high and about 7 metres wide with no signs of a berm, ankle-breaker or a palisade on the bank (Hogg 1934 221; Hogg 1941 20). Where a track noted crosses the dyke just

south of the dogleg there is a gap in the bank which Hogg interpreted as a possible original entrance, but only excavation can resolve the issue (Hogg 1934 222; Hogg 1941 18). It is difficult to see why the dyke has a dogleg plan, unless it was built in more than one phase or respected an older feature (Hogg 1941 13 and 18). The earliest record of the dyke is in a charter dated 814 (S 175) where it is called ‘fæstendic’ (Birch 1885 483-84). The name is Old English meaning the bulwark or fortification dyke, though Barker suggests it means overgrown (Bosworth 1838 107; Hogg 1941 25; Barker 2008). Sir Mortimer Wheeler thought the Saxon built it, but recent work suggests the rest of the dykes in his system are almost certainly prehistoric (Wheeler 1934; Bradley 1968; Hinchcliffe 1975; Ford 1981-2). In 1934, Hogg excavated two sections (TQ503720 and TQ503710) across the dyke (Hogg 1934; Hogg 1941; Crawford 1953 186). Small pottery sherds were found on the old land surface under the dyke; they were hard to date, but were not Roman and not from before 100 BC (Hogg 1941 19). Hogg’s sections clearly revealed a hard gravel layer at least 1.5 metres wide behind the bank possibly to allow defenders covered access along the length; the excavations revealed short lengths of the southern section of the banks were later enlarged, but the ditch showed no sign of re-cutting (Hogg 1941 19-21). Hogg concluded from the pottery and tile evidence the overlapping series of rectangular enclosures to the east of the dyke previously thought to be Roman were the remains of a later medieval farm (Hogg 1941 12-16). Without any clear dating evidence this dyke is possibly early medieval.

Figure 76 Faesten Dyke looking east

5.18.2 FULLINGA DYKE

258, 3195, 14307 and 14795. No NMR entry.

Fullinga Dyke is a west-facing dyke that ran from the Thames at Weybridge possibly as far south as the North Downs (Blair 1989; Dyer 1990; Blair 1991; Brants 1997; Brants 2007a). The best-preserved sections of the dyke are on St

George's Hill and on Ockham Common. If the dyke continued on the same alignment northward as it follows on St George's Hill it would reach the Thames (at TQ069651) at Weybridge (Blair 1991 16; Brants 2007a). Parts survive just south of the Byfleet Road and on Ockham Common. The southern end is more difficult. In the seventeenth century Aubrey records a 'trench' (presumably the northern section of Fullinga Dyke) that runs from St. George's Hill to the Thames at Weybridge as well as a 'great ditch' on Albury Down near Guildford which could mark the southern end of the dyke (Fowles 1982 274-75 and 908-09). However, Blair claims the sinuous bank that is marked on early Ordnance Survey maps between Shere and Abinger was the southern end of the dyke (Blair 1991 14 and 18 fn 13). If it was originally continuous and reached as far as, or further than, the North Downs at Shere or Albury Down, it was about 20 kilometres long. As well as 2 kilometres of the present Ockham-Cobham parish boundary, the whole length of the dyke was contiguous with hundred boundaries. Fieldwork for this study (at TQ085585) found the ditch only 0.8 metres deep (though it is probably heavily silted) and 4 metres wide with the bank a mere 0.5 metres high and 4 metres wide, but this section was heavily damaged by forestry. As Aubrey talks of a 'great ditch' perhaps the structure was once much larger (Fowles 1982 908-09). It is recorded as '*antiqua fossa id est Fullingadic*' (old dyke that is Fullinga Dyke) in a charter (S 69) dated 672-4 (Birch 1885 55-59; Collingwood and Myers 1937 406; Whitelock 1955 440-41). The name Fullingadic seems to relate to the Fullingas, a folk-group of Anglo-Saxons who lived in northwest Surrey (Collingwood and Myers 1937 406 fn 1; Blair 1989 100). Despite having a Saxon name without any clear archaeological dating evidence this study concludes this dyke is possibly early medieval, though as the Anglo-Saxons thought it was old and the earthwork seem highly eroded/silted it may be much older.

Figure 77 Looking north along Fullinga Dyke on Ockham Common

5.18.3 RIDDLESDOWN DYKE

MLO12735. NMR TQ 36 SW 13 (Monument 404240).

This possibly southeast-facing 200 metre-long (TQ322605 to TQ324607) earthwork near Purley bisects a ridge of downland; it was probably originally much longer. It is not contiguous with parish boundaries. It probably originally consisted of two banks and two ditches, but they are too damaged for meaningful measurement. Various early Ordnance Survey maps and the Victoria County History record the name of the dyke as 'Newedich' or 'Widedich' (Clinch and Montgomerie 1912 403). Newedich suggests medieval English-speakers recognised the dyke was of recent construction, but this is an error and the name actually applies to a different earthwork that lies two kilometres to the southeast (Hope-Taylor 1946-7 65). The NMR entry assumes the earthwork predates the medieval period partly because excavations similar agricultural earthworks three kilometres to the southwest (NMR TQ 25 NE 17) produced Romano-British and Iron Age material (Hope-Taylor 1946-7). A possible Celtic field lies less than a kilometre to the southeast (SMR reference 020548 at

TQ330601). As it is similar to other prehistoric cross-ridge dykes in the area and the name evidence is probably does not relate to this earthwork, this study assumes the dyke is probably prehistoric or Roman.

5.18.4 SURREY-KENT DYKE

1366 (Surrey) and 178 (Kent). NMR TQ 45 SW 89 (Monument 407498).

This west facing dyke, that seems to have no recorded name, runs for 320 metres (TQ432536 to TQ433533) from a prominent hill south across a valley through which passes across the A25 and up the hill on the other side. The entire earthwork is contiguous with by the county boundary. It consists of a ditch 1.5 metres deep and 9 metres wide with a bank 3 metres high and up to 16 metres wide. Where the A25 cuts the dyke there is a lump of tarmac about 60 centimetres above the road surface sticking out of the north bank suggesting that some time in the past the road had a definite hump and therefore the bank either cut or predated the road though modern road engineers have heavily altered the road. The only study of the dyke, written by Clark, assumes the early-medieval kings Kent built it (Clark 1957). Without any clear dating evidence, it is possibly early medieval.

Figure 78 Looking north along the dyke on the Surrey-Kent border

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