



Historic England

Prehistoric Linear Boundary Earthworks

Introductions to Heritage Assets



Summary

Historic England's Introductions to Heritage Assets (IHAs) are accessible, authoritative, illustrated summaries of what we know about specific types of archaeological site, building, landscape or marine asset. Typically they deal with subjects which have previously lacked such a published summary, either because the literature is dauntingly voluminous, or alternatively where little has been written. Most often it is the latter, and many IHAs bring understanding of site or building types which are neglected or little understood.

This IHA provides an introduction to prehistoric linear boundary earthworks. Prehistoric linear earthworks range in length from a few tens of metres to more than 80 km (50 miles). Many of the shorter and straighter examples are so-called 'cross-dykes' or 'cross-ridge dykes', which span narrow necks of land, running between steep slopes or sheer escarpments. Descriptions of prehistoric linear boundary earthworks and their development along with a brief chronology are included. Linear earthworks may relate directly to various artificial features, such as burial monuments and **hillforts**. So-called 'multiple ditch systems' share certain characteristics with **oppida**; namely, they are also of Late Iron Age origin and appear to have bounded areas where a wide range of settlement, economic, political and religious activities took place. A list of in-depth sources on the topic is suggested for further reading.

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Front cover:

Bokerly Dyke, Dorset. Already ancient, in the Iron Age the Dyke was probably a Tribal boundary between the Atrebates and the Durotriges.

Introduction

Land boundaries have been important to society for thousands of years and are found, in different forms, throughout England and indeed throughout the world. Some have served practical purposes, for example related to the control of livestock. Others have been political symbols, marking ownership of territories, although this symbolism was often intimately interwoven with the more practical requirements of defence.

From the Neolithic period onwards in the British Isles, natural boundaries such as watercourses and escarpments have been supplemented by artificial boundaries, often formed by a ditch and bank (the bank sometimes topped by an additional barrier, such as a timber palisade or hedge) (Figure 1).

Although many examples have been levelled by later land-use, a considerable number still survive as upstanding earthworks, while some major examples have acquired proper names that are still used and appear on Ordnance Survey maps. Some boundaries thousands of years old still play a role in structuring the physical and administrative layout of the landscape in the



Figure 1
A linear earthwork comprising a double bank with central ditch, on Hockley Down Golf Course, Hampshire. The boundary earthwork is associated with a Romano-British settlement.

present day, demonstrating that once created, these earthworks were sometimes continuously used, or repeatedly re-used.

Boundaries constructed in the historic period, such as Hadrian's Wall and Offa's Dyke, can sometimes confidently be linked with real individuals and political circumstances.

Boundaries of prehistoric origin, on the other hand, are less straightforward to understand. They sometimes bear names such as Devil's Dyke, in reference to the apparently superhuman effort involved in the construction of the largest examples. Names such as Danes' Dyke, Scots' Dyke, and so on, may refer to historical battles incorrectly attached by folklore to their construction, or correctly believed to relate to their re-use.

The word 'dyke' means a bank and ditch, but archaeologists commonly use the term 'linear earthwork' so as to include not only these simple earthworks, but also a wide range of variant types, described below.

It is often difficult to determine whether a particular boundary was used for defence, for stock-herding, or purely as a symbol; in truth, most boundaries probably served all of these functions to varying degrees at different times in their existence. We cannot assume for example, that large boundaries were for defence and small ones for controlling livestock.

The form, extent and very existence of the artificial boundaries can offer vital clues to their purpose, and sometimes the social and political 'map' at the time they were built, while their re-use and modification can show how that picture changed over time.

1 Description

Prehistoric linear earthworks range in length from a few tens of metres to more than 80 km (50 miles). Many of the shorter and straighter examples are so-called 'cross-dykes' or 'cross-ridge dykes', which span narrow necks of land, running between steep slopes or sheer escarpments (Figure 2).



Figure 2

This 350 m long cross-dyke in Northumberland runs between two steep slopes. A gap near the mid-point allows Clennel Street, a route presumed to be of medieval origin, to pass through, but the linear earthwork could predate the track by thousands of years.

On the Hambleton Hills, North Yorkshire, where steep-sided valleys cut deeply into the edges of the limestone plateau, several prehistoric linear earthworks continue the lines of these natural barriers straight across the plateau, apparently dividing the land into blocks. In contrast, an

earlier and much longer boundary known as the Cleave Dyke follows a more sinuous course along the length of the Hambleton Hills, approximately following the watershed and running parallel to the plateau's western escarpment, thus echoing natural boundaries in a somewhat different way (Figure 3).

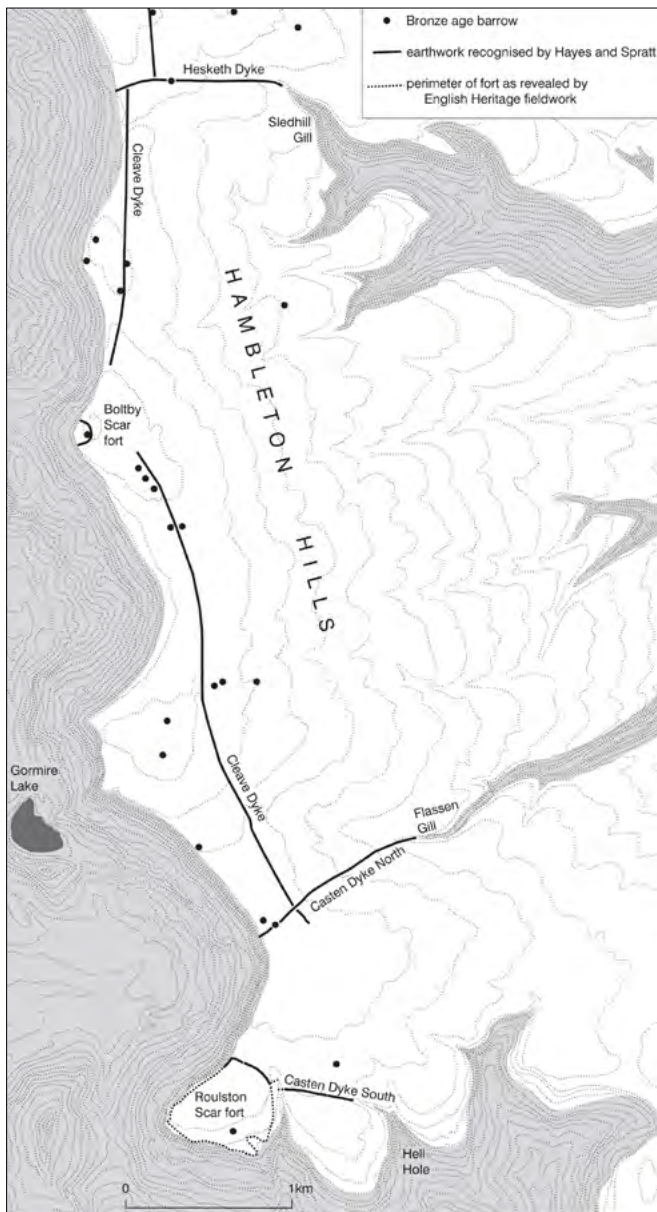


Figure 3
The plateau of the Hambleton Hills, North Yorkshire, is traversed by a number of named linear earthworks of different dates. The discontinuous pit alignment known as the Cleave Dyke, which echoes the western edge of the plateau approximately following the watershed is probably the earliest, but this may not have been built in a single episode.

In Wessex, where the most prolonged and intensive studies have been undertaken, similar long land divisions have often been called ‘ranch boundaries’. Here, on the Salisbury Plain Training Area, the best preserved part of the pattern, on either side of the River Bourne, gives the strong impression that the boundaries were laid out in a concerted single operation with the intention of enclosing within each block a range of potential

resources spanning the high downland to the river’s floodplain.

Some boundaries only ever comprised low earthworks, while the banks of others may stand several metres high, with correspondingly large ditches. Some were successively extended or enlarged, presumably as political or economic circumstances changed. Sometimes, this resulted in appreciable changes of form or direction, leading to very long alignments with irregular plans.

Some boundaries were repeatedly rebuilt or realigned, so that they eventually developed into several parallel banks and ditches (known as ‘multiple ditch systems’, multiple-ditched variants were deliberately built like this and are not the result of sequential additions). Some clearly faced in a specific direction, while others were constructed as a single ditch lined by a bank on both sides (or a single bank lined by twin ditches), thus presenting an equal barrier to people approaching from either direction.

The boundaries with perhaps the strangest appearance to the modern eye are ‘pit alignments’, so called because the vast majority have been discovered through aerial survey, as ‘dotted lines’ of approximately circular or rectangular marks visible from the air in former or current arable land. Geophysical survey and excavation also reveal the pits very clearly. However, a tiny number are preserved as earthworks in upland areas that have escaped ancient and modern ploughing, and these examples generally have prominent banks running along one or both sides of the lines of pits (Figure 4). As a result, theories developed in the 1980s that pit alignments were ‘permeable’ boundaries, through which people and livestock could pass using the causeways of intact ground between the pits, now seem less convincing. Instead, the pits may have been simply a method of quarrying material for the bank – a technique quite different from what may seem logical to a present-day mind.

On Eberston Common, North Yorkshire, one of a sequence of pit alignments has evidently been carefully cleaned out at some stage, with small mounds of spoil from the individual pits dumped on top of the adjacent bank. Another has been



Figure 4

The best preserved and earliest pit alignment on Ebberston Common, on the North York Moors, comprises a line of sub-rectangular pits of regular size and spacing, with a low bank on either side. Many of the pits are still waist-deep and some usually contain water.

re-dug as a continuous ditch, leaving only faint impressions of the original pits in its base, while another disappears under the Snainton Dyke, a much more massive bank and ditch believed to be of Iron Age date. This hints that continuous earthworks that can be seen elsewhere today may have evolved from pit alignments (Figure 5).

The so-called ‘Dartmoor reaves’ testify to the progressive taming and sub-division of this now desolate landscape through the course of the mid-later Bronze Age, prior to 1200 BC. Though reaves are usually described as elements of a ‘field system’, the major axial boundaries from which the pattern as a whole developed are linear earthworks reminiscent of the Wessex

‘ranch boundaries’. Each reeve is formed by a low, narrow stony bank - sometimes so slight that it can be difficult to recognise - evidently made of stones cleared off the surrounding land surface. They may run virtually straight across what is now inhospitable moorland for hundreds of metres or many kilometres, sometimes aligned on distant natural landmarks such as tors. The reeves only survive because later land-use on Dartmoor has not been intensive. In recent years, similar boundaries have been identified in other upland settings.

So-called **oppida** (the term used by Julius Caesar to describe the defended towns he encountered during his campaigns in Britain, France and the

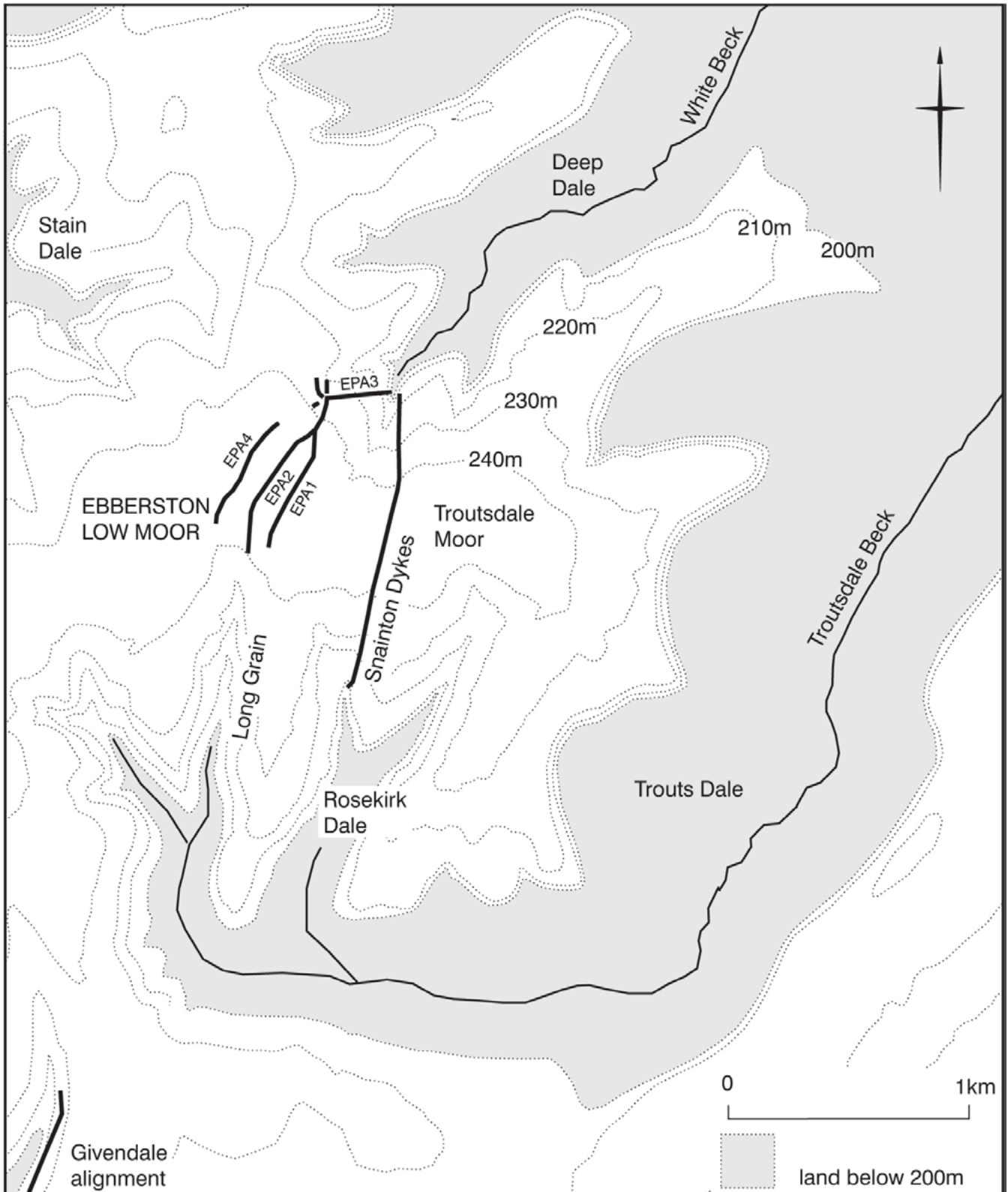


Figure 5
 The inter-related pit alignments on Eberston Common, North Yorkshire. All these linear earthworks, together with the Snainton Dyke which is probably of Iron Age date, traverse the plateau between the ends of deeply incised valleys, cutting off the southern end of the plateau. The alignments originated at different times and it seems unlikely that all would have survived in contemporary use.

Low Countries), dating to the Late Iron Age, are often surrounded by stretches of linear earthwork which, since they are discontinuous, seem as much concerned with the definition of territory

as with defence. Indeed, some so-called ‘multiple ditch systems’ define enclosures which share certain characteristics with oppida, though they generally lack the same degree of monumentality.

2 Chronology

Linear earthworks are not always easy to date: often, they contain little dateable material and in many cases they are likely to have been repeatedly cleaned out or refashioned so that evidence for their origins has potentially been removed. Superficially, their form is not often diagnostic, so prehistoric examples can be confused with medieval or later ones. For this reason, amongst others, associations with other monuments are extremely important.

In some cases, survey can demonstrate that linear earthworks are aligned on, or even impinge upon, pre-existing monuments such as burial mounds and hillforts (Figure 6). A number of other hillforts, such as Woolbury, Danebury and that on Quarley Hill, all in Hampshire, or Sidbury in Wiltshire, were established at the junctions or terminals of pre-existing linear earthworks. In these cases, understanding of the associated monuments can make a vital contribution to the understanding of the function and date of the linear earthworks.

Overall, it would seem that boundaries were constructed, in one form or another, from the early Neolithic onwards. The earliest 'conventional' linear earthwork so far confirmed, dating to around 3600 BC, follows the crest of the western escarpment of Hambleton Hill, Dorset, for perhaps as much as 3 km. It comprises an almost continuous bank and segmented ditch, thus similar in form to two causewayed enclosures on the adjacent summits.

Land boundaries appear in greater numbers from the middle of the Bronze Age, around 1500 BC, apparently coinciding with pressure on land brought about by increasing population levels and perhaps with the rise of powerful rulers who were able to command large workforces. Some of these early boundaries, as well as newly constructed ones, continued to structure the



Figure 6
On Chapperton Down, Wiltshire, within Salisbury Plain Training Area, a linear earthwork is aligned on a Neolithic long barrow, cuts through earlier fields, and changes direction sharply to avoid a pre-existing settlement

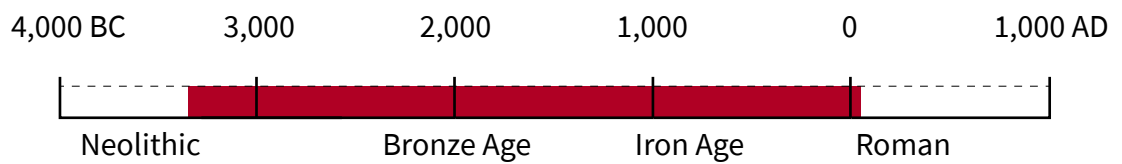
social and economic landscape through the Iron Age and into the Roman period. Indeed, some have seen continuous use, or repeated re-use, from prehistory to the present day.

The construction and initial use of pit alignments may have spanned a somewhat shorter period, though a number were re-used subsequently.

Some of the earliest seem to date to the later Neolithic period: on Ebberston Common the latest of the sequence of at least six pit alignments appears to predate the construction of a round barrow which would typically date to the earlier Bronze Age, around 2000 BC. Relatively few pit alignments seem to have been created after the Early Iron Age. Excavations elsewhere have discovered other anomalies, however, constructed in the Roman period and even in the 18th century.

So-called 'multiple ditch systems' appear to have originated in the late 2nd to early 1st centuries BC and to have continued in use into the Roman period. This makes them broadly contemporary with the oppida with which they share various characteristics.

Linear Boundaries Timeline



3 Development of the Asset Type

While most linear boundaries which survive as large earthworks have presumably been recognised ever since their construction, it is relatively recently that archaeology has been able to test interpretations of their dates and purposes derived from folklore. Survey of upstanding earthworks was the first analytical technique to be applied and was used systematically by the Ordnance Survey from the mid-19th century onwards.

Survey, in various forms, remains a key tool for understanding linear earthworks, in part because their remains tend to be extensive. As was recognised as early as the 18th century (and as described above), careful analysis of surface traces where the earthwork is well-preserved can also sometimes elucidate constructional sequences or give some suggestion of function.

As with many other types of monument, increasingly intensive and extensive aerial survey, and more recently geophysical survey, has shifted attention away from examples that are still visible as upstanding earthworks towards those that have been levelled by ploughing, often many centuries ago (Figure 7).

In the last few decades, large-scale aggregate extraction, notably in East Anglia and the Thames Valley, has prompted excavation of much larger samples of linear earthworks; previously, most excavations were limited to examining narrow slices through the earthworks (known in archaeological jargon as 'sections'). These larger samples stand a better chance of recovering dating evidence and detecting changes in form along the length of the earthworks; accurate dating remains one of the key questions about most linear earthworks.

The ditches of linear earthworks can also preserve important evidence about the ancient environment in the vicinity, in the form of snails and, where the base of the ditch is waterlogged, pollen and plant remains (especially in peat).

In upland environments, the date and pace of peat growth is itself an important environmental indicator. Such information can potentially contribute to an understanding of the function of the boundary. Former turf-lines sealed beneath banks (where these survive) can also preserve information about the state of the environment prior to the construction of the boundary, potentially showing how land-use changed when the boundary was created. Obviously, this environmental information is at its most useful when coupled with good dating evidence.



Figure 7

On Pentridge Down, Dorset, a Neolithic long barrow survives as a prominent mound, but centuries of ploughing have flattened the terminus of a later Neolithic cursus monument and an adjacent linear earthwork also presumed to be of prehistoric origin. These are now only visible from the air as soilmarks.

4 Associations

As described above, linear earthworks may relate directly to various artificial features, such as burial monuments and hillforts. In some cases, cross-ridge dykes appear to block the easy approaches to a particular monument or settlement (Figure 8). Since sure-footed livestock could in many cases have rounded the ends of these barriers, it would seem that they related primarily to human movement.

While it may be tempting to interpret them as defensive outworks, it is seldom certain that the



Figure 8
At the centre of the aerial photograph, a cross-dyke seems to block the approach to the Iron Age hillfort of Chanctonbury, West Sussex, but it remains uncertain whether the two are of contemporary origin and/or use.

presumed outworks are actually contemporary in origin or use with the centres they appear to protect. In addition, it is not usually clear without excavation whether the earthworks were intended as defensible lines, perhaps with superstructures and gateways, or as symbolic borders conveying the message “You have just entered our territory”, both to friends and less desirable visitors. In other cases, a single cross-ridge earthwork may cut off the tip of a spur or promontory in a manner comparable to a promontory fort. Devil’s Dyke, in East Sussex, is one of a number of Iron Age hillforts which seem to have incorporated earlier cross-dykes into their circuits; it also totally encloses another cross-dyke.

So-called ‘multiple ditch systems’, as mentioned above, share certain characteristics with oppida; namely, they are also of Late Iron Age origin and appear to have bounded areas where a wide range of settlement, economic, political and religious activities took place. In such cases, the evidence for the activities is integral to the understanding of the boundaries themselves.

The indirect, in a sense incidental, associations of linear earthworks with earlier remains, such as field patterns they cut through, can be just as significant as the more obvious direct relationships (Figure 9). Similarly, much later episodes of re-use of prehistoric boundaries, for example as medieval parish boundaries or 19th century field boundaries, are potentially very informative about those later periods in their own rights.

It is not uncommon for linear boundaries to influence the lines of later tracks. They are also illustrative of the potential of inherited prehistoric boundaries to contribute to the structure of the present landscape. Conversely, the deliberate erasure of the surface traces of part or all of a boundary can be significant.



Figure 9
On the central ranges of Salisbury Plain Training Area, Wiltshire, a prehistoric linear boundary called Old Nursery Ditch predates a multi-period field system to the left.

5 Further Reading

Two edited volumes, J C Barrett and R Bradley, *Settlement and Society in the British Later Bronze Age* (1980) and J Brück, *Bronze Age Landscapes: Tradition and Transformation* (2001), present useful overviews of the later Bronze Age, the period which saw the most dramatic rise in the extent and number of boundary earthworks.

Collin Bowen's two 1978 analyses of Wessex 'ranch boundaries' ("*Celtic*" *Fields* and "*Ranch*" *Boundaries in Wessex*, in S Limbrey and J G Evans (eds), *The Effect of Man on the Landscape: The Lowland Zone*, and (with J G Evans and E Race), '*An Investigation of the Wessex Linear Ditch System*' in H C Bowen and P J Fowler (eds), *Early Land Allotment*) represent an early benchmark in the recording and understanding of linear earthworks, and exemplify a contextual approach to their understanding through field survey.

The Wessex linear ditches are particularly important because initial survey work has been followed up with other investigations, such as J G Evans and M P Vaughan's 1985 analysis of associated environmental evidence ('*An Investigation into the Environment and Archaeology of the Wessex Linear Ditch System*', *Antiquaries Journal* 65 (1985), 11-38), Barry Cunliffe's excavations of various hillforts associated with linear boundaries (summarised in his 1990 article '*Before Hillforts*', *Oxford Journal of Archaeology* 9, 323-36), and the programmes of survey and excavation carried out by Richard Bradley and colleagues.

Don Spratt's publications (*Prehistoric and Roman Archaeology of Northeast Yorkshire* (1982), and *Linear Earthworks of the Tabular Hills, North-East*

Yorkshire (1989)) begin to do a similar job for the various linear earthworks of the Hambleton Hills in North Yorkshire.

For cross-dykes, E C Curwen's 1951 survey of the Sussex evidence ('*Cross-Ridge Dykes in Sussex*' in W F Grimes (ed.), *Aspects of Archaeology*, and Peter Fowler's 1964 review prompted by fresh evidence from Wessex ('*Cross-Ridge Dykes on the Ebble – Nadder Ridge*', *Wiltshire Archaeological and Natural History Magazine* 60, 47-51), collectively provide an introduction.

David Wilson's 1978 synthesis of the evidence then available for pit alignments through aerial survey ('*Pit Alignments: Distribution and Function*' in H C Bowen and P Fowler, *Early Land Allotment*) offers another benchmark, although many new discoveries have been made since then.

Collin Bowen's 1990 analysis of the origins and evolution of Bokerley Dyke, the Late Bronze Age earthwork on the Hampshire/Dorset border (*The Archaeology of Bokerley Dyke*), and Eberhard Sauer's 2005 account of Aves Ditch, an Iron Age boundary in Oxfordshire (*Linear Earthwork, Tribal Boundary and Ritual Beheading: Aves Ditch from the Iron Age to the Early Middle Ages*) represent useful studies of individual linear earthworks.

Detailed assessment of the linear ditch systems on Salisbury Plain Training Area, and their relationship to other forms of monument and land use is covered in D McOmish, D Field and G Brown *The Field Archaeology of the Salisbury Plain Training Area* (2002). See also, *The archaeology of the dykes: from the Romans to Offa's Dyke*, Mark Bell, Stroud, Amberley (2012).

6 Where to Get Advice

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