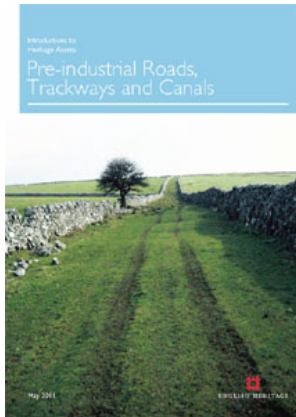




Historic England

Pre-industrial Roads, Trackways and Canals



On 1st April 2015 the Historic Buildings and Monuments Commission for England changed its common name from English Heritage to Historic England. We are now re-branding all our documents.

Although this document refers to English Heritage, it is still the Commission's current advice and guidance and will in due course be re-branded as Historic England.

[Please see our website](#) for up to date contact information, and further advice.

We welcome feedback to help improve this document, which will be periodically revised. Please email comments to guidance@HistoricEngland.org.uk

We are the government's expert advisory service for England's historic environment. We give constructive advice to local authorities, owners and the public. We champion historic places helping people to understand, value and care for them, now and for the future.

HistoricEngland.org.uk/advice

Introductions to
Heritage Assets

Pre-industrial Roads, Trackways and Canals



May 2011



ENGLISH HERITAGE



Fig. 1. Unmetalled sunken green lanes such as this example mark the courses of former roads in all areas of England.

INTRODUCTION

Not long after the end of the last Ice Age early hunter-gatherers left footprints which have been preserved on the shores of river estuaries. These are the earliest known evidence of journeys made in Britain. As prehistoric communities adopted a more settled existence, from the Neolithic period (5000-2500BC), permanent trackways developed when the same paths were trodden on a daily basis by people and animals. There was little long distance travel at this time and water transport was often the easiest option for long journeys, and this remained the case until as recently as the late medieval period. Wheeled transport was rarely used until the Romano-British and medieval periods and before modern roads were built (from the 18th century onwards) travel was slow and difficult.

As here defined, the term 'trackway' refers to a linear route which has been marked on the ground surface over time by the passage of traffic. Trackways are usually relatively short routes for local use. A 'road', on the other hand, is a route which has been deliberately engineered. Roads tend to be major routes running for longer distances than trackways, often between towns. There are a few exceptions to these general rules. They include deliberately constructed prehistoric timber trackways and 5th- to 17th-century unmade roads.

It used to be thought that the earliest routes in Britain were prehistoric 'ridgeways', long distance trackways following chalk and limestone hills. This idea grew up in the early years of archaeological studies when the most obvious prehistoric monuments, such as Bronze Age burial mounds and Iron Age hillforts, were found

concentrated in upland areas. Since then a large number of late prehistoric settlements have been discovered in valleys and other low-lying areas with the help of aerial photography and excavation. Timber trackways buried in low-lying water-logged areas have also been excavated, demonstrating that prehistoric activity was not confined to hilltops and ridges and that although some upland trackways were used in prehistory, they clearly formed part of a more complex network of local routes.

Roads were an innovation brought to Britain with the Roman invasion of AD 43. Their initial purpose was to speed the progress of the conquest by allowing messages, reinforcements and supplies to be transported quickly from established bases to the conflict zone. Following the conquest, roads were maintained and constructed by civil authorities. Towns were important in Roman Britain and good roads were necessary to transport supplies to them. Additionally, valuable raw materials were exported from the province, while imported luxury goods were conveyed by road to new settlements. By about AD 150 at least 10,000 miles of Roman road had been built, widely distributed across England (with the exception of Cornwall, so far as is known). The Romans also used rivers for transport and they built artificial water channels which may have been used for navigation. When the Roman market economy collapsed (cAD 420) a high quality transport system was no longer needed, though roads and trackways continued to be used by pack animals and pedestrians.

(continued)

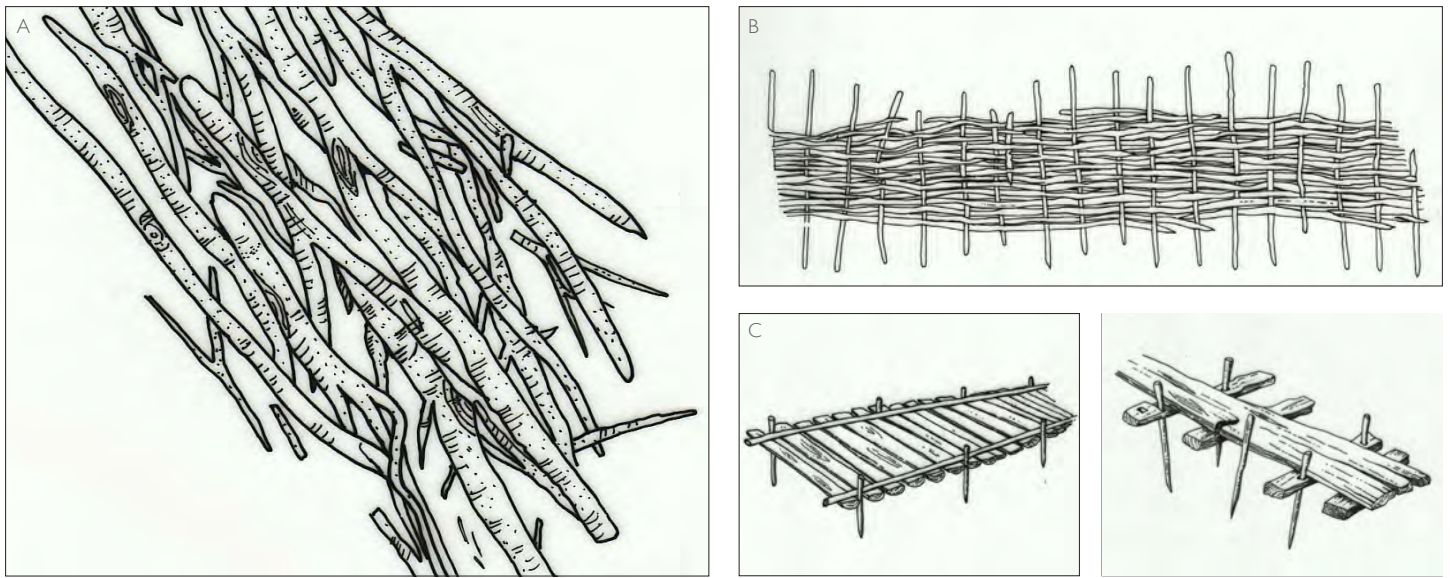


Fig. 2. Different types of prehistoric wooden trackways found on the Somerset levels. A: The Honeygore Track, plan as excavated in 1948. Its longitudinal timbers, of birch, are pinned down by slender oblique stakes. B: The Eclipse Track. C: The Abbot's Way, reconstructed from excavation evidence. The transverse timbers are 1.4m long. D: The Meare Heath Track, as reconstructed from excavation evidence. Heavy planks were used as transverse bearers and for the walking surface.

Four hundred years later towns began to re-emerge, many on the old Roman road network, and new towns and villages were established away from existing roads. During the 9th century, Saxon defences built against the Danes included a system of fortified settlements, 'burhs', and interconnecting military roads, 'herepaths'. Saxon roads followed way markers, often prehistoric monuments attributed to legendary figures, for example 'Wodin's Barrow' and 'Adam's Grave'. From late Saxon times a network of roads and paths existed between settlements. While the perception of Saxon and medieval roads is of wide muddy spaces through which travellers picked their way looking for a dry path, various pieces of evidence demonstrate that rapid long-distance travel was commonplace. In 1066 Harold's army, for instance, returning from the Battle of Stamford Bridge, marched from York to London in a week or less, while all medieval kings and their large households routinely managed twenty miles a day moving from one residence to the next. Matthew Paris's Map of Britain of the mid 13th century, the Gough Map of the mid or late 14th century, and written itineraries, all show that major routes, and route-planning, were well understood. As in Roman times, London remained the focal point of the road pattern, though roads also radiated from other major towns. Central and southern England, where the largest number of medieval towns were located, had the densest concentration of medieval roads.

Water transport was also important. The shipment of goods by water has obvious advantages compared to road haulage in terms of the relative ease with which heavy loads can be transported. However,

despite an extensive natural network of rivers which connects the coast with many significant inland towns, transport along England's water ways presented significant difficulties – particularly up-stream, where permanent or seasonal shallows prevented navigation. To overcome these obstacles it was necessary either to improve rivers by dredging, widening or the use of locks; or to construct wholly artificial canals. The earliest artificial watercourses in England were built by the Romans the most notable example being the Car Dyke, which runs along the western margins of the fens between Lincoln and Peterborough. It is thought to have been dug primarily as a catchwater drain, although a sunken boat containing Roman pottery discovered near Waterbeach, indicates that some lengths also served for navigation. The shorter Foss Dyke, stretching some 18km between the River Witham at Lincoln and the River Trent at Torksey, has been claimed as a further Roman navigation, although a medieval origin, linked to the shipment of stone for the construction of Lincoln Cathedral seems more probable; it was certainly dredged to improve its depth around 1121. Other early waterways are to be found in fenland areas (i.e. the Monk's Lode at Sawtry, and the 'Saxon canal' at Glastonbury). These channels mainly linked medieval religious houses to natural rivers (and thereby to towns) and served to move building materials and agricultural produce from towns and villages to nearby rivers.



Fig. 3. A prehistoric wooden trackway on the Erith foreshore, being cleaned during recording. This trackway was later given a radiocarbon date of about 1800 cal BC.

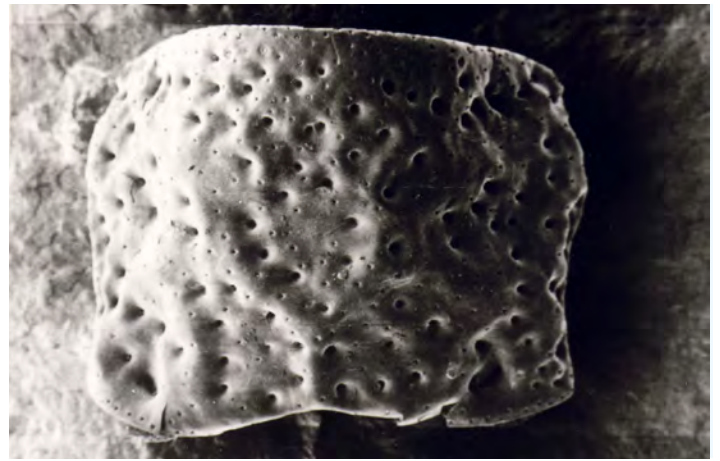


Fig. 4. A scavenger water beetle (*Hydrochus carinatus*) recovered from The Sweet Track, Somerset.

DESCRIPTION

Trackways may be recognised in the landscape as sunken lanes or 'hollow-ways', formed where the ground has been worn down by the repeated passage of traffic. Once formed, hollow-ways often remain in use for long periods and become drainage gullies for surface water, which deepens them further. Other trackways may be identified from parallel ditches dug along their sides to provide drainage or to discourage animals from straying. Terraced trackways can remain as linear earthworks running along the contours of hillsides. Multiple sunken ways, roughly parallel with each other, splay outwards on hill slopes where travellers diverged from existing paths to cross difficult terrain. Amongst medieval open fields further trackways developed along unploughed headlands and these sometimes survive as low ridges 9m to 27m wide. Many other trackways remained in use and still survive as farm tracks, bridle paths, footpaths, field boundaries or roads. Trackways have been used from early prehistoric to modern times and their physical appearance has remained the same irrespective of their date. Trackways were concentrated in the vicinity of contemporary centres of population.

Wooden trackways providing easy passage over waterlogged ground are integral part of any wetland exploited by humans from the mesolithic to the present day. They vary from simple short tracks of brushwood laid down in a fairly haphazard manner to substantial timber causeways covering several km. Two main types of construction are recognised: simple (Figure 2: A and B), where the wooden elements are laid directly on the ground and composite (Figure 2: C and D), where a raised walkway is supported on a foundation of stakes driven into the ground, sometimes with additional foundations. These two main types are then divided into several sub types depending on the type of wood used and the nature of the stake foundations. The type of construction used may vary along any given length of trackway depending on the ground conditions. Similarly trackways can be intermittent along their length reflecting past wet areas, and often occur in roughly parallel clusters showing the constancy of both former wetland and the need to transverse it.

Roman roads frequently remain fossilised in the landscape as modern roads or later boundaries. Their most characteristic feature is their straight course. They rarely follow the natural lie of the land or adopt the easiest route, but run through natural features and across pre-existing boundaries. Changes in direction are angled rather than curved, often occurring on hilltops or higher ground from which the next section could be sighted by surveyors. Where the gradient was extreme a zig-zag course was adopted, though very occasionally cuttings may be seen.

The hard and durable surfaces of Roman roads were designed to be suitable for heavy wheeled vehicles. Structural elements included the 'agger' (an embankment formed by material from side ditches or quarry pits), the road surface (metalling) and side ditches or quarry pits. The full width of a road was greater than the metalled surface since it also included the slopes of the agger and the side ditches or quarries, plus a cleared strip on either side for security. The overall width varied considerably, though the average was between 5m and 10m. The agger, which can survive to about 0.75m high, provided a firm, dry base for metalling materials. It was occasionally revetted with stone kerbs, sometimes supplemented by a central rib of stones. Unstable ground was sometimes consolidated with wooden piles or brushwood. The metalling, of materials gathered locally, generally consisted of two layers: a foundation of large stones with a layer of finer material on top. The passage of wheeled vehicles compacted the surface into a hard smooth layer and prevented the roads from becoming rutted and muddy. Side ditches tended to be U-shaped and shallow, about 0.5m deep and about 1-2m wide. They provided material for the agger and helped with drainage. Their place was sometimes taken by lines of quarry pits.

London, the provincial capital, was the focal point of the Roman road system in Britain. Eight major roads connected it with other towns. The Fosse Way was the only major Roman road not leading to London, instead connecting legionary bases at Exeter and Lincoln.

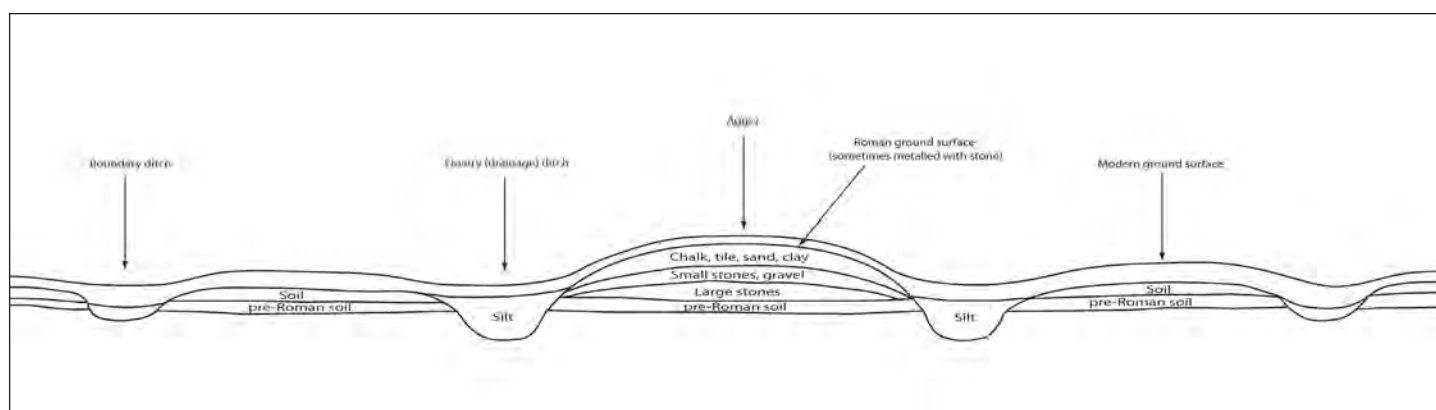


Fig. 5. 'Typical' Roman roads in Britain had a central raised agger, which was metalled and flanked by drainage ditches. However, there is frequent variation. Some roads had additional lightly metalled or unmetalled strips on either side of the agger, bounded by smaller outer ditches. Other examples had no side ditches at all. It is often thought that Roman roads have a standard width of 20 pedes (1 pede or Roman foot = 1 1/2"). This refers to the width of the stone metalling, which was 6.51m on average, more than adequate for two-way wagon traffic. When the agger slopes and side ditches are taken into account the full width of roads is far greater and can be as much as 100m (Akeman Street, Quenington, Oxfordshire). The width of Roman roads has been used as an indicator of their importance, major routes tending to be wide, while narrow roads indicate local access to villas and settlements.

Most new roads dating from the post-Roman period to the 18th century were merely heavily used trackways. They share the characteristics of trackways and, apart from a few town streets, bridge approaches and causeways, they were not metalled. They follow the natural contours of the land and avoid existing boundaries. When a road was obstructed or impassable, travellers had the right (enshrined in the Statute of Winchester of 1285) to diverge from its course, causing multiple hollow-ways running alongside each other to be created. Prior to enclosure, roads were often not restricted by walls or hedges and so they tended to be wide, consisting of large numbers of roughly parallel hollow-ways spreading out across broad swathes of the countryside. Except where they cross moors or other unenclosed areas, the lines of medieval roads are now reduced and confined by later boundaries. They are widely distributed throughout England, converging at major medieval towns and are most densely concentrated in the south of England.

Enclosure, especially Parliamentary Enclosure of the 18th and 19th centuries, introduced a new era of road construction. These roads, part of replanned blocks of countryside, are typically straight and superficially resemble Roman roads. The 18th century was also the great era of turnpike roads. These lie beyond the scope of this guide. Toll houses and other structures are treated in the English Heritage selection guide on Transport.

The improvement of rivers for transport in pre-industrial times took several forms. 'Flashlocks' were temporary dams which, when removed, produced a prolonged surge of water sufficient to carry boats over shallow reaches of river. These were in use from medieval times. There were two main types: the 'paddle and rymer weir' and the 'staunch'. Use of the former, an arrangement of removable vertical blades set within a framework, is recorded along the Rivers Thames and Severn and their tributaries, around the fringes of the Fens, on the Rivers Tone and Parrett in Somerset and the Derwent and Soar in Yorkshire. A number remained in active use (to control the flow rather than aid navigation) on the upper Thames well into the 19th century, and a few still survive (that is Northmoor and Rushy Weirs) albeit rebuilt with modern materials. The staunch was a more sophisticated type dating from about the 17th

century. It consisted of a gate which might be hinged, operate much as a guillotine blade, or comprise horizontal planks slotted one on top of another. In almost cases, flashlocks operated alongside complex, competing demands on the river; specifically those of watermills.

Artificially constructed water channels can be distinguished by their stagnant water and lack of an obvious current. By-pass channels were sometimes dug for the passage of boats to avoid conflict with mills, fish-traps and other weirs. These were initially rather small and localised (that is the 'barge gutters' of the River Severn), but more extensive channels developed, notably the 4km section dug to bypass several weirs along the Exe and bring ships to Exeter in 1566.

CHRONOLOGY

Unmetalled roads and trackways are extremely difficult to date. They have no constructional material to aid interpretation and artefacts are rarely present. This difficulty is compounded by the fact that their form has remained unchanged from prehistoric to modern times and that many were in continuous use for centuries, even millennia.

Prehistoric timber trackways across water-logged areas are the earliest known deliberately constructed routeways in Britain and excavated examples range in date from the end of the Mesolithic period.

Far more is known about Roman roads. As the Roman army advanced military roads were laid out in its wake, the main network being built between AD43 and AD81. The pattern of roads and their construction sequence reflects the advance of the Roman army, so the earliest examples lie south and east of the Fosse Way. Later military roads are found in the north of England, including examples close to the southern side of Hadrian's Wall and the Antonine Wall. Secondary roads linking Romano-British industrial sites and agricultural settlements to the main network were built in the late 1st and 2nd centuries AD and possibly into the 3rd and 4th centuries AD. As with unmade trackways, many of these roads continued to be used in later periods.



Fig. 6. A mile-long stretch of a probable Roman road crosses isolated moorland at Wheeldale, North Yorkshire. Its hardcore and drainage ditches can be seen.



Fig. 7. A paved Roman road on Blackstone Edge, near Littleborough, Greater Manchester.

The Roman road network formed the basis of later road systems. New roads added to the network prior to the 18th century fall into the same category as trackways in that they do not display any characteristic physical features, but their dates are known from the dates of the settlements they link. In addition to roads between settlements, long distance routeways developed during the medieval period, such as pilgrims routes leading to famous shrines, or drove roads for moving animals from upland areas to market towns.

In terms of water transport, the Exeter Canal (completed 1566) introduced the pound lock to Britain: a technology, developed in Holland and Italy, which provided a much more closely-controlled means of raising and lowering water levels and hence enabled navigations to overcome significant changes in gradient. Improvements in this technology (for instance, the double mitre-gate pound lock introduced on the River Lee in Hertfordshire in 1574, the refinement of stone built pounds on the Thames in the 1630s and more ambitious projects such as the Don, the Mersey and Irwell and the Aire and Calder navigations in the following century) set the scene for the explosion of canal building ushered in by the completion of the Bridgewater Canal in 1776. Canals and improved river navigations, together, provided the transport infrastructure which facilitated the Industrial Revolution. Canal structures of the Industrial Age are discussed in the Transport Buildings selection guide.

DEVELOPMENT OF THE ASSET TYPE AS REVEALED BY INVESTIGATION

Where roads and trackways went out of use, or have a different alignment to their modern course, earthworks, cropmarks or eroded surface material have been located by field survey and aerial survey. Straight alignments of Roman roads fossilised in the landscape have been found by similar methods. Geophysical survey has been used to confirm the presence of metalling, side ditches, or other structural material buried beneath the ground surface.

Excavation has added to the knowledge of pre-industrial roads and trackways. Details of the construction techniques used in prehistoric times have been revealed by excavations of timber trackways, which have been dated using dendrochronology and radiocarbon methods. Excavation has also revealed the construction methods used by Roman road engineers. The few artefacts, pottery, coins, metal objects and animal bones, which have occasionally been recovered from road surfaces have given insights into when individual routes were in use. Land surfaces buried beneath aggers have yielded artefacts and environmental evidence, as have ditch fills. Organic materials used for the agger base have sometimes been preserved, particularly in water-logged places like river crossings or on marshy ground.

The value of wooden trackways is the totality of the evidence that is preserved. The anoxic (oxygen depleted) conditions found on these sites lead to a wide range of artefacts and environmental remains being preserved. Thus trackways provide information on prehistoric wood working techniques as well as woodland management which are almost entirely absent from most prehistoric sites. The wood from trackways can also be used for radiocarbon dating and dendrochronology, not only providing evidence of the longevity, repair and re-use of timber routeways, but also of problems of insect infestation. More generally, wood used in trackways has the potential to fill gaps in the tree ring sequence. As well as providing routes through wetland, trackways may also have acted as boundaries, and this may explain the deliberate deposition of artefacts alongside them, some of them remarkable. Archaeologists often refer to this as 'ritual activity'. In addition to the delicate biological remains found above, within and below trackways, they provide data on environmental events such as flooding and wider land use, such as the proximity and extent of arable agriculture.

Place-name evidence and documents have assisted studies of pre-industrial routeways. Anglo-Saxon charters, from the 8th century onwards, often refer to 'straets' (paved roads, probably Roman), 'wegs' (ways), 'here-paeths' (military tracks) and 'portways' (leading to ports or market towns). Roads are not often recorded in medieval documents but their presence can be deduced from references to repairs to bridges and causeways along their routes.



Fig. 8. Multiple hollowed trackways traverse the hillslope at Twyford Down, Hampshire. Seen on an aerial photograph taken in 1929.



Fig. 9. An enclosure-period road at Roystone Grange, Derbyshire, confined between newly-constructed stone walls.

Travel itineraries, particularly royal itineraries, and maps, including those of Matthew Paris (about 1250) and the 'Gough' map (about 1360) have also been useful sources. Studies of place-names and alignments on later maps have revealed further examples of early roads and trackways. Significant names include 'way', 'ford', 'bridge', 'street', 'stretton', 'gate', 'cryw (ford)', 'ffordd or heol (road)' and 'sarn (causeway)'. Roads used by particular trades or for particular purposes have also been identified by names such as 'saltway', 'drove', 'driftway' and 'corpse road'. Roman roads were a favourite topic of interest for 18th-century antiquarians, 19th-century surveyors and later archaeologists. The most notable study by later researchers has been Ivan Margary's. He traced about 6,000 miles of Roman roads and his work, including his numbering system, has formed the basis of more recent research.

ASSOCIATIONS

Roads and trackways exist as articulating features in the landscape and are associated with a wide range of contemporary monuments. Trackways of all periods are associated with contemporary settlements from large towns to isolated farmsteads, while roads connect major settlements. Prehistoric trackways are also associated with burial mounds, fields and possible ritual sites. Wooden trackways are often associated with waterlogged prehistoric settlements, platforms, and potentially fishing and hunting sites. As their survival depends on the maintenance of anoxic conditions they are highly at risk from any actions that lower the water table (for instance, drainage works, tree planting). Peat extraction will also destroy any sites within the deposits being exploited.

Roman roads and trackways are found in association with military sites, mansiones, walls, ramparts, gateways, temples, villas, potteries, iron works, salterns, bridges, extra-mural cemeteries, harbours, Saxon shore forts, Roman barrows, amphitheatres and triumphal arches. Lesser features associated with Roman roads include drains, culverts, fords, ferries and bridges.

Milestones, cylindrical and about 1-2m high, may also be present beside roads, bearing an inscription recording the name and titles of the emperor; sometimes mileage, place-names and the name of the public authority responsible for work on the road.

Saxon roads, similarly, can now be seen to interlink both settlements and sites of political and military strategic significance like burhs (defended towns). Research on this topic by scholars like Andrew Reynolds is being actively pursued.

Medieval roads are associated with settlements (living and deserted), religious complexes like monasteries, fortifications, industrial sites and local agricultural landscapes. Some structures, such as bridges, have an intimate association with the roads they carry. Medieval and later trackways across moorland may be associated with marker stones or crosses. There may also be non-contemporary associations with prehistoric trackways and perhaps early estate boundaries and field systems.

FURTHER READING

Brian Paul Hindle's *Roads in Roman Britain, From Trackways to Motorways: 5000 years of Highway History* (2006) provides a comprehensive overview of the history of roads in general. Richard K Morriss's *Roads: Archaeology and Architecture* (2004), Christopher Taylor's *Roads and Tracks of Britain* (1979), and Brian Paul Hindle's *Roads, Tracks and their Interpretation* (1993) are also informative studies. For early maps and itineraries, P D A Harvey, *The History of Topographical Maps* (1980) is wide-ranging and authoritative.

For information on prehistoric wooden trackways see B and J Coles, *Sweet Track to Glastonbury* (1986) and H Godwin, 'Prehistoric Trackways of the Somerset Levels', *Proceedings of the Prehistoric Society* 26 (1960), 1-37. R Van de Noort's *The Humber Wetlands: The Archaeology of a Dynamic Landscape* (2004) is another useful source of information.



Fig. 10. Engraving of an upper Thames weir and flashlock.

Ivan Margary's *Roman Roads in Britain* (published in 1955 and 1956; most recent edition 1973) remains the standard text on Roman roads and contains a wealth of information, while *Roman Roads in Britain* by Hugh Davies (2008) provides a handy summary. For the locations of Roman roads, the Ordnance Survey's *Map of Roman Britain* (2001 edition) gives an overall picture of the Roman road network, while information about accessible sections can be found in Helen Livingstone's *In the Footsteps of Caesar: Walking Roman Roads in Britain* (1995). Later pre-industrial roads are described in Brian Paul Hindle's *Medieval Roads and Medieval Roads and Tracks* (revised edition 2008).

To find out more about water transport see John Blair's *Waterways and Canal Building in Medieval England* (2007) and Edward Paget-Tomlinson's *The Illustrated History of Canal and River Navigation* (1993). The literature on canals, especially, is extensive, but a good general introduction is Nigel Crowe, *Canals* (1994).

If you would like this document in a different format, please contact our Customer Services department:

Telephone: 0870 333 1181

Fax: 01793 414926

Textphone: 01793 414878

E-mail: customers@english-heritage.org.uk

CREDITS

Author: Nicky Smith

Cover: Enclosure period road, Roystone Grange, Derbyshire (as Figure 9)

Figures 1, 6, 9: © P Stamper

Figure 2a: after Godwin H, *Prehistoric Wooden Trackways of the Somerset Levels*, *Proc Prehistoric Society* 26 (1960), fig 10

Figure 2b: after Coles J 1982, *Somerset Levels Papers* 8, fig 29

Figure 2c: after Godwin 1960, fig 11

Figure 2d: after Coles B & Coles J 1986, *Sweet Track to Glastonbury* (1986), fig 29, Thames & Hudson: London

Figure 3: © Jane Sidall, English Heritage

Figure 4: © Maureen Girling, English Heritage

Figure 5: © English Heritage

Figure 7: © Mark Moxon

Figure 8: Crawford Collection © Crown copyright. NMR

Figure 10: from Robertson, H R, *Life on the Upper Thames* (1875)