

# THE THAMES THROUGH TIME

**The Archaeology of the Gravel Terraces of  
the Upper and Middle Thames:  
The Thames Valley in the Medieval and  
Post-Medieval Periods AD 1000–2000**

## **Road, Rail and Aviation in the Thames Valley**



Historic England





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**Road, rail and aviation in the Thames Valley**  
*By James Bond, Anne Dodd, Jill Hind and Trevor Rowley*

**FROM TRACKS TO TURNPIKES: ROADS IN THE MEDIEVAL AND POST-MEDIEVAL PERIOD**

**Medieval roads in the Thames Valley**

*by James Bond*

The road system of the middle ages was complex, with individual links derived from different periods serving a variety of functions and operating at varying levels of importance. Place-names and landmarks on Anglo-Saxon charter bounds provide evidence for an intricate network of roads and tracks before the Norman Conquest, and the variety of terms used reflects the existence of different types of thoroughfare. The road pattern was never static, but in a continual state of evolution. The priorities of routes have always been liable to change, reflecting the fluctuating economic fortunes of the places they served. Their courses were often altered by large-scale planned diversions during the middle ages, particularly into medieval new towns (the main road between Oxford and Aylesbury was diverted to pass through the new market-place at Thame in 1219) and around the margins of new parks. Since the medieval concept of a road was as a right-of-way rather than a strip of land with defined boundaries, roads could also undergo spontaneous change through small-scale diversions around obstacles such as fallen trees or poached-up areas. Their character was also modified by the process of enclosure, which converted broad corridors of movement with many alternative routes into narrowly circumscribed tracks. It is, therefore, often difficult to assign any clear date of origin to roads in use before the 18th or 19th century.

Long-distance tracks avoiding modern settlements, particularly those that follow ridgeways and watersheds, have often been regarded in the past as surviving prehistoric routes. Of these, the Ridgeway on the crest of the Berkshire Downs, and the so-called Jurassic Way across the Cotswolds, appear to have been in use in the medieval period, but there is very little evidence to suggest that they were in use earlier. Much of the present green lane which bears the name 'Ridgeway' is, in fact, a product of enclosure in the 18th and 19th centuries (Steane 1983). Along the foot of the Berkshire Downs and Chilterns, crossing the Thames at Streatley, is a third long-distance trackway known as the Icknield Way. This is

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traditionally regarded as a pre-Roman route linking Wessex with East Anglia, though its prehistoric origins have been questioned (Harrison 2003). Its course is followed by the modern B4507 to the west of Wantage, and the B4009, B4544 and B489 between Chinnor and Ivinghoe. Elsewhere, it survives only as a minor road or track, in places with parallel upper, middle and lower courses which perhaps reflect a pre-enclosure corridor of movement up to a mile in width (Hindle 1993, 23–6). While the origins of this road are questionable, it is named in several Berkshire pre-Conquest charters, and on the bounds of Monks Risborough in Buckinghamshire (Mawer and Stenton 1926, 4–5; Thomas 1916, 51). It came to be regarded as an important route in the early middle ages, since it was one of four roads in England where travellers were placed under special royal protection (*chimini regales*, or ‘royal roads’) in the late 11th century (Stenton 1936, 3).

Some elements of the Roman road system remained in use throughout the middle ages and beyond (Fig. 1). The Old English word, *straet*, is usually taken to mean a metalled road of Roman origin, and its occurrence in place-names such as Stratton Audley (Oxfordshire), Stratton St Margaret (Wiltshire) and Streatley (Berkshire) indicates that such roads continued to be used into the early middle ages. The term occasionally appears in the boundary clauses of Anglo-Saxon charters. Cirencester, the most important Roman town in the Upper Thames basin, had half-a-dozen major Roman roads converging upon it, and they all continued to carry traffic in later centuries. London similarly served as a focal point of nine important Roman roads, some of which are still at least partly recognisable. Between Cirencester and London there was no major Roman road through the heart of the Thames Valley, but there were important routes on the northern and southern flanks. To the north, Akeman Street ran from Cirencester through Asthall, Wilcote, Alchester, Fleet Marston and St Albans. Short sections near Cirencester, east of Bicester, east of Aylesbury and through Berkhamstead are still classified as ‘A’ roads, and many other stretches remain in use at least as minor roads or tracks. To the south, Ermin Street ran from Cirencester through Wanborough and Speen to Silchester. It now survives as a minor road to the east of Swindon, while much of its course is fragmentary or entirely lost to the east of Wickham near Newbury, and only beyond the Thames crossing at Staines does it re-emerge as a modern road. This, the A30, follows the Roman course for about 11 miles as far as Brentford.

Traces also remain of two Roman roads crossing the Thames Valley from north to south. One road extended south from Alchester, crossing the Thames near Dorchester and continuing to Silchester. This road is now largely abandoned, though it featured as a *straet* on

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the bounds of Cuddesdon attached to the charter dated 956 (S. 587) and on the bounds of Sandford, nominally of 1050 and 1054 (S. 1022; S. 1025), and parts of its course survive as minor tracks and green lanes over the middle of Otmoor, east of Oxford and north of Dorchester. A possible crossing-point over the Thames is indicated by the name *eald straet ford*, ‘Old Street Ford’, in the bounds of Brightwell, Oxfordshire. The other road remains in use as the distinctively straight A338 between Grove and Frilford, but its continuation southwards over the Berkshire Downs, and northwards beyond Oxford, is entirely lost. Elsewhere in the Thames Valley knowledge of the Roman road system and the extent to which parts of it continued in use through the middle ages remains fragmentary.

As some of the major Roman arteries of the region, such as Akeman Street, declined and fell into partial disuse, new routes began to replace them. One of the most important roads of Anglo-Saxon England, mentioned under the name ‘Portway’ in the Anglo-Saxon Chronicle, linked the royal centre of Northampton with the port of Southampton, crossing the Thames at Oxford (Hindle 1993, 50). The term ‘Port Way’ or ‘Port Street’ is fairly widespread and generally indicates an important early road leading to a market centre. The *Portstraet* recorded on the 1005 bounds of Eynsham (S. 911) can be identified with the Witney-Bladon road; despite the *straet* element, this shows no evidence of Roman origin. The name occurs in several other Oxfordshire charters nominally of late 10th- or 11th-century date, at Ardley (S. 883), Whitehill in Tackley and Cutslow north of Oxford (S. 909) and is widely recorded in many later medieval records (Alexander 1912, 2–3).

The importance of pre-Norman long-distance transport is underlined by in the distribution of salt from Droitwich in Worcestershire. The Domesday survey notes rights to Droitwich salt in relation to the manors of Bampton and Great Rollright in Oxfordshire and Princes Risborough, 70 miles away in Buckinghamshire. Salt rights are also mentioned with regards to two other villas within the Thames catchment in Gloucestershire, Guiting and Chedworth, and their supplies probably came from Droitwich, though this is not explicitly stated. This distinctive trade has left its mark in numerous place-names such as Salt Way and Salters’ Lane, by which the routes followed by the salt carriers can be traced. Two important routes crossed the Cotswolds heading for the Thames. The first climbed the Cotswold scarp by Salters’ Lane above Hailes, continuing mostly along the watershed under the name Salt Way, passing west of Hawling and Northleach, and then descended through Coln St Aldwyns to the Thames at Lechlade. The second, more easterly route, followed the upper Windrush valley through the Guitings as far as Sherborne, then headed for Lechlade via Eastleach.

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Salford near Chipping Norton in north-west Oxfordshire, the earliest spelling of which is Saltford, lies on a route to Chipping Norton from which salt-carriers could either have travelled south to Bampton or east to Risborough (S. 112; Alexander 1912, 373–4). Salt ways were certainly used for the transport of salt, but they were also used by other travellers. Other local names which seem to imply the carriage of special commodities need to be treated with caution. A green lane beginning at Chapel House, east of Chipping Norton, and following the interfluvium between the Evenlode and Glyme for at least seven miles, passing through no settlements on its way, bears the name ‘Wool Way’, but there seems no authentic early record of this name, and nothing to suggest that it had any special function.

Several medieval maps portray elements of the main road system throughout England and Wales. Four surviving versions of a map of Britain were produced by Matthew Paris, monk of St Albans, in the middle of the 13th century (Fig. 2). The basis of the map was clearly a written itinerary from Dover to Newcastle-upon-Tyne, passing through London, St Albans and Dunstable. Off this main axis, however, Paris’ maps are extremely sketchy and their portrayal of the Thames Valley is very limited (Harvey 1992). The Gough Map in the Bodleian Library, made in about 1360, is much more accurate and provides fuller detail, being based upon not one but a whole series of intersecting main road itineraries. Some 40 per cent of main routes shown on the Gough map follow the line of Roman roads, but the road network as depicted on the surviving map (there are thought to have been at least two other versions which are no longer extant) is obviously incomplete, and omits several roads known to have been important from other contemporary sources. Four major roads are depicted radiating out from London and crossing parts of the Thames basin: the main route to Cornwall passed through Kingston, Cobham, Guildford, Farnham and Alton; the main road to Bristol passed through Brentford, Colnbrook, Maidenhead, Reading, Newbury, Hungerford and Marlborough; the main road to Gloucester and south Wales passed through Uxbridge, High Wycombe, Tetworth, Oxford, Witney, Burford and Northleach; and the road north-westwards to Carlisle passed through Barnet, St Albans and Dunstable. The Gough map also shows several interconnecting routes between those main arteries, from Reading to Oxford, from Oxford to Bristol via Faringdon, and from Oxford to Abingdon (<http://www.goughmap.org/>; Parsons 1958; Hindle 1980).

In addition to the main roads that could carry vehicles, there were many other routes used only by local traffic. Pre-Conquest charters contain numerous references to the word *weg*, usually translated as ‘way’ or ‘unmade road’, which was the commonest of all terms



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used for road in charter boundaries. Examples occur at Shifford, Eynsham, and Benson (S.911, S.887). The *weg* on the 1005 bounds of Eynsham survives as a green lane along the western boundary of Eynsham parish. Sometimes it was qualified by some further descriptive epithet, such as *hrycweg* (ridgeway) and *port weg* (road to market), which have already been mentioned. ‘Ridgeway’ is even more common as a local name in post-Conquest records, occurring in places where it does not seem to fit the natural topography. The term may often refer to a path along raised balks or headlands within the open fields (Alexander 1912, 3). Other common terms include *holan weg* (hollow way), *grenan weg* (green way) and *ealdan weg* (‘old way’), the latter two both occurring on the bounds of Witney in Oxfordshire (S. 771), and perhaps implying routes no longer in regular use. The Witney bounds in 969 and 1044 (S. 771, S. 1001), also included a ‘sheep way’ and a ‘huntsmen’s way’ (Gelling 1967, 99–103). On the bounds of Withington in Gloucestershire a feature called the *beamweg* crosses the valley of the River Churn, presumably implying some form of timber cordon over marshy ground. The *weg* element also appears in post-Conquest names, as in two separate mentions of a mereway or ‘boundary track’ on the boundary perambulation of Wychwood Forest in 1300 (Alexander 1912, 4–5). The Old English word *paeth*, ‘path’ occasionally occurs in major place-names such as Horspath, Oxfordshire, and seems to be used particularly for tracks over commons or heaths. It often occurs in charter bounds and sometimes seems to indicate a major route. The distinctive compound *herepað* implies a road used a strategic route for the rapid movement of troops. One example, mentioned in the late Saxon charter bounds of both Cuddesdon and Little Haseley, seems to have crossed the River Thames near Wheatley Bridge and continued south-eastwards to link up with the Icknield Way (Alexander 1912, 142; S. 587, S. 902).

Every township had its own local road system linking the settlement with its fields. In open-field townships these often followed a convoluted course around the headlands of open-field furlongs, and the routes were straightened out and rationalised on enclosure. Abandoned local roads of this type can sometimes be recognised as hollow-ways within deserted medieval villages and followed outwards from the settlement between surviving blocks of ridge and furrow. In areas of old enclosure, much of the existing local road network may have taken shape during the middle ages or even earlier.

The practicalities of early medieval farming occasionally required routes extending beyond the bounds of the individual township. Some individual settlements had rights in woods, meadows or common pastures 10–12 miles away, and in such cases routes in regular

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use connecting them with their distant resources might be expected. Along the Chiltern scarp there is a particularly well-marked pattern of parallel lanes linking the scarp-foot villages with their woodlands along the scarp face (Emery 1974, 64–8). There is some evidence of local droveways associated with transhumance, where stock was moved between valley and upland pastures with the seasons. Cattle were already being driven over longer distances from Wales and the Welsh borders to various market towns in the midlands by the end of the 13th century.

Travelling by road in the middle ages was not without its hazards. Wheeled vehicles could become bogged down in wet seasons and Parliament had to be postponed in 1339 because so many members were unable to travel because of bad weather. However, there was considerable mobility of both people and goods throughout the medieval period. The expanding economy produced agricultural surpluses up to the 14th century, which encouraged trade and industry, and promoted the expansion of towns. These developments could not have been achieved without reasonable ease of both local and long-distance travel. Considerable efforts were made at all levels, through royal orders, grants of indulgences by bishops and through local bylaws, to ensure that roads remained passable. Investment in bridges to replace earlier fords and ferries reduced the significance of the Thames as a barrier (see *The River Thames* chapter, this volume). Although medieval road surfaces were generally unmetalled, they served well enough for horse traffic and broad-wheeled carts. Indeed, travel by road was probably easier in the middle ages than in the following centuries. After the mid-16th century, the increasing popularity of narrow-wheeled coaches caused road surfaces to become seriously rutted and such journeys become increasingly difficult.

The royal household and members of the nobility were constantly moving with large entourages and wagon trains from one palace, castle or manor-house to another. Royal court movements from the time of King John are particularly well documented through the royal household accounts and the place of issue of royal letters and charters (eg <https://www.hist.cam.ac.uk/research/research/magna-carta-itineraries>). John himself moved on average a dozen occasions each month throughout his reign. The extensive travels of Edward I and Edward II have also been mapped by Hindle (1982, 34–40), and it is striking that only a minority of their journeys covered any part of the same route on more than one or two occasions, indicating once again that cross-country travel presented few real obstacles. All three monarchs travelled extensively within the Thames Valley and its immediate hinterland, from London out to Kings Langley, Windsor, Guildford, Farnham, Odiham,



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Marlborough, Reading, Wallingford, Oxford, Woodstock and Brill. Royal itineraries underline the importance of some routes not shown on the Gough map; for example, the road from Woodstock south-eastwards through Oxford and Wallingford to Reading and Windsor, or south-westwards to Marlborough, or from London to Portsmouth through Guildford.

Records underline the extent to which others, such as royal agents, messengers, justices and sheriffs, needed to travel on a regular basis. Monastic cellarers made considerable journeys to distant fairs to purchase commodities unavailable in local markets, and many people undertook lengthy pilgrimages. Estate stewards had to visit and inspect distant properties. Manorial officials might travel to buy and sell produce and livestock. For example, the Reeve of Cuxham in Oxfordshire regularly made at least twenty journeys a year to Henley to sell corn for the London market, and he also travelled to Winchcombe fair in 1320–1 to purchase ten foals for the bursar of Merton College (Harvey 1965, 66, 103). In 1305, the miller of Cuxham brought a millstone from Southampton with the aid of the carter and three horses, while five more stones were brought by water up to Henley and then overland in 1330–1 (*ibid.*, 103–4). Tenants often owed carting and carrying services which took them not just to their local market town but further afield.

Bulky and perishable goods were regularly transported by road, particularly after the number of obstructions on the Upper and Middle Thames began to hinder navigation (see *The River Thames* chapter, this volume). Building stone from quarries on the Cotswolds destined for building works in Oxford and Abingdon almost invariably seems to have been carried by road. When stone from Taynton was brought to Abingdon Abbey it was not shipped downstream from Lechlade, the nearest point on the river, but carried overland, 24 cartloads in 1375–6, 42 cartloads in 1383–4 (*Obed. Accts.*, 28, 49). Similarly, during the building of All Souls College in 1438–43 stone from the Taynton and Sherborne quarries was carted to masons' workshops in Burford and then carted overland to Oxford (VCH 1954). The transport of stone from Wheatley to Edward III's Round Table building at Windsor Castle involved 113 carts making 30 return journeys (Tatton-Brown 2007, 58). In 1367, a great alabaster reredos made in Nottingham was carted to St George's Chapel in Windsor by ten carts each drawn by eight horses (Brown *et al.*, 1963, 873). Timbers were also carried overland over prodigious distances. At the beginning of the 12th century, Abingdon Abbey was bringing timber from as far away as the Welsh border, and it was recorded that six wagons each drawn by 12 oxen took six or seven weeks over the return journey to Shrewsbury (*Chron. Abingd.*, ii, 150). A variety of different types of medieval wheeled

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vehicle are implied by documentary records, and illustrative sources show a range of two- and four-wheeled vehicles. There is, however, very little direct archaeological evidence of vehicles from this period.

#### **Post-medieval Roads**

*by Anne Dodd and Jill Hind*

##### ***Roads from 1500 to 1750***

From the 16th century, land transport in the Thames Valley witnessed a sustained period of increasing travel that was not matched by significant improvements to the road network until the 1750s. Regular carrying services, especially to and from London, seem to have developed during the 15th century and expanded during the 16th century (Gerhold 2005, 167–8). From around 1610, carts were generally replaced by the more-stable four-wheeled waggons that were introduced from Flanders in 1560, and from 1650 the introduction of stage coaches facilitated and encouraged private travel. Nevertheless, it is very difficult to obtain any clear impression of the general state of roads in the 16th and 17th centuries. Gerhold (*ibid.*) suggests that the volume and regularity of the carrying and coaching trade meant that roads were generally not impassable, but the relatively poor condition of the road acted as a brake on social and the economic movement because they kept the cost of travel relatively high, particularly for ‘high-speed’ transport (2005, 166). Thus, the early part of this period saw an expansion in travel as the economy grew, the population doubled, and a wider range of people were enabled by stage coaches to undertake long-distance journeys more often, but it was an expansion that was to reach something of a plateau by the early 1700s. The other significant factor was the increasing focus of key route networks around London, influenced its rapidly growing market.

The Highways Act of 1555 (2 & 3 Ph. & Mary, c. 8) placed the responsibility for repairing roads on parishes. Each parish was to elect Surveyors of the Highways from among the parishioners, who would be responsible for the upkeep of the highways leading to local towns and who were answerable to the local Justices of the Peace. Each parishioner was obliged to work on the roads four days a year, a system known as statute labour; this obligation was extended to six days a year under the Highways Act of 1562 (5 Eliz.1 c.13),

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and the 1562 Act also empowered surveyors to dig gravel without paying for it, to clean ditches and prevent the dumping of refuse on the roads. During the 17th and 18th centuries, it was increasingly common for payment to be accepted in place of labour, but statute labour was not finally abolished and replaced by parish rates until 1835 (2 & 3 Vic. c.81; Albert 1972, 166). The Highways Act of 1862 combined parishes in Highway Boards, although road maintenance was still financed from parish rates. The Local Government Act of 1888 finally transferred responsibility for main roads to the newly established County Councils, and in 1894 the unpopular Highway Boards were dissolved, and the care of minor roads went to the new Rural and Urban District Councils.

The system of parish maintenance had several drawbacks (Albert 1972, 23). The parish surveyors, unpaid and obliged by law to serve if elected, often served only for a year at a time. They and the local people who worked on the roads rarely had any knowledge or experience of effective road-building techniques. At the same time, the volume of traffic and the number of wheeled vehicles were increasing substantially, while heavier loads were also being carried. The parish system could cope with the effects of light, local traffic, but it was hopelessly inadequate for intensively used main roads. Moreover, parish effort was normally concentrated on those roads deemed to be of greatest use to local people, while major cross-country routes, used mostly by outsiders, tended to be neglected. During the 17th century, attempts were made to reduce road damage by controlling the size and weight of vehicles, and in 1621 four-wheeled waggons and carriages weighing more than a ton were prohibited on the roads (ibid., 133). From 1662, repeated legislative attempts were made to limit the damage to roads by prescribing minimum wheel widths and maximum weights and draught powers for waggons. The first 'Broad Wheel Act' in 1753 (26 Geo. II c.30) introduced a minimum wheel-width standard of nine inches for all waggons travelling on turnpike roads that were drawn by more than five horses (ibid., 134), and wheel widths, load weights, carriage construction and permitted numbers of draught animals continued to preoccupy legislators well into the late 18th century. Not until the early 19th century, and the campaigns of J L McAdam, did attention turn instead to the way in which roads were made and repaired to provide more durable and resistant surfaces (ibid., 142–3).

#### *The road networks*

Early post-medieval maps provide a useful insight into the existing road networks. The first comprehensive set of county maps was by Christopher Saxton, who surveyed the Upper

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Thames region in 1574 and published a combined map of Berkshire, Oxfordshire and Buckinghamshire in 1579 (Rosevear 1995, vol. 13, 3). Saxton's maps show towns and bridges across major rivers, but no roads. Speed's county map series of 1611–37 largely reproduces the information in Saxton's surveys. The best view of long-distance routes across the region before the turnpike era comes from John Ogilby's *Britannia* of 1675, which contains 100 strip maps of major routes across England and Wales at a scale of one inch to the statute mile, with text accompaniment (see <https://www.geog.cam.ac.uk/research/projects/occupations/transport/roads/ogilby/> for a digitised version of Ogilby's roads). This remained the standard survey on which succeeding maps were based until 1794 (Rosevear 1995, vol. 13, 4). In addition to the long-distance routes, Ogilby indicates side roads and their destinations and local landmarks, such as church towers, and gives descriptive notes on the landscape, all of which provides a valuable insight into the pattern of local settlements and roads (Fig. 3). The second half of the 17<sup>th</sup> century saw the appearance of the first privately-funded signposts, a few of which survive. The major routes crossing the Thames Valley in Ogilby's time were the east–west routes leading from London to Worcester and Monmouth, from London to Gloucester and St David's, from London to Bristol, and from London to Exeter and Plymouth. A north–south route extended from Derby and Coventry through Banbury, Oxford, Abingdon and Newbury to the south coast at Chichester, connecting with routes from London to Portsmouth, Southampton and Exeter, but notably bypassing Winchester, presumably reflecting its decline in importance by this date. A second route sets out from Abingdon along a broadly parallel track but diverges westwards through Hungerford to Salisbury. A road runs north-east from Oxford via Buckingham and Stony Stratford towards the East Midlands. Ogilby's network also includes important connections across the Cotswolds and Berkshire Downs, with routes from Banbury via Chipping Norton and Burford to Cirencester and Bristol, and to Marlborough and Salisbury.

County maps begin to show roads from the late 17<sup>th</sup> century. Although many of these only add Ogilby's roads onto existing county surveys, an important series that included new survey work was produced by Robert Morden in 1695 (Rosevear 1995, vol. 13, 5–6). Numerous atlases were produced in the early 18<sup>th</sup> century, but there was much reproduction of the earlier work of Ogilby and Morden until in 1747, John Rocque, the son of Huguenot immigrants, produced a new and much more accurate survey of London. Rocque also produced detailed maps of many towns, and county maps, including Berkshire (Fig. 4),

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Buckinghamshire, Oxfordshire, Middlesex and Surrey, which were published in the early 1760s. These were gradually improved on by successive topographers through the late 18th century, such as Richard Davis of Lewknor, who produced maps by Royal appointment (Fig. 5). A new survey of the turnpike roads was carried out by John Cary from 1794 (<http://www.strata-smith.com/map/>), and he produced a series of itineraries and atlases in the early 19th century. At the same time, several new road maps using the strip-map technique were published, but showing much more detail of the adjoining countryside, villages and estates. From the early 19th century, large numbers of accurate county maps start to appear, and the Ordnance Survey gradually took over from independent surveyors and publishers, with the one inch to the mile Old Series published in 1830, followed by the much more accurate six-inch and 25-inch surveys (Rosevear 1995, vol. 13, 12–13). At a local level, estate maps and enclosure maps also provide valuable information about roads and trackways, particularly from the middle of the 18th century on.

#### ***Road users***

##### *Carriers*

The options for road travel and transportation in the early 16th century would have been those familiar for centuries: on foot, by riding horse, by packhorse ‘gangs’ or ‘drifts’ or by two-wheeled cart. The first significant change was the introduction of the four-wheeled waggon from Flanders in the middle of the 16th century (see above), and by 1610 waggons were widely adopted and had become general use for London carrier services (Gerhold 2005, 4, 81). Packhorses continued to be used throughout the 17th century. They were faster than waggons and could be worked over longer distances each week; they were cheaper to operate, being smaller and needing less feed than waggon horses, and they were much less affected by poor roads and hills (ibid., 66–7). Conversely, waggons could carry much larger loads, loads of varying sizes, and even passengers. In general, road carriage was preferred for valuable, perishable goods in relatively small quantities, where speed and safety were paramount, while water was used for the bulk transportation of low-value non-perishable goods such as grain, coal and timber. A journey by packhorse or waggon in the 17th and early 18th century was unlikely to have been much faster than in the late medieval period. Although there were some exceptional routes and services, the average waggon speed was

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around 20–25 miles per day, while packhorses averaged 25–33 miles per day (ibid., 67). The most important business was the carriage of manufactured goods, chiefly textiles, from provincial centres to London for further processing, export or redistribution (ibid., 35). Industrial raw materials were also carried to and from London, which was the largest manufacturing centre in the country as well as its greatest port. Food was often transported by road, and road carriage was particularly suitable for perishable and valuable goods. Fish was carried by special fast services, and fruit, vegetables, pies, game and poultry were sent up to gentlemen in London from their country estates. Carriers were always keen to pick up ‘down’ loads for the return journey from London, often charging lower rates to attract business. Typical ‘down’ loads would be shop goods, such as draperies, hats, haberdashery, tea and coffee, tobacco and snuff, wine, spices, drugs and books. Carriers also conveyed private commissions for gentlemen sending goods between their London and country houses that could include furniture, pictures, china, wine and brandy, game, trees, tulips and even dogs and horses. Carriers also conveyed letters and money, sometimes amounting to thousands of pounds in a single journey. From 1635, the Government’s postal service was made available to the public, though carriers could continue conveying letters until 1711.

By 1637, John Taylor’s *Carriers Cosmographie* gives an insight into what seems already to be an extensive and regular network of carriers operating between the Thames Valley region and London, or on longer-distance routes that would pass through the Thames Valley (<http://mapoflondon.uvic.ca/CARR1.htm>). Weekly or more frequent services are noted between London and Abingdon, Aylesbury, Bath, Bristol, Burford, Bampton, Buckland, Banbury, Chipping Norton, (N)ewelme, Faringdon, Reading, Thame, Wantage, Wallingford, Witney and Woodstock. The *Cosmographie* notes that the Oxford service was very frequent:

The Carriers of Oxfoorde doe lodge at the Saracens head without Newgate (neere Saint Sepulchers Church) they are there on Wednesdaies or almost any day.

The cloth trade between the West Country and London was prominent:

Clothiers doe come every weeke out of divers parts of [Gloucestershire] to the Saracens head in friday street...The Clothiers of sundry parts of Wiltshire doe weekly come and lodge at the Saracens head in Friday-street



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and there were regular services from Buckinghamshire:

The Carriers from divers parts of Buckinghamshire and Bedfordshire are almost every day to bee had at the signe of the Saracens head without Newgate

and

There doth come from great Marlow in Buckinghamshire, some Higglers, or *demie* Carriers, they doe lodge at the Swanne in the Strand, and they come every Tuesday.

*Passenger transport before 1750*

There is plenty of evidence that waggons were carrying passengers as well as goods by the early 17th century; sometimes referred to as coaches, sometimes as coach-waggons, these were probably waggons adapted for passengers by the installation of seats and possibly compartments, and they could carry 20–25 people (Gerhold 2005, 81). The first true stage coaches appeared in the 1650s; by carrying far fewer passengers (typically only six), and by changing horses at regular intervals during their faster summer journeys, the early stage coaches were able to travel approximately twice as fast as waggons (Table 1). Stage coaches seem to have been used principally by the gentry and middle classes, sometimes accompanied by their servants travelling outside. Riding on horseback remained the commonest form of travel, and could be the fastest, particularly if post-horses were used and changed regularly at 10–15-mile intervals. However, long-distance horseback travel was though inappropriate for women, children and older people, while early resistance to coach travel as being unmanly seems largely to have vanished by the middle of the 17th century. Evidence from diary records suggest that middle-class men made regular use of the services. Stage coaches offered the comfort of travelling sheltered from the weather, the security of travelling with a group, and the reliability of travelling with a coachman who knew the road. Even those who had their own private coaches seem to have used stage coaches for longer journeys, probably because few private individuals would have had the means to arrange for the regular changes of horses along the route that enabled the stage coaches to achieve their faster speed (Gerhold 2005, 92–9). Overall, the poor did not use stage coaches because of the relatively high fares, and probably continued to travel mostly on foot or by waggon or coach-waggon. The nobility

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continued to use their own coaches, horses and servants, and are not generally recorded as having used stage coaches.

Many Thames Valley towns had a stage coach service to London by 1696 (Windsor 1658, Oxford 1661, Reading 1670, Henley 1672, Abingdon 1681, Cirencester 1696, Wallingford 1696). In addition, important long-distance services passed through: London to Worcester mentioned by 1654, London to Bristol by 1657, London to Gloucester by 1672 and London to Cirencester by 1696. Coaches travelled much faster in the summer, when road conditions were better, but regular services were maintained throughout the winter. The summer timetables generally ran from April to September, with the winter timetables starting in October. During the summer, horses would be changed at stages of 20–24 miles on average. Coaches typically stopped for an hour for dinner, and for half-an-hour when the horses were changed and fed. Flying coaches covered greater distances in a shorter time by running for longer hours. These were introduced in Oxford as early as 1669 and were said to be able to complete the 58-mile journey to London in 12 hours. The Cirencester flying coach of the 1730s managed the journey of 92 miles in one day by setting off at 11pm. In winter, journeys were slower and were undertaken without any change of horses. Typically, 29–36 miles would be covered in a day.

Although some provincial services were added in the early 18th century, including a service from Oxford to Bath, the coaching network failed to develop significantly between 1700 and 1750, with only relatively minor improvements in journey times and a limited, if influential, passenger base. This was to change from the middle of the 18th century as turnpike trusts multiplied and became more ambitious and effective. The gradually improving state of the roads made it worthwhile to invest in ways of improving the coaches for greater speed, which was achieved by the introduction of steel springs. These were first used on stage coaches between Maidenhead and London in May 1752 and were adopted by Reading and Newbury services later in the same year. Subsequently, more-reliable steel springs were developed by Richard Tredwell, a London blacksmith, between 1757 and 1766. Steel springs acted to reduce the impact of shocks and meant that lighter coaches could be built, enabling the horses to travel faster. This raised the average speed of a stage coach from around 4–5 miles per hour in summer to around 5.5–7.5 miles per hour (Gerhold 2005, 164). By 1792, the average speed of the fast mail coaches was 7.3 miles per hour, rising to 9.4 in 1836, and the fastest stage coaches may have reached 11 miles per hour by the 1830s. The combined effect of these changes was to permit greater speeds without adding to the costs of the coach

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operator. This led to a rapid increase in the number of coach services on offer, and to a general increase in travel.

#### *The turnpike road system*

The principle that road users should contribute to the cost of repair and maintenance took a long time to become established and was vigorously opposed in the 17th century. Only four turnpike acts were passed in the 17th century, but thereafter the numbers increased rapidly. Thirty-six new turnpike acts had been passed by 1720, with the first grant to a turnpike trust, rather than county justices, coming in the 1706 act for the road from Farnhill to Stony Stratford. Turnpike trustees were generally empowered to set up gates and collect tolls, appoint toll collectors and surveyors, demand statute labour or its monetary equivalent, mortgage the tolls to raise the funds necessary to carry out the repairs, elect new trustees and undertake the work needed for repairing the roads (Albert 1972, 22–3). Trusts were promoted by town councils, merchants, manufacturers, farmers, landowners and gentlemen, often for the repair of a stretch of road for which they were responsible, together with adjacent sections that lay outside their jurisdiction, where they would attempt to obtain as much support as possible. Toll roads were unpopular with road users, and new proposals were often strongly opposed, usually by petition but occasionally with violence. Albert notes, for example, that in 1717 a proposal for the Kensington-to-Cranford Bridge turnpike, one of the first on the Great West Road, was opposed by eleven petitions from drovers, carriers, stage-coach proprietors, merchants, clothiers, landowners and farmers in Wiltshire, who claimed that the local landowners had allowed the road to fall into disrepair and were seeking a turnpike to transfer the repair costs to the road users. Meanwhile, the promoters of the scheme argued that the recent turnpiking of the nearby Tyburn-to-Uxbridge road (to Worcester) had led to increased use of the Kensington road by wagons seeking to avoid the tolls, and thus to a serious deterioration in its condition (<http://www.turnpikes.org.uk/Reading>).

Some of the most heavily used roads in the country were those leading from London. Albert (1972, 49–53) notes 13 of these, and most had been turnpiked along their entire length by the 1750s. The so-called ‘Turnpike Mania’ occurred between the years 1751 and 1772, when 389 new trusts were established, most near existing turnpikes. Turnpiking declined between 1773 and 1791, and Albert (*ibid.*, 53) suggests this could be because most of the

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specific transport problems had largely been met. Subsequently, trust formations seem to have become increasingly speculative and many of the late trusts proved to be financially unsustainable. On the eve of the railway age in the 1830s, the country had over 1000 turnpike trusts controlling over 20,000 miles of main road and collecting around £1.5 million pounds annually in toll receipts (ibid., 189). The importance of long- and medium-distance road transport was sharply undermined by the railways, however, and toll receipts had fallen by nearly 25% by 1848. Faced with declining revenues and increased competition from the railways, many trusts were struggling financially and all renewals of turnpike acts from 1871 onwards were referred to the Turnpike Trust Commission. This arranged for existing acts to continue with the object of discharging the debts of the trusts and transferring the roads to the administration of the Highway Boards. The transfer of authority for main roads to county councils under the Local Government Act of 1888 spelt the effective end of the system, and by 1895 only one turnpike in the country was still collecting tolls.

#### *Road improvement*

How effective the early trusts were at improving roads is not easy to establish. Daniel Defoe writing in the 1720s considered turnpike trusts ‘very great things, and very great things are done by them’ (*A Tour*, vol II, 120–1, quoted in Albert 1972, 140). The problems were still far from being solved, however, and there seems to have been a general perception that the Oxfordshire turnpikes in the 18th century were not good value for money (Rosevear 1995, vol. 8, 11). Their roads were described by Arthur Young in 1760 as ‘in a condition formidable to the bones of all who travelled on wheels’; he described the busy section of the London-to-Worcester road through east Oxfordshire as ‘all chalkstone of which everywhere loose ones are rolling about to lame horses. It is full of holes and ruts very deep’ (quoted in Rosevear, ibid.). It was not until the early 19th century that serious attention was paid to methods of road surfacing and construction. The leading engineers in this field were John L McAdam (and sons) and Thomas Telford. John McAdam advocated the construction of roads without foundations, but on a dry subsoil, with two layers made of cleaned stones and gravel broken up into small pieces, the first layer being consolidated before the second was laid, and the whole laid with a slight convex camber. Telford advocated the creation of roads on stone foundations, a method that was far superior in terms of engineering practice, but much more expensive. Telford’s construction methods, therefore, tended to be adopted for major roads that had direct financial assistance from the government, while the McAdam system,

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vigorously promoted by its inventor, was widely adopted by trusts, including those in the Thames Valley. McAdam also campaigned for improved trust administration through the employment of competent professionals as surveyors and treasurers, greater care in the selection and preparation of materials and greater scrutiny of management and expenditure (Albert 1992, 150–52).

In addition to maintenance, trusts undertook a range of improvements, including road widening, straightening, reducing gradients, re-routing to avoid difficult terrain, rebuilding of bridges, and the clearance of verges to reduce the scope for highway robbers to hide by the wayside. These more ambitious works are typical of the period from the 1750s onwards, and some regional examples are noted below.

In the long term, although the turnpike system only covered a minority of the country's roads, it had an important impact on communications. As preferred routes were improved and maintained, many of the earlier alternative ways were abandoned and now survive only as unclassified roads, tracks or green lanes. Many of the turnpike roads became trunk roads during the 20th century and are still an important part of the road network today. The turnpikes also had an important impact on settlements. Towns and villages along the busiest roads benefited from the passing trade, and those that lay along a busy coaching route took on a new appearance in the late 18th and early 19th century (Taylor 1979, 159). Villages along these roads often have one or two 18th-century inns. The importance of attracting road traffic is underlined by the surge in bridge building evident in the region in the late 18th and early 19th centuries, and the improvements to the major access routes at places like Oxford. Town and village plans could be reshaped by the need to accommodate busy through-routes, with some roads gaining increased prominence. At Abingdon, for example, a new link (now Spring Road) was built to take traffic directly from the Faringdon Road to the Ock bridge, avoiding the frequently flooded Ock Street (Rosevear 1995, vol. 7, 22). In contrast, a place that was bypassed as a result of re-routing or the straightening of a turnpike road could face serious decline.

Turnpiking was not the only means by which old transport systems were changed during the post-medieval period, and the process of enclosure, particularly the latest stage of Parliamentary enclosure in the 19th century, was characteristically accompanied by the laying out of new roads and the straightening of old ones (Harris 1976, 202). New enclosure roads are recognisable from their straight alignments and uniform width, the awards commonly specifying the width to which they should be laid out. They are particularly evident over

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areas of former common land, such as Horton Common in Horton-cum-Studley to the north-east of Oxford, where the new enclosure road of 1827 runs for about a mile connecting the two former, funnelled entrances to the common.

The old system of long-distance drove roads continued to be used for the movement of cattle and sheep from Wales to London or the midlands. The best-known examples tend to lie north of the Thames Valley, but more southerly routes can be identified from drovers' account books, in particular Hereford to London, passing through Rollright, Adderbury, Launton, Aylesbury and Tring, and from Gloucester to London passing through Burford, Witney, Wheatley, Thame and Amersham. Other known routes include Monmouth via Lechlade, Faringdon, Abingdon and High Wycombe, and the Berkshire Ridgeway and Icknield Way. Herds of cattle usually numbered a couple of hundred, travelling 14–16 miles a day; sheep-flocks numbered 1500–2000, travelling up to 12 miles a day. Drove roads were characterised by the avoidance of turnpiked routes to escape faster-moving traffic and tolls, broad green verges to provide grazing while in transit (these usually became reduced in width through agricultural enclosure in the 18<sup>th</sup> century), wayside inns to accommodate drovers in remote areas of country, usually with paddocks or stances alongside where stock could be shut up and rested overnight, and watering-places at regular intervals, including artificial dewponds on chalk routes. The railways effectively killed the droving trade, though it did not entirely die out until about 1900 (Bonser 1970; Lawrence 1977; Moore-Colyer 2001).

#### *Turnpike roads in the Thames Valley*

The main turnpike roads of the Thames Valley were (Table 2; for turnpike maps of each county, see <http://www.turnpikes.org.uk/>):

#### (A) Routes from London to the north-west and the West Midlands

Several important long-distance routes ran from London to the West Midlands and North West. The road to Manchester via Highgate, Barnet, St Albans, Newport Pagnell, Northampton and Derby ran through east Buckinghamshire, beyond the Thames Valley. The Chester road branched off the Manchester road at Hockcliffe, running north-westwards via Coventry and Lichfield. The Shrewsbury road ran from Tyburn and Uxbridge via Aylesbury and Buckingham, Warwick and Birmingham. A fourth road, with branches leading ultimately to Birmingham and Worcester, branched off westwards from the Shrewsbury road near Uxbridge and ran through the Thames Valley east of Oxford. The Uxbridge road was



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turnpiked in 1715 and in consecutive Acts in 1719 trusts were established to cover the road from Beaconsfield via High Wycombe to Stokenchurch and from Stokenchurch down the steep face of the Chilterns to Tetsworth, then across the river Thame at Wheatley and the river Ray at Islip to Enslow Bridge near Woodstock (Rosevear 1995, vol. 8, 9–10). Here, the road crossed the Cherwell a couple of miles north-east of Woodstock and continued north-westwards via Glympton and Enstone to the Chapel House crossroads. Here it divided. One branch ran on north-westwards to Rollright and on to Stratford and Birmingham, while the Worcester road turned south-westwards through Chipping Norton, and then north-westwards again through Salford and on through the Cotswolds via Bourton on the Hill and Broadway to Worcester.

At the same time, a connection between this road and Oxford was being sought by local interests, and the branch roads from Wheatley to St Clements at the east entrance to Oxford and from St Giles at the north entrance to Oxford via Begbroke to Woodstock were included in the Stokenchurch Roads Act of 1719. The road from Oxford via Woodstock merged with the Worcester road at Kiddington, some four miles north-west of Woodstock. The upgrading of these roads led to considerable work on the accesses into Oxford, particularly to the east. The original route from Wheatley to Oxford involved a very steep climb over Shotover Hill, where vehicles were allowed to use up to 10 horses to make the ascent. The new route involved the upgrading of an existing bridleway over Headington Hill to Forest Hill to create a new stretch of road, which was constructed between 1789 and 1793 (Rosevear 1995, vol. 8, 12–13).

#### (B) Routes from London to Gloucester

North of the Thames, routes from Gloucester across the Cotswolds had been important since medieval times, connecting premier wool-producing areas with London via Oxford (Peberdy 2010, 50–1). Routes passed through or near Northleach, via Burford and Witney. From Witney, one route ran south-eastwards to cross the Thames at Eynsham. Until 1769, however, there was only a ferry here. From Swinford, on the Berkshire bank, the road led across Wytham Hill to Oxford. The alternative route entailed a northwards loop via Long Hanborough and Bladon to join the Woodstock road to Oxford at Campsfield in the parish of Kidlington. Following petitions from inhabitants and interested parties in Northleach, Burford, Witney and Oxford, an act was passed in 1751 for the turnpiking of the road over the Cotswolds from Crickley Hill near Gloucester to Campsfield. The same act included

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provisions for improving the road from Witney to the ferry at Eynsham, and on to Oxford. The ferry made the Eynsham route unsuitable for large vehicles, which used the longer route via Campsfield (Rosevear 1995, vol. 8, 23). By the late 18th century, this route had displaced the southern route via Faringdon (see below) as the main posting route and was the route eventually to be used by the Mail coaches (ibid.). The road originally entered Burford from the west, entailing difficult turns around narrow corners and a steep climb up White Hill. In 1821, a new upper road was created to bypass the town and is still the route followed by the A40 today (ibid.). In 1767–8, acts were obtained for upgrading the route to the west of Oxford so that it could be used by coaches and heavier vehicles; the ferry at Eynsham was replaced with a new toll bridge, the derelict Botley Causeway along the western approach into Oxford was restored, and New Road was built taking travellers directly from the causeway into the city centre (VCH 1979, 285–6; Munby and Walton 1990).

#### (C) Routes from London to Gloucester

South of the Thames, the road from London to Gloucester extended from Kensington via Brentford, Hounslow, Cranford Bridge, Colnbrook and Slough to Maidenhead, where it crossed the Thames. West of Maidenhead, the route diverged from the Great West Road (see below), turning north across Maidenhead Thicket to Hurley and crossing the Thames again at Henley. From Henley, the road climbed over the Chilterns. The steep ascent to Bix was one of the stretches of the route that was improved by the turnpike trust and a new road was probably built on the present line in 1798 (Rosevear 1995, vol. 7, 10). Further improvements in 1825 followed the surveying of the road by McAdam. Benson, at the foot of the Chilterns, was an important staging post. From here, the road crossed the Thame at Dorchester, where a new bridge was opened in 1815. The road divided at Dorchester with one route continuing north to Oxford, while the Gloucester route turned west through Shillingford to Clifton Hampden where the old loop down into the village was replaced by a new alignment on higher ground (Rosevear 1995, vol. 7, 13). From here, the road ran to Abingdon via Culham and then on to Faringdon, crossing the Thames again over St John's Bridge at Lechlade and continuing west via Fairford and Cirencester to Gloucester via one of the earliest turnpikes in the country at Birdlip Hill.

#### (D) The road from London to Bath and Bristol

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This followed the same route as the Gloucester road as far as Maidenhead. From here, it took a more southerly course via Hare Hatch (Wargrave) and Twyford to Reading, and then westwards via Theale and Thatcham to Speenhamland, at Newbury. Beyond Newbury the route passed through Marlborough and Chippenham to Bristol, with a branch south-west to Bath. Staines was important during this period as it contained several government posts and numerous posting houses and inns serving the through trade (VCH 1962, 14–5). The road was turnpiked in 1727.

#### (E) North-south routes

The old north-south route from the Midlands via Winchester to Southampton seems to have declined in importance in the post-medieval period, as trade became increasingly focused on London (Rosevear 1995, vol. 7, 18). The road from Banbury via Adderbury, Deddington and Kidlington was turnpiked as part of improvements to the Oxford to Coventry road in 1755 (Rosevear 1995, vol. 8, 28). From Oxford, the road ran south via Abingdon onto the Berkshire Downs. Ogilby shows two routes, one from Abingdon via Newbury to Chichester, and the other via Hungerford to Salisbury, but by 1695 the Salisbury route is no longer shown on Robert Morden's map of Berkshire, suggesting that the Newbury route was the dominant one (Rosevear 1995, vol. 7 18). The road south from Oxford to Abingdon over Hinksey Hill via Bagley Wood was improved in 1809. The Oxford Journal of April 1809 is quoted as saying 'the trustees decided to fill up the valley between the two hills in Bagley Wood, next beyond the directing post in the way in to Abingdon, in the manner the other valley in the Wood is filled up' (Rosevear 1995, vol. 7, 20). This stretch of road was a favourite haunt of highwaymen.

#### (F) Local connections

The turnpiking of the route from Coventry to Newbury and the south coast took place during the early years of the 'Turnpike Mania', when large numbers of new trusts were set up. Many of the new trusts were formed to improve routes between the market towns of the region and provide connections to some of the major through routes. An increasingly important factor in these years was the need for better roads to facilitate the movement of agricultural produce. This was one of the reasons advanced for the creation of a connection across North Berkshire by means of the Wallingford, Wantage and Faringdon Turnpike of 1751. Wallingford petitioners for the act claimed that 'opening a communication between the Vale and the River

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Thames would be an inconceivable advantage permitting supplies of malt, meal, cheese, butter and other provisions to be supplied to London and Westminster at cheaper rates' (quoted in Rosevear 1995, vol. 5, 6). The turnpike provided a link from Lechlade and Gloucestershire, via Faringdon and across the rich agricultural lands of the Vale of White Horse via Wantage, to cross the Thames at Wallingford Bridge and climb up into the Chilterns to meet the London road at Nuffield.

#### *Turnpike road infrastructure*

No turnpike gates have survived, and many were destroyed during celebrations to mark the end of toll collection (Fig. 6; Fig. 7). There is a better rate of survival for the toll-collectors' houses. Toll-houses can be assigned to three general periods (Rosevear 1995, vol. 10, table 10.1). In the early 18th century, gatekeepers' houses were probably not purpose-built. The Stokenchurch Trust described their gate at Cheney Lane as a sentry box, and the earliest collectors may have worked under small shelters and rented accommodation in a cottage nearby. The toll-houses at Gosford Bridge and Culham Bridge are surviving examples of this kind and are only identifiable as toll-houses because of their position. Today, structures thought of as typical toll-houses often date from the first three decades of the 19th century when the trusts were well established and there was a good income from the tolls. Specially designed toll-houses were usually intended to inspire respect and to give the collector a good view of the road in both directions from a bay window. These buildings were often located on corner plots where odd shapes helped them to fit the available space. The surviving toll-houses at Dorchester (built 1815) and Bix (built 1827) are good examples of single storey toll-houses of this period. The larger two-storey toll-houses have polygonal ground plans, with good surviving examples at Old Man's Gate on the Banbury Road at Oxford (built 1844) and at Brockhampton, near Stadhampton. Other survivals include Wiggold Lodge, Ampney Crucis, which has a three-sided front, Attington (Tetsworth) with an octagonal centre portion and Cookham Bridge, which is a complete octagon (Fig. 8). A single-storey brick toll-house with Gothic windows and crenellations built in 1826 for the toll collector at High Wycombe has been rebuilt at the Chiltern Open Air Museum. The magnificent castellated toll-house on the Great West Road at Halfway, near Kintbury, built in 1810–35, was sadly demolished c 1964–5 (<http://www.hungerfordvirtualmuseum.co.uk/index.php/36-themes/transport/823-turnpike-trusts>, see images 'coaching 01–07'). Many toll-houses are now protected as Listed Buildings. Toll-houses often had a recess or a 'blind' window over

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the front door where a board was displayed with the tolls painted on. A board setting out charges is preserved in Thame Museum. The final phase of toll-houses is associated with the railway era, when new gates were built to intercept traffic heading for local stations. These toll-houses were small, but smart. Surviving examples can be seen on the Botley Road and Folly Bridge at Oxford. Elsewhere, toll-houses of the later 19th century reflect the declining revenues of the trusts and were often again simple cottages; surviving examples can be seen at Clifton Gate and Culham Gate on either side of Culham Station, and at Tetsworth Gate (built in 1841).

Milestones had been used on some roads from the Roman period, but they became compulsory on main roads in 1744, and the requirement was extended under the General Turnpike Act of 1766. Many milestones were probably lost during the Second World War, when they were removed or defaced; others have been lost to road changes or vandalism, and the faces of others have been damaged by salt spray from passing vehicles, and acid rain. However, an almost unbroken series survives on the Bath Road (A4) west of Beenham, and rates of survival are generally good on roads in Berkshire and Wiltshire. In Oxfordshire, many stones have been lost or damaged (see Rosevear 1995, vol. 10, fig. 10.1 for surviving Thames Valley examples). A variety of different styles are evident but there is little evidence for a consistent relationship between individual trusts and milestone design, and stones were regularly replaced and repaired on heavily used routes (*ibid.*, 4). Local stonemasons were contracted for the work, and the style and lettering are often similar to local gravestones.

Road watering to reduce dust seems to have been undertaken from the mid-18th century (Phillips 1983, 61–4), and pumps were installed at regular intervals along the route where water could be raised for loading into carts. Examples of pumps still survive along the A4 through Longford, Colnbrook and Datchet, and between Twyford and Thatcham.

#### *The stage coach trade in the turnpike era*

The development of the turnpike system was very closely associated with the development of coaching. Although coaches had run regularly along the routes of the region since the later 17th century, the full development of the trade took place from the 1750s onwards with the development of new steel-spring coaches and a steady improvement in the roads. The Oxford Journal for May 1753, for example, carried a notice advertising ‘an ABINGDON Four-wheel’d Stage-Chaise, made with steel Springs’; the following year, the same proprietors were advertising their Abingdon Flying Stage Chaise in one day to London. Evidence from

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surviving timetables of the late 18th and early 19th century shows that journey times fell, and the frequency of services increased, particularly in the winter. The Reading Flying Machines from the Upper Ship, Crown and Angel inns were advertising same-day services every morning by 1767, leaving Reading at 5am, and returning from London at noon (Rosevear 1995, vol. 11 fig. 11.21). New routes were established, including increasingly ambitious long-distance connections. In 1770, Ephraim Sperinck and Co. advertised ‘The Oxford, Bath and Bristol Machine, on Steel Springs, in one day, twice a week’, and ‘for the convenience of passengers’ it met ‘the Exeter machine at Bath every Thursday’ (Oxford Journal for April 1770 in Rosevear 1995, vol. 11, fig. 11.17d). In 1803, John Willan, proprietor of the *Ancient Briton* from the Bull and Mouth Inn in London, which travelled via High Wycombe and Oxford, was advertising a connecting coach from Shrewsbury for Holyhead at 4am every day except Sunday, ‘by which Passengers and Luggage will be forwarded to all Parts of *North Wales* and to *Dublin* with the greatest Care and Expedition’ (Rosevear 1995, vol. 11, fig. 11.17h). A ‘New and Elegant Post Coach’ called *The Rising Sun* ran from the Golden Cross Inn at Oxford to the George Inn at Cambridge every Tuesday, Thursday and Saturday at 6am, via Bicester, Brackley, Towcester, Northampton and Huntingdon. A notice in the Oxford Journal of 1812 advertised connecting services at Northampton onwards to the midlands, Sheffield, Leeds and Manchester, at Huntingdon to ‘most parts of Lincolnshire’ and at Cambridge to ‘most parts of Cambridgeshire, Norfolk and Suffolk’ (ibid., fig. 11.17i). The regular advertisements of coach and inn proprietors often provide details of their routes. In 1767, the Newbury Flying Machines to the Bell Savage Inn in Ludgate Hill ‘dine going up at the Crown at Slough and coming down at the Black Bear at Reading’ (Rosevear 1995, vol. 11, fig. 11.20b). In 1785, *Jackson’s Oxford Journal* carried an advertisement for ‘a neat and elegant post coach from Oxford to Bristol’ setting out at 6am, calling at the Hind’s Head in Kingston Bagpuize, the Crown in Faringdon, the Red Lion in Lechlade, the Bull in Fairford, the Bull in Cirencester, the Three Cups in Tetbury, the Beaufort Arms at Pettyfrance and the Bell at Sodbury, arriving at the White Lion, Broad Street or the Bush Tavern, Corn Street in Bristol the same evening.

The improvements in the road network and coach capability facilitated the development of a fast and reliable postal service. Royal Mail services had been made available to the public from 1635, but the 18th century saw substantial improvements through the work of Ralph Allen and subsequently John Palmer, both of Bath. By the late 18th century, the mail was carried by the ‘patent coach’ built by Besant and Vidler of Millbank;



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the coaches were cleaned, greased and overhauled at the end of every journey to keep them in top condition. Good, fresh horses were supplied under contract by inn keepers at short stages along the route, and the coaches were driven by trained, uniformed expert coachmen and armed guards. Unnecessary delays were eliminated, and the mail coaches ran to strict timetables. Palmer considered that the loading and unloading of mailbags and the changing of horses need not take more than fifteen minutes at each stage (Phillips 1983, 95). The Royal Mail took precedence over all other road traffic and was exempt from paying tolls; when the guard sounded his horn, other vehicles were obliged to draw aside, and the tollgate keepers had to have the gates open ready for the Mail to pass through at top speed, often in the middle of the night. The Mail coaches for all parts of England picked up their passengers at the London inns at 7.30pm and moved on to the General Post Office in Lombard Street for the mailbags to be loaded, leaving London at 8pm. The West Country mails, bound for Bath, Bristol, Portsmouth, Exeter, Southampton, Devonport, Poole and Gloucester all moved off together at 8pm, on the road to Hounslow or Maidenhead (*ibid.*, 106). By 1806, the Mail coach covered the journey from London to Bath in a little over 13 hours. Cary's *New Itinerary* gives the timetable as follows (Phillips 1983, 107):

The 'down' mail: Brentford 9.20pm, Hounslow 9.40pm, Colnbrook 10.35pm, Slough 11.05pm, Maidenhead 11.45pm, Reading 1.25am, Newbury 3.30am, Hungerford 4.40am, Marlborough 6.00am, Calne 7.20am, Chippenham 8.00am and Bath at 9.30am

The 'up' mail: departed Bath at 5.30pm, Chippenham 7.05pm, Calne 8.00pm, Marlborough 9.30pm, Hungerford 10.40pm, Newbury 11.35pm, Reading 1.55am, Maidenhead 3.30am, Slough 4.15am, Colnbrook 4.45am, Hounslow 5.30am, Brentford 5.45am and London at around 7.00am.

Servicing the coaching trade became a major business for the towns and villages along the main routeways. Inns with large stabling facilities proliferated everywhere, and the trade created much employment. Several major routes from London, such as A4, and A40 and A30, pass through the Thames Valley region and many of these former coaching inns survive, including the Kings Head, Aylesbury, the Griffin, Amersham, and the George and Dragon, West Wycombe (Bucks); the Chequers, Newbury, the White Hart, Colnbrook, and the George, Reading (Berks); the Old Black Horse, and the Lamb and Flag, Oxford, the George, Dorchester-on-Thames (Oxon) and the Angel, Guildford. Many of these buildings

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have earlier origins but were adapted and expanded at this time. The usual layout provided an entranceway from the street, just wide enough to admit a coach, leading to a yard and stables behind. The number of inns in the heyday of coaching was substantial. There were four in Thame, which had a population of less than 3000 in 1900. This includes the Spread Eagle, most famous for the innkeeper, John Fothergill, in the 1920s.

## **ON THE TRACKS: A HISTORY OF THE RAILWAYS IN THE THAMES VALLEY**

### **Rail travel in the 19th century**

*by Anne Dodd and Jill Hind*

The first large-scale, steam-powered railways for passengers and freight were developed in the industrialising areas of northern England, the best known being the pioneering Stockton and Darlington of 1825 and the Liverpool and Manchester of 1830. Numerous proposals for other railway lines were put forward in the 1820s and early 1830s, but they faced strong opposition from landowners and competing interests such as turnpike trusts and canal companies, and it was generally not until the middle of the 1830s that new lines were authorised on any significant scale. The years 1836–7 saw the first burst of activity, as promoters and investors sought Parliamentary authorisation for railway schemes, followed by an even greater frenzy in 1844–6, amid the so-called ‘Railway Mania’. Although the development of new railway lines continued to the end of the 19th century and beyond, the essentials of the network were laid down in these years. In 1838, there were only some 500 miles of public railway in England and Wales, but by 1848 there were 3900, and 4600 by the end of 1849 (Harris 1976, 210). The principal lines in the Thames Valley came into being during this period, largely because of the construction of connections between London, major ports, and the industrial regions of the Midlands and Lancashire (see below). Places that became main-line stations and junctions quickly saw considerable benefits, but the prime concern of the promoters of the first railways across the region was not to generate passenger traffic, but to improve their trading position through enhanced access to London’s dominant market and export network, and to win business away from rival ports. The bursting of the speculative bubble associated with Railway Mania, and the resulting financial chaos, led to greater government concern to regulate the wilder excesses of the industry, and greater caution on the part of investors. After the first great phase of investment and construction the

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second half of the 19th century saw the consolidation of companies into fewer, larger operators. The construction of new lines in these years was mainly concerned with the improvement of existing routes, the provision of faster and more direct links, the building of 'blocking' lines as companies attempted to exclude their rivals, and the provision of branch lines to satisfy the demands of influential local interests and important customers. These trends all affected the way in which the Thames Valley network developed.

The railways soon had a profound impact on the turnpike trusts, coaching services and the canals. Within a decade, the long-distance coaching services were largely put out of business. By 1836, the fastest coach service could reach Bristol from London in 12 hours and 14 minutes; by contrast, the same journey took only 4 hours and 20 minutes by rail in 1844, and only 2 hours and 15 minutes by the end of the 19th century (Simmons 1978, 271, table 10). When the line from London to Bristol was opened for its entire length in 1841, the Great Western Railway ran eight services a day with two goods trains carrying 3rd class passengers, plus additional short-distance services including 17 daily from London to Slough (*ibid.*, 206). The Regulation of Railways Act of 1844 stipulated that railways should be obliged to run at least one service a day each way, carrying passengers at a maximum fare of one penny per mile, to stop at every station and to travel at a minimum speed of 12mph. In addition, the penny-a-mile passengers were to be provided with seats and protected from the weather (*ibid.*, 37). While this was cheap compared with coach fares, Simmons points out that the cost was still beyond the means of many people when semi-skilled or unskilled men generally earned around 10 shillings a week. The provision of cheap railway travel was greatly increased with the passing of the Cheap Trains Act of 1883.

The impact on long-distance coach services was partly offset for many years by the need for more local carrier and passenger services between towns and local railway stations. The earliest main lines had been designed as fast links from London to major ports and industrial towns, and this, together with local resistance to railways, meant that the first main line stations were often 'road' stations, a couple of miles or so from the towns they passed along the way. Railways had a similar effect on road freight carriage; while they offered a greatly superior service over long distances, they also provided much business for local carriers taking goods to and from the stations. The deduction of long-distance road travel was very serious for the turnpike trusts, however, as it led to a rapid decline in toll receipts. Trusts moved gates to intercept traffic travelling to and from railway stations, but they could not compensate for the loss of long-distance trade and from the 1860s the system was gradually

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dismantled. Dis-turnpiked roads were at first returned to the responsibility of parishes, and as a consequence there was widespread neglect with the best turnpikes the first to deteriorate (Coppock 1976, 352). Despite the transfer of responsibility for main roads to the County Councils in 1888, there was to be no systematic improvement of rural road surfaces until the spread of motorised vehicles in the early 20th century.

The impact of the railways on the canal companies was more complex (see Hadfield 1979, 217–56). The canal and railway companies undoubtedly regarded each other as serious rivals for freight business. Canal companies often vigorously opposed proposals for railways, but directors might equally be persuaded to sell up if the railways offered a good price to buy them out. The Kennet and Avon Canal company, for example, was involved in the promotion of a London, Newbury and Bath District Railway at the height of the Railway Mania, the purpose of which seems to have been to persuade the Great Western Railway, which was promoting the rival Berks and Hants project, to make them a better offer. In the event, GWR bought the canal in 1852. Railway companies were bound by statute to maintain their canals in good order, but they had many ways of neutralising them as competition, from charging high tolls and making no effort to get business, to allowing wharves, warehouses and cranes to decay, and closing for lengthy periods for ‘leisurely repairs’. Between 1845 and 1847, about 20% of the navigable waterways of Great Britain passed into railway control. Nevertheless, many canals continued in business: the general expansion of trade meant that tonnages were often maintained, but price-cutting wars between railways and canals often led to a serious decline in revenue. Canals in agricultural areas were hardest hit by the railways. Conversely, factories built alongside canals long continued to use them for deliveries and despatches, but new factories tended to prefer locations along railway lines, with increasing provision of private sidings and branches to replace costly carting of goods from railway termini. By the 1870s there was increasing concern about the railways’ monopolisation of freight services, and measures were brought in to revive waterways and protect them from the worst practices of the railways. Nonetheless, toll receipts continued to decline, and many canals were no longer able to sustain operations.

#### ***The railway network in the Thames Valley***

##### *The main lines*

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The railway network within the Thames Valley was associated principally with four major companies. The London and Birmingham Railway Company (L&BR) was incorporated in 1833, with much of its funding coming from subscribers in Lancashire. Its main line from London Euston to Birmingham Curzon Street, London's first intercity line, was built by Robert Stephenson and was completed and opened in 1838. In 1846, L&BR merged with two north-western companies to form the London and North Western Railway (LNWR). The Great Western Railway (GWR) was promoted by Bristol business interests who feared loss of their trade to the port of Liverpool. GWR was incorporated in 1835 and its main line from London Paddington to Bristol was built by Isambard Kingdom Brunel. The line was open to Taplow (Maidenhead Bridge) by 1838, Reading by 1840 and through to Bristol by 1841. The London and South Western Railway Company (LSWR) was founded in 1834 as the London and Southampton Railway, with accompanying proposals for the upgrading of Southampton's port facilities. The line was opened from Nine Elms in London as far as Woking in 1838 and completed to Southampton by 1840. By 1848, LSWR had established its London base at Waterloo Station (originally Waterloo Bridge Station, after the nearby bridge). The South Eastern Railway Company (SER) was formed in 1836 for the construction of a line from London to Dover, with William Cubitt as engineer. The SER shared the lines of other London and south-eastern companies as far as Redhill Junction in Surrey and initially operated from a London terminus at London Bridge, opening at Charing Cross in 1864. Its main line was complete to Folkestone by 1843 and Dover by 1844, creating a fast railway connection with the Channel ports. The SER immediately acquired Telford's now-derelict Folkestone Harbour for £18,000 and began running steam-packet services from Folkestone to Boulogne in 1843. In 1844, it founded the South Eastern and Continental Steam Packet Company (absorbed in 1853) and by 1848 was running two steam-packet services a day between Folkestone and Boulogne, one between Dover and Calais, and one between Dover and Ostend. The GWR was to become the dominant company within the Thames Valley region, but the way in which the network developed owed much to the intense rivalry between these companies, as they attempted to expand their own core territories while excluding their competitors. The eventual form of the lines to the Midlands owed much to competition between the LNWR and the GWR, while the LSWR and SER eventually established themselves as far as Reading. The LSWR was also heavily involved in developing the network of suburban stations in south-west London, Surrey and east Berkshire.

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From the outset, the railway companies had plans for the extension of their original main lines. The GWR's original prospectus of 1833 envisaged a 'probable' branch from the main London-to-Bristol line running from Swindon to Gloucester, forming the first part of a connecting line from London to South Wales (Christiansen 1981, 66–7). This was completed as far as Cirencester as early as 1841 and the line was subsequently extended to Cheltenham and Gloucester in cooperation with the Birmingham and Gloucester Railway (from 1846, known as the Midland Railway), which had been established to create a fast rail link between Birmingham and the port of Bristol. The section from Swindon to Cheltenham (now the Golden Valley Line) was built by the Cheltenham and Great Western Union (C&GWU) via Purton, Minety and Ashton Keynes by 1841, with a junction at Kemble, and completed through to Cheltenham by 1847.

A second 'probable' early branch proposed by the GWR was to run from Didcot via Oxford to Worcester (*ibid.*, 137). The original Euston-to-Birmingham line had been planned to run via Oxford, but Stephenson eventually opted for a route via Coventry because of concerns over the possible impact of Thames floods. The link from Didcot to Oxford was promoted by the wholly GWR-owned Oxford Railway Company, authorised in 1843, and was completed and opened in 1844 with its terminus south-west of the city at what is now Western Road. A new station for the GWR line was subsequently built on the present site in 1852 (*ibid.*). The right to extend from Oxford into the Midlands was fiercely contested by the LNWR and the GWR, but in the event the latter prevailed, and the GWR's Birmingham and Oxford Junction railway was authorised in 1846. The line opened to Banbury in 1850 and the extension via Leamington Spa to Birmingham opened in 1852.

The LNWR meanwhile developed its own lines, via the Buckinghamshire Railway company, formed under its direction in 1847 (Simpson 1981). Lines were built from Bletchley on the main Euston line first to Banbury in 1850 and then to Oxford in 1851. The LNWR (Rewley Road) and GWR stations stood on adjacent sites in west Oxford following the GWR's move in 1852. The LNWR-backed Buckinghamshire Railways Oxford line, via Bicester and Bletchley ran on via other lines through Bedford and Sandy to Cambridge; all had come under direct LNWR control by 1879 and operated as the 'Varsity Line' until 1968.

The Oxford, Worcester and Wolverhampton Railway (OW&W) (Jenkins and Quayle 1977) was promoted, in Christiansen's (1981, 86) words 'to smash the London and Birmingham's monopoly of a route between the Black Country, London and other southern ports through which Midland manufacturers dispatched their goods all over the world'.



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Parliament preferred the OW&W proposals to those of the London and Birmingham for a similar route because of the ‘independence’ of the company, but the OW&W was in fact supported by the GWR and engaged Brunel as engineer. Construction took place between 1850 and 1854, and the line connected with the GWR Oxford-to-Banbury line at Wolvercote in 1853. In April 1854, the construction of a spur from the Buckinghamshire Railway to Yarnton connected the line to the LNWR network. The last routes to be developed across parts of the Thames Valley region were the Didcot, Newbury and Southampton line, worked by the GWR, constructed between 1882 and 1891, and the Midland and South Western Junction line, which provided an alternative link from the Midlands to Southampton. The M&SWJ was an independent company, and represented a very rare incursion by a competitor into what had now become largely consolidated GWR territory. The line profited particularly from heavy military use to access the large army camps on and around Salisbury Plain (Christiansen 1981, 163).

If routes northwards into the Midlands were contested by the LNWR and the GWR, there was no less competition in the south of region between the GWR and the LSWR. The LSWR’s original line from Southampton to London took a northerly course through Basingstoke and intended to form a junction for a second LSWR line westwards to Bristol via Newbury. The LSWR’s initial plans had been thwarted by the authorisation of the GWR line to Bristol, but it retained considerable ambitions in the south-west, developing lines to Portsmouth, Salisbury, Weymouth, Exeter and North Cornwall. Forestalling an LSWR invasion of its Berkshire heartland, the GWR supported the creation of the nominally independent Berks and Hants Railway, authorised in 1845 (Christiansen 1981, 160). The first section between Reading and Hungerford (the Kennet Valley Line) was opened in 1847, followed by a line from Reading to Basingstoke in 1848; the Kennet Valley Line was extended to Devizes in 1862 (Christiansen 1981, 159–60). The Berks and Hants was absorbed by the GWR in 1846.

#### *GWR branch lines in the Thames Valley*

In 1849, the GWR opened a branch line from Slough to Windsor, based at Windsor and Eton Central Station, where it competed with the LSWR at Windsor and Eton Riverside. Connections northwards through Buckinghamshire from the GWR at Maidenhead were developed by the Wycombe Railway Company. Authorised in 1846, the line was completed to High Wycombe in 1854 and leased to the GWR. An extension through Princes Risborough

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to Thame was completed in 1862, to Aylesbury in 1863, and to Oxford via Kennington Junction in 1864. The Wycombe Railway was absorbed by the GWR in 1867. The GWR itself constructed a line from West Drayton to Uxbridge in 1856, and the line from Twyford to Henley, opened in 1857. The town of Abingdon had rejected a branch from the projected Didcot to Oxford line (Christiansen 1981, 148), but in 1856 a connecting line was eventually opened for a local company, running from near Culham. In 1873, the line was extended to Radley, where a new station was opened. After several failed proposals, a line from Yarnton to Witney was opened by the Witney Railway in 1861. An extension via Fairford to Cheltenham was proposed in 1864, though in the end the line was only constructed as far as Fairford. The line opened in 1873 and was absorbed by GWR in 1890. A line to open-up the rich farming lands of the Vale of White Horse was developed by the Faringdon Railway Company, which opened in Uffington in 1864 and was absorbed by the GWR in 1886.

The Wallingford and Watlington Railway was authorised in 1864 and opened in 1866 from Moulsoford to Wallingford. It was never completed across the Thames to Watlington, which was instead reached by a privately developed line from Princes Risborough in 1872. The Cholsey-to-Wallingford line is now operated as a Heritage Railway, with weekend and bank holiday services. The Wantage Tramway Company opened a line from Wantage Road Station in 1875, and work on the Swindon and Highworth Light Railway began in the same year, being taken over by the GWR before its opening in 1883 because of problems with the construction. A branch to Great Marlow, owned by local businessmen, was opened in 1873 and the GWR absorbed the Great Marlow Railway Company in 1897. The West Drayton-to-Staines branch was opened by the GWR in 1884. At the very end of the 19th century, the Lambourn Valley Railway was opened in 1898 to provide a line from Newbury. This was almost entirely financed by Col. George Archer Houblon of Welford Park, but it had only a short independent life and was absorbed by the GWR in 1905.

#### *The London suburban network*

The development of a dense network of suburban railways around London began almost as soon as the main lines were open. The LSWR main line to Southampton (see above) had initially been planned with a station at Kingston-upon-Thames, but this had been opposed by the town as damaging to their coaching trade. The original 'Kingston' station opened with the main line in 1838 about 2.4 km south of the town, and was re-sited a short distance west to Surbiton, then little more than a farm, in 1845. It immediately drew business travel from

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Kingston to London and created a demand for new housing in the area. The success at Kingston prompted the creation of the Richmond Railway to Waterloo, opened, and absorbed by the LSWR, in 1846. The Windsor, Staines and South Western Railway Company (supported by the LSWR) was created a year later, extending the Richmond line via Staines as far as Datchet by August 1848. Opposition from Eton College and Windsor Castle held up the completion of the link to Windsor, via a new railway bridge, until December 1849, when the elaborate Gothic Windsor and Eton Riverside Station (by William Tite) was opened in competition with the GWR's Windsor and Eton Central Station. A loop from this line at Barnes via Brentford, Isleworth and Hounslow was opened in 1850. The LSWR also established branches from its Southampton main line, in 1848 from Weybridge to Chertsey and in 1849 to Hampton Court.

A second cluster of connections centred on the development of a complex junction at Guildford, reached by the LSWR from its main line at Woking in 1845 (Dendy Marshall 1963, app. II). From Guildford, the LSWR developed a line via Godalming in 1849 destined ultimately to provide a direct connection to Portsmouth, the Portsmouth Direct Line, completed a decade later. The significance of the Guildford junction to the Thames Valley lies in its use to create the SER's Reading route. The main interests of the SER lay in Kent and its steam packet services to the Continent (see above), but in 1846, despite internal disagreement amongst its directors, it supported the formation of the Reading, Guildford and Reigate Railway to provide a connection to the GWR at Reading, with the stated aim of providing an alternative route to the Channel ports, avoiding London. The line, later known as the North Downs Line, was built in 1849 from the junction at Redhill westwards via Reigate and Dorking to Guildford, via a junction with the LSWR at Shalford. In the same year, the LSWR developed its line from Guildford to Farnham via Ash Green and Tongham (superseded by a more direct connection from Brookwood on the Southampton main line, running via Aldershot, in 1870), while the SER branched northwards via Ash, North Camp, Blackwater and Wokingham to Reading. The SER line ran to a station in Reading located slightly to the south-east of the GWR station; later known as Reading South, it survived as a separate station until 1970. The LSWR also sought a connection to Reading, which it obtained via collaboration with the Staines, Wokingham and Woking Junction Railway, which opened a line from Staines to Wokingham in 1856. The line was operated by the LSWR from Waterloo, with authorisation to run over the SER's line into Reading; the LSWR absorbed the Staines, Wokingham and Woking Junction Railway in 1878.

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The complex development of London suburban lines by the LSWR continued in the second half of the 19th century. From 1854, it operated trains from a special terminus at Waterloo to the newly opened Brookwood Cemetery in Surrey on behalf of the London Necropolis and National Mausoleum Company, via a branch from its main Southampton line (<http://www.victorianweb.org/art/parks/brookwood/history.html>).

In 1859, the LSWR collaborated with its arch-rival, the London, Brighton and South Coast Railway (LBSCR), to construct a joint line from Epsom to Leatherhead, a continuation of the LBSCR line from Croydon. This enabled the LBSCR to develop its second line to Brighton, via Horsham, while the LSWR constructed a connection through from its main Southampton line at Raynes Park in Wimbledon, which opened in 1859. In 1863, a new connecting line was opened from Twickenham to Kingston, with a branch from Strawberry Hill to Shepperton in 1864. In 1866, Chertsey was linked to the Wokingham line at Virginia Water and in 1869 a line was built from Malden to Kingston. A connection from Ascot to the Southampton and Alton lines was built in 1878–9, and in 1885, the line from Leatherhead was extended to Guildford and connected to the Southampton line at Hampton Court Junction.

#### *Local impacts of the railways*

Largely because of opposition from the University, the opportunity to house a major engineering depot for the Great Western Railway in Oxford was refused. This was eventually built in Swindon, transforming the fortunes of that town. Construction of the works, which now house a Retail Village, the GWR museum, and English Heritage, was accompanied by an initial phase of 300 houses for railway workers with more to follow. Although not on the same scale, the railways in west Oxford did have a clear impact on that part of the city. By the mid-1870s, rows of terraced houses had been constructed on the previously undeveloped land to the west of the railway, between Osney Mill and the Botley Road and across most of Osney Island, mainly intended for those employed by the railway.

The railways made an even greater impact was made on the village of Didcot, which appears as a small village surrounded by fields on the 1852 Enclosure Map (Fig. 9). A single railway line from London is shown to the north of the village, but there is no station. By 1883, when the 1st Edition OS 6" map was published there are three lines entering Didcot Junction, where there is a station, sheds and a gas works, while on the south side stood a corn exchange and several hotels (Fig. 10). A new road leads from the station to Newtown, on the

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Harwell to Wallingford Road. The junction had opened in 1844 (Fig. 11), followed by the Junction Hotel in 1846 (Fig. 12) and Station Road in 1848 (Fig. 13).

Between 1840 and 1870, most of the old buildings in the village had been rebuilt and replaced by terraced housing, with limited expansion and construction of some better housing. The new housing to the east was mainly the work of a local farmer, Stephen Dixon, who also established brick kilns north of the railway where the porous clay was not suitable. The railway settlement, which became known as Northbourne (originally Newtown, and then North Hagbourne), was not provided with running water or drainage and conditions were so poor that it was declared a Special Drainage District in 1883. Nonetheless, the sewage works did not open until 1895 and piped water was not provided until the turn of the century. During the later 19th century, Northbourne grew into a sizable settlement with its own schools, shops and churches and remained separate from Didcot village, which saw limited growth. The pattern of building was haphazard, consisting mostly of terraces, but with some cottages and larger houses. By the end of the 19th century, building had virtually stopped as the needs of railway workers had been met. The expansion which resulted in the merger of these settlements to form the current town of Didcot was not a direct result of the railway, but the construction of an army barracks during World War I, although the railway might have influenced the decision to build at that location (Lingham 1992).

The later stages of the expansion of the rail network in the region were carried out by the Metropolitan Railway. This company expanded its operations into Buckinghamshire in the 1890s. They gained permission for their land holdings along the route to have non-railway uses, among which was house building. This helped to create the suburbs of Metroland in the early 1900s (Fig. 14; Hepple and Doggett 1994).

Despite the tremendous changes that have taken place in rail travel, it is relatively easy to find evidence of original features, including level-crossing cottages, signal boxes, bridges, signs and stations. Windsor and Eton railway station, designed by Tite in 1849, is an interesting example as it includes a separate waiting room purpose-built for the royal family and there is a series of large doors opening onto the platform to allow access for the cavalry (Morris 1999, 129). The preservation and recording of railway archaeology owes much to volunteer organisations, who also run associated museums and operate trains over limited distances. There are several of these within the region, mostly significantly the Didcot Railway Centre and the Buckinghamshire Railway Centre at Quainton.

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**The Railways in the 20th century**

*By Trevor Rowley*

By the time Queen Victoria had died in 1901, England had become the most urbanized nation in the world, with the most comprehensive system of railway transport that any country has ever seen and over 18,000 miles of track. It is difficult to appreciate just how isolated many rural areas close to London were before the development of the metropolitan railway network. Settlements more than a day's ride away from the capital were as remote as those fifty miles away. Around London, the railways enabled commuters to move to rural residences well outside the capital, opening areas such as the Chilterns and the North Downs to city workers. The railway also penetrated remote rural areas, enabling access to the countryside for town dwellers on a large scale for the first time.

In a pattern that was to become familiar during the 20th century, the railways came under government control during the First World War and the experience suggested that the network could be developed more efficiently if it was less fragmented. The option of nationalisation was rejected in 1923, and instead almost all the remaining companies were grouped into just four operators, known as the 'big four': the Great Western, the London and North Eastern, the London, Midland and Scottish, and the Southern. Competition between the big four to run the fastest, most modern and most attractive services led to some of the greatest achievements of the railways in Britain, including the setting of the world speed record for a steam locomotive by the LNER's Mallard. Nevertheless, the railways increasingly struggled to compete with the expansion of road transport, particularly for the carriage of freight. During the Second World War, the big four operated jointly as a single organisation and the railways were heavily used. By the end of the war they were in a poor condition and it became clear that the cost of repairs and upgrading was beyond any company in the private sector. From the start of 1948, the railway companies were nationalised to form British Railways, which was run as six regional services. Nationalisation was followed by a major campaign of regeneration that saw the network recover to profitability by 1954. However, this resurgence was short-lived. Apart from the southern region, where the lines had been electrified in the interwar period, British Rail still relied on steam-power, which becoming increasingly outdated, partly to protect demand for coal, and thus employment in the mines. An attempt at modernisation in the 1950s was a costly failure, partly because it



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took little account of the way in which transport needs were changing. For example, there was a marked reduction in the use of short-distance branch lines, as both passenger and goods traffic moved onto the roads, and the rise of container freight was soon to make the new shunters and marshalling yards obsolete. By the early 1960s, British Rail was losing £100 million a year and the government appointed a businessman, Richard Beeching, as the new chairman, with a brief to cut the losses. He concluded that much of the network was carrying little traffic and in 1963 his report (known as the *Beeching Report*) recommended the closure of 2363 small stations and the removal of 5000 miles of track. Although most of his recommendations were carried out, they failed to return the railways to profitability. By the 1970s, passenger numbers had halved, though recovery began with the development of the new high-speed InterCity 125 trains, which were introduced on the Great Western line to Bristol in 1976. The railways were returned to private ownership in 1994, despite much public opposition, and by the end of the 20th century, the provision and maintenance of the tracks was in the hands of a single organisation, Railtrack, which was subsequently replaced by the publicly owned Network Rail. Ironically, although train services were provided by private-franchise operators, several part-owned by the state-run railways of other European countries, chiefly Deutsche Bahn and SNCF. The late 20th century and early years of the 21st century has seen a substantial increase in the use of the railways, thought to be due in part to the private operators increasing the numbers of services to maximise revenue, but also to changing patterns of travel arising from high fuel prices and road overcrowding. New investment in railways has resulted in the opening of the High-Speed line from London to the Channel Tunnel, and the major Thameslink and Crossrail upgrading of routes into and across the capital. At the time of writing, the proposed High Speed 2 (HS2) link from London to the north, due to cut across the Chilterns, remains controversial.

#### ***The railways in the Thames Valley***

By 1900, the railway infrastructure of the Thames Valley was almost fully formed. This incorporated the Metropolitan line from Baker Street to Aylesbury (1891). During the 20th century the only additions in the region were associated with the expansion of London and the provision of underground and surface railways for the expanding suburbs and industries. Between 1935 and 1940, substantial lengths of former GWR track passed into the hands of

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the London Passenger Transport Board. Elsewhere, the little expansion that occurred was largely to service military establishments, such as the great ordnance depot at Arncott near Bicester, Oxfordshire. Otherwise, the story of the railway in the Thames Valley was one of contraction and abandonment. This shrinkage was not as severe as in regions further away from London and several spur lines, such as those to Windsor and Henley, survived.

Although the main casualties occurred post-1960, several stations and halts closed before the Second World War (<http://www.disused-stations.org.uk/>). For instance, Port Meadow Halt on the 'Varsity' line between Oxford and Cambridge, which had only opened in 1906 as part of a rail-motor service between Oxford and Bicester, closed during the general strike in 1926 (Simpson 1981). The branch line to Watlington from Thame closed for passengers in 1957, and for freight in 1960 when Watlington station was closed.

The railways were intensively used during the Second World War, particularly the stations and sidings at Oxford, Bicester and Didcot, but post-war attempts to revitalise the system were undermined by lack of funding. Eventually, when the volume of commerce carried by road overtook that carried by rail in the 1950s, it was decided to rationalise the system. As a result of the Beeching Report, the main lines to close in the region were the Oxford-to-Princes Risborough route through Thame (1963), the Didcot-to-Warwick line through Kidlington and Bletchington (1964), and the Oxford-to-Cambridge line (1964), although the section to Bicester from Oxford was reopened in the 1980s. Passenger facilities were withdrawn on the Fairford line in 1962 and freight just three years later. In Berkshire, the Abingdon and Faringdon branches both closed to passengers in 1963, while in 1964 the Didcot to Newbury line was shut.

Many of the old railway lines were sold off in portions to adjacent landowning farmers or for housing, making the restoration of services extremely difficult. Railway buildings became homes, offices, workshops and storage units. The station at Abingdon was eventually dismantled and its site is now occupied by a supermarket. With the rise of leisure activities, several former railway trackbeds were turned into footpaths or cycleways. The disused railtracks of the 20th century today form extensive linear earthworks in many areas, wooded, overgrown, and sinking back into the landscape. Often resembling Iron Age earthworks or Roman roads, their true origins are only revealed by an occasional solid brick or stone bridge or an abandoned station. Apart from providing safe and attractive walks and rides, the disused lines are often sanctuaries for a wide range of wild flora and fauna. Stations and crossing-keepers' cottages have been converted into homes, sidings have become

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gardens, and station yards were taken over by builders or coal merchants or were sometimes used as car parks. Elsewhere, the remnants of disused railway lines and stations rust or sink back into the landscape.

Part of the track of the Fairford line has been converted to a road at Eynsham and the station there was partly built over by Oxford Instruments (Stretton 2006, 83), although a platform which was added in 1944, was dismantled in 1964 by the Great Western Society and moved to the Didcot Railway Centre. Further westwards, the stations at Witney, Bampton, Carterton, and Kelmscott and Langford have been demolished. The sole surviving relic at the latter is a pole which once held the station lighting. At Alvescot, the station house, now called ‘Station Bungalow’, survives, as does the station platform with a deteriorating fence on top of it. In 2005, the trackbed was used for storage by a coal merchant (*ibid.*, 91–2).

In Oxford, the old GWR station (dating from 1891) was demolished in 1971 and a new station built on the same site with a platform extension. This station had a far shorter life than its Victorian forerunner as it proved quite inadequate for the task. Another new station was built, reflecting the priorities of the age. Writing in the *Observer*, Rory Coonan likened it to the average DIY superstore and dismissed it as a complete design failure. However, it was larger and functionally much more successful than its short-lived predecessor (Simpson 1981, 16). Just to the east was the old LNWR station, Oxford Rewley Road, which served Bicester, Bletchley, Bedford and Cambridge. It was built by Joseph Paxton, designer of the Crystal Palace, and was closed to passenger services in 1951, just a century after it had opened (Fig. 15). The station building survived as a railwaymen’s hostel and then a tyre centre until the late 1990s. The whole road layout in this extremely busy thoroughfare into Oxford’s city centre was remodelled from 1999 and Oxford University’s Said Business School was built on the site of the old station, which was removed brick by brick and reconstructed on the Quainton Road section of the Buckinghamshire Railway Centre. The plan to build the business school at the expense of the old station was met with considerable opposition from heritage and conservation groups, though the University won (Stretton 2006, 50–5).

One curious survival is the Rewley Road swing bridge, which is now a scheduled monument (No. 1003651). Just to the north of both Oxford stations is the navigable link between the Thames and the Oxford Canal called the Sheepwash channel. The GWR station was at a higher level than Rewley Road and to avoid impeding navigation on the Sheepwash channel, its tracks passed over an unusual double-track swing bridge. The Rewley Road coal yard survived in use until the 1980s, so the bridge survived. Houses were built on the coal

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yard site (also the site of Rewley Abbey) but the swing bridge was left intact, but overgrown and marooned in a sea of houses (Fig. 16).

#### ***Heritage Railways***

Some of the old lines, such as the Cholsey and Wallingford steam railway and the Icknield Line, have reopened as tourist attractions as nostalgia for the Steam Age became part of a broader appreciation of national and local heritage. The Didcot Railway Centre houses an important collection of GWR steam trains and other railway archaeology, while the Buckinghamshire Railway Centre is in the heart of Metroland, to the west of Aylesbury. The latter began in 1968 as the London Railway Preservation Society and is now one of the leading steam railway museums in Britain. Sections of line have been reopened for steam trains between Chinnor and Princes Risborough, Cholsey and Wallingford, and Swindon and Cricklade.

## **ROADS AND THE RISE OF THE MOTOR VEHICLE IN THE 20TH CENTURY**

*by Trevor Rowley*

The road network had evolved over the centuries, but despite improvements in the 19th century, particularly in the form of the turnpikes, the speed of travel was restricted to the pace of the horse. Because the Thames does not flow in a straight line and makes great loops along its course, no one road follows the river for its entire length. The two, principal east–west routes from London became the A4 and the A40, after the creation of trunk roads in 1923. The A40, which links the City of London to Fishguard connecting several turnpike routes along the way, extends to the north of the Thames, but only touches the river at Oxford and Eynsham. It follows the line of Western Avenue, Gerrards Cross, Beaconsfield, High Wycombe, Oxford, Witney and Burford and it is one of the few ‘old’ trunk roads not to have been superseded by a direct motorway link (though the London-to-Oxford section is served by the M40). The A4 mostly follows the route of the old Bath Road, starting at Hyde Park Corner. The road runs relatively close to the Thames through Hounslow, Heathrow, Slough, Maidenhead and Reading, and then continues westwards to Newbury, Hungerford and

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Marlborough. This is the approximate route later taken by the M4, which since the 1960s has relieved the A4 of much long-distance and freight traffic. Parts of the M4 and the M40 also form sections of Euroroute E30.

There is only one direct primary north-south route, the A34, which originally (in 1923) ran from Winchester to Oxford, but later (1935) was extended northwards to Manchester and now joins the M40 to the north of Oxford. To the east of the Chilterns in the High Wycombe/Reading/London triangle, there is a dense network of A and B roads and several primary routes, for example from Maidenhead to Aylesbury. There is also the Thames Valley section of the London Orbital M25, and there are also several motorway spurs. To the west of the Chilterns in the corridor between the M4 and the M40/A40, the network is less dense, except for the area on the Thames terraces to the south of Oxford as far as the Goring Gap, where the primary A and B roads once again form a complex matrix.

#### **Early 20th-century roads**

In 1900, motoring was in its infancy. On 3 July 1895, the Hon. Evelyn Ellis of Datchet made the first car journey on an English road in his new Panhard automobile. However, Britain's roads were not suited to this new mode of transport. Even the best roads designed by John McAdam were only built of stone held together with mortar, rubble and clay, and the suction action of car tyres drew out the binding medium in the roads, which then disintegrated. In addition, many roads that had been improved in the early 19th century had subsequently been allowed to deteriorate with the decline of the turnpike system. Metalling had first been introduced in London in the middle of the 19th century, and several other city centres had metalled roads by 1900. Elsewhere, however, roads remained unsurfaced and in the control of local councils. At Twyford, the dust and general unsatisfactory state of the roads gave rise to an acrimonious dispute through letters to the *Reading Mercury*, which eventually persuaded the parish council to tar the roads at a cost of some £40, a sum that was mainly raised through subscriptions. In 1904, the new County Surveyor of Highways in Berkshire organised a more efficient system of maintenance. Gangs of six or seven men were employed in each district to spread a water-bound macadam in front of a roller, and length men were responsible for about four miles of road. In 1909, tar-spraying equipment was purchased for use only on main roads and it was soon remarked that its use lessened the need for excessive watering,

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which had formerly been so detrimental to surfaces. The busiest road was the Bath Road, which absorbed an inordinate amount of surfacing materials because of heavy traffic. In 1912, a government grant of £30,000 was received towards the reconstruction of this road from Maidenhead to Hungerford, and of the London road via Ascot. In 1913, an international road conference was held at Reading and stretches of the Bath Road at Twyford were surfaced with a variety of materials to demonstrate their differences. By the end of that year the whole length of the Bath Road through Berkshire had been resurfaced, the first road in the county to be tarmacadamed (Hunter 1995, 127). Subsequently, tarmac was used to cover and transform many thousands of miles of road to provide a consolidated surface for the transport revolution (Fig. 17).

During the first decades of the 20th century, the ancient highways and byways of the Thames Valley were converted into black ribbons that criss-crossed the region. This represented a major change to the landscape, and brought about a much greater degree of standardisation in the width and quality of roads. The new metalled roads tended to be much narrower than the old Parliamentary Enclosure roads. The wide, straight tracks of Enclosure roads conformed to the regulation width that had been laid down by the Enclosure Commissioners in the 18th and early 19th centuries. The Enclosure roads were statutorily 40, 50 or 60 feet wide to enable horses and carts to avoid obstructions or potholes. In contrast, many of the new tarmac roads were only 12 feet wide, which just allowed two motor vehicles to pass. The narrowness of the actual road was accentuated by the wide, grassy verges that were left on either side after the roads were metalled in the early decades of the 20th century. Particularly good examples of this phenomenon are to be seen in the Otmoor region of Oxfordshire.

Villages, hamlets, farmsteads and towns were all changed by the advent of good roads. In rural areas, the decisions made in the 1920s and 1930s as to which roads should be properly surfaced and which left as tracks had an enormous impact in terms of contact among communities and in some cases determined the very survival of some settlements: a maze of metalled minor roads in the Buckinghamshire Chilterns was created at this date. No county council, however, could afford to tar all its minor roads. Many ancient trackways, such as the Ridgeway in Oxfordshire and Berkshire, were not improved and today provide a playground for motorcycles and four-wheel drive vehicles.

Where several roads entered a village, the choice of which ones should be improved for motor vehicles affected the morphology of the settlement as new development



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automatically gravitated along the tarred roads. Often, communities which had previously been clustered around churches and greens had linear elements added to them following 20th-century road improvement. At Kidlington, north of Oxford, the core of the village moved about a mile westwards from its historic position around the church to a crossroads on the Banbury road. In those villages close to urban centres, ribbon development was a common feature of the interwar years, sometimes in the form of rural council housing but more frequently as speculative housing development. Some villages, such as Old Marston, Old Headington and Iffley at Oxford, were absorbed by their neighbouring town through this process. Such alterations to rural settlement patterns and communication were widespread and represent one of the most important changes in the 20th-century rural landscape.

The size of Reading was considerably increased by a boundary extension in 1911, when it absorbed most of Tilehurst and Caversham. The latter addition made better road communications with the town a matter of prime importance, as the only existing link was a narrow iron bridge that was erected across the Thames in 1868 on the site of a dilapidated medieval bridge. Before the First World War, plans had been under discussion for two new bridges, one to replace the iron bridge and a second, entirely new bridge linking east Reading with Lower Caversham. These plans were postponed by the war but were revived in the 1920s, by which time it was obvious that much wider bridges were needed to cope with the increased volume of motorised traffic. The new Reading bridge was opened in 1923, and the replacement for Caversham bridge in 1926 (*ibid.*).

### **Roads between the Wars**

The sale of large numbers of cheap ex-Army vehicles to private owners after the end of the First World War provided a stimulus to motorised transport, and the volume of freight carried by road increased significantly in the interwar years. One of the first functions of the Ministry of Transport, set up in 1919, was to undertake the classification of roads, which in the first instance were simply graded as One or Two. From 1920 central government began contributing towards the cost of road maintenance, and the interwar years saw the building of the first bypasses to avoid congestion in towns throughout the country. The Trunk Roads Programme (1929) was devised both as a means of providing employment during the Depression and to ensure that road improvement schemes were implemented.

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The main roads running westwards out of London were the most urgent problem. Brentford had had been a bottleneck since the 19th century, as the Bath Road here was constrained by the Thames to the south and Osterley and Gunnersbury parks to the north. Following several road fatalities on Brentford High Street, *The Times* ran a series of articles at the beginning of the 20th century advocating a Royal Road to Windsor. In 1909, a report claimed road conditions in Brentford were ‘intolerable’. Various schemes to help alleviate the situation were curtailed by war. In 1918, the Great West Road Scheme was revived as a means of employing returning soldiers. Building the new road, which was 120ft wide and flanked with verges for future expansion, involved the destruction of 59 houses and the construction of several bridges, and a third carriageway was added in 1936. One innovative feature was that all the services were carried under the pavements. The foundations of the carriageway consisted of nine inches of reinforced concrete and two inches of rock asphalt. A landscaping feature was the planting of trees at 60ft intervals, with a different species every mile: planes, chestnuts, beech, Norwegian pine and beech. The five miles and one furlong of the Great West Road cost about £1 million to develop and it was extended to Staines, at the last minute, at an additional cost of £157,000. The combined length of just over five miles was opened by George V and Queen Mary on 30 May 1925.

The Great West Road was not the only major London bypass constructed in the 1920s, and it soon became apparent that these new arterial roads not only helped to reduce congestion, but also provided ideal locations for industries. Western Avenue, the Great Cambridge Road, and the Barnet and Watford bypasses all offered clean greenfield sites with easy access to London. The Great West Road, however, had the advantage of rail and canal links that were essential for bringing in raw materials and enjoyed a greater proximity to the West End shops. Most importantly, it saw the first London co-location of factories and headquarters offices on the same site. This consisted of a mix of American and British companies using electricity as their main source of power and became known as the ‘golden mile’ of factories. Some of the most iconic Art Deco buildings of the interwar era were/are to be found here, including the Firestone Factory (1928, demolished 1980), the pseudo-Egyptian Pyrene Factory (1930), the Gillette Factory (1936–7), the Berlei Factory (1936–7; Fig. 18) and Wallis House, built in 1936–42 for Simmonds Aeroaccessories, later used by Beecham’s, and now converted into flats (Harwood and Drake, 1994, 1–2). When the M4 was constructed to relieve the Great West Road in the 1960s, it was laid out to the north and sliced its way across the middle of Osterley and Cranford parks.

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The plan to construct Western Avenue, the major road leading westwards out of London, was complicated by the existence of 23 different local authorities along the projected route. Western Avenue was first advocated by the Roads Improvement Association. In 1921, work started on the road, only to fall victim to financial cutbacks and when work eventually restarted in 1937, it was stopped again due to the outbreak of war in 1939. Since 1945, work has continued intermittently on rebuilding the Westway. Despite its problems, it is one of the best surviving examples of the road suburb, and like the Great West Road it attracted new factories and works, including the most striking of West London buildings, the Hoover Factory, Perivale (1931–5). At its eastern end, Western Avenue joins the Westway, a 2.5-mile-long, elevated dual carriageway, and at the western end it meets the M40 at the Denham roundabout (Thorold 2003, 230–31; Platt 2000).

On the A4, a bypass to relieve Maidenhead of congestion had been proposed since 1927 and a route had been surveyed, but in 1930 the government withdrew its consent under the National Economy Act. However, in 1935, the Ministry of Transport concluded that a Maidenhead bypass was ‘an urgent national need’ and two years later work began on a new bridge near Bray to carry the bypass across the Thames. In 1939, bulldozers, then new and unfamiliar machines, arrived to start work on the road, but on the outbreak of war the project was halted, and the 1680 tons of steel ordered for the superstructure of the bridge were diverted to more urgent uses. The bypass plan was revived in 1959, when the roadwork begun twenty years earlier and subsequent overgrowth was cleared for further progress. By that time, there were plans to build a motorway from London to South Wales into which the bypass was eventually incorporated, and accordingly the partly built river bridge had to be redesigned and its approach roads altered.

Several roads in the Thames Valley were subject to uncontrolled ribbon development. This was particularly evident in places such as High Wycombe in the Chilterns, where narrow chalk valleys restricted the area available for suburban housing. The uncontrolled spread of new housing along arterial roads led to the Restriction of Ribbon Development Act of 1935. This stated that no new access could be made on to any road classified before 17 May 1935, nor any building erected within 220ft of the middle of the road, without the consent of the highway authority. The 1935 Act was of considerable importance for highway design and town planning. The differences between the road schemes built in the years after 1935, which generally function effectively as uninterrupted through routes, and those where adjacent development was uncontrolled are very obvious today.

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The rural roads were also subject to improvement. After 1926, the Ministry of Transport began to make grants of 20 per cent for strengthening and widening the more important unclassified roads to meet the needs of motor vehicles. In some cases, these were former ‘secondary roads’ that were still receiving 25 per cent grants from the county council.

The bypasses created a new genre of roadhouses and filling stations specifically designed to meet the needs of motorists. The Automobile Association established the first roadside filling station at Aldermaston in Berkshire in 1919. Up until then, there had been some petrol pumps sited at garages, many of them former blacksmiths, away from the main roads, but motorists generally relied on petrol cans carried in the car. The oil companies then built strings of their own filling stations along the highways. By the 1930s, distinctive roadhouses were often splendid, large, brick public houses or hotels, sometimes built in flat-roofed art-deco style. They emphasised the glamour of motoring and often provided a wide range of exotic activities. Sporting facilities were particularly important: swimming pools and ballrooms were essential, as was some form of golf course. Some roadhouses, like the Clock at Welwyn on the Great North Road (<http://www.hertsmemories.org.uk/content/herts-history/places/restaurants/the-clock-hotel-welwyn>), were organised along the lines of later motels. The Berkeley Arms Hotel at Cranford, Middlesex, was built in French chateau style and boasted ‘the delicate sophistication of a Mayfair restaurant complete with jazz band’. The most famous was the Ace of Spades on the Kingston bypass, which had a 24-hour restaurant and could accommodate 700–800 people at a time, a polo ground and a riding school. Such was the contemporary fame of the Kingston bypass that it prompted Noël Coward to write a song about it: ‘Give Me the Kingston By Pass’. Many roadhouses were left isolated or demolished as a result of later road building or improvement, which often left them on a redundant section of road (Thorold 2003, 138–41).

### **Post-war roads**

Post-war suburban England was shaped with motor transport in mind, though traffic increase always exceeded road provision. Intersections, roundabouts, signposts, footpaths, underpasses and bridges were constructed throughout England, normally to standard designs, to meet safety requirements and not aesthetic sensibilities. As a result, side streets became ‘rat runs’, quick shortcuts linking busier roads, and the sides of all roads filled up with parked

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cars. Parking took up an increasing percentage of city and town space, parking meters became a normal part of street furniture and, where problems persisted, ticketing and clamping measures were introduced. Many front lawns and gardens were paved over to create off-street parking, which appears to have exacerbated flooding problems in Thames Valley towns. Many cities, such as Oxford and even Reading, almost gave up on trying to accommodate the car altogether and adopted measures to restrict motor access to the centre. Park-and-ride schemes were introduced in the latter part of the 20th century in an effort to reduce traffic flows. Such schemes have persisted into the present and enable shoppers to park on the edge of town and take public transport or walk to the centre. In Oxford, where the scheme has been energetically promoted, there have been some positive results in keeping cars out of the congested city centre. The downside was the dedication of acres of land to access roads and parking spaces. This land was adjacent to the bypass providing easy access to the out-of-town motorist, but within the Green Belt and contributed to the blight of the open space designated around the town. Such schemes were also accompanied by the introduction of dedicated bus and cycle lanes.

After the 1960s, there were numerous schemes to improve roads, whether by widening, straightening, creating dual carriageways, improving junctions, or building bypasses or ring roads. Priority was given to intercity routes and to the main roads within urban areas, but virtually all roads have been ‘improved’ to some extent. Yet the number of vehicles, especially cars, has kept increasing, and at a faster rate than road space. Today, it is clear from the experience of the M25 and other examples that traffic expands to fill the available road space, and the consequences in terms of congestion and falling traffic speeds are obvious.

### ***Motorways***

The single greatest change to the road system in the second half of the 20th century was the construction of the motorway, and the impact of these roads in the last part of the 20th century was as pervasive as that of the railways in the 19th century. The motorways created new types of economies. Rapid transport between new industrial estates, air and rail links, and London encouraged the growth of industries along the axial lines of motorways. Motorways, like Roman roads and the railways before them, were designed to run in

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predominantly direct lines and were largely able to ignore property and other boundaries in the landscape through which they passed. Their impact on the modern landscape is significant as motorways consume about 25 acres of land to the mile and are twice as land-hungry as railways. There are several elevated junctions of motorway in the region along the M25, the M40 to the east of High Wycombe and the M4 to the west of Heathrow, and the lighting, gantries and service areas associated with motorways have become familiar landscape features.

The most dramatic motorway-landscape feature of the Thames Valley is the M40 Chiltern cut, which has a maximum depth of 47 metres and was carefully designed to minimize landscape disruption and ensure safety. One of its features is a 2.3metre-high, strained deer wire along the wooded escarpment to prevent deer straying into the cutting. The M40 between London and Oxford is not without its critics, notably in the Chilterns, where noise and pollution are perceived to be major problems. ‘Near Loudwater the motorway strides across the valley on giant concrete legs. To say that they intrude into the landscape is an understatement of Gargantuan proportions’ (Reed 1979, 271). The Handy Cross junction (Wycombe/Maidenhead) is now a notorious traffic bottleneck. One of the latest major additions to the national network, the 48 miles of the M40 from Oxford to Birmingham, designed in part to relieve pressure on the 30-year-old M1, was completed in 1991.

The M4 corridor lies to the west of London and follows the route of the M4 motorway towards Heathrow Airport, Reading, Newbury, Swindon and Bristol into South Wales. By 1967, the motorway had been built to the east and west of Berkshire, but across Berkshire the hopelessly inadequate A4 carried an increasing volume of traffic, so that long queues of vehicles crawled through one bottleneck after another. By 1971, it was estimated that the busiest stretch between Maidenhead and Reading was carrying 70,000 vehicles a day. Eventually, construction of the M4 across Berkshire commenced early in 1970 and the motorway was opened on 22 December 1971. The M4 brought economic growth and prosperity to the whole region. The motorway’s links with London, Heathrow and the M25, and with the Midlands and Southampton docks via the A34, made the M4 corridor a prime area for business and industrial expansion. In the 1980s, the rapid growth of high-technology and service industries such as finance and distribution companies caused land and property values to rocket as developers competed for huge sites to build prestigious office accommodation and business parks. The demand for premises was so great that more than two million square feet of new industrial and commercial floorspace was being built in



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Berkshire each year. Around Reading, in addition to new developments, such as the Worton Grange industrial estate near junction 11 of the M4 and the Thames Valley business park at Lower Earley near junction 10, several older industrial sites have been redeveloped, such as the Forbury industrial park on the former site of Huntley and Palmer's biscuit factory. To the west of Reading, the Arlington business park at Theale occupies a 48-acre site next to junction 12 of the motorway and provides 720,000 square feet of office space and jobs for up to 3000 people. More recently, the area has become notable for the spread of information technology-based industries, giving it the name of Britain's own 'Silicon Valley'. In rural areas of west Berkshire, the demand for property rescued many decaying houses and cottages in villages which were suddenly within easy reach of London and Heathrow. Perhaps the most spectacular change took place at Newbury, which in the 1980s was no longer just a country market town, but a 'boom' town transformed by new industry and commerce into one of the busiest and most prosperous in the south of England.

The completion of London's 'Motorway Box', the M25, was the most expensive and controversial scheme. The M25 quickly became the busiest route in the country and because of frequent traffic jams there were soon plans to add more lanes. The M25 did, however, improve access to London's two principal airports, Heathrow and Gatwick.

There is no single motorway extending throughout the Upper Thames Valley. To the west of Oxford, apart from the nine-mile stretch of the Witney bypass, the single-carriageway A40 is the principal trunk road. The only major north/south trunk road crossing the region is the A34 from the south coast to the junction with the M40 near Bicester, a dual carriageway by the end of the century, but now quite inadequate for the volume of traffic it carries.

Major bridges and flyovers were also built as part of the motorway system. The first of these was the Chiswick flyover in London, opened in 1959. This was the first serious attempt to provide a smooth flow of traffic at a major bottleneck, and by the end of the 20th century it carried 140,000 vehicles a day. The Westway, at the eastern end of the M40, represented a similar attempt to raise traffic above an area of inner-city congestion. Such attempts, however, tended only to move the problem further into central London.

Although motorways were able to ignore micro-landscape features, many of them roughly follow the routes of earlier lines of communication, both rail and road. Motorways were 'landscaped', with graded cuttings and extensive programmes of tree plantation. As a result, the setting of most motorways tends to be bland; only occasionally are rock cuttings able to reveal the true nature of the underlying geology, although their impact on the

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surrounding landscape is often very dramatic. The limited number of access junctions to motorways meant that many hundreds of minor roads had to be accommodated by bridges and tunnels, and in some instances, where a farm unit was divided by a motorway, a crossing was provided solely for the use of livestock. In some cases, roads were truncated and cul-de-sacs created. In the case of Lewknor, at the foot of the Oxfordshire Chilterns, an access road to the M40 also acted as a village bypass. As a result, the old village high street was blocked to the south of the motorway and the village no longer has any through traffic, although the noisy motorway is only a few hundred yards away. Attempts to improve the visual quality of service stations, as on the M40 at Oxford, have tended to produce replicas of the ubiquitous shopping mall.

#### **Coach Transport**

The origins of motorised coach transport go back to the 1920s. In 1921, William Beesley of Oxford formed a company called South Midland and started excursions to London by charabanc. This became a daily service, and by 1928 was regularly picking up and setting down passengers en route. South Midland had competitors, however, and by 1930, 18 companies were running a total of 58 coach services between Oxford and London every day. After the Road Traffic Act 1930, the competitors quickly reduced to two: South Midland and Varsity Express. The latter used the A40 via High Wycombe and Uxbridge, while South Midland ran via Henley-on-Thames, Maidenhead and Slough. In 1933, the Eastern Counties Omnibus Company acquired Varsity Express (which also ran a service between London and their base in Cambridge). In 1934, the Tilling Group (Eastern Counties' parent company) moved the Oxford service of Varsity Express to a closer group company, United Counties. In 1934, South Midland was running seven journeys a day, and Varsity Express ran eight journeys a day. The day return fare was 6/- (30p) (Flitton 2004). By the end of the 20th century, coach transport was a popular and cheaper means of transport than rail. Central London was only just over an hour away and Oxford was a major hub for coaches, partly drawing upon the foreign tourist trade between the two cities. In addition to over 100 coaches a day to London, there were shuttle services to Heathrow and Gatwick airports.

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#### THE IMPACT OF FLIGHT

*by Trevor Rowley*

The aeroplane made a distinctive contribution to the Thames Valley landscape during the 20th century. Air transport's impact up to the First World War was relatively small. Even those airfields created during the war were sited on grass and after 1918 many of them were abandoned, leaving little trace. There were many short-lived airfields and almost any large area of flat pasture or parkland was adequate for early flight. For example, Port Meadow at Oxford was used as an airfield before and during the First World War. As civilian airports developed in the 1930s, characteristic airport buildings began to appear on sites around London, but the runways themselves normally remained grassed, sometimes reinforced with wire netting. The Second World War saw extensive use of the Thames terraces, where a new generation of military airfields were established, many of them with concrete runways. These were much more difficult to erase from the landscape after they were abandoned, with many of them surviving to the end of the century, but often adapted for alternative uses. A small number were converted into civilian use. Among these was Heathrow, which developed as the United Kingdom's premier air hub and one of the world's busiest airports; with all its ancillary activities, Heathrow, now occupies as much space as a medium-sized town (see below).

... airports have to be situated on flat land which does nothing to hide the acres of concrete, and ... for safety reasons, tall trees which might soften the skyline are not tolerated. ... neighbourhoods decline and take on an unloved appearance. What we finish up with, all too frequently, is an unappealing wasteland of warehouses, car parks and poor housing. (Hudson and Pettifer 1979)

To this negative list of landscape features resulting from the expansion of airports could be added tower-block hotels, fuel storage tanks and mass catering facilities. Nevertheless, the impact of the aeroplane on the landscape in the 20th century was not as all-pervasive as that of the motor vehicle. Although airports were large, they occupied relatively discrete concrete and brick islands, the impacts of which lessened the further one moved away from them. However, as the century progressed, the planning blight created by large airports in their hinterlands became increasingly apparent. Often, hundreds of acres of good

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agricultural land close to the airport lay uncultivated and unkempt. The area to the west of Heathrow is now given over to huge reservoirs and man-made lakes; the Queen Mother Reservoir was added to Wraysbury, King George VI and Staines reservoirs in 1975, when 500 acres of farmland in Horton and Datchet were swallowed up. Gravel extraction at Kingsmead Farm and at the Welley and Fleet Meadow has produced the Kingsmead and the Thames Valley water-sports lakes. In effect, the five-mile zone between the west of Heathrow and the River Thames at Windsor is a ‘no-man’s-land’ of water, car parks, motorways and industrial estates.

### **Early Aviation**

In 1908, the Aeronautical Society acquired an area of reclaimed land near Dagenham Dock, Essex, as an experimental flying ground, and many other early airfields were located along the mudflats bordering the Thames estuary. The Dagenham site eventually proved to be a white elephant and in 1925 the Ford Motor Company started to build their motor assembly factory there. In 1909, the year Louis Blériot successfully flew across the English Channel heralding the age of the aeroplane, the Aero Club acquired a flying ground at Shellbeach, near Leysdown on the Isle of Sheppey. The Short brothers established a factory here and manufactured the first aeroplanes in Britain. Unfortunately, the Shellbeach site also proved to be unsuitable as its surface was uneven because of drainage ditches running across it. In 1910, a more favourable location was found a few miles away at Eastchurch, which rapidly became the centre of aviation experiment and manufacture before the First World War, and there is a memorial in the village commemorating the home of pioneer aviation in Britain.

In 1910, Claude Grahame-White acquired a 200-acre meadow site at Hendon, north-west of London, for a flying school. The site was bordered by the Midland Railway and was later to be used as one of the military airfields sited around London for its defence during the First World War. Others, to the west of the capital, were sited on the plateau between the rivers Colne and Crane, tributaries of the Thames. These were at Hanworth (known as London Air Park) and Northolt, where an area of 283 acres was acquired and six flight sheds and a twin hangar were built. After the First World War, several wartime airfields to the west of London became civilian airports. Hounslow Heath was London’s first airport and saw

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regular flights to Paris in 1919. However, it closed the following year when all flights were transferred to Croydon.

To begin with, light aeroplanes continued to use small grass fields, and for a while it was believed that every town and city would have its own airfield, just as it had its own railway station. One commentator in the mid-1930s speculated that ‘every centre with a population of over 3,000’ might soon have an ‘authenticated aerodrome’ (Stapleton 1935). During the 1920s and 1930s there was a proliferation of rudimentary municipal aerodromes, and the sight and sound of planes flying over urban areas became common. Nonetheless, the number of air travellers remained small as ‘airliners’ were single-engine biplanes carrying only two or three passengers. It was not until *c* 1930 that air travel became safer and comfortable enough to begin attracting a larger clientele. For the first time, new airfields joined other developments as serious consumers of agricultural land. The Land Utilisation Survey Report of 1937 described the brickearth soils in the Harmondsworth area as being ‘some of the best in England and they are, and have been, extensively used for market gardening, although they are well-suited to almost any type of farming. In the national interest it is, therefore, a matter of regret that so much development of an urban and suburban character has been permitted to take place on this highly productive land’ (Willatts 1937). The report went on to lament, ‘at least four aerodromes have been recently established in the region, three of them involving the conversion of excellent market-gardening land into grassland of little value’. The four airfields in question were Hanworth, Heston, Great West Aerodrome (Heathrow), and Hawker’s at Langley.

Heston, which was the only aerodrome to compete with Croydon for overseas flights between the wars, was opened in 1929. In 1928, Airwork Ltd bought 170 acres of land between the villages of Heston and Cranford and eventually plans were drawn up to develop Heston as an alternative to Croydon. Several buildings were erected, including the first reinforced-concrete hangar as well as a new terminal and control tower. In 1936, the Air Ministry bought the airfield and much of the surrounding land, and in 1938 Heston airfield achieved national attention as the airport from which Neville Chamberlain flew to Munich to meet Hitler. Plans were drawn up for the expansion of Heston, which would have extended from the Grand Union Canal in the north to the Bath Road in the south and destroyed the villages of Cranford and Heston, creating one of the largest grass-field sites of the period in the world. Had it not been for the outbreak of World War II, it is probable that Heston would have become London’s main airport

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At the beginning of the war, plans for a new civil airport for London were abandoned. British Airways, by then the largest civil fleet in the country, moved their operations to Bristol, and Heston became a satellite to nearby Northolt. Heston was intensively used during the war, particularly by Polish squadrons, and was subject to a devastating air raid in September 1940. After the war, because of its proximity to Heathrow, Heston was forced to close. In 1965, the M4 motorway was constructed directly across the airfield. The control tower and adjoining buildings were pulled down in 1978 and part of the old airfield was returned to agriculture. A few original features of the airport survive, including a concrete hangar, five aircraft sheds, which are used for storage, and sections of the old perimeter track.

In 1911, Hanworth Park was described as containing ‘many fine trees, which are the more remarkable as the rest of the parish is but sparsely wooded’ (VCH 1911). The trees were cleared and the park was used as an airfield during the First World War. After the war, flying did not resume until 1928 when 229 acres of Hanworth Park were laid out as a private airfield by National Flying Services Ltd and Hanworth House served as the clubhouse. In 1930, Hanworth, also known as London Air Park, hosted the prestigious King’s Cup flying contest and it continued in use until 1946, when flying ceased because it was too close to Heathrow. In 1959, it was converted into a municipal public park (Cherry and Pevsner 1991, 422).

The possibility of building paved runways, common in the United States, on commercial airfields was already being considered prior to the outbreak of the Second World War. By 1942, the RAF had settled into a policy of laying 6000-foot runways with two shorter, subsidiary runways at almost all its operational fields. When the American Air Force arrived, they enhanced the airfield construction programme and created several large bomber bases in East Anglia and Oxfordshire. By 1945, the country had a network of several hundred modern airfields capable of accommodating the latest aircraft. As the bomber war developed, so did longer runways, some as long as 8000 feet, to carry the heavier aeroplanes. The flat gravel terraces of the Thames Valley proved particularly attractive and adaptable for wartime use.

Of the 31 wartime military airfields in Oxfordshire, only six were still active in 2000. Some, such as Abingdon and Brize Norton, remained in some form of military use; others, such as Booker, near High Wycombe, were used for commercial and recreational light aircraft. Kidlington, which had been intended as a municipal airport before the war, became a significant civilian pilot training centre. It is now the home of CSE Aviation and Oxford



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Aviation Academy. Most of the decommissioned airfields were eventually reclaimed for agriculture and their unwanted concrete structures were gradually dismantled. The reclamation was accelerated after the late 1950s, when concrete runways could be sold profitably as hardcore for road making. For example, in 1963, Great Horwood, near Buckingham, was reclaimed for agriculture by a farming company; large areas of concrete were sold as hardcore at a price equal to the cost of the land beneath them, but enough was retained to provide ideal foundations for poultry and pig breeding units. A considerable number of the other disused airfields became industrial estates. At Witney, for example, the former de Havilland airfield was sold in 1949 to a motor accessory company, which built a large new housing estate and business park.

Other airfields found non-agricultural uses, such as car racing at Silverstone and go-karting and gliding at Shenington. Several others became research establishments, such as the nuclear research institutions at Aldermaston and Harwell, which were transformed in appearance and enhanced the prosperity of local villages, while the large airfield at Culham became a high-technology research centre.

### **Heathrow**

London Heathrow is Britain's premier airport and one of the busiest in the world. At peak times, over 12,000 passengers an hour pass through its five terminals, and there are well over 1000 aircraft movements a day, mostly large passenger jets. Until the 1930s, however, Heathrow had remained a rural area growing produce for the London market. Following enclosure in the early 19th century, there had been a steady increase in orchards and market gardens as enclosure fields were gradually consolidated, and a jam factory opened in Sipson in the 1890s. Divided into broad strips, the landscape had something of an open, medieval appearance.

Heathrow's location on a flat plateau on the western edge of the ever-expanding metropolis and along a major routeway meant that it came under increasing pressure from services required by the capital. By the 1930s, cars, lorries and buses had begun to open the area up to developments from London in the form of several small gravel pits, brickworks and limited suburban housing. In 1935, Harmondsworth became home to one of the best-known names in British publishing, Penguin Books. A major development in and around

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Heathrow was the opening of a sludge disposal works at Perry Oaks by Middlesex County Council in 1935 as part of the West Middlesex Drainage Scheme. One consequence of this was that market gardeners, who up until then had relied upon horse manure to improve their land (up to 40 tons an acre was used), were able to apply dried sewage sludge as a soil nutrient. The market gardens produced a wide range of vegetables under glass and in forcing sheds bound for the London market. At about the same time as the sludge works opened, the Ham River Sand and Gravel Company also began excavating gravel from land to the east of Heathrow Road. Nevertheless, as late as 1935, Heathrow was described as follows:

If you turn down from the Bath Road by the Three Magpies you will come upon a road that is as rural as anywhere in England. It is not, perhaps, scenically wonderful, but for detachment from London or any urban interests it would be hard to find its equal; there is a calmness and serenity about it that is soothing in a mad rushing world. (Maxwell 1935)

In the 1930s, Heathrow was a small, private, grass airfield, which enjoyed the inflated title of the ‘Great West Aerodrome’. The principal figure behind the development of early Heathrow was Richard Fairey (1887–1956), who began his aeronautical career by selling model aircraft to Gamages of High Holborn. He formed the Fairey Aviation Company in 1915, which initially operated from Hayes. Fairey later bought a field in Harlington, which became the company headquarters and factory. A few flights were made from this field, but from 1917, Northolt Aerodrome became Fairey’s test-flying base. After the Air Ministry gave Fairey notice to quit, he was obliged to find another airfield within a reasonable distance of his factory at Hayes. It is believed that the Heathrow site was chosen because Norman Macmillan, Fairey’s test pilot, had made a forced landing and take-off here. Macmillan was impressed by the stability of the land and suggested that the Heathrow area would provide a suitable location for the new aerodrome. Fairey’s contacted the owners of a block of fields and negotiated their purchase. The first was a plot of 71 acres of glebeland in the hands of the Reverend R. Ross, vicar of Harmondsworth. A further five plots, consisting of 108 acres, had been bought by 1930. Another two plots of 48 acres each were acquired during the early years of the Second World War.

The area was levelled by C. P. Hunter in 1930, who laid out an area of high-quality turf. The airfield was known originally as the ‘Harmondsworth Aerodrome’, but later became the ‘Great West Aerodrome’ and the hangar located on the northern corner of the site was

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said at the time to be the largest in the world. Because of a protracted legal struggle over reparations to Fairey's, this survived until the 1960s. Large numbers of people in the aviation world visited the Fairey aerodrome for the Royal Aeronautical Society garden parties held here in the 1930s, and Fairey later argued that this must have drawn attention to the potential of Heathrow as the site for a new civil airport for London. The company acquired additional land during the Second World War in order to bring the works and flight-testing facilities together, and by 1943 they owned about 240 acres of land between Cain's Lane, High Tree Lane and the Duke of Northumberland's River.

With the outbreak of war, the whole area was requisitioned for the RAF, although Fairey continued to operate from here. It was not until 1944 that work began on a bomber base at Heathrow, intended to house US Air Force Flying Fortresses which were going to be used in the war against Japan. Temporary arrangements were made for the Fairey Aviation Company to use Heston Aerodrome. When he first officially learned of the news on 7 January 1944, Fairey cabled: 'Decision so utterly calamitous, suggest liquidation only practical prospect.'

Wartime technical developments had brought about significant changes in the capacity and performance of aircraft, and it was obvious that London required a large airport equipped with long runways, modern navigation aids, engineering facilities and passenger terminals. When he was Undersecretary of State for Air, Lord Balfour confirmed that he had deliberately misled the government committee during the war that a requisition was necessary so that Heathrow could be used as a bomber base. In fact, Balfour wrote that he had always intended the site to be used for civil aviation and used a wartime emergency requisition order to avoid a lengthy and costly public enquiry. In May 1944, the Air Ministry, using emergency wartime powers against which there was no appeal, issued a compulsory purchase order for 800ha of land, which incorporated the hamlets of Heathrow, Perry Oaks and Sipson Green, and the Great West Aerodrome. This represented 15 per cent of the agricultural land in south-west Middlesex. Because of the Defence of the Realm Act, there was a news blackout about the development for two years after this. Neither the RAF nor the US Air Force ever made use of the airport, although work was started on the construction of runways for military use. A runway extending north-west to south-east was constructed by the RAF at a cost of £350,000 but was in fact redundant and never used by civil aircraft.

According to the Greater London Development Plan of 1944, 'although the airport [Heathrow] is on land of first-rate agricultural quality, it is felt, after careful consideration

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and thorough weighing up of all the factors, that the sacrifice for the proposed purpose of the airport is justified'. When the airport plan was being developed, Heathrow was at the centre of the Thames Valley market-gardening plain and the dilemma of destroying the land for the construction of an airport was deplored by the leading authority on land-use classification:

The brick-earth is a magnificent soil—easily worked, adequately watered, of high natural fertility and capable of taking and holding manure. It is a soil fit to be ranked with the world's very best ... In addition to the destruction of this good land by gravel digging, a further using up has recently been made manifest where huge areas are taken for the construction of the airport. Was there ever such a profligate waste? (Stamp 1944)

Some twenty growers were displaced, either wholly or partly, from their holdings, and subsequent airport-related developments continued to make further inroads into the agricultural land in the area throughout the second half of the 20th century; the west Middlesex market-gardening industry was virtually destroyed in less than a generation. Although a relatively small number of buildings were destroyed to make way for the airport, the hamlet of Heathrow and parts of Harlington and Hatton were immediate casualties. Terminal 3 (the Oceanic) occupied the site of Heathrow hamlet, and several 17th-century farms and the 18th-century Heathrow Hall were also destroyed. Sub-surface remains were even more numerous and one of the first government-funded rescue excavations was undertaken in 1944 by W. Grimes, prior to the construction of the main runway. This work revealed settlement remains and activity dating between the Neolithic and the late Iron Age (Grimes *et al.* 1993). Knowledge of early Heathrow was given a further boost by the construction of Terminal 5 which was preceded by one of the largest developer-funded excavations in Britain involving the collaboration of two major archaeological units: Oxford Archaeology and Wessex Archaeology (jointly operating under the name Framework Archaeology). This work revealed a sequence of human activity on the western segment of the terrace going back over 9000 years (Lewis *et al.* 2006; 2010).

The unfinished RAF site at Heathrow was handed over by the Air Ministry to the Ministry of Civil Aviation on the 1st January 1946, by which time the first runway had been completed and basic passenger facilities had been established, in the form of tents, adjacent to the Bath Road on the north side of the airfield. Three original runways were completed by 1947 and work continued on a further three, which were intended to provide a pair of parallel

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runways in three directions, with the overall plan resembling a six-pointed star. Eventually, these were scaled down to three runways, only two of which are ever used. The cross runway at the eastern end of the airport (a relic of the original military airfield) was intended for emergency landings, but is now too short for most planes using the airport.

Work began on terminal facilities in 1950 in the central area between the two main runways. Terminal 2 and the Queen's Building, a show place for the airport, were completed in 1955. As passenger numbers rose to 3,000,000 per annum by the mid-1950s, it was decided to expand the airport and there have been alterations and additions ever since. The earliest buildings can be recognized by their use of red brick and the more delicate detailing characteristic of the 1950s, although now much obscured by later additions. Terminal 3 was added in 1961 and Terminal 1 in 1968, both with the innovation of piers leading directly to the aircraft and with large open-plan interiors. Their exteriors have broad white bands instead of the facing bricks of the earlier buildings.

The freight and service buildings scattered round the southern perimeter include some remarkable engineering structures. The most monumental are the former BOAC headquarters and hangars of reinforced concrete, built in 1950–4 by Owen Williams. These constituted a central cross of workshops, offices and stores, abutted by the four hangars, each with doors 90m wide (now obscured by the additions made necessary by larger aircraft). The extended wing hangar of c 1964 built by F J Snow and Partners has a vast glazed roof of lightweight aggregate concrete with 60m-span main girders of box section on steel portal-frame piers.

Up to the 1960s, the Bath Road (now the A4) was the most important route from London to Bath and Bristol. Many coaching inns had been built near Heathrow to cater for the travellers on the road. Many of these old coaching inns were destroyed to make way for the construction of airport hotels on the same sites. The major exception to this was the construction of the Post House Hotel, later renamed the Forte Crest Hotel, in the heart of the Green Belt between Harlington and Harmondsworth in 1969. The inspector who conducted the public enquiry for this development recommended that the site was 'at present of negligible visual interest and offered great opportunities for substantial landscaping which could be a major contribution to the M4 Linear Park. An hotel reaching to about 120 feet, set well back from the M4 would do no violence to any part of the M4 or its immediate surroundings' (Sherwood 2001).

When the airport was built, the Bath Road was the only means of gaining access to the airport from London. The construction of the M4 motorway with its airport spur caused

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considerable disruption to the suburbs north of the airport in the 1960s, as did the M25 and Terminal 4 in the 1980s to the west. To get close to Heathrow, the building of the M4 destroyed the entire hamlet of Ditton in Datchet, just to the west of Heathrow, in 1964. By 1952, some 3500 new homes had been built by the British Airways Staff Housing Association, many of them in Stanwell, Heston and Feltham.

Until 1970, the only expansion of the airport outside the boundaries set in 1952 was the extension (approved in 1967) of the northern runway to the west. During the 1960s and early 1970s it became apparent that Heathrow and Gatwick would not be able to cope with the anticipated expansion of air traffic. The cancellation in 1974 of the proposal to construct a third London Airport at Foulness (Maplin) increased pressure on Heathrow. Proposals were therefore made in the mid-1970s to expand the capacity of Heathrow by constructing a fourth terminal on the southern side of the airport, outside its existing perimeter. Following a public enquiry, the inspector's report, published in 1979, stated that 'in my view the present levels of noise around Heathrow are unacceptable in a civilised society'. Despite this, he recommended that permission be given for the construction of a fourth terminal. The reason given for the decision was the 'overriding national necessity'. Whilst recommending the expansion of the airport, the inspector went on to say:

In the past the growth of Heathrow untrammelled by normal planning control has appeared to proceed without proper consideration for its effect on the environment especially in relation to noise. There is an inevitable danger that permission for Terminal 4 should be seen by some as yet another instance of precedence being given to the interests of travellers by air over the enjoyment of life by the local population. If this impression is to be dispelled it is, in my view, essential that if they decide to permit Terminal 4 the Secretaries of State should reiterate that it is the Government's policy that there will be neither a fifth terminal nor any other major expansion of Heathrow. (Glidewell 1979)

The Government accepted these recommendations and Terminal 4, built by Scott, Brownrigg and Partners, was opened in 1986. This terminal had the great advantage of being planned from the first to connect directly with covered bus stops, car parks and underground. The concourse is 650m long, allowing easy access to 22 aircraft stands.

At this point, it was official policy that no further expansion would be permitted. This was made clear by a statement on 14 February 1980, when the government aviation



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spokesman said: ‘The Government conclude that the idea of a fifth terminal at Heathrow and a second runway at Gatwick should not be pursued. This effectively limits expansion at these airports.’ Within a year, however, an enquiry into the expansion of Stansted airport commented on the desirability of the closing of the Perry Oaks sludge works as soon as possible with a view to expanding the airport westwards to the line of the M25 and not discounting the possibility of building a fifth terminal there. By the end of the century, in the absence of an official third London Airport, pressure on Heathrow had increased to the point where, despite earlier protestations and the fact that its two runways were being used to 97 per cent capacity, a fifth terminal became inevitable.

The 250-acre fifth terminal was built on the west side, on the site of the Perry Oaks sludge works, but within the present boundaries of the airport. This was thought to give Heathrow a carrying capacity of up to 90,000,000 passengers a year, up from its previous limit of 68,000,000. The transport network around Heathrow was also extended to cope with the additional passengers. A spur motorway now runs from the M25 to the new terminal. The rapid-transfer railway line from Paddington, the Heathrow Express, and the underground line have also been extended. A white paper, published in December 2003, on the future of aviation in the United Kingdom proposed the construction of a third runway. Such a runway would require the building of a sixth terminal and the expansion of the airport outside its present limits to take in extensive areas that are currently occupied by suburban housing. The principal proposal was that the third runway would run to the north of the Bath Road. It would obliterate the middle of Harmondsworth, Sipson and Harlington, communities which, despite being severely blighted by Heathrow, had until then survived over half a century of airport expansion. The scheme for a third runway was dropped by the Conservative/Lib Dem coalition government in May 2010 in favour of expansion of railway links. By the end of that parliament in 2015, the pressure for expanding passenger capacity meant that the issue was firmly back on the agenda. The Airports Commission stated that there was need for one additional runway in south-east England by 2030. On the 25th June 2018, Parliament voted unanimously (415–119) in favour of expanding Heathrow. The vote cleared a path for Heathrow to submit a planning application for development consent (this proposal is being developed at the time of writing). If development consent is granted, construction is planned to begin in 2021 with the new runway opening in 2026.

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#### **SUMMARY**

The development of the transport system over the past 1000 years has changed the landscape of the Thames valley beyond all recognition, reflecting massive changes in economy and social life. By the Norman Conquest, the road network was already fairly complex. Several of the Roman roads in the region, being well built and connecting places of importance, continued to be used. These were added to by a series of tracks and paths that were created, modified, and abandoned over time. Some came to replace the Roman roads as the primary transport arteries as different settlements prospered economically. For the most part, roads were travelled by foot, hoof and cart, and there were few coaches and larger travelling entourages making long-distance journeys. Nonetheless, roads still needed to be maintained and there are many accounts of deteriorating surfaces and unpassable routes during the winter months. Investment could be received from a variety of sources, whether state, church or local institution, but there was no regulated system of road maintenance, and finances would come from where individual concerns were greatest. Some routes were vital for the regional economy, moving building stone, timber and agricultural surpluses over many miles and the road system competed well as a transport network with the Thames and its tributaries.

The 16th century witnessed an increase in road-use generated by an expanding economy, catalysed by the growth of London. For the first time, local parishes were made directly responsible for the roads and their upkeep, which shows that it was becoming increasingly important to maintain robust and passable routes. This led to the development of the turnpike system. The 17th century saw a considerable increase in long-distance coach travel with many people using the roads in parishes through which they were only passing. This placed a heavy financial burden on parishes whose job it was to finance road maintenance, and there were growing calls for road-users to pay. By the 18th century, several turnpike acts had been passed, to the dismay of many road-users. This saw the rise of several turnpike trusts whose job it was to collect tolls to raise funds for necessary repairs. This development also saw the establishment of toll gates and bridges, forming new elements of the transport landscape, and the expansion of the stage-coach industry brought with it new opportunities for the towns and villages through which the main routes passed. At this time, the turnpikes were in direct competition with the canals, but both were to suffer considerably in the 19th century with the coming of the railways.

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Unsurprisingly, the first railways were established in the industrial north. By the middle of the 19th century, several routes were built in the Thames valley with the initial purpose of connecting northern England with London. The impact of this was quickly felt, with many turnpike and canal trusts going out of business within a couple of decades. The stage-coach industry only survived because of the continued need for short-distance journeys between regional towns that had yet to be connected to the train network. However, the period up until the First World War saw major expansion of the railways throughout England, primarily due to the competitive nature of the various private railway companies. Soon, many towns and villages around London and through the Thames valley began to receive railway stations, further impacting the turnpikes and canals as viable modes of transportation.

The dominance of the railways was comparatively short-lived, however, as the invention of the motorcar quickly led to large-scale manufacturing and concerns quickly returned to road-use. The old turnpikes and medieval tracks were no longer suitable for carrying motorcars and major improvements in road-building was required, notably in hardcore foundations not seen since the Roman period, but also in the development in tarmac. The expansion of this road system, beginning with the template of the medieval roads and developing with new major routeways, particularly the motorway system in the second half of the 20th century, had perhaps the most dramatic impact on the modern landscape of the Thames valley (as across the rest of the country). Nonetheless, the railways survived and continue to be a significant player in the travel industry into the 21st century, with millions of pounds being invested in projects such as High Speed 1 and 2, Thameslink, and Crossrail, which are seen as fundamental to today's national economy.

Coupled with the massive changes seen from the mid-19th century to today, the development of the aeroplane and airports has also had significant impacts on the economy and travel. Major moves forward in aeroplane design during the First and Second World Wars provided the basis for rapid developments in safety, speed and capacity in commercial airliners from the late 1940s onwards. The establishment of many airfields in the Thames valley during the wars also provided convenient locations for modern airports to develop, as seen in the considerable and continuing expansion of Heathrow.

Overall, the transport network has expanded from its medieval extent in a way that is almost unrecognisable today, developing the economy of the Thames valley from a primarily local and regionally-based phenomenon, creating nationwide connections in the post-medieval period, to one which today has taken on global significance. Such change has had a

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dramatic effect on concepts of time and geographic distance, as people are now able to travel far greater distances over relatively short periods, completely altering how the landscape of the Thames valley is experienced.

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#### Tables

Table 1: Costs and speeds of passenger transport in summer in the late 17th and early 18th centuries (Gerhold 2005, table 5)

| Type of transport           | Typical miles per day | Approx. miles per hour | Cost (pence per mile) |
|-----------------------------|-----------------------|------------------------|-----------------------|
| Post horses                 | 60–70                 | Up to 7                | 3.3                   |
| Flying stage coach          | 55–76                 | 4.5                    | 2.3–3.1               |
| Stage coach                 | 41–52                 | 4.5                    | 2.3–3.1               |
| Hired horses                | 51–58                 | 4                      | 1.7–2.3               |
| Horses                      | 40–47                 | 4                      | ?                     |
| Private coach               | 30–36                 | 4                      | ?                     |
| Horses hired from a carrier | 25–33                 | ?                      | 0.8–1.4               |
| Coach–waggon                | 25–33                 | 2                      | 1.2–1.7               |
| Waggon                      | 20–25                 | 2                      | 0.7–1.4               |

Table 2: Main Turnpike roads across the Thames Valley (from Albert 1972, appendix C)

| Road   | Act  | Route       |
|--|--|-------------|
| London–Cirencester–<br>Gloucester and Hereford | Kensington–Cranford Bridge 1717              | 12m         |
|  | Cranford Bridge–Maidenhead Bridge 1727       | 14m         |
|  | Maidenhead Bridge–Henley 1718                | 9m          |
|  | Henley–Abingdon 1736                         | 19m         |
|  | Abingdon–Fyfield not turnpiked by 1750       | 6m          |
|  | Fyfield–St John’s Bridge (Lechlade) 1733     | 14m         |
|  | St John’s Bridge (Lechlade)–Cirencester 1727 | 13m         |
|  | Cirencester–Birdlip Hill 1747                | 10m         |
|  | Birdlip Hill–Gloucester 1696/7               | 6m          |
|  | Gloucester–Hereford 1726                     | 29m         |
|  | Total  | 132 miles   |
| London–Oxford–<br>Gloucester and Hereford      | Tyburn–Uxbridge 1715                         | 15m         |
|  | Uxbridge–Beaconsfield 1751                   | 8m          |
|  | Beaconsfield–Stokenchurch 1719               | 12m         |
|  | Stokenchurch–Oxford 1719                     | 18m         |
|  | Oxford–Crickley Hill 1751                    | 41m         |
|  | Crickley Hill–Gloucester 1723                | 4m          |
|  | Gloucester–Hereford 1726                     | 29m         |
|  | Total  | 127 miles   |
| London–Bath and Bristol                        | Kensington–Cranford Bridge 1717              | 12m         |
|  | Cranford Bridge–Maidenhead Bridge 1727       | 14m         |
|  | Maidenhead Bridge–Twyford 1718               | 8m          |
|  | Twyford–Reading 1736                         | 5m          |
|  | Reading–Puntfield (nr Theale) 1714           | 6.5m        |
|  | Puntfield–Newbury 1728                       | 11m         |
|  | Newbury–Marlborough 1726                     | 17m         |
|  | Cherhill–Studley Bridge 1707                 | 5m          |
|  | Studley Bridge–Toghill 1727                  | 16m         |
|  | Toghill–Bristol 1727                         | 8m          |
|  | Chippenham–Box 1726                          | 8m          |
|  | Box–Bath 1707                                | 7m          |
|  | Total  | 125.5 miles |

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| Road                                      | Act   | Route     |
|---|---|-----------|
| London–Oxford–<br>Birmingham<br>Worcester | Tyburn–Uxbridge 1715                                    | 15m       |
|   | Uxbridge–Beaconsfield 1751                              | 8m        |
|   | Beaconsfield–Stokenchurch 1719                          | 12m       |
|   | Stokenchurch–Woodstock 1719                             | 28m       |
|   | Woodstock–Rollright 1730                                | 12m       |
|   | Rollright–Long Compton not turnpiked by 1750            | 2m        |
|   | Long Compton–Stratford-upon-Avon 1730                   | 15m       |
|   | Stratford-upon-Avon–Birmingham 1726                     | 21m       |
|   | Chipping Norton–Bourton-on-the-Hill 1731                | 15m       |
|   | Bourton-on-the-Hill–Broadway Hill not turnpiked by 1750 | 4m        |
|   | Broadway Hill–Stonebow Bridge 1728                      | 20m       |
|   | Stonebow Bridge–Worcester 1726                          | 3m        |
|   | Total   | 156 miles |
| London–Portsmouth and<br>Chichester       | Southwark–Kingston-upon-Thames 1718                     | 12m       |
|   | Kingston-upon-Thames–Petersfield 1749                   | 42m       |
|   | Petersfield–Portsmouth 1710                             | 17m       |
|   | Hindhead–Chichester 1749                                | 23m       |
|   | Total   | 94 miles  |

Table 3: The development of railways

| Opened    | Route   | Company   |
|-----------|---|---|
| 1838      | London Euston to Birmingham Curzon Street   | London and Birmingham Railway Company (L&BR); from 1846 London and North Western Railway (LNWR)   |
| 1838–41   | London Paddington to Bristol Temple Meads   | Great Western Railway (GWR)   |
| 1838–40   | London to Southampton   | London & Southampton Railway; later London and South Western Railway (LSWR)   |
| 1841–4    | London to Folkestone and Dover  | South Eastern Railway Company (SER)   |
| 1841–7    | Swindon to Gloucester and Cheltenham (the Golden Valley Line)   | Cheltenham and Great Western Union (C&GWU) with the Birmingham and Gloucester Railway   |
| 1844      | Didcot to Oxford  | Oxford Railway Company (GWR owned)  |
| 1847–8    | Reading to Hungerford (extended to Devizes 1862) and Reading to Basingstoke (the Kennet Valley line)  | Berks and Hants Railway, absorbed by GWR in 1846  |
| 1849      | Redhill Junction to Reading (via Guildford and Wokingham) (the North Downs line)  | Reading, Guildford and Reigate Railway (leased to SER 1846; absorbed by SER 1852)   |
| 1850–52   | Oxford to Birmingham via Leamington Spa   | Birmingham and Oxford Junction Railway (GWR owned)  |
| 1850–51   | Euston–Birmingham line (Bletchley) to Banbury and Oxford (part of the ‘Varsity Line’)   | Buckinghamshire Railway Company (LNWR supported)  |
| 1850–54   | Oxford to Worcester and Wolverhampton   | Oxford, Worcester and Wolverhampton Railway (GWR supported)   |
| 1856      | Staines to Wokingham (and Reading via SER line to Reading South)  | Staines, Wokingham and Woking Junction Railway (LSWR operated; absorbed by LSWR 1878)   |
| 1881–1891 | Cheltenham to Southampton (via Swindon): Swindon to Marlborough 1881, extended to Southampton 1898; Swindon to Cheltenham (via Cricklade and Cirencester by 1883), through to Andoversford Junction by 1891 | Midland and South-Western Junction Railway (amalgamation of the Swindon, Marlborough & Andover of 1873 and the Swindon & Cheltenham Extension of 1881); independent company |
| 1882–1891 | Didcot, Newbury and Southampton   | GWR   |

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| Opened         | Route   | Company   |
|----------------|---|---|
|                | (Didcot to Newbury 1882; Newbury to Winchester (Chesil) 1885; connected to LSWR Southampton line 1891)      |   |
| GWR branches   |   |   |
| 1849           | Slough to Windsor (Windsor and Eton Central)  | GWR   |
| 1854           | High Wycombe to Maidenhead  | Wycombe Railway Company (leased to GWR)                           |
| 1856           | West Drayton to Uxbridge  | GWR   |
| 1856           | Didcot/Oxford to Abingdon (junction nr Culham; extended to Radley 1873)                                     | Abingdon Railway (GWR operated; absorbed by GWR1904)              |
| 1857           | Twyford to Henley   | GWR   |
| 1861           | Yarnton to Witney   | Witney Railway (GWR operated; absorbed by GWR 1890)               |
| 1862–4         | High Wycombe to Princes Risborough and Thame (1862), Aylesbury (1863) and Oxford (Kennington Junction 1864) | Wycombe Railway Company, absorbed by GWR 1867                     |
| 1864           | Uffington Junction to Faringdon   | Faringdon Railway Company, absorbed by GWR 1886                   |
| 1866           | Moulsford to Wallingford  | Wallingford and Watlington Railway, bought by GWR 1872            |
| 1873           | Witney to Fairford  | East Gloucestershire Railway (GWR operated; absorbed by GWR 1890) |
| 1873           | Bourne End to Great Marlow  | Great Marlow Railway (GWR operated; absorbed by GWR 1897)         |
| 1875           | Wantage Road to Wantage   | Wantage Tramway Company   |
| 1883           | Swindon to Highworth  | Swindon and Highworth Railway, sold to GWR 1882                   |
| 1884           | West Drayton to Staines   | GWR   |
| 1898           | Newbury to Lambourn   | Lambourn Valley Railway (absorbed by GWR 1905)                    |
| London suburbs |   |   |
| 1846           | Richmond to Waterloo  | Richmond Railway (absorbed by LSWR 1846)                          |
| 1848–9         | Richmond to Staines, Datchet and Windsor (Windsor and Eton Riverside)                                       | Windsor, Staines and South Western Railway (LSWR supported)       |
| 1848           | Weybridge to Chertsey   | LSWR  |
| 1849           | Hampton Court Junction to Hampton Court   | LSWR  |
| 1849           | Guildford to Farnham  | LSWR  |
| 1850           | Loop from Barnes via Brentford, Isleworth and Hounslow  | LSWR  |
| 1854           | Waterloo to Brookwood Cemetery  | LSWR for the London Necropolis and National Mausoleum Company     |
| 1859           | Epsom to Leatherhead (jointly with LBSCR), Raynes Park (Wimbledon) to Leatherhead                           | LSWR  |
| 1863           | Twickenham to Kingston  | LSWR  |
| 1864           | Strawberry Hill to Shepperton   | LSWR  |
| 1866           | Virginia Water to Chertsey  | LSWR  |
| 1869           | Malden to Kingston  | LSWR  |
| 1885           | Leatherhead to Guildford with connection from Hampton Court Junction  | LSWR  |

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