

CHAPTER 6 TRANSPORT

Introduction

A good transport system is both economically and socially vital as a means of moving goods and people. The demand for travel is related to the location of development such as housing, employment and schools. Transport patterns are therefore linked closely with patterns of land use.

Transport has an impact on the environment, particularly air quality. The burning of fossil fuels produces carbon dioxide which contributes to global warming. Transport also gives rise to other noxious emissions, which affect the atmosphere and human health: for example it has been implicated in medical conditions such as asthma. Transport is also responsible for noise, vibration, accidents, and the separation of communities and can, as a result of congestion, lead to costs to industry and commerce in the form of delays and unreliability of delivery.

The environmental consequences of the growth in levels of traffic are widespread throughout Reading. Some of the impacts are directly related to the amount of travel undertaken by the private car, while others are more closely linked to the inadequacy of the transport system to cope with the current demands. Monitoring progress towards a sustainable transport system therefore involves consideration of transport demand, provision and usage. By 2020, it is aimed to create a more sustainable transport system in Reading, with good links to the town centre by walking, cycling, public transport and necessary journeys by car (Reading Borough Council : Reading City 2020, 1998)

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Legislation and Guidance

In response to growing concern about the environment, particularly as expressed at the 'Earth Summit' (United Nations Conference on Environment and Development: The Earth Summit, Rio) in 1992, there have been a number of changes in the direction of transport policy in this country and elsewhere. Guidance is contained in the following:

European Union Policy

The European Union has produced a Common Transport Policy (Commission of the European Communities: The Future Development of the Common Transport Policy, December 1994), the main aim of which is to achieve an integrated, safe, efficient, competitive and environment-friendly transport system. This is supported by an agreement made at the Kyoto Summit between EU Member States, to reduce CO₂ emissions by 8% by 2008-12.

National Guidance

- **White Paper: A New Deal for Transport, July 1998**

The general aims of 'A New Deal for Transport – Better for Everyone' are to bring about a reduction in the growth of car use, and to provide choices for those without access to a car. Roads are not seen as the solution to the problem of increasing traffic; instead, an 'integrated transport strategy' is seen as the answer. A more effective and strategic approach to road management is also encouraged.

A move away from the stance of 'predict and provide' to the ethos of demand management is called for. The centrepiece of the strategy is the new local transport plan, which involves the creation of local strategies for transport. The local transport plan may include revenue-raising proposals following new legislation to allow congestion charging and taxation of workplace parking.

In order to assess the success of various measures, there are to be a number of national and local targets concerning issues such as air pollution, road safety, walking, cycling and public transport.

There are to be various measures to promote public transport (including the creation of a Strategic Rail Authority), walking and cycling, and the co-ordination and interchange of modes. The government is also to set up an Independent Commission for Integrated Transport. However, the White Paper also considers the needs of the car driver. There are various measures as part of a 'Motorists' Deal'. These include better road maintenance and traffic management.

Other issues highlighted in the White Paper include safety, and the countryside.

Irrespective of this, policies at a national level remain fragmented. Priorities for investment in the road programme are determined independently of those for rail investment. The extent of the motorway widening programme, which will encourage more and longer car journeys to be made, is out of scale with the capacity of the urban areas to accommodate more traffic. Policies for the management of public transport are determined largely by the deregulated market in which buses operate, and by the drive towards privatisation of the railway.

- **White Paper: Sustainable Development**

Following discussions at the 'Earth Summit' the government published a White Paper on 'Sustainable Development' in January 1994 (Sustainable Development: The UK Strategy). This was followed in May 1999 by 'A Better Quality of Life: UK Strategy for Sustainable Development'. The latter builds upon the 1998 Transport White Paper in developing a sustainable transport policy framework.

It:

- emphasises the need for energy-efficient and resource-efficient vehicles in sustainable development,
- proposes a new Commission for Integrated Transport to advise on targets,
- urges partnership in achieving integration in transport, and
- aims to improve local services and access, especially by means other than the private car.
- **Planning Policy Guidance Note 13: Transport (March 1994)**

Many of the themes outlined in the first White Paper concerned with sustainable development are developed more fully in this guidance, the key aim being to ensure that local authorities implement their land-use policies and carry out their transport programmes in ways which help to:

- reduce growth in the length and number of motorised journeys,
- encourage alternative means of travel which have less of an environmental impact, and hence,
- reduce reliance on the private car.
- **Revision of Planning Policy Guidance Note 13: Transport Public Consultation Draft (October 1999)**

The Public Consultation Draft follows the Government's 1998 White Paper in proposing a more integrated transport policy at the national, regional, strategic and local level. It aims to:

- promote more sustainable transport choices,
- reduce the need to travel, especially by car,
- promote social inclusion, and
- revitalise towns and cities.

Regional Policy

- **RPG9: Regional Planning Guidance for the South East (March 1994)**

The objectives of RPG9 in respect of transport are:

- to provide for safe and efficient movement and to facilitate accessibility in order to serve the future pattern of development in the region;
- to reconcile the demand for travel with environmental concerns, including impacts on human health and climate change;
- to reduce the growth in reliance on the motor vehicle;
- to increase the opportunity to choose modes of travel with less environmental impact;
- to take account of the interaction between transport and land use; and

- to take into account fully the high and rising economic and environmental costs of transport in the South East.
- **A Sustainable Development Strategy for the South East (December 1998)**

The strategy aims to achieve a more sustainable pattern of movement in the region by encouraging more self-contained communities where residents have the opportunity to work and access services locally. Within the overall aim of reducing travel demand, it seeks a modal shift away from cars and lorries.

- **A Sustainable Development Strategy for the South East – Panel Report (1999)**

The panel suggest that guidance should direct local authorities to promoting constructive and sustainable ways of meeting the travel needs of people and commerce. These should be directed at reducing the length and changing the mode of journey rather than trying to reduce the number of journeys. It is also stated that RPG should contain guidance on indicative parking standards.

Local Policy and Initiatives

- **Berkshire Structure Plan (1991 – 2006)**

The overall strategy of the plan is to seek development that is 'sustainable'. Amongst its key objectives are:

- developing an integrated transport strategy to reduce reliance on the private car by encouraging alternative modes of transport and introducing measures to control and restrain car use
- steering development to locations which minimise the need for travel and can be well served by public transport, and
- seeking to minimise pollution

This plan is now the subject of a review, a public consultation exercise on the issues and choices that the plan must address having taken place in the Autumn of 1999, with a view to producing a deposit draft in 2000.

The Joint Strategic Planning Committee, which considers strategic matters on behalf of the Unitary Authorities of Berkshire, has adopted a Berkshire Transport Plan as a bridge between the strategic policies of the Structure Plan and the Local Plans. It sets out an integrated strategy and targets for modal shares.

- **Reading Borough Local Plan (1998)**

At a local level, the council has an important role to play, through its planning powers and as the transport authority for the area, in helping to identify transport problems, formulate solutions and implement them.

The adopted Local Plan (October 1998) contains detailed policies and proposals on transport matters, which are, to a large extent, based on the transport strategy set out in the Berkshire Structure Plan. The transport objectives of the plan are:

- (i) to explain the need for a balanced transport strategy and to illustrate in general terms what would go into such a strategy for Reading
- (ii) to identify those parts of it which can legitimately be covered in a plan of this kind and to set down appropriate policies

- (iii) to find ways of containing the town's growing traffic congestion by restricting the growth of car usage
- (iv) to help make alternatives to the private car, such as cycling, walking and public transport, safe, efficient and attractive to potential users and reduce reliance on car-based travel;
- (v) to reduce conflict between vehicles and pedestrians

- **Local Transport Plan**

An implication of the Transport White Paper is that local highway authorities are now required to produce a Local Transport Plan. The Local Transport Plan replaces the Transport Policy and Programme (TPP) and is a more strategic, policy-based document. Although the Local Transport Plan is not a statutory document at present, it will become so in due course.

Reading's provisional Local Transport Plan covers the period 2000/2001 to 2004/2005, and was submitted to government in July 1999. The first full Local Transport Plan will be submitted in July 2000.

The production of the full Local Transport Plan will involve developing strategic policies and objectives for the whole of the town. Reading's transport policies as set out in the Structure Plan and Local Plan are consistent with the objectives of the Transport White Paper. However, these objectives will need to be measurable. Targets will need to be developed and progress on achieving these monitored. The council will review and develop its current policies and objectives to ensure that it can achieve the requirements of the White Paper and, where necessary, develop new objectives and policies to address specific transport problems within Reading.

- **Funds**

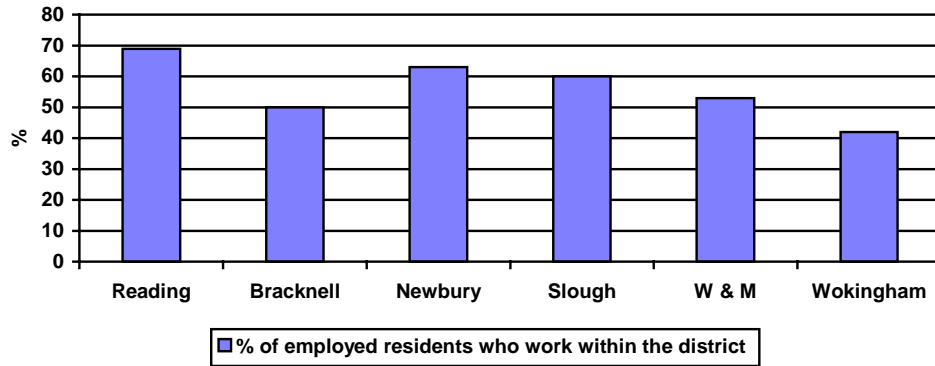
Congestion charging and imposing levies on business car parking are foreshadowed in the White Paper. Legislation to give councils the authority to implement these schemes will be passed as parliamentary time allows. Although the timing of this legislation is unclear, the council may include proposals, which incorporate these techniques in its five year Local Transport Plan.

The government introduced a 'package approach' to funding in 1993, inviting local authorities to bid for transport funding in urban areas within a broad-based strategic planning framework. In simple terms, this approach calls for a balanced package of funding for road and public transport proposals plus any appropriate measures, as part of a comprehensive transport strategy. This process of securing government support for local transport investment represents an opportunity to create a partnership between the government and local authorities.

The Reading Urban Area Package (including parts of Wokingham and West Berkshire), in which the council plays a leading role, includes proposals for cycling, pedestrians, public transport, road safety and highways. It was accepted by the Department of Transport in 1994. It forms a key part of Reading's Local Transport Plan. The progress made so far has been encouraging, particularly in demand management and the involvement of many partners in the implementation of measures.

Land Use Patterns

Many people both live and work in Reading. The town is the most self-sufficient in the Berkshire area in terms of journeys to work. Figure 6.1 illustrates the proportion of Berkshire residents who work within their home district.



Source: Census 1981 and 1991: OPCS.
Figure 6.1: Berkshire Residents Working in District of Residence

In addition, many of the jobs within the Reading itself are occupied by residents of adjacent suburban areas. Between 1981 and 1991, the proportion of Reading residents employed within Reading fell by 6.5%. (OPCS: Census 1981 and 1991).

As it has been accepted that some of Reading's housing needs will have to be met by building homes outside the town, it is likely that the extent of 'self-containment' will be further reduced.

Journey Lengths

As the urban area has spread, and the imbalance between employment and the workforce has grown, so the average length of journeys to work has increased. This is, to a certain extent, a function of land use planning policies well beyond the Reading boundary. It is also related to the increasing mobility of Reading residents.

Nationally, the average distance travelled per person per day has increased by 75% in the last 25 years (Royal Commission on Environmental Pollution: Eighteenth Report: Transport and the Environment, HMSO, October 1994). This trend is reflected in local travel patterns.

Despite this, a large proportion of journeys involve short distances, with a third of all personal trips being made on foot. Car journeys average 8.5 miles per trip (Department of the Environment, Transport and the Regions: Transport Statistics Bulletin: National Travel Survey 1996 – 98 Update) and 69% of all goods lifted in the UK by freight traffic in 1998 were set down within 62 miles of the start point. (Department of the Environment, Transport and the Regions: Transport Statistics Great Britain 1999 Edition)

However, increased car usage has meant that fewer journeys are being made on foot and by bicycle. Shorter distances provide great potential for walking, cycling and public transport use, but the car now accounts for 79% of trips between 2 and 5 miles in length. (Department of the Environment, Transport and the Regions: Transport Statistics Bulletin: National Travel Survey 1996 – 98 Update).

The average journey length for all modes was 6.4 miles in 1996/98 (Department of the Environment, Transport and the Regions: Transport Statistics Bulletin: National Travel Survey 1996 – 98 Update).

Car Availability

Berkshire has for many years featured prominently in the league of counties with high car availability. In 1995, car ownership stood at 508 cars per 1,000 people, including those too young or unable to drive. Only Wiltshire and Hertfordshire have a higher level of car availability. Nationally, the average was 376 cars per 1,000 people. (Dept. of Transport: Transport Statistics Report: Vehicle Licensing Statistics 1995, July 1996).

% of households with:	Reading		Berkshire	
	1981	1991	1981	1991
No car	39	33	26	21
1 car	46	45	48	43
2 or more cars	15	22	26	36

Source: Census 1981 and 1991: OPCS.

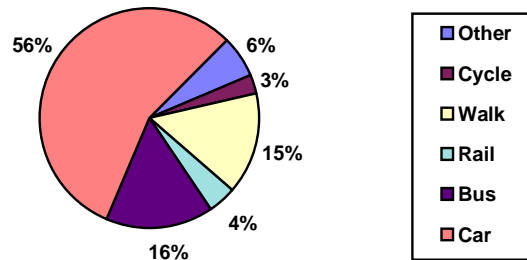
Table 6.1: Number of Car-Owning Households in Reading and Berkshire

Although at 1991 average car availability in Reading was lower than in the Berkshire area, it remained close to the national average and concealed a wide range of values. Some areas of Caversham, for example, had amongst the highest proportion of 2-car owning households in the country. Conversely, many areas of central Reading exhibited exceptionally low car ownership. Significantly, surrounding districts had higher than average car availability. The ability to access a car has a crucial influence on modal choice.

Modal Share

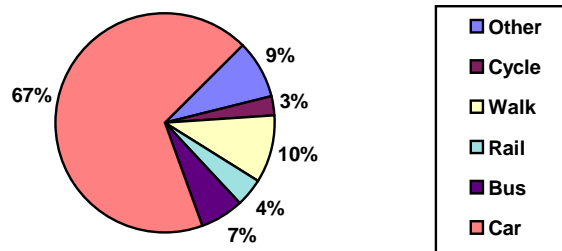
Modal choice depends on a range of factors, including destination, time of day and journey purpose. Commuters are responsible for 85% of morning peak hour traffic (Berkshire Transport Plan 1997). The choice of mode determines the extent of congestion and associated environmental impacts.

The pattern of commuting journeys in Reading reflects both urban form and the availability of local bus services. Whereas the Berkshire average for commuting by bus is limited to 7% of the workforce, the comparable figure in Reading is 16%. Whilst this is higher than in any other District in Berkshire, it has fallen from 19% since 1981. (OPCS: Census 1981 and 1991). Travel by car continues to dominate, although it carries a smaller proportion of the total demand than elsewhere in the area. Travel by bicycle and rail are reasonably well provided for in terms of infrastructure and services and carry proportions similar to the Berkshire average.



Source: Census 1981 and 1991: OPCS

Figure 6.2 Reading Borough Residents : Travel to Work by Mode (1991)



Source: Census 1981 and 1991: OPCS.
Figure 6.3 Berkshire Residents : Travel to Work by Mode (1991)

Highway Network

The local road network is a central feature of the transport system. It provides essential access to premises and carries various forms of transport.

Reading is situated just over 38 miles west of London and is served by the M4 motorway running in an east-west direction. Connections to the national motorway and trunk road network are significant in that they provide links with other parts of the UK and the rest of the world, including Heathrow and Gatwick Airports, and the Channel Tunnel.

Within Reading, public road length amounts to some 238 miles (Reading Borough Council GIS Group). Key network development currently taking place includes major accessibility and environmental improvements to the South Reading Corridor.

Reading	94.3
Berkshire	30.5
SE Region	26.4
England	18.6

Sources: Census 1981 and 1991: OPCS; Transport Statistics Report: Road Lengths in Great Britain 1995, December 1995, Dept. of Transport; Reading Borough Council GIS.
Table 6.2: Road Density (km road/1000ha Borough)

Table 6.2 shows Reading's highway network to be a major land use, and to be relatively dense. However, the Transport White Paper emphasises the priority attached to maintaining existing roads rather than building new ones which threaten open land and give rise to associated environmental considerations.

Traffic Flows

Traffic flows in and around Reading are monitored at several sites on a continuous basis. Data relating to the period 1992 to 1998 has been analysed to establish absolute values of traffic flow and trends over time. (Reading Borough Council, Provisional Local Transport Plan, July 1999).

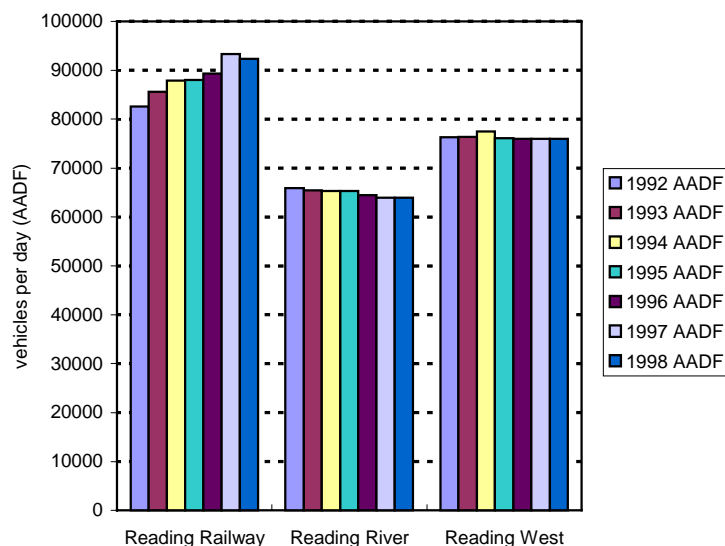
Flows on some of the radial routes into Reading are in excess of the theoretical carrying capacity of the roads which accommodate them. Oxford Road, for example, carries a 24-hour flow of around 23,000 vehicles per day, whereas the physical characteristics of the road are more suited to a maximum flow of about 18,000 vehicles per day. (Reading Borough Council: Oxford Road Transport Strategy: Draft Report, April 1998).

Traffic Growth

Despite the extensive weekday peak hour congestion, daily traffic flows continue to grow as peak hour traffic levels spread into other periods. Consequently the fastest growing traffic relates to the hour 7am to 8am. (Berkshire County Council: A33 Relief Road, Rose Kiln Lane to Inner Distribution Road, Reading, Traffic Report, October 1992).

The traffic flow monitoring data for Reading is grouped into 'screen lines' to illustrate how traffic flows are changing within particular parts of the Borough. The grouping of routes is necessary because of the tendency of drivers to switch to less crowded routes at peak times. Reading has three screen lines relating to Reading West, the River Thames, and routes from the east. Whilst flows grew during 1992-98 for the eastern routes (+11.7%), there was a slight decrease in traffic crossing the Thames bridges (-2.88%) and at the Reading West screenline (-0.39%). The growth at the eastern screenline was mainly due to the rapid development of Thames Valley Business Park.

Figure 6.4 below illustrates the traffic levels at the three Reading screenlines between 1992 and 1998, showing the particular growth at the Reading Railway (eastern) screenline.



Source: Provisional Local Transport Plan, July 1999: Reading Borough Council.
Figure 6.4: Traffic Growth at Screenlines 1992 – 1998

Congestion

High levels of personal mobility, and the density of population and development in Reading give rise to a high concentration of traffic in the morning and evening peak hours. Traffic spills over into the hours surrounding the traditional peaks, and on to unsuitable routes through residential areas, having an environmental impact on local neighbourhoods.

Regular measurements of traffic speed in Reading are now undertaken, aimed partly at quantifying the environmental, energy and economic costs associated with traffic delay. It is estimated that £15bn is lost each year in Britain due to congestion (Dept. of Environment, Transport & the Regions: 'A New Deal for Transport', July 1998), and that at least £50m per annum is wasted in traffic queues in Reading. The average speed of journeys in 1995 was measured at 21kph, for an average urban journey of around 40 minutes (Berkshire Traffic Model 1995). Congestion adversely affects the reliability and timekeeping of bus services and undermines the just-in-time delivery process used by many commercial organisations.

Energy consumption and exhaust emissions are minimised under free flow conditions. Slow-moving traffic, and repeated interruptions in traffic flow, give rise to increased exhaust emissions and greater energy consumption.

Parking

All car journeys begin and end at a parking space, making the management of the town's parking a key feature of the integrated transport strategy. The parking strategy adopted by Reading in 1997 has set a target of reducing public parking spaces in the town centre to 7,000 spaces, including on-street parking. (Reading Borough Council: Car Parking Strategy – Town Centre: December 1997).

The amount of private non-residential parking is seen as being excessive at 12,000 spaces within the central area. The council is hoping to achieve, through policy, a 20%-30% reduction over the next 3-5 years.

In order to enforce these changes and ensure that the parking strategy is fully effective, the council is pursuing the creation of a Special Parking Area. This will transfer responsibility for on-street parking enforcement to the council from the Police.

High car ownership levels have also meant that many residential parking schemes are heavily over-subscribed. Unauthorised parking inconveniences other road users and is a source of road safety problems.

Bus Routes and Service Frequency

The majority of services in Reading are provided commercially using conventional buses. The principal operators of local buses in the Reading area are:

- Reading Transport,
- First Beeline,
- Tillingbourne, and
- Chiltern Queens.

A number of smaller operators provide some additional services.

The urban area of Reading is served by extensive weekday daytime local bus services radiating from the town centre. Inter-urban services supplement local services on urban radial roads and complement rail services on some corridors. 62 miles out of a total of 238 miles of adopted highway in Reading are covered by a bus route, i.e. 26% of the road network. (Reading Borough Council GIS Group). The competitive nature of the operating companies has meant that certain services run less frequently due to take-overs

Accessibility of Local Bus Services

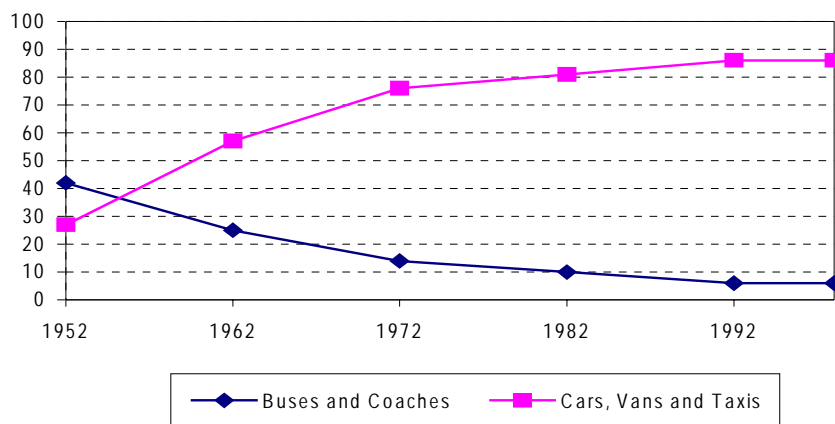
According to the 1991 Census data, 67% of Reading's population is within 200m of a bus route with a 20-minute service frequency. (Reading Borough Council: GIS).

Access to buses is particularly important for those with restricted mobility. A high proportion of the services in Reading are now operated by low floor, easy access buses. Readibus provides the most extensive service for those with restricted mobility in the Reading area.

Reliability and journey times are important factors in retaining existing users and attracting new customers. Although in reality account should be taken of bus fares and parking charges, it is obvious that considerable improvements are needed to encourage existing car users to switch to public transport. Bus priority schemes have helped to improve the reliability and speed of buses. The Transport White Paper stresses the need to develop 'Quality Partnerships' between bus operators and local authorities as a means of raising standards. In addition, the creation of some 'Quality Contracts' will give operators the opportunity to have

exclusive rights to run services on routes. The council is preparing a 'Quality Partnership' document to be agreed with local bus operators.

Due mainly to road congestion, the number of miles travelled per person by bus and coach has fallen considerably over time (See Figure 6.5). Buses and coaches had 42% of the market share of passenger transport in 1952 but that this had fallen to 6% by 1998, whereas the proportion of passenger transport undertaken by cars, vans and taxis rose from 27% in 1952 to 86% in 1998.



Source: Transport Statistics Great Britain 1999 Edition, Department of the Environment, Transport and the Regions (1999)

Figure 6.5 Miles Travelled per Person on Different Modes

Data collected has also emphasised how people perceive buses as being suitable only for short journeys. In 1996/98 local bus usage outside London was 4½ times that of surface rail, yet average journey length by rail was seven times higher. (Department of the Environment, Transport and the Regions: Transport Statistics Bulletin: National Travel Survey 1996 – 98 Update). Bus usage is heavily influenced by car availability. People in households without cars made 2.4 times as many bus trips in 1995/97 than those in car-owning households (Department of the Environment, Transport and the Regions: Focus on Personal Travel 1998 Edition: Including the Report of the National Travel Survey 1995/97)

More detailed information on local levels of bus usage is limited for commercial reasons. However, comparisons have been made between a 1994 town centre passenger transport survey and a 1998 bus survey on the Oxford Road Corridor. The resulting figures for patronage on bus routes along the Oxford Road Corridor show passenger numbers to have held up well over the years. The reliability and punctuality of services was also calculated. Reliability for the most frequent service along the Corridor was 95%, whilst punctuality on others was around 98% (Reading Borough Council: Transport Policies and Programme 1999-2000, July 1998).

A survey was also undertaken in 1998 on the Loddon Bridge Park-and-Ride facility. This site serves the eastern approach into Reading and offers up to 625 parking spaces and has 3 bus stops. It is operating at capacity and achieving the objective of reducing road congestion. A new Park-and-Ride facility opened in October 1999 at the Madejski Football Stadium near to Basingstoke Road, and further sites are proposed at Mereoak Lane to the south of the M4, and at either the A4155 Henley Road or the A4074 Woodcote Road. There is also a possibility of a further facility to the west of the town, within West Berkshire.

Rail Network and Service Frequency

Reading is the second biggest interchange station on the UK rail network. It is an important node on the regional and national rail network and enjoys frequent services to 260 towns and

cities nationally. Services to London Paddington and London Waterloo are provided by three train operators. There are over 200 trains daily to London. The journey time to Paddington has fallen as track and rolling stock have been improved. Express trains now typically take 25/ 30 minutes.

Reading is one of the western termini of the proposed Crossrail scheme, which if approved would link Reading directly with east and central London and Essex. The London to Reading Multi-Modal Corridor Study, which is scheduled for 2000, will consider rail links between London and Reading and the potential for the Crossrail scheme.

Rail privatisation in April 1994 resulted in changes to the structure and control of rail services. Responsibility for infrastructure (now vested in Railtrack) was separated from the operation of trains. However, recent criticism over the punctuality and reliability of services has prompted the Government to propose the creation of a Strategic Rail Authority. This will closely monitor the operating companies to ensure better standards are achieved. There are now 5 principal train operating companies in the Reading area:

- Great Western Trains
- Thames Trains
- South West Trains
- Virgin Trains (includes Cross Country Trains), and
- Wales and West Trains

The performance of the operating companies has been monitored by OPRAF. In 1997, reliability was found to be 98% or more for all operators. Punctuality statistics showed Great Western trains and Cross Country (Virgin) trains to be down to around 86%. (Reading Borough Council: Transport Policies and Programme 1999-2000, July 1998)

There are approximately 12.5 miles of railway track in Reading and over 500 trains serve Reading station each day. Direct rail connections into Heathrow Airport from the west are currently being considered in order to influence modal choice.

Rail travel is predominantly available from the east and west into Reading. Those travelling from the south or north are more reliant on the car or bus. Generally rail accounts for 11%-18% of motorised journeys into the town centre (Dept. of Transport: Transport Statistics Report: National Travel Survey 1993/94, September 1998).

Public Transport Interchange

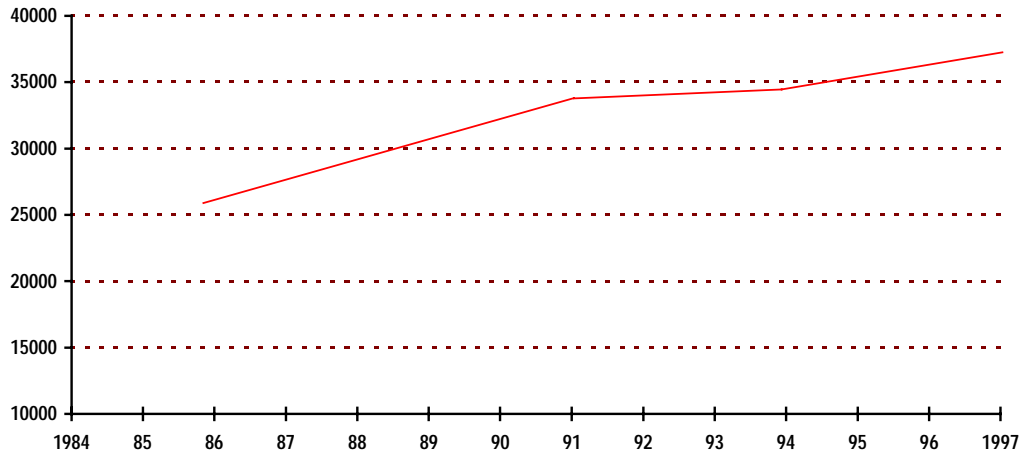
The opportunity to change between various modes of transport is an important component of transport infrastructure and features prominently in the new Local Transport Plan. Many journeys involve two modes of transport (other than walking), bus/train and bicycle/train being the most common.

Facilities at Reading Station are well developed, with the convenient location of bus, rail and taxi services, along with public car parking and cycle parking facilities. It is planned to further develop the railway station as a major rail hub, providing the opportunity to interchange between different types of transport. (Reading Borough Council : Reading City 2020 (1998).

Reading has one of the few stations in the area which is fully accessible to people with mobility handicaps and which provides high quality facilities for the travelling public.

Taxis

Although taxis represent a small proportion of road traffic, their use has increased and their impact on the environment gives cause for concern. As so many journeys are without a passenger, their effect on the environment is disproportionate to the private car, and both energy consumption and emissions are greater.



Sources: Transport Statistics Great Britain, 1995 Edition September 1995
 Department of the Environment, Transport and the Regions: Transport Statistics Great Britain 1999 Edition,
 Dept. of Transport
Figure 6.6: Number of Licensed Taxis outside London

Figure 6. 6 shows that there has been a considerable increase in the number of licensed taxis outside London, although part of the increase is due to a greater number of local authorities being involved in licensing. This has been matched by a rise in the average distance travelled per person from 27 miles/year (1985/86) to 50 miles/year (1996/98). (Department of the Environment, Transport and the Regions: Transport Statistics Great Britain 1999 Edition).

Cycling

Cycling is an environmentally friendly form of transport in that it does not emit any of the pollutants or particulates associated with motorised forms of transport, generates little noise, and is efficient in terms of energy consumption and use of space. The British Medical Association has also suggested that regular cycling has an important role to play in reducing stress and tension, lessening coronary heart disease, decreasing obesity and reducing osteoporosis. (Cyclists Touring Club: More Bike – Policy into Best Practice, 1995).

Nationally, 70% of journeys made by people were under 5 miles in length during the period 1996/1998. It is these trips that are particularly suited to cycling with door-to-door journey times frequently being less than those of motorists. However, only 2% of trips under 5 miles were by bicycle, compared with 4% 20 years ago (Dept. of Transport: Transport Statistics Report, September 1998). In 1996/98, 1.5% of all trips were by bicycle. (Department of the Environment, Transport and the Regions: Transport Statistics Great Britain 1999 Edition).

	Cycles owned per 100 persons	Mileage per person per year
1972/73	14	42
1975/76	14	51
1978/79	18	46
1985/86	25	44
1989/91	27	41
1992/94	29	38

Source: Transport Statistics Report: National Travel Survey 1992/94, September 1998, Dept. of Transport
Table 6.3: Cycle Ownership and Mileage 1972/73 - 1992/94

Although the number of bicycles owned per person doubled between 1975/76 and 1992/94, cycle mileage per person fell by 25% over the same period. Mileage by children fell by more than 40% during the period 1975/76 to 1992/94, the decline being greatest between 1989/91

and 1992/94, possibly reflecting the greater traffic volumes on roads and the growing unpopularity of cycling to school. (Dept. of Transport: Transport Statistics Report: National Travel Survey 1992/94, September 1993).

Table 6.4 below shows the two-way cycle flows over 12 hours on the 2nd, 3rd and 4th March 1999 at the South Reading Cycle Screenline.

	Tuesday 2 March 1999	Wednesday 3 March 1999	Thursday 4 March 1999	Average	% on Footway
Weather	Drizzle	Fine & Windy	Dry & Overcast		
Relief Road	168	185	204	186	82.9
Towpaths	18	10	8	12	100
Elgar Road	193	163	223	193	23.5
Basingstoke Road	177	205	188	190	22.6
Northumberland Ave	161	155	174	163	36.7
Northcourt Ave	328	300	385	338	29.2
Shinfield Road	1246	1150	1290	1229	46.9
Total	2291	2168	2472	2311	42.3

Source: Provisional Local Transport Plan, July 1999, Reading Borough Council
Table 6.4: 12 Hour 2 Way Cycle Flows Across South Reading Cycle Screenline

In 1991, a greater proportion of the Borough's population cycled than in other parts of the country. Irrespective of this, it is recognised that further growth potential exists. Journeys to work are an obvious area to be targeted for growth in cycling.

	Reading Borough		Berkshire	
	1981	1991	1981	1991
% travelling by:				
Cycle	3.9	2.8	5.1	3.2
Walk	14.5	14.8	13.8	10.4
Bus	23.8	15.8	10.3	6.5
Rail	4.7	4.3	4.8	4.4
Car	47.3	55.6	58.3	67.8

Source: Census 1981 and 1991, OPCS
Table 6.5: Journey to Work Statistics (1981 and 1991)

In 1991 only 2.8% of those travelling to work in Reading Borough travelled by bicycle. (OPCS: Census 1981 and 1991).

Cycling Facilities

Reading Borough Council is working towards the completion of a comprehensive network of cycle routes.

The network comprises:

- off-road cycle paths
- cycle lanes on roads
- quiet routes

Reversing the decline in cycling is a key national aim that the council hopes to contribute to making it easier and safer to cycle is critical to the design of improvements to existing facilities and the creation of new routes.

A Cycling Strategy for Reading was approved in 1997 which encompasses the National Cycling Strategy and National Cycle Network. Significant progress has also been made in the development of cycle facilities. Further schemes to upgrade the network are being assessed for the Local Transport Plan and opportunities to incorporate new facilities in development proposals are being sought.

Pedestrians

Walking is the least damaging method of travel. It is healthy and pollution-free. As a form of leisure it uses very few resources, and is accessible to most sectors of the population. It is also readily linked to other forms of transport, be they bus, car, or bicycle, and provides flexibility in that it is not constrained by timetables, vehicle availability, or money. There are however certain people who are not able to walk at all, or for a significant distance, including the physically disabled and the elderly.

Pedestrians suffer from a variety of external influences, which render walking an unsafe or unpleasant activity in certain circumstances. Road accidents frequently involve pedestrians. Pollution from vehicle emissions in urban areas is of particular concern given Reading's traffic growth and congestion. There are few segregated pedestrian routes in Reading and the definitive footways tend to be fragmented. Pedestrianisation is improving the environment, especially in the town centre. The main shopping area has a pedestrianised zone and the council is currently implementing a town centre transport strategy that will extend pedestrianisation. Having safe and attractive environments to walk in is a high priority nationally.

Transport by Water

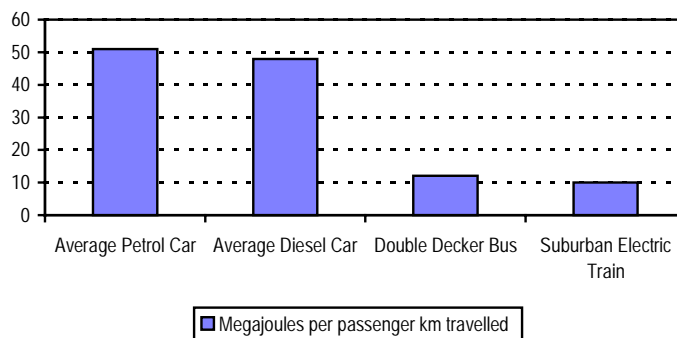
A number of waterways, of ranging character, are located within Reading. The Rivers Thames and Kennet, the Kennet and Avon Canal and the Holybrook are all potentially significant elements of the local transport network. Although stretches of the River Thames are used for the carriage of freight, the waterways in the Reading area are primarily useful for their recreational role.

Air Travel

Although there are no facilities for air travel located within Reading boundary, the proximity of Heathrow and the availability of car routes and bus services to the airport make it a local consideration. There is a direct Rail-Air coach link from Reading Station to Heathrow and direct rail services from Reading to Gatwick.

Energy Use

Cars use by far the most energy per passenger kilometre travelled, compared to any other means of road or rail travel. Figure 6.14 gives a crude comparison between cars and other transport modes.



Source: 6th Report: Transport Related Air Pollution in London, 1994, House of Commons Transport Committee

Figure 6.7 : Comparison of the Energy requirement of Cars with Other Modes of Transport

Since 1970, energy consumption by passenger transport (cars and buses) has risen considerably. The volume of traffic has increased by a similar amount, showing that there has been little change in efficiency of fuel use.

Diesel engines are more efficient than petrol engines and they have a particular advantage in efficiency at slower speeds, up to about 25mph. Fuel efficiency increases as a car moves faster, and is at its most efficient at about 44mph for all types of fuel, after which speed cars become increasingly less fuel-efficient. (Royal Commission on Environmental Pollution: Eighteenth Report: Transport and the Environment, October 1994).

A number of alternative fuels to petrol and diesel are being advocated on the grounds that they are less polluting. The greatest environmental advantage would be gained from the use of compressed natural gas instead of diesel in large vehicles such as buses and refuse collection vehicles. Compressed natural gas powered buses have been operated in the Berkshire area by Reading Buses.

Since 1980, there has been a trend towards larger engines which use more fuel. The most noticeable difference between 1988 and 1998 was the decrease in number of vehicles between 1000 and 1500cc and the increase in vehicles between 1500cc and 2000cc – see Table 6.6.

	1000-1200cc	1200-1500cc	1500-1800cc	1800-2000cc
1988	11.9	28.5	28.6	10.4
1994	11.0	26.0	30.6	15.1
1998	10.4	24.8	30.6	18.5

Source: Transport Statistics Great Britain 1999 Edition, Department of the Environment, Transport and the Regions

Table 6.6: % of Vehicles Licensed by Engine Size

Exhaust Emissions

Diesel and petrol have different implications in terms of polluting emissions. Cars that use petrol (even with a catalytic converter fitted) produce more carbon monoxide than those that use diesel. The latter produce more particulates and nitrogen oxides. The health effects of changes in air quality are complex, however; respiratory problems involving conditions such as asthma and bronchitis are the most publicised. Other vehicle emissions include benzene and 1,3 butadiene, a suspected carcinogen.

High road traffic levels and traffic growth mean that urban areas are suffering from pollutants. Nitrogen dioxide levels have been raised in recent years but are expected to fall as the proportion of catalyst-equipped cars increases. Concentrations of particulates have also grown, but again are expected to drop as a result of measures already in place.

Public transport is seen as environmentally less damaging mode of transport than the car. However, buses tend to be major contributors to air pollution in urban centres. Deregulation of bus services has accentuated the problem by keeping a number of older, poorly maintained buses in service. Some bus companies have started to address the problem of emissions by experimenting with greener fuels. Reading Buses in particular have run trials with rape-seed oil and Greenery City Diesel. In order to assess the effect that using environment-friendly fuel might have, air quality was measured during the trial period. The results showed that the levels of particulates dropped by 43% and of oxides of nitrogen by 20%, and that carbon monoxide concentrations were well within the recommended air quality standards. (Reading Borough Council: Leaflet: Our Environment: 1997/8). City diesel was found to produce an overall 50% improvement in air quality and has now been used by Reading Transport buses since March 1998. No electrically powered buses currently exist in Reading. The pollutants referred to are dealt with in more detail in Chapter 7 - Air Quality.

Noise

As volumes of traffic have grown, noise from traffic has become an increasing problem for occupiers and users of land adjacent to the road system. Engine noise at low speeds and tyre noise at high speeds can be a nuisance at considerable distances from the highway.

Householders affected by noise due to heavy traffic on existing roads have no automatic right to either secondary glazing or protection from noise barriers. The council is beginning to make provision for mitigation measures to be provided in the most serious cases. The subject of noise from traffic is also referred to in Chapter 8.

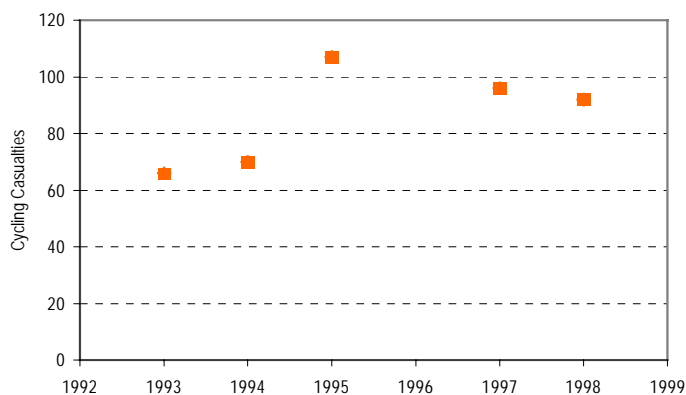
Railway noise tends to be less intrusive, although the sudden or intermittent onset of noise can be disturbing.

Safety

Transport is responsible for nearly two-fifths of accidental deaths in Britain. In 1998, road accidents killed 3,421 people, caused 40,834 people serious injuries and resulted in 280,957 other casualties. The deaths and injuries caused by other modes of transport are far fewer in number. In the ten-year period 1988-98, 56 passengers and 61 other people were killed in rail accidents. In 1997/98, 10 people died in rail accidents, 2 received major injuries and 242 received minor injuries. (Department of the Environment, Transport and the Regions: Transport Statistics Great Britain 1999 Edition).

Despite the great increase in traffic, deaths from road accidents in Britain have roughly halved over the last 30 years and injuries have fallen by over a third. Fatal and serious injuries to car occupants in Reading have risen slightly since 1995. However, 56 deaths in 1997 still represents a 70% decrease since 1981/85 and reflects national trends. (Reading Borough Council: Road Safety Plan 1998-99, April 1998). A target set by the Secretary of State for Transport of reducing all casualties by one-third of the 1981-85 average by the year 2000 has proved to be too ambitious both locally and nationally. The 729 casualties that occurred in Reading in 1997 is some way off the target of 509. The reason for this is likely to be the increase in car usage.

The poor safety record associated with cycling is a further deterrent to potential cyclists. Nationally, the cycle safety record is poor in comparison with other European countries. In Reading, injuries sustained by cyclists involved in accidents on the highway have increased since 1993, as illustrated in Figure 6.15 below. Younger age-groups are particularly vulnerable. In 1998, 92 cycling casualties were reported, of which 16 were children and 76 were adults.



Source: Road Safety Plan 1998-99, April 1998, Reading Borough Council, Reading Borough Council Key Accident System (1999)

Figure 6.8 : Cycling Casualties in Reading 1993/98

Measures to make cycling and walking safer for children include the Safe Routes to School initiative.

The road safety record for pedestrians in Reading has improved recently by a substantial margin over the national trend. The 72% reduction in fatal and serious casualties locally (1985 to 1995) compares with a 35% improvement nationally. Young children between the ages of 5 and 14, who often have a certain amount of independence, are those most frequently involved in pedestrian accidents.

Community Severance

Traffic represents a major barrier to movement which may be partly overcome through the provision of pedestrian crossing facilities. Many of the main radial routes into Reading – such as Oxford Road and London Road - are long established streets around which substantial communities have grown. It is not currently possible to quantify the impact of traffic on the free movement of people around these areas, in terms of restrictions in the opportunities to gain access to key locations and land uses. It is aimed to reduce the community severance caused by the Inner Distribution Road in the future by increasing the number of routes, particularly for pedestrians, into the centre. (Reading Borough Council: Reading City 2020)

Social Issues

The extent to which transport impacts are significant to the quality of life depends upon a range of factors, including the economic and social circumstances of the people concerned. Non-car owners, for example, may find that their opportunities to travel by public transport, and hence to enjoy access to distant facilities, are limited by delays caused by car users. Those with mobility handicaps may find that the availability of accessible services is limited by cost or opportunity.

The council operates a concessionary fares scheme for residents who meet certain criteria, and this is designed to assist travel for the most needy groups. The administration of the system is currently under review and monitoring data on levels of use may be available in the future.

Main Issues

- The achievement of a fully integrated and sustainable transport system.
- The preparation of new Local Transport Plans.
- High levels of peak hour congestion due primarily to commuting.
- Increasing average journey lengths.
- The use of cars for the majority of all journeys.
- High and increasing levels of car ownership
- The wider environmental impact of roads.
- Many of Reading's radial roads are often at their carrying capacities.
- The widening of peak time periods as congestion worsens.
- Managing demand for parking spaces.
- Persuading motorists to switch to sustainable modes of travel.

- Developing the popularity of buses for long distance journeys.
- The frequency and efficiency of rail services.
- Developing the cycle network and facilities to increase the popularity of cycling.
- Protecting the safety and mobility of pedestrians.
- Reducing the amount of energy used for transport purposes by making more efficient use of various modes.
- The introduction of more environmentally friendly means of powering motor vehicles.
- The effect of traffic noise on Reading's residents.
- The need to improve road safety.
- The need to ensure that children can travel safely to school.
- The effect of road traffic in severing local communities.

Key Contact(s)

For further information, please contact Nick Blades on 0118 939 0069.

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