MILTON KEYNES COUNCIL

ROAD TRAFFIC REDUCTION REPORT

ANNEX A
to

MILTON KEYNES COUNCIL'S LOCAL TRANSPORT PLAN

2001/02 – 2005/06

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July 2000

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A1. BACKGROUND TO THE ROAD TRAFFIC REDUCTION ACT

A1.1 INTRODUCTION

The Road Traffic Reduction Act (1997) sets out the requirements for local highway authorities throughout the country to;

- Assess current levels of traffic.
- Forecast the growth in those levels.
- Determine appropriate targets for reduction of either the levels of traffic or the rate of traffic growth on their roads over a specified period.
- Set out information that influences levels of local road traffic in their area.

Draft guidance for the production of RTRA reports was published early in 1998. However, this guidance has been superseded by the publication of the Transport White Paper, 'A New Deal For Transport - Better For Everyone' (July 1998). The White Paper introduced the requirement (although non-statutory) for local highway authorities to produce 'Local Transport Plans' (LTPs).

Guidance for the production of Provisional LTPs was published in April 1999. Included in the guidance was the requirement to produce an interim Road Traffic Reduction Report as an annex to the Provisional LTP. The first RTRA reports were required to assist Government in completing its own report under the 1998 (National Targets) Act.

Guidance on the production of the statutory RTRA reports was published in March 2000. The new guidance takes account of the development of policy on LTPs and also considered the implications of 'Tackling Congestion and Pollution' the Government's first report under the Road Traffic Reduction (National Targets) Act 1998.

The format of this report will be,

- Outline of Milton Keynes' current transport patterns.
- Presentation of current and forecast traffic flows and conditions.
- Introduce targets to reduce the growth of traffic.
- Outline measures proposed to achieve the targets.
- Outline monitoring and review procedures.

A2. MILTON KEYNES' CURRENT TRANSPORT CONDITIONS

A2.1 INTRODUCTION

Milton Keynes Council is a unitary authority established on 1 April 1997 as a result of the reorganisation of local government in the County of Buckinghamshire. The Council covers an area of 30,869 hectares. It is almost halfway between Birmingham and London, to the north east of Oxford, to the south of Northampton, and to the west of Bedford and Cambridge. Milton Keynes is approximately 80 miles from Birmingham, 60 miles from London, and 50 miles from Cambridge and Oxford.

The major settlement is the new City of Milton Keynes formed from new development surrounding the older towns of Bletchley, Wolverton, and Stony Stratford, and a number of villages. The remainder of the area is largely rural with a number of small towns and villages; the largest being Newport Pagnell and Olney in the north and Woburn Sands in the south.

The planned expansion of the City of Milton Keynes to 2006 and the debate on expansion beyond is leading to many complex and detailed planning issues relating to both new development and changes to existing development, land use and transportation. In the year since the publication of our first RTRA report and Provisional LTP the Milton Keynes sub region (an area bounded by Milton Keynes, Bedford, Northampton and Corby) has been identified in the Draft Regional Planning Guidance for the South East (RPG9) as an area for possible plan led expansion. Studies will be undertaken now that will develop RPG9. This is due for publication in the next couple of years.

Transport focuses highly in employment with over 30% of all employees engaged in transport and distribution functions. Access to markets is perceived as high with 8 million of the UK's population within a 1 hours drive time and 23 million within 2 hours.

A2.2 POPULATION GROWTH & TRENDS

Milton Keynes has a population of some 203,000 living in over 80,000 households. Table 2.0 illustrates the trends in the population for 1981 to 2006 in Milton Keynes using information from the Census and English Partnerships (formerly the Commission for the New Town's) population projections.

From 1981 to 1991, the total resident population of Milton Keynes increased by 54,000 persons (43%) from 124,300 to 178,300. Between 1991 and 1996, its population increased by 10%, whereas the population of England increased by under 2%. Most of the growth is focused on the new City. This makes Milton Keynes one of the fastest growing areas in the country.

The high rate of population growth will continue. It is anticipated that 14,300 houses will be built between 1997 and 2006 and there is a projected growth in population of 30,400 people (11%). Around 94% of the growth will occur in the new City, reaching a population of 193,100 by 2006.

TABLE 2.0 Population Growth

Year	Milton Keynes City	Milton Keynes Council Area
1981[1]	95,800	124,300
1991[1]	144,700	178,300
1996[2]	161,500	196,900
1999[2]	170,100	206,900
2001[2]	176,000	213,600
2006[2]	193,000	231,400
	% growth	% growth
1991-1999	17.6	16.0
1999-2006	13.5	11.8

NOTES:

1. Census of Population (Office of Population Censuses and Surveys, Crown Copyright). For the 1991 census, the 1981 resident population base has been used. This excludes households wholly absent on Census Night. The use of this base definition for both Censuses enables their comparison.
2. Estimated using the milton keynes population model July 1999.

A2.3 TRANSPORT NETWORKS IN MILTON KEYNES

A2.3.1 THE ROAD NETWORK

The road network is dominated by the M1 motorway, running through the area from north-west too south-east carrying traffic from London, the Midlands, and the north. There is one intersection at Junction 14. Traffic can also access Milton Keynes via Junction 13 to the south in Bedfordshire.

Other major roads are the:

- A5 London to Holyhead trunk road also on the same axis as the M1.
- A428 trunk road linking Northampton and Bedford at the northern fringe of the Council area. This section of the Trunk network has been identified for de-trunking, by June 2001.
- A509, the A421, the A422, and the A4146, providing northerly, easterly and westerly connections and linking local settlements with those in neighbouring authorities.

Within the City area, main roads are formed on a loose 1-km grid network. This allows multiple route choice and relatively free flow of traffic movement. Road space takes up 15% of land.

Most of the grid roads are of a modern standard, consistent with the recent development of the city over the past 25 years, often dual carriageways, well lit and intersected by roundabouts. Residential and employment areas access directly onto the grid roads via a network of distributor roads.

A2.3.2 THE REDWAYS, WALKING AND CYCLE NETWORKS

Within the City there are extensive shared cycle/pedestrian routes known as the Redways. Currently this network has a route length of over 250km. The Redways are separated from the gridroads, leading to the criticism that they

are not direct. Redways are lit but suffer from the perception that in places overgrown vegetation hamper sight lines and potentially provide personal security risks. Redways only make limited penetration into the older centres of Bletchley and Newport Pagnell.

This year sees the opening of parts of the SUSTRAN national cycle network through Milton Keynes. Two routes, 6 and 51 traverse Milton Keynes. Route 6 links Northampton to Leighton Buzzard and route 51 runs east to west connecting Bedford to Oxford via Milton Keynes.

Rural areas of Milton Keynes are not covered by the Redway system, however much of the area is covered with a network of public rights of way (footpaths and bridleways).

A2.3.3 THE BUS NETWORK

There is a network of bus passenger services throughout the area carrying regular, but sometimes infrequent services and other less regular services to and from smaller villages. The largest operator is MK Metro with a number of other operators running services on various routes. Bus services are perceived to be improving in Milton Keynes. This improvement in image is down to the general improvements in services in terms of newer buses, driver training and greater availability of information. This year saw the introduction of our first Quality Bus route. Initial result show that patronage on this route has increased significantly over the first few months of operation.

Inter-urban and express coach services are available from the Coachway and Central Milton Keynes bus station.

A2.3.4 TRAVEL INFORMATION

The Council provides comprehensive information about passenger services. It is showing steady improvement principally due to developments in information technology. Over 90% of the fixed bus stops in the area have a timetable case with a computerised print out of departures. There is one on-street "TravelGUIDE" computer terminal, which provides timetable information for buses, coaches and trains. A telephone enquiry service is available for around 90 hours per week. Maps and timetables are also produced. Timetable information is also available on the World Wide Web at: http://www.pindar.co.uk/mk.

A2.3.5 TAXIS AND PRIVATE HIRE VEHICLES

78 Hackney carriage vehicles and 410 private hire vehicles are licensed with the Council and 48 licensed operators. 320 drivers are employed in Hackney carriage operations, whilst 600 drivers are involved with private hire.

A2.3.6 THE RAIL NETWORK

There are three train-operating companies (TOCS) running services through Milton Keynes. Virgin Trains runs passenger services on the West Coast

Main Line from London Euston to the West Midlands, the North West, North Wales and Scotland. A number of these services stop at Milton Keynes Central rail station. Major investment in track and signalling is scheduled for the near future.

SilverLink County run commuter passenger services over the same lines between London Euston and Birmingham with services stopping locally at Bletchley, Milton Keynes Central and Wolverton stations. It also operates the Marston Vale Line, a cross-country branch line between Bletchley and Bedford with services stopping locally at Fenny Stratford, Bow Brickhill and Woburn Sands.

Connex South East run services to Gatwick airport and Rugby partly along the West Coast Main Line.

A consortium of local authorities is promoting the re opening and in places upgrading of an east west rail link from Oxford and Swindon in the west to Bedford, Cambridge and east coast ports to the east. The section of this link from Oxford to Bedford passing through Bletchley and possibly a link to Aylesbury has been identified as an initial section to be developed.

A2.3.7 THE CANAL NETWORK

The Grand Union Canal passes through the Milton Keynes Council area on the same axis as the M1, A5 and the West Coast Main Line railway. It links London with Birmingham and beyond. Towpaths provide pleasant leisure routes for cyclists and pedestrians. Freight movement through and to Milton Keynes is not extensive, consistent with national trends. The canal is maintained to a relatively good standard with regular inspections and repairs carried out to the canal banks and locks. Although the depth is variable, the central channel is continually maintained and the canal was open for use throughout the working day in 1999. MKC welcomes in principle the recent announcement by British Waterways of their plans to extend the canal network east from Milton Keynes to Bedford.

A2.3.8 AIR

Domestic and international air services operate from Birmingham (under 1 hour by rail and road), London Luton (½ hr by road or bus/coach), London Heathrow (1½ hrs by road or rail), London Gatwick (2 hrs by road or rail), London Stansted (1½ hrs by road). Private air travel is available at Cranfield airport to the east, which is around 20 minutes from Central Milton Keynes. There are three helipads within the City area.

Some key transport facts:

- 47,500 street lights;
- 2,000 illuminated road signs;
- 9 sets of traffic lights;
- 4 speed cameras;
- 9 pelican crossings;
- 16 zebra crossings;
- 1 toucan crossing;
- 1 puffin crossing;
- 7 school crossing patrol sites;
- 150 bus shelters;
- 2 bus/coach stations, (Coachway at M1 Junction 14, CMK Bus Station).

A2.4 CAR OWNERSHIP

Between 1981 and 1991 the number of households without a car fell by 8 percentage points from 33 to 25%. Northamptonshire and Great Britain matched this as a whole. The surrounding counties of Bedfordshire and Buckinghamshire had a 5-percentage point fall in the number of households with no car. Results from the 1997 MK Household Survey show a further decline in the number without a car by 4 percentage points to 21%. Over 25% of households have two or more cars. See Tables 2.1 and 2.2

TABLE 2.1 Car Ownership

Area	Total Number of Households 1991[1]	Percentage of Households with/without Car					
		1981[1]		1991[1]		1997[3]	
		no car	1+car	no car	1+car	no car	1+car
Milton Keynes City	54,700	36	64	27	73	22	78
MKC	67,200	33	67	25	75	20	80
Bedfordshire	222,100	30	70	25	75	-	-
Rest of Bucks	172,900	22	78	17	83	-	-
Northamptonshire	224,100	36	64	27	73	-	-
GB[2]		41	59	33	67	-	-

Sources:

1. Census of Population (Office of Population Censuses and Surveys, Crown Copyright).
2. GB - General Household Survey.
3. MK Household Survey 1997. Note not based on the number of households in 1991.

TABLE 2.2 Households with Vehicles and Cars in 1997 (%)

	MK Whole	MK City
Households with vehicle (inc LGV)		
0	19%	21%
1	44%	48%
2	31%	27%
3	5%	4%
3+	1%	1%
Households with car		
0	20%	22%
1	47%	50%
2	29%	25%
3	3%	3%
3+	1%	1%
Individuals per household	2.46	2.45

Source: MK Household Survey, 1997.

A2.5 TRAVEL

Amongst residents the car is the most prevalent form of travel. Over 55% of all residents have a full driving licence and 65% of all journeys are undertaken by car. For particular journey purposes the car also features highly. Over the area as a whole 72% of work and 34% of education journeys are made by car. Within the city this rises to 78% of work journeys and 39% of education journeys.

TABLE 2.3 Usual means of travelling to destinations by Milton Keynes Residents (Whole Borough (%))

MK (Whole)	Mode								
Destination Purpose	car driver	car passenger	bus	walk	train	bicycle	taxi	m/c	other
Work	69	9	4	13	1	3	1	1	0
Home	48	19	5	23	0	3	1	0	0
Education	3	31	15	47	1	3	1	0	0
Visit	43	21	3	28	0	3	0	0	0
Shopping	46	19	7	25	0	2	1	0	0
Leisure	36	26	2	31	0	3	1	0	0
Personal business	56	19	4	19	0	1	0	0	0
Employers business	81	4	2	7	2	0	1	0	4

Source: MK Household Survey, 1997.

TABLE 2.4 Usual means of travelling to destinations by Milton Keynes Residents (City Area (%))

MK (City)	Mode								
Destination Purpose	car driver	car passenger	bus	walk	train	bicycle	taxi	m/c	other
Work	67	11	4	11	1	3	1	1	0
Home	47	20	6	23	0	3	1	0	0
Education	2	37	10	45	0	4	1	0	0
Visit	42	22	4	26	0	5	0	0	0
Shopping	45	19	8	24	0	2	1	0	0
Leisure	38	27	2	29	0	2	1	0	1
Personal business	54	22	6	17	0	1	0	0	1
Employers business	82	2	2	7	2	0	2	0	3

Source: MK Household Survey 1997.

A3. CURRENT AND FORECAST TRAFFIC FLOWS

A3.1 INTRODUCTION

The Council has four permanent ATC sites. One is on the A422 east of Chicheley; on the B526 at Gayhurst; on the A509 north of M1 Junction 14 and one on Wolverton Road, Newport Pagnell.

The Department of the Environment Transport and the Regions (DETR) has an automatic counting site to the south of Olney, which records the number and type of vehicle. The Highways Agency has a traffic count programme covering the trunk road network. Highways Agency sites in the Milton Keynes area are the:

- M1 between J13 and J14, and between J14 and J15;
- A5 Little Brickhill Bypass, and Knowl Hill; and,
- A428 at Lavendon.

English Partnerships' (formerly CNT's) traffic monitoring programme provides traffic data from over 100 ATC sites within the City. They are mostly counted at least once a year for a short period, usually two weeks. The site on the C146 (H6 Childs Way between V8 and V10) is counted on a more regular basis.

A3.2 CORDONS AND SCREENLINES

Information gathered from these surveys illustrates the changes in flow patterns that have occurred in Milton Keynes and is given added focus by use of cordons and Screenlines. These are:

- MK City cordon (Table 3.2).
- Central Milton Keynes Cordon (Table 3.3).
- Central Milton Keynes Screenline (Table 3.4).
- MK South-West to North-East Screenline (Table 3.5).
- MK North-West to South-East Screenline (Table 3.6).

A3.3 TRAFFIC FLOWS AT MONITORING POINTS

Estimated Annual Average Daily Traffic (AADT) flows and percentage HGV flows for 1997 on the Motorway, Primary Route and Principal Road Network shows that the M1 carries by far the heaviest flow of traffic at over 103,000 vehicles of which 21% are heavy goods vehicles. The A5 carries over 33,000 vehicles on an average day, of which more than 10% are HGV's. Other roads in Milton Keynes typically carry less than 25,000 vehicles per day, see Figure D.

AADT for the continuous monitoring sites is shown in Figure A and Table 3.1 and that for the cordons and screenlines in Figure B. and Tables 3.2 to 3.6.

A3.4 OBSERVED TRAFFIC GROWTH

The year on year traffic growth has been presented in Table 3.7 for the A422, A509, C146 (H6 between V8 and V10), as well as for the cordons and the screenlines.

Examination of the results from the cordon and screenline counts illustrates that between 1998 and 1999 there has been a steady increase in traffic. Traffic crossing the Milton Keynes City cordon has increased by 3% in a year.

TABLE 3.0 Annual Average Daily Traffic (AADT) for the A422, A509 and C146 (H6)

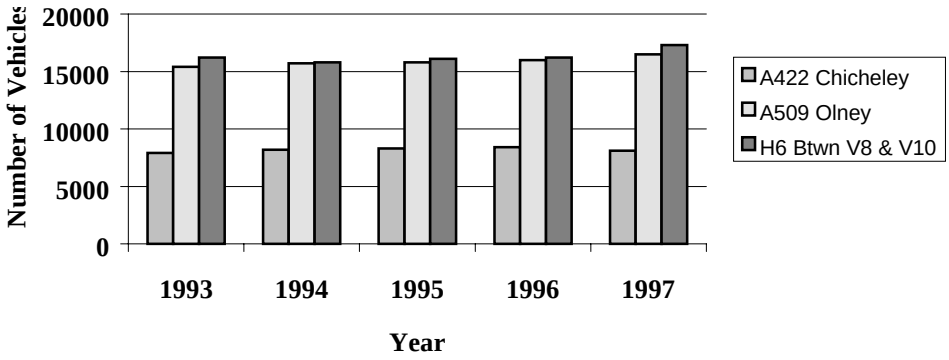


TABLE 3.1 Annual Average Daily Traffic at DETR and Highways Agency Sites

Year	A509 Olney	A428 Lavendon	A5 Knowl Hill	A5 Little Brickhill	M1 J14 - J15	M1 J13 - J14
1996	-	7,000	31,500	20,600	97,500	-
1997	16,009	6,700	33,200	-	101,100	103,700

TABLE 3.2 Milton Keynes City Cordon

	AADT				
Location	**1997**	**1998**	**% Change**	**1999**	**% Change**
1. A421 (Bottledump site)	15,700	16,200*	3	16,700	3
2. C17 Calverton Road	2,900	2,700	-7	2,600	-4
3. Queen Eleanor Street	9,800*	12,800	31	12,700	-1
4. A5 (A508/A422-H3)	33,000	34,000*	3	23,200	-32
5. Haversham Road	6,600	6,700	2	6,600	-1
6. Wolverton Rd (V10-M1 Bridge)	10,000	12,400	24	12,300	-1
7. H3 (V10-M1 Bridge)	18,100	17,300	-4	18,400	6
8. Willen Road (A422-H4)	12,700	13,100*	3	13,500*	3
9. A509 (H5/H6/A5130 –M1, J14)	38,600	23,400	-39	32,900	41
10. A421 (A5130-M1 J13)	18,500	19,100*	3	21,300	12
11. A5130 (A421-Wavendon)	11,400	11,700*	3	12,100	3
12. V10 (H10 – Station Rd)	8,700	8,900	2	9,600	8
13. A5 (H10 – Fenny Stratford Bypass)	24,200	25,800	7	28,100	9
14. Watling St (Simpson Rd–A5/A4146)	11,000	11,500	5	11,800*	3
15. Stoke Road (A4146 – Windemere Dr)	7,000	7,000	0	7,600	9
16. Drayton Road (Bletchley)	2,500	2,800	12	2,900	4
17. Newton Road (Bletchley)	4,300	4,100	-5	4,300	5
Total	**235,000**	**229,500**	**-2**	**236,600**	**3**

TABLE 3.3 Central Milton Keynes Cordon

	AADT				
Location	**1997**	**1998**	**% Change**	**1999**	**% Change**
Elder gate (H5 to Silbury Blvd)	3,700	5,700	54	5,100	-11
V6 (H5 to Silbury Blvd)	27,900	28700*	3	29,600*	3
Witan Gate (H5 to Silbury Blvd)	5,200	4,900	-6	8,200	67
V7 (H5 to Silbury Blvd)	16,700	11,700	-30	15,600	33
Secklow Gate (H5 to Silbury Bvld)	16,000	15,400	-4	17,200	12
Silbury Blvd (Campbell Park North)	7,800	8,100	4	8,800	9
Avebury Boulevard (Campbell Park South)	4,900	5,100	4	5,700	12
Secklow Gate (H6 to Avebury Bvld)	11,200	14,600	30	16,400	12
V7 (H6 to Avebury Blvd)	14,000	13,800	-1	12,600	-9
Witan Gate (H6 to Avebury Blvd)	5,300	4,900	-8	5,300	8
V6 (H6 to Avebury Blvd)	24,400	24,600	1	27,000	10
Total	**137,100**	**137,500**	**0**	**151,500**	**10**

TABLE 3.4 Central Milton Keynes Screenline

	AADT				
Location	**1997**	**1998**	**% Change**	**1999**	**% Change**
Silbury Blvd (V7 to Secklow Gate)	13,200	13,600*	3	14,700	8
Midsummer Blvd (V7 to Secklow Gate)	8,900	10,800	21	11,100*	3
Avebury Blvd (V7 to Secklow Gate)	6,900	7,000	1	7,200*	3
Total	**29,000**	**31,400**	**8**	**33,000**	**5**

TABLE 3.5 SW-NE Screenline

Location	AADT				
	1997	1998	% Change	1999	% Change
V1 (H7/H8)	5,500	4,800	-13	5,300	10
V2 (H7/H8)	5,600	6,400	14	5,700	-11
V3 (H7/H8)	9,800	10,800	10	11,400	6
V4 (H7/H8)	10,500	11,600	10	11,800	2
A5 (H5/H9)	15,400	15,900*	3	16,400*	3
V6 (H6/H7)	18,000	21,300	18	22,000	3
V7 (H6/H7)	13,700	11,400	-17	12,200	7
V8 (H6/H7)	24,300	21,400	-12	22,500	5
V10 (H6/H7)	7,600	7,800*	3	9,400	21
V11 (H6/H7)	16,300	17,800	9	20,000	12
Total	**126,700**	**129,200**	**2**	**136,700**	**6**

TABLE 3.6 NW-SE Screenline

Location	AADT				
	1997	1998	% Change	1999	% Change
H2 (V5/V6)	7,700	8,500	10	8,500	0
H3 (V5/V6)	18,200	20,200	11	19,200	-5
H4 (V5/V6)	11,300	12,400	10	11,700	-6
H5 (A5/V6)	30,300	37,100	22	38,200*	3
H6 (V4/V6)	14,600	15,000*	3	18,500	23
H7 (V4/V6)	11,800	10,700	-9	12,600	18
H8 (V4/V6)	24,400	25100*	3	15,600	-38
V6 (V4/A5)	10,100	11,200	11	11,400	2
V7 (H10/V4)	27,900	33,700	21	35,100	4
Total	**156,300**	**173,900**	**11**	**170,800**	**-2**

*Calculated using NRTF.

TABLE 3.7 Annual Average Daily Traffic - Growth From 1995-97

	Year on Year Growth %			
Location	1995-96	1996-97	1997-98	1998-99
A422	2	3	-	-
A509	1	4	-	-
C146	1	7	-	-
MK City Cordon	1	2	-2	3
CMK Cordon	5	-1	0	10
CMK Screenline	-1	6	8	5
SW to NE Screenline	9	-8	2	6
NW to SE Screenline	4	-3	11	-2

A3.5 FORECAST TRAFFIC FLOWS

The previous sections describe the observed levels of traffic. These figures have then been compared with past years to determine trends and patterns in traffic growth. This monitoring programme is continuing and data collection from 2000 is being collected and in due course will used to update the relevant tables. The monitoring sites are listed below and flows detected in 1999 are included as the 'current' year flows.

A3.6 MILTON KEYNES TRAFFIC MODEL

Milton Keynes Council with English Partnerships has developed a traffic model covering the whole of the 'City' area of Milton Keynes. The model's current base year is 1999 and has a forecast year of 2010. The model is an AM weekday peak period model covering 7am to 10am. In due course it will be further developed to cover the off peak and PM peak period (16.00 to 19.00). The AM peak period includes upgrading the model to include data collected in 1999.

The results from the 1999 monitoring programme, showing the AM peak hour flows are included in the Tables 3.8 to 3.13 below. These are compared to the forecast 'do minimum' flows from the MK Traffic Model for 2010.

The percentage change in traffic from 1999 to 2010 is also highlighted. The flows quoted are for the peak hour (8.00 am to 9.00 am) and included all vehicles except cycles and Passenger Service Vehicles (PSV).

TABLE 3.8 Milton Keynes City Cordon

Site No	Location	1999 8-9 am Flow	2010 8-9 am Flow	% change
14	1. A421 (Bottledump site)	2,172	2,500	15
59	2. C17 Calverton Road	591	226	-62
16	3. Queen Eleanor Street	1,857	2,612	41
50	4. A5 (A508/A422-H3)	4,663	4,641	0
58	5. Haversham Road	1,466	868	-41
2	6. Wolverton Rd (V10-M1 Bridge)	1,231	1,747	42
35 & 36	7. H3 (V10-M1 Bridge)	2,527	2,953	17
64	8. Willen Road (A422-H4)	1,013	2,765	173
9 & 15	9. A509 (H5/H6/A5130 - M1, J14)	5,336	2,276	-57
83	10. A421 (A5130-M1 J13)	2,648	2,420	-9
32	11. A5130 (A421-Wavendon)	1,565	1,048	-33
86	12. V10 (H10 - Station Rd)	1,458	1,601	10
53	13. A5 (H10 - Fenny Stratford Bypass)	4,494	4,869	8
12	14. Watling St (Simpson Rd-A5/A4146)	1,289	2,026	57
13	15. Stoke Road (A4146 - Windemere Dr)	1,082	809	-25
77	16. Drayton Road (Bletchley)	556	441	-21
76	17. Newton Road (Bletchley)	661	547	-17
	Total	**34,611**	**34,349**	**-1**

TABLE 3.9 Central Milton Keynes Cordon

Site No	Location	1999 8-9 am Flow	2010 8-9 am Flow	% change
69	Elder gate (H5 to Silbury Blvd)	237	448	89
-	V6 (H5 to Silbury Blvd)	N/A	2,656	-
98	Witan Gate (H5 to Silbury Blvd)	1,297	1,632	26
54	V7 (H5 to Silbury Blvd)	1,050	1,447	38
19 & 20	Secklow Gate (H5 to Silbury Bvld)	642	1,447	125
121	Silbury Blvd (Campbell Park North)	527	1,280	143
122	Avebury Boulevard (Campbell Park South)	386	1,258	226
23	Secklow Gate (H6 to Avebury Bvld)	608	962	58
55	V7 (H6 to Avebury Blvd)	1,345	1,430	6
99	Witan Gate (H6 to Avebury Blvd)	768	1,125	47
48	V6 (H6 to Avebury Blvd)	2,939	2,251	-23
	Total	**9,799**	**15,936**	**63**

TABLE 3.10 Central Milton Keynes Screenline

Site No	Location	1999 8-9 am Flow	2010 8-9 am Flow	% change
21	Silbury Blvd (V7 to Secklow Gate)	983	541	-45
22	Midsummer Blvd (V7 to Secklow Gate)	425	N/A	-
70	Avebury Blvd (V7 to Secklow Gate)	635	692	9
	Total	**2,042**	**1,233**	**-40**

TABLE 3.11 SW-NE Screenline

Site No	Location	1999 8-9 am Flow	2010 8-9 am Flow	% change
116	V1 (H7/H8)	717	1,280	79
117	V2 (H7/H8)	477	2,106	341
74	V3 (H7/H8)	1,329	2,164	63
28	V4 (H7/H8)	1,298	1,524	17
52	A5 (H5/H9)	2,469	7,236	193
49	V6 (H6/H7)	1,648	2,392	45
26	V7 (H6/H7)	920	674	-27
6 & 7	V8 (H6/H7)	1,857	1,879	1
127	V10 (H6/H7)	1,334	3,530	165
112	V11 (H6/H7)	1,588	2,817	77
	Total	**13,637**	**25,602**	**88**

TABLE 3.12 NW-SE Screenline

Site No	Location	1999 8-9 am Flow	2010 8-9 am Flow	% change
109	H2 (V5/V6)	698	365	-48
88	H3 (V5/V6)	1,808	2,792	54
42	H4 (V5/V6)	1,200	3,169	164
37 & 38	H5 (A5/V6)	2,345	1,391	-41
95	H6 (V4/V6)	3,590	3,220	-10
27	H7 (V4/V6)	1,800	2,363	31
39 & 40	H8 (V4/V6)	1,828	2,220	21
41	V6 (V4/A5)	1,713	1,814	6
10 & 11	V7 (H10/V4)	4,070	3,885	-5
	Total	**19,052**	**21,219**	**11**

TABLE 3.13 Milton Keynes Monitoring Sites Other Than Screen Lines & Cordons

Site Number	Location	1997 8-9 am Flow	2010 8-9 am Flow	% Change
	'H' ROADS			
31	H9 (V8 to V10)	754	3,375	348
63	H3 (V9 to V10)	2,346	4,594	96
65	H4 (V9 to V10)	1,067	1,329	25
67	H5 (A5 to V4)	902	1,226	36
82	H7 (V8 to V10)	1,058	2,716	157
87	H8 (V2 to V3)	2,156	2,142	-1
90	H4 (V10 to V11)	612	1,697	177
94	H4 (V4 to V5)	1,133	2,070	83
96	H10 (A5 to V7)	1,999	2,104	5
97	H5 (V9 to V10)	1,780	1,941	9
100	H6 (V8 to V10)	1,526	1,743	14
101	H8 (V8 to V10)	2,907	3,869	33
102	H5 (V10 to V11)	1,654	1,530	-7
103	H10 (A5 to V10)	4,072	2,607	-36
105	H5 (V2 to V3)	847	2,321	174
106	H7 (V2 to V3)	1,171	1,084	-7
107	H6 (V2 to V3)	889	922	4
115	H9 (V11 to A5130)	2,188	2,264	3
119	H9 (V11 and A5130)	2,711	2,118	-22
123	H8 (V1 to V2)	1,527	1,972	29
	'V' ROADS			
4	V4 (H4 to H6)	2,228	3,460	55
5 & 18	V8 (H4 to H5)	1,640	3,553	117
17	V7 (H4 to H5)	1,179	1,921	63
29 & 30	V8 (H8 to H9)	807	1,309	62
33	V4 (H8 to V6)	1,945	984	-49
43 & 44	V6 (H8 to H9)	2,073	1,198	-42
45	V7 (H8 to H9)	1,772	3,294	86
46	V6 (H4 to H5)	1,432	1,926	34
60	V4 (H1 to H2)	1,100	2,225	102
61	V5 (H1 to H2)	1,338	1,499	12

66	V9 (H4 to H5)	735	1,268	72
79	V10 (H4 to H5)	1,344	2,505	86
108	V6 (H2 to Newport Rd)	1,202	1,595	33
110	V4 (H3 to H4)	974	3,509	260
111	V11 (H4 to H5)	1,310	2,862	119
113	V10 (H8 to H9)	1,493	1,771	19
114	V11 (H8 to H9)	1,853	2,236	21
	NON CITY			
1	New Bradwell, Newport Rd	759	2,425	219
25	A5130 (H6 to H8)	920	1,554	69
51	A5 (H3 to H5)	3,689	6,746	83
56	Water Eaton (Plough)	2,552	958	-62
62	New Bradwell(Bradwell Rd)	217	54	-75
75	Whaddon Way	212	298	41
78	Bletchley (Buckingham Rd)	1,050	864	-18
83	A421 (J13 Link)	2,648	1,747	-34
118	A5130 (H6 to H8)	1,220	1,464	20
120	A5 (H9 to H10)	4,504	3,941	-13
124	Bletchley (B4034)	325	737	127
125	Newton Rd (South of A421)	326	543	66

A3.7 MODEL DETAILS - DATA SOURCES

The Milton Keynes Traffic Model has been developed over many years. Its base year forecast is updated annually to reflect the results of the comprehensive traffic-monitoring programme. Recently it has incorporated data from a 1997 household survey covering the whole Milton Keynes Council area. A complete external cordon survey was undertaken in 1999. This data has been incorporated into the model.

The model uses the latest version of 'SATURN' (version 9.5) and operates in simulation mode for the whole of the City and Newport Pagnell area.

Planning data has been supplied by the Land Use Strategy and Transport Division of the Milton Keynes Council's Environment Directorate and incorporates the latest figures from the Council's monitoring programme on population, housing employment and retail land use.

A3.8 FORECAST GROWTH - BASE YEAR

The model uses regression analysis to develop relationships between planning data and traffic generation and attraction. This is then combined with observed traffic movements from origin and destination surveys to produce a matrix of interzonal movements. The model is disaggregated into over 200 distinct traffic generation and attraction zones. Traffic movements are then assigned to a representation of the Milton Keynes road network.

The resultant flows are validated against independently observed traffic flow data. The model calibration and validation adheres to advice produced in the Design Manual for Roads and Bridges Volume 12 Traffic Appraisal of Road

Schemes. Flows from the model represent all vehicles. The model does not distinguish between vehicle types.

A3.9 FORECAST GROWTH - FUTURE YEAR

Processes similar to the base year are used to forecast future year traffic. Forecast changes to land use including population growth and employment changes are input and the resulting levels of generations and attractions at zonal levels are produced. This matrix of movements is then assigned to a representation of the road network, which incorporated any forecast or programmed changes e.g. road construction, traffic management measures or road closures. Traffic passing through Milton Keynes (external to external trips) has NRTF factors applied to it. Currently, this is NRTF low growth based on advice given from DETR.

Forecasts from the model have been used extensively. Results from the model have been used as supporting evidence at Public Inquiries.

The forecast year is 2010. This year has been chosen as it is regarded as representing the year when the current planned development of Milton Keynes is completed.

The forecasts do not include any effects of policy initiatives or modal shift. They represent a ‘do nothing’ scenario based on unrestrained use of private vehicles. The forecasts do not allow for ‘time shift’ of trips either. This is based on the fact that although traffic condition worsen significantly over the forecast period, the congestion experienced, although severe in a few places, does not reach levels experienced in many other towns and cities, where behavioural responses may be inclined to time shift or journey suppression. It was decided that on this basis ‘matrix capping’ other than using NRTF low growth assumptions was not appropriate.

Further information on how we have developed our forecasts is available from Brian Matthews on (01908) 252064 or via e-mail (brian.matthews@milton-keynes.gov.uk).

A4. ROAD TRAFFIC REDUCTION - TARGETS TO REDUCE TRAFFIC GROWTH

A4.1 ROAD TRAFFIC REDUCTION TARGET

The overall road traffic reduction target is to reduce the rate of growth in the car-based journey to work, thereby maintaining levels of traffic experienced today in a thriving economic environment. Outlined below are our targets that will deliver this reduction. Following this section is an assessment of how our strategy measures will contribute to achieving our targets.

A4.2 SUSTAINABLE INTEGRATED TRANSPORT STRATEGY TARGETS

Milton Keynes' Sustainable Integrated Transport Strategy (SITS) states the targets for a significant modal share from the car to alternative modes of transport. The goal is to reduce car use for the journey to work from 77% in 1997 to 62% by 2006 and 55% by 2011.Our journey to work targets for the SITS are as follows:

TABLE 4.0 Milton Keynes Transport Targets

MODE	1997	2001	2006	2011
	%	%	%	%
Car	77	71	62	55
Public Transport	12	15	20	25
Cycling	3	6	10	12
Walking	7	7	7	7
Motorcycling	1	1	1	1
Total	**100**	**100**	**100**	**100**

These are ambitious targets but ones the Council are committed to achieve. We do not expect that these will be met uniformly throughout the Council area. We see particular areas as making different contribution i.e. work journeys to Central Milton Keynes will need to be reduced significantly more than the overall target if we are to achieve the Council wide target. We have developed additional complementary targets indicating the contribution peak hour travel targets for CMK can make to our overall targets for reductions.

TABLE 4.1 Peak Hours Travel Targets to/from CMK

Mode	Current split	Target for 2006	Target for 2011
Car Driver	70%	60%	50%
Car passenger	11%	15%	15%
Bus	9%	10%	15%
Park & Ride	-	4%	5%
Rail	3%	3%	4%
Walk	4%	4%	5%
Cycle	2%	3%	5%
Other	1%	1%	1%

It must be noted that we do not expect to see large-scale reductions in the level of traffic below that present now. The tables below highlight that our measures will primarily halt the rate of growth in traffic, only reducing the total journey to work by car slightly from current levels.

A4.3 JOURNEY TO WORK

In order to monitor reductions in reducing car commuting, we first need to know how people get to work. The 1991 Census showed that almost 80% of journeys to work in Milton Keynes were by car - much higher than the South East regional average of 60%.

Traffic congestion is worst during the peak periods and is mainly caused by commuting traffic. Since most employment is, and will continue to be, within the City, congestion and pollution problems will continue to be concentrated in this area. Commuting traffic also aggravates the areas with notable air quality problems, the M1 corridor and the A509 through Olney.

Past trends have been for the proportion of journeys to work made by car to increase and for the proportion made by public transport, cycle, and on foot to fall. Our Strategy must ultimately reverse this trend, if it is to be successful. We will survey journey to work patterns at regular intervals, the next due within the life of our LTP, alongside our annual traffic monitoring programme.

The table below translates the modal split targets into the estimated number of work journeys.

TABLE 4.2 Estimated Number of Work Journeys

MODE	1997	2001	2006	2011
Car	93,100	94,000	91,000	89,400
Public Transport	14,500	19,900	29,300	40,600
Cycling	3,600	7,900	14,700	19,500
Walking	8,500	9,300	10,300	11,400
Motorcycling	1,200	1,300	1,500	1,600
Total	**120,900**	**132,400**	**146,800**	**162,500**

Currently only 1% of people travel to work by motorcycle, we don't expect this figure to alter by 2011.

We believe our targets are realistic. If we achieve them, the number of journeys to work by car in 2011 will be less than now. This would be a considerable achievement when set against the long-term trends and current commuting behaviour in Milton Keynes. We will review our journey to work targets, from time to time. They are not maxima and we will try to improve on them.

A5. MEASURES TO ACHIEVE TARGETS

A5.1 INTRODUCTION

Milton Keynes Council's Local Transport Plan emphasises the vision statement contained in our SITS. The vision's aims are,' *to open up Milton Keynes by making it a place where everyone can afford to move around conveniently, where economic, social and cultural life can flourish, whilst damage to our environment is minimised.'*

Our LTPs strategy is based on providing alternatives to cars for journeys to work, in line with delivering our SITS targets. The measures include the provision of Park and Ride, Quality Bus routes and better and additional facilities and infrastructure for pedestrians and cyclists. Complementary measures such as a CMK car share scheme and the promotion of 'green' transport plans for existing and future major employers are outlined. These initiatives are a primary function of a dedicated 'Green' Transport co-ordinator.

A clear and well-defined demand management programme for CMK will also assist the measures. Our parking strategy has been developed so that before the end of our first LTPs life, all public parking in CMK will have a charge associated with it. We are members of the Development Charging Partnership, set up by the Government to develop workplace-parking and congestion charging. We are developing a scheme with the intention to introduce workplace charging in CMK within the life of our LTP, (subject to necessary legislation and extensive consultation).

A5.2 IMPACT OF MILTON KEYNES' LTP STRATEGY

In assessing the impact of our strategy we have worked closely with University College London, in particular staff from the ESRC Transport Studies Unit led by Professor Phil Goodwin. The following analysis draws both on their research and our detailed knowledge of local conditions.

Our Local Transport Plan Strategy considers a range of policies to be introduced. In general, it is received wisdom that a package of measures will be more effective than one-off policy measures. However, there is a danger that none will achieve the critical mass to be publicly successful if resources are spread too thinly to make any alternative truly attractive. Worse, the effort and public funds invested in each separate policy measure may actually compete inefficiently.

Four important insights emerge regarding phasing:

- The availability and price of car parking will be critical in determining whether car users consider other options at all.

- 'Carrot' measures need to be in place before 'sticks', but the implementation of sticks needs to occur sufficiently quickly after the carrots so that the carrots do not become discredited as ineffective, because no one uses them.

- Policies that can achieve the greatest changes should be implemented first as part of encouraging a cultural shift away from the car. This will create the conditions to make other, more marginal, policies more likely to succeed.

- Achieving substantial modal shift is a long-term process.

Our strategy offers a complementary mix of measures that will reduce car travel into Milton Keynes in the peak hour, namely:

- car sharing;
- improved bus services;
- cycling and walking; and,
- Park and Ride.

Each operates over different distances, although there are potential overlaps between all the alternatives. Hence, an essential problem is that travellers who are prepared to change mode may choose more than one potential alternative, so if more than one alternative mode is promoted, the total potential modal shift to each will not be experienced.

A5.3 CAR-SHARING

A summary of existing best practices elsewhere and the current extent of car sharing in MK suggests four possible levels of target, to be achieved by 2011.

- The average success exhibited by existing schemes, i.e., 4.9% car drivers become active sharers, so reducing car use by 2.5%.

- Increase of MK car occupancy to the national average of 1.21, which would result in 4.1% reduction in car use.

- Double the average success exhibited by existing schemes, i.e., 9.8% car drivers become sharers, so reducing car use by 4.9%.

- Reduce traffic by the level shown by one of the few UK GTP schemes for which there is monitoring information, which would increase MK car occupancy to 1.25, and reduce car use by 7.2%.

An appropriate target would seem to be to achieve an initial involvement in car sharing of 4% of car drivers (resulting in a 2% reduction in car use). The target would increase to between 9.8% and 14.4% of car users being active members of a car-sharing scheme by 2011 (with associated traffic reductions of 4.9-7.2%).

Table 5.1 demonstrates the introduction of a car-sharing scheme in 2001, with initial take-up being 4% of car drivers joining, followed by 0.5% of drivers per annum increase in membership.

TABLE 5.1 Reductions in Peak Hour Car Trips With Car-Sharing

Year	A.M. Peak car-trips to CMK given no modal shift	Active scheme members	Pairs of drivers sharing	Rate of traffic reduction (%)	Modal-share of car trips (%)	Implied no of peak car-trips to CMK
by 1999	8,900	0	0	0.0	70.2	8,900
by 2000	9,128	0	0	0.0	70.2	9,128
by 2001	9,435	0	0	0.0	70.2	9,435
by 2002	9,737	389	195	2.0	68.8	9,542
by 2003	10,039	502	251	2.5	68.4	9,788
by 2004	10,348	621	310	3.0	68.1	10,038
by 2005	10,657	746	373	3.5	67.7	10,284
by 2006	10,965	877	439	4.0	67.4	10,526
by 2007	11,274	1,015	507	4.5	67.0	10,767
by 2008	11,851	1,185	593	5.0	66.7	11,258
by 2009	12,427	1,367	683	5.5	66.3	11,744
by 2010	13,004	1,560	780	6.0	66.0	12,224
by 2011	13,350	1,736	868	6.5	65.6	12,482

By 2011, the modal-share of car use could decline to 66% as a result of car-sharing, despite an overall increase in car-trips. This assumes the scheme is implemented according to best practice, and that conditions for car use become less attractive. The introduction of dedicated car share spaces could be particularly important and will be reviewed as part of our parking strategy especially as we continue to explore workplace-parking charges.

A car-sharing scheme is relatively inexpensive to set up compared with the other options. However, promotional efforts need to be considerable, as two individual decisions to car-share only remove one car trip, whilst with other modal shifts, two decisions not to use a car remove two car trips.

A5.4 PUBLIC TRANSPORT-BASED SOLUTIONS

Our SITS modal split target is for a 231% increase in work journeys by public transport within the MKC area by 2011. For CMK, this would require an increase from around 1,800 trips in 1998 to around 4,500 trips in 2011.

Analysis suggests Park and Ride could assist in meeting this target, by intercepting the final part of car trips. Dedicated park and ride could contribute up to a third of the mode-switch required, although, in practice, Park and Ride implementation is likely to make the car to conventional bus mode-switches require greater incentives.

An operating environment conducive to increasing the modal share of conventional bus services in MK might be constituted by:

- restricting Midsummer Boulevard to bus, cycle, and taxi use only, as a high-profile centre-piece to the public transport network - the relative priority brought by a bus-only central street seems to be key element in the success of cities such as Brighton and Oxford;
- a continuation of the bus-replacement programme;
- bus lanes, or even bus-only carriageways on CMK approach roads;
- a policy target to increase principal bus services to a minimum daytime operating frequency; and,
- competitive fares, to enable buses to compete with (rising) CMK parking charges and the possible introduction of Park and Ride.

Experience suggests these measures might be expected to provide a 60% increase in overall bus use by 2011. However, only part of the additional patronage will be trips transferred from car.

Hence, by 2011, 4% of the total car trips that would otherwise be expected to emerge would be attracted to bus, with the modal share of car reduced from 70% to 67%.

TABLE 5.2 Potential for Quality Bus Initiatives to Reduce Car Traffic During the a.m. Peak

Year	Car to CMK if no mode shift	Car trips made by bus	% Car-trips intercepted	Mode-share of car	Peak car trips to CMK net of shift to bus
by 1999	8,900	n/a	n/a	70.2	n/a
by 2000	9,128	30	0.3	69.9	9,098
by 2001	9,435	61	0.7	69.7	9,374
by 2002	9,737	95	1.0	69.5	9,642
by 2003	10,039	131	1.3	69.2	9,908
by 2004	10,348	169	1.6	69.0	10,179
by 2005	10,657	208	2.0	68.8	10,449
by 2006	10,965	250	2.3	68.6	10,715
by 2007	11,274	294	2.6	68.3	10,980
by 2008	11,851	348	2.9	68.1	11,503
by 2009	12,427	405	3.3	67.9	12,022
by 2010	13,004	466	3.6	67.6	12,538
by 2011	13,350	522	3.9	67.4	12,828

The Quality Bus Initiative (QBI) process could achieve one-third of the SITS public transport target. In addition, combining QBI with related measures, most notably, better bus-rail integration (either in practice or through a marketing approach) would increase the potential for greater modal switch.

A5.5 CYCLING

Within SITS, cycling is targeted as undergoing the largest proportional increase in use: 540% by 2011 - very considerable growth in both proportional and absolute terms.

Experience from other European countries suggests that cycling can be expected to increase its modal share by about 0.8% per year where it is treated as a priority. Work from the Nottingham Cycle Challenge project suggested that it might increase by a similar amount and evidence from several Green Transport Plans also supports this figure as roughly accurate, although perhaps likely to be achieved over several years rather than one year.

In terms of costs, the Nottingham data provides a potential measure of what is needed in terms of resources to improve cycle facilities at work.

Currently, there are just over 13,000 work trips made to CMK each weekday morning peak.

There is a clear need to provide better cycle routes within (and through) CMK. Identifying additional funds for infrastructure that would make an important contribution to achieving the SITS targets for cycling.

Table 5.3 suggests that the SITS modal split target for cycling (12% of trips to CMK in 2010) is mostly achievable, but very high rates of modal transfer of short and medium-range car trips would be necessary. Four conditions are likely to be necessary to achieve such a shift;

- determined political will;
- a less attractive car use environment;
- adequate investment in cycling facilities; and,
- lack of competition from other modes.

TABLE 5.3 Implications to Short-Range Car Trips of Increasing Cycling

Year	New cycle trips due to mode-shift from car	Person-trips by car given current mode-split		% of car trips that would need to be cycled	
		From within 3 km of CMK	from 3-7 km of CMK	from within 3 km of CMK	from 3-7 km of CMK
by 1999	0	1,422	5,058	n/a	n/a
by 2000	0	1,458	5,188	n/a	n/a
by 2001	54	1,507	5,362	1.8	0.5
by 2002	111	1,556	5,534	3.6	1.0
by 2003	172	1,604	5,705	5.4	1.5
by 2004	236	1,653	5,881	7.1	2.0
by 2005	304	1,703	6,057	8.9	2.5
by 2006	375	1,752	6,232	10.7	3.0
by 2007	450	1,801	6,407	12.5	3.5
by 2008	541	1,893	6,735	14.3	4.0
by 2009	638	1,986	7,062	16.1	4.5
by 2010	741	2,078	7,390	17.8	5.0
by 2011	837	2,133	7,587	19.6	5.5

A5.6 WALKING

SITS has a policy aim for increasing the number of walkers in line with the current modal share exhibited.

Currently, walking to work in the Milton Keynes area overall appears to be roughly comparable with national trends (11% of commuters walk to work according to the 1997 household survey), although walking accounts for a below-average number of commuter trips into CMK.

According to data for a range of European situations, the average walk trip is about 1 km, and UK statistics suggest that 70% trips to work from within 1 mile are made on foot.

Analysis reveals that only 40% of trips into CMK from within 1 km are made on foot and that there are currently about 755 person-trips by car made per weekday from within 1 km of CMK (made using 650 cars, at car occupancy of 1.16).

Increasing the number of people who commute on foot requires positive policies to enhance the attractiveness of walking. However, at least in statistical terms, the current low level of walking means there is an above average potential for improvement, that might be achieved by a range of

measures to improve safety and convenience, and to advertise the health benefits walking provides.

Our strategy to achieve our SITS target will be to concentrate on achieving the national average for the number of commuter trips shorter than one mile walked. This would increase the total modal share of walking to CMK in the morning peak to 6.8% by 2011. The overall modal share of car use would fall by 3%.

TABLE 5.4 Implications of Increase in Short-Range Trips Walked to National Average on Overall Modal-Split

Year	Proportion of all person trips to CMK walked (%)	Overall car traffic reduction (%)	Modal share of car
by 1999	3.9	n/a	70
by 2000	3.9	n/a	70
by 2001	3.9	n/a	70
by 2002	4.2	0.4	70
by 2003	4.5	0.7	70
by 2004	4.8	1.1	69
by 2005	5.1	1.5	69
by 2006	5.4	1.8	69
by 2007	5.6	2.2	68
by 2008	5.9	2.6	68
by 2009	6.2	2.9	68
by 2010	6.5	3.3	67
by 2011	6.8	3.7	67

A5.7 PARK AND RIDE

Temporary Park and Ride services that operated in 1998 and 1999 in Milton Keynes mainly intercepted shopping trips. However, future implementation of widespread parking restraint measures in CMK will make the interception of commuters by Park and Ride possible. At the same time, greater space availability for shoppers in CMK, due to demand management measures will reduce Park and Ride's attractiveness to these users.

With these demand management measures in place it is suggested that the interception of commuter car trips without a reserved parking opportunity by Park and Ride could rise from 0.5% to 14% by 2011. The calculation takes into account both rising peak-time demand and increased parking capacity.

Interception at the higher end of this range by the end of the period would be sufficient to mean that the forecast peak-time parking capacity shortfall in

CMK would not emerge. However, this is not to say that Park and Ride is the only policy that could avoid commuter parking capacity problems or that, alone, it would be sufficient.

It is proposed to eventually charge for Park and Ride. Even with charges applied there is a risk of attracting people who currently use public transport (or who would use improved public transport) to use Park and Ride instead. Without careful attention to charging regimes, the diversion effect from other public transport services will grow with time.

TABLE 5.5 Trips Eligible for Interception by Park and Ride and Likely Interception Rates 1999-2011

Period	Peak cars not parked in reserved spaces	Diversion rate of commuter cars without reserved parking	Expected parking acts at P&R sites	% of total a.m. peak car flow to CMK intercepted
1999	5,490	0.5	27	0.3
by 2000	5,056	0.5	25	0.3
by 2001	5,159	0.5	26	0.3
by 2002	5,296	4.3	228	2.3
by 2003	5,433	5.3	285	2.8
by 2004	5,534	6.2	343	3.3
by 2005	5,635	7.2	403	3.8
by 2006	5,735	8.1	465	4.2
by 2007	5,836	9.1	528	4.7
by 2008	6,089	11.0	667	5.6
by 2009	6,342	11.9	755	6.1
by 2010	6,595	12.9	847	6.5
by 2011	6,716	13.8	927	6.9

A5.8 COMPARISON OF MODE-BASED ALTERNATIVES WITHIN THE LTP

Table 5.6 below indicates the relative performance that could be expected from:

- introducing a dedicated Park and Ride service;
- an amended SITS strategy for bus quality enhancement;
- a scheme to promote car sharing;

- investment in cycling facilities and promoting their use, based on the SITS proposals; and

- the introduction of a strategy to invest in, and promote, more walking to work.

TABLE 5.6 Ability of Various Modes to Reduce Demand for Car Travel to CMK 2001-2011

Year	Demand for peak car trips to CMK	% of total a.m. peak car traffic that could be avoided by:				
		Dedicated P&R	Bus quality enhancements	Promoting car-sharing	Promoting cycling	Increasing walking
by 2001	9,435	0.3	0.7	0	0.6	0
by 2002	9,737	2.3	1.0	2.0	1.1	0.4
by 2003	10,039	2.8	1.3	2.5	1.7	0.7
by 2004	10,348	3.3	1.6	3.0	2.3	1.1
by 2005	10,657	3.8	2.0	3.5	2.9	1.5
by 2006	10,965	4.2	2.3	4.0	3.4	1.8
by 2007	11,274	4.7	2.6	4.5	4.0	2.2
by 2008	11,851	5.6	2.9	5.0	4.6	2.6
by 2009	12,427	6.1	3.3	5.5	5.1	2.9
by 2010	13,004	6.5	3.6	6.0	5.7	3.3
by 2011	13,350	6.9	3.9	6.5	6.3	3.7

The bus and cycle proposals could be expected to show slight benefits in the present year, as route and corridor-specific schemes are already in progress. Other measures, including dedicated Park and Ride could begin to show benefits by 2002, assuming they are introduced by the end of the present year.

Park and Ride, car sharing and cycling measures all show similar potential to achieve traffic reduction by 2011, whilst it is suggested that public transport and walk measures would achieve about two-thirds their level of modal shift. However, the public transport estimate does not include the possibilities for increasing the use of rail to access CMK.

An important point is that the potential for each option has been assessed independently. In practice the 'same people' might in fact make some of the indicated mode-switches from car to the various modes. *Hence, the columns cannot be summed horizontally to give estimates of the combined traffic reduction that might be possible with a range of mode-specific measures*.

A6. MONITORING AND REVIEW PROCEDURES

A6.1 INTRODUCTION

The scope and coverage of the current traffic-monitoring programme is described in detail in the introduction to Section 3. These 100 plus permanent sites provide excellent coverage throughout the City and City fringe areas. Recently, Milton Keynes Council has added further permanent loop counters on Wolverton Road, Newport Pagnell, on the A422 near Chicheley and B526 near Gayhurst. In addition to the permanent sites, the Council has the ability to count traffic at various locations by the use of portable Automatic Traffic Counters (ATC's).

The main LTP highlights, in our set of Causal Chain diagrams, expected outcomes of our various strategy measures. Our monitoring programme has been developed to measure these impacts. Our Causal Chain diagrams are included as Appendix 1 to this report.

As we progress our strategies outlined in our LTP we will review and adjust our traffic counting programme accordingly, although at this stage we feel we have the coverage as widespread as necessary. It is important that we understand fully the effects of our schemes not only on the numbers of vehicles but also on other modes.

Monitoring of how people travel in and around Milton Keynes will be a key role for the Council. Monitoring of vehicle occupancy will form an important aspect of our monitoring programme especially as we develop our CMK car share scheme.

The major bus and rail operators have agreed to supply information on the numbers of passengers they issue tickets to (subject to commercially sensitive information).

We have introduced permanent cycle counters around CMK (June 2000, see Figure C), and will investigate how we can better monitor walking. Our 1997 household survey indicates current usage. Local business staff surveys in association with green commuter plans will also add to our understanding.

We will also look at whether shifts in time of travel occur. Our strategy is aimed at reducing the total share of car trips for the journey to work. We will need to satisfy ourselves that any reductions measured during a particular period are not just a result of people re timing their journeys. Data is currently collected at least at hourly intervals and at many sites is collected at 15 minutes intervals. This will allow us to assess if there is time shifts in traffic.

A6.2 STRATEGY TESTING

We intend to develop the MK Traffic Model's capabilities to test and forecast the effects of our schemes so that the schemes can be 'fine tuned' to deliver the results we aim for.

We have expanded the model's coverage from the AM peak hour (8.00am to 9.00am) to the three hour AM peak period (7.00am to 10.00am). We intend to further expand the model to cover the PM and off peak periods. We have as stated earlier recently incorporated new data from a cordon survey and household survey.

Over time, the model will also be developed to forecast behavioural changes of transport user by incorporating stated and revealed preference surveys into its forecasting capabilities.

A6.3 MONITORING REPORTS

We will produce a Milton Keynes Transport Monitoring Report for 2000 this autumn. This will bring together many of the statistics highlighted in this report. Our intention is to widen the scope of the data reported on to include all aspects of transport in and affecting Milton Keynes Council area. Our report will highlight the progress of our performance indicators and approach to best value.

We will also await guidance on the requirements for monitoring LTPs and incorporate this into our monitoring programme.

LIST OF PLANS

APPENDIX 1

CAUSAL CHAIN DIAGRAMS

Diagram 1 Demand Management of Parking Causal Chain

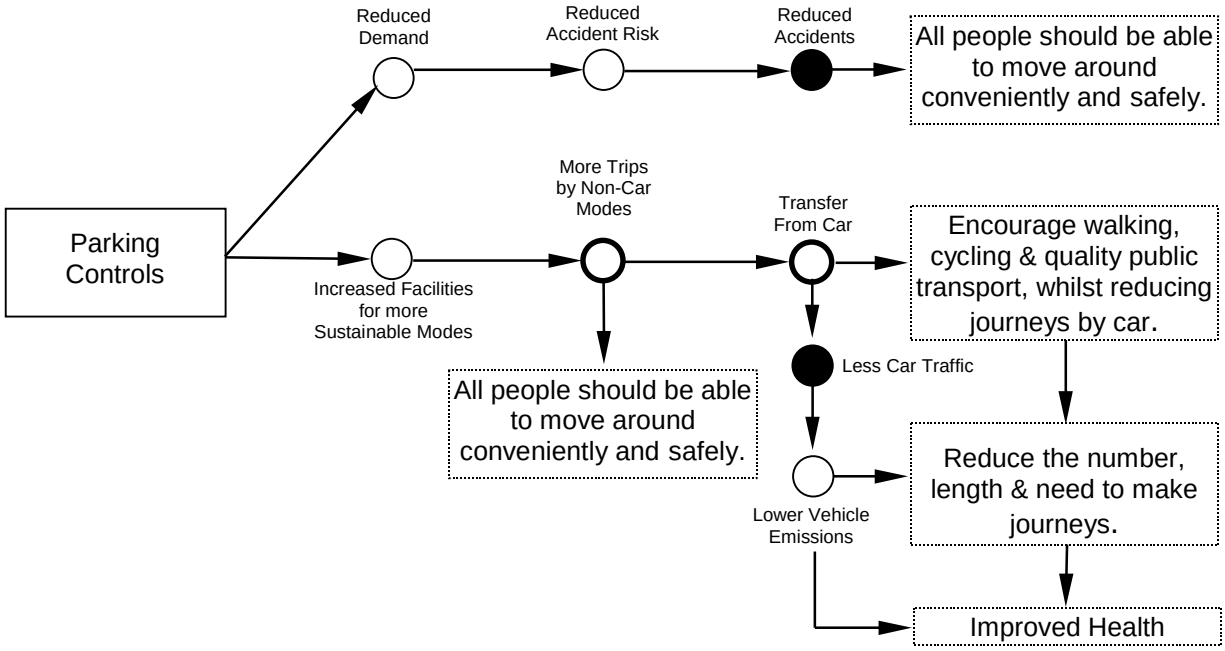
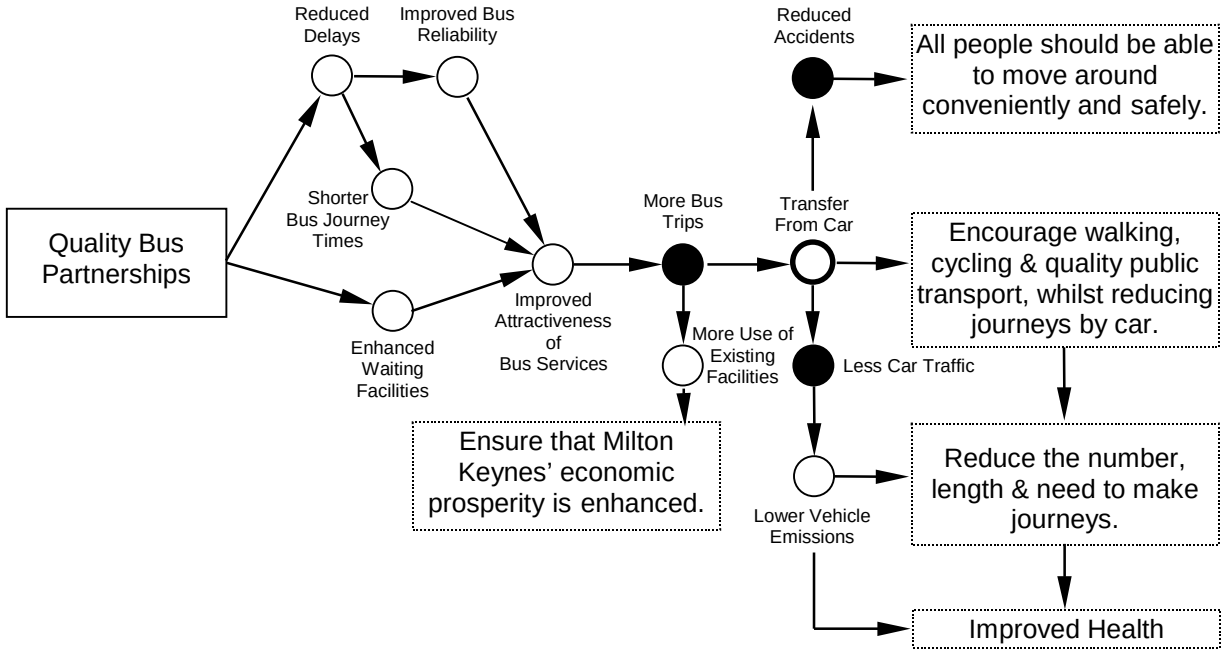


Diagram 2 Quality Bus Causal Chain



Key

Type of Measure Proposed

Objective

Assumed Effect

Effect to be Measured

Effect to be Measured or Modelled

Diagram 3 Park and Ride Causal Chain

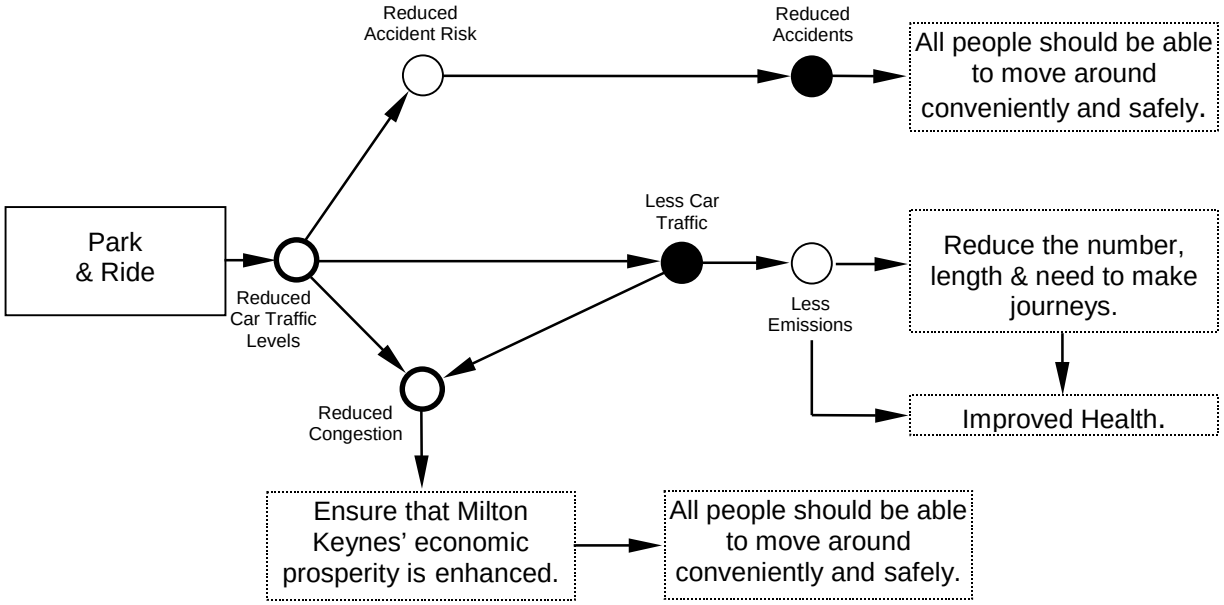
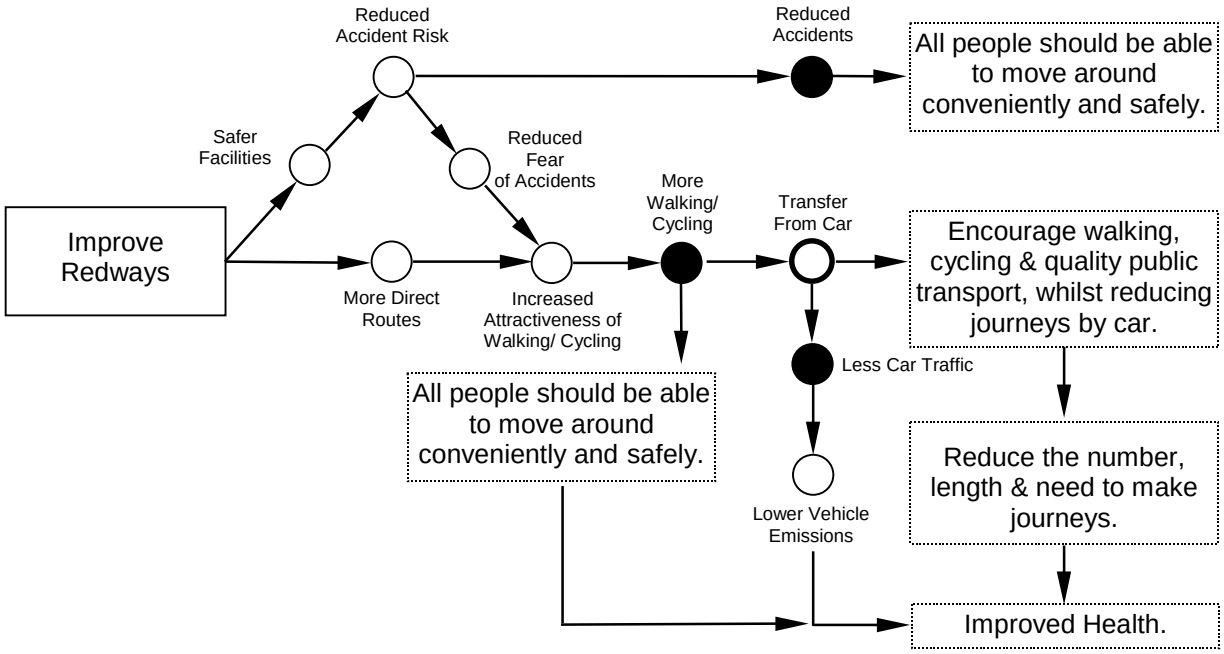


Diagram 4 Walking and Cycling Causal Chain



Key

Type of Measure Proposed

Objective

Assumed Effect

Effect to be Measured

Effect to be Measured or Modelled