Milton Keynes Council and English Partnerships

Public Transport Long Term Vision

Study Report – Draft

June 2003

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1 INTRODUCTION



1 Introduction

In July 2002 Faber Maunsell were appointed jointly by Milton Keynes Council and English Partnerships to develop public transport options for Milton Keynes with the view to the long term vision that sustainable transport should have a central role in the accessibility of Milton Keynes.

The objective of the Study was to develop and assess at least two strategic options for the long term development of city-wide Public Transport.

The Study was also to develop interfaces with other Studies which are in progress in Milton Keynes or in the sub-region, with the most recent being the Milton Keynes and Aylesbury Vale Growth Area Study, where extensive consultation with the Study team resulted in the enhancement of the focus of the land use options emerging from this Study.

This Study was undertaken in two stages. The first stage consider the key issues involved in the development of options leading to broad option definitions. These options were broadly costed and assessed in Stage 2 of the Study. This document reports on the whole of the Study process. Throughout this project, consultation with Stakeholders and the client group formed an integral part of the Study process.

This report is presented in ten further chapters following this introduction. Chapter 2 provides a description of the existing conditions in Milton Keynes. Chapters 3 and 4 provide the main background of planned growth in Milton Keynes and sets out issues and options available to assist with the long term operation of the City. Chapter 5, sets out the vision at an overall level. Chapters 6 and 7 describe te testing and appraisal of the options considered. Sections 8, 9 and 10 set out the path to realising the long term vision with a summary of recommended measures set out in the final Chapter.

2 GROWTH IN MILTON KEYNES



2 Milton Keynes Urban Form and City Structure

2.1 CITY STRUCTURE AND TRANSPORT IN EVOLUTION

The masterplan for Milton Keynes was based on a desire to ensure that the private motor vehicle could be used without creating problems of congestion, or problems of environmental intrusion. This was achieved by three means in particular:

- Provision of a grid network of high capacity, high speed highways at approximately one kilometre intervals, without frontage development and without traffic signal intersections;
- Distribution of employment and other non-residential activities throughout the grid to balance traffic flows across the network;
- Ample parking at all destinations, including Central Milton Keynes.

The impact of such full-some provision for the private car on the take-up of other modes of travel in Milton Keynes was not appreciated by the masterplanners of the time, and has not registered as an issue of major concern until recently. Transport planning practice has changed and there is now greater awareness of the interaction between urban form and transport, and of competition between travel modes.

The urban structure of Milton Keynes is ideally suited to use of the car. As in all structures that are suited to the car, they are not well suited either to walking or to public transport, because the trip origins and destinations are too far apart and too dispersed. Cycling is feasible, because this has the flexibility of the car, and caters for the majority of internal trip distances. The low level of cycling in Milton Keynes is a product of both cultural factors and the ease of car use.

Another feature of the structure of Milton Keynes that works against the operation of public transport is the configuration of the grid layout. The main grid roads have no frontage development, and trip origins and destinations lie at a distance from any bus stops located on these roads. If bus stops were located on the grid roads, and assuming that access to them is direct (which it is not), more than 40% of the grid square would lie outside the 300 metre[1] walking catchment of bus stops.

[1] The usually accepted standard maximum walk distance to bus stops of 400 metres is considered inappropriate where the aim is to provide an alternative to the car, and to encourage bus use by people with access to a car. The 400 metre figure relates to the acceptable walking distance stated by public transport users, the majority of whom (outside London) do not have a car at their disposal. Moreover, research in Switzerland has found a rapid drop in public transport use beyond a 300 metre catchment. For this study, and in the Milton Keynes context the 300 metre catchment is considered appropriate.

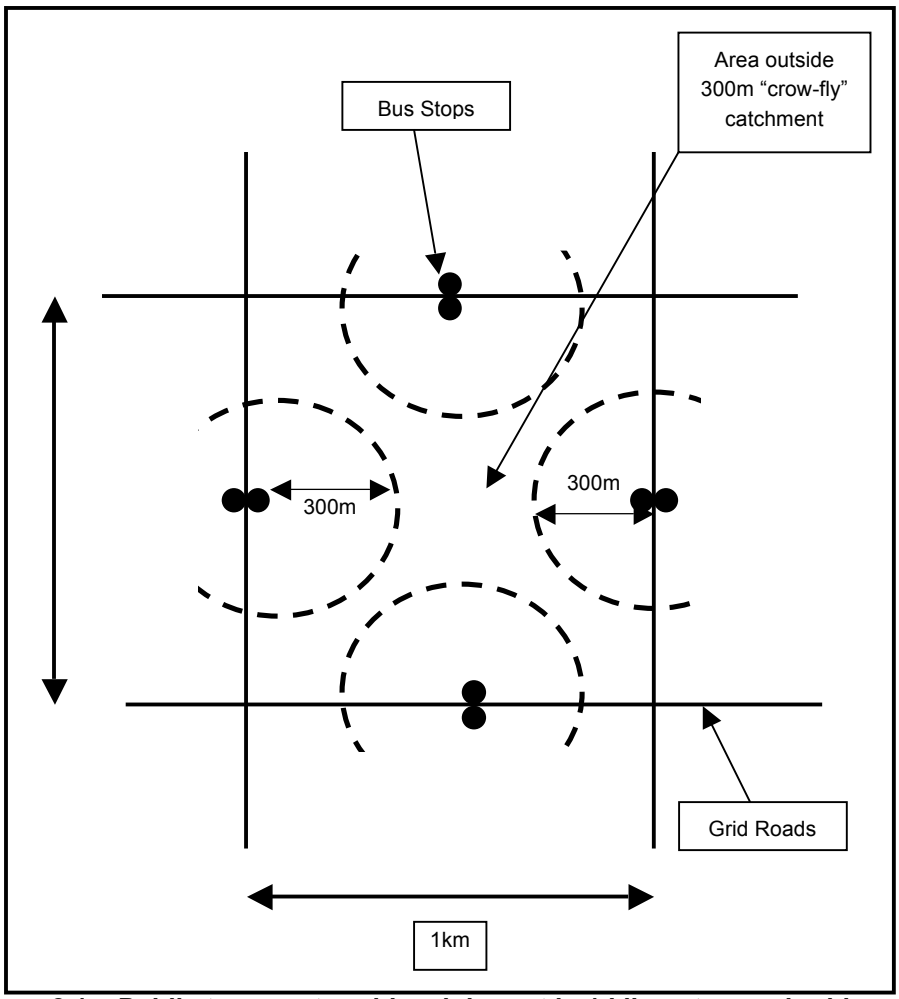


Figure 2.1 Public transport problem inherent in 1 kilometre road grid.

Development within the grid squares is for the most part arranged to discourage the passage of through traffic. The internal road layouts are therefore unsuited to bus operation. As a consequence, bus routes are either remote from users if they use the grid roads, or tortuous and inefficient if they penetrate the grid squares in order to get closer to users.

Competition between the travel modes is better understood than when Milton Keynes was developed. The key to this is that trips rates (the number of trips undertaken per person per day) are more or less constant at or about 3 trips per person per day. This means that if the number of trips by one mode increases, this will be at the expense of an equal number made by other modes. In the Milton Keynes context, as car ownership has risen (the level is now one of the highest in Britain), people have been making an increasing proportion of their journeys by car, and this has reduced trip making by other modes.

In combination these factors have led to a situation where public transport in Milton Keynes is used for the most part by people who do not have access to a car. It is a marginal mode of transport, disregarded by the majority, and relied upon only by those who by reason of age, disability, or low income, do not have a car at their disposal.

The conclusion here is that Milton Keynes has a structure that is not conducive to the operation or use of public transport. As discussed later, this means that changes will be needed if public transport is to play anything other than a marginal role.

2.2 CURRENT TRANSPORT PATTERNS IN MILTON KEYNES

This section provides a brief description of transport conditions within Milton Keynes. Recent transport demand surveys have been conducted on behalf of the Milton Keynes Council, as a part of the development of a Multi-Modal transport model of Milton Keynes. All available results of these surveys have been incorporated in analysis undertaken for the current Study. In addition, there is a significant body of traffic flow information from earlier traffic studies and the Milton Keynes traffic monitoring report which has also been used for the analysis included in this Study.

Using material which have been made available, a general description of the supply and demand for private and public transport is set out below.

2.2.1 Highway Traffic

Parking

Parking spaces in Central Milton Keynes are almost fully accounted for and a complete inventory of these spaces is available. This is rather unusual and is the result of the control of nearly all of the parking spaces jointly by two organisations which cooperate with very closely (Milton Keynes Council and English Partnerships) and critically due to the Council making an early decision in 1997 that monitoring the use of the car parking spaces was essential in assisting the development of the CMK parking scheme. This, therefore, provides an excellent opportunity to exercise control over the volume and the type of spaces available in CMK as well as tariffs charged.

There are over 25,000 parking spaces in Central Milton Keynes, a distribution of which is set out in Table 2.1, and presented as Figure 3.1. A quarter of the parking spaces in CMK are free public spaces and around half of the spaces are surface pay and display or multi-storey spaces. Existing Multi-storey car parks are located

in blocks E3 and D3 which contain the main shopping and leisure elements of the City.

Table 2.1 - Parking provision in CMK

BLOCK	PUBLIC FREE	Pay & Display	MULTI-STOREY	OTHER	PRIVATE	TOTAL
A1	450	410	0	22	70	**952**
A2	0	356	572	153	716	**1,797**
A3	0	131	0	253	462	**846**
A4	458	358	0	16	0	**832**
B1	539	731	0	151	267	**1,688**
B2	0	865	0	98	301	**1,264**
B3	514	602	0	126	259	**1,501**
B4	-	0	-	0	314	**314**
C1	418	620	0	124	95	**1,257**
C2	0	792	0	76	264	**1,132**
C3	244	343	0	12	748	**1,347**
C4	585	611	0	37	384	**1,617**
D1	468	566	0	178	66	**1,278**
D2	62	281	0	69	0	**412**
D3	327	632	1,090	72	25	**2,146**
D4	401	431	0	293	18	**1,143**
E1	754	662	0	101	99	**1,616**
E2	578	592	0	56	0	**1,226**
E3	467	103	849	82	29	**1,530**
E4	26	1220	0	40	0	**1,286**
TOTAL	**6,291**	**10,306**	**2,511**	**1,959**	**4,117**	**25,184**
% Split	**25%**	**41%**	**10%**	**8%**	**16%**	**-**

Source: Milton Keynes Council Parking Survey (March 2003)

Parking in CMK is considered as 'easy' and poses a negligible cost to car based journeys into the centre for commuting and shopping trips. This situation fundamentally encourages car journeys. Outside of the CMK parking is plentiful and free in all of the grid squares with the exception of the hospital where a charge of £1 is made for four hours of visitor parking.

Milton Keynes Council, with the support of English Partnerships, are currently consulting on lower parking standards which, in the long term, would reduce the availability of parking in relation to total trips to CMK. The total trips will increase substantially, however, and the absolute total of parking places would still increase.

Whilst by Milton Keynes standards, the new parking standards may class as a 'major leap forward', with respect to discouraging car trips and encouraging the more sustainable modes of transport such as cycling, walking and bus use, they can only be classified as 'a step in the right direction'. However the current excessive provision means that the reduced rate of parking growth will still result in provision that is rather generous.

Car Ownership

With a car ownership rate of 0.51 per resident or 1.26 cars per household, Milton Keynes is amongst the highest car ownership districts of similar size in the UK. Depending on the indicator used (cars per head of cars per household) car ownership rate in Milton Keynes is between 10 and 15% higher than the national average and generally in the same league as car ownership figures for affluent and predominantly rural districts in England. Whilst this, in itself, is a reason for the high car usage, coupled with the

sparse land use pattern, together with the easy parking availability and poor public transport coverage (which is directly related to the sparse land use pattern), use of car for all journey purposes in Milton Keynes is the most attractive means of travel to, from and within Milton Keynes.

Table 2.2 provides a benchmarking listing of Milton Keynes' car ownership rates compared to a selection of major districts in England and Wales.

Table 2.2 - Car ownership per household – at District level

District	Population	No. of households	No. of cars	Car/pop	Car/Hhld
Milton Keynes	207,057	83,359	105,088	0.51	1.26
Bath	169,040	71,115	85,670	0.51	1.20
Bedford	147,911	59,597	73,557	0.50	1.23
Colchester	155,796	63,706	78,229	0.50	1.23
Worcester	93,353	39,060	45,238	0.48	1.16
Northampton	194,458	80,822	90,910	0.47	1.12
Swansea	223,301	94,400	97,825	0.44	1.04
Bristol	380,615	162,090	165,334	0.43	1.02
York	181,094	76,920	78,288	0.43	1.02
Ipswich	117,069	49,869	49,898	0.43	1.00
Southampton	217,445	91,217	91,729	0.42	1.01
Exeter	111,076	46,573	47,050	0.42	1.01
Plymouth	240,720	102,540	98,436	0.41	0.96
Preston	129,633	52,970	52,174	0.40	0.98
Blackpool	142,283	63,940	53,608	0.38	0.84
Oxford	134,248	51,732	48,595	0.36	0.94
Sunderland	280,807	116,356	95,564	0.34	0.82
Leicester	279,921	111,148	91,611	0.33	0.82
Nottingham	266,988	116,112	84,433	0.32	0.73
Total for England and Districts with highest car ownership per resident and per houshold					
South Bucks*	61,945	24,781	40,052	0.65	1.62
Hart (Hampshire)**	83,505	32,470	53,725	0.64	1.65
England	**49,138,831**	**20,451,427**	**22,607,629**	**0.46**	**1.11**

* Highest car ownership per person resident in district

** Highest car ownership per houshold in district

Source: Census 2001

Highway demand

Highway traffic origin-destination demand has been obtained from the existing traffic Studies, in particular the existing traffic model being maintained by Stirling Maynard Transportation (SMT) consultants on behalf of Milton Keynes Council and English Partnerships. The commentary on the highway demand is therefore based on the estimates of highway traffic demand in the morning peak period.

During an average weekday morning peak hour some 68,000 vehicles use the highway network in Milton Keynes. Of this traffic a very small proportion (about 2%, or less than 1,500) travel through Milton Keynes as part of journeys which start and end outside of the area of Milton Keynes. Some 3,700 vehicles travel into Central Milton Keynes from outside Milton Keynes District and 8,300 from within the Milton Keynes district area.

In total, some 12,000 vehicles travel into Central Milton Keynes during the morning peak hour (of 0800 to 0900) and have access to 25,000 parking spaces. Whilst it is expected that over the entire morning peak period (of say 0730 to 0930) the total vehicles travelling into the centre are likely to be at around 1.3 to 1.5 times that of the peak period, these headline figures clearly show the high availability and ease of parking (recognising that the majority of the available spaces are no longer free) for Milton Keynes commuters.

The low density nature of the land use in parts of the Borough outside of the CMK makes the use of the car attractive, indeed essential and effective penetration for public transport very difficult. Table 2.3 presents the estimate of the broad distribution of car trips within Milton Keynes District which demonstrates the significance of trips with both origin and destinations outside the central area, which was an intended planning decision at the time of developing the city.

Table 2.3
Broad distribution of car trips within the Milton Keynes District
AM peak hour (0800-0900)

	CMK	Rest of Borough
CMK	2%	2%
Rest of Borough	17%	80%

Source: Milton Keynes Traffic Model 1998, edited January 2001

From total trips made in the morning peak, within Milton Keynes District, less than 20% are of radial nature to and from Central Milton Keynes. To illustrate this point more specifically, the northern part of the city (north of CMK and from Wolverton through Tongwell and Blakeland) attracts some 14,500 vehicles (over 20% of total traffic) and generates some 16,500 (24% of total traffic) during the morning peak hour.

Whilst the above makes the point that trip origins and destinations are relatively widely spread in Milton Keynes district, it is critical to recognise that CMK accommodates the highest concentration of trip destinations within the district, by far.

Overview of growth in car traffic and congestion

Over recent years, daily car traffic flows in Milton Keynes has continued to grow at rates of up to 5% per year in certain sections of the City. This is in line with the growth in car ownership and the strong economic growth in the City. However, traffic flow data over a cordon around Central Milton Keynes suggests that during the morning peak hour (0800-0900) flows into CMK has declined. Whilst congestion levels, by standards of similar size cities, remains quite low, the overall daily growth together with decline in peak 'hour' flows indicates that the City has started experiencing peak spreading, which is symptomatic of increasing and noticeable congestion around the corner – in the medium to long term.

There is no doubt that traffic growth of the order being experienced in Milton Keynes, however unnoticeable at present, will lead to severe congestion in the medium to long term as these rates of growth in highway traffic will prove unsustainable, as experienced in almost every major City in the UK. The inevitable consequence of this chain of events is the erosion of the city's competitive advantage.

2.2.2 Public transport

Milton Keynes district is served by 23 bus routes, with variations resulting in around 60 route configurations. Almost all (with very few exceptions) serve the city centre[2].

Most of the routes are "diameter" routes between two points in Milton Keynes via the centre. Some of these routes are meandering, with a total travel time in excess of an hour, and such routes are not easy to integrate with other services.

Some of the routes are sub-divided with different "branches" of service. The departure times are sometimes "shifted" through the day, making the timetable difficult to memorise, and also causing interchange difficulties. Only five routes are operated to a (more or less) regular timetable (numbers 4, 7, 23, 210 and X1). The configuration of the 23 main routes is as follows:

Table 2.4 Configuration of bus routes in Milton Keynes

Type of route	Number operated
Diameter routes (From one side of Milton Keynes to another, via CMK)	16
Radial routes (From a single origin to CMK)	5
Tangential routes (Between two points without serving CMK)	2
Total	**23**

Source: Milton Keynes Travel Guide – covering period October 2002 to April 2003
Excludes long distance and Express services.

Only some of the routes (5 out of 23) operate with more or less regular frequencies. This means that in most cases users must consult timetables before travelling on on buses other than their regular bus. Frequencies are operated as follows:

Table 2.5 Grouped frequency of bus services in Milton Keynes

Usual Daytime Frequency (Headway)	Number of routes
20 minutes	5
30 minutes	5
60 minutes	6
More than 60 minutes	7

Source: Milton Keynes Travel Guide – covering period October 2002 to April 2003
Excludes long distance and Express services.

The variations in routings at different time of the day and different days of the week make the network extremely difficult to understand. Although research would be useful to establish patterns of usage, it may be predicted with a degree of certainty that this both reflects and ensures the fact that most users are people who do not have alternative means of travel at their disposal.

Table 2.6 shows the main 23 routes (or groups of routes) according to the total number of buses operated on a weekday, and the number of buses travelling the entire route as set out in the published timetable.

[2] Source: Milton Keynes Guide – covering period October 2002 to April 2003. Services discussed Excludes long distance and Express services.

Table 2.6 Proportion bus services operating partial routes in Milton Keynes

Route number(s) of buses serving Milton Keynes (Excludes external and longer distance buses)	Total buses per day in one direction	Buses travelling the entire published route
1	24	0
2	29	4
3/3A	29	4
4	46	45
5/5A	42	6
6/6A	25	2
7	11	11
9/9A	27	23
10/10E/1111	10	4
12	2	1
13	4	3
14	39	12
17	5	5
18	5	5
19/19A	25	5
20	15	1
22	9	2
23	38	37
25	12	3
26E	3	3
30/31	7	3
X1	10	10
210	32	32

Source: Milton Keynes Travel Guide – covering period October 2002 to April 2003
Excludes long distance and Express services.

Three routes stand out as having a service that is both relatively frequent (20 minute headway) and with a mostly regular clockface timetable. These are Routes 4, 23 and 210. A significant concentration of the bus services lies within the Bletchley-CMK corridor, which is also the busiest public transport corridor in Milton Keynes.

In general, a large proportion of the early morning services (before 7am), evening services (after 6pm) and a significant majority of Sunday bus services are supported (subsidised) by Milton Keynes Council. However, in general, nearly all of the radial weekday, day-time services to CMK are operated commercially.

Bus and rail infrastructure

With respect to the bus infrastructure provision, the image of bus travel in Milton Keynes is poor as many bus stops have unattractive waiting environment with little or no protection from adverse weather conditions and many with no or poor quality information (such as timetables or route maps).

Access to a large proportion of the stops outside of the Centre is (and is perceived as) unsafe and hidden from view. Also, a number of the bus routes are not as direct as they could or should be, forcing users to walk long distances (in an 'unsafe' environment) to reach their actual destinations. This

is true even of some key destinations, notably the general hospital and some local centres.

There are two railways serving the Milton Keynes area. The west coast mainline runs through Milton Keynes with three stations of Bletchley, Milton Keynes Central and Wolverton within the City boundary. The primary utilisation of the mainline rail stations is for travel to outside of the City and District and its contribution to trips internal to Milton Keynes is minimal. In addition there is the line between Bletchley and Bedford, which forms part of a potential longer east-west route for which proposals are being developed for services between Oxford and Cambridge. Currently services operate between Bletchley and Bedford, with stops at Fenny Stratford, Bow Brickhill and Wooburn Sands. Again the contribution to internal Milton Keynes travel is minimal.

Public Transport Use

At the time of undertaking this Study, data collection and analysis and development of the Milton Keynes Multi Modal Transport Model was in progress. Whilst extensive use has been made of data collected and analysed, and the first version of the transport models developed as part of the multi-modal Study, it has not been possible to comment on public transport demand and its distribution in detail based on completed set of analysis. However, at an overall level, it is estimated that some 6.7 million bus journeys were made in Milton Keynes in the financial year 2001/2002. Given a population of 180,000 and approximately 3 trips per person per day on average, this equates to buses serving less than 4% of trips.

Analysis of travel to Central Milton Keynes undertaken as part of the development framework study suggested that in 2000 less than 10% of journeys to work to CMK were by public transport. (EDAW/Mott MacDonald, November 2001, CMK Development Framework, “Movement and Transport Options”.)

For comparison, in 1992 public transport accounted for 33% of journeys to work in the centre of Oxford, a city with a third less population than Milton Keynes. (Colin Buchanan and Partners, 1992, “Oxford Transport Study”)

An evaluation of the current public transport conditions in Milton Keynes is set out in Appendix B.

Walking and Cycling

Milton Keynes was planned with walking and Cycling very much in mind. The extensive network of Redway, large green spaces and Boulevards were all expected to encourage cycling and walking. However, available data suggests that cycling constitutes around 2% of all trips in Milton Keynes (3% of all journeys to work). Compared with overall national average of around 2% for cycling as a proportion of all trips, popularity of cycling in Milton Keynes may not seem very different from the rest of the country. However, when considering that national averages refer to all areas (rural and urban areas), in all terrain and with a variety of facilities for cycling, the comparison is rather an unfair one, and proportional of cycling in Milton Keynes would be expected to be significantly higher.

A similar comparison is reflected in the ‘walking’ figures. Walking constitutes between 20 and 23% of all trips in Milton Keynes against an overall national average of 25. Whilst this may be due to longer distances between actual origins and destinations in Milton Keynes, it is also expected to be related to the culture of car use and high availability of cars per household, in Milton Keynes.

It may be argued that in view of the facilities for cycling and the nature of the terrain, proportion of walking and cycling in Milton Keynes should be expected to be more akin to cities like Cambridge which has a combined walk and cycle mode share of around 50% of all trips, as opposed to a similar figure for Milton Keynes of around 25%.

3 THE PLANNED GROWTH OF MILTON KEYNES



3 The Planned Growth of Milton Keynes

3.1 ADOPTED PLANS FOR THE EXPANSION OF CENTRAL MILTON KEYNES

A development framework for Central Milton Keynes (CMK) was produced by consultants EDAW in October 2001. This has subsequently been adopted as Supplementary Planning Guidance. The aim is to intensify the quantity and quality of development in CMK, to strengthen economic and commercial viability and to create a more socially inclusive environment. Another aim is to achieve a "more sustainable approach to transport access". The potential for expansion of CMK is given as set out in Table 3.1. below.

Table 3.1 Potential for CMK expansion as set out by CMK Framework

Use/activity	Present (m2)	Additional (m2) in CMK framework
Office	300,000	400,000 *
Retail	200,000	90,000
Other (leisure etc)	140,000	Included in retail figure, plus 5 hotels
Residential population	2,500	8,800

* This has been translated into 20,000 extra jobs, but this assumes a floorspace per employee of only 20 m2, which seems low for high quality offices. Total additional employment in CMK is assumed in this study to be 20,000, however.

The framework proposes a bold restructuring of CMK, with the following implications for transport:

- Strengthening the provision in CMK will help to increase the strength of the centre relative to other parts of MK, and other competing towns. Other things being equal, this will make it easier to increase public transport market share. Increased residential population should also increase the walking market share;

- The proposed restructuring of parking at the edge of CMK, and multi-storey provision to release development land are seen as powerful elements of the development framework, and are helpful in terms of future public transport provision; and

- Intensification will not be possible with the same degree of car access as at present. Parking ratios will have to be reduced, meaning that a higher proportion of trips to CMK than at present will have to be made by means other than the car.

The Development Framework is not, however, explicit about the implications for terms of parking and public transport.

- The CMK framework document does not spell out clearly that a smaller proportion of people will be able to drive to CMK, or that they will be paying more for parking when they do so;

- The parking and public transport statements tend to avoid the difficult choices that will in reality need to be made;

- The outline parking management strategy includes shifting the balance towards short stay parking. This is consistent with limiting peak hour congestion, but is inconsistent with increasing public transport use. Since each parking space would accommodate more car trips, this will erode daytime public transport market share, with potentially negative consequences for public transport revenues;

- "Short-stay" parking appears to be at odds with the stated aim of encouraging greater diversity in the city centre to attract people to spend more time there, though this can be addressed though tariff structures;

- While increased public transport is advocated, there is no indication as to how this will be achieved. Mode switch to public transport is advocated and required, but no reasoning is provided as to why people should switch from car to public transport. The report states, rightly in our view, that rising congestion "will be insufficient to persuade motorists to switch to public transport";

- The Study puts forward the suggestion of a dedicated intra-CMK public transport service. In our view this recommendation should be dropped as CMK internal transport should be based on the city-wide services with their focal point on CMK resulting in fast and frequent intra-CMK services. Further discussion on this issue is set out later in this report.

- The studies also underplay walking and cycling as alternatives to the car;

- The Framework advocates a dedicated intra-CMK public transport service, but no hard justification is given for this. Public transport proposals amount to little more than a "wish list" with no analysis of likely demand, or how this will be ensured. Indeed the supporting Transport report appears to be hesitant about the viability of what is proposed; and

- Parking policy for new development includes aspects that contradict national and regional policy (PPG13 and RPG9). For example, maximum standards are held to be a parking "requirement", contrary to PPG13. In addition, the use of "commuted payments" in lieu of spaces not provided on site is advocated, despite the fact that this technique is irrelevant within the maximum standards framework, and that PPG13 explicitly states this.

In these respects the present study will attempt to provide more robust advice for a realistic transport and access strategy for CMK.

3.2 PLANS FOR GROWTH OF THE CITY AND THE SUB-REGION

Milton Keynes is clearly identified for substantial growth in the medium to long term. The growth potential is not confined to the Borough boundary, but is seen as sub-regional in character. Four documents are of particular relevance to this scenario. Dealt with in turn they are:

- Milton Keynes Local Plan (Draft October 2002)
- Milton Keynes and South Midlands Study (Roger Tym & Partners, September 2002, commissioned as a result of Regional Planning Guidance for the South East, RPG9, March 2001)
- Sustainable Communities Plan (ODPM, February 2003)
- Milton Keynes and Aylesbury Vale Growth Area Assessment (Roger Tym & Partners, May, 2003)

Milton Keynes Local Plan – Second Deposit version October 2002

The local plan provision for growth is based on the requirement for new housing set out in the Buckinghamshire Structure Plan. It is therefore a "top-down" approach to determining the extent of growth. It deals with the growth requirement up to 2011, and so covers the "early" part of the timescale being considered by this study.

The structure Plan requirement was for 36,700 additional dwellings to be provided between 1991 and 2011. Allowing for those built up to 2001, the remainder to be provided between 2001 and 2011 is 19,957. Of these, capacity on committed sites was 13,154 at 2001, leaving the plan to find capacity for a further 6,803. Some of this is planned on "infill sites within Milton Keynes city, and a certain amount on sites in the rest of the Borough.
To meet the identified housing requirement three types of site have been allocated in the Plan:

- Three "expansion areas", one each to the east and west of MK, and a smaller one to the north. These are shown on the proposals map;
- Infill sites within the city. The location of some of these is specified. Estimates of the capacity of committed sites now reflect higher capacities for CMK and Campbell Park sites.
- New housing in selected villages, namely those considered to have some potential in terms of local service provision including public transport.

The largest part of the growth (4,025 dwellings), however, is to be accommodated on Expansion Areas identified in the Local Plan. The total capacity of these areas is estimated to be greater than this, even after allowing for the inclusion of employment land. The capacity of the three areas as identified in the Local Plan is given as 6,780 – 7,130 dwellings.

Following the completion of the new dwellings allocated in the Local Plan, the population in 2011 is estimated to be 211,690 for Milton Keynes city, and 248,090 for Milton Keynes borough as a whole (Milton Keynes Population Bulletin 2002/2003, page 12).

Table 3.2 Proposed new housing

	Plan requirement (Borough)	**Capacity**
Structure Plan requirement 1991-2011	36,700	
Less completed by 2001	16,743	
Remaining requirement	19,957	
Of which committed sites to 2001		MK 12,856 Rest of Borough 298 Total 13,154
New requirement to be allocated in plans	6,803 (6,810)	
Capacity estimated in local plan	Allocated	Capacity
Infill sites in city	1,843	1,843
Expansion Areas	4,025	6,780 – 7,130
Rest of borough	942	942
Total in local plan 2001 to 2011	6,810	9,565-9,915

The Local Plan has identified requirements and capacities for the period up to 2011. However, the city will continue to grow beyond that date, and a number of studies have considered what further potential there might be, as

set out in Table 3.3. It should be noted that the assumptions, boundaries and sites are not comparable between these studies.

Table 3.3 Other capacity assessments for longer term growth

	Capacity in dwellings
Llewelyn-Davies 1998 (Cautious estimate of capacity and low density assumption, including sites outside MK)	43,000 (@ gross densities of 16-22 dph)
Preliminary MKC in-house Study (2001) proposal to build within the MK grid road reservations	8,400 (20 kms of grid road @ 70 dph net)
FaberMaunsell assessment of grid road development potential (similar to proposals in preliminary MKC in-house Study of 2001 but different assumptions)	8,400 (35 kms x 6ha land x 40 dph gross)
MKSM study (Not just Milton Keynes City), 2031 time horizon (see separate commentary)	69,000

dph = dwellings per hectare

Housing densities
Housing density has a major influence on the ability to serve an area by public transport. As a general (but not unqualified) rule, the higher the density, the easier it will be to operate a well used and viable public transport service. Milton Keynes densities are low. The designated area of 9,000 hectares contains around 72,000 dwellings, giving an overall density of only 8 dph. However, the average net density of the city as actually developed is about 27 dph – some 23% higher than the national average net density of 22 dph for greenfield development. Within the development grid squares densities vary considerably between different parts of the city. Net densities of over 100 dph have been achieved in Central Milton Keynes.

The Local Plan envisages minimum net densities in Milton Keynes city of 35 dph, with a range of net densities depending on the location:

- Zone 1 CMK and Campbell Park 100 dph
- Zone 2 Adjoining grid squares north and south of CMK, plus older settlements and Kingston 40 dph
- Zone 3 The rest of the city and the expansion areas 35 dph

To meet more radical sustainability objectives, the capacity could be increased considerably.

Milton Keynes and South Midlands Study
(Roger Tym & Partners, September 2002)

Regional Planning Guidance for the South East (RPG9, March 2001) called for the preparation of this study to explore the potential for growth in the South Midlands sub-region, including Milton Keynes.
Different options are given for population growth over a 30-year period. At "trend" rates the city population is forecast to grow from 207,000 to 295,000, while at a "higher growth" scenario, the population in 2031 would be 320,000. This higher figure has been used in all the analyses in this report, in light of the identification of the area in national and regional policy as a one of four key growth areas in the south east. The population growth was considered to equate to 69,000 additional dwellings between 2001 and 2031.
The study considered employment as well as housing and population growth. It gives a "forecast" employment growth of 71,000 jobs to 2031.
The MKSM study recommended a growth scenario based on focusing growth on the four main towns in the sub-region that are capable of supporting major improvements to the public transport system, namely Milton Keynes, Northampton, Bedford and Luton. The scenario also included a

"two-corridor" expansion focusing on the Midland Main Line (Corby, Kettering, Wellingborough) and the proposed east-west rail line (Districts of Bedford, Luton, Mid Bedfordshire, Aylesbury Vale and Milton Keynes). The latter concept and the configuration of generally are discussed later in this report. It is worth noting, however, that one reason for the choice of scenario was the potential to increase the potential for public transport mode share, compared with the other options studied.

Sustainable Communities: Building for the Future (ODPM, February 2003)

The plan identifies potential for and advocates major additional growth in the South East. Milton Keynes is identified as a major growth area within a wider sub-region, of which Milton Keynes is the only administrative area located within the South East region. The potential is based largely on the study by Roger Tym & Partners discussed above. It may be noted that the potential housing growth identified for Milton Keynes borough accounts for around 20% of the identified total sub-region potential. The plan underpins the aspirations for higher levels of growth in and around Milton Keynes, and has led to more detailed analysis of the growth potential, again undertaken by Roger Tym & Partners, as discussed below.

Milton Keynes and Aylesbury Vale Growth Area Assessment (Roger Tym & Partners, May, 2003)

Following the affirmation of regional plans for higher levels of growth in Milton Keynes (and elsewhere in the South East), more detailed analysis of sites has been undertaken by Roger Tym & Partners with Halcrow. The latter part of the present study overlapped with this, and as a result the led to some alteration to the options tested in terms of public transport performance. While the two studies both worked to similar overall housing and employment growth figures (as described earlier), there were alternative scenarios in terms of the spatial distribution of the growth. In view of the likely impact on public transport, our study also examined an option drawn up within the RTP study. This is described in more detail in **Section 5 below.

3.3 IMPLICATIONS FOR TRANSPORT QUANTITY AND QUALITY

If the planned scale and character of growth in Milton Keynes were to rely on the private car to the same extent as existing areas, road traffic would increase by at least 50% in 20-30 years, inevitably adding to environmental, safety and social exclusion difficulties. To accommodate such traffic would require large-scale investment in new roads and parking facilities, including in CMK. Although not quantified in any detail, the expectation is that such expansion of facilities for car travel, even if it were seen to be a solution, would be both unpopular and unaffordable. Indeed, in broad terms this expectation led to the commissioning of the present study, to find ways in which a larger role for public transport could be secured in the long term.

An issue of key importance is the spatial distribution of new development, because this will affect the ability to serve the resulting travel demand by effective public transport.

From the point of view of increasing the role of public transport, new development can, given the right conditions, support much better levels of public transport. But given the wrong conditions, additional growth could have the opposite impact. For example, if new housing were to be scattered around the periphery of the city it would small increments of demand to a large number of public transport routes, and little improvement would be possible. At the same time, the additional car traffic generated would make the operation of the public transport routes more difficult, thus further exacerbating the problems of low demand.

The growth areas identified in the Local Plan are grouped together in expansion areas, with the majority of the allocated land for development being in two major expansion areas east and west of the city. On a strategic level this pattern offers extremely important opportunity for establishing a high-quality public transport route that can link new growth areas to Central Milton Keynes. To be effective in encouraging the use of public transport, however, this concept must be translated into the detailed design of the new areas. This means, for example, the provision direct routes for public transport through the development that are segregated from, or not affected by, routes for other traffic, and development arranged to fall within 300 metres of the public transport stops. This study also points to the benefits from a public transport point of view of focusing the majority of longer term growth (beyond the Local Plan period) within a consolidated east-west public transport corridor. Other sites for accommodating growth can occur in other public transport corridors that offer scope for high frequency operation, and this study identifies a north-south corridor that would meet this requirement.

Somewhat different considerations apply to employment. If the majority of new jobs are not located on **nodes** in the network (basically CMK and Bletchley) but instead are scattered throughout the city, or are served by only one public transport route, then employees will mainly travel to work by car, creating a negative impact on public transport. For employment and other trip-attracting non-residential development, consideration must be given to how public transport can serve the required inbound travel.

4 LONG TERM VISION FOR PUBLIC TRANSPORT



4 Long Term Vision for Public Transport

4.1 A BIGGER ROLE FOR PUBLIC TRANSPORT IN MILTON KEYNES

Given the problems and difficulties that would be generated by continued reliance on the private car as the main means of travel in Milton Keynes, there is a need for a new direction in Milton Keynes transport. Key arguments pointing to the need for a change of direction may be summarised as follows:

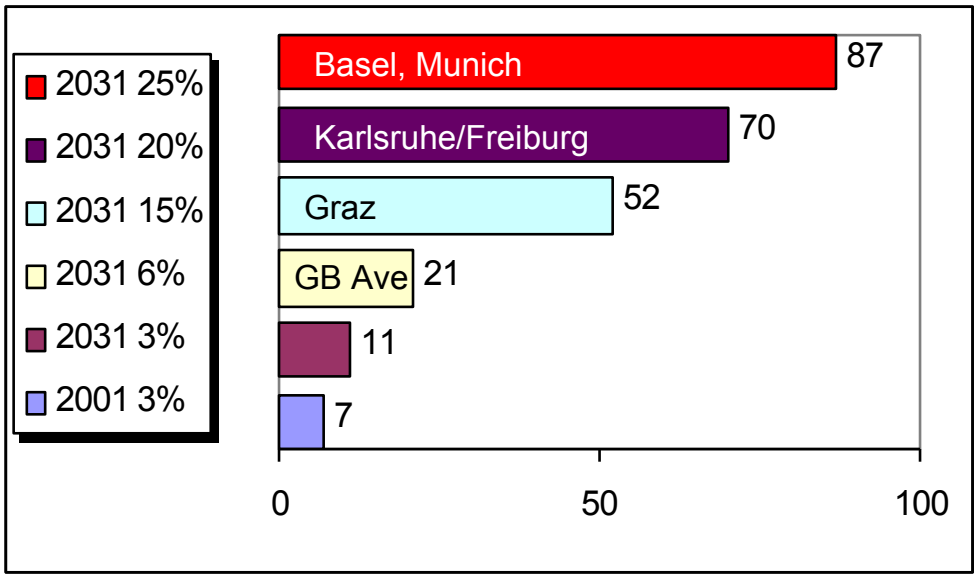
- Current levels of car use (car trips or kms per person and levels of service on the roads) cannot be provided in future at the levels of population and employment growth envisaged. To achieve this, it is estimated that road and parking capacity would need to be at least doubled;
- In particular the adopted plans for the expansion of Central Milton Keynes could not be realised;
- Expanding Milton Keynes on the basis of such car-dependency would be counter to national, regional and local policy, and funding on the scale would not be available;
- The inability to maintain levels of service on the roads, as traffic levels rose, would lead to increasing costs for commerce and industry through delays and uncertain journey times;
- Additional congestion, pollution, road danger and social exclusion would mean a lower quality of life in Milton Keynes.

A change of direction is required to reduce over time the proportion of travel that is undertaken by private car.

The extent of this reduction will depend in large part on the objectives that are to be pursued. This is discussed in 4.4 below. In any traffic reduction scenario, however, it is assumed that public transport play a very much bigger role than at present. Public transport currently serves around 4.5% of all trips in Milton Keynes, around three quarters of the national average.

If the proportion was raised to the current national average (6% of all trips), and Milton Keynes grew to a population of 320,000 by 2031, then the number of public transport trips made each day would more than triple to around 21 million per year. A more ambitious target of 10% mode share would mean 35 million public transport trips per year, more than 5 times the current total. This would still be well below the levels achieved in some other cities, three of which are shown for comparison in Figure 4.1, below.

Figure 4.1 Annual public transport trips in Milton Keynes at different mode shares



Note 1. 2031 figures assume a population of 320,000)
Note 2. Examples of cities with stated mode share are given within the bars, but the data relate to trips in Milton Keynes.

In broad terms, if the car mode share in 2031 was 75% (similar to today's level) then the increase in car trips estimated for the period 2001 to 2031 would be in the order of a quarter of a million trips per day. If the entirety of this increase were to be switched to public transport, then the number of public transport trips in Milton Keynes would be more than 10 time higher than it is today.

This indicates the scale of the challenge, but it is by no means unachievable. It will depend on the level of commitment, and clarity of approach, not only to public transport planning, but also land use planning, parking and other factors that determine the level of public transport use.

Further information on experience of development of Public Transport system and their impact on mode share from selected cities around the world is set out in Appendix C.

4.2 THE OPPORTUNITY PRESENTED BY CITY GROWTH

A number of theoretically available options for city growth in Milton Keynes have been considered in this study, independent of the other studies and plans reviewed above. The aim was to take a fresh look at how urban growth could be used to develop the market for public transport. The various possibilities are not mutually exclusive and two or more could be pursued together.

The possibilities are described briefly below. (The option chosen for detailed testing is described in Sections 6 and 7.) The first three are ways of intensifying development within the present Milton Keynes urban boundary. The other two options are ways of developing within an extended urban boundary.

Intensification concept A - "build the boulevards"

This would mean extending the concept of intensification beyond CMK, by developing land alongside the main grid roads. The development would be predominantly residential. Since residential use is less well suited to location alongside traffic routes, the grid roads would be converted from high speed highways (as at present) to developed 30 mph boulevards which are open to through public transport, pedestrians and cyclists only. General traffic could use them for access, but not as a through route. The differentiation would require bus gates of some kind.

This may not be popular with existing residents who value the open road character. Those backing onto the grid roads may also not like having development at the foot of the garden. On the other hand there could be benefits from development rather than the present landscaped areas and roads – security could be improved, and traffic noise could be reduced. This would be an issue for detailed public consultation.

The reduced grid road capacity could be used as a positive feature in securing a switch of travel from car to bus, walking and cycling.

Intensification concept B - build local nodes

Development intensification could be undertaken at specific nodes in the Milton Keynes suburban area. Places such as Kingston or Stantonbury Campus already have a certain "Critical mass" of development, and these could be strengthened so that these locations became more important destinations, and therefore would have greater potential to attract people by public transport. These nodes could be developed at locations where public transport services can be provided at higher frequencies, for example where radial or diameter routes are combined as they approach CMK. This concept could easily be combined with the "build the boulevards" option described above, and is to a limited extent included in the FaberMaunsell Option A (see Section 6).

Intensification concept C – "build under-used spaces"

There are areas in the city where development is very "loose" or with low density, and where land could be assembled to provide higher density infill schemes. The Local Plan envisages some such sites. This would result in an incremental increase in densities. Urban design improvements could be achieved, including making areas of the city more walkable. Such development could in the longer run produce a higher demand for public transport, not least by redeveloping land currently used for parking, but this approach would not produce any "quick wins".
It is an option that could be considered particularly in areas that are particularly unsuccessful in townscape terms, or which have particular social problems that need to be addressed. Parking and access road areas could become candidates for such development.

Extension concept A– extend what is there - "extend the grid"

This is already planned in the Local Plan (Deposit version 2000), with the eastern, western and northern extensions. Bus services will be the likely answer, but extending existing services may lead to operational problems, and relatively long journey times from the new areas. New services with faster line-haul sections could be offered, but these may not be viable if

serving scattered growth sites. For example the east and (especially) the west growth areas lie in an orbital configuration that could be difficult to serve with direct radial routes.

If services can be provided that serve the existing settlement well, then that same solution could be applied to any new areas that are built with a similar structure. For example, the re-structured services proposed in this report for the existing areas could be equally appropriate in new areas built to a similar structure.

New areas on the periphery can sometimes benefit from existing services that pass the site – allowing services to be available from day 1 of the development, and providing a base from which to "thicken-up" services as justified by higher demand. This type of growth is similar to the satellite or corridor options below; it is really a question of scale.

Extension Concept B - concentrated satellite or corridor growth

This is peripheral expansion, but concentrated to optimise access to public transport, and of a sufficient scale to make new public transport services (or even new modes) worthwhile. This concept forms the core of the FaberMaunsell Option A (Section 6), and is intended to ensure that all new development contributed to maximising the role of public transport. A key feature is that the corridors of development are appropriately configured so as to lie on a direct local transport route to and from CMK.

The 2002 revision of the Local Plan includes a potential east-west corridor between the proposed eastern and western expansion areas via CMK. If new corridors such as this are to be achieved, action is likely to be needed at an early stage to protect corridors of land from development that might prejudice the implementation of suitable transport infrastructure, such as a segregated public transport right-of-way. A possibility for this option is to use enhanced existing sub-regional PT services to serve the new areas in the initial stages of development.

The Milton Keynes South Midlands study included the concept of development in the corridor served by an anticipated new east-west rail service incorporating the Bletchley to Bedford line. This route is not suited to the provision of internal Milton Keynes services, however, since it lies well to the south of CMK.

Combinations of concepts and implementation

The above concepts are not mutually exclusive, and could be combined. For example the infill and node or boulevard options together could supply all the housing requirement for at least ten years, but growth beyond that would entail some form of outward expansion. Any further options are likely to be variations on one of the above themes, rather than wholly new concepts.

Whether a particular concept works may depend to a large degree on where and how it is implemented. For example, peripheral growth can be implemented in such a way as to facilitate public transport use, configured into high density corridors or nodes. Conversely poor design or detail could undermine the potential of even the best development concept.

4.3 PUBLIC TRANSPORT OPTIONS FOR 2030

A number of public transport schemes have been considered for Milton Keynes Long Term Vision from a review of available systems. A review of the available systems and broad cost levels for these are set out in Appendix D. The systems considered for Milton Keynes as a part of this Study cover a range which are implemented and operated at different levels of cost and sophistication.

The starting point and the key element of all of the schemes is the development of a set of core public transport services together with the provision of extensive public transport priority measures within CMK and on the approaches to CMK. This Starting point should be implemented as soon as possible so as to raise the profile of Public Transport sufficiently to pave the way for the larger schemes to follow. These basic, first level, improvements will then be expanded into a larger city-wide scheme which will be developed along the key development corridors and within development areas.

4.3.1 The starting point - base CMK scheme and enhanced core bus services

The starting point for all the schemes considered is based on significant increase in provision and improvement of the public transport priority measures in CMK. Only after implementation of the CMK scheme, can any further scheme take shape. In addition to public transport priority measures in CMK, it is recommended that the offer of public transport will be re-organised to provide eight diameter routes serving Milton Keynes, as the core public transport services. These services will be operated at a minimum of 15 minutes interval during the day and half hour interval during the evening and weekends. In addition for routes with higher demand levels frequencies will be increased, but the operation will always be based on a clock face timetable.

Broad representations of the eight diameter routes and the base CMK scheme are set out in Figures 4.2 and 4.3 with further detailed description set out in Chapter 8.

The concept is that the 8 diameter routes will provide for a high quality, reliable and easy-to-understand network of services to meet the requirements of existing users, and to attract future users, including those who would otherwise be travelling by car. The routes are based on the concept of attracting users on the basis of their quality, rather than on their proximity. They are intended to strike a workable balance between bringing buses as close as possible to people's front doors, and providing swift and reliable travel times.

It is possible that other bus services could be developed to fill any remaining gaps in the market. For example, there might be sufficient demand in the longer term for tangential routes, while there may be niche markets for the further development of demand-responsive services. The recommendation in this report, however, is that efforts are concentrated on restructuring the services to provide the core network of diameter routes as described.

4.3.2 Evolution and Development of Routes

Throughout this Study the aim of the option development process has been to take advantage of the proposals for growth of Milton Keynes and to develop a land use disposition pattern to fit the needs of the strategy for promotion of public transport. To this end the eight diameter routes form the backbone of the overall public transport system with the East-West route and the North-South route expecting to be converted to the higher level of public transport system as the developments take shape and further demand is

generated along these corridors. In particular, the broad alignment of the East-West Route has been developed on the basis of the development which is planned both as a part of the current Local Plan for the medium term and the Growth Area Studies for the Longer term. The North-South route has been developed on the basis of its current public transport demand, as well as the expected regeneration of Bletchley area which is currently being considered by the Milton Keynes Council. Broad representation of the corridors proposed for the main high quality public transport system is set out as Figure 4.4. It has been assumed that the CMK PT priority schemes and the operation of the eight diagonal bus routes will be implemented as soon as possible. For computational purposes, this has been assumed to be in place by 2011. Development of the higher level PT system along the East-West and North-South corridors will be dependent on the pace of growth in the corridor. However, for the purposes of this work, it has been assumed that upgraded routes will be in place and operational by 2021.

4.3.3 Systems considered

In addition to the basic bus system operating in mixed traffic with no segregation and little priority outside of the Central Milton Keynes, three further system types have considered for the upgrading of the East-West and the North-South routes. These are set out below:

i) Light Rail Transit
ii) Guided Light Transit, and
iii) Busways

All of the above systems make the assumption that one lane of the dual carriageway highways on the East-West and North-South corridors will be allocated exclusively to the transit system so that the system will operate on a semi-segregated basis along the whole of its route. Also, where the routes on the highway network is too narrow to accommodate an exclusive lane to the transit system and accommodate another lane for cars, either a new lane will be constructed (where there is space) or the road space will be shared with priority given to the transit system (this is particularly the case on a few pinch points on the North-South Route).

4.3.4 Light Rail Transit – Entire length on tracks

The first option considered development of a Light Rail Transit system run on steel tracks over the East-West and North-South Route. This would be a system similar to that currently operating in Croydon, Manchester or Sheffield, or a large number of major continental cities. Both the East – West and North South Routes of the system will run the whole length of the CMK along an East-West axis and will have interchange facilities with each other and with other bus services.

4.3.5 Guided Light Transit – Part of length on tracks

One major disadvantage of a full LRT system is the cost of constructing the track and supporting electric supply infrastructure. New technology which is currently in operation, albeit in a limited form, on the continent (eg. Rouen, France) allows for operation of high quality and high capacity transit vehicles on rubber wheels, but at least for part of their route also guided on tracks. Whilst this technology is at its early stages, it was considered that by the time Milton Keynes embarks upon development of its transit system, further technical advances will provide higher confidence in workability of this system.

4.3.6 Busways

Busways serviced by high quality bus vehicles and supported by extensive priority at CMK will provide a lower cost option which also allows flexibility of operation,. In addition, should the assessment identify that insufficient demand is in place (at least in the early years) to justify a tracked system, busways will provide an exclusive right of way for public transport from early stages, which ensures reliability of journeys and can, at later stages of the development be converted to tracked forms of rapid transit systems. The third system considered, was therefore operation of high quality buses on busways.

4.4 STRATEGIC CHOICES

In order to achieve a significantly bigger role for public transport in Milton Keynes some choices will need to be made. The choices arise from the fact that there is considerable conflict between what is required to sustain a car-based city, and what is required to encourage and achieve a high level of public transport use. The choices to be made include the following:

- Developing the city with the present open, low density character may will be popular with some, but is not conducive to public transport operation or use. A greater role for public transport will mean a radical change in the design layout and location of new development.
- The expansion of activity of CMK is adopted as policy. It will not be possible to accommodate the same proportion of travel to CMK by car as at present. Consequently provision has to be made of alternative modes and, importantly, measures must be taken to ensure that alternative modes are used. The main choice here relates to the supply, price and tariff structure of parking in CMK. A further choice concerns the management of roads leading to and from CMK.
- Where should new employment be located? From a public transport perspective, the greater the proportion of employment located in CMK, the greater is the likelihood of achieving a higher public transport mode share. This is partly because CMK provides the only substantial focus for public transport in the city, and partly because only CMK has sufficient attraction to be able to limit parking activity through supply and pricing management. The MKSM study put forward a total of 70,000 additional jobs in Milton Keynes, but the CMK development framework is likely to contribute only 20,000 of these. There may be scope for altering the balance in favour of CMK.

In making such choices, the decision will reflect what objectives are being pursued, and what priorities are attached to them. If, for example the priority is given to objectives such as maximising access to CMK, or minimising pollution, or maximising the available land for development, then this requires giving priority to public transport over other motorised traffic. To be effective, such a choice must be pursued with tenacity, so that the vision is not lost as soon as car users experience some change to their opportunities. The recommendations in this report will inevitably mean that the use of cars in future will not be as easy or as cheap as it is for present users. But they can be justified by broader objectives than the convenience of car users.

For this study an option was developed to concentrate almost the entire growth onto public transport corridors linking directly to CMK, either existing routes with significant demand, or new routes where such demand could be

generated through the new development. Adoption of this approach requires complementary actions both to limit development in other less favourable locations, and to limit demand for travel that would undermine either the operation of or the demand for public transport. These aspects are explained further in the following sections of this report.

5 THE VISION EXPLAINED



5 THE VISION EXPLAINED

5.1 OVERALL VISION – WHERE WILL PUBLIC TRANSPORT FIT?

The main planning and funding resources will be focused on generating strong demand for public transport for trips to and from CMK. The justification for this is twofold:

1. CMK is the focus of existing public transport services and demand. It is easier to build on existing services than to develop wholly new patterns;
2. CMK is the only location in Milton Keynes with a density and diversity of activity sufficient to justify such a focusing of public transport routes.

5.2 THE VISION FOR CMK

The vision is for a public transport system of sufficiently high quality to attract people to use it for travel to and from CMK. This includes people who have a car at their disposal. In the year 2031, people from all walks of life will find CMK a destination of choice for work, leisure, shopping and other activities, and will not think twice about using public transport to get there, regardless of the purpose of the trip or the time of day. There will be many occasions on which it is decided to use the car instead. The trip will cost more by car than by public transport, mainly because of parking charges that are higher than the public transport fare. But the overall door to door journey time may still be quicker, and the journey purpose may mean that the car is the optimum choice.

Part of the vision also is that CMK becomes a place where people can easily interchange between different public transport services. Frequencies of all local public transport routes will be such that a timetable will not be required, and people will be able to get from any place in the city to any other place with no more than one change. All of these changes will be possible at CMK, and there will be no fare penalty.

CMK itself will be an enclave with very little disruption from traffic. There will be plenty of spaces that are free of traffic and parking where it will be a pleasure to stroll and spend time outdoors. A dramatic new landscaped boulevard and walkway will act as the main means of connection through CMK, all the way from the railway station to Campbell Park. The same journey could be made on one of the buses that will be passing along the same route every 2 minutes in each direction.

5.3 THE VISION FOR THE REST OF MILTON KEYNES

Travel to places other than CMK will be possible by public transport, and the quality and reliability of the services will make this a viable alternative to the car. However, for many journeys those with cars available will find it advantageous to use them. There will be relatively uncongested roads and easy parking available at the destination. However, there will be other choices. For many short trips, such as to school, it will be pleasurable and popular to walk on well-maintained and well used footpaths unhindered by traffic. In addition, the network of routes available for cycling will be more attractive and direct, and people will have been persuaded to a much greater extent than today to adopt this mode of travel as a healthy and enjoyable alternative to the car.

The vision for travel not involving CMK, therefore, acknowledges that the car will continue to play a major role. The difference will be that alternative modes of travel will be better quality and more attractive than they are today. This will have come about not just through better infrastructure, but also a changed set of attitudes, in which people make a more considered choice of mode based on the particular trip characteristics.

For residents of existing areas, but particularly for residents of the new areas to be built over the next 30 years, a trip into CMK for work or to shop or to meet friends will be easily accomplished on a comfortable and quick bus or other public transport vehicle, arriving on time at a convenient and secure stop near their home, and dropping them off close to their destination. The car may be more appropriate on some occasions, for example when the trip is to be combined with other destinations, or involves meeting elderly relatives off the train. But public transport will be a clear choice for most people most of the time, especially those travelling solo to work in CMK. And the choice of employment in CMK will be much wider than today.

Within the individual residential neighbourhoods, there will be a better choice of local employment, shopping, community and other facilities, partly because there is a greater population to support them, and partly because strict planning policies will have avoided the scattering of new facilities to locations accessible only by car. The locality will support a range of facilities that will be easily reached on foot, by bicycle. When a motorised mode is appropriate, for example for travel to other parts of Milton Keynes, buses will be available for many journeys, perhaps involving a simple change at Midsummer Boulevard.

In addition, an improved network of Redways, with better links to the developments they serve, will be available for journeys to be easily made by bicycle. Greater awareness of health and environmental issues will have changed attitudes so that people often choose the bicycle in preference to the car or the bus. As now, people will often choose to go by car, but they will no longer feel dependent on doing so.

Availability of high quality interchange facilities such as park and ride sites at key strategic locations and rail-bus interchange at railway stations will provide the level of integration which will invite and attract longer distance trips to use the public transport services and facilities within Milton Keynes.

5.4 CRITERIA FOR EXPANDING THE ROLE OF PUBLIC TRANSPORT

A key part of the vision, therefore, is the development of a high quality public transport system. The particular quality attributes are discussed below:

The various recommendations set out later are based on assumptions about the role of public transport, and the quality of infrastructure and service characteristics required to achieve that role. Here we set out these assumptions by way of explanation.

5.4.1 Attracting Car Users

The present bus system in MK is used almost exclusively by people who do not have the choice to drive. This will have to change if the development of CMK is not to be constrained.

The criteria for making public transport attractive to present non-users is, however, a potentially expensive one, since the cost of improvements is justified wholly on the basis of new users. (Existing users, by definition, do not need the improvements to persuade them to use the services.)

This is one of the reasons why “stick” measures are needed as well as “carrot” measures. Without measures to discourage car use, the public transport system would have to be of fantastic quality to persuade car users to leave their car at home. Restraint on parking and other measures can bring the quality requirement to within more reasonable limits.

5.4.2 Attracting "all-purpose" use

The system should be configured appropriately to be able to attract users for a wide range of trip purposes. This means good levels of service throughout the day and into the evening. It also means highly accessible vehicles and user-friendly information systems and facilities. Simply catering for the journey to work will prove to be extremely costly since the capacity of the system will be poorly used for much of the day.

5.4.3 Integration with rail and coach

The system must be integrated with other public transport services, particularly National Rail services at Bletchley, Wolverton and Milton Keynes Central, and coach services at the Milton Keynes Coachway. At present such integration is fair at Milton Keynes Central, but otherwise is extremely poor.

5.4.4 Integration with other modes – car, walk, cycle

The system should be configured to enable people to switch to public transport from other modes, in order to complete their journey, especially to CMK. Cycle facilities can be made available to encourage "cycle and ride". Consideration could be given to accepting cycles on buses, as in many continental towns, to encourage multi-modal travel habits. The main inter-modal effort, however, is likely to be Park and Ride, to enable people arriving at the fringes of Milton Keynes to complete their journey to CMK by bus.

5.4.5 Providing good access for people without a car at their disposal

By improving the quality of public transport sufficient to attract car users should, at the same time, improve the level of service for those without cars. However, this criterion needs to be addressed more specifically when particular decisions are made regarding, for example, fares and ticketing, detailed routing, and accessibility

5.4.6 Park and Ride

Extensive provision of Park and Ride at key locations connected to high quality frequent public transport services together will extensive advertising of the system will provide a viable choice for the medium and long distance car users to take advantage of public transport system rather than contributing to congestion and pollution within and on the approaches to CMK.

5.4.7 Avoiding congestion

The infrastructure for public transport should be designed to avoid congestion or delays caused by other traffic. At the same time, the public transport service should be of sufficient quality to appeal to drivers who also wish to avoid congestion themselves by switching to public transport. There is a precautionary element to this also: bus lanes and priority measures could be installed before they are needed (before congestion has reached disruptive levels), and a means of limiting traffic growth.

Public transport should be capable of releasing development potential, for example by enabling higher densities and lower parking levels to be achieved. In this way public transport contributes to the objective of sustainable development.

6 TESTING THE OPTIONS FOR GROWTH AND PUBLIC TRANSPORT



6 Testing the Options for Growth and Public transport

6.1 DESCRIPTION OF THE OPTIONS

Options which were tested were developed based on two key inputs. The first is the land use scenario which underpins the overall demand volumes and distribution of demand and the second is the public transport option which provides the basis for mode share and attraction of the various transport modes.

6.1.1 Land Use Options

Two land use options were tested. The first was the highest density land use scenario from the set of land use scenarios developed as part of this Study (Long Term Public Transport Vision for Milton Keynes). The second land use option was that developed as part of the Milton Keynes and Aylesbury Vale Growth Study.

For the purposes of this report the former will be referred to as MKPT land use option or land use option A and the latter as MKAV land use option or land use option B.

The study process included consideration of a range of options regarding housing density. The options selected for testing were based on the requirement to enable the provision and use of high quality public transport services. This meant both the concentration of new devfelopment into corridors (as described above) and also the adoption of densities considerably higher than the average for Milton Keynes to date. The basis of this is relatively straightforward, namely that the higher the density of development, the greater will be the number (and proportion) of people able to reach public transport services within a short walk. It does not mean the development of uniform densities, however, and there is scope for wide variation within the design and layout of particular areas. The assumptions made for testing the options are averages and are not intended to constrain detailed masterplanning.

6.1.2 Transportation Options

For each of the above two land use scenarios, five transport options were tested, primarily centred on the public transport system which is to be evaluated. Transport options tested are as follows:

Do-minimum
The do minimum scenario is effectively based on no change to the quality of the bus service or the infrastructure over which the service operates.

Bus service improvement
This option is based on efficient operation of the core eight diameter routes as the routes forming the supply of the public transport in Milton Keynes operating at a minimum frequency of 15 minutes and higher frequencies for busier services. This option also includes the extensive public transport priority measures in CMK and on approaches to CMK as described earlier in this report.

Busway
This option is based on allocation of road space for exclusive use of high quality buses along the two main East – West and North – South routes with the rest of the network operating as per ‘bus service improvement option’, ie eight frequent diameter routes plus extensive priority within and on approaches to CMK.

Guided Light Transit (GLT)
This option is based on conversion of the part of the existing road space to tracks over which high quality and high capacity transit vehicles will operate. Beyond the existing built up areas (ie areas to be developed as part of the growth scenarios), the service will run on segregated highway lanes exclusive to the system. As with the busway option, this system will also run on the East-West and North-South routes with the remainder of the diameter routes operated by high quality buses and with extensive PT priority within and on approaches to CMK.

Light Rail Transit (LRT)
This option is basically the same as the GLT option with the difference being that the vehicles only operate on steel wheels and the whole of the route operates on tracks. As with the busway and GLT options, this system will also run on the East-West and North-South routes with the remainder of the diameter routes operated by high quality buses and with extensive PT priority within and on approaches to CMK.

6.2 FORMAT OF THE TESTS

The busway, GLT and LRT systems were tested based on their operation on the

i) East-West Route alone,
ii) East-West Route and North-South route

Table 6.1 provides a list of the scenarios tested as part of the assessments:

Tables 6.1 List of Scenarios tested

Land Use	Do-Min.	Bus Improvement	Busway		GLT		LRT	
Routes			E-W	E-W+N-S	E-W	E-W+N-S	E-W	E-W+N-S
MKPT (Option A)	✓	✓	✓	✓	✓	✓	✓	✓
MKAV (Option B)	✓	✓	✓	✓	✓	✓	✓	✓

Therefore in total some 16 tests were undertaken combining 2 land use scenarios and five system type scenarios.

6.3 LAND USE GROWTH PATTERNS

The two land use options tested in this study are designed to accommodate the level of growth anticipated in emerging planning guidance and studies for the Government and regional authorities. This includes the provision of an additional 69,000 dwellings over and above the new dwellings for which provision is made in the second deposit version of the draft Milton Keynes local plan (October 2002).

The two land use options tested for their impact on public transport are briefly:

OPTION A:
The most concentrated and compact form of development devised within the context of the present study. (a number of other distributions and densities were devised originally as part of the study process, but were not further pursued or tested.) Option A is configured along two key public transport corridors. An east-west corridor serves new areas of development beyond the existing built up area boundary. A north-south corridor is mostly within the existing built up area, but serves more intensive development.

OPTION B:
The land use distribution devised for the Milton Keynes Aylesbury Vale study3 undertaken by Roger Tym & Partners. (This was arrived at following consultation with the team preparing the present study.) This also is configured for the most part along the two key corridors, although some of the growth beyond 2016 would not be served by these corridors, and alternative public transport assumptions have been made.

The distribution of land use growth in these options (A and B) is shown in Figures 6.1 and 6.2.

The following assumptions were made:

- Sites within and associated with the existing main grid road corridors to be used by the north-south and east-west principal public transport routes were assumed to be developed to accommodate 6,000 dwellings on the north-south route, and 2,400 on the east-west route. A broad catchment of these routes is shown in Figure 4.4 (section 4).
- An average net density of 70 dph was assumed for such development within the existing corridors;
- For the new areas of growth (i.e. outside the existing built up area), an average net density of 45 dph was assumed. This would comprise higher densities close to public transport stops, and lower densities at more distant locations;
- For the purpose of testing the impact on public transport, it was assumed that 80% of dwellings would lie within 300 metres of a public transport stop;
- The development was assumed to be configured along the public transport corridors, served by stops every 400 metres (in practice this would vary considerably);
- The growth areas would need to accommodate non-residential activities, and it was assumed that such activities would occupy an area that in total would be about 50% of the land occupied by residential development. This means that one third of the total growth area would be occupied by non-residential development, including main roads, schools, playing fields, parks, employment sites, and so on;
- Each public transport stop catchment area would accommodate approximately 1,250 dwellings at the densities and spacings assumed. A higher figure would apply to the intensification corridors within the existing built up areas, with higher residential densities;

Options A and B are broadly similar in strategic terms although the locations chosen for the development area on the western flank and thus its associated public transport corridor are somewhat different between the options. It is also recognised that whereas the eastern expansion corridor is largely constrained between existing city boundary and M1, the western expansion area is less constrained. Broad options selected for testing were considered to offer the most suitable representation and layout for supporting a high quality public transport corridor, though it is recognised that other options both closer to and further from the existing city limits may also be feasible. From considerable discussions with the Milton Keynes and Aylesbury Vale Growth Area Study team members, it is evident that the precise location and form of the development area on the western flank of Milton Keynes, will require substantial further work before robust proposals can emerge – such work is beyond the scope of the current study.

[3] It should be pointed out that the MKAV study was concerned primarily with allocation of land for the period up to 2016, and the longer term growth was studied in broad terms only.

7 REVIEW OF BROAD ASSESSMENTS



7 Review of Broad Scheme Appraisals

Assessment of the options concentrated on the key issues directly related to transport mode share and broad estimation of scheme costs. This section sets out a broad assessment of each of the options with reference to their impact on mode share, scheme costs, Economic performance, Contribution to integrated transport, safety and Environment.

7.1 METHODOLOGY

In addition to a review of the existing conditions, using published data and other available recently surveyed information, a broad model of the trip movements in Milton Keynes was developed as a part of the Study. Growth in trips in Milton Keynes was estimated using published growth perditions as the base growth, with additional growth resulting from the land use development which are set out in the Local Plan, together with the developments which are currently being considered as a part of the Growth Area proposals, which has been described in detail in the previous section of this report. Total trips and mode shares were forecast using the model and input data as described above.

Broad scheme costs for Central Milton Keynes were developed using FaberMaunsell's extensive experience of estimating scheme costs for traffic management and bus priority measures (with experience of development of schemes for Milton Keynes). Estimates of the busway, LRT and GLT was also undertaken by FaberMaunsell's transport infrastructure engineers based on their extensive experience of designing and estimating scheme costs and reviewing actual tender and outturn capital costs for similar schemes in the UK. Operating costs for public transport systems were also based on the consultants extensive experience of estimating these costs and working with actual outturn operating costs.

Economic Appraisal of the schemes were based on the assessment of changes resulting from the scheme (compared with a do-nothing scenario) in journey times, forecast of passengers and car users, operating costs, generated revenues and scheme capital costs. The economic parameters used were based the latest government guidance as set out in the Treasury's most recent advice and requirement[4] which has become effective from 1 April 2003.

7.2 TRAVEL PATTERNS AND MODE SHARES

Tables 7.1a and 7.1b provides a summary of the mode share estimates for the transport options operating with each of the two land use options. To set the forecasts shown in Tables 7.1a and b in perspective, it should be noted that the mode share of public transport in Milton Keynes is 4.7% of all modes or 6.6% of motorised modes only (car and public transport, ie excluding walk and cycle). This mode share represents some 6.5 million public transport trips.

In general it is noted that as a result of the similarities between the two land use options, their performance with respect to enhancing public transport patronage is also quite similar. Also, as the system type changes in its nature to a more segregated and higher quality / better image system, mode share of the system improves.

[4] HM Treasury, The Green Book – Appraisal and Evaluation in Central Government

The best performing system with respect to its attractiveness to users and its mode share is the Light Rail System and as expected, the worst performance results from the do-minimum scenario.

It is important to appreciate that the mode shares set out in Tables 7.1a and b, refer to trips over the whole of Milton Keynes. Share of public transport trips to CMK is estimated to be typically 50% higher than that estimated for the whole of Milton Keynes.

Table 7.1a Forecast Mode Share with MKPT land use (Option A) assumptions

				Busway		GLT		LRT	
		Do min	Bus Imp	E-W	E-W+N-S	E-W	E-W+N-S	E-W	E-W+N-S
2011	PT Share of all modes	3.9%	5.8%						
	PT Share of motorised Modes	5.4%	8.1%						
2021	PT Share of all modes	5.2%	8.0%	8.8%	9.7%	9.1%	10.3%	9.5%	11.1%
	PT Share of motorised Modes	7.2%	11.2%	12.3%	13.5%	12.7%	14.4%	13.3%	15.6%
2031	PT Share of all modes	7.1%	9.3%	10.4%	11.3%	10.9%	12.1%	11.6%	13.1%
	PT Share of motorised Modes	10.0%	13.1%	14.6%	15.8%	15.3%	16.9%	16.2%	18.3%

Table 7.1b Forecast Mode Share with MKAV land use (Option B) assumptions

				Busway		GLT		LRT	
		Do min	Bus Imp	E-W	E-W+N-S	E-W	E-W+N-S	E-W	E-W+N-S
2011	PT Share of all modes	3.8%	5.8%						
	PT Share of motorised Modes	5.4%	8.1%						
2021	PT Share of all modes	5.1%	7.9%	8.7%	9.5%	8.9%	10.1%	9.3%	10.9%
	PT Share of motorised Modes	7.1%	11.1%	12.1%	13.4%	12.5%	14.2%	13.1%	15.3%
2031	PT Share of all modes	7.0%	9.2%	10.1%	11.0%	10.5%	11.7%	11.1%	12.5%
	PT Share of motorised Modes	9.8%	12.9%	14.2%	15.4%	14.8%	16.4%	15.5%	17.5%

Based on available data, current conditions in Milton Keynes resulted in public transport mode share of around 4% of all trips or 6% of motorised (Car and PT only) trips. This mode share equates to around 6 million trips per year. In the do-minimum scenario, where there is effectively no improvements in the conditions under which public transport operates, the mode share remains the same, although due to the growth in demand by 2011, the same mode share equates to some 7 million public transport trips per annum.

Basic improvement to bus services, as set out in the 'bus service improvement' option, including efficient and prompt operation of the eight core diameter routes and implementation of priority measures within and on public transport accesses to CMK, is forecast to results in an increase in the mode share of public transport to 9% of motorised trips n 2011, increasing to 15% of motorised trips in 2031. This equates to some 27 million public transport trips per annum by 2031.

With respect to further enhancement of the East-West and North-South routes, the mode share of public transport increases with better quality and higher speed systems, albeit not by a huge margin. At the top end of the scale, for LRT which represents the most attractive mode, public transport's share of trips is up to 16% of all trips or 22% of motorised trips. This equals to just under 40m public transport trips in Milton Keynes by 2031.

7.3 ESTIMATES OF SCHEME COSTS

Broad estimates of scheme costs are set out in Table 7.2. These have been prepared to provide a knowledge of the differences in the magnitude of scheme

costs and to enable a first level economic cost:benefit analysis of the schemes under consideration.

Scheme costs have been estimated for the options with the enhancement of the East-West corridor alone and that of both East-West and North-South corridors.

At £513m for the full scheme (East-West and North-South routes) the highest cost option is that of the Light Rail Transit as the infrastructure for the system requires laying of tracks along one of the lanes of the existing dual carriageways or widening on single carriageway sections to accommodate the track, separately from the road. In addition, the cost of the infrastructure for power supply facilities over the whole of the route constitute a significant part of the construction costs.

Construction costs for the Guided Light Transit is estimated to be lower than that of the LRT, at £359m for the full scheme as this option only requires laying of tracks for part of its route with the remainder of the route effectively operating as a system similar to a trolley bus system. It is noted that as there are effectively no system of this type and of the extent which is being considered here currently in operation, the estimates are therefore primarily based on LRT unit costs.

At £77m, the Busways option is the lowest cost option to develop as a significant proportion of the required infrastructure is already in place in the form of one of the lanes of the dual carriageway for the majority of the proposed busway routes.

Construction costs relating to the bus improvements only option relates to the development of the priority measures in within and on the approaches to CMK.

Table 7.2 Estimate of Scheme costs for various options

Option		Scheme Cost
Bus Imp		£13.8m
Busway	E-W	£43.6
	E-W+N-S	£76.7
GLT	E-W	£186.4
	E-W+N-S	£359.2
LRT	E-W	£272.4
	E-W+N-S	£513.4

Note: Costs are in 2002 prices

There is clearly a significant difference between the costs of the three main options. On the other hand, there are also differences in forecast demand and mode share and therefore benefits between different scenarios.

7.4 ECONOMICS ASSESSMENT

Estimates of costs, demand and mode share forecasts feeds through to the cost:benefit economic assessments of the scheme which forms a major part of the scheme appraisal and a key consideration of securing funding for infrastructure proposals.

Economic assessment is concerned with the value of benefits generated from a scheme compared with cost of the scheme measured by the benefit to cost ratio (BCR) and Net Present Value (NPV).

In advance of the completion of the full multi-modal transport model for Milton Keynes, development of which is currently in progress, this Study has made use of a

broad spreadsheet based model of the demand and mode shares to provide an assessment of the modal switch and benefits

Economic analysis was undertaken for whole schemes (ie East-West and North South Corridor schemes together). A summary of the result of the economic analysis is set out in Table 7.3. Further details showing the cost and benefit streams is set out in Appendix E.

Table 7.3 Summary of Economic Performance of Options

Option	Land Use	Net Present Value	Benefit to Cost Ratio	Description of economic performance
Bus Imp	**MKPT**	£65m	2.77	Good
	MKAV	£39m	2.05	Good
Busway	**MKPT**	£102m	2.63	Good
	MKAV	£64m	2.00	Good
GLT	**MKPT**	-£172m	0.56	Very Poor
	MKAV	-£183m	0.50	Very Poor
LRT	**MKPT**	-£344m	0.40	Very Poor
	MKAV	-£359m	0.36	Very Poor

The above Table shows the performance of the options tested. The description of the performance has arbitrarily been set by the consultants and referes to Benefit To Cost Ratios (BCR) of less than 0.75 as 'very poor'; between 0.75 and 1 as 'poor', between 1 and 3 as 'good' and above 3 as 'very good'. In practice schemes with benefit to cost ratios of less than 1 effectively have no chance of receiving any funding from central government and or indeed any chance of attracting interest from the private sector as a benefit to cost ratio of less than one almost always equates to a weak financial and business case for a scheme.

The analysis show good economic performance from the very low cost bus improvement option and the medium cost busway option.

7.5 INTEGRATION

Integration, refers to planning and development of transport schemes with its impact on and feedback from a variety of other policies and issues, such as land use development in addition to specific transport related issues of modal relationships, operations and interchange. Consideration of the issues related to land use development have been addressed extensively in this report.

With respect to modal relationships, operations and interchanges, all of the schemes considered in this Study support significant integration from major improvements to interchange between public transport routes and modes through to provision of high quality well designed Park and Ride facilities and improvement of public transport services in general for all residents, resulting in better penetration of services, particularly into the residential areas, further enhancing social inclusion and accessibility of all of Milton Keynes, in general and CMK in particular.

All of the options are therefore expected to contribute to the significant enhancement of the level of integration as compared with existing conditions.

7.6 SAFETY AND ENVIRONMENT

As significant issues in their own right, safety and Environment merit detailed assessments separately from this Study which has its focus on development of land use and public transport options.

However, as a broad statement supporting public transport based initiatives and options, it is clear that safety will certainly improve as more car users switch to public transport and highway speeds for private cars reduced as a result of reallocation of road space in favour of public transport. Also, in broad terms environmental benefits resulting from increased switch from car to public transport is a benefit of all public transport schemes.

8. REALISING THE VISION - RECOMMENDATIONS FOR CMK



8 Realising the vision; recommendations for CMK

This section of the report focuses on the steps that are required in order to achieve the vision for public transport. The system cannot be transformed overnight, but neither can key decisions and actions be postponed without endangering long term opportunities.

8.1 TRANSPORT AND THE CMK FRAMEWORK

A scenario for a stronger centre

The framework proposes a bold restructuring of CMK, and a considerable increase in the volume and intensity of development. In round terms there are expected to be an additional 20,000 jobs, a 50% increase in retail floorspace, together with other uses such as hotels and leisure. There will also be high density housing, providing an additional 1,000 homes or more.

This restructuring has the following implications for transport:

- Strengthening the provision in CMK will help to increase the strength of the centre relative to other parts of MK, and other competing towns. Other things being equal, this will make it easier to increase public transport market share.
- The proposed restructuring of parking towards the edge of CMK, and multi-storey provision to release development land are seen as powerful elements of the development framework, and are helpful in terms of future public transport provision, especially with the proposed Midsummer Boulevard spine route.
- Intensification will not be possible with the same degree of car access as at present. Parking ratios will have to be reduced, meaning that a higher proportion of trips than at present will have to be made by means other than the car. Again this is favourable to increasing the role of public transport.

Demand for public transport

Mode share

The growth of activity cannot occur in CMK with the same mode split for travel to CMK as at present. As CMK is built out, so there will need to be a diminishing proportion of trips to the centre made by car, and an increasing proportion made by other modes. This means either that new occupiers of CMK will have to make minimal use of cars, or that the reduced car share is achieved across the whole spectrum of users, including existing users.

We believe that the issue of mode share targets needs to be addressed in the process of further development of CMK. Targets included in the 1999 “Sustainable Integrated Transport Strategy” were transferred from the Royal Commission on Environmental Pollution Eighteenth Report and are unrealistic in the Milton Keynes context. (For the journey to work, the target was to reduce the car share of journey to work trips in all Milton Keynes from 77% in 1991 to 55% in 2011, and the public transport share to increase from 12% to 25%.) Achieving a 25% share for work trips in the whole of Milton Keynes would imply a very much higher share for CMK.

Trip purpose

In terms of traffic congestion, the main factor continues to be the journey to work. In terms of the role of public transport, however, the issue is not just about the journey to work, but the whole spectrum of trips undertaken throughout the day. Shifting only peak hour car trips onto the bus will be inefficient and costly in terms of bus

operation. Public transport should aim to serve as wide a range of trip purposes as possible, to balance passenger number across the day, and hence achieve optimum cost-revenue ratios.
The achievement of this is crucially dependent on the supply and management of parking in CMK (see below).

Interaction with parking

The prognosis for mode share of trips to CMK is, however, dependent on the quantity of parking, its price, and its tariff structure. For example, it is envisaged that the total amount of parking will increase from 26,000 to 33,000 by 2026. If the proportion of parking available for each type of user remains unchanged (i.e. between long and short stay), then car trips to CMK would increase by 27%, including in the peak hour. If, however, a higher proportion were to be switched form long-stay to short- or medium-stay, the traffic increase would be different, with a greater increase at off peak times, and a smaller increase at peak times. These impacts have a critical bearing on the demand for public transport.

A theoretical case is presented in Table 8.1, below. The actual figures for CMK would need further investigation in relation to decisions on a detailed parking strategy. The public transport demand outcome would in addition be dependent on a range of other factors such as relative fares and pricing, quality of service, and the load factor of car journeys.

Table 8.1 Hypothetical distribution of parking and impact on trips to CMK

Number of Parking Spaces Long/Short Stay Split % assumed	Total Car Trips generated per day (inbound)	% in Peak	Reduced potential demans (compared to base case) for modes other than car-driver
26,000 spaces **Base Case** 50/50	65,000	20	
26,000 spaces 25/75	91,000	7	-26,000
33,000 spaces (2026) 50/50	82,500	2	-17,000
33,000 spaces (2026) 25/75	107,250	8	-42,250

Assumptions:
All parking spaces are fully utilised
All-day parking spaces are used by peak hour trips and are used only once
All short stay parking spaces are used 4 times a day

The planned increased intensity of development means that a smaller proportion of people will be able to drive to CMK, and that they will be paying more to do so. Provisional parking standards for CMK adopted in April 2003 will reduce the ratio of parking to floorspace, but will still produce an absolute increase in parking supply, estimated to be from a 2001 figure of 25,500 to 33,000 in 2026 when most of the development framework proposals will have been completed.

The parking management strategy includes, it is understood, a shift of balance towards short stay parking. This is consistent with limiting peak hour congestion, but is inconsistent with increasing public transport use overall, as Table 8.1 indicates. Since each short-stay parking space converted from long-stay would accommodate

more car trips, this will erode daytime public transport market share. In addition, in broad terms, “short stay” parking appears to be at odds with the stated aim of encouraging greater diversity in the city centre to attract people to spend more time there.

The CMK Development Framework states that “rising congestion will be insufficient to persuade motorists to switch to public transport”. We agree with this. Reduced parking and concomitantly higher charges will be the main factor influencing a switch to public transport, though there are other considerations, not least of which is the quality of public transport offer.

In view of the inter-related importance of parking supply and management to the success of the public transport strategy, it is important that the parking strategy for CMK is developed at an early stage, and kept under review as development progresses.

8.2 PROVISION OF PUBLIC TRANSPORT TO AND FROM CMK

Recommendations for public transport services to and from CMK are set out elsewhere, but the main proposal is for a network of 8 “diameter” routes (providing radial services in 16 directions from CMK) to form the core of the public transport services in Milton Keynes. These will include two high frequency routes serving corridors with higher intensity development (one north-south, the other in the longer term east-west). All the routes will travel end to end on Midsummer Boulevard.

Walking distances between CMK activities and the nearest bus stop group will for most people be no more than 5 minutes. Moreover, all 8 routes will serve the nearest bus stop group, thus avoiding people having to choose different bus stops according to their destination as at present.

It is intended that in the short to medium term a frequency of no less than every 15 minutes will be established on all routes during the daytime.

8.3 PUBLIC TRANSPORT FOR TRAVEL WITHIN CMK

CMK internal public transport demand should be served by the city-wide services that converge on CMK. The Milton Keynes services will have as a common element the entire length of Midsummer Boulevard, between Station Square and Marlborough Gate. The high frequency thus achieved on this spine route through CMK will provide for movement within CM.

The 15 minute frequency on all the 8 diameter routes will mean a minimum of 32 buses per hour in each direction along Midsummer Boulevard, providing a waiting time of no more than about 2 minutes for travel within CMK. For example, a journey from the railway station portal to John Lewis would take less than 9 minutes, compared to about 20-25 minutes on foot.

Consideration should be given to making travel free for trips between the four CMK bus stop groups.

The CMK Development Framework advocated a dedicated intra-CMK public transport service, but no hard justification for this was provided. The suggestion of a dedicated intra-CMK public transport service has been considered in this study, but in our view should be dropped for the following reasons:

- There is insufficient demand to support a separate service;
- To develop a specific system for CMK which is different in technology and services pattern from the Milton Keynes main public transport system will be prohibitively costly;

- Car users using public transport only within the centre should be exposed to the experience of using the city system, thus reducing an important barrier to choosing public transport, and encouraging them to use it for the whole journey. A separate service would not achieve this;
- Development of a higher intensity centre could increase demand for internal trips, but at the same time could make internal trips on foot more attractive;
- The CMK framework includes the relocation of some parking towards the periphery of CMK, which for some will mean longer walking distances from car parking spaces to the final destination. In terms of promoting public transport use for travel to the centre this may be regarded as an advantage, because it increases the relative accessibility and attractiveness of public transport;
- The distances between central destinations and the nearest peripheral car park are no greater than 500 metres. While this may be a considerable distance for people with mobility difficulties, it is unlikely that most users would find the effort and fuss of waiting for a shuttle service worthwhile. It takes about 6 minutes to walk 500 metres, which means that to compete, the shuttle would need to offer a door to door journey time including waiting time of less than 6 minutes. This would require a 3 minute headway or better. Of course most walks from car parks to destinations will be considerably less than 500 metres. On this analysis the notion of a car park shuttle would not be feasible.

8.4 INFRASTRUCTURE PROVISION

Infrastructure measures are needed to create the spine route along Midsummer Boulevard as a priority route for buses (and pedestrians and cyclists) and to provide bus access into and out of CMK that is free of delay or disruption from other traffic. These include:

- Reconfiguration of the carriageways and other areas of Midsummer Boulevard, with appropriate traffic management;
- Re-instatement of the bus-only link roads from Marlborough Gate to Marlborough Street;
- The reconstruction of Station Square to provide a high quality multi-modal interchange. As a general rule all improvements will be based on high quality passenger facilities;
- The provision of bus priority (including bus lanes and priority traffic signals) on the approach and exit roads for CMK;
- Reopening of Midsummer Boulevard through Midsummer Place.

These measures are described in more detail below.

8.4.1 Specification

The system will need to be specified for the whole of Milton Keynes, for example under the following headings:

System Characteristics, such as route principles, information systems to be provided, type of “track” and principles of priority over or integration with other traffic;

Vehicles, their operating and design characteristics including accessibility for those with mobility impairments;

Stop areas, including the range and type of facilities to be provided, graded according to their role (interchange or otherwise) and importance;

Complementary measures, in particular in relation to parking supply and management, and integrated approaches to parking charges and public transport fares.

In view of the importance of the Midsummer Boulevard spine route for the entire system, a separate specification will probably be required. This should be developed in conjunction with the development of urban design and traffic and parking management.

It is important to stress that the introduction of the measures described for CMK are in many ways inextricably bound up with the proposed restructuring and improvement of bus services throughout Milton Keynes. For example, there is little point in investing in substantial measures such as Midsummer Boulevard if the standard of public transport services is no higher than today.

8.4.2 Phased introduction

The difficulties of introducing all measures simultaneously are acknowledged, and it is more realistic to programme changes in phases. A suggested phasing is shown below.

Watching brief (Immediate and continuing)

(To take immediate effect, to ensure that any decisions or negotiations relating to traffic or development in CMK contribute to or at least to not prejudice the public transport strategy and vision).

- Re-opening Midsummer Boulevard at Midsummer Place and conversion to complete bus spine route
- Pedestrian links between Midsummer Boulevard and Campbell Park must not prejudice, and must take account of bus spine on full length of Midsummer Boulevard and priority measure on Marlborough Gate
- Station Square redevelopment providing potential for more direct and efficient route for buses to the north and north west to North Elder and Portway.

Phase 1

- Station Square bus and other facilities (see below)
- Bus priority on approaches to CMK
- Rendezvous and interchange bus facility for CMK (see below)
- Re-structured bus routes and regular service pattern (whole of MK area)

Phase 2

- MS Boulevard as public transport spine (traffic management to achieve bus only through route, other traffic access only)
- Construct Marlborough Street links with bus priority access
- Midsummer Place conversion to bus spine

8.4.3 Proposals and recommendations for CMK in detail

Figures 8.1, 8.2 and 8.3 provide an schematic description of the recommendations specifically related to CMK. Figure 8.1 provides an overall view of the recommendations for CMK, Figure 8.2 sets out the Rendezvous Layout on Midsummer Boulevard and 8. 3 provides a schematic view of the suggested Station Square concept.

Midsummer boulevard public transport spine

Required actions:

1. Establish the principle of a priority route for public transport throughout. (The new bus lanes help towards establishing this principle, but will not form part of the proposed spine measures.)

2. Convert part of Midsummer Boulevard to a two-way busway (probably one side of the present dual carriageway).
3. Incorporate in the bus-way a “crossover” style interchange point. This should be located on Midsummer Boulevard between Saxon Gate and Secklow Gate, although could be phased with re-opening of Midsummer Boulevard at Midsummer Place
4. Creation of a high quality continuous at-grade pedestrian and cycle route parallel to the bus-only way. Reinforces the Midsummer Boulevard public transport spine concept.
5. Closure of the other carriageway as a through route, and conversion to local access road (traffic management measures to achieve this).
6. Re-opening of Midsummer Boulevard at Midsummer Place in order to complete the bus spine. This is critical to the achievement of the public transport strategy, and early attention must be paid to the means of delivering this scheme.
7. The Midsummer Boulevard bus-way to be linked directly into the re-designed Station Square (see below) with priority signalised junction (not roundabout) at Grafton Way (currently named “Midsummer” roundabout)
8. Construct new two-way bus-way links between Marlborough Gate and the Belvedere and Springfield junctions. Redesign all junctions and control with signals to facilitate public transport priority throughout.

Station Square

The concept is to provide a welcoming facility and range of services for those arriving (or departing) CMK by rail. The arrangement will eliminate interference with bus services from other traffic functions, and will be comprehensive. Potential passengers will not need to walk to any other location in order to board a bus. Every bus service coming to CMK will call at the new Station Square facility. The design is described below, and illustrated in Figure 8.3.

To be completely redesigned to achieve separation of public transport from all other transport functions. A design scenario is for buses and related areas and facilities to occupy the northern half of the square. Car drop-off and pick-up, and taxi and service vehicle activities will occupy the southern half of the square. The two halves will be separate by a pedestrian and cycle portal, running continuously and directly from the station portal to the pedestrian/cycle way running the length of Midsummer Boulevard (see above).

Required actions

1. The bus area will incorporate all passenger service functions, including those currently provided at MK bus station.
2. Buses from any direction will enter the square from the east and pull up at bus stops that are aligned facing the station building. This helps passengers to identify their bus.
3. The number of bus stops is to be determined on the basis of the number of routes and service frequencies. An indicative layout is set out in Figure 8.2. Half of the buses calling will be continuing along the Midsummer Boulevard spine, and the stops for these should be located closest to the station portal to maximise convenience for those using services to reach other parts of CMK, and to minimise the crossing of bus lanes to reach the stops.
4. An information point should be provided adjacent to the facility, incorporating all modes of travel, not just MK buses.
5. The possibility of providing lay-over and staff facilities within the north-eastern part of the square should be investigated. The goal should be to do away with the need for bus facilities at other locations in CMK, and to release the present bus station for other development. The scale of requirement may, however, mean that certain non-passenger functions may need to be located outside Station Square.

6. The route out of the Square in a northerly direction is currently via Grafton Gate and North Grafton junction. A more direct route towards the west via Portway would be possible if a link could be constructed between the Station Square bus stops and “North Elder” and thence to Portway, which it would join with a bus priority signal intersection. This route would benefit the operational efficiency of 5 of the 8 proposed diameter routes including the proposed high intensity route serving expansion areas to the east and west. This proposal would be dependent on the redevelopment of the office building on the north side of Station Square and therefore requires a watching brief to be kept to exploit any opportunities that may occur.

Stops, interchange and rendezvous

Midsummer Boulevard will be the core of the entire MK network. It will provide access for the majority of trips served by public transport in MK. It is therefore crucial that all passenger activities including waiting and interchanging are provided for with high quality facilities.

1. It is proposed that passengers will be provided with 5 locations (including Station Square, described separately) along Midsummer Boulevard at which they can board or alight any MK service bus. These locations will be the same as currently provided, broadly speaking halfway between the 5 “Gates”.
2. This means a spacing of 500 metres between stops, providing a catchment of 300 metres walking distance to the great majority of sites within CMK. The CMK development framework envisages most parking to be located at the “extremities” of CMK, namely at the locations furthest from the Midsummer Boulevard bus spine. This is a positive feature of the scheme in terms of traffic management as well as operational catchments for bus passengers.
3. Each “stop location” will serve all bus routes, i.e. 8 routes in each direction. The number of separate stops to be provided will need to be planned in relation to service frequencies and potential “pairing” or routes serving similar directions. Frequent routes (including the key north-south route, and eventually the key east route) will need their own dedicated stops. Other services can “double up” as a means of reducing the length of the bus stop area. (Keeping the length to a minimum is an objective because of the need for passengers to be able to switch between stops for route interchange purposes.)
4. It is proposed that all routes should operate at a minimum 15 minute frequency. Some routes will operate more frequently, and indeed already do. Assuming that 6 diameter routes operate at 15 minute intervals, and 2 operate at 10 minute intervals, this means that each “stop area” in CMK will handle 36 buses an hour in each direction. (This results in a service offer of 180 bus departures from CMK every hour.)
5. The interchange philosophy with such frequencies is that people can switch between routes at any of the 5 bus stop areas in CMK. People interchanging would expect to wait a maximum of 15 minutes, and this could be done with full support of information, shelter, and other facilities at any of the CMK bus stop areas.
6. In the evenings (and in the long term also the night), it may not be feasible to maintain these service frequencies. For these times it is proposed that the service provision switches to a different timetable of 30 minute frequencies, with buses timed to rendezvous at ONE of the bus stop areas. Buses on half the routes would arrive simultaneously on the hour and half hour. Buses on the other half of routes would be timed to arrive on the quarter and three-quarter hour. The division of routes would be made on the basis of minimising the need to wait 15 minutes for interchange. (This is done by timing dis-similar routes together, and timing similar routes on the cycle that is 15 minutes apart.)
7. The single rendezvous bus stop area should be designed to facilitate ease of interchange between bus routes. This is best done by the creation of an “island” whereby passengers can walk from one bus to another without the need to cross a road, or walk in front of a bus. The island arrangement also makes it very

much easier to provide facilities that are shared by all uses, and in addition makes it easier to provide security. The island arrangement requires buses to "crossover", as shown in 8.2, but this poses no operational problems provided drivers are adequately trained. Examples of island operation are at Lemgo and Lübeck in northern Germany.

8. Mostly people making leisure, entertainment and social trips will use the Rendezvous for interchange. The stop area chosen for off-peak Rendezvous should therefore be located adjacent to CMK leisure and entertainment activities. Currently this would mean between Secklow and Marlborough Gates. (It should be borne in mind that Rendezvous operation is possible at only one stop area.)
9. Provision of real time information on services and expected wait time for passengers at the stops provides comfort and confidence for the passengers and improves the image and passengers perception of the services. All stops and interchanges within CMK should be equipped with electronic Real Time Passenger Information Displays.
10. The Midsummer Boulevard spine is the means whereby internal CMK trips are made by bus. It is a good marketing technique, and also good for efficient boarding and alighting at CMK stops, to make travel with CMK fare-free. This helps persuade people who are not habitual bus users to ride occasionally within CMK, and thus expose them to the system, thus making it more likely that they will choose the bus in other circumstances. We would therefore recommend that this option should be considered in development and implementation of a step change in Public Transport in Central Milton Keynes.

Bus priority measures

It must be emphasised that the purpose of bus priority measures is not so much to "help" buses in congested traffic conditions, but to provide them, in effect, with a mode of operation that is segregated from other traffic to the extent that bus operation is unaffected by other traffic. It must also be emphasised that the prime purpose of bus priority measures in not to reduce passenger journey times, although this can be a useful benefit. (Buses will never compete with the car on door to door journey time.) The main purpose is to achieve guaranteed running times to achieve close to 100% reliability and operational efficiency.

Three types of bus priority measure are proposed, in CMK and on roads leading to CMK, as set out below.

Bus-only way, Midsummer Boulevard and links

1. The concept is described above. It requires for its implementation not simply the removal of other vehicles from the busway, but priority measures wherever it crosses streets carrying general traffic. This should be achieved by bus activated traffic signal control. Junctions within Midsummer Boulevard will need complete redesign to accommodate the new functions and allocation of space.
2. Marlborough Gate will require either conversion to bus-only operation, or bus priority signals and lanes to ensure that other traffic does not impede bus progress. The new road links between "Campbell Park" junction and "Belvedere" junction, and "Bankfield" junction and "Springfield" junction will be bus only, and will require appropriate signal priority at each end.
3. There are a number of options for bus routing at Station Square. It is vitally important that buses are not mixed with other traffic at this location, which for many will provide their first impression of the local public transport system when they arrive at the station. The provision must make a clear and symbolic statement that public transport is a key part of the system in Milton Keynes. People need reassurance that the town means business when it encourages and expects people to use the local buses.
4. The option shown on Figure 8.1 is for Elder Gate to be closed as a through route past Station Square. The northern half of it would be taken over for bus use, as would the link from Elder Gate to Grafton Gate, which would be part of the bus-

way spine. The southern half of Elder Gate would provide access from Avebury Boulevard into the southern half of Station Square for taxis and other vehicles. The short stretch of Elder Gate immediately south of Midsummer Boulevard would be closed to all vehicles, thus allowing the creation of the proposed pedestrian and cycle way leading up through Midsummer Boulevard alongside the busway. More detail is provided in Figure 8.3.

Bus lanes

All main roads carrying bus routes should be provided with bus lanes on their approach to CMK, and on their approach to key junctions on routes away from CMK. The suggested location of these lanes is shown on Figure 8.1. The logic of these lanes needs to be clarified:

1. The removal of one lane for general traffic starting from the short term (ie as soon as possible) will help to avoid traffic increasing on the route to the point where buses are delayed. If traffic is allowed to increase over time, when the need for the bus lane is critical it will then be a very much harder measure to "sell" all road users.
2. Bus lanes have a much more powerful presence than signal priorities alone. The "visibility" of the public transport system has already been mentioned as an important component of building up demand, and changing travel culture to accept the bus as a valid alternative to the car. Use of coloured road surface and distinctive markings assists with this objective and also helps enforcement.
3. It must be acknowledged that the frequency of buses on these lanes will be low, with a probable maximum of 30 buses per hour per direction. Usage of the lanes can be increased by allowing taxis and cycles. But visibility of the "track" itself is important, even if it is empty for much of the time. The same is true, after all, of railway track, where the supremacy of the mode and priority over other traffic is well understood.

Bus priority signals

1. Providing buses with unimpeded flow requires the provision of signal control of any junction where traffic is likely to queue. This includes T-junctions. It is therefore a requirement that all junctions in and around CMK that carry bus routes should be converted to signal control, with bus-activation. Figure 8.1 shows the location of these junctions.
2. A further issue to be resolved on a case by case basis is whether the junction should also be converted from roundabout to simple four-arm operation. From a bus operation point of view, cross road junctions are preferred, since these are more comfortable to negotiate than roundabouts. However, there are some junctions on the network where such conversion would be difficult to justify in cost terms, for example the Portway roundabout over the A5.

9 REALISING THE VISION – RECOMMENDATIONS FOR MILTON KEYNES AS A WHOLE



9 Realising the Vision – Recommendations for Milton Keynes as a whole

This section explains the recommendations and the reasoning behind them for the whole of Milton Keynes. As with CMK, it will be important to take the necessary actions to avoid losing opportunities for improvements to public transport, and to ensure that new development provides maximum encouragement to public transport use. However, with a few specific exceptions this report does not attempt to set out all the locations where such action may be required. There will be a need for further local studies, and a watching brief kept for all planning applications to ensure that they accord with long term public transport plans.

The recommendations are designed to meet or be consistent with the criteria which it is felt the future public transport system should satisfy. These have been set out in Section 5 above.

9.1 RECOMMENDATIONS FOR MILTON KEYNES AS A WHOLE

Making public transport visible

It is considered vital that public transport should be highly visible to people in Milton Keynes. Its presence should be understood and acknowledged by everyone as a means of encouraging its use. This is a difficult concept to put across in a town that has never experienced high profile public transport, but it is considered vital. The provision of bus priority measures within CMK and on the approach roads is seen as an important means of achieving this objective. The bus lanes recently installed into and within CMK can be justified in relation to this objective. This recommendation covers a range of possible measures; other measures can be devised to meet the requirement for a high profile system.

- Presence of public transport on all information sources for Milton Keynes;
- Ensuring that bus (or other) routes use the road network, or rights of way that are visible from the roads and footpaths of the town;
- Prominent and well-designed shelters and other facilities;
- Bus priority measures;
- Bus-only boulevard through CMK (Midsummer Boulevard)

Recommended service pattern

The main recommendation is for services to be re-structured into a more robust core network of 8 diameter routes, with service patterns that can be understood and used without the need for timetables. This involves considerable regularisation and simplification of the service pattern compared to today's extremely complicated pattern.

The recommended pattern of service for Milton Keynes is for:

- Routes operated to the same pattern of routes and frequency throughout the day;
- Regular intervals of service on a clockface basis, eliminating the need for carrying timetables;
- A minimum daytime frequency of 15 minute headways;
- A principle of interchange at CMK, requiring people to make no more than one change in order to travel by bus between any two points in the city;
- There can be change of frequency at periods of low demand, but this must occur at the same time on all routes and every day. It should become as widely known as the usual 6.00pm end to parking restrictions.

- In late evening, for example, frequency on the 8 diameter routes could be lowered to 30 minute headways and a timed interchange provided at a single CMK rendezvous point on Midsummer Boulevard (suggested at cultural quarter to maximise evening demand). For example, 4 diameter routes interchange at 0 and 30 minutes past the hour; the other 4 diameter routes interchange at 15 and 45 minutes past the hour.

Immediate safeguarding actions

The safeguarding actions required within CMK have already been described. There is a similar need to ensure that incremental and ad hoc changes, for example arising through planning permissions or highway alteration, do not impede or neglect opportunities for realising the long term public transport vision.

Within the scope of this study it is not appropriate to attempt to identify all the possible requirements, but the following are seen as particularly critical:

- Identifying, following more detailed study and consultation, the preferred routes for the public transport corridors where intensified development will occur. This includes the north-south and east-west routes described elsewhere in this report.
- Examine all planning applications within these corridors for their consistency with the overall vision, and if necessary conduct masterplanning exercises to guide appropriate development. Consistency will include, for example, residential or mixed land use, higher tan average density density, traffic generation that does not hinder the conversion of the route to bus and access-only operation in the future.
- The hospital is a major generator of public transport demand yet its potential is undermined by inconvenient access to bus stops. As a matter of priority the potential for bringing bus routes through the site with stops at the hospital entrance should be investigated with the health authority. A Travel Plan for Milton Keynes General Hospital is currently being developed. It is important that this opportunity is used to maximise the public transport contribution for travel to and from the hospital.
- Bletchley is the subject of a regeneration planning exercise. This should include a framework for re-structuring bus services in Bletchley, and exploiting the north-south high frequency route that will serve it. The potential for running all buses to stops within the High Street should be investigated. At present access between the bus station and the shopping areas is extremely poor.
- Bletchley railway station provides an important opportunity to interchange with the local bus network that is presently unrealised. The Bletchley regeneration plan should address this issue.
- Public transport currently has a low profile at some of the local centres in Milton Keynes. As a principle, opportunities should be taken wherever they arise to locate bus stops at preferential sites close to the main entrance of shopping and leisure areas. Examples where improvements could be made are Westcroft, Kingston and Stantonbury Campus.

Planning controls to maximise public transport use

Planning applications should be reviewed in terms of accessibility by public transport. This should be undertaken in the context of Transport Assessments prepared by applicants as part of the planning application. Government guidance on this is imminent, but meanwhile similar guidance is already published by the Scottish Office. (Scottish Office, “Guide to Transport Assessment for Development Proposals in Scotland”, April 2002. Recommended here for use in the English context.)

It is also appropriate for planning frameworks or masterplans to be drawn up to encourage suitable development applications for major sites, or where redevelopment is to be encouraged. Such frameworks should have maximising public transport accessibility as a key objective. In addition they should address potential for improved public transport routing or priority arising from any development that takes place. An example already mentioned is the potential offered by any redevelopment of Station Square.

One of the most important planning controls that will affect public transport demand is the level and management of parking provided associated with new developments. The level of parking should be an ***output*** of the Transport Assessment process. In addition, it will be necessary to ensure that parking is provided at the level specified in the planning permission, and enforcement action taken if necessary to ensure that excessive parking is avoided. Consequential action may be needed to introduce further on-street parking controls to avoid problems created by overspill parking.

Route development – physical measures

As explained earlier, the road layout in Milton Keynes is mostly unsuited to efficient bus operation or convenience of access by users. It is important, therefore, that measures are taken to improve upon this situation. This can be done in three ways:

1. Instigate plans to develop areas around bus stops on main grid roads and within the grid squares so that access to them is easier. Such plans might be called “bus stop access plans”, or “safe routes to bus stops”. They could address a wide range of issues, from the simple cutting back of hedging in order to improve safety and security for people walking to and from bus stops, to plans for redevelopment and intensification of activity within the 300 metre walking catchment of bus stops.
2. Instigate a routing review to achieve more direct routes for buses through grid square developments, involving short new sections of road for bus use, with or without traffic management measures to provide preferential access for buses (and pedestrians and cyclists).
3. Ensure that layouts for all new development (except small infill developments) are designed both to facilitate bus route operation, and to maximise opportunities for occupiers and visitors to the development to travel to and from by public transport. This means, for example, ensuring that the highest density and mixed use, and non-residential users are located within 200-300 metres of a bus stop.

9.2 SERVICE DEVELOPMENT

The restructuring of bus services recommended in this study will provide the foundation for further service development. The importance of simplified routes at regular clock-face intervals has already been recognised in Milton Keynes, for example with the introduction of Route 210.

A minimum set of frequencies has been recommended, together with the need for better information and ticketing, and removing irregularities of routing and timetabling.

These improvements are ultimately best operated on a commercial basis, although this may take time to achieve. In our view, any revenue support should be geared to creating the “no timetable” bus operating philosophy. In this way service improvements can be actively marketed to the public as a major change and innovation. This cannot be done with ad hoc and incremental changes to marginal evening services, for example.

Moreover, such service developments will ultimately depend on increasing passenger numbers. This requires pro-active integration of land use development and bus access plans as described above, together with marketing and other devices. The restructuring of services by itself may achieve a great deal, but the full potential will require the complementary actions described.

10 REALISING THE VISION – FUNDING AND STATUTORY PROCEDURES



10 Realising the Vision – Funding and Statutory Procedures

This section provides a description of the funding paths available for developing the public transport vision in Milton Keynes and the statutory procedures which will need to be followed in developing major transportation schemes in the UK.

10.1 FUNDING

This section sets out, in broad terms, the funding paths. It provides an outline of the methods for gaining central government funding, the potential other funding sources, the level of funding likely to be available to deliver major public transport projects

Major schemes are defined as schemes with a capital cost of over £5m. Annex E funding is the path currently used to obtain Central Government funding for major highway and public transport schemes under the Section 56 of the 1950 Transport Act provision. The guidelines provided by the DfT sets out the methodology that should be used and the levels of funding available. Schemes should be taken forward at the expense of the local authority concerned and included within the LTP process. The LTP process should be followed in the preparation of the scheme design, and costs for feasibility studies must be solely borne by the local authority. Applications for Central Government funding should be made through the Annex E process.

The Major Scheme Appraisal in Local Transport Plans published by the DfT states that the prime criterion for which major schemes are assessed is value for money although financial performance of public transport schemes is also important.

There are four areas of potential funding for a major public transport scheme:

i) private sector finance,
ii) local funding;
iii) credit approved borrowing; and
iv) government grant.

Each of these areas is detailed in the following paragraphs.

Private Sector Finance

There are three methods of obtaining private sector finance; developer contributions, scheme franchising and infrastructure leasing. Private sector finance can be in the form of developer contributions to a scheme. This has been very successful for the Docklands Light Railway and Manchester Metrolink has also secured significant funds through this route. Developer funding is likely to form a significant part of the funding mechanism for Milton Keynes. Private sector finance is also manifest in the procurement and operation of the scheme, through the franchising of the scheme - for example design, build and operate contracts with a fixed commercial return therefore offset the capital costs against the potential revenues. The private sector provides the capital in this case and as part of the contract agrees a proportion of the capital to be repaid each year as well as, in many cases a share of the operating surplus. The third form of private sector funding is through leasing of the infrastructure where the residual value of the infrastructure is used by the private financer to offset the capital cost. The infrastructure would always be privately owned in this case and leased to operators or passenger transport authorities.

Local Funding

Local funding can be through capital receipts. This has been used to partly fund the Tyne and Wear Metro where capital was obtained through the profits from the privatisation of the bus company and was then re-invested into the LRT scheme. In the case of Milton Keynes local funding may be sourced from the parking revenues. Urban regeneration funding also is considered local funding and Single Regeneration Budgets (SRB) can be used. Although in their conventional sense these funds may not be available to relatively affluent areas such as Milton Keynes, growth area proposals may provide a vehicle for Milton Keynes to benefit from these or similar funds. European funding also comes under the local funding category and the main source is the European Regional Development Funding which was a considerable proportion of the Manchester Metrolink Phase 1 costs. However, this is unlikely to form one of the means of funding for a public transport schemes in Milton Keynes. It is very important to note that local funding from Local Authorities or Passenger Transport Associations (PTA's) must make up a minimum of 25% of the net scheme cost (after private sector contributions).

Credit Approved Borrowing

Credit approved borrowing and Government grants are both available through Central Government. The capital approved borrowing system enables the local authority to borrow money with central government assurance. When applying through the Annex E process for Central Government capital, half of the capital will be in the form of approved borrowing. This enables the scheme promoter to borrow money from a bank that is secured by Central Government assets rather than just local assets. When applying for Annex E funding the level of borrowing already being undertaken by the scheme promoter should be considered as, for example, a local authority with numerous major projects and therefore separate borrowing agreements can result in paying large levels of interest on the capital borrowing.

Government Grant

The grant is obtained through an Annex E submission to access the Section 56 Grant. The grant can only make up a maximum of 50% of the net capital cost. Therefore, the capital cost should have the private sector contribution deducted, a minimum of 25% must be funded locally. Of the remaining sum only 50% can be provided by grant. It is therefore essential that each of the methods of securing capital funding are explored as each are expected to contribute to the funding of a scheme through the LTP process.

We have not been able to find any evidence of recent schemes that have not required any Central Government funding.

Changes were announced at the beginning of March 2003 for the requirement of information for major scheme grant applications. These changes mean that the submission must now include:

- An Economic Impact Report (EIR) includes the need for quantification of land use changes, employment changes, travel time changes and accessibility effects. The guidance for EIR has not yet been released (draft guidance has been issued – we have a copy) but is likely to be similar to the system currently used in Scotland;
- A New Green Book of guidance for appraisal will be published by the DfT in April 2003;
- Account of Optimism Bias in relation to capital costs, operating costs, timescales and benefit uncertainty; and
- Fully appraised alternative mode solutions – this is a step-change in detail from previous guidance.

10.2 STATUTORY PROCEDURES

This section sets out the statutory procedures that could deliver the Milton Keynes Vision. It outlines the methods that can be used to obtain the statutory powers required for compulsory purchase of land and large scale change to the urban environment.

Construction powers would be required for any urban transit system that requires the compulsory purchase of land, change to the visual or operational environment or the introduction of a new transport scheme. Construction powers should not be taken for granted as the Southampton, Glasgow and Merseyside schemes failed to get the powers required for construction even when funding had been identified. It is therefore important to note that the risks associated with obtaining funding and obtaining construction powers are separate and should be considered separately.

There are three routes for obtaining the powers required, these are:

i) A private bill before parliament;
ii) A Transport and Works Act Order; or
iii) A Scottish bill.

The first two of these could be used to obtain powers for the Milton Keynes scheme. The process undertaken to prepare for the submission of a private bill or a public inquiry for TWA powers are the same, therefore the same process of consultation, scheme development and documentation needs to be undertaken for both. The difference between a public inquiry and a private bill is the political mechanism that evaluates the scheme and then awards the powers. The decision to go for a private bill or a TWAO is a legal decision made to try and mitigate the timescale and financial risks and is made just prior to submission. The timescale and financial risks are similar for both a private bill and a public inquiry and therefore it is unlikely if following one route rather than another would save significant time or money. The preparation process is as follows:

a) Preliminary Consultation – the local planning authority must be consulted at this stage but in practice it is advised to consult widely to reduce the number of objections received. All key stakeholders would ideally be met to pass on a clear description of the proposals and to receive an understanding of potential concerns;
b) Application – this is made to the Secretary of State. The information provided at this stage includes a draft of the proposed order, the powers sought, a book of reference detailing land affected and ownership, the effect on the environment, the details required for planning permissions, estimate of cost and funding, estimate of time required to complete the works and a fee for processing the application;
c) Objections – written objections are received and the consultation process continues to try to mitigate these objections where possible; and
d) Determination – the application and objections will be considered by a representative of the Secretary of State (usually at a public inquiry).

The level of detail required to submit an application for construction powers involves full feasibility and costing work to be completed. It is therefore essential that capital costs are at Level 5 with all detailed design elements complete and that demand and appraisal has been undertaken to a high level of detail involving detailed modelling and sensitivity testing. In effect the scheme must be ready for implementation with only the final detailed design work to be completed when a TWAO application is made. The funding should be secured before the scheme is progressed and the financial risk is borne by the scheme sponsor. The cost of the process is usually taken as about 10% of the total scheme cost but this depends on the how complicated the powers required, the number of objections received and

the time taken to undertake the process. It usually takes about 2 years for power to be granted from the application stage to the determination although this can vary greatly depending on the resources available and the number of scheme submitted within the Office of the Deputy Prime Minister.

11 SUMMARY OF RECOMMENDED MEASURES TO DEVELOP PUBLIC TRANSPORT OVER TIME



11 Summary of recommended measures to develop public transport over time

Below we set out a number of measures that are independent of key decisions about the long term future of public transport in Milton Keynes, but which could contribute to an incremental building of demand for public transport. Many of these measures could be pursued by the local authority, or in partnership with the bus operators.

For the purposes of the recommendations as set out in this section, *'short term'* refers to immediate actions with a view to implementation over the next two to three years. *'Medium term'* refers to three to six years from now and certainly in advance of the adoption of the next Local Plan or equivalent, and *'Long term'* refers to the time period for the growth planned by the Milton Keynes and Aylesbury Study proposals with a view to have the proposed measures firmly in place by 2021.

In the short term

Restructuring and improving bus services without major infrastructure or traffic management changes. These measures are relatively straightforward to develop and can be implemented relatively quickly. The measures could include:

- Provide high quality attractive bus shelters for all bus stops in Milton Keynes;
- Provide high quality visible interchange facilities at key locations – train stations (Milton Keynes Central, Bletchley and Wolverton) CMK Shopping and the Hospital;
- Provide extensive and easy to understand information on services at **all** bus stops throughout Milton Keynes;
- Place bus information kiosk (preferably staffed) at the CMK shopping terminal and at MK Central station, preferably combined with existing rail travel centre;
- Restructure and simplify route numbering – Key axes / groups of routes, such as south to centre, north to centre, east to centre and west to centre be given route numbers distinctive to that specific axis;
- Incorporate branding and apply specific and distinctive livery to each route group / axis;
- Restructure schedules and timetables to provide services at repeating clockface intervals constant at all times and build into the timetable effective interchange;
- Re-organisation of Milton Keynes Central station forecourt to provide priority access for buses over car access. Relocate car and taxi access to enable this to be achieved (see draft designs);
- Re-organisation/re-design access to junction 14 Park and Ride to ensure easy and prioritised access into and out of the site (without having to traverse the congested motorway junction);
- Re-organisation/re-design of the internal circulation within the junction 14 Park and Ride site to ensure buses are not delayed by private car and coach traffic;
- Redesign Coachway to provide access from both directions (avoiding the need to traverse roundabouts, including the congested J14 roundabout), and to prevent coaches and buses being blocked by cars and other vehicles as at present.
- Review the role of the Central MK bus station with a view to its relocation or dispersion of its functions, and redevelopment of the site;
- Review bus routes based on demand information to maximise catchment and minimise walk distances to stops. Make use of bus only access and gating to shorten bus routes through, into and out of the grid squares;
- Convert all public parking in CMK to paid spaces;
- Reduce parking ratios further for new development;

- Ensure that all new development in CMK and at other locations uses shared rather than dedicated parking (there should be a presumption against dedicated parking, although individual cases can be reviewed on their merits.
- All new parking access points should be designed and located away from routes that are to become bus-only or bus priority routes.
- Increase CMK parking charges so that average parking charges are higher than average return bus fares to the CMK.

Medium term

- A greater level of improvement, and hence significantly higher potential for increasing public transport use, than measures set out under the 'short term' heading. The medium term measures are based on measures that simultaneously improve the quality of public transport, and reduce the relative attraction of car use. Infrastructure and traffic network changes in the medium term could include:
- All CMK routes to be focused on Midsummer Boulevard (MSB), and this Boulevard created as a single spine route through CMK;
- Midsummer Place and the railway station to become key points of interchange and interconnection for CMK buses;
- Private car traffic to be kept off Midsummer Boulevard and the central section of Saxon Gate, between Avebury Boulevard and Silbury Boulevard – to be considered in conjunction with redevelopment proposals for the centre;
- Midsummer Place to be reconfigured or removed to enable a true bus mall to be created for use by low emission vehicles;
- Develop extensive bus priority and traffic management measures to be introduced at all junctions, pinch points and accesses approaching CMK. This measure should ensure, in its implementation, high visibility of the priority of the public transport over car traffic;
- Improve bus priority routes with judicious infill and other development to create bus user-friendly environments, and to link more effectively with existing development;
- Develop new Park and Ride sites: north of the City at Blakelands/Newport Pagnell accessible from the M1 and A509/A422; west of the City (west of Wolverton) accessible from A5; and south of the City (north of Bletchley/Denbigh) accessible from A5;
- Develop real time information system to cover key bus stops along main routes and extend, eventually, to all bus stops in Milton Keynes;
- Reduce parking ratios further still (beyond that achieved in the short term
- Increase CMK parking charges further so that average parking charges are higher than 75th percentile of return bus fares to the CMK.

Long term

It is critical to appreciate that the long term proposals are feasible only if pursued in conjunction with high levels of development growth located and designed specifically to support a high intensity public transport corridor(s). The options for the long term are described and developed in Sections 4 and 6 of this report.

In brief, it is recommended that the City should work towards developing the proposed land use growth primarily along an east-west corridor with specific attention given to the Public Transport Orientated land use Development. The growth will be served through increased frequency and quality of service on the eight core diameter bus routes with busways constructed on the east-west and a north-south (subject to the forthcoming proposals for the regeneration of Bletchley) axes. Busways will be developed using one of the existing lanes in each direction on the dual carriageways, where the existing network consists of single carriageway highway (particularly applicable to part of the north-south route), a dedicated lane to be constructed for exclusive use by buses. Where the physical

constraints does not allow construction of a dedicated lane for buses, priority measures will be developed to ensure public transport vehicles receive priority over private vehicles. In particular,

- In preparing for the long term, implementation of the short and medium term measures, as set out above, is critical.
- The planning authority must ensure that strict guidelines are in place with respect to structure, configuration and densities of developments,
- The Highway Authority, together with the Planning Authority must ensure that public transport routes and busway routes over the existing network as well as in new development areas are safeguarded

11.1 KEY ACTIONSTO BE UNDERTAKEN TOWARDS ACHIEVING THE LONG TERM VISION

In this section we set out the key actions and activities, which should be undertaken in Milton Keynes towards the realisation of the long term public transport vision. It is noted that the actions listed below are not exhaustive and are listed to set out as the main direction of tasks following this Study.

- Securing central Government funding is critical to the realisation of any major scheme. In considering any application, Department for Transport (DfT) insists on high quality data on transport demand. A comprehensive and complete programme of periodic private and public transport usage data collection should be developed, building on the recent surveys undertaken for the Milton Keynes multi-modal transport model development work.
- A comprehensive Multi-Modal transport demand modelling tool should be developed to act as a main means of developing, testing and assessing schemes. This tool, once fully developed, should also be used to undertake a comprehensive and detailed analysis of the proposals recommended as part of this Study. This action effectively refers to the multi-modal model for Milton Keynes, the development of which is currently nearing completion.
- In the first instance, an application to be submitted to DfT, through the Annual Progress Review route to secure funding for the Central Milton Keynes public transport priority scheme which will act as a catalyst for all the short, medium and finally, long term schemes.
- Discussions with Bus operator(s) to start to secure the restructuring of the bus services and development of the eight core diameter routes.
- Set up guidelines and develop the basis for Local Authority/PT operator agreements to secure service quality improvement against infrastructure development. It is critical to ensure that the upgraded infrastructure will be served by upgraded services.
- Rigorously pursue restraint with respect to parking standards, through implementation of the recently adopted parking standards and further tightening of these standards through further reducing of spaces and increase of parking fees. To ensure progress, preparation of a six monthly or annual report on the progress of parking restraint (to contain numbers, geographical and tariff based distribution of parking spaces, revenues collected etc) would provide an important monitoring tool.

- Set up realistic, clear and measurable targets for public transport usage and mode share.

- Develop specific urban design criteria to accommodate public transport routes through all new developments.

- Develop clear and transparent set of rules for securing contributions from developers, towards the proposed Milton Keynes Public Transport system which will apply to all Section 106 agreements across the whole of the district.

- Set up a public transport scheme development fund which will start receiving contributions from various sources, from a proportion of parking revenues (to be decided) through to developer contributions.

- Set up detailed investigation and pilot projects to improve access to bus stops on foot, and to demonstrate how such improvements can be enhanced through integrated new development.

- Set up pilot projects with respect to the development of the restructured bus routes, based on branded, frequent services.

Appendices