Appendix C

Experience from Elsewhere

Experience elsewhere

This chapter begins with an overview of experience that can be brought to bear on MK issues. This is followed by benchmarking information on passenger trips rates in Milton Keynes and other cities Finally, summaries of individual cities are included.

Experience in relation to town and city centres

CMK

CMK is large in relation to the population currently served, and the CMK development framework has identified how the intensity of development can be increased to serve a much large future population. The availability of space for such development is a big advantage for MK.

The centre of Almere New Town (Netherlands) works well for its current population (160,000), with a compact centre well related to the main public transport hub. But it may find this less of an advantage in future with the town set to double in size over 15-20 years.

Graz in Austria has pursued a target of reducing the space available to the car (roads and parking) in its centre by 2 hectares between 1995 and 2000. Given the key importance in CMK of the amount of parking, both in terms of development potential and encouraging alternatives to car access, perhaps such an operational target could be useful for CMK.

The key to the level of public transport use in a city is the quality of provision for alternative modes, and in particular the car. A fundamental flaw in the objectives set by the original MK masterplanners was to provide for high quality access by all modes. The reality is that if the car is provided for, then it becomes the mode of first choice. Public transport tends to become the mode of last resort, as is seen in MK today. If parking supply is limited (through both regulation and pricing) this can open up the way for more public transport use, as has been demonstrated in ***Portland, Oregon***. For many years the city imposed an upper limit on total parking supply in the downtown area, and the parking to floorspace ration was halved over a twenty year period. This resulted in the public transport share of downtown trips increasing from 20% to 40% over a twenty year period. Given that CMK is and will remain the main potential for growth of the public transport market, the degree of such growth will be closely tied to what happens to the availability (and pricing) of parking in CMK.

CMK is built on a grid. A number of our benchmark city centres are also built on a grid. This is sometimes held to be a disadvantage compared to the hub and spoke arrangement of the traditional European city, so the way in which other grid cities have arranged their public transport is of interest. **Portland** now has three axes: a central bus-priority mall, flanked on one parallel street by a streetcar (tram) axis, and on the other side by a light rail axis. This creates a high density of stops, and brings most of downtown to within about 200-300 metres of a stop. Interchange around downtown is easy because the streets have good provision for walking, and stops are close to intersections. The large grid on which the centre of **Melbourne** is built is served by tram routes, including a historic tram running on a circuit for tourists. The two principal shopping streets provide the main tram routes, however, and both of these are designed for tram and pedestrian priority.

Perth (WA) also has a grid city centre extending over a considerable distance. It has two free shuttle buses serving the centre financed from a levy on private parking spaces. Also interesting is a major restructuring of the footway network to provide direct traffic-free links between the city centre, the rail and bus stations, and the cultural and entertainment quarter. This scheme is an exemplary piece of urban network planning to achieve inter-modal integration.

Almere centre like that of Milton Keynes is also built on a grid. The main centre begins immediately at the railway station (unlike in MK) and extends about 500 metres southwards. Running parallel to the main pedestrian shopping spine (and less than 100 metres distant) is a bus-only road. However, because of the small scale of the centre there is only one additional stop on this busway. Most trips begin and end at the bus and rail station interchange, with people completing their journey on foot.

Another aspect of **Almere** is the extremely high level of cycling use (apparently around a third of all trips). Cycling is much more prominent as a means of access to the centre than is public transport.

CMK development framework includes rebuilding parking at the edge of CMK, to reduce traffic within. This is the pattern developed already in **Almere**, which has car parks to the edge of the central area. Other cities do not manage this so well, with car parks within the main core in, for example, **San Francisco, Munich, Lübeck,** which means that car access must be retained in the core.

MK is planning to reduce the traffic dominance of some of its CMK streets. There are examples of roads in other cities that have been downgraded from a traffic point of view to achieve this. In Britain, Birmingham is probably their best known example. Woolwich Arsenal is another example. Some of the post war New Towns on mainland Europe are also beginning to address the issue. In **Lelystad**, for example, the town centre network has been re-structured to reduce severance and increase the convenience of movement on foot, by public transport and by bicycle.

Experience in relation to growth options

The loose urban structure commonly found in New Towns built since the 1960s is widely seen to be problematic in terms of public transport.

In the Netherlands, **Lelystad** acknowledges the problem and is trying to address it. Other possible examples are ***Almere and Zoetermeer***. All three are smaller than Milton Keynes, but all have main roads without frontage development. French New Towns have a similar structure, but it is not known if attempts are being made intensify development along them.

There are various locations where urban expansion has been tackled consciously to favour public transport. Examples are:

- ***The western expansion of Utrecht, Netherlands*** – served by new cycle and pedestrian routes, and new tram lines, all of which will have more direct routes into the city centre than those provided for cars;
- An example of where better buses are part of the deal is ***Ipswich airport site*** (Ravenswood), served by a new Superbus route. This is currently being developed; and
- On a bigger scale is the ***Longstanton*** new settlement north west of Cambridge, which currently is proposed to be served by a new guided bus system linking with Cambridge City. Proposals are also being formulated for an ***eastern extension of Cambridge*** (including the airfield site), and an extension of the guided bus system (or other quality system) is likely to form part of the final scheme.

Examples on a large scale from continental Europe include:

- ***Rijswijk - Wateringsche Veld,*** served by an extension of the tram system of the Hague;
- Areas to the north east of ***Groningen, Netherlands***, where bus and cycle routes are more direct than car routes to the city centre;
- In Germany, a good example is ***Freiburg***, where the western expansion site is served by a tram extension and also has a new retail and commercial offer – claimed to offer more balanced PT flows.

Experience of public transport in car-oriented towns and cities

MK is not alone in being a car dominated city where those with access to cars rarely consider using any other mode.

Perth (WA) is the location for a major "Travel Blending" scheme, marketed as "TravelSmart". This concept is now being tried in a number of places, but Perth has to date achieved the best results in terms of persuading people to make less use of cars. The scheme targeted individual households in a suburb in south Perth, and claims a shift of mode away from the car of 14%. Pilot projects in **Frome and Gloucester** in England also produced favourable responses, although the reductions in car driver trips were lower at 6% and 9% respectively.

Some cities have tried to overcome their car-oriented structure and to promote bus-based solutions as a means of limiting or reversing the growth of car travel Examples are **Ottawa and Brisbane**, both of which have built busway systems. The **Ottawa** system is substantial and has succeeded in attracting a significant proportion of commercial development within the walking catchment of stops. The **Brisbane** scheme (planned on the Ottawa model) is relatively recent and its impact on land use and travel is not yet known.

Four more specific Milton Keynes characteristics are explored below, namely:

- A grid road system;
- Main roads without frontage development, and arrangement of development so that it turns its back on main roads;
- The arrangement of access and internal roads so that through vehicle movement is difficult (including for buses); and
- A dispersed pattern of non-residential uses across the grid.

Grid road system

Like MK, much of the development in **Almere** is based on a grid road system, but unlike MK, most of the roads have development close to them or even fronting them, making it much easier for the bus to serve development. Unlike MK, the housing and public transport routes (some of which are segregated busways) were designed so that everyone is within 400m of a bus stop, or even a rail station. The MK aspiration is for 500m accessibility to bus stops, but even this is difficult without buses diverting into the housing areas.

The grid roads in wide landscaped swathes in MK. This is true on a smaller scale in **Almere**. One of the main concerns about the future of **Almere** is the ongoing high maintenance costs of the many green areas and strips. This presumably is also an issue in MK. In both cases, intensification of development could help to solve this problem as well as transport sustainability issues.

Although not directly related to the grid form, a potential method of increasing the relative attraction of public transport is to establish "preferential routing" for public transport compared to cars. An example of this can be found in **Groningen, Netherlands**, where a direct pedestrian, cycle and bus link to the north east suburbs is much more direct than the route available for cars. Similarly, a purpose built tram, pedestrian cycle bridge across the railway in **Freiburg, Germany** provides these modes with a more direct link to the city centre from the western suburbs. The same technique is planned for an eastern extension of **Ipswich (Ravenswood, former airport site)**, and this is currently under construction.

Main roads without frontage development

This is a product of highway design ideology from the 1960s onwards. It is now being challenged from many quarters, and there are calls for urban streets to be built with strong frontage development. There are many examples in the UK of distributor roads without frontage development, and it is also a feature of most post-way New Towns, both in GB and other countries. It is a powerful

feature of all the **Paris New Towns** and the Dutch New Towns (**Almere, Lelystad, Zoetermeer** etc.).

Some lessons may be available from the latest good practice in terms of sustainable urban design. An example is a ten-point code of practice drawn up by the city of **Freiburg**, which includes a requirement that all front door should open onto a street (as opposed to a back way or side alley). Also relevant is the measure of urban street quality from a pedestrian viewpoint devised by Jan Gehl in **Copenhagen**. This measures doors per 100 metres of frontage, as well as features such as windows that overlook, and architectural details and activities that add interest for passers-by.

Access and internal roads that are difficult for through vehicle movement (including for buses)

The "environmental area" concept made popular by Colin Buchanan's "Traffic in Towns" report has resulted in a mass of housing areas (here and in other countries) with tortuous internal roads and few access points onto the main road system. The aim was to ensure that residential areas were protected from through traffic, but it has resulted in layouts that are difficult to serve by bus, or indeed any mode other than the car. Milton Keynes for the most part offers no exception. It is difficult to see how the situation can be improved, short of large scale redevelopment.

A dispersed pattern of non-residential uses across the grid

The trend towards the dispersal of employment from central city locations to suburban locations has been recorded since the 1930s. MK was planned from the start with dispersed employment. It was seen as a positive feature to "bring the jobs to the people", as well as avoid tidal peak hour traffic into and out of the centre. The dispersal of employment, and the resulting declining proportion of jobs in central cities, is a feature of almost all cities, but in particular north American cities where the trend is more advanced, and less restrained through planning control. It characterises, for example, **Los Angeles, Detroit, Denver and Salt Lake City**. As one would expect, it is difficult in such places to serve the journey to work by public transport, which requires concentration of destinations, and preferably also concentrations of origins. It is interesting to note that per-capita public transport trips appear to be similar in **Los Angeles** and **Milton Keynes**.

Importance of accessibility to bus and train stops

Studies have been undertaken in the Toronto region which demonstrate how mode split for trips varies with distance from transit rapid transit (rail) stations. It seems likely that a similar effect could be found in relation to bus stops, although there are no data on this from Toronto. Transit mode share is 40% for residents within 500 metres of a station, but only 20% for residents more than 500 metres from a station. In municipalities adjacent to Toronto, where development is much lower density, transit mode share is 5% overall. 500 meters is also the distance aimed at by MK as the standard for access to bus stops.

Benchmarking trip rates

There is a range of criteria for use in comparing the public transport use in different cities. Data collection in British cities is generally poor due to the deregulated bus system, and it is often difficult to make accurate comparisons with European cities. In the table below public transport trip rates are given for a range of cities. From this it implied that MK does not compare favourably with other cities of similar size.

The data are difficult to establish accurately, and in particular methods of calculation differ and impinge on results:

- Service area ride rates (calculated by dividing the combined number of bus and rail trips by the resident population of the service area). This depends on getting passenger totals from bus and rail operators, which is often inaccurate and difficult to verify. The service area population may also be difficult to establish; and

- Public transport rides per resident (obtained by survey of residents trip-making patterns). This will generally be lower than the per capita figure because it excludes public transport trips made by non-residents. This is obtainable at the regional level from the National Travel Survey, but local level data depend on the availability of local household travel diary surveys.

In cities like MK, the difference may not be great, but in cities with a large regional labour catchment and/or a significant visitor population (such as London or San Francisco) the difference between the two methods can be significant. Table C1 gives a range of public transport annual ridership figures for cities of different sizes.

Table C1 Comparison of annual ridership for different size cities

City or Area Type	Date	Pop (Approx)	Service area rides divided by population	Rides per resident (surveyed)	Definition not known
Greater London	1998-00	7m	(Not known)	177	-
Toronto	1991	3.9m	223	-	-
Curitiba (Brazil)	1999	2m	450	-	-
Portland (Or) CMSA	1999	1.8m	56-72	46 (1990)	-
Melbourne (Aus)	1999	3.4m	-	-	101
San Francisco-Oakland	1999	3m	55	-	-
Perth	1996	1.3m	-	-	50
Calgary	1990	800k	-	-	75
Zürich	1989	395k	-	520	-
Karlsruhe	1989	250k	-	230	-
Graz (A)	2000	240k	-	-	180
Milton Keynes	2000	210k	37	-	-
Towns - NTS Average	1998-00	25-250k		61	-
Basel	1989	210k	-	380	-
Freiburg	1989	190k	-	230	-
San Sebastian (E)	2000	180k	150	-	-
Almere (NL)	2000	160k	-	-	

Information on individual cities

Portland, Oregon

Portland is recognised as one of the most go-ahead cities in the USA. It has a strong track record of public involvement in major decisions about urban growth, and major infrastructure projects such as the building of the LRT system (MAX) and the downtown streetcar (tram) system. Portland has intensive suburban bus services, and in fact the heaviest used route is an orbital route not serving downtown.

Like MK, Portland is a low-density city where the great majority of trips are made by car. But like MK has a city centre built on a grid. They have achieved a big increase in the number and proportion of people coming into downtown by public transport. This is partly by a new light rail, partly by a cap on parking provision, and partly through a bus-only mall through the core of downtown. They also provide free public transport for travel within the downtown area, including a free shuttle bus for shoppers.

Portland (Oregon) until recently operated a “cap” on city centre parking, and has converted parking areas to other uses. The parking to floorspace ratio has been reduced to less than half the level that was applied before 1990. The proportion of city centre employees using public transport to work more than doubled in 10 years to over 40%.

The following points are highlighted as potentially relevant for MK.

- The relationship between city centre parking provision and public transport share of the journey to work is well illustrated in Portland;
- Public transport trips within the downtown area are free. The area is called the “Fareless Square”, but it actually extends across the river to serve a major retail and commercial centre (the Lloyd centre);
- The Portland tram is described as the first “modern streetcar” in the U.S.A. As in most US cities, streetcars (trams) were once the most important part of the public transport system, but were virtually eliminated in the 1950s. The City of Portland is bringing the streetcars back, and has introduced (July 2001) a new route through downtown and extending to the main hospital (3.8km). It serves as a shuttle along an axis not previously well served by public transport. In this was, downtown Portland now has three principal PT axes, served respectively by the bus mall (“transit mall”), the MAX light rail, and now the streetcar. Unlike the other public transport systems, the streetcar is not part of Tri-Met, the greater Portland transit authority. But it has been integrated into Portland's existing transit system through careful planning and collaboration between Tri-Met and the City of Portland. Approximately two-thirds of the estimated $2.4 million (about £1.5m) annual operating funds are paid by Tri-Met, with the balance covered by revenues from new parking meters in the River District, farebox revenues, sponsorships and promotions. The streetcars are narrower than conventional LRT vehicles (2.46m as opposed to 2.6 or 2.65);
- Ridership has settled into around 4,000 passengers per day, more at weekends;
- Service is 15 minutes during the day, less in the evenings. Service period 18 hours a day; and
- Historic “trolleys” operate at weekends.

Objectives of the streetcar are to:

- Link neighbourhoods with a convenient and attractive transportation alternative;
- Fit the scale and traffic patterns of existing neighbourhoods;
- Provide quality service to attract new transit ridership;
- Reduce short inner-city auto trips, parking demand, traffic congestion and air pollution; and
- Encourage development of more housing in the Central City, particularly in undeveloped areas like the River District

It should be noted that Portland’s public transport is entirely public funded, both investment and operating subsidies.

In terms of relevance to MK, the following can be noted:

- Portland is a much bigger city than MK (over 1 m population), but the transit mode share at 3% for the whole city is less than half that in MK. (This is contrary to the usual correlation between city size and transit use.) Transit use to downtown is more than 5%, but this is still less than for MK;
- The downtown is based on a grid, like MK, and supports three transit axes, one of which (the bus transit mall) is closed to other traffic over most of its length; and

- The free fare zone in the centre is useful because it avoids delays. Moreover, it gets car users onto the transit system, whereby they can get to know more about other public transport routes and services. In a car-dominated city this is perceived as important for attracting people out of their cars.

San Francisco, California

San Francisco is much larger than MK, but is also built on a road grid system. Buses are in the main operated as integrated north-south and east-west services requiring no more than one interchange to get between any two points in the city. When purchasing a ticket, passengers are provided with one free "transfer" ticket, enabling them to make one interchange to another service.

While this system works fairly well in the San Francisco context, there are major differences in the structure of MK that would militate against its adoption.

1. The density of development is much lower than the inner parts of San Francisco.
2. Development is not close to the grid roads in MK, which means that buses running only on the grid roads are not very accessible to the majority of the population. If buses were diverted into the grid squares (as at present), this would undermine the concept of direct services with a single change.
3. Interchange at the roundabout intersections would be extremely inconvenient unless they were converted to signal controlled junctions. In San Francisco there are few roundabouts, and bus stops are often adjacent to the junction (i.e. not set back as is usual in the UK).

Melbourne (similarities to CMK)

Melbourne is another city with large low density suburbs and a high mode share for the car. It does, however, have substantial inner suburbs built to high density, and many of these areas are served by street-running trams, as well as a suburban rail system. These factors boost Melbourne's public transport ridership rate to 101 trips per person per year (1991 figure).

The car is used for 75% of trips. Transit accounts for 5.6%, which is lower than most European cities, but higher than most American cities. For travel to the CBD, however, transit carries 45% of trips.

Of interest is a study carried out by Paul Mees of Melbourne university, which found that parts of the high density inner suburbs with terraced housing actually had a lower population density than some outer suburban areas with single family dwellings. Yet it is assumed that the street trams are viable only in the inner suburbs because of the need to serve high density development.

This highlights the fact that demographic structure rather than building density is of greater importance in relating public transport demand to urban density.

This needs to be taken into consideration in the MK situation is assessing potential demand. (Reference: Paul Mees, 2001, "A Very Public Solution: Transport in the Dispersed City" Melbourne University Press.)

Almere (Netherlands)

Almere has been successful in being structured around the public transport (and cycleway) network with bus-only roads and a town centre that is pivoted on the bus/rail station interchange. The rail

tracks are elevated, allowing free pedestrian movement at ground level from one side to another, and also to the bus station, also at ground level. The bus station is mostly under the tracks, and is thus sheltered from the weather. The main pedestrian "spine" of the town centre runs directly from the station.

The layout as described is thus much more convenient than in MK, where the bus station is located at some distance from the railway station, although many buses do serve the station forecourt. Also the CMK retail and leisure core is between 10 and 20 minutes walk from the bus and rail stations.

Almere, however, is planned as a smaller town than CMK, and the layout of the centre could be relatively inflexible for major expansion. CMK by contrast has enormous scope for expansion, to serve a much larger population in future. Nevertheless, Almere is expected to double in size over the next few decades.

Los Angeles (USA)

There is probably not much in common between LA and MK, except that both cities have an average public transport ridership rate of around 55 trips per person per year.

Perth (Western Australia)

Like MK, a low density car-based city, with a public transport average ridership rate of 50 trips per person per year in 1990 (this rate may have increased since then due to major system improvements). The city centre has increased its size over the past 20 years. Like MK the centre covers a large area and is built on a grid. Public transport access has improved with new rail lines into suburbs and major new urban expansion areas.

Like Portland, Perth also offers free public transport travel within the city centre (Free Transit Zone). This applies to all modes, bus rail and CATS (Central Area Transport Service). The latter are buses operating as two distribution shuttles within central Perth, one east-west the other north-south. These are funded from a levy on private parking spaces.

Perth is also the location for a major "Travel Blending" scheme, marketed as "TravelSmart". This targeted individual households in a suburb in south Perth, and claims a shift of mode away from the car of 14%, as shown in the table below. Pilot projects in Frome and Gloucester in England also produced favourable responses, although the reductions in car driver trips were lower at 6% and 9% respectively.

Table C2 Results of the "TravelSmart" project in South Perth

Mode	Mode share before (Trips pppy)	Mode share after (Trips pppy)	Change in %
Walk	139	188	+35%
Bicycle	23	37	+61%
Public transport	70	82	+17%
Car Driver	696	599	-14% *
Car Passenger	232	253	+9%
Total	1160	1159	-0.1%

* Reduction of 97 car driver trips per person per year

Karlsruhe. A spread-out urban region, now linked with dual function trams which run on city streets, through the main shopping core, and outside the city share tracks with national rail services.

Adelaide. Like MK a city centre on a grid covering a large area. Public transport includes an historic tram, and guided buses to far reaching suburbs, as well as conventional bus services.

Bluewater/Meadowhall and other regional shopping centres. Bluewater has managed to negotiate improvements to bus services, including integration with rail, and as a result has a public transport mode share of 15%. This is probably the highest achieved of the "modern" regional centres, and this has been achieved despite a relatively high car ownership visitors.

Toronto (Canada)

Toronto has good frequency services operating in low density suburbs, as well as a subway network. Like Portland and San Francisco, major road building was dramatically halted in the early 1970s.

Given the high car ownership and large low density suburbs, the city has a remarkably high public transport ridership rate, reported to be 106 trips per person per annum. It is of course a large city (4.5 million population), but on the other hand is a very new city, with a population of only 1 million 50 years ago. Thus most of the growth has been during the "auto era".

Studies have been undertaken which demonstrate how mode split for trips varies with distance from transit rapid transit (rail) stations. It seems likely that a similar effect could be found in relation to bus stops, although there are no data on this from Toronto. Transit mode share is 40% for residents within 500 metres of a station, but only 20% for residents more than 500 metres from a station. In municipalities adjacent to Toronto, where development is much lower density, transit mode share is 5% overall. The overall transit share for the greater metropolitan area is 15% of all trips. This compares favourable with the 17% figure for Greater London (Sources: Toronto Transit Commission, 1999; GB National Travel Survey 1998-2000)

Curitiba (Brazil)

Curitiba is the most affluent city in Brazil with the highest car ownership. Despite this it has pursued high capacity bus transit on segregated ways, but importantly has also developed high density development along key routes. The system has a capacity that matches some heavy rail transit systems.

The bus stops are fully enclosed and accessible, with the bus coming alongside in the same way as a tram or train. These distinctive stops together with the extensive sections of busways and the high frequency services mean that the public transport is highly visible in the street scene, with a modern, robust image.

Graz, Austria

Graz is a city of 240,000 people, which has achieved a high public transport mode share of all trips of 18%. This is despite high car ownership of 474 cars per 1000 people, and medium densities of 3,700 people per square kilometre.

The city has 10km of bus lanes. Most public transport users use travelcards. The public transport services are mostly publicly owned, and receive public subsidy of 38% of operating costs.

The city had an interesting target 1995 – to reduce the space given over to the motor vehicle in the city centre by 2 hectares by year 2000.