

Appendix A

Historic Structure and Evolution of MK

Growth in Milton Keynes

The development of Milton Keynes

As planned and as built

Milton Keynes has often been portrayed as a city designed for the car. While this has turned out to be the case, it was originally intended to provide for all modes including walking, cycling and public transport. It was expected, for example, that public transport in the form of minibuses would cater for 20% of journeys to work.

Its layout was based on a grid of roads with 1km spacing. This basic pattern was warped to fit with various local features and constraints.

The original concept was that the grid of roads would have “activity centres” astride them, at which people would also find bus stops to gain access to other parts of the city. (See Figure A1) Otherwise they would be without frontage development, and would run through “generous landscape” (Walter Bor). The grid roads were also designed to be able to accommodate separate busways or lanes. Somewhat ambiguously, the masterplanners envisaged a sub-grid of local roads running between the squares which “would be essential if public transport were to approach door-to-door quality”¹. This would have created a 500 metre bus route grid, and there appears to have been no analysis of how this would work.

The intended “typical bus journey in MK” as envisaged by the masterplanners is illustrated in Figure A2. In terms of the modern tenets of public transport oriented development, it is utterly naïve, and helps to explain why public transport has never been significantly developed in MK. The scenario assumes, for example:

- That buses will run every “few minutes”;
- That there will be bus routes linking all origins and destinations, or that interchange between different routes will be a realistic option;
- That the paths between bus stops and origins and destinations will be “safe”.

None of these assumptions has proved to be tenable. They were unrealistic at the time, as subsequently admitted by the masterplanners, and they are even more so now, given the changed prospects for public transport following bus deregulation under the 1985 Transport Act.

The original goals of the masterplan illustrate the thinking of the consultants, and can now be seen to have been mutually incompatible:

- A high degree of accessibility amongst all activities;
- Freedom of choice between public and private transport;
- High quality public transport;
- Congestion-free driving; and
- Transport that allowed for expansion and change.

¹ (See Bendixson and Platt, 1992, “Milton Keynes: Image and Reality”, Granta Editions, Cambridge, p60)

In the event, the plan was effectively “highjacked” by those who believed that the car should be fully provided for, and the grid roads were built as highways without frontage development, and with few access points to the development “squares”. Roundabout intersections were built instead of the proposed traffic signals. They operate without speed limits.

Local facilities were developed either within the squares or to one side of the grid roads (e.g. Neath Hill). No direct vehicle access to these facilities was provided from the grid roads. Moreover, the grid roads were built without any pedestrian or cycle ways alongside. The spoken of “sub-grid” of local roads is hard to identify, except in the six kilometre-squares adjacent to CMK. Elsewhere the local roads within the squares are disjointed and sometimes tortuous, and generally unsuitable for efficient bus operation.

The grid road system, together with a dispersed pattern of employment, is relatively efficient at balancing traffic flows (i.e. avoiding congestion) and this makes the car an attractive option for most journeys in MK.

Distinguishing features of MK as developed include:

- A kilometre grid road system without frontage development;
- The arrangement of development within the grid squares so that it turns its back on the grid 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.

The original concept of local facilities being served directly by public transport was never realised. In addition, no separate bus lanes or other facilities were provided on any of the main roads, which now are broad roads (Super grid mostly dual carriageway, sub grid mostly single carriageway) with a 60 mph speed limit, within landscaped swathes. They are hostile environments for any transport other than cars and lorries.

The development “squares” themselves were built with various layouts. While some can (and do) provide for bus routes within them, the layouts were basically designed to keep out through traffic, and this has had the consequential effect of making bus routes indirect. Bus operation has to strike a compromise between two unsatisfactory inevitable factors of the MK layout:

- Direct bus routes, needed to achieve fast journey times, must stay on the grid roads, entailing long and indirect access on foot from development within the grid squares; and
- Indirect bus routes through the grid squares, which provide better access to the development but which are circuitous and inconvenient in terms of bus operation.

Land use distribution

Major retail facilities were concentrated in Central Milton Keynes (CMK), and this provides the main destination for public transport trips in MK. While there are offices and commercial and civic uses in CMK, other employment is dispersed in different parts of the city. This makes it difficult to serve by public transport, since both origins and destinations are dispersed.

MK is host to distribution and warehousing activity, and this is generally well related to the main road network, and away from CMK. This fits well with planning policies aimed at matching land use

location with accessibility. On the other hand, people working at these locations (such as Kingston) have a limited choice of public transport for the journey to work.

Public transport conclusions

There are two inescapable outcomes in terms of public transport in Milton Keynes.

First, the arrangement of grid roads and development squares is poorly suited to public transport operation. Where buses operate on the main grid roads, access to the bus stops is poor, often with excessive walking distances, inconvenient routes, and problems of safety and security due to paths being hidden from buildings and often poorly lit. Overgrown vegetation increases the perceived threats to personal safety. Where buses penetrate the development squares bus stops are closer to people's homes, and safer to reach, but the bus routes are indirect and inefficient from an operational point of view.

Second, the present travel outcomes illustrate very clearly one of the basic tenets of transport planning, namely that provision for the car in terms of both urban form, road capacity and provision of ample parking leads to a marginalisation of other modes of travel. Public transport becomes the mode of last resort, and cannot compete with the car. In MK there is little reason to use the bus unless one does not have access to a car.

Walking and cycling

What is somewhat less easy to explain is why the extent of cycling is so low in MK. Although the Redways have been subject to various criticisms for their design, they nevertheless provide routes for cyclists that are segregated from the hazards of road traffic, a facility that most cities would be envious of. One can imagine that if MK were located in the Netherlands cycling would be an important mode of travel.

While this study is concerned primarily with public transport, it will be necessary to acknowledge the actual and potential role that walking and cycling make to transport in Milton Keynes, and in the context of this Study, particularly with respect to access to public transport.

Options for the future growth of Milton Keynes

CMK Development Framework – EDAW Oct 2001

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 A1. below.

Table A1 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.

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 than at present will have to be made by means other than the car.

The Development Framework is not, however, explicit about the implications in 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 to 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. Reduced congestion will encourage car use, not public transport use. Moreover, since each parking space would accommodate more car trips, this will erode daytime public transport market share;
- In addition “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;
- While increased public transport is advocated, there is no indication as to how this will be achieved. Mode switch to PT is advocated and required, but there is no indication as to why people should switch from car to PT. That rising congestion “will be insufficient to persuade motorists to switch to public transport”;
- 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 (paragraph 86).

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

The suggestion of a dedicated intra-CMK public transport service in our view should be dropped. CMK internal transport should be based on the city-wide services that converge on CMK for the following reasons.

- There is insufficient demand to support a separate service, and it would be unwise to dilute demand for the city-wide services that will in any case be difficult to grow;

- 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 PT, 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 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 headways 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 does not look sensible.

Milton Keynes City-wide growth

Local Plan – Deposit version September 2000

The local plan provision for growth is based on the requirement for new housing set out in the 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 the MKPT study.

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 these is not specified; and
- New housing in selected villages, namely those considered to have some potential in terms of local service provision including public transport.

The Local Plan provision for housing, as shown in the table below, does not indicate a resulting population growth figure. However, it is reported on the Newtowns comparison website (newtowns.net) that “under current plans, the population of the city is expected to increase to 218,600 by 2011, with the Borough population rising to 259,200”. The figures for new housing are set out in Table A2, below:

Table A2 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	
Capacity estimated in local plan		
Infill sites		1,843
Expansion sites		4,025
Rest of borough		942
Total capacity in local plan 2001 to 2011		6,810
Other capacity assessments (within MK City, or with expansion areas)		
Llewelyn-Davies 1998 (Cautious estimate of capacity and low density assumption)	43,000 (@ gross densities of 16- 22 dph)	
Martin Davies (2001)	8,400 (20 kms of grid road @ 70 dph net)	
FM preliminary grid road development assessment (based on LP recommended minimum density of 40 dph)	8,400 (35 kms x 6ha land x 40 dph net)	
MKSM study (Not just Milton Keynes City), 2031 time horizon	69,000	

Housing densities

Densities vary considerably between different parts of the city and within grid squares and net densities of over 100 dw/ha have been achieved in Central Milton Keynes. The average net density of the city as actually developed is about 27 dw/ha - about 23% higher than the national average net density of 22 dw/ha for greenfield development.

It should be noted that the Local Plan (as revised October 2002) envisages minimum net densities in Milton Keynes city of 35 dph. A range of net densities is proposed depending on the location:

- Zone 1 CMK and Campbell Park 100 dph
- Zone 2 Adjoining grid squares, 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.

MK and South Midlands Study

The study gives a “forecast” employment growth of 50,000 in 15 years to 2016, plus a further 50,000 over the following 15 years.

Different options are given for population growth over a 30-year period. At “trend” rates the city population is forecast to grow 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. The reason for this is that Milton Keynes has been identified in both national and regional planning policy as one of four major growth areas in the south east, and consideration of the future transport networks should run in parallel.

The MKSM study examined four growth scenarios:

Current planning policy (e.g. for Milton Keynes an extra 9,000 dwellings and a roll-forward beyond the local plan period of similar outward growth);

Urban Concentration, involving expansion even more focused 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;

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);

Metropolitan Double Centre focusing expansion in Milton Keynes and Northampton.

In an evaluation on a range of criteria, both the Urban Concentration and Two-Corridor options scored quite well.

The study recommended a long-term growth strategy based on a hybrid consisting of a combination of these two options. This would essentially mean using both strategies, in fact the urban concentration and two-corridor strategies, but allocating less growth to each. Specific advantages compared to one or other of the options alone were said to be:

- Reducing the negative impact of major growth on Green Belt around Luton compared to urban concentration alone;
- Reducing the likelihood of “coalescence” of Northampton and Wellingborough compared to urban concentration alone; and
- Increase the potential for public transport mode share, compared with the corridor option alone.

Growth possibilities for MK city

This section sets out the theoretically available options for city growth in Milton Keynes, and is not dependent on the other studies and plans reviewed above. It is important to note that these options are not mutually exclusive and two or more could be pursued together. The first three options 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 A - “build the boulevards”

- This would mean carrying on the concept proposed for the expansion and intensification on CMK, though obviously mostly with residential uses rather than mixed and non-residential as in CMK.;
- This leaves a potential problem with this option in that residential use is less well suited to location alongside traffic routes, especially in a city where almost all residential property is away from the noise and nuisance of traffic. To cope with this, a solution might be to take out parts of the traffic grid, and to convert the roads to developed 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 they may prefer development to the present landscaped areas and roads – security could be improved, and traffic noise could be reduced. This is an issue for detailed public consultation;
- It may result in another new phenomenon for MK which may be unpopular – congestion!; and
- The housing “capacity” would need to be assessed, and estimates are given in Table A2.

Intensification B - build local nodes

- Development intensification could be undertaken at specific nodes on 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; and
- These nodes could be combined with public transport interchange points. These would consist of high quality bus stops/stations where buses on a number of routes congregate at regular intervals every hour throughout the day. People would know that from this point at a certain number of minutes past each hour, they can get to a range of destinations, including CMK.

Intensification C – “build the green spaces”

- There are areas of the city where development is very “loose”. Land could be assembled to provide 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 there would be no “early 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; and
- Parking and access road areas could become candidates for such development.

Extension 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 offering quick line-haul will be needed, 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 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 if demand responsive transport were to be the answer, this could be the answer as well for new areas of 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; and
- This type of growth is similar to the satellite or corridor options below; it is really a question of scale.

Extension 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;
- The MKSM study mentions only one such potential corridor, namely that of the proposed east-west rail route that includes Bletchley to Bedford. But it is difficult to conceive how this could be configured to benefit MK, since the east-west route is well to the south of CMK;
- The 2002 revision of the Local Plan also 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 bus or rail 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; and

Any other growth options?

- The above options 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 could be implemented in such a way as to pick up the benefits of concentrated satellite growth, if located on a strong existing sub-regional service; and

- Conversely poor design or detail could undermine the potential of even the best development concept. Distortion and amendment of the original MK plan was responsible for the current car dependent structure, and it is important that this lesson is learnt.

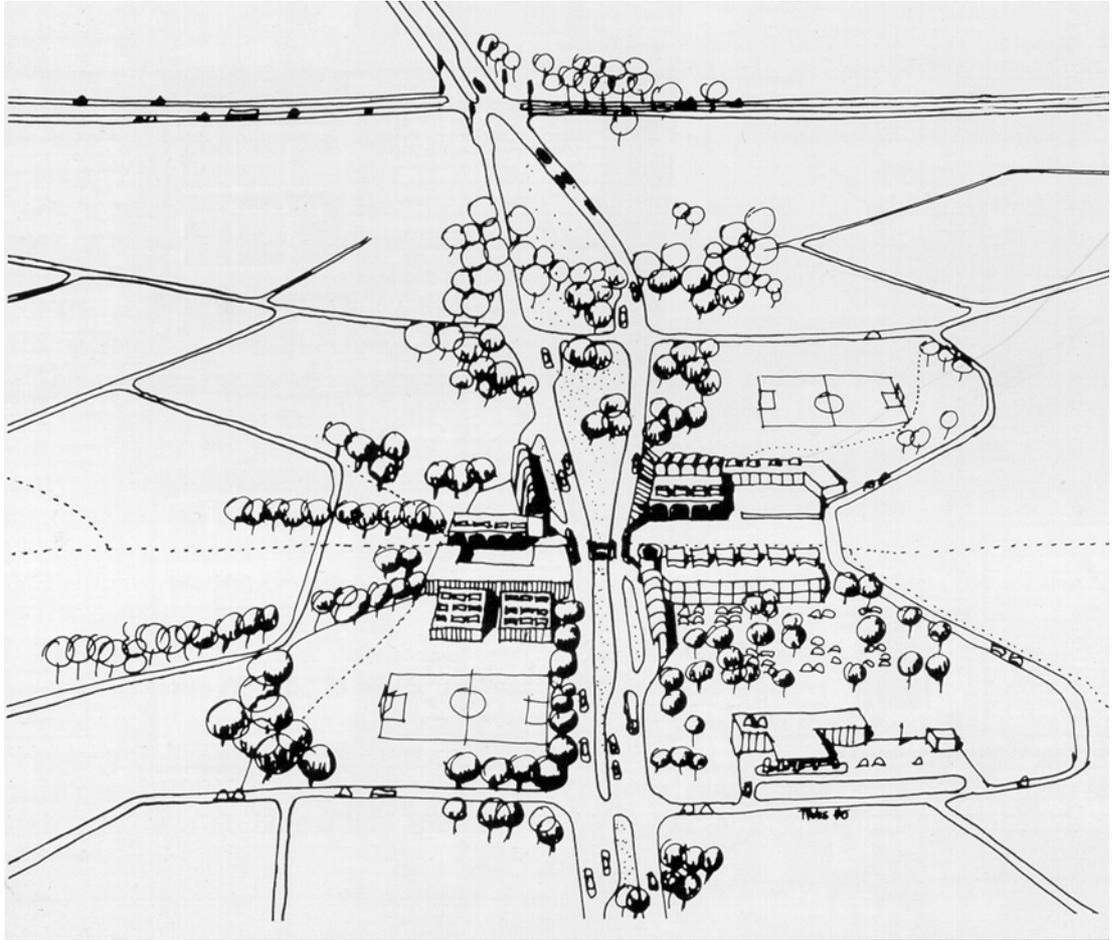


Figure A1

Local centre astride a grid road and at intersection of pedestrian route. Supergrid road shown in background as dual carriageway. Note that the intersection is light controlled. (Source: Original Llewelyn-Davies concept for MK)

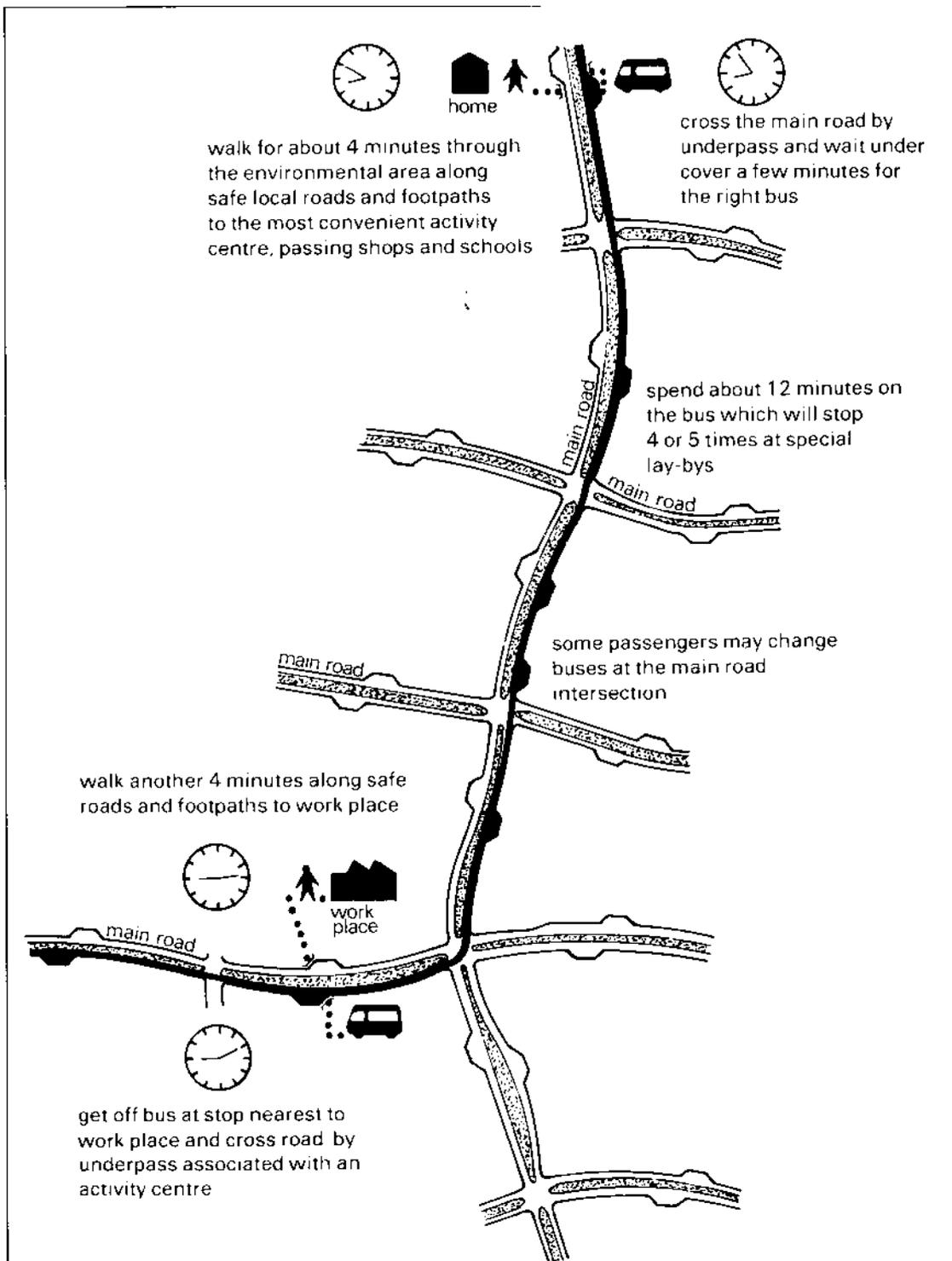


Figure A2

A typical journey to work by bus – as envisaged by the master planners