

MILTON KEYNES:

**MAKING A
GREAT CITY
GREATER**

Commission Working Paper 11
Intelligent On-Demand Mobility

Arup

Milton Keynes Futures 2050 Commission



Milton Keynes Council
Transport Strategy
Intelligent on-demand mobility

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1 Introduction

Many global cities are currently engaged in developing transport strategies which will deliver low-carbon solutions to challenges posed by improving air quality, reducing vehicle congestion and enabling mobility. Development of these strategies is taking place against a backdrop of demands for increasing mobility to support growing cities and limitations on investment in underlying physical infrastructure.

2 Some examples of exemplar developments

There are many global and European cities which are promoting low carbon mobility solutions in response to transport pressures caused by existing demand or anticipated growth in demand. Some examples of these are shown in the case studies which follow.

It should be noted that in the majority of cases the cities are seeking to address specific challenges linked to congestion, air quality or access to mobility. Given the increasing social awareness of carbon and particulate emissions and their negative effects on health and wellbeing together with the political pressure to achieve global climate change targets – it is inevitable that the majority of schemes being adopted are low carbon by default.

2.1 Oslo

The low-carbon strategies related to transport are:

- Developing a compact city with growth near public transport nodes and axes
- Improving public transport
- Facilitating the transition to green vehicles in Oslo
- Switching to zero emission cars in Oslo
- City bikes in Oslo
- Car sharing.

Road transport contributes 55 per cent of overall direct emissions and is thus the largest source of GHG emissions in Oslo. Oslo seeks to meet its steadily growing transport needs through increased supply of public services allied to the reduction of private car use. Oslo also works to promote low or zero fossil fuel consumption in motorised transport.ⁱ

The core requirement for the City of Oslo is to secure green public transport for the growing population in the region. The number of public transport journeys has grown by more than 35 per cent in the period from 2005 to 2011, and the volume of car traffic has ceased expanding in the same period. This trend may be explained by modernisation, the increased frequency of public transport services

and a reduction in the price of travel cards. Between 20 and 45 per cent of the revenues generated by the city's toll ring supplement other financing to cover investment and operating costs for public transport. In 2008 public transport use grew by 7 per cent and in the first half of 2009 rose again by 10 per cent. During the same period car use decreased by 4 per cent. More than 60 per cent of the energy used for public transport is renewable. Biogas from waste, together with biogas from waste water sludge, will be used as transport fuel and will replace diesel in buses.

The city's toll ring has been crucial in facilitating the introduction of green vehicles in Oslo. The city is paving the way for the introduction of electric vehicles. Today there are around 5,500 electric cars in the Oslo urban area. Since 1999 public parking has been free for electric vehicles in Norway. Electric cars are given free passage through Oslo's toll road system and are allowed to use lanes otherwise reserved for public transport. Oslo has installed around 500 charging stations for electric vehicles in the city where users can charge their vehicles for free.

2.2 Malmö

The low-carbon strategies related to transport are:

- Regular travel habits surveys
- Promotion of cycling, adoption of measure to make cycling faster, safer and more enjoyable
- 'Green' buses run on trunk routes, focus on modern, environmentally-friendly public transport
- Public transport given priority at crossings
- Clear, simple network of public transport with frequent services, good access and a high degree of comfort
- Public transport links to walking and cycling
- Travellers need to be able to rely on arriving on time, with the journey being fast, safe and secure, and with reliable information
- Good public transport which persuades large numbers of motorists to change their travelling habits also means better access for those who genuinely need to travel by car.

The City of Malmö carries out a large-scale travel habits survey every five years, with the most recent survey having been carried out in 2008. Being able to monitor the changes in the travel habits of the people of Malmö, it is encouraging to see that cars are being used for shorter journeys less often. On average, the number of journeys per person for 2008 and 2003 is the same. However, the number of car journeys has fallen from 52% of all journeys in 2003 to 41% in 2008. Conversely, the number of shorter journeys on foot and by bicycle has increased, and for longer distances the number of train journeys has also gained ground. This is in line with the increases in rail and bicycle traffic recorded in the

region. Overall, the percentage of bicycle journeys has risen from 20% to 23%, with the number of journeys on foot increasing from 14% to 20%. Train journeys have gone up from 3% to 5%.ⁱⁱ

Malmö is Sweden's best city for cycling. With 420 kilometres of cycle paths and a quarter of all journeys in the city made by bike, Malmö can count itself as one of the world's leading cycling cities. Thanks to the relatively mild climate and the flat terrain, it is possible to cycle all year round in Malmö. A variety of interventions have been tested to make cycling faster, safer and more enjoyable. The innovations introduced include rails at traffic lights which cyclists can rest against so that they do not need to put their feet down. To allow people to see what is happening around the corner, large mirrors have been erected in a crossing where visibility would otherwise be poor. Different types of lighting are also being trialled along the routes to improve visibility in the dark. Tools have been added to the three air pumps along the cycle route, turning them into mini-service stations where cyclists can carry out simple repairs.

"Cycling barometers" on Kaptensgatan and at Södervärn count passing cyclists and provide a visual indication of cycling levels in Malmö. These barometers are a way of showing how many people cycle in Malmö, and remind cyclists that they are appreciated.

Travelling to and from Malmö by bus and train is easy. Within the city, Skånetrafiken's green city buses run frequently along trunk lines and are entirely powered by biogas. A focus on modern, environmentally-friendly public transport means that passengers can find out departure times using their mobile phones and public transport is given priority at crossings, ensuring green, clean travel.

In autumn 2007, the City of Malmö began an in-depth study into the public transport of the future. Public transport should be so attractive that it is just as good as or better than travelling by car. This means providing a clear, simple network of lines with frequent services, good access and a high degree of comfort. Malmö needs a transport system where the various forms of public transport work together and link up with walking and cycling. As well as city buses, regional buses and trains, city rail transport is also needed. Regional bus traffic can be improved by giving it a higher priority within the traffic system and with attractive city traffic interchanges. Travellers need to be able to rely on arriving on time, with the journey being fast, safe and secure, and with reliable information. Good public transport which persuades large numbers of motorists to change their travelling habits also means better access for those who genuinely need to travel by car.

2.3 Bremen

The low-carbon strategies related to transport are:

- Development of public transport from existing low modal share
- Bike & Ride facilities exist at many public transport stops
- Marketing and public relations focus on the qualities of public transport as an efficient, cheap, reliable and eco-friendly means of transport

- Bremen promotes Car Sharing with the Municipal Car-Sharing Action Plan targeting 20,000 car-sharers by 2020
- Electronic ticketing
- New residential development only allowed if there is access to public transport.

Bremen has 550.000 inhabitants in the city and around 2.000.000 in the region. Outside the inner metropolitan area the population density is low and land use is predominantly rural. Five commuter railway lines serve Bremen (operated half-hourly to bi-hourly during peak hours), the rest of the region is served by busses with low frequencies. Private car traffic accounts for nearly 90% of the trips in the whole region.ⁱⁱⁱ

In comparison to other German cities public transport in Bremen has a comparatively low modal share. The conditions for car traffic are favourable with only few congestion making driving attractive. Nearly everybody in Bremen owns a bike and most people use it as a regular means of transport. Bremen has the highest cycling share of all German major cities. Cycling is on short and medium distances faster than public transport. There is a clear trend towards using cycle lanes in the road space which reduce conflicts with pedestrians and increase traffic safety.

Some of the densely populated suburbs are only served by busses, sometimes not running frequently. **The creation of new commercial or residential zones at the outskirts has a tendency to create more private transport trips because extending the bus services is costly.**

Bremen uses a push and pull strategy to make traffic more sustainable. The negative impacts of motorised traffic (noise, pollution, greenhouse gas emissions) should be minimised. High polluting vehicles are not allowed the city centre (air quality management). Parking space in the inner city is generally paid for by the motorist.

New residential zones will only be allowed in areas with access to existing or planned public transport routes helping to decrease urban sprawl and land consumption.

Smooth changes between different transport modes make the public transport system more attractive. Integrated fare systems combine railway tickets with urban public transport. Bike & Ride facilities exist at many public transport stops and you may take your bike with you on the trip when travelling by public transport.

A customer helpline is operated 24/7 giving advice on departure times, itineraries and fares. Customer service centres offer support at the seven most important stops. Marketing and public relations focus on the qualities of public transport as an efficient, cheap, reliable and eco-friendly means of transport. Public opinion on public transport is favourable, although a private car remains a status symbol. A customer loyalty programme (“Bodo Bonus”) offers public transport subscribers discounts for leisure activities of shopping. There is a single tariff system for the whole region allowing passengers to change between different operators using the

same ticket (integrated fare system). There are special discounts available e.g. for children, students, annual subscribers and companies. Bonus system for subscribers: E.g. if you own an annual ticket for one adult, you may take your family with you for free in the evenings and on the weekend.

Electronic ticketing makes using public transport a lot easier. You just hop on and the appropriate ticket is automatically selected by the vending machine using the best price (e.g. a dayticket). Payment is made by bank transfer. The e-tickets are primarily for people using public transport not on a daily basis, 60.000 persons use electronic tickets.

About 6.000 people use Car-Sharing, these cars replace more than 1.000 private cars and save public space and public money (~15 mio. € = 125 mio. ZAR) otherwise required parking space. Bremen promotes Car Sharing the Municipal Car-Sharing Action Plan – target: 20.000 Car-Sharer by 2020. Car-Sharing cuts down car traffic as Car-Sharing users use public transport or cycle more frequently. Car-Sharing is very attractive for public transport users only needing a car once in a while. Users pick a car type suitable for the purpose of each journey. This leads to a downsizing as people only choose large cars when actually needed. The Car-Sharing fleet consists of new cars with best emission standards.

2.4 Oxford

The Oxford transport strategy is a plan aimed at improving access and making Oxford a better place to live, work and visit^{iv}. Improving transport access into and around the city, and making Oxford a better place to live, work and visit are the main goals of a transport plan for the city. These would be achieved by reducing congestion, improving public transport and making Oxford more cycle and pedestrian friendly.

Oxford articulates its issues as^v:

- Oxford's economy is changing ... People are travelling to new locations
- Oxford is facing rapid population growth ... More people are travelling into the city
- Oxford is still a tale of two cities ... Some people are being left out
- Oxford's city centre could do better ... Different uses are competing for space
- Oxford's air quality is a major challenge ... The causes of poor air quality are persisting.

In response to the stated issues Oxford have developed a series of requirements for transport:

Oxford's requirements for transport	What this means in practice
Support the growth of Oxford's economy, with good connections to employees and markets	Effective transport connections to employment clusters by all modes
Cater for growth in population with effective travel choices for diverse movements in city	Radical improvements to public transport and active modes so they become obvious travel choices
A fully accessible network that meets the needs of all users	Tackle all barriers to connecting with opportunities: knowledge, confidence, price, time, physical ability
An accessible city centre that provides a world class visitor experience	Reduce traffic flows, reallocate roadspace, reconfigure public transport, improve permeability
Tackle the causes of poor air quality and environmental degradation in the city	Reduce traffic flows, reduce stop-start traffic, improve management of HGVs.

In spring 2014, the Leader of Oxfordshire County Council, launched Connecting Oxfordshire, a bold transport-enabled vision for the future. The Oxford Transport Strategy (OTS) is being developed as part of Connecting Oxfordshire to find ways to cope with rising demand for transport in and around the city. The OTS will form part of the county council's fourth Local Transport Plan.

Buses would remain a central part of the city's future transport forming part of a 'mass transit system' linking outer suburbs and Park and Ride sites to the city centre. Increasing park and ride capacity outside the ring road to encourage more drivers to take public transport into the city is another major part of the draft strategy.

Ideas being considered in the Oxford Transport Strategy include:

- Developing new park and ride sites further out of the city at places such as Eynsham, Cumnor, Woodstock, Lodge Hill, Sandford and Garsington Road to capture incoming traffic earlier.
- City centre bus tunnels
- Diverting the A40 to the north of the urban area/Creating an A40 tunnel under the urban area
- Mass transit systems in the city centre and elsewhere

- Working with the private sector on better ways of managing freight flows that use the ringroad and A34
- Expansion of smart ticketing and parking systems
- Congestion charging and workplace parking levies.

Oxford already attempts to limit traffic in the city centre by the use of ‘bus gates’ which prohibit certain classes of vehicles – mainly private cars during certain periods of the day. The bus gates have the effect of making car usage less convenient in the city centre, which in turn helps to promote use of park and ride facilities and public transport.

2.5 Cambridge

The Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) was adopted by Cambridgeshire County Council on 4 March 2014 and ensures that local councils plan together for sustainable growth and continued economic prosperity in the area^{vi}.

It is predicted that approximately 44,000 new jobs and 33,000 new homes will be created in Cambridge and South Cambridgeshire by 2031. The strategy will provide a plan to cope with the rising population and increase in demand on our travel network by shifting people from cars to other means of travel including cycling, walking and public transport.

This strategy has two main roles:

- It provides a detailed policy framework and programme of schemes for the area, addressing current problems, and is consistent with the Cambridgeshire Local Transport Plan 2011-26. It is part of how the Council manages and develops the local transport network of the County as a whole.
- It supports the Cambridge and South Cambridgeshire Local Plans, and takes account of future levels of growth in the area. It details the transport infrastructure and services necessary to deliver this growth.

The detailed strategy contains major schemes proposed in the short, medium and longer term. The programme will be regularly reviewed given the extent of growth and development in the area.

Key points from the Cambridge strategy include:

- The Council's aim for more journeys to be made by bus, train, bike and on foot so that traffic levels aren't increased.
- Extra capacity for traffic to travel round the outskirts of Cambridge, so that road space into and across the city can be prioritised for buses, cyclists and pedestrians.
- Additional Park and Ride options on the fringes of Cambridge, to reduce the amount of unnecessary traffic travelling through the city.

- Ensuring public transport, cycling and walking are the best ways of getting around and across the area, since they will be quicker and more convenient than by car.
- Reducing car traffic by using a variety of techniques, which may mean limiting the available road space for cars.
- Enabling people to use public transport for at least some of their journey into Cambridge or surrounding towns, by creating a frequent, quality service across major routes.
- Developing local transport solutions with communities, which link to public transport along key routes.

Cambridge is taking actions which aim to:

- Encourage more people to walk, cycle and use public transport for journeys into, out of and within the city
- Promote bus routes that connect key economic hubs and link to the new train station at Cambridge Science Park Railway Station
- Persuade more people to car share
- Prioritise pedestrian, cycle and bus trips across the city and make these methods of transport more convenient than using a car
- Maintain general traffic at current levels.

3 The challenge for Milton Keynes

Over the past 40 years Milton Keynes has grown from a small collection of towns and villages into a young, planned and modern city and borough. It is home to over 260,000 people and thousands of businesses. In the last decade, Milton Keynes population has grown by 17.3% to its current population. The population is forecast to increase by 20% to over 300,000 by 2026.

The Council's Core Strategy forecasts employment growth of between 41,230 - 69,060 new jobs over the period of the Core Strategy, which represent an increase of between 29% and 49% above current levels. As the forecast increase in employment exceeds that of population this suggests that the future employment opportunities will be met, in part, by an increased level of in-commuting (to Milton Keynes from surrounding areas).

Along with significant new residential development proposed for the borough by the core strategy and increasing car ownership, there will be around a 57% increase in journeys by car at peak travel times at current rates of growth, but the capacity of the grid road network's junctions can only be practically increased by 25% at peak times through junction improvements and other measures. Capacity improvements are limited to 25% by a combination of funding availability and other environmental impacts.

Much of the employment growth across the borough is planned to take place in CMK. Around 10,700 new office-based jobs are projected for CMK, plus a further 3,400 in retail, community and other sectors. This represents a substantial increase in employment in CMK from today's level of around 30,000 jobs. This growth will be supported through the delivery of 12,000 sq. metres of B1(a) office space per annum (2013-2026). There is also significant residential development planned for CMK, with around 5,000 dwellings.

This is expected to lead to a 40% increase in travel demand to CMK, which at times now on approach junctions is already reaching capacity and there are concerns that parking can be increased to meet this demand.

In addition, the council has a commitment to reduce CO2 emissions by 40% by 2020. Improving sustainable transport to provide a real and attractive transport choice is, therefore, a key focus of the council's Transport Vision and Strategy.

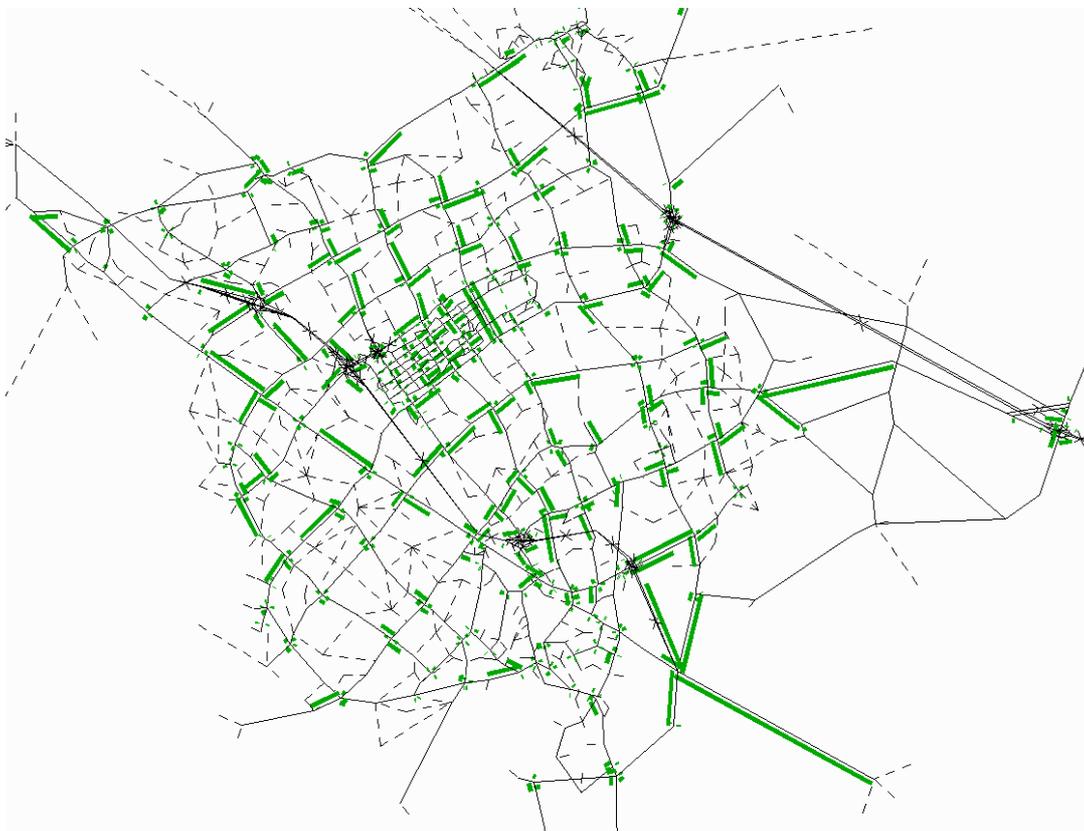
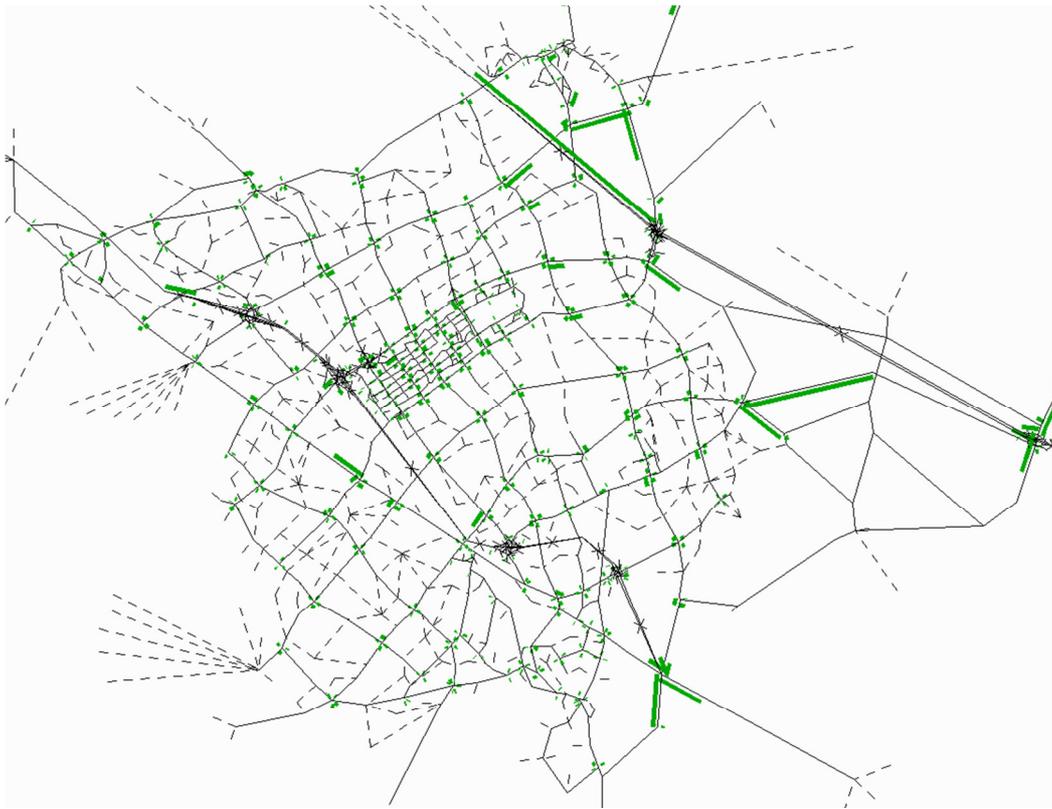
The impacts of this growth in travel demand have been assessed using the council's transport forecast models. These look in detail at the proposed development patterns and the range of transport options available to meet demand in the future. The impacts are not uniform across the network, and can be distorted by the scale and pattern of development in particular areas.

The forecasting has been developed using robust techniques that are governed by Department for Transport guidelines. But as with all forecasts into the future these need to be considered carefully and be treated with a degree of caution. But applying a common sense approach, supported by secondary analysis of transport issues, the impact must be considered as a very likely scenario when looked at alongside the key issues faced by transport in Milton Keynes (described in the following text).

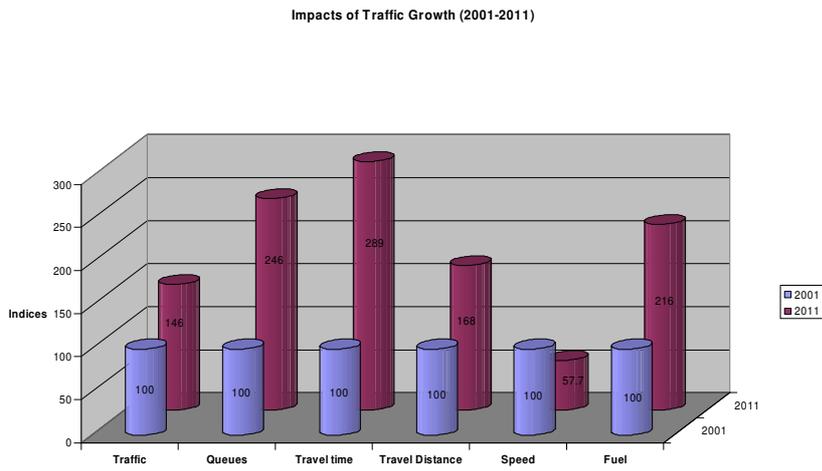
Impacts of increased travel demand (2009 v 2026) – Core Strategy Assumptions

	AM Peak	Inter Peak	PM Peak
Total Distance Travelled	+31%	+49%	+27%
Total Travel Time	+54%	+72%	+48%
Average Network Speed	-15%	-13%	-14%

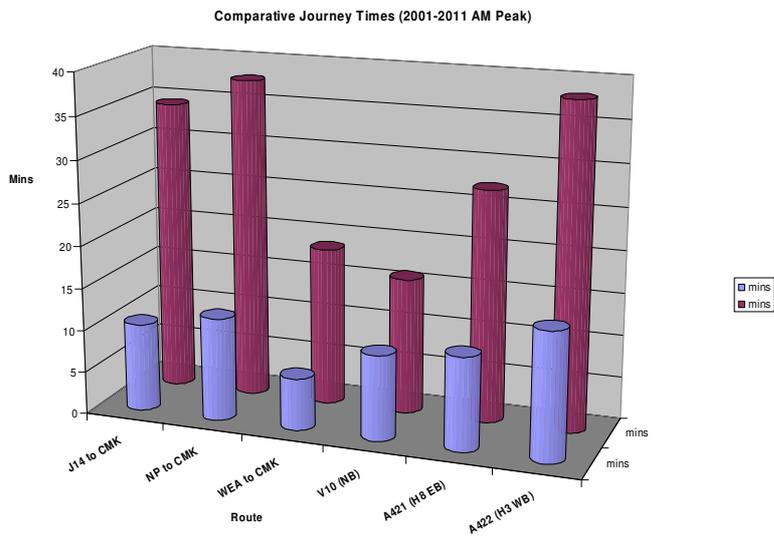
Change in Congestion Hot spots (morning peak 2009-2026)



Network Performance Changes



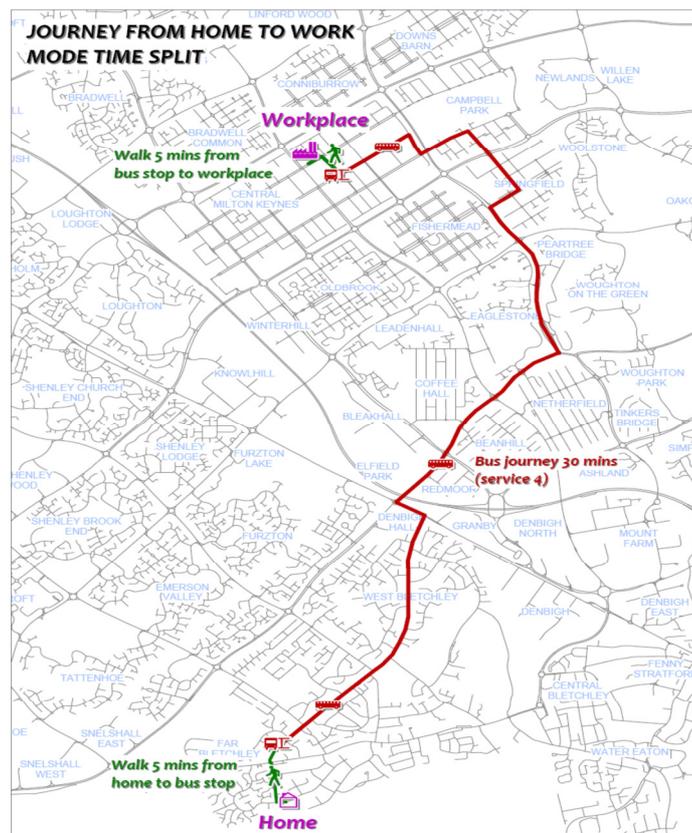
Key Routes – change in journey times



3.1 Key Issues - Buses

Despite ongoing improvements to sustainable transport networks and growing bus patronage levels on core routes, there is a poor perception of buses. Against a council target of 58% satisfaction with local bus services, only 40% satisfaction was achieved in 2009/10. There have been some more recent improvements but satisfaction levels remain (in 2014/15) the lowest in the country where it is measured. For journeys to work, public transport mode share is 8.7%, below regional and national averages²¹ and for journeys to school, car usage was 28.8% against a national average of 25.4%.

It is difficult to provide commercial bus services from low density residential areas in villages and in city estates to dispersed employment sites and retail areas. Buses that operate along grid roads only, have lower levels of accessibility, but benefit from faster journey times. Services that run through estates have higher levels of accessibility, but are prone to lower levels of reliability and relatively long journey times. In addition, buses are also perceived to be expensive as return fares can often exceed local car parking charges, and lack of direct services poor quality bus and rail interchange and integration of timetables and lack of integrated ticketing increase people's perceived costs.



Recently, timetable and route changes have received much negative media coverage and high levels of public opposition.

When the 'wait time' for a bus - say on average 15 mins for a 30min frequency service - is added to the travel time, the total time for the journey is approaching 1 hour. This perhaps compares with a 15 min car journey with maybe a 5 min walk from a parking space (total 20 mins)

Fast grid roads are a safety concern for bus operators with buses turning or merging onto grid roads, as well as providing an uncomfortable journey experience if buses need to break suddenly.

Rail

Milton Keynes borough is relatively well self-contained with regards to journeys to work. 78% of working age residents also work in the borough, and 38% of journeys to work to Milton Keynes and 43% of journeys from Milton Keynes are less than five kilometres in length. However the opportunity to provide a real transport choice and mode shift across short to medium distances and along key corridors with high journey to work flows has not been realised with only journeys to work in London having a sizeable rail mode split. This is exacerbated by short bus operating hours and weekend and public holiday services for people who work shift patterns or long hours and does not support the buoyant night time economy of Milton Keynes.

In addition, where rail services are available for journeys to work, there is often crowding on the network and on board trains in the morning and evening peak, particularly on West Coast Main Line rail services (PTi15). There are also gaps in local peak rail services, such as no peak services between Wolverton and Bletchley (PTi16). Locally, there are also perceived safety concerns at stations and on trains, particularly late in the evening (PTi17).

At a national scale, there is limited direct rail connectivity between Milton Keynes and many major urban areas in the country, as well as international gateways such as airports, ports and the Channel Tunnel (PTi18). Connectivity is poor to the east and west of the borough to the knowledge economies of Cambridge and Oxford (PTi19), and as a result, many business trips must be conducted by car or require time consuming interchange.

Long distance coach services fill some of the gaps, but require further promotion to support their commercial viability.

Travel Opportunity

There are pockets of high levels of multiple deprivation in Milton Keynes, typically matched by lower levels of car ownership. With regards to accessibility, almost 20% of Milton Keynes residents do not have access to a private car, with approximately 50% of working age population residents not having access to a car at some point during the day.

When considered alongside a relatively limited bus service network, this can make travel difficult for many residents.

Access to key services is perceived to be poor by residents anecdotally. Membership of the current community transport service is reaching capacity 1. With a 102% increase in the elderly population between 2011 to 2031 from

28,400 to 57,300, ‘mainstreaming’ services (i.e. making the public transport network as accessible as possible and reducing dependence on Community Transport) will become essential if Community Transport is to be funded and provided across the entire borough. Preventing this aim from being achieved are public transport network accessible constraints for people with mobility or sensory impairments (PTi24).

3.2 Key Issues – Walking & Cycling

With limited scope for increasing the capacity of the highway network in line with forecast growth in car trips based on current rates and a council commitment to a 40% reduction in CO₂ emissions by 2020 (CWi2), a shift to more sustainable modes of transport is required. However, despite 78% of Milton Keynes working age residents also working in the borough, and 38% of journeys to work to Milton Keynes and 43% of journeys from Milton Keynes being less than five kilometres in length, the proportion of walking and cycling trips for journeys to work in Milton Keynes (10%) is currently below the regional and national averages for journey to work (13%).

Milton Keynes’ 280 kilometres of world class Redway network is an underutilised resource. Routes are often perceived to be indirect and unsafe. Low levels of lighting, winding paths, maintenance issues, vegetation obscuring people’s forward vision, poor wayfinding (on and off the Redway network) and underpasses along with negative media attention add to people’s perceived safety concerns on the network.

The Redway network does not extend fully into Central Milton Keynes, older towns and rural areas and a lack of good trip end facilities, including at bus stops and interchanges, such as cycle parking and shower facilities at workplaces make it difficult for cycling to be a real and attractive transport choice from all parts of the city. Poor cycling and walking infrastructure in rural areas, particularly to rural employment centres and key services also denies rural parts of the borough a full choice of transport options.

3.3 Key Issues – Smarter Choices

There is a reliance on the use of the car in Milton Keynes, with high and growing car ownership levels with limited capacity for growth in car trips on the highway network.

A high proportion (73%) of journeys to work are by car. Similarly, the Milton Keynes School Census (2010) shows greater use of the car for journeys to school (29%) compared to the national average (25%). There is however, excellent scope for increasing active travel in Milton Keynes. For example, 38% of journeys to work to Milton Keynes and 43% of journeys from Milton Keynes are less than five kilometres in length.

It is estimated that without positive action, but with increasing car ownership and significant new development proposed for the borough, the number of morning peak journeys by car will rise by a further 57% by 2031 based on current trends.

This high level of forecast growth is a particular challenge given that there is only scope to increase the capacity of the current road network by 25% through junction improvements and other measures. Linked to the reliance on the car, road-based CO₂ emissions in Milton Keynes are also a concern and the council has committed to reducing all CO₂ emission (SCi5), with air quality issues also a concern in the borough (SCi6).

3.4 Key Issues - Highways

Due to the unique grid road network that defines the urban area of the borough, Milton Keynes does not suffer today from significant congestion. However, there are heavy concentrations of traffic leading to and from major gateways, such as the M1 junctions, and to and from Central Milton Keynes, especially involving journeys to and from work during the peak periods – notably M1 Junction 13, Junction 14 / Northfield area, along the A509 / A422 corridor, and the Old Stratford and Fenny Stratford junctions on the A5. Milton Keynes has high private car mode share for journeys to work (73%) and school (29%) in part due to the lack of alternative choices and perceived safety concerns.

Forecasts suggest that due to high levels of housing and employment growth and rising levels in car ownership, there will not be enough spare capacity on the highway network to cope with increases in traffic levels despite junction improvements and other measures. Those areas that do not currently have serious congestion problems will face potential problems in the future as road traffic continues to grow. By 2018 it is estimated that average speeds will be reduced by 6%, resulting in a 67% increase in total travel time, reductions in reliability and an estimated increase in fuel consumption of 65%. This will also have a negative impact on public transport journey times and reliability.

Whilst Milton Keynes is performing well in terms of casualty reduction and is exceeding targets, casualty rates per vehicle kilometre are not falling as quickly as towns and cities of a similar size. It is noted that Milton Keynes' unique high speed, city grid road network does make comparison difficult with other authorities. Right hand turns across high speed dual carriageway grid road traffic can be difficult and is anecdotally perceived a safety hazard.

Anecdotally, poor road signage leads to confusion for visitors, and poor signage and Satellite Navigation routing 'wastes' vehicle kilometres for all road users; and online information provision for journey planning is poor.

In Olney, high traffic flows, including freight traffic, have created air quality issues in the centre of the market town.

3.5 Key Issues – Development Strategy

With significant new development proposed for the borough and increasing car ownership, there will be a 57% increase in journeys by car at peak travel times at current rates of growth, but the capacity of the grid road network's junctions can only be increased by 25% at peak times through junction improvements and other measures. In addition, the council has a commitment to reduce CO₂ emissions by

40% by 2020. The interaction of spatial and transport planning is key to minimising the impact on the network whilst achieving other objectives.

3.6 Key Issue – Parking

There are approximately 25,000 parking spaces in CMK. Of these approximately 21,000 are public parking and a further 4,000 private spaces. By comparison, neighbouring towns of Northampton and Luton have approximately 4,000 public town centre spaces and Peterborough (considered to be a demographically comparative town) has 7,000 public spaces and 3,500 private (employee parking) spaces. These comparisons reflect the fact that Milton Keynes is very different from similar sized towns, whereby good road accessibility and parking availability underpin its attractiveness as a retail and employment destination. However, they also emphasise the scale of challenge in accommodating future growth in a more sustainable manner.

Parking charges in Milton Keynes are also lower than those levied in neighbouring and comparable cities, and this is one reason why driving is a more attractive option than more sustainable forms of transport. However, the current availability of parking, without attractive sustainable alternatives, is important for Milton Keynes' economy.

The central challenge facing CMK is that the planned level of future growth cannot be accommodated under a 'business as usual' scenario. In particular, the scale of additional parking required to accommodate growth (between 10,000 and 12,000 additional spaces, assuming current mode share and occupancy) cannot be provided without significant consequences alongside the delivery of development aspirations within CMK.

Car is the dominant mode, accounting for 75% of commuting trips (person trips) into CMK, with 19,600 car vehicle trips going to CMK each morning.

Parking must support and respond to the wider growth and development aspirations for CMK; this means accommodating growth while also helping shape the pattern of that growth, and the demand for movement associated with it.

The scale of challenge is significant, and will necessitate a significant improvement in the attractiveness of non-car alternatives. The extent to which improving public transport and walking / cycling can address this challenge, given the current dominance of the car and the desire to retain the high-levels of car based accessibility that underpins the attractiveness of CMK, is limited.

As an illustration, an increase in 50% in usage across all non-car modes would only result in a 12.5% reduction in car mode share². This would be significant in itself, but when set against a forecast of 40% growth, can only be part of an overall strategy.

4 Existing Milton Keynes strategy

4.1 Current Strategy – Overview

The Transport Vision and Strategy constitute the council's third Local Transport Plan (LTP) for Milton Keynes and was submitted to the Department for Transport in April 2011. The Transport Vision and Strategy set out the borough's policies and programme for delivering local, sub-regional and national policy objectives and will be reviewed on a regular basis and at a minimum every four years. The main elements are as follows:

4.1.1 Public Transport:

- MK Star Bus Network
- Park & Ride
- Semi-flexible urban feeder services
- Increase peak frequency rural services
- Improved interchange
- Rapid transit including defining and defending alignments
- Improved Real Time Passenger Information (RTPI) provision
- Integrated ticketing and smartcards
- Alternative fuel buses and supporting infrastructure
- Support for East West Rail and High Speed 2
- Local rail improvements
- Continued provision of community transport.

4.1.2 Cycling, Walking and Smarter Choices:

- Expansion of the Redway network into Central Milton Keynes, new developments, regeneration areas and where possible the older towns
- More direct Redway routes and top priority for cyclists and pedestrians within city estates
- Improved walking and cycling access to rural employment areas and key services
- Improved maintenance and lighting of Redways
- Improved walking and cycling access to the public transport network
- Cycle hire

- Co-ordinated package of Smarter Choices interventions.

4.1.3 Highways and Traffic Management, Road Safety and Infrastructure Management:

- Expansion of grid roads into and through future Expansion Areas
- Dualling of A421 from M1 Junction 13 to the M40 in Oxfordshire
- Junction improvements
- Improved access to / from the M1 Motorway
- Improved freight partnership working
- Ongoing funding for road safety engineering and education, training and promotion
- Intelligent Transport System package of interventions and improved broadband coverage
- Alternative fuel private vehicles and supporting infrastructure
- Improved maintenance to the highway network.

4.1.4 Development Planning:

- Appropriate parking standards for new developments and in regeneration areas
- Improved integration of spatial and transport policies including improved partnership working between Milton Keynes Council, the Homes and Communities Agency, and developers.

5 New opportunities; innovation and state-of-the-art solutions

The Intelligent Mobility Review report produced by Arup on behalf of the Council's Task and Finish Group on Transport Innovation provides details of a number of innovative low-carbon and intelligent transport developments that could benefit Milton Keynes' transport networks. Adoption of such schemes will allow passengers to take efficient multi-modal journeys throughout the city with minimal effort and maximum flexibility thereby supporting and enabling the growth of the city

The identified low-carbon intelligent transport opportunities for Milton Keynes are presented below.

Opportunity	Details (locations, benefits etc.)
Data availability (data network coverage)	All of the intelligent transport services will require some level of data connectivity for either the passengers' smartphones or the transport system. The city has the opportunity to ensure the city has sufficient data coverage for the next generation of transport services and other systems competing on the same data networks.
Data interoperability (UTMC framework)	To allow the equipment, sensors, networks and smart-devices of the intelligent transport system to seamlessly share data and benefit from available real-time and historic information, devices and data communication and storage should be compliant with the open UTMC framework.
Real Time Passenger Information (RTPI)	Real time, multi-modal passenger information at transport interchanges and key locations throughout the city. Bus stops/stations, rail station, autonomous pod stations, cycle hire bays, red-routes, highway signage etc. Provide public transport users and car drivers with the information to adapt their journey plans dynamically.
Smart Parking Trials	Expansion of the Smart Parking trials to a greater number of spaces. This would allow drivers to book in advance and check parking availability before the start of their journey. Live and forecast availability could be developed based on usage stats.
Smart ticketing	Proposal of a multi-modal smart ticket solution for Milton Keynes to provide the cash- and ticket-less benefits to existing services and encourage greater public transport use.
Multi-modal travel application	Develop the MotionMap application/service, or work with exiting application/service providers (e.g. Citymapper) to create an application to provide a single, intuitive and user friendly service for all journey planning requirements in the city.
Mobility as a service	Building on the smart ticketing and multi-modal travel applications to offer a complete mobility solution for all public transport requirement in the city.
Ride and car sharing	Identify the current barriers to car and ride sharing, and source and propose a suitable ride sharing

Opportunity	Details (locations, benefits etc.)
	<p>system/operator in the city. A successful scheme will have a larger pool of users to provide greater coverage and flexibility when required.</p> <p>A similar scheme could be introduced for on-demand vehicle rental.</p>
<p>Taxi sharing and on demand bus trial</p>	<p>Identify the current market for taxi sharing and work with taxi operators and interested parties to trial the operation.</p> <p>Development of the taxi sharing system to trial an on-demand bus service.</p>
<p>Autonomous door to door service</p>	<p>Develop the first and last mile solutions using autonomous pods and driverless vehicles to offer a door to door transport solution. Driverless vehicles would integrate with parking and charging/refuelling solutions for a complete autonomous system.</p> <p>Could extend to school and community transport.</p>
<p>High-speed mass transit</p>	<p>The MK Bullet high-speed mass transit scheme has the potential to be the first of its kind in the world and provide the city with a futuristic system that demonstrates a cost effective low carbon transport solution and improves traffic flows throughout the city.</p>

6 An intelligent on-demand mobility strategy for Milton Keynes

“Mobility for All” should be at the core of the vision for the future of Milton Keynes. It is a crucial driver for sustaining economic growth, investment and continuing to attract people to move to the city. Everyone who lives, works, studies or does business in Milton Keynes must be able to move freely and on-demand, using services that are attractive, flexible, and affordable. The world of transport is being revolutionised by low-emissions technologies and the arrival of intelligent systems that provide the opportunity for Smart Shared Mobility services to be at the heart of the city’s long-term strategy.

The city’s strategic approach to mobility must address the needs of the 20% of households who do not own a car and the approximately 50% of working age population residents who do not have access to a car at some point during the day.

The forecast growth in congestion will impact on all road users; planned employment growth to 2026 will lead to a 40% increase in travel demand to CMK, which at times now on approach junctions is already reaching capacity.

The city should take steps to ensure that the capacity and flexibility offered by the grid-road network and Redways network can be capitalised on and exploited to the fullest extent in future. The city cannot meet the very high costs of rebuilding key road junctions and the other network improvements that would be needed to avoid grid lock and keep pollution under control. Other ways must be found to provide mobility for all.

The strategy must recognise that personal choice will mean that many will still choose personal travel by car as one amongst many future mobility options and that low-emission vehicle strategies must therefore be an integral part of the city’s forward thinking. The city should seek to exploit the capacity offered by the grid-road layout provided that it can be used without damage to the environment. To be successful, the transition to shared mobility services will only occur when those new services become more attractive and convenient than using the car. Personal choice, rather than enforcement, should be the driving force behind the provision of future mobility services.

Much of this thinking is already embodied in the City’s recent achievements. Milton Keynes has been very successful in establishing itself as the UK’s leading city for transport innovation. It is the Government’s ambition to see the UK develop as an international leader in these fields and it is the right time to make the case for Milton Keynes to be at the centre of those developments.

Within the context of a new long-term strategy three key areas should be prioritised for strategic investment. These are:

- **The development of city-wide motion information and travel integration systems** – building on early R&D work delivered through the MK: SMART programme, the city should make a bold move to support and expand the curated data hub which has been at the centre of this successful programme. This action should be supplemented by the large-scale deployment of busyness sensors throughout the city which can provide data to the hub for access by all. The provision of ubiquitous ‘busyness’ information to travellers and transport providers alike should be seen as a cornerstone of the future’s flexible transport services. Additionally, a “MK oyster card” to pay for journeys across multiple modes should be introduced.
- **The encouragement of low-emission shared transport provision** – building on the significant achievements of having the UK’s most comprehensive electric vehicle charging infrastructure and hosting the UK’s first wirelessly charged electric bus service, the city should invest in the encouragement of next-generation shared services for all. The objective should be to provide emission-free public transport services for all, spanning the full spectrum of needs from fixed-route, fixed timetable buses, through demand responsive shared services (on-demand buses, shared taxis, car-clubs, and car-shares), to publicly available electric bikes and push-bikes. The unique facility of the city’s extensive Redway should be exploited to the full in delivering these services.
- **The exploration and development of future transport systems** – building on the city’s outstanding track record of fostering innovative transport developments, Milton Keynes should invest to encourage the introduction of transformative solutions. Low-Speed Autonomous Transport Systems (L-SATS, or driverless pods) potentially have a significant role to play in providing convenient and cheap last-mile transport services in areas where cars might, in future, be excluded. At the other end of the spectrum, a flexible low-emission mass transit solution for small cities could be demonstrated in Milton Keynes as an affordable solution for many cities with populations which fall below that level which is needed to support traditional metro or light-rail solutions.

The strategy could be formulated and delivered by a new mobility partnership body with public private and other providers of transport to build a shared vision of how mobility in MK would work and a collaborative endeavour to making that happen.

The **next steps** for a Smart Shared Mobility project would be for the Council to:

- adopt the **ambition of Smart Shared Mobility** and the need to be able to articulate what that would mean in practice as a cornerstone of city's long-term strategy.
- to work with partners, formulate the key components of a low emission **shared mobility strategy and a transition plan** to achieve it; and
- that this low emission shared mobility strategy is incorporated in the next **strategic transport plan and seek funding** for elements of it through the Local Investment Plan and as part of the National Infrastructure Commission's East West route study.

7 References

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ⁱⁱ

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