MILTON KEYNES
C O U N C I L

A Transport Vision and Strategy for Milton Keynes

The Local Transport Plan 3 - 2011 to 2031

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Transport Department

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Appendix A: Policy Review and Evidence Base

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April 2011

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Appendix A: Policy Review and Evidence Base

Overview

This section provides the evidence base and policy review for the Transport Vision and Strategy. The policy review provides the policy context for the Transport Vision and Strategy, as well as the policy thread for the transport objectives of the Transport Vision and Strategy. The evidence base highlights the key issues that the Transport Vision and Strategy must address.

The policy review has drawn on international, national, sub-regional and local legislation, guidance, policy, strategy, and plans that inform the study; and the evidence base builds on the wealth of existing data and analysis available from Milton Keynes Council and its partners. Figure A.1 below provides an overview of the key national and local policy and strategies reviewed as part of this process.

FIGURE A.1   KEY POLICIES AND STRATEGIES

National Policies and Strategies with Transport Impacts

•Policy Planning Statement 1 – Planning and Climate Change
•Policy Planning Statement 4 - Planning for Sustainable Economic Growth
•Equality Act 2010
•Local Growth: Realising every places' potential (2010 White Paper)

Key National Transport Policies and Strategies

•Highways Act 1980
•Road Traffic Act 1988
•New Roads and Street Works Act 1991
•Road Traffic Reduction Act 1997
•Transport Act 2000
•Traffic Management Act 2004
•Local Transport Act 2008
•Policy Planning Guidance 13 – Transport (Revised 2011)
•Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen (2011 White Paper)

Local Policies and Strategies with Transport Impacts

•Local Plan (2005)
•Milton Keynes Sustainable Community Strategy (2008)
•Milton Keynes Core Strategy: Revised Proposed Submission Version (October 2010)
•Low Carbon Living Strategy and Action Plan (2010)
•Supplementary Planning Documents: Residential Development Design Guide (2010),
•Transport and Sustainable Transport (2009)
•Supplementary Planning Guidance: Parking Standards (2009)
•Milton Keynes Neighbourhood Renewal Strategy (2009)

A Transport Vision and Strategy for Milton Keynes – Milton Keynes Local Transport Plan

Local Transport Policies and Strategies

•Cycling Strategy (2010)
•Safer Journeys Strategy (2010)
•Transport Strategy….as Milton Keynes Grows (2008)
•Bus Strategy (2008)
•Parking Strategy (2008)
•Lorry Management Strategy (2008)
•Milton Keynes Transport Strategy Review (2008)
•Milton Keynes Local Transport Plan Progress Report (2008)
•Milton Keynes Local Transport Plan 2006/2007 to 2010/2011 (2006)
•Sustainable Integrated Transport Strategy (SITS) (1999)

National Key Transport Policy

Transport Act 2000

The Transport Act 2000 is part of the UK government's strategy to meet present and future transport challenges. It requires all local transport authorities in England (except London) to prepare Local Transport Plans, with the aim of giving local authorities the means to develop and improve locally appropriate measures, and requiring authorities to take consideration of government guidance relating to transport issues. It also sets out a number of schemes to facilitate this process such as governing local bus operations and introducing the concept of road user charging.

Traffic Management Act 2004

The Traffic Management Act set out to tackle congestion and disruption on the road network. It requires local highway authorities to take on new network management duties with an obligation to ensure the 'expeditions movement' of traffic on their road network. The Act also includes the provision of additional tools to enable these local authorities to better undertake their new traffic responsibilities.

Local Transport Act 2008

The purpose of the Local Transport Act 2008 is to address congestion issues and improve public transport with new governance and powers for local authorities. It sets stronger quality standards for more effective partnerships with bus operators through Quality Contracts. It also introduced Integrated Transport Authorities to replace Passenger Transport Authorities, to give them wider responsibilities and powers to act for the social, economic and environmental well being of their area.

Policy Planning Guidance 13 - Transport

PPG13 sets out objectives to better integrate planning and transport at local, regional and national level; promotes sustainable transport choices for people and freight; and reduce the need to travel by car by improving accessibility through public transport, walking and cycling. The guidance advises on travel demand and traffic management, implications of development and land use on transport networks, sustainable travel practices, and integrated parking strategies.

Local Key Policy

Sustainable Integrated Transport Strategy (1999)

SITS, influenced by the Government's White Paper on the Future of Transport: 'A New Deal for Transport: Better for Everyone', published in 1998, recognised that a new transport strategy was required in order to address car domination. The councils first two Local Transport Plans were developed on the SITS vision and strategy.

Local Plan (2005)

This document outlines the basis and objectives of all planning policy in Milton Keynes. The main transport policies of the Local Plan are to use parking policy to promote sustainable choices, prioritise pedestrians over cars in town centres, mixed developments and local areas, cater for the disabled and protect sites and routes for transport investment. The Local Plan also includes a number of policies related to public transport, freight, development travel planning, parking policies, cycle and pedestrian links, road works, and rail upgrades.

Milton Keynes Sustainable Community Strategy 2004-2034 (Revised 2008)

This document outlines a sustainable growth plan for Milton Keynes to 2034, developed by the Local Strategic Partnership (LSP). It sets out a number of transport-related objectives but does not make any recommendations for specific schemes. The focus is rather on positioning Milton Keynes as a leading UK city in a globalising world; developing and delivering high quality services and good quality of life for those who live and work in Milton Keynes; facilitating participative communities by supporting opportunities for citizens to be involved in decision making; and establishing a clear process for the LSP to effectively implement and monitor this strategy.

Core Strategy: Revised Proposed Submission Version (2010)

The Core Strategy is the principal spatial plan for the borough. The scale and complexity of development covered in the Core Strategy dwarfs most other Local Development Frameworks in the country. It sets out the vision of how the borough will be in the year 2026 and how the council can lead on how we are going to get there. It aims to help improve people's quality of life. It provides the objectives and strategy for development of the borough and identifies the major areas where growth and change will take place. It also provides the spatial expression of the Sustainable Community Strategy. It recognised the challenge for transport to support the sustainable development of the borough as it grows rapidly, and provides transport policies for transport to adhere to. Figure A.2 relates Policy CS11 on transport to the Transport Vision and Strategy.

Milton Keynes Transport Strategy Review (2008)

Milton Keynes Council and the Milton Keynes Partnership commissioned this report to review existing strategy documents at local, regional and national level to examine the convergence of relatively short term policy in the LTP with longer term planning for the town's future, as outlined in the regional planning documents to 2031. The report predicts Milton Keynes will see increased congestion as population growth pushes up travel demand in a car-oriented city. As such it recommends that actions be taken to reduce car use and promote alternative transportation options in Milton Keynes, such as increasing car occupancy for journeys to work, increasing walking and cycling for journeys to work, developing a parking management strategy, and increasing public transport trips by focusing on attracting car users to use public transport.

Bletchley Transport Strategy

The overarching aim of the Transport Strategy for Bletchley is to assist in the delivery of a Bletchley ready to make the most of the future opportunities offered by proposals such as East – West Rail, a Bletchley which has a transport system that supports the economic vibrancy of the area by providing access to jobs and education and a Bletchley that is accessible for all users, with a range of transport options for all important trips. These aspirations have been summarised in a single Transport Vision Statement based upon a combination of the views expressed during the Consultation Workshops held in September 2010, and the findings of the previous studies:

Transport Vision - "A Sustainable, Transport System that makes Bletchley an attractive, connected and convenient place to live, work and shop".

Low Carbon Living

The Milton Keynes Local Strategic Partnership in association with the council is working together to help Milton Keynes citizens, communities and businesses to cut their CO_2 emissions.

The Milton Keynes Low Carbon Living campaign has been developed with the aim of making citizens more aware of how much fossil fuel energy (i.e. electricity, gas, petrol, diesel etc) is used in day to day living; the impact this is having on the climate, locally and globally, and the many positive actions that can be taken to reduce energy consumption and CO_2 emissions to help tackle climate change[1]

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[1] See Milton Keynes Local Strategic Partnership and Council's *Low Carbon Living* website:
http://www.milton-keynes.gov.uk/Milton Keyneslowcarbonliving/

FIGURE A.2   LINKAGES BETWEEN THE CORE STRATEGY AND TRANSPORT VISION AND STRATEGY

Core Strategy - Policy CS11 A Well Connected Milton Keynes	Transport Vision and Strategy
Maintain and future-proof the city's grid road network and extend it into new development areas whilst safeguarding the corridors for possible mass transit schemes.	Interventions 'DPo2 Expansion of the grid road and Redway networks into major new developments', and 'DPo3 Define and defend alignments for high capacity transit in new development', support the Core Strategy's spatial planning policies. 'Bo7 Rapid transit' also looks at feasibility of future rapid transit
A step change in improvements to public transport including a core public transport network, with Central Milton Keynes at its hub, serving key trip generators and to cater for specific areas and types of public transport need. New bus services will be provided to major new areas of development when sufficient buildings are occupied.	The Public Transport Strategy contains packages of interventions that will deliver the required step change, chiefly: Bo1 'MK Star' bus network Bo2 Semi-flexible 'dial-a-ride' bus services covering city estates Bo3 Bus 'hopper' service for Central Milton Keynes Bo4 Improved interchange facilities Bo5 Park & Ride Bo6 Bus priority Bo7 Rapid Transit Bo9 Increased frequency of morning and evening peak services Bo12 Improved information provision including Real Time Passenger Information provision Bo14 Integrated ticketing between operators and across modes, including smartcard ticketing Bo15 Accessibility improvements CTo1 Community Transport provision All other strategies support this step change.
More sustainable transport choices for car owners and information and measures to encourage them to use non-car modes for more journeys	The Public Transport, Cycling and Walking and Smarter Choices Strategies contain interventions aimed at encouraging individuals to choose more sustainable transport modes, for example bus, coach, rail, taxi and private hire, community transport, car sharing, walking, and cycling.

Core Strategy - Policy CS11 A Well Connected Milton Keynes	Transport Vision and Strategy
Encouraging greater movement within the Borough by cycling and walking through improvements to the existing Redway network and other paths, including more direct routes, enhanced facilities and signage, better integration with transport interchange hubs, and improved surveillance; and by extending the Redways network throughout major new development areas (including creation of routes that are shorter than the equivalent road journey).	The Cycling and Walking Strategy provides a package of interventions aimed at encouraging greater movement by cycling and walking.
Planning the development of large housing and employment areas, health, education, leisure, sports, emergency services and other key facilities so that they are well served by public transport and easily accessible by walking and cycling. Applies particularly to Central Milton Keynes, town and district centres elsewhere in the Borough, the Eastern and Western Expansion Areas, the four Strategic Reserve Areas, (SR1, SR2, SR3 and SR4), and Key Settlements in the rural area.	All interventions in the Public Transport Strategy, Cycling and Walking Strategy, and Development Planning Strategy will improve the accessibility of all residents, workers and visitors to key services and employment opportunities, with a particular focus on Central Milton Keynes, town and district centres, rural areas, and Expansion Areas and large new developments (e.g. strategic Reserve Areas).
Demand management in order to help achieve a shift from journeys by car to more sustainable transport.	The Smarter Choices Strategy has the primary aim of managing demand on a 'carrot' rather than 'stick' basis, by promoting sustainable travel choices and reducing the need to travel (including enhancements to the broadband network).

Core Strategy - Policy CS11 A Well Connected Milton Keynes	Transport Vision and Strategy
Maximising the capacity of the Borough's highway network through phased improvements in step with housing and employment growth (e.g. the dualling of the A421, a new Junction 13a on the M1 and improvements to key roundabouts on the grid network).	The Highways and Traffic Management Strategy anticipates future housing and employment growth, and the associated increase in demand for travel, by delivering interventions that will increase highway capacity including: HTo2 Peak spreading of traffic through spreading school and business working hours HTo6 Promotion of sustainable freight movement HTo12 – HTo18 Intelligent Transport Systems to better manage the existing highway asset. HTo19 Junction capacity improvements HTo20 Dualling of the A421 from Junction 13 to the Kingston Roundabout (A5130) and on to M40 in Oxfordshire HTo21 / HTo22 Olney / Bletchley Southern Bypass HTo24 More coordinated delivery / distribution of freight HTo26 Maintain easy access to the M1 Motorway
Delivery of high quality transport interchanges at: • Milton Keynes Central rail station (gateway and interchange); • Bletchley rail station; • M1 Junction 14 Coachway / Park and Ride; • M1 Junction 13 / A421 (East) Park and Ride with East-West rail link); • A421 (West) Park and Ride with East-West rail link (potentially outside MK); • Stadium MK / Denbigh North Park and Ride; • A5 (North) Park and Ride; and • A5 (South) Park and Ride.	High quality transport interchange facilities have been incorporated into the Public Transport Strategy including: Ro3 and Bo4 improved facilities and interchange at Milton Keynes Central and Bletchley rail (and bus) stations Bo5 Park & Ride with the suggested locations from the Core Strategy noted

Global Issues

The impact of global issues on Milton Keynes provides the international context in which local authority policy and planning activities take place. In the current economic climate, peak oil, CO_2 emissions and climate change represent particular challenges which will impact on delivering the Transport Vision and Strategy, and these issues need to be taken into consideration. A partnership approach to delivering transport interventions will be crucial in allowing Milton Keynes to learn from the experiences of other global cities. The borough's Low Carbon Living Strategy already establishes a foundation for addressing global issues and the Transport Vision and Strategy seeks to complement this strategy.

Global Economic Crisis

In the shadow of the global economic crisis, the UK Coalition Government has introduced spending cuts to reduce its deficit. Local Authorities have seen significant spending constraints imposed which produce significant challenges in addressing transport issues. The Transport Vision and Strategy needs to make best use of existing assets and deliver low cost and high value interventions in the short term. At the same time, reducing CO_2 emissions and creating economic growth are paramount. The difficulty of balancing the need to drive growth forward in a sustainable manner, without the ability to make substantial investments, is a difficult situation for Milton Keynes Council.

Peak Oil

Peak oil refers to the point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline. The Transport Vision and Strategy encompassing the next twenty years anticipates the effects of peak oil, namely a rise in petroleum prices which will impact on car use. As a car-dependent society it is likely that some car drivers will continue to drive regardless of spiralling costs, but deprived populations will be particularly affected by increased costs of driving. In addition, a shift to more sustainable modes will be seen and the council must provide the real and attractive transport choices to support these decisions.

Low-cost Smarter Choices interventions will support and facilitate behaviour change towards sustainable travel in Milton Keynes. Improving access to public transport services that are suitable to Milton Keynes' geography and population ('MK Star' network and for instance, providing community transport tailored to an ageing population) will reduce consumption of petroleum, this delaying a peak oil event, whilst also providing a resilient transport network for Milton Keynes.

CO_2 Emissions

Exponential increases in CO_2 emissions in recent years have been met with ambitious targets from central government to attain a 34% reduction in carbon emissions by 2020 from 2008 values. Current estimates for changes in CO_2 emissions from road transport suggest that in the Milton Keynes South Midlands area, emissions are forecast to increase 1% by 2021. It is evident then that more must be done to address growing CO_2 emissions. Whilst increases in sustainable transport usage would reduce single occupancy car journeys, reducing the need to travel and where travel is necessary reducing the distances travelled are necessary interventions to meet government targets.

Balancing this reduction in travel with increased economic growth requires careful integration of transport and spatial planning. Facilitating working from home, enhancing rural business and employment opportunities, and interventions to encourage more sustainable travel, either through the uptake of electric or alternative fuel vehicles, walking and cycling or public transport ridership, are interventions that address these issues.

Mitigating the Impacts of Climate Change

In addition to mitigating against the effects of climate change by reducing greenhouse gas emissions, Milton Keynes needs to prepare for the effects of climate change that are already being felt. More dramatic fluctuations to weather patterns have seen the United Kingdom strongly affected by harsher winter weather events, sudden flooding, and hotter and dryer summers. The Transport Strategy and Vision goes some way to anticipating the effects on the transport network and also the resulting maintenance and infrastructure impacts. Extreme heat and drought in summer months lead to issues such as melting asphalt and a 'heat island' effect in urban areas. Altered precipitation patterns also increases flood risk and particularly the occurrence of flash flooding. Implementing the principles of Sustainable Urban Drainage Systems in transport infrastructure development will mitigate against the probability of serious flooding.

Milton Keynes Borough and its Socio-Demographic Profile

The borough of Milton Keynes is one of the fastest growing areas of the country. Between 1981 and 2001, its population increased by 64.4%, whereas the population of England increased by only 5.0%[2]. Going further back, since the designation of the new town in 1967, the borough's population is now more than three times what it was and is currently estimated to be 242,800 in 2011[3]. Milton Keynes is a relatively 'young' city. The borough's population age profile is younger than that for England as a whole, with half of the borough's population aged 36 years or younger (the median age). Nationally, the median age is 38. The 30 to 44 year olds in Milton Keynes are the largest proportion of the population. 35 to 39 year olds are the largest 5-year age group. Despite being a 'young' borough, the number of residents over 65 years of age will grow by 102% from 2011 to 2031 from 28,400 to 57,300[4] (compared to overall growth of 24%). The transport network must accommodate the changing needs of all its residents, as well as changes in need resulting from all other socio-demographic trends.

The Office for National Statistics has published experimental statistics on the ethnicity of the population for districts in 2007. The figures for Milton Keynes suggested that around 18.1% of the population are from a black and minority ethnic (BME) group. In addition 13.5% of the population in 2007 were classified as being non-white, this compares to 11.8% in England as a whole[5]. Asian groups are the largest minority ethnic group with a total of 12,300 people (5.4%). Over half of the Asian group are Indian who make up 3.0% of the total Milton Keynes population. Black or Black British ethnic groups account for 4.0% of Milton Keynes population. The Black African group accounts for 2.7% of the population which compares to the England figures of just 1.4%. The figures indicate that 2.3% of Milton Keynes' population classify themselves as mixed compared to the England figure of 1.7%.

The borough of Milton Keynes is located in the South East of England, approximately midway between Birmingham and London. The borough shares a border with four other local authorities, with Bedford Borough and Central Bedfordshire to the east, Northamptonshire to the north and west and Buckinghamshire to the south and west. Milton Keynes South Midlands has recently been given the go-ahead to create a Local Enterprise Partnership (LEP) for South East Midlands which will include Bedford; Central Bedfordshire; Luton; Milton Keynes, Aylesbury Vale in Buckinghamshire; Cherwell in Oxfordshire; Northampton, Kettering, Corby, South Northamptonshire and Daventry in Northamptonshire; and Dacorum in Hertfordshire. One key aim of the partners is to make the new LEP area for the South East Midlands is for improved transport connectivity to major urban areas in the country as well as improved inter-urban connectivity within the Local Enterprise Partnership area.

The role of the city as a sub-regional hub in the wider Milton Keynes South Midlands area has been acknowledged as being central to the economy of the region. Investment in key intra- and inter-regional links particularly with the M1 and rail networks is crucial to ensuring the city meets its growth potential.

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[2] *United Kingdom 1981 and 2001 Censuses* (Office of National Statistics, 1981 and 2001)
[3] *Milton Keynes Population Bulletin 2009/2010* (Milton Keynes Council, 2009)
[4] See reference 3
[5] See reference 3

Milton Keynes is heavily reliant on the car for meeting transport demand, despite having a substantial cycling and walking network known as the Redways. The reliance on the car is predominantly due to the often multi-destination journeys people undertake and the unique grid road layout of the city. Whilst it allows for relatively uncongested and fast journeys around the city, the grid road system dominates the urban, south-west quadrant of the borough. The fast grid roads and meandering road layout within the grids have created difficulties for bus service provision, and per capita usage is much lower than most other towns and cities. The fast grid roads may provide for relatively fast bus journey times, but turning onto and emerging from estate roads onto grid roads is perceived to be dangerous by bus operators and can lead to sudden breaking and accelerating making for unpleasant journey experiences. Where buses serve estate roads, accessibility is increased, however journey times increase, reliability decreases, and on-street parking can often restrict bus access leading to operators withdrawing routes.

There is higher than average car-ownership in the borough, with only 19% of households not having access to a car compared with 27% nationally. In 2001, car ownership rates in Milton Keynes were 0.51 cars per resident or 1.26 cars per household. This rate is between 10% and 15% higher than the national average, and is a similar rate to affluent and predominantly rural districts. The rate is much higher than urban centres with a similar population[6].

The grid road network will continue to be key to the city's growth, but the major future expansion of residential and employment areas means that sustainable transport will have a much larger role if the transport network's capacity is to accommodate increases in demand, and meet wider environmental objectives. It is imperative that a transport strategy is developed which improves the road network at key points, whilst developing its sustainable transport networks.

Figure A.3 overleaf provides an overview of the borough, including main rail and road links. The red dotted border marks the limits of the borough, whilst the dark grey shading area indicates the Milton Keynes urban area. Central Milton Keynes is marked as a red oblong in the centre of the city, and the older towns are labelled in italic writing.

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[6] *UK 2001 Census* (Office of National Statistics, 2001)

FIGURE A.3   LOCAL CONTEXT MAP
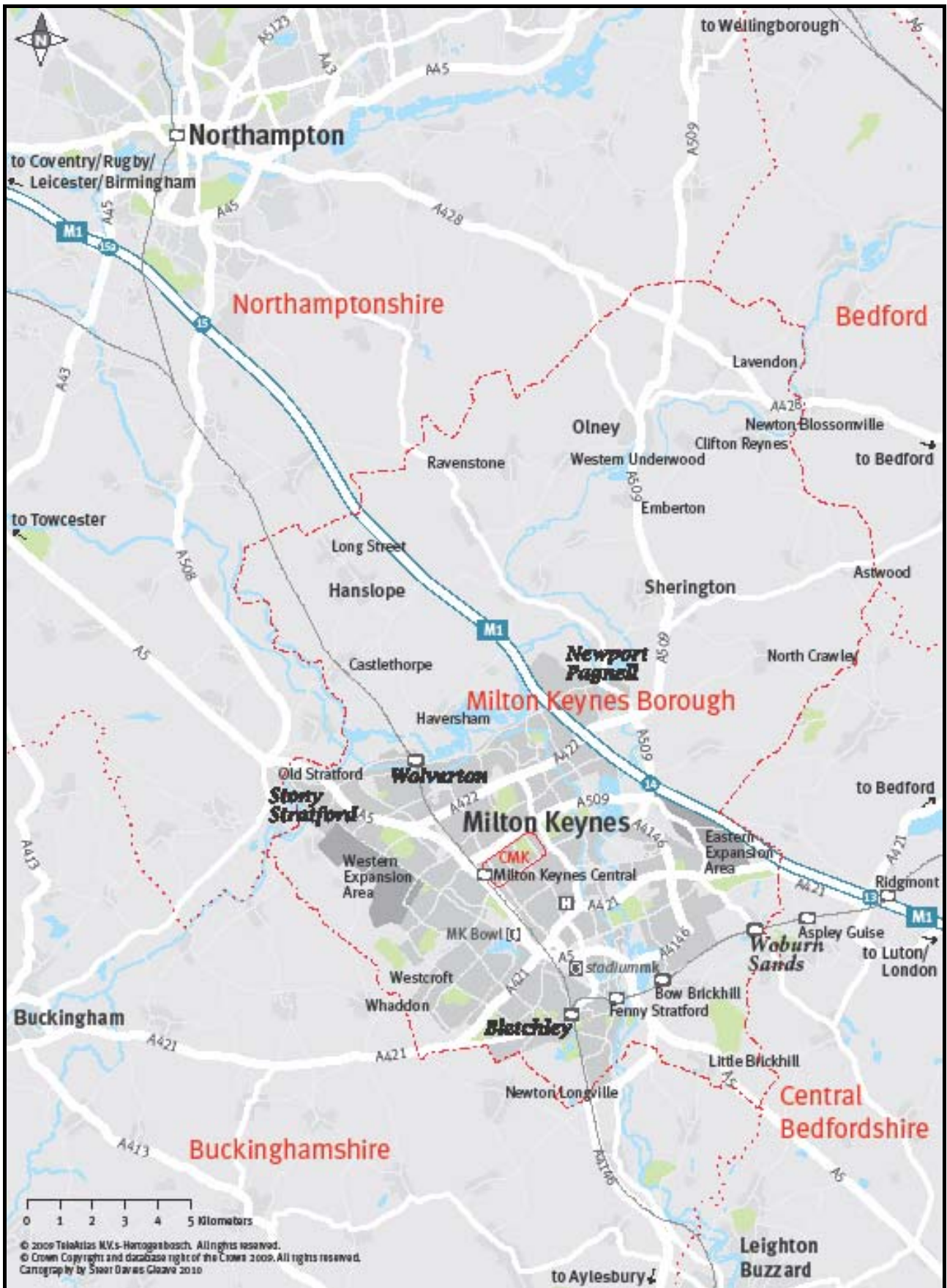
TravelStyle

People's choice of mode of transport for their commute is driven by a range of factors, including demographic characteristics. Analysis of local demographic profiles, using the bespoke demographic profiling software 'TravelStyle', has been used to estimate people's propensity to use different modes of transport. Figure A.4 provides a TravelStyle profile for Milton Keynes. Figure A.5 shows the accompanying characteristics associated with these individual groupings.

Figure A.6 overleaf shows the geographical spread of each grouping across the study area. The profile shows a relatively wealthy population dominated by "Mid-Market" and "Mature Professionals" groupings, which has a characteristic of middle to high incomes, high car use, high propensity to commute by rail, and a low propensity to travel by bus. The second largest grouping in Milton Keynes is "Struggling Communities" with the largest concentration around Woughton, Campbell Park, Bletchley, Stantonbury and Wolverton, characterised by lower than average car ownership and income, and a higher propensity to travel by bus. The third most populous group is "Financially Constrained" characterised by higher car ownership than the "Struggling Communities" group, but also with low rail use and high propensity for bus usage. The geographical spread is similar to "Struggling Communities" with pockets also in the parishes of Bradwell Abbey, Shenley Brook End, West Bletchley, Broughton, Monkton and Kents Hill, Walton and Great Linford.

FIGURE A.4   TRAVELSTYLE PROFILE
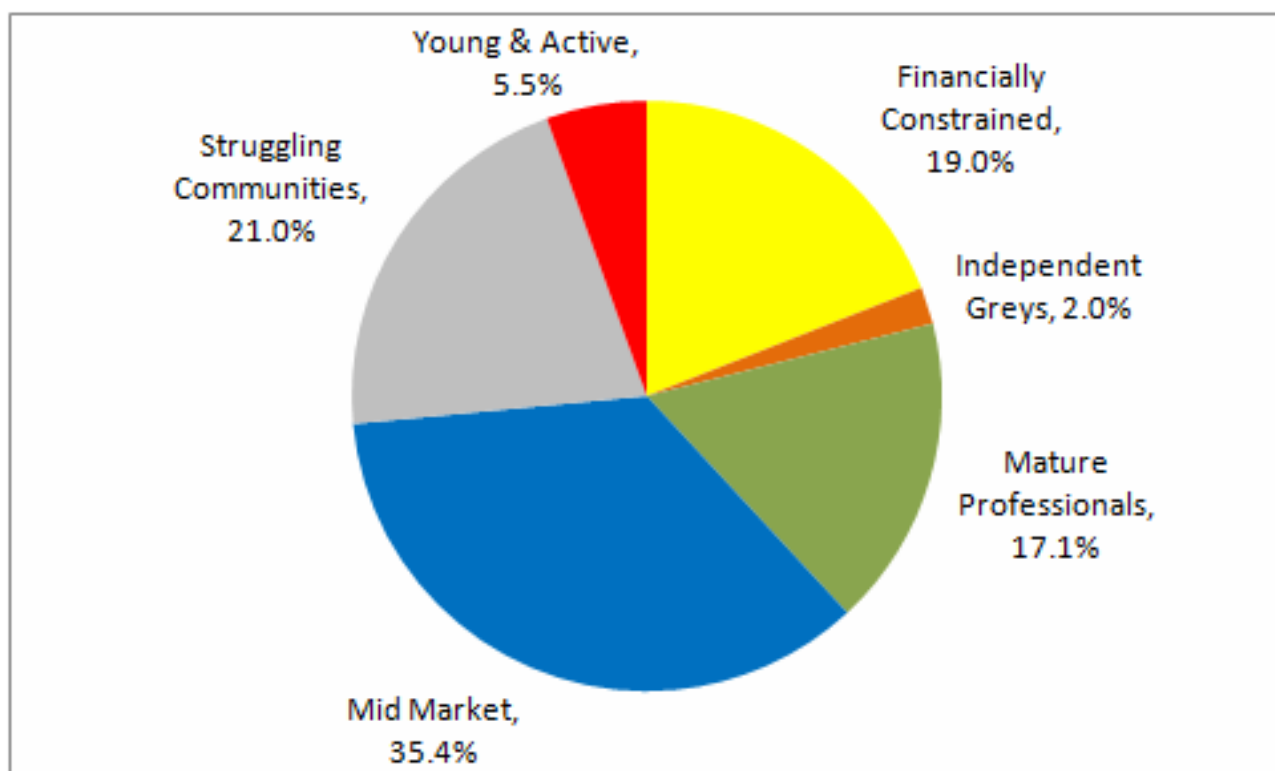
Source: Steer Davies Gleave (2010)

FIGURE A.5   TRAVELSTYLE CHARACTERISTICS

	Key characteristics (compared to general population)	Rail Use	Bus Use
Financial Constrained	Lower than average purchasing power and car ownership, more children at home.	Low	High
Independent Greys	Mid-range purchasing power, lower car ownership and fewer children at home.	Medium	Medium
Mature Professionals	Above average purchasing power and car ownership. Less children at home.	Very high	Low
Mid Market	Mid-range purchasing power, higher car ownership and more children at home.	Medium	Medium
State Dependent	Lower than average purchasing power and car ownership. Children at home average.	Very low	Medium
Young & Active	Mid-range purchasing power, lower car ownership and fewer children at home.	High	High

Source: Steer Davies Gleave, 2010

FIGURE A.6   TRAVELSTYLE PROFILE FOR MILTON KEYNES
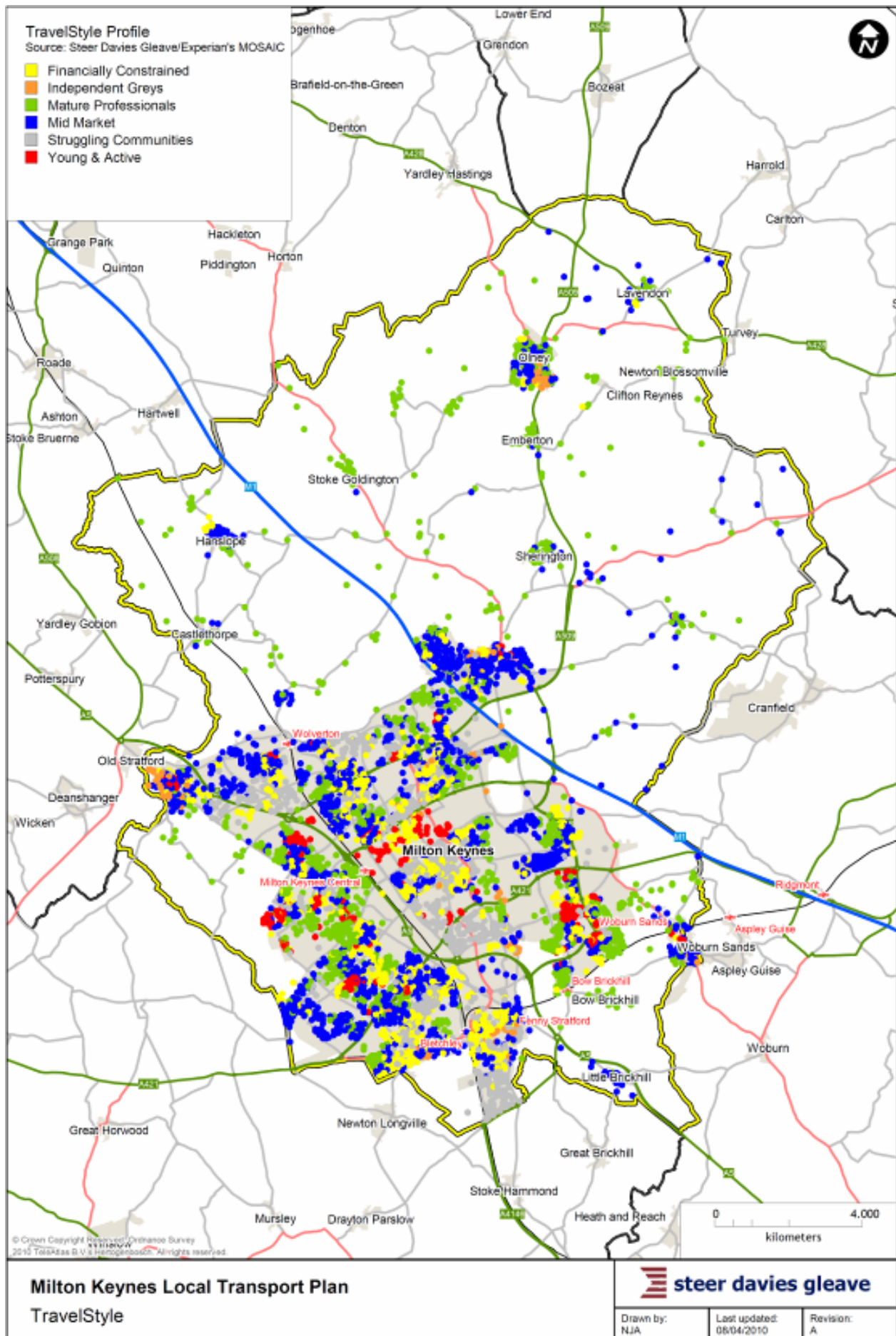
Source: Steer Davies Gleave/MOSAIC (2010)

Smarter TravelStyle Profile

Smarter TravelStyle is a geo-demographic profiling and targeting system. It is based on the fusion of a commercial geo-demographic system (MOSAIC) and travel behaviour data. The tool segments the population according to a combination of travel behaviour and lifestyle variables. Analysis is at an individual postcode level, allowing a fine geographical segmentation of the population. The tool has been used in towns and cities across to the UK to understand if different people are susceptible to specific travel behaviour messages. Figure A.7 below provides the characteristics of each Smarter TravelStyle group.

FIGURE A.7   SMARTER TRAVELSTYLE CHARACTERISTICS

Affluent Professionals	Young Minded	Family Focus
Highest participation Car users ABC1 Employed High income Married	Younger Single or co-habiting Students Have car	C1C2D Large households Married with children Middle aged
Motorised Lifestyles ABC1C2 25-44 years old 2+ cars Short time at address	**Urban Challenge** *Lowest participation* Single Divorced 18-29 years old Poor health No car DE Social grade	**Traditional Values** Small household 1 car Married C2D Social grade
Independent Elders Small household Married Widowed 60+ years old 1 car Poor health	**State Support** All age groups No car DE Social grade Poor health	**Rural** ABC1C2 Married 45+ years old 2+ cars

Source: Steer Davies Gleave 2010

From experience the "Affluent Professionals" and "Motorised Lifestyles" groups are more susceptible to cycling messages. Those in the "Traditional Values" or "State Support" groups were lower than average in terms of taking cycling resources. Susceptibility to bus promotion messages is highest amongst "Independent Elders" and "State Support" groups. "Urban Challenge", "Young Minded" and "Affluent Professionals" are least likely to be susceptible to bus promotion messages. Figure A.8 overleaf provides an overview of where these groups live in Milton Keynes.

FIGURE A.8   SMARTER TRAVELSTYLE PROFILE FOR MILTON KEYNES
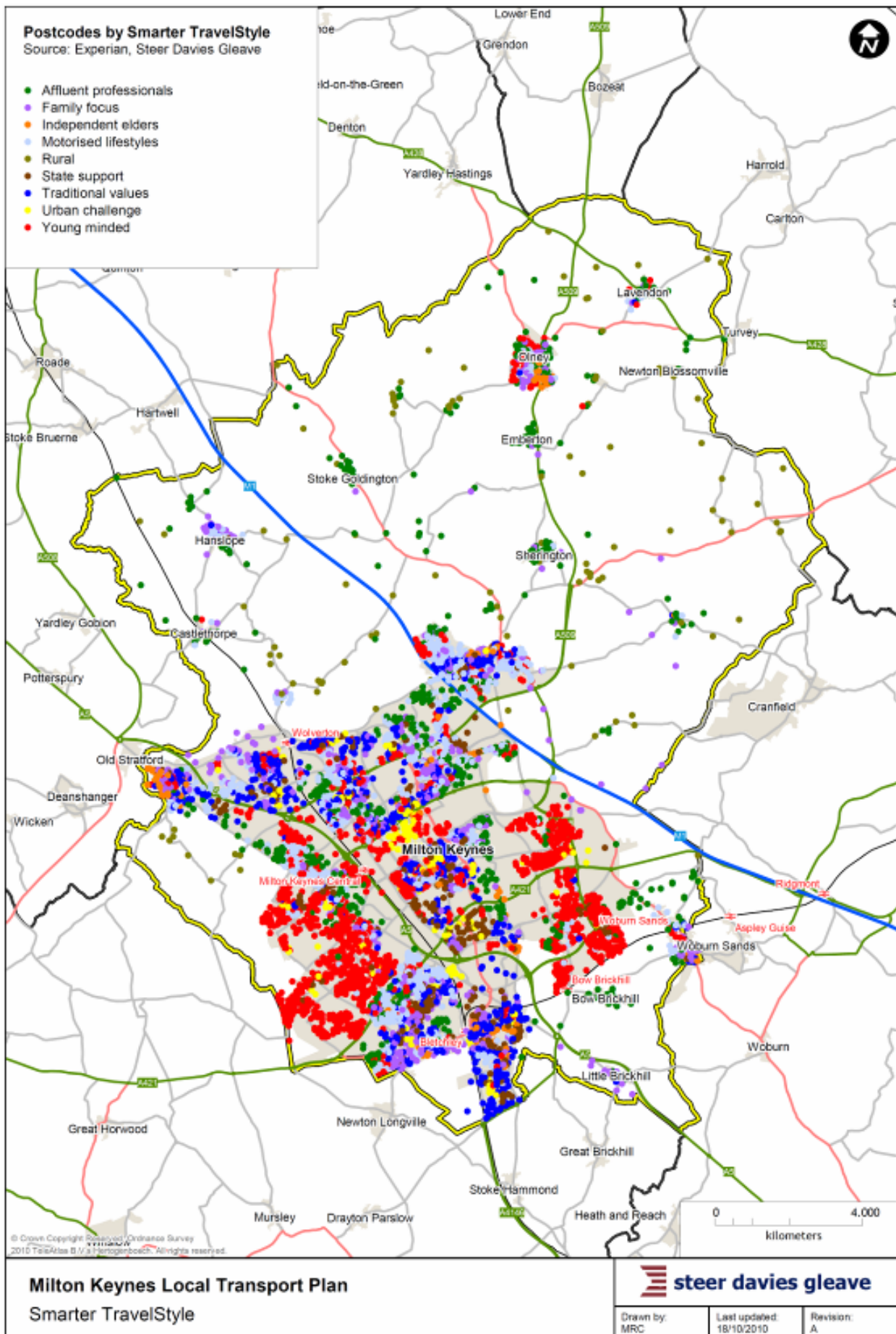
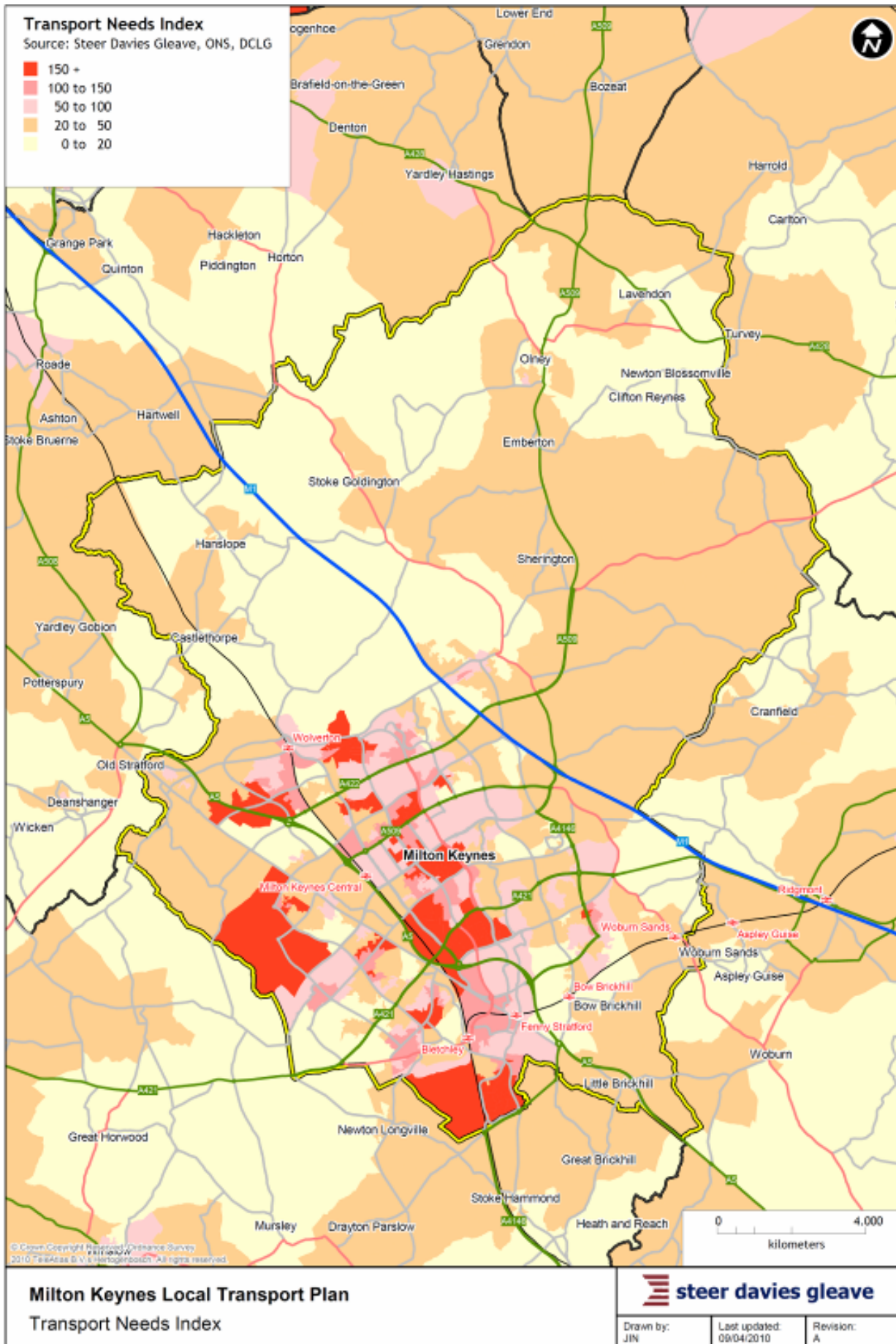*Source: Steer Davies Gleave/MOSAIC (2010)*

Travel Needs Index

Figure A.9 provides a Travel Needs Index for Milton Keynes. The Transport Needs Index (TNI) is designed to assess the relative need for affordable public transport services across the UK. The TNI is based on three dimensions:

- cars per adult in household (the fewer the cars the higher the need)
- income (the lower the income the higher the need)
- ruralness (the more rural the area the higher the transport need).

These three component indices are combined to create the overall TNI. The higher the figure, the greater the transport need of the area. The resulting map for Milton Keynes clearly shows that areas such as Bletchley, Woughton, Campbell Park, and Stony Stratford all have a high TNI. It is key that these areas are provided with adequate public transport services.

FIGURE A.9   TRANSPORT NEEDS INDEX FOR MILTON KEYNES

Source: Steer Davies Gleave/MOSAIC (2010)

Index of Multiple Deprivation

Figure A.10 overleaf provides a graphical representation of the Index of Multiple Deprivation (IOMD) for Milton Keynes[7]. The IOMD contains seven distinct dimensions of deprivation which relate to: income deprivation, employment deprivation, health deprivation and disability, education skills and training deprivation, barriers to housing and services, living environment deprivation, and crime.

The map clearly shows that there are areas situated in the borough that fall within the top 20% of the most deprived areas of the United Kingdom (marked in red). These are predominately found in the urban wards of Milton Keynes, including Woughton, Bletchley and Fenny Stratford, Campbell Park and parts of Wolverton. These areas also closely link with the Travel Needs Index outlined previously. It is important that these areas are provided with a reliable choice of transport access to key services across the borough.

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[7] Department for Communities and Local Government, June 2007

FIGURE A.10   MILTON KEYNES INDEX OF MULTIPLE DEPRIVATION 2007 (DCLG, JUNE 2007)
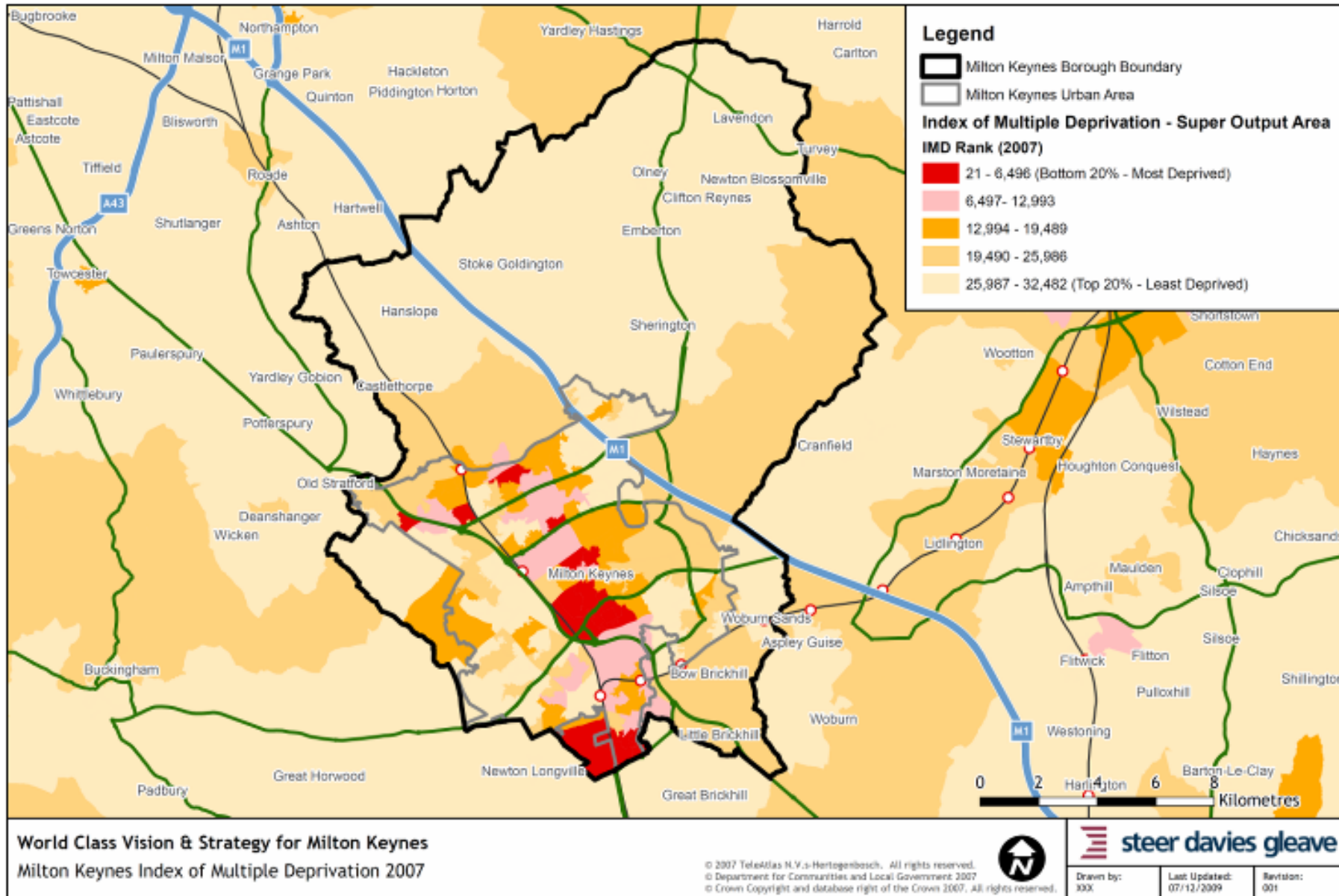
Travel Patterns

Journeys to Work

Car travel in Milton Keynes is at present relatively efficient due to the nature of the grid network and the availability of free parking. The dominant mode of transport for travel to work trips is the private car. 73% of total trips to work are made by car, meanwhile only 10% are made by public transport. Milton Keynes compares poorly against the regional and national picture (66% and 63% of total trips to work made by car respectively[8]).

Despite having a unique cycle network walking and cycling modal share is also low. Based on the 2001 Census, the total number of people aged 16-74 who were in employment, who travelled to work each week by foot or cycle in Milton Keynes was 9% of the working population, an estimated 10,670 people (4% cycled to work and 5% walked to work)[9]. Figure A.11 below shows Milton Keynes' travel to work modal share graphically. Cycle use for journeys to work is lower in Milton Keynes than in neighbouring Aylesbury Vale (4.0%), and significantly less than in Central Bedfordshire (16.6%). Neither of the local authorities has a cycling and walking network such as the Redway network[10]. Cycle ownership in Milton Keynes is higher than the national average, at around 1.79 cycles per household, according to recent household survey data[11] and 47% of households in Milton Keynes own two or more bicycles.

FIGURE A.11 MILTON KEYNES TRAVEL TO WORK MODAL SHARE FOR ALL JOURNEYS TO WORK
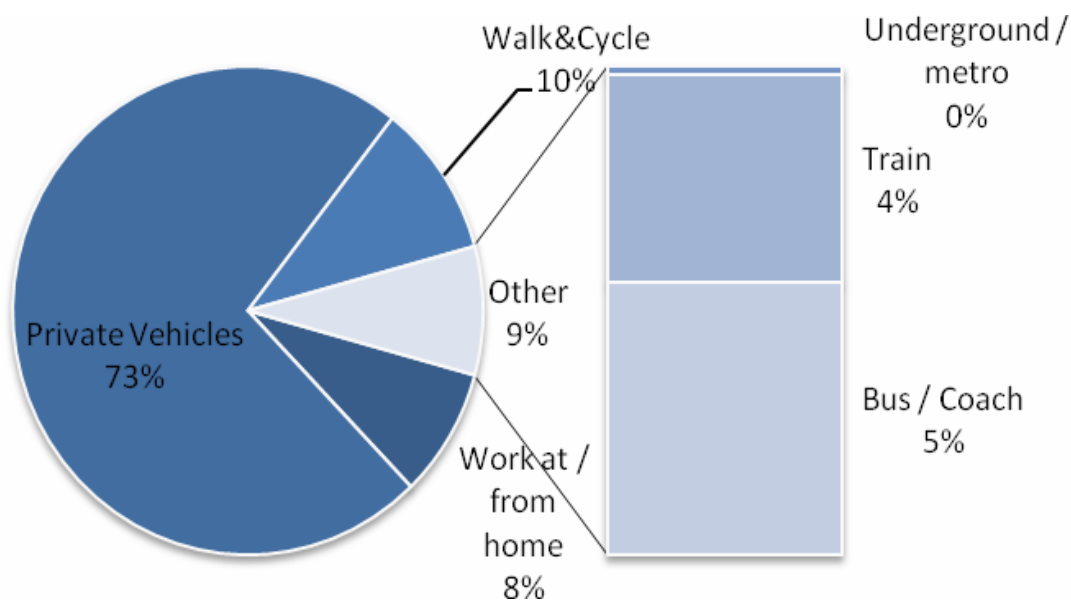
Source: United Kingdom Census (2001)

[8] *UK 2001 Census* (Office of National Statistics, 2001)
[9] *Milton Keynes Local Transport Plan 2006-7 to 2010-11* (Milton Keynes Council, 2006)
[10] See reference 8
[11] *Milton Keynes Transport Model – Household Survey Analysis* (Milton Keynes Council, 2010)

When considering the modal share for work related trips among residents who live and work in Milton Keynes borough, 77% of journeys made by car[12]. Therefore, of the 78% who live and work in the borough, 77% use a car to get to work on a daily basis despite there being 5,000 jobs which are readily accessible by public transport, cycling or walking. Modal share for people living and working in Milton Keynes is presented in Figure A.12 below.

FIGURE A.12   JOURNEY TO WORK MODAL SHARE FOR RESIDENTS LIVING AND WORKING IN MILTON KEYNES
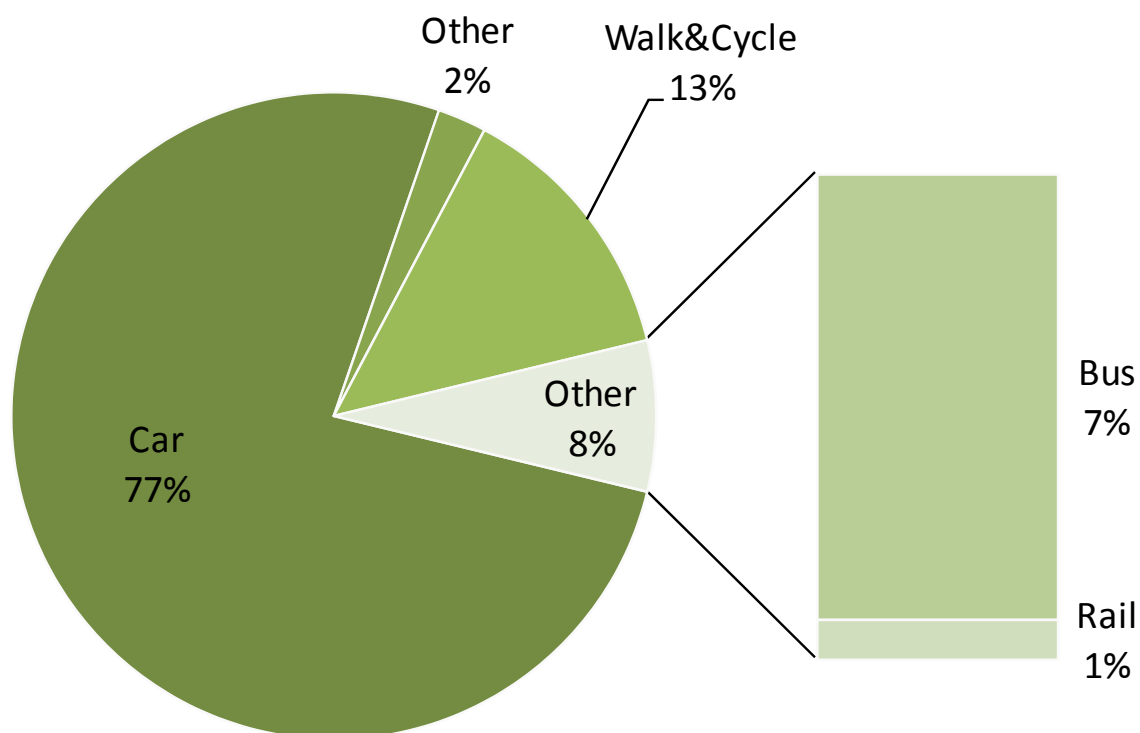
Source: United Kingdom Census (2001)

Table A.1 overleaf shows the total number of jobs and workers in the borough. A high proportion of people live and work in Milton Keynes (78%). However, the borough provides more jobs that its available workforce, regardless if they have the skills to fulfil these jobs or not. The borough imports over 16,000 people to fill available jobs.

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[12] *Milton Keynes Transport Model – Household Survey Analysis* (Milton Keynes Council, 2010)

TABLE A.1   TOTAL NUMBER OF JOBS, SELF-CONTAINMENT OF JOURNEYS TO WORK, AND NET IMPORTING OF LABOUR BY MILTON KEYNES

Description	Number/Proportion of trips TTW Census 2001
Total Jobs	125,445
Total Workers	109,254
% people who live and work in Milton Keynes	78.72%
In-commuters	39,438
Out-commuters	23,247
Net Importing of Labour	**16,191**

Source: United Kingdom Census (2001)

2009 National Accessibility Core Indicators suggest there are good levels of accessibility in Milton Keynes[13]. More than 5,000 jobs located within the borough are accessible within 20 minutes by public transport, walking or cycling. In addition, 83% of people of working age have public transport or walk access within 20 minutes to a major employment site (i.e. 500 jobs or more within a Lower Super Output Area) within the borough[14].

The journey to work analysis for all modes shows a high level of self-containment of working and living in the borough as seen in Figure A.13. The figure also shows that within the vicinity areas there are strong links of journey flows between Northampton, Luton, Bedford, Leighton Buzzard. Figure A.14 also shows that Milton Keynes has significant levels of in-commuting, with the majority of journey to work trips being made by car.

Figure A.15 shows the top 30 peak journey to work flows within Milton Keynes borough. 81% of those who live and work in the borough travel to a different output area for work; whilst 8% remain within the same output area. A further 11% work from home. Some of the highest flows are to Central Milton Keynes, followed by flows to retail and business parks and distribution sites.

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[13] 2009 *National Core Accessibility Indicators* (Department for Transport, 2010)
[14] *National Indicator 176: working age people with access to employment by public transport, walking and cycling* (Department for Transport, 2010)

**FIGURE A.13   JOURNEY TO WORK DESTINATIONS FROM MILTON KEYNES (ALL MODES)**
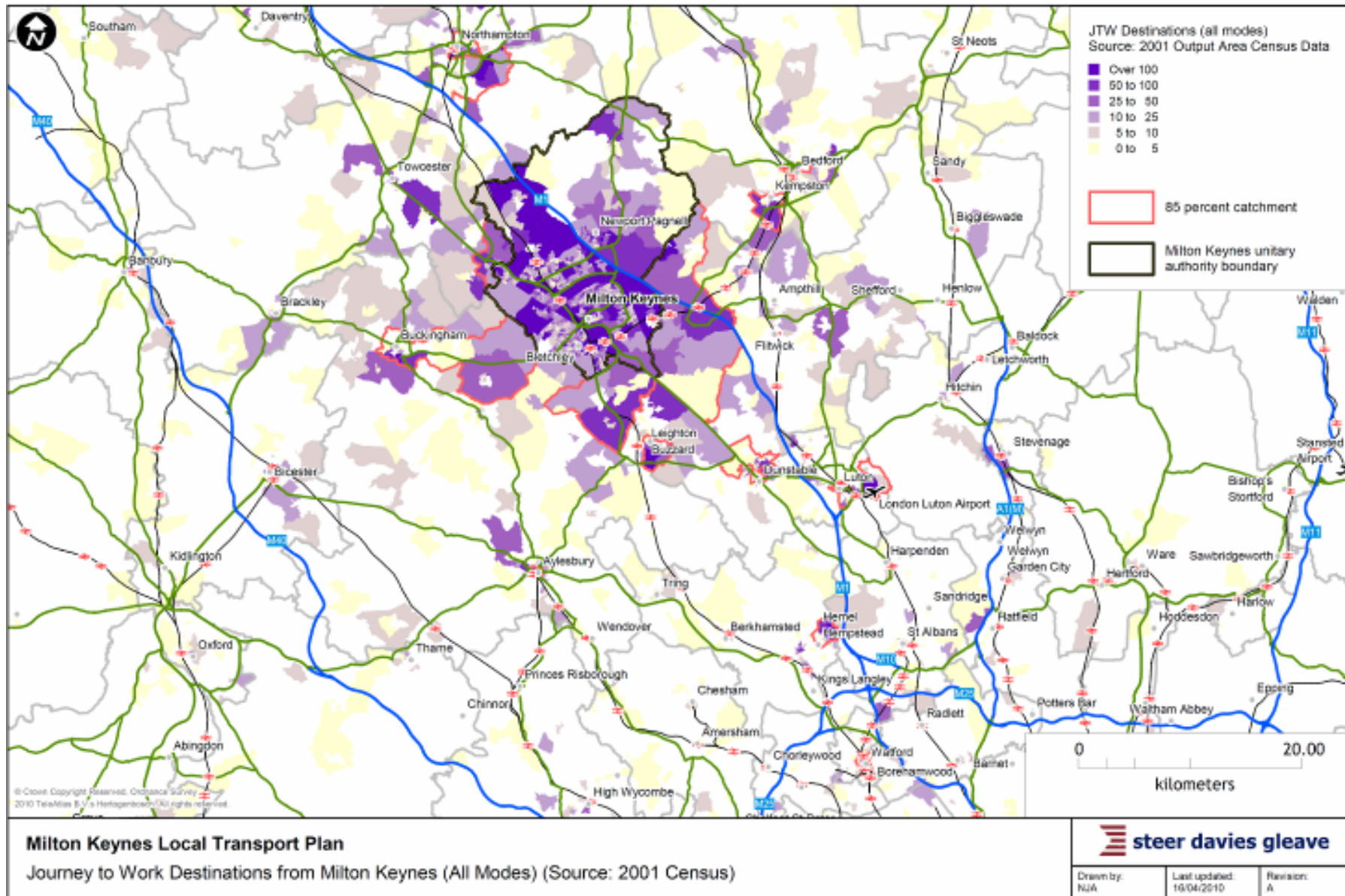
*Source: United Kingdom 2001 Census (Office of National Statistics, 2001)*

FIGURE A.14   **JOURNEY TO WORK DESTINATIONS TO MILTON KEYNES (ALL MODES)**

Milton Keynes Local Transport Plan
Journey to Work Origins to Milton Keynes (All Modes) (Source: 2001 Census)

steer davies gleave
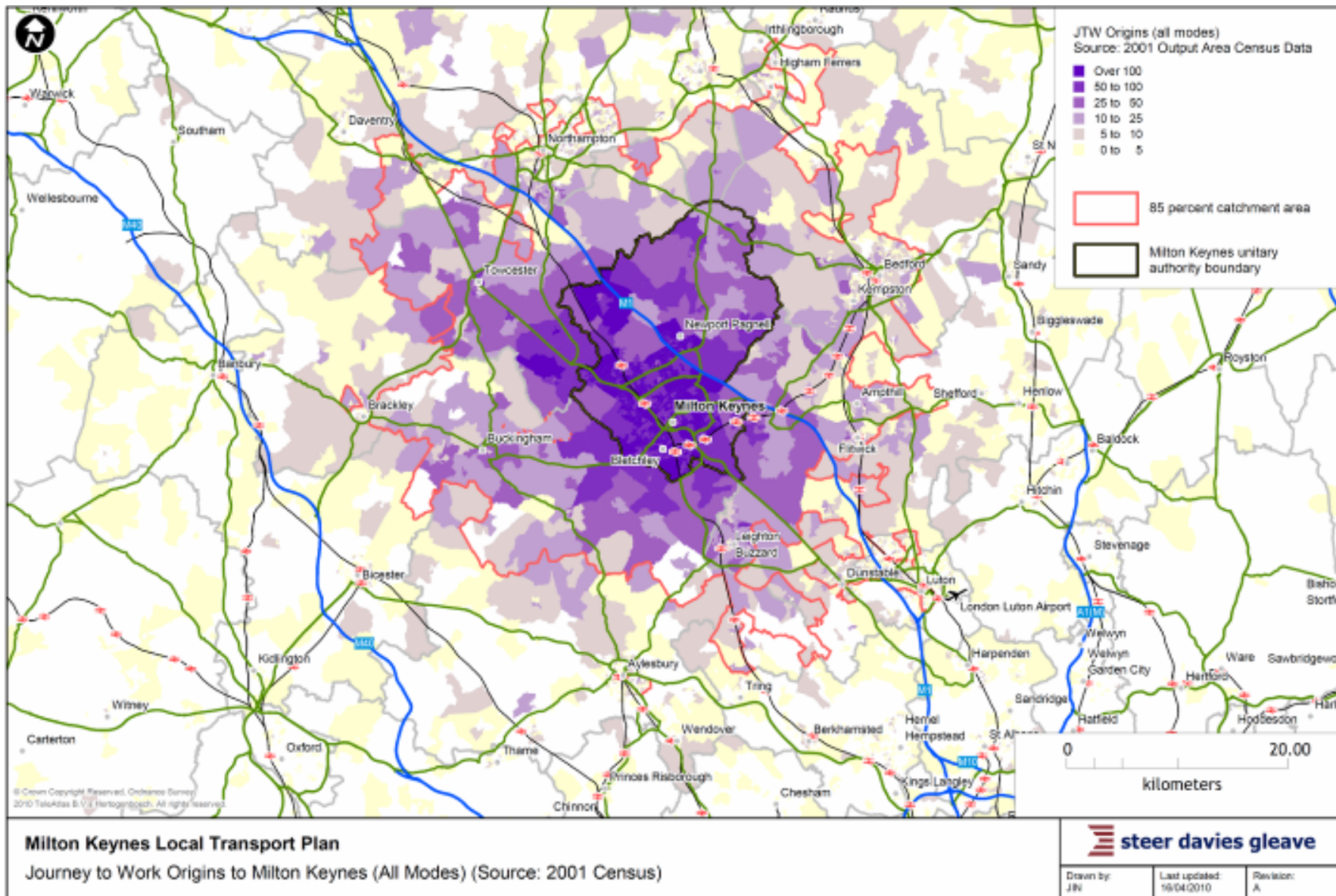
Source: United Kingdom 2001 Census (Office of National Statistics, 2001)

FIGURE A.15   JOURNEY TO WORK DESTINATIONS TO MILTON KEYNES
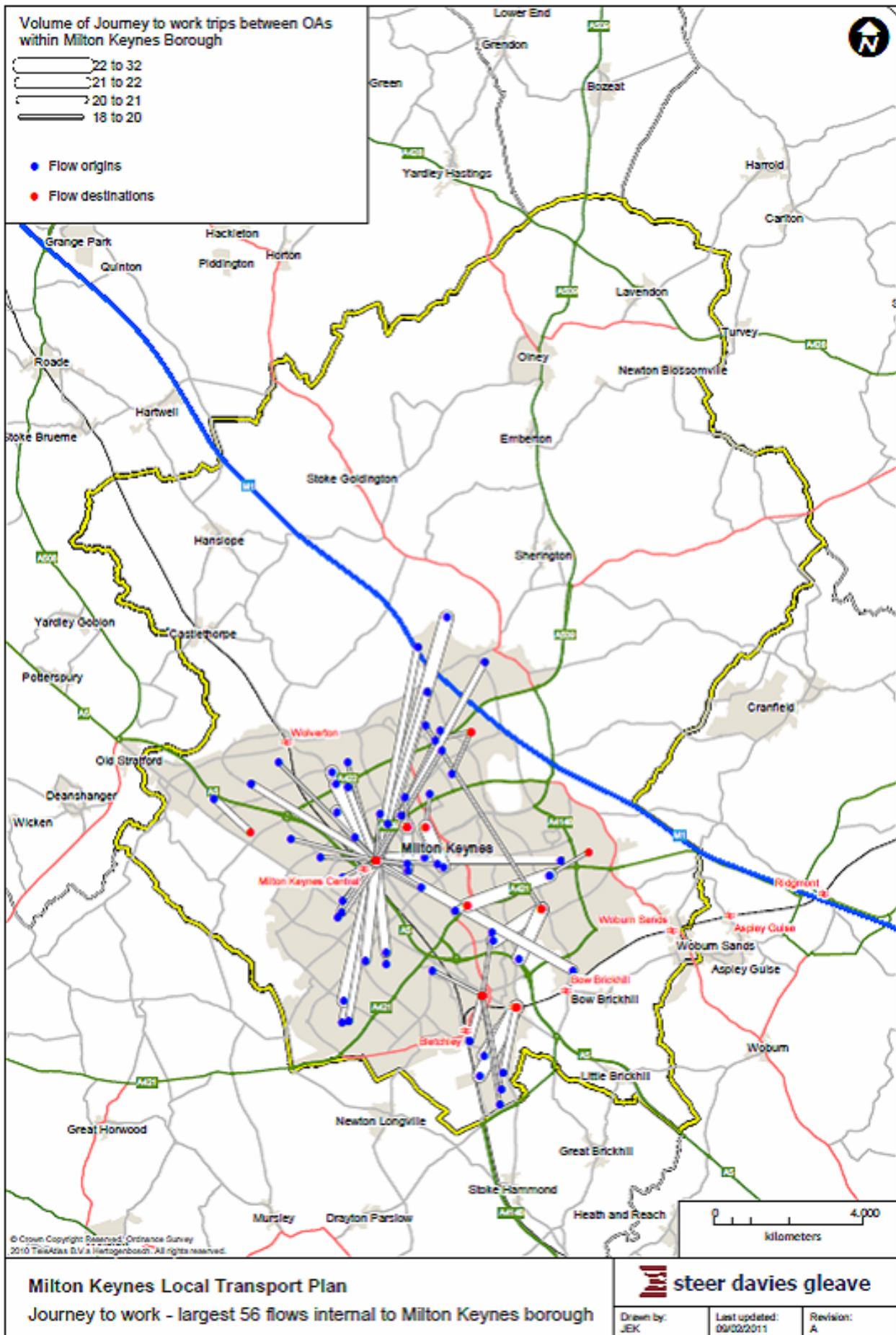
Source: United Kingdom 2001 Census (Office of National Statistics, 2001)

The rural nature of the borough and the low densities of the neighbourhoods that surround Milton Keynes make it difficult to provide frequent and efficient public transport services. As a result the majority of commuting trips to and from Milton Keynes are made by car as shown in Figure A.16 below.

FIGURE A.16   RURAL AND URBAN SPLIT OF JOURNEYS TO WORK TRIPS TO/FROM MILTON KEYNES BY MODE (EXCLUDING INTERNAL TRIPS)
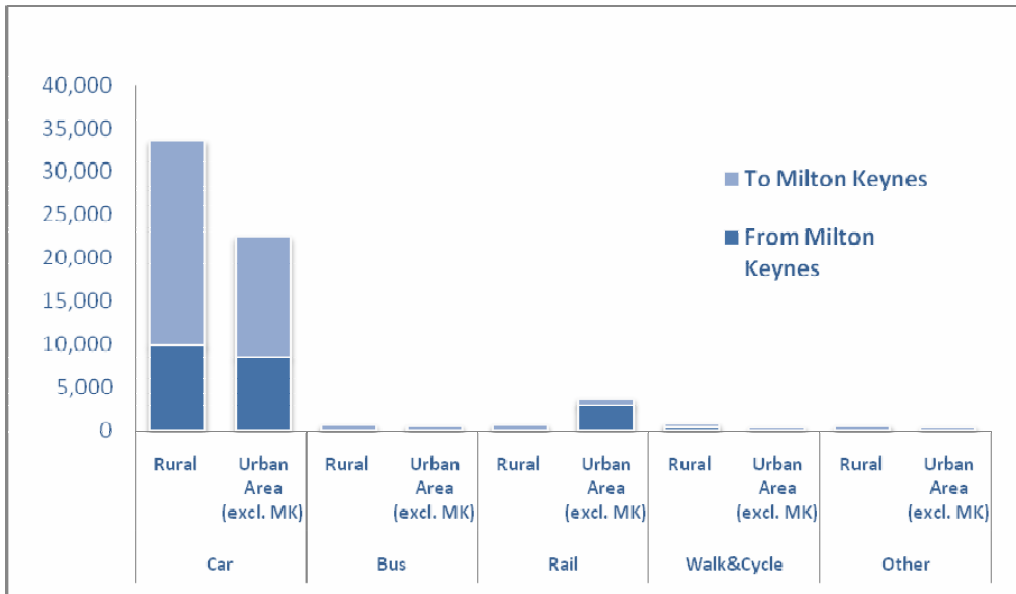
Source: United Kingdom Census, 2001

Journey to station data shows that for trips of two kilometres or over, driving is the most popular form of transport. If 'Young Actives', 'Mature Professionals' and 'Mid-Market' demographic groups living in close proximity to Milton Keynes Central, this could free up of parking spaces for those who travel a further by car.

FIGURE A.17   JOURNEYS TO MILTON KEYNES CENTRAL RAIL STATION BY MODE
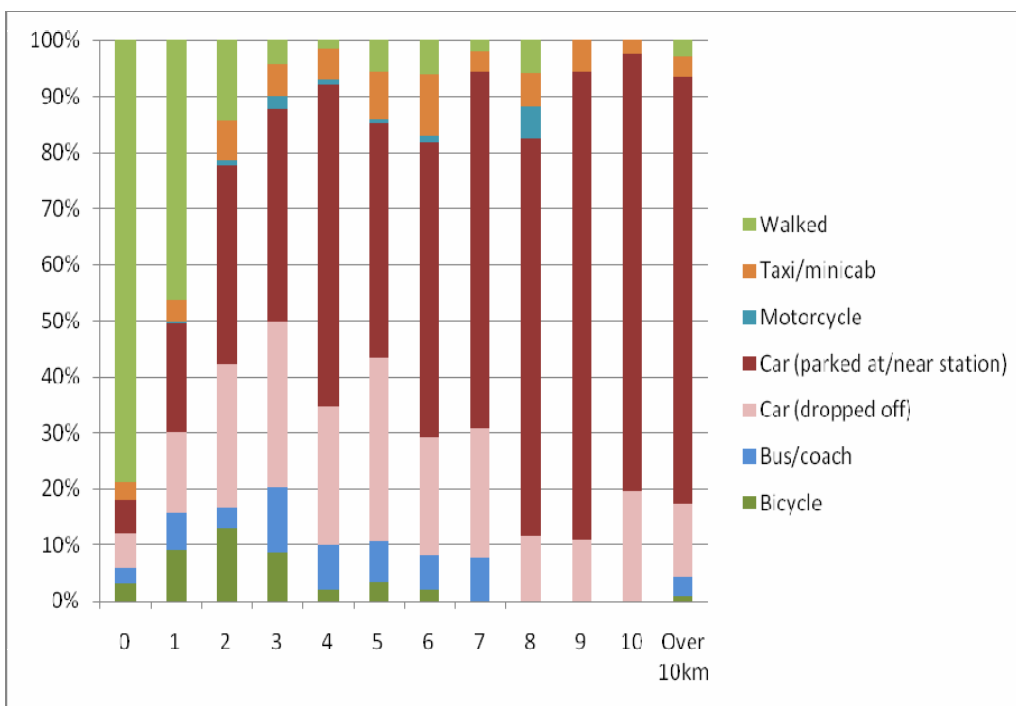

Source: LATS Rail Survey (Transport for London, 2001)

Interurban Flows and Constraints

Figure A.18 presents the top journey to work origins and destinations for flows to and from Milton Keynes based on 2001 census data, excluding trips within Milton Keynes.

FIGURE A.18   TOP ORIGINS AND DESTINATIONS FOR WORK JOURNEYS TO/FROM MILTON KEYNES (EXCLUDING INTERNAL TRIPS)

from Milton Keynes
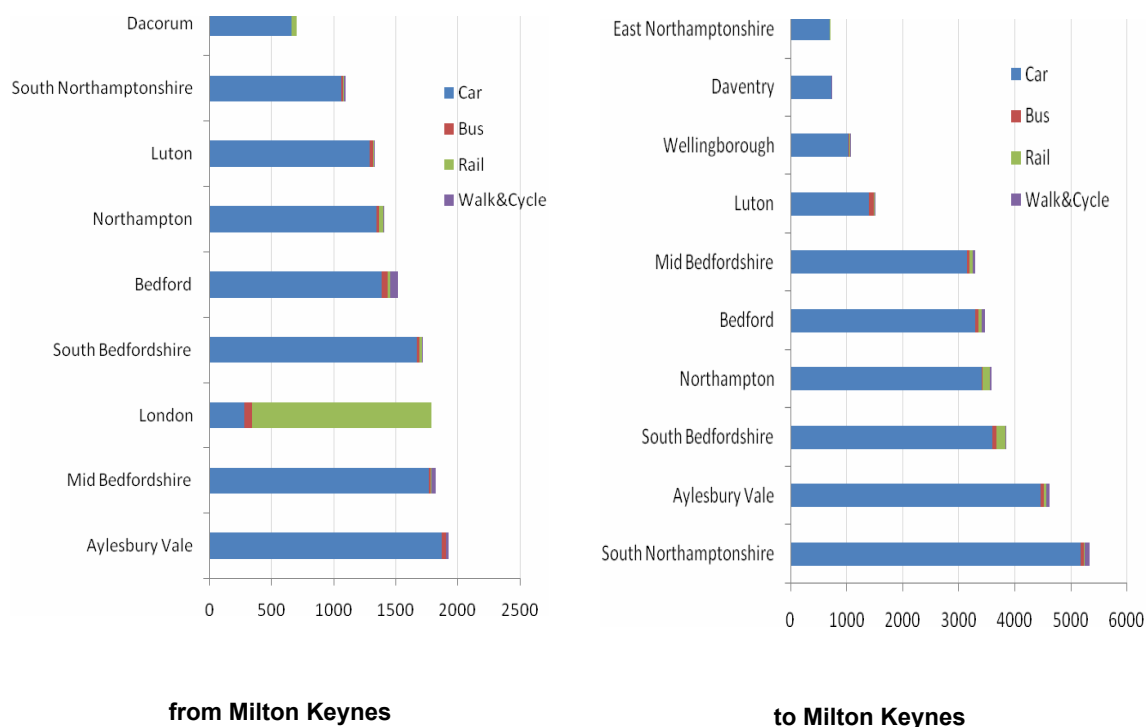
to Milton Keynes

Source: United Kingdom Census (Office of National Statistics, 2001)

Flows for trips starting in Milton Keynes are highest to Aylesbury Vale, Central Bedfordshire and Inner London. Most of the journeys to work that start in Milton Keynes are made by car. The exceptions are journeys to London for which most trips are made by rail. This is explained by good rail connectivity to London along the West Coast Main Line. However, it is worth noting that there is still a high car mode split for flows between Milton Keynes and Northampton and Bedford despite there being rail connections between the two urban areas[15], and the X5 bus route providing a direct link to Bedford. The West Coast Mail Line provides limited connectivity. This explains the high proportion of car trips for journeys to work between Milton Keynes and most employment locations. Of the high journey to work flows to and from Milton Keynes, only Northampton, Bedford and London have direct links under an hour in journey time. Direct coach and rail services provide access from these towns.

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[15] Direct rail service between Milton Keynes and Bedford are along the Marston Vale Line

Table A.2 displays the proportion of journeys to work in Milton Keynes by distance bands, based on 2001 Journeys to Work Census data. Overall approximately 11% of the workforce work at home and 38% travel less than five kilometres to work. Most journeys are longer than five kilometres (51%). This implies the high proportion of in- and out-commuting. Travel to work trends of Milton Keynes residents by distance show a lower proportion of residents work regularly at home (9%). There is a higher proportion of residents travelling less than five kilometres (43% compared to 38% of journeys to Milton Keynes being under five kilometres). This may reflect suggest the high proportion of residents who work within the borough.

TABLE A.2   TRAVEL TO WORK TRENDS

Travel To Work Journeys by distance	Milton Keynes	Less than 2km	2-5 km	5-10 km	10-20 km	over 20 km	Works mainly at or from home	Other	Total
To	No. of Journeys	18,742	28,528	25,316	14,464	23,817	13,465	0	124,332
	%	15%	23%	20%	12%	19%	11%	0%	100%
From	No. of Journeys	18,693	28,173	23,602	7,596	16,258	9,253	4,501	108,076
	%	17%	26%	22%	7%	15%	9%	4%	100%

Source: Steer Davies Gleave analysis of 2001 Census Travel to Work data

Milton Keynes' strategic geographical location positions the borough at the centre of an arc between Oxford and Cambridge, with strong opportunities for further economic growth in knowledge-based sectors. Transport links between the east and west of this arc are very important for the city's promotion and growth. East–west routes are generally poor compared to the north-south routes through the sub-region. This has implications for the competitiveness of the borough and means that rural towns are relatively isolated from key centres of economic activity. Beyond the built up area of the city there are local connections which will require improvement when growth impacts on the network.

Transport Needs of Children and Young People

Shortages in school places for preferred schools, and a degree of choice in where parents send their children to school, mean that children will not necessarily live close to where they go to school. Milton Keynes Council is required to provide transport for children who live more than three miles from their school, and it also has the discretion to offer transport to other children. It does so where there are spare places on services already arranged to meet the needs of children entitled to free transport. These discretionary arrangements are covered by as the Discretionary Fares Scheme.

Milton Keynes Council also runs two junior concessionary travel schemes, the Junior Tripper and Junior Cityrider. These schemes are for children aged between 5 to 18 years, who are permanent residents of Milton Keynes in full-time education within or outside of Milton Keynes, or are attending primary or middle schools in Milton Keynes or schools and colleges outside of Milton Keynes. These concessions are applicable to either per-journey tariffs, or to discounted travel passes for a week or month time period.

Young Milton Keynes citizens, precluded by their age from independent car transport, have been the most vulnerable to the constraints of the local transport system. The 2001

Census shows that 25% of the Milton Keynes population is under 18 and that 18% are aged between 5 and 17. The transport needs of this demographic group must be addressed through sustainable modes where possible. However, a study carried out by Milton Keynes Council found that in the last decade, Milton Keynes has experienced a net loss of persons aged 15-24[16]. The study cited poor access to transport as one of the reasons for out migration in general.

Journey to school trips are dominated by walking (57% of all trips), however 28% of school children are being taken to school by car. Public transport makes up 7% of all trips, cycling 6% and car share 2%. The high percentage of walking trips underlines the pedestrian-friendly nature of the city, however the car modal split figure is higher than two other comparable Unitary Authorities in England: Swindon (21.3%) and Peterborough (25.5%). It is lower than two others: Telford and Wrekin (36.5%) and Warrington (36.7%). Milton Keynes' cycle to school mode split is higher than all four Unitary Authorities[17]. As of March 2010, 94% of all schools in Milton Keynes had a School Travel Plan[18].

A recent survey of primary and secondary school children in Milton Keynes found that the majority consider it easy to get around the city, but expect that this is a situation which will only get worse in 20 years. When questioned further, the children admitted that the city was only easy to get around if a car was available, with 91% of children surveyed travelling by car everyday (mainly to school). 24.6% of the children interviewed suggested that public transport reliability should be a priority for future transport development, alongside road safety improvements (19.6%), congestion management (17.4%) and better provision of cycling and walking facilities (17.4%)[19].

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[16] *The Future Population of Milton Keynes* (Milton Keynes Council, 2005)
[17] *School Census* (Milton Keynes Council, 2009)
[18] Milton Keynes Council, 2010
[19] *Youth and Transport in Milton Keynes* (M Synnott, 2008)

Evidence by Objective

Provide a real and attractive transport choice to encourage more sustainable travel behaviour as Milton Keynes grows

As Milton Keynes grows, the increased demand for travel will require a real and attractive transport choice to the private car if the existing transport networks are to accommodate and support growth sustainably.

Current Congestion on the Road Network

Because of the grid pattern of the local road network in Milton Keynes, traffic flow within the city is reasonably well distributed spatially. Drivers have plenty of alternative routes if their normal one is congested.

In 2010, the Department for Transport released a benchmarking tool for local authorities[20]. This includes a number of National Indicators to help local authorities understand their transport priorities and performance against the national average and other authorities. National Indicator 167 for congestion indicates the average journey time per mile during the morning peak. Milton Keynes is performing well at a national level, with a delay value of 1.8 minutes per kilometre travelled (in 2007/08), positioned within the top quartile of local authorities with the lowest levels of delay. 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 at peak hours. This is particularly evident on radial routes connecting Milton Keynes with the surrounding area – notably M1 Junction 13, Junction 14 / Northfield area, along the A509 / A422 corridor, and the Old Stratford and Fenny Stratford junctions on the A5.

Figures A.19 to A.21 below show areas of AM peak, inter-peak and PM peak delay on Milton Keynes' roads for a forecast year of 2026. Proposed new housing developments for 2018 are also shown[21]. The red bands show the amount of delay in seconds. The figures clearly highlight the extra pressure that these areas of development will bring to key areas of the local road network, especially within the urban areas of Milton Keynes. Of note is the consistent levels of delays across the urban areas in the inter peak period – this demonstrates that current levels of car use will lead to sever congestion, restricting the economic growth of Milton Keynes. Planned growth results in a 21% increase in the number of trips across all time periods. The impacts of this are a 58% increase in total vehicle kilometres as average trip length increases. Congestion and delay mean that average speeds are reduced by 6%, resulting in a 67% increase total travel time and an estimated increase in fuel consumption of 65%[22]. With increased fuel consumption comes higher CO_2 emissions.

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[20] *National Indicators* (Department for Transport, 2010)
[21] *Milton Keynes Traffic Model* (Milton Keynes Council, 2010)
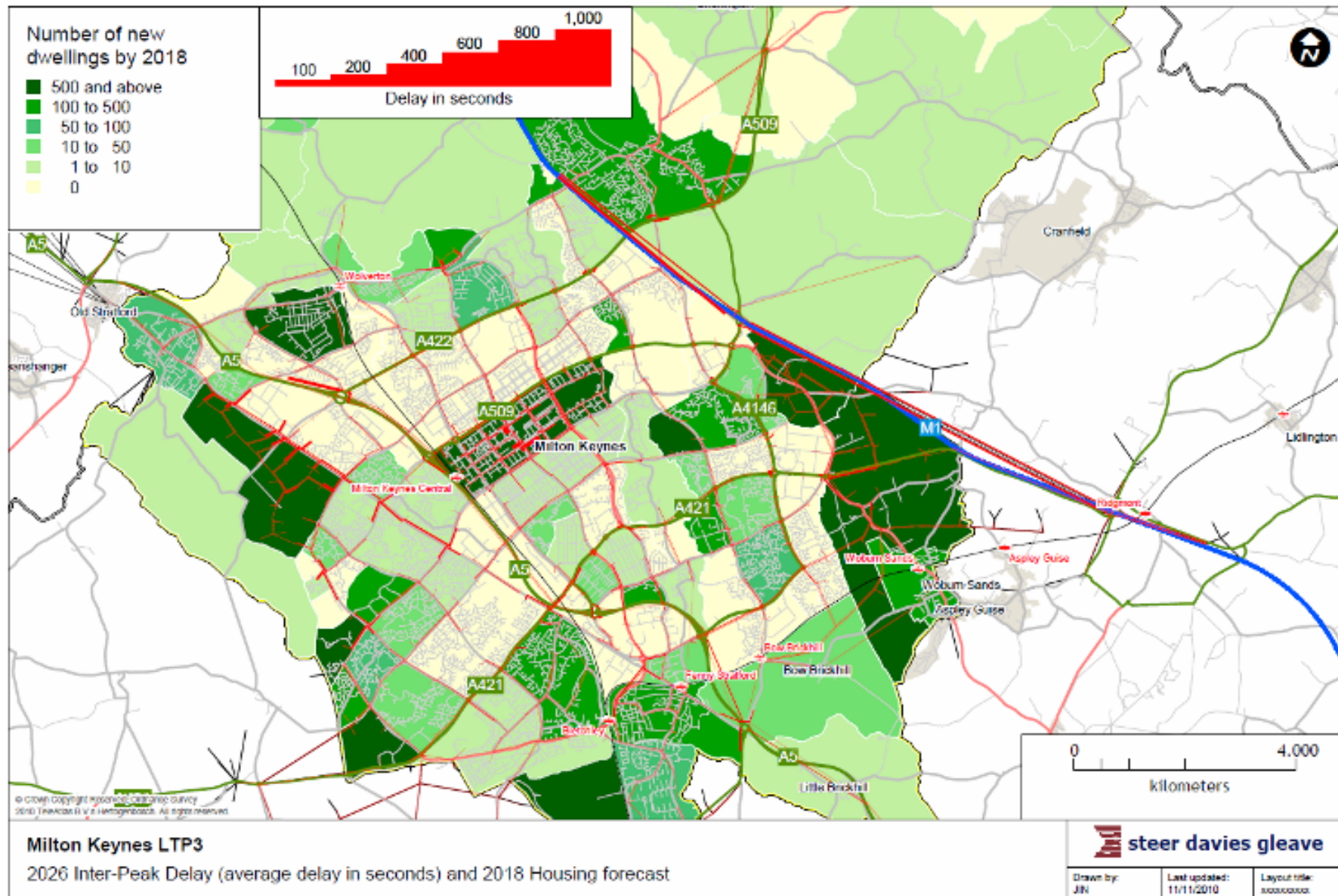[22] *Milton Keynes Traffic Model* (Milton Keynes Council, 2010)

FIGURE A.19   2026 AM DELAYS (AVERAGE DELAY IN SECONDS) AND 2018 HOUSING FORECASTS
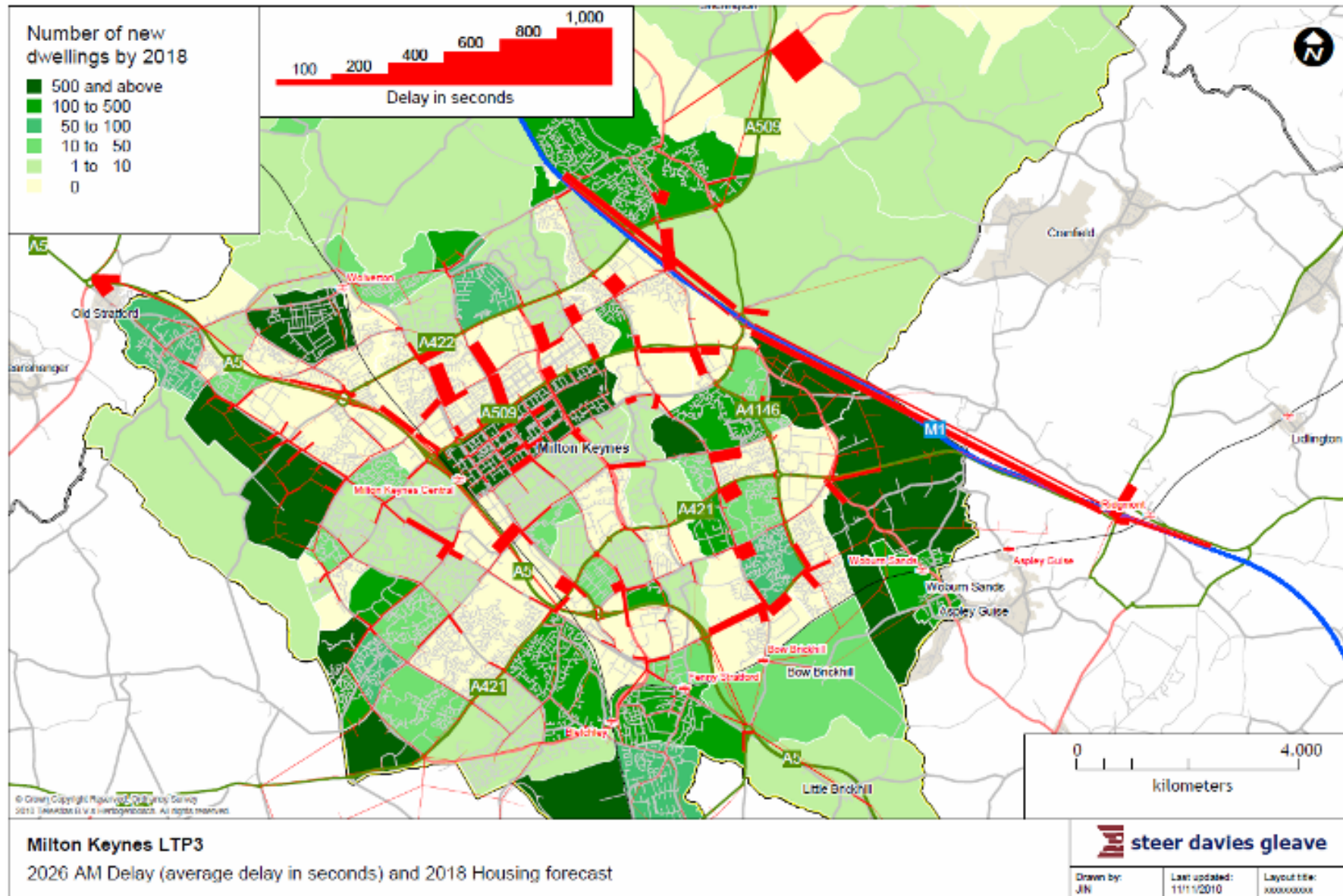
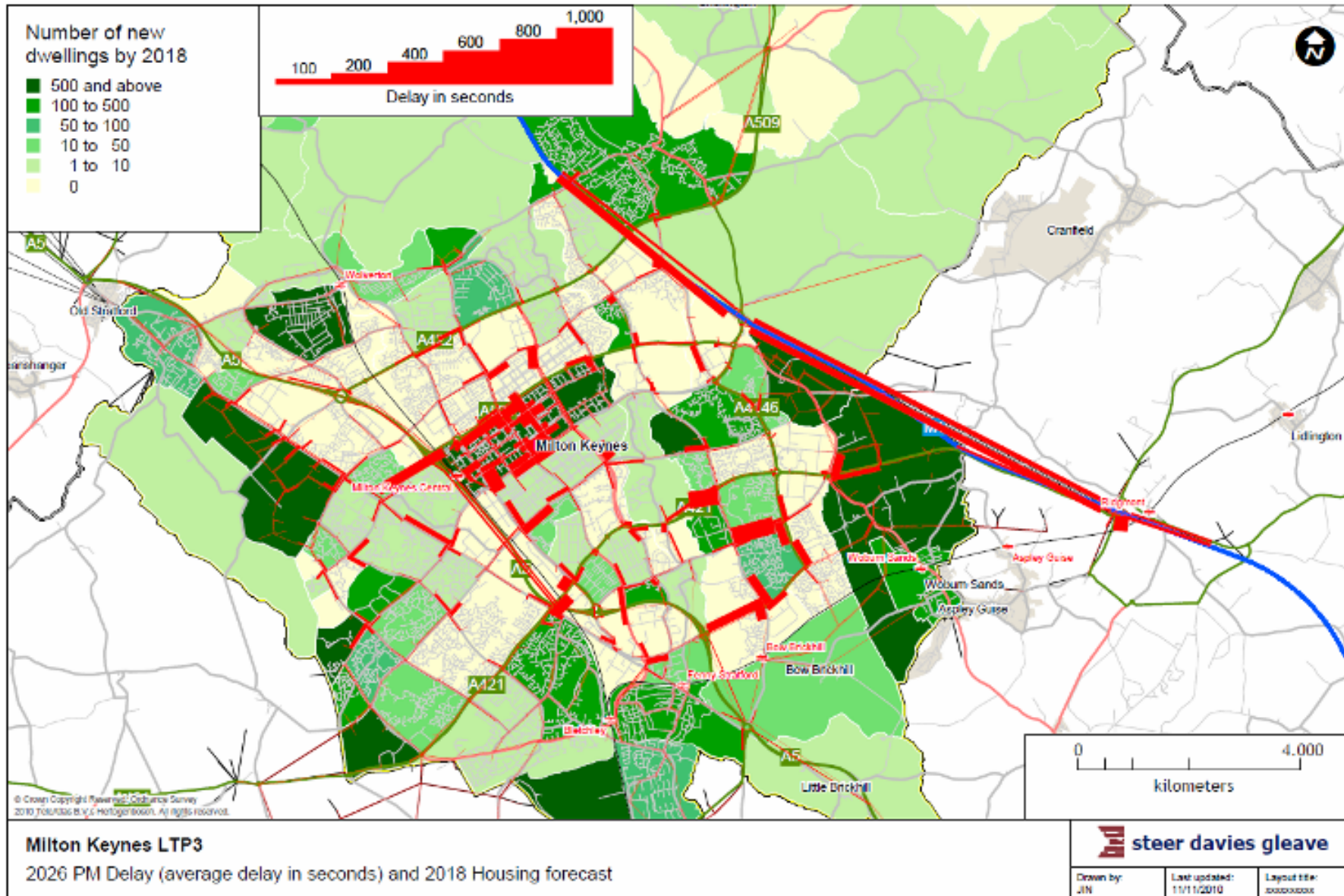*Source: Steer Davies Gleave analysis of MKSM Transport Strategy data (housing forecasts) and outputs from the Milton Keynes Traffic Model (delays)*

FIGURE A.20 **2026 IP DELAYS (AVERAGE DELAY IN SECONDS) AND 2018 HOUSING FORECAST**

Source Steer Davies Gleave analysis of MKSM Transport Strategy data (housing forecasts) and the Milton Keynes Traffic Model (delays)

FIGURE A.21   **2026 PM DELAYS (AVERAGE DELAY IN SECONDS) AND 2018 HOUSING FORECAST**

Source: Steer Davies Gleave analysis of MKSM Transport Strategy data (housing forecasts) and the Milton Keynes Traffic Model (delays)

The M1 and Strategic Highway Connectivity

The connectivity provided by the M1 to nearby conurbations, the rest of the strategic highway network, and international gateways is essential to the success of the Milton Keynes economy. The M1 provides for many of the travel needs of residents and business, and will continue to support planned growth within the borough. There is a large proportion of traffic flow to Milton Keynes from Luton and Northampton and the MKSM Transmodal Study suggests that Milton Keynes, Northampton and Dunstable are highly dependent on the M1[23].

The borough and the sub-region have high levels of freight movements. Milton Keynes along with Northamptonshire host a number of road and rail freight distribution centres. Not only do some of the most important routes for both road and rail cross the region, but the area also generates significant freight activity both in originating and receiving traffic. The largest proportions of containers imported through ports in the south, east and North West of England are destined for distribution centres in the borough and within the MKSM sub-region[24]. Figure A.22 overleaf demonstrates the importance of the M1 as a key route for traffic that comes from the Port of Dover, Folkestone Ferry Port, and the Channel Tunnel[25].

A study of the M1 in support of the Junction 10 to 16 'Managed Motorway' scheme, assessed the levels of congestion in this section of the M1[26]. The current and future performance of the M1 is measured using a metric of capacity of the network called 'Congestion Reference Flows' (CRF). In 2009 the levels of congestion along the M1 between Northampton and Luton showed that there are sections of the M1 with over capacity issues. CRF levels vary between 110% and 118%. The highest levels of CRF were identified for Junction 14 and 15 (between Milton Keynes and Northampton). The situation is expected to worsen significantly by 2021 as it is expected that overall traffic levels will growth within a range of between 37% and 59%, with an overall average growth of approximately 50%[27].

Although the M1 is important in facilitating both north-south through traffic and traffic into and out the sub-region, the east-west movements are also important for facilitating journey to work and business to business movements between the major urban centres. Key links include the A421, A509 and A422 (all of which connect with the A5 to the west of Milton Keynes). It has been identified that the M1 causes severance within the region and impedes the east-west movements[28]. Locations where this has been identified as being an issue are:

- M1 Junction 10 (Luton)
- M1 Junctions 13 to 14 (Milton Keynes)
- M1 Junctions 15 to 16 (Northampton)

Junction 10 is important as is the access point for the nationally important strategic road connection to Luton Airport.

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[23] *MKSM Transmodal Study Interim Report* (Atkins, 2010)
[24] See reference 23
[25] *Delivering a Sustainable Transport System: City and Regional Networks Data Book Annex 16* (Department for Transport, 2008)
[26] Jct 10-13 Study (Scott Wilson, 09). Junctions 15 to 16: East of England Regional Model (AECOM, 2009).
[27] The Congestion Reference Flow (CRF) of a link is an estimate of the Annual Average Daily Traffic (AADT) flow at which the carriageway is likely to be congested at peak periods on an average day.
[28] *Modal Shift Study* (Arup, 2008)

FIGURE A.22   HGV FLOWS FROM KEY UK PORTS
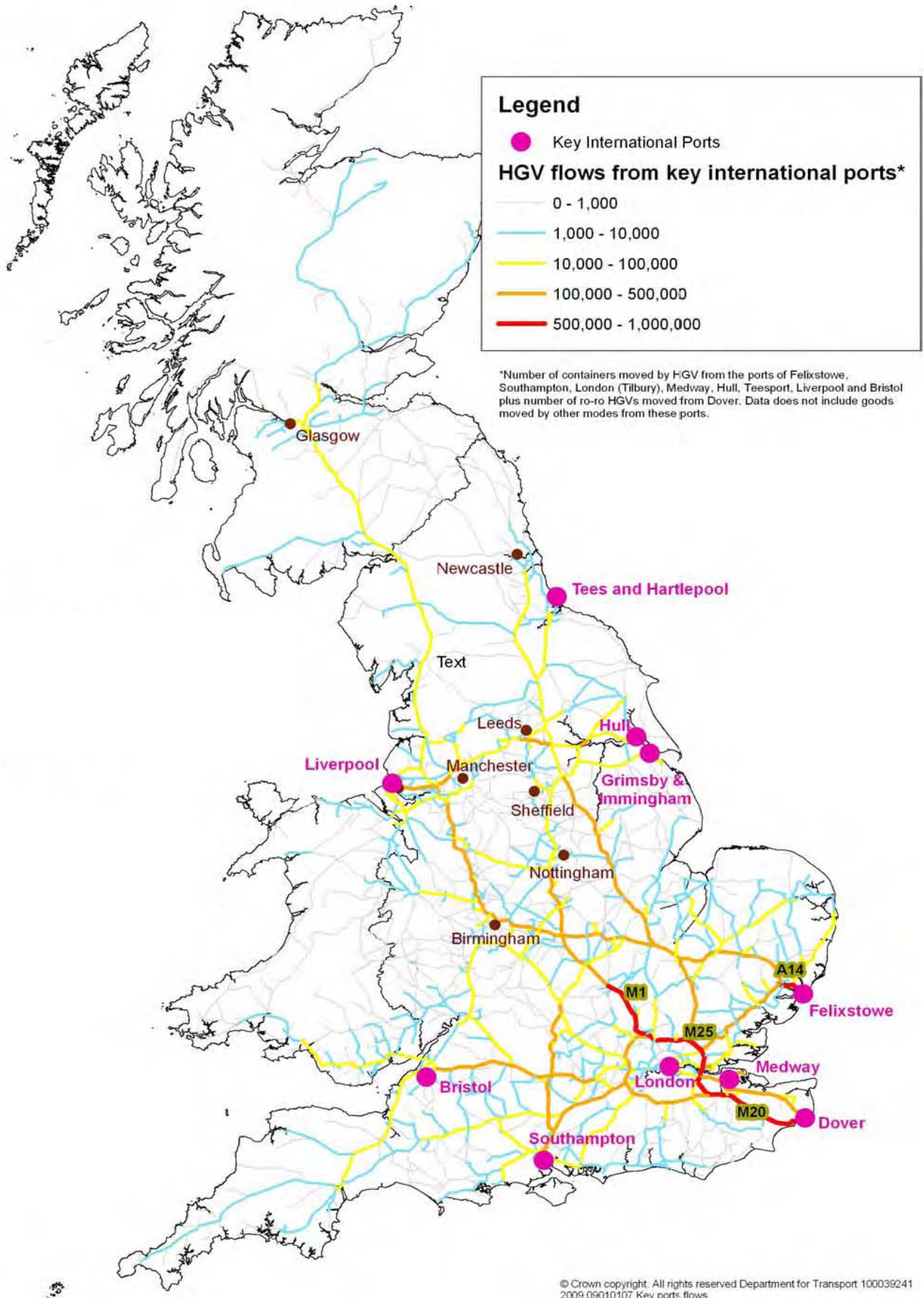
Source: Department for Transport, 2008

Carriageway Condition

As Table A.3 overleaf indicates, all National Indicator and LTP targets in respect of road condition have been met during 2009/10. Recent monitoring of the condition of bridges found that certain bridges, particularly those under the grid network, are in need of maintenance to bring up to current design standards[29].

TABLE A.3   CONDITION OF ROAD NETWORK 2009/10

Indicator No	Indicator Name	Definition	Target	2009/10 Actual
NI 168	Road Condition	Condition of Principle Roads	6%	2%
NI 169	Road Condition	Condition of Non-Principle Roads	8%	7%
PI 224b	Road Condition	Unclassified Roads	10.50%	6%

The West Coast Main Line

The West Coast Main Line (WCML) between London and the West Midlands and on to the North West of England and Scotland provides a key link for people who live or work in Milton Keynes. It supports the high number of commuter and business trips that are made to and from Milton Keynes everyday; and makes the City, particularly Central Milton Keynes, an attractive place to work.

The route is now effectively full over key sections, and the 2008/09 unconstrained demand was 14,017 compared with a capacity of 13,084 seated passengers in the AM peak. Demand exceeding seated capacity will shift people from rail to alternative modes, typically car, or suppress demand.
Forecasts for unconstrained demand are expected to rise 23% over the period from 2007/08 to 2021 (17,386 passengers). This will exceed the ability of the network to provide capacity[30].

Demand on the WCML long distance services is likely to increase by almost 140% from 2008 to 2033 (from 44,500 to 105,700 passengers for 16 hour two-way services). The capacity of the WCML long distance services, north of Milton Keynes is forecast to increase by 54% between 2007/2008 and 2021[31]. Demand forecasts for the WCML show that growth in demand is likely to be greater than the capacity increases, and as such, crowding levels are likely to increase from approximately (50% to almost 80%).

Rail Freight Performance

The MKSM sub-region has high levels of freight transportation by rail. The WCML route is heavily used by freight especially for bulk intermodal traffic originating at south and east coast ports destined for rail linked distribution terminals including those in the West and East Midlands. Apart from bulk inter modal traffic, the region is also a significant freight generator through aggregates industry activity in the East Midlands. Quarries to the north

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[29] Milton Keynes Transport Asset Management Plan (2010)
[30] *Modal Shift Study* (Arup, 2008)
[31] *High Speed 2 Strategic Alternative Study* (Atkins, 2010)

and the east of Leicester not only generate significant volumes of road HGV traffic in the region but also support substantial volumes of rail aggregates traffic over the Midland Main Line.

The Freight Route Utilisation Strategy anticipates that traffic container flows to and from the ports are expected to deliver the greatest demand on the rail freight network. The container market is expected to grow by 83% over 2005 levels by 2014/15[32]. Container rail freight traffic is particularly important for the WCML as this is a key route for intermodal traffic serving rail terminals along the route. Much of the container traffic from the Haven Ports is carried on the WCML, and the volume of containers through the Haven Ports is expected to increase significantly by 2015[33]. The Transmodal GB Freight Model indicates that growth of all rail freight volumes will increase by 30% from 2006 to 2015 and will more than double to 2030[34].

The WCML is therefore subject to significant anticipated growth over the forecast period leading to some excess of demand over the capacity of the route to cater for all rail needs. If High Speed Rail (i.e. High Speed 2) takes place, this may influence network availability for increases in freight capacity along the WCML. Other rail freight routes along the region are the East Coast Main Line and the Midland Main Line. Both are also important freight routes and the Midland is particularly especially significant in the region for the movements of bulk aggregates by rail from quarries in the East Midlands.

Bedford and Milton Keynes Canal

Milton Keynes is served by the Bedford and Milton Keynes Canal. It is proposed that links between local waterways could be developed in order to expand the freight, leisure and transport capabilities of these valuable assets, as well as parallel walking and cycling routes.

Bus

The dispersed residential and employment locations in the borough represent serious challenges for public transport. Some grid squares are wholly given over to industrial or distribution related land uses, others are predominantly residential, each with a variety of local services. Whilst much employment is focussed in Central Milton Keynes, there is still a diverse profile of employment locations and it is difficult to provide a public transport network that links employment areas with residential and other services locations.

This complexity is highlighted by Milton Keynes's low public transport modal share of 9%[35]. Compared with towns and cities of a similar size, only Telford had lower bus patronage per capita[36]. Simply put, people don't see the bus an attractive modal choice. Coupled with cheap car parking and often multi-destination journeys, the urban form means that the vast majority of in-commuters will rely on the private car to get to work.

Public transport services meet most basic transport needs but are not seen by residents as an attractive alternative to the car[37]. Whilst improvements have been made to services

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[32] *Freight Route Utilisation Strategy* (Network Rail, 2007)
[33] See reference 31
[34] MDS Transmodal, 2008
[35] *United Kingdom 2001 Census* (Office for Nation Statistics, 2001)
[36] See reference 35
[37] *Milton Keynes Bus Strategy* (Milton Keynes Council, 2004)

along core routes with daytime services running every twenty or thirty minutes, significant parts of the urban area have a daytime service that are hourly or less frequent.

Bus reliability is also an issue in Milton Keynes, as most of the services are radial routes travelling to Central Milton Keynes and tend to get affected by congestion in the urban areas at peak times. In addition, poor information provision and perceived service quality do not make bus an attractive transport choice.

A strong message from the community is that reliability of bus journey times is often more of an issue than seeking to reduce journey time. From ICM Market Research it was identified that 31% of residents consider bus reliability as the aspect of transport in most need of improvement, whilst 49% of those surveyed think buses should be given priority on roads in and around Milton Keynes.[38]. An Arriva customer satisfaction survey reinforces the argument that punctuality is the most important attribute for bus users[39]. Better punctuality and service frequency should in turn lead to improved reliability and overall satisfaction scores. Information at bus stops has been also identified in Arriva surveys as important issue for Milton Keynes residents (more so than with other Arriva services in the United Kingdom).

Despite evidence of low bus usage and satisfaction, the National Accessibility Indicators (2008) suggest there are good levels of accessibility in Milton Keynes[40]. More than 5,000 jobs located within the borough are accessible within 20 minutes by public transport, walking or cycling. In addition, 83% of people of working age have public transport access within 25 minutes to a major employment site (500 jobs or more within a Lower Super Output Area) within the borough[41]. This suggests that the existing bus network is not providing the quality of access required, coupled with the ease of driving and the amount of available parking in the city.

Growth

Milton Keynes has experienced high levels of population growth and this will continue[42]. Within the next ten years, it is estimated that the population in the borough will rise by approximately 29,000 people, or a 12% increase of the current population[43]. In order to meet the housing needs of this growing population, over 16,000 homes will be built in the borough. The majority of this growth is expected to occur in the Eastern and western Expansion Areas, and the city will reach a population of almost 225,000 by 2018[44].

In order for housing targets to be delivered in a sustainable fashion, it is critical that the existing transport networks can support and serve these new developments. Efforts should also be made to ensure that new housing developments are not placed in areas where congestion is already high. In addition, public transport and cycle and pedestrian networks should fully support these developments. The provision of high-speed broadband is also crucial, for the use of home working and collaborative technologies.

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[38] *Milton Keynes Transport Survey* (ICM Market Research, 2008)
[39] The 2009 *Milton Keynes Metro* Customer Satisfaction Survey has been conducted for the first time to understand perceptions of service quality on buses
[40] *National Core Accessibility Indicators* (Department for Transport, 2008)
[41] *National Indicator 176: working age people with access to employment by public transport, walking and cycling* (Department for Transport, 2010)
[42] *Milton Keynes Population Bulletin 2009/10* (Milton Keynes Council, 2009)
[43] The population projections were produced by the Milton Keynes Population Model December 2009 using PopGroup and HouseGroup forecasting software.
[44] *Milton Keynes Population Bulletin 2009/10* (Milton Keynes Council, 2009)

There are two key areas where population growth will occur – natural population growth and net migration:

Natural growth: The 2001 census population estimates for Milton Keynes Council area indicate that the growth seen between 1991 and 2001 was at least 28,800 people, a growth rate of 17%. Milton Keynes was the fastest growth area in the South East, and one of the fastest growing in England and Wales, a situation which is forecast to continue[45].

Net migration: According to the population estimates, the growth of Milton Keynes is due to the number of newcomers to the borough generally being greater than the number of leavers, resulting in net in-migration. This is combined with high natural growth. Net migration is set to dip as the house building programme responds to the economic situation. Net migration is forecast to recover during 2010, strengthen by 2016 and then maintain a steady rate, with a net inward migration of up to 3,000 people annually into the borough[46].

Between 2011 and 2018, 14,500 houses are anticipated to be built in the borough, allowing for a projected growth in population. This is a reduction from previous estimates due to current housing market conditions[47].

Housing figures to 2018 are based on agreed forecasts of housing completions. However, the totals have been adjusted to reflect the anticipated impact of the current economic situation. This is also assumed to affect completion rates afterwards for some time. This is because as past estimates of completions have been consistently higher than what has been achieved. The reductions in completion rates have been applied across the board to all developments of more than five dwellings[48].

Table A.4 below provides an overview of predicted housing and population growth between 2011 and including 2018[49].

TABLE A.4   FUTURE HOUSING GROWTH AND POPULATION IN MILTON KEYNES (2011 – 2018)

Year	Housing growth in Milton Keynes Borough	Population Milton Keynes Borough
2011	101,830	235,550
2012	102,980	237,420
2013	104,550	239,170
2014	106,300	242,000
2015	108,600	245,080
2016	111,230	249,400
2017	113,750	259,380
2018	116,330	264,480

Source: Milton Keynes Population Bulletin 2009/10 (Milton Keynes Council, 2009)

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[45] See reference 44
[46] See reference 44
[47] See reference 44
[48] See reference 44
[49] Milton Keynes Population Bulletin 2009/10 (Milton Keynes Council, 2009)

Looking further ahead, the Sustainable Communities Plan for the MKSM Growth Area suggested that by 2031, Milton Keynes Borough and a population of 350,000. The MKSM Sub-Regional Growth Plan outlines that 31,500 new homes will be required between 2001-2016, through the use of 'urban intensification', and the development of new urban extensions and enhanced public transport systems and interchanges[50].

Table A.5 overleaf provides an overview of predicted housing growth in Milton Keynes borough from 2011 up to 2031. The Government's Sustainable Communities Plan (February 2003) identified Milton Keynes as an area for 'continued growth' to 2031. Figures post-2011 are informed by the MKSM growth strategy which envisages Milton Keynes a major Regional centre. The figures for 2011 to 2031 have not been inflated to include dwellings delayed from pre-2011.

TABLE A.5   HOUSING GROWTH BEYOND 2011 IN MILTON KEYNES BOROUGH

Future Growth	Total	Average
2011-16	8,400	1,680
2016-21	12,100	2,400
2021-31	23,300	2,400

Source: MKSM Growth Strategy

These population projections are not based on the agreed forecasts of housing completions in the borough because these were believed to be unrealistic. This was because shortfalls in previous years housing completions forecasts had been added to future years' totals. The 2009/10 Annual Monitoring report uses a 25% 'optimism bias' to get a realistic and achievable forecast of future dwelling completions[51].

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[50] Source:
http://www.miltonkeynespartnership.info/future_plans/MiltonKeynes_2031_documents.php#growthstrategy
[51] Milton Keynes Population Bulletin 2010 (Milton Keynes Council, 2010)

Housing Growth

As stated above, by 2018 16,000 houses will need to be built to accommodate the rise in population of 29,000 people (12%). Most of the planned expansion will occur in the city area, which will form a focus for development as well as sustainable transport requirements. Areas abutting the city will also see growth, such as Eastern Expansion Area, which is relatively close to Junction 14 of the M1, an area of peak time congestion. Figure A.23 provides a graphical representation of these areas of housing growth. Changes in the planned programme of expansion mean that work is unlikely to commence in the Western expansion area until 2012. Development has begun in the Eastern Expansion Area (Brooklands and Broughton Gate) in 2008/09 and other areas to the east of Milton Keynes including Monkston Park and Middleton. Development is also going ahead in Bletchley, particularly in the Newton Leys development. In the rest of the borough the main settlements of Newport Pagnell and Olney will also see some growth over the same period. Aylesbury Vale District council is also considering plans to develop an area known as Saldon Chase around Newton Longville to the south of the borough. The council does not support this development.

The significant growth in population, housing and employment combined with the development of Milton Keynes as a regional centre will significantly increase the volume of traffic on Milton Keynes' grid road network over the next 25 years. The Milton Keynes Traffic Model has been used to forecast the potential impact that this growth would have on traffic congestion assuming a continuation of existing trends in car usage and modal share[52]. It is clear that this growth in population (both natural and net), demographic trends, and housing and employment growth, will place pressures on the transport network. The placement of new housing is key to the future sustainability of development in the borough – it will need to be readily accessible by sustainable transport modes and not place undue pressure on existing networks. By placing new housing in accessible areas of the borough (or supporting new developments with sustainable transport links and connections), there is potential to reduce CO_2 emissions, improve air quality, and promote active travel.

At current rates of population growth, there will be a 57% increase in journeys by car at peak travel times (2001 to 2031)[53]. However, the city will only be able to provide an extra 25% capacity at peak times through junction improvements and other measures. This highlights the need to start managing the demand for car travel now, to ensure the efficiency of the city's transport network and to improve access to labour markets. Journey times, and therefore, access to key services, will be negatively impacted.

In addition, the changing population structure must be taken into consideration. As indicated earlier on in this report, Milton Keynes is a relatively 'young' borough with a lower than national average median age. By 2031, the borough's population age structure will have changed. The median age will be around 39 years because of migration. The age profile will still be slightly younger than for England, which will have a median age of about 40 years. The number of 50-54 year olds will have significantly increased, and the number of over 65 year olds will experience a very significant increase[54].

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[52] *Milton Keynes Local Transport Plan 2006-07 to 2010-11* (Milton Keynes Council, 2006)
[53] *See reference 53*
[54] *Milton Keynes Population Bulletin 2009/2010* (Milton Keynes Council, 2010)

**FIGURE A.23   2018 HOUSING FORECASTS (MILTON KEYNES POPULATION BULLETIN 2009/10)**
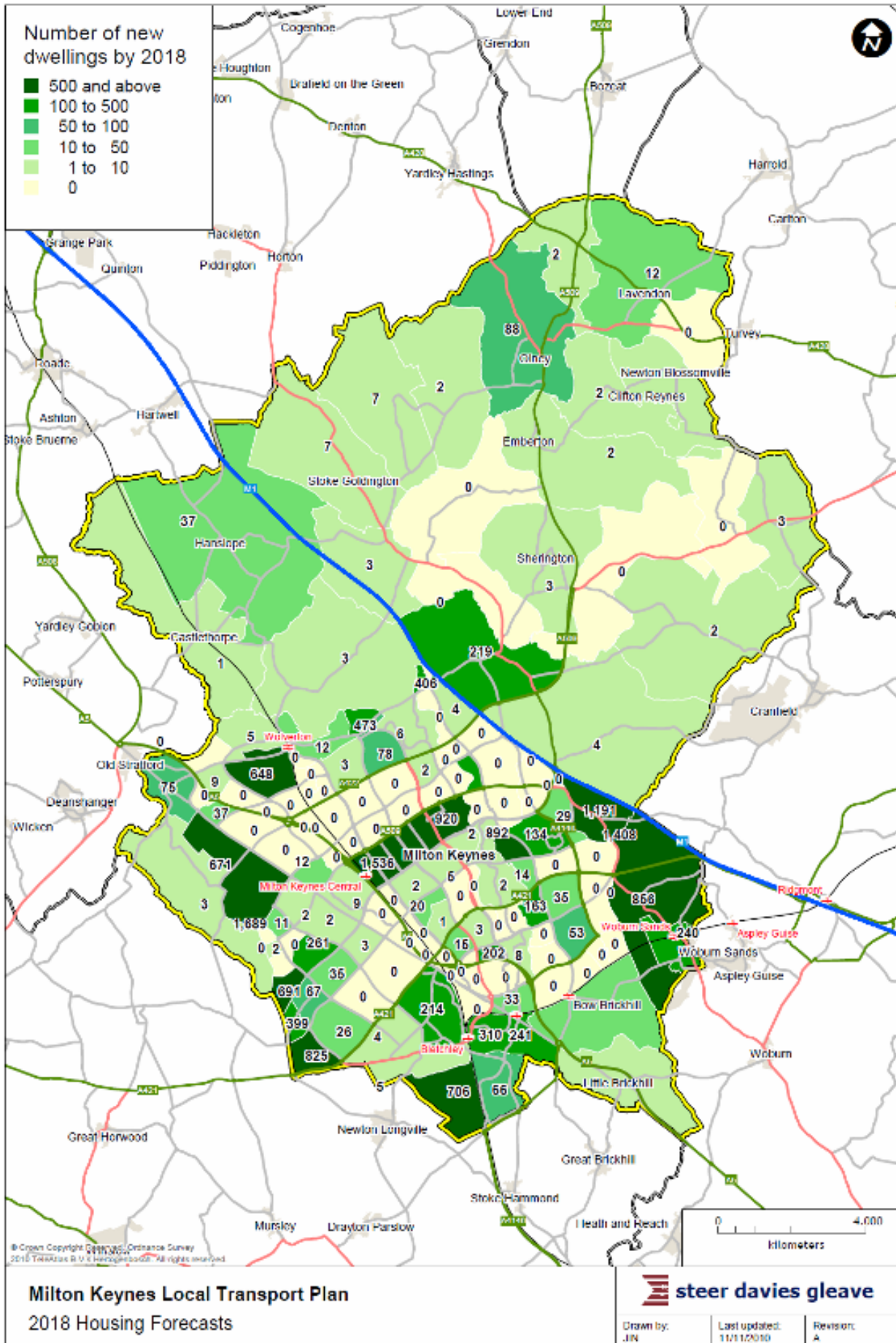
Support the economic growth of the borough through the fast, efficient and reliable movement of people and goods

The efficient and reliable movement of people and goods is key to the future growth and development of the borough.

Labour Market and Skills Context

Milton Keynes is a borough with traditionally high levels of employment, exceeding employment rates of the South East and the national averages. In 2008/09, 80.2% of the working age population were in employment in Milton Keynes, compared with 78.6% in the region and 74% in England[55].The latest NOMIS Business Enquiries data (Figure A.24) shows that the Milton Keynes labour force is dominated by the retail and service sector, with almost one third employed. The service sector includes: retail trade, transportation and distribution, accommodation and food services, information and communications. Recession has hit all cities hard in the United Kingdom. Cities' exposure to the recession varies according to the type of business forming their main economic activities.

FIGURE A.24   EMPLOYMENT BY INDUSTRY
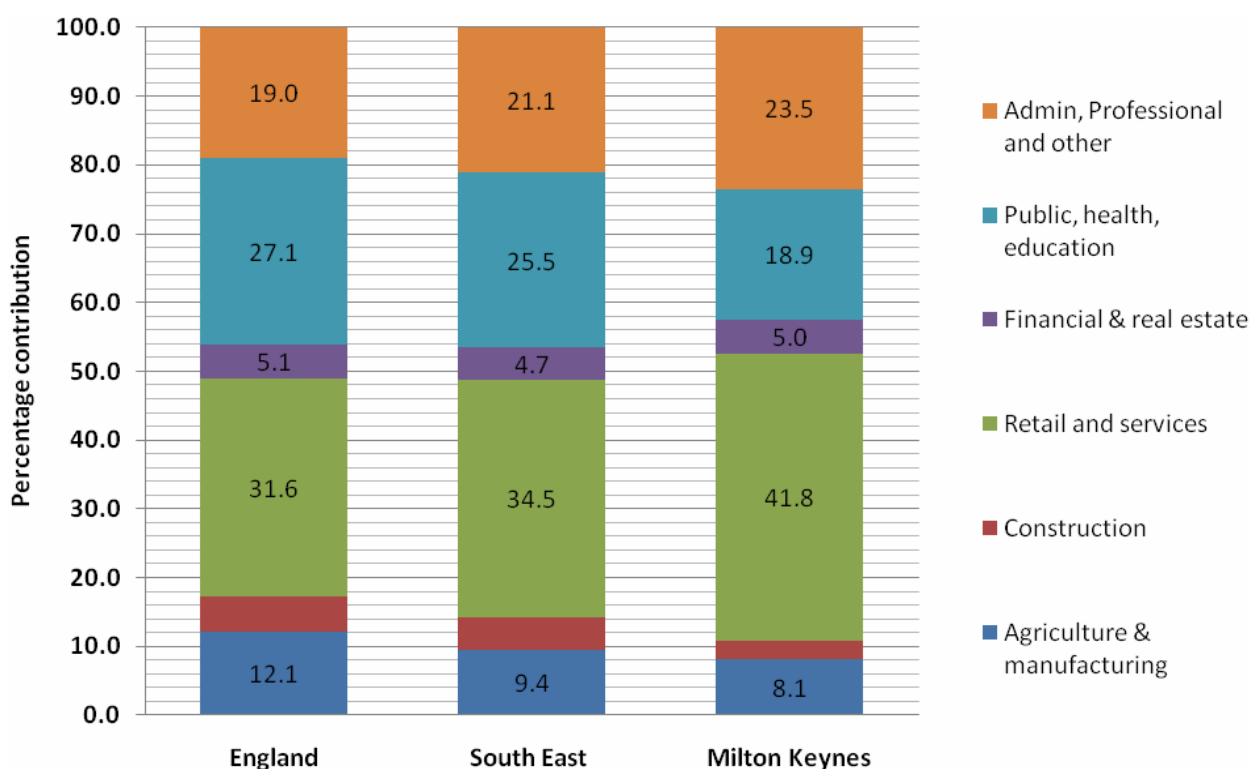
SOURCE: NOMIS, 2008

One particular feature of the Milton Keynes economy is the importance of the logistics and distribution sector. Milton Keynes, by virtue of its proximity to the main UK population centres and its relatively good access to the strategic road and rail networks, is a favoured location for warehousing and distribution facilities. However this sector has been one of

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[55] Economic Activity 2008/09 (NOMIS, 2010)

the sectors most exposed to the recession in 2008 as companies cut back on jobs, services and networks[56].

Thus, Milton Keynes is one of the cities that have seen the highest rise in Job Seekers Allowance (JSA) claimant count in November 2009 - a rate of 4.8% compared to 3.0% and 4.1% at a regional and national level (see Table A.6 below). Youth unemployment has also risen higher than the national average in Milton Keynes – 3.4% compared to 2% nationally[57].

However, it has been suggested that Milton Keynes is well positioned to succeed once the recession has finished. This is predominately due to a strong private sector, high levels of entrepreneurship, a highly educated workforce and large shares of knowledge-intensive jobs[58].

TABLE A.6   PERCENTAGE EMPLOYMENT CLAIMANT COUNT (2000-2010)

Year	Milton Keynes	South East Region	England and Wales
2000	1.6%	1.7%	3.1%
2001	1.4%	1.4%	2.7%
2002	1.7%	1.5%	2.6%
2003	2.0%	1.6%	2.5%
2004	2.0%	1.5%	2.4%
2005	1.9%	1.5%	2.3%
2006	2.3%	1.7%	2.6%
2007	2.1%	1.5%	2.4%
2008	2.2%	1.3%	2.2%
2009	4.8%	3.0%	4.1%
2010	4.8%	3.0%	4.1%

Source: Office of National Statistics (2010)

Unemployment is now a significant issue in Milton Keynes. The unemployment rate has traditionally been low, below the England and Wales average. However it has been rising since 2007, exceeding both the South East and England and Wales average. Unemployment is particularly high in the regeneration target wards of Eaton Manor, Woughton, Campbell Park and Bradwell.

The city of Milton Keynes is amongst the top quartile for highest growth in private sector jobs between 1998 and 2008; a 19% increase in private sector jobs[59].The entrepreneurial nature of the borough exposed Milton Keynes to the first wave of private sector job losses; however this should demonstrate to be a positive characteristic for the borough's

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[56] *Cities Outlook* (Centre for Cities, 2010)
[57] See reference 56
[58] See reference 56
[59] *Cities Outlook* (Centre for Cities, 2010)

economy, providing resilience to the second waves of the recession and its impact in the economy. The Government has now announced a plan to address the public deficit and cities depending on high levels of jobs for the public administrative, health and education sector will be badly affected. Milton Keynes' percentage of public sector jobs is low (19%) in comparison with the regional and national levels of 25% and 27% respectively.

Key employment sites (that employ 500 staff or more) tend to be quite dispersed across the borough. Aside from Central Milton Keynes, there are employment sites dotted around the periphery of the urban area. This adds pressures to east-west movements and to traffic flows on the M1. Figure A.25 overleaf provides a visual representation of key employment sites in Milton Keynes, and the current bus stop network. This provides an overview of public transport provision to the employment sites and shows that it is lacking in some key areas. Note that the provision of bus stops does not necessarily reflect the level of service or connectivity to the area. There are also a number of rural employment centres with fewer than 500 jobs which add to the economic diversity of the borough but face accessibility issues for access by public transport.

FIGURE A.25   KEY EMPLOYMENT AREAS AND BUS STOP LOCATIONS
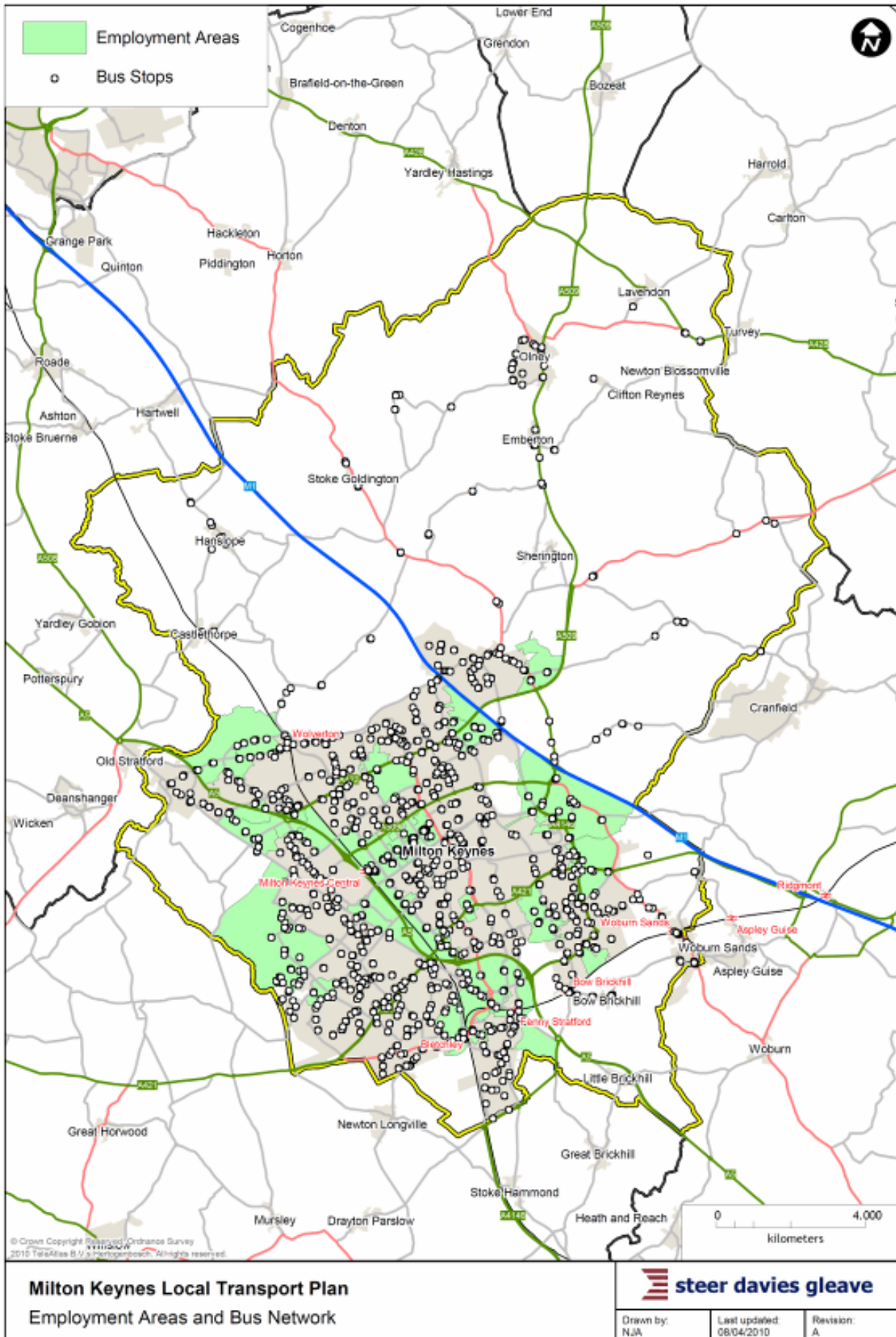
Source: Office of National Statistics and NaPTAN, 2010

The recession has reinforced the disparities between higher and lower skilled residents in the borough. It has been demonstrated that cities with high levels of people educated to NVQ4 and above have suffered much less from the effects of the recession (NOMIS, 2008). Milton Keynes has a relatively high proportion of working age population with no or low levels qualifications (i.e. below and including NVQ Level 2) compared to the South East regional average; and the proportion achieving NVQ Level 3 and above is below the South East regional average (see Table A.7). Level 3 qualification is the most important in terms of providing key skills needed to produce goods and services. Figure A.26 overleaf provides an overview of NVQ attainment in Milton Keynes Borough and surrounding areas. This shows the high levels of Level 1 and 2 attainment within Milton Keynes City, and the higher levels of Level 4 and 5 attainment outside of the City.

TABLE A.7   WORKING AGE POPULATION QUALIFICATIONS (2008)

| Qualifications	Milton Keynes	South East Region	England
No Qualifications	10.0%	8.9%	12.3%
Other Qualifications	8.2%	7.7%	8.9%
NVQ1 only	17.4%	14.5%	14.2%
NVQ2 only	16.2%	16.1%	16.1%
Trade Apprenticeships	3.5%	4.0%	4.1%
NVQ3 only	14.9%	17.3%	15.8%
NVQ4+	29.7%	31.5%	28.7%

Source: NOMIS, 2008

Table A.8 shows the total number of jobs and workers in the borough. A high proportion of people live and work in Milton Keynes (78%). However, the borough provides more jobs than its available workforce could staff, regardless if they have the skills to fulfil these jobs or not. The borough imports over 16,000 people to fill available jobs.

TABLE A.8   TOTAL NUMBER OF JOBS, SELF-CONTAINMENT OF JOURNEYS TO WORK, AND NET IMPORTING OF LABOUR BY MILTON KEYNES

Description	Number/Proportion of trips TTW Census 2001
Total Jobs	125,445
Total Workers	109,254
% people who live and work in MK	78.72%
In-commuters	39,438
Out-commuters	23,247
Net Importing of Labour	**16,191**

Source: United Kingdom Census (2001)

FIGURE A.26   PERCENTAGE OF POPULATION WITH NVQ 1 AND 2 AND NVQ 4 AND 5 ATTAINMENT LEVELS OR ABOVE
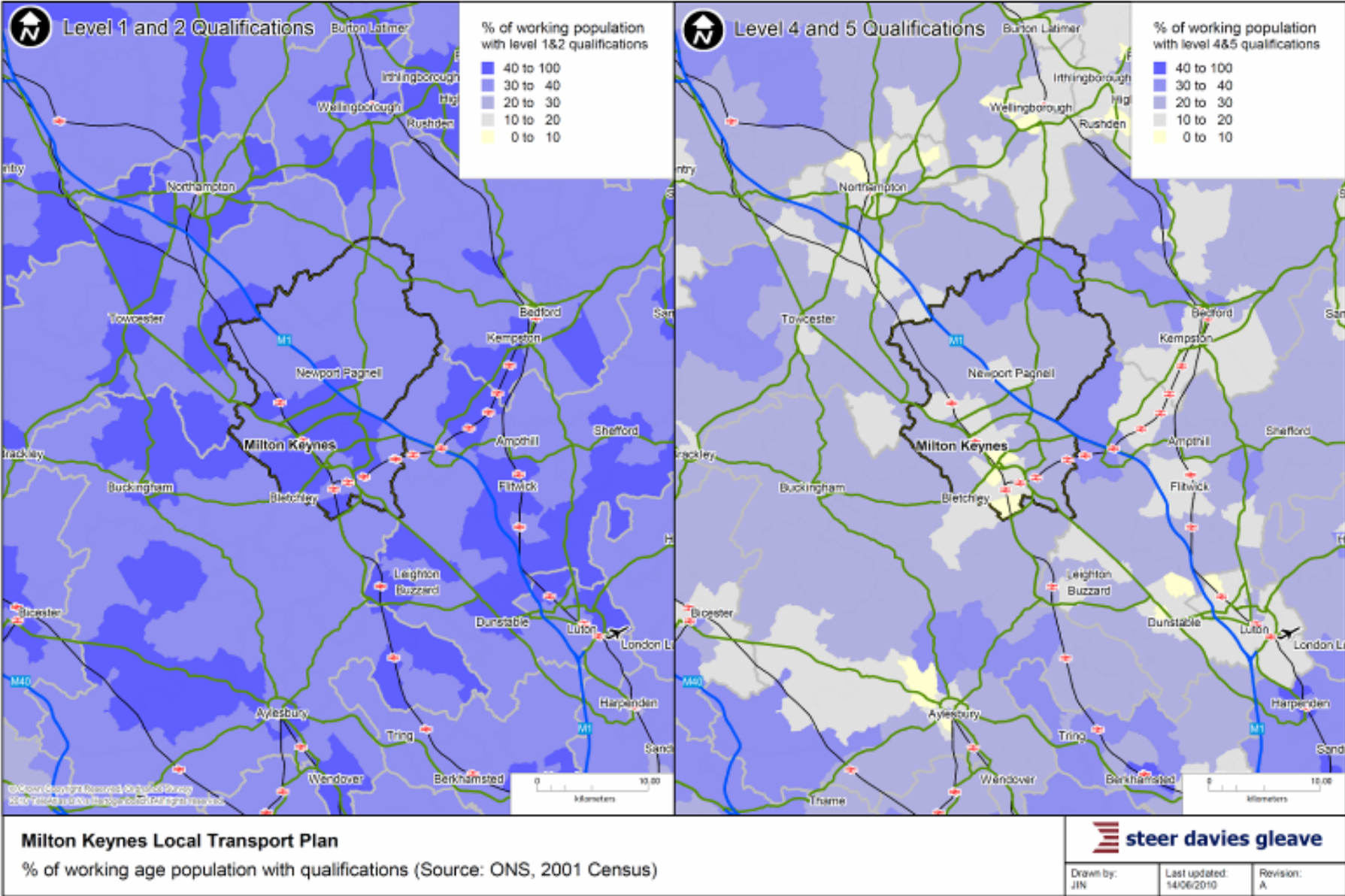
From Table A.9 below, it can be observed that in 2008 the proportion of the total working age population with low skills in Milton Keynes accounted for 55%, similar to the national average but above the regional average (51%). Meanwhile the proportion of low skill jobs in the borough was lower than the regional and national average (only 43%)[60]. Therefore we can conclude that the relationship between these two values is higher in Milton Keynes than in the South East and in England. It appears that more local residents are taking up job opportunities in the service industry and more highly skilled inward commuters or non-residents are benefiting from job-creation in the higher value sectors[61].

TABLE A.9   SKILL LEVELS IN MILTON KEYNES (2008)

Description	Milton Keynes	South East	England
Total Working age population	150,400	5,049,000	31,663,100
Number of lower skill level (NVQ2 and below) working age population	83,300	2,584,200	17,570,300
Proportion of lower skill level working age population	55.4%	51.2%	55.5%
Total Work Places in Milton Keynes	10,555	215,650	2,125,963
Number of lower skill level jobs	4,538	179,941	1,046,990
Proportion of lower skill level jobs	43.0%	45.5%	48.4%
Low skill/Employment ratio	1.288	1.125	1.146

Source: NOMIS (2008)

Table A.10 overleaf shows the average gross weekly pay by workforce and resident population for Milton Keynes Borough and its surrounding areas[62]. Regional and national figures are also given. Data is from 2009 and is for full time workers. Milton Keynes has the highest weekly pay by workplace. People who work in Milton Keynes earn approximately 6% and 2.5% more than the national and regional average respectively. This demonstrates the high level of high value jobs in the borough and may explain the number of in-commuters to the borough. Meanwhile, residents in Milton Keynes earn less than those who work in the borough. They also earn approximately 3% less than the regional average and the surrounding area of Bedfordshire.

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[60] NOMIS, 2008
[61] *Milton Keynes Revised Proposed Core Strategy* (Milton Keynes Council, 2010)
[62] Office of National Statistics, 2010

TABLE A.10   GROSS WEEKLY PAY

Area	2009 Gross Weekly Pay	
	By Workplace Job	**By Resident**
Milton Keynes	£526	£521
Northamptonshire	£467	£459
Luton	£493	£442
Bedfordshire	£448	£535
South East	£514	£537
England	**£ 495**	**£ 496**

Source: Office of National Statistics (2010)

Analysis of how development forecasts will affect commuter patterns and the balance of jobs and workforce size is shown in Table A.11. The table shows levels of self-containment of journeys to work and net importing of labour, job and workplace population forecasts for 2009 and 2031. Data shows that in 2009, Milton Keynes had a high level of self-containment and was a net importer of labour, but it is likely that in the longer term the borough will be more self-contained as the workforce population increases disproportionately more than the number of jobs. It is important to caveat this analysis on the basis of inaccuracy of using different data sources and that future skill levels and employment mix have not been considered.

TABLE A.11   SELF-CONTAINMENT AND NET IMPORTING OF LABOUR AND JOURNEYS TO WORK BASED ON GROWTH FORECASTS

% self-containment	Net importing of labour	Total no. of jobs (2009)	Total no. of workforce (2009)	% change in jobs (2001 - 2031)	% change in workforce (2001 -2031)
78%	-16,191	151,466	127,737	16.7%	32.0%

Source: United Kingdom Census (2001) and TEMPRO V6.1 (DfT, 2010)

Reduce transport based CO$_2$ emissions to help tackle climate change

Travel to and from Milton Keynes Borough is dominated by the car, with public transport and 'active travel' modes (i.e. walking and cycling) having a poor mode share in the borough. This has a negative impact on CO$_2$ emissions and will continue to do so if not correctly managed. To meet the targets of reducing road transport CO$_2$ emissions, Milton Keynes will need to experience an important modal shift from car to more sustainable transport such as cycling and walking; as well as technological improvements to automobile technology.

The borough's level of car ownership (81% of households) is comparable to the South East average and much higher than the national average (73% of households) based on 2001 Census data. Milton Keynes residents travel comparable distance to work as the South East and national average, although a lower proportion work from home compared to both averages (and despite extensive broadband coverage). 73% of all trips to work are

made by car, meanwhile only 9% are made by public transport (see Figure A.27). Milton Keynes compares poorly against the regional and national picture (66% and 63% of total trips to work made by car respectively).

FIGURE A.27   TRAVEL TO WORK MODAL SHARE COMPARISON (CENSUS 2001)
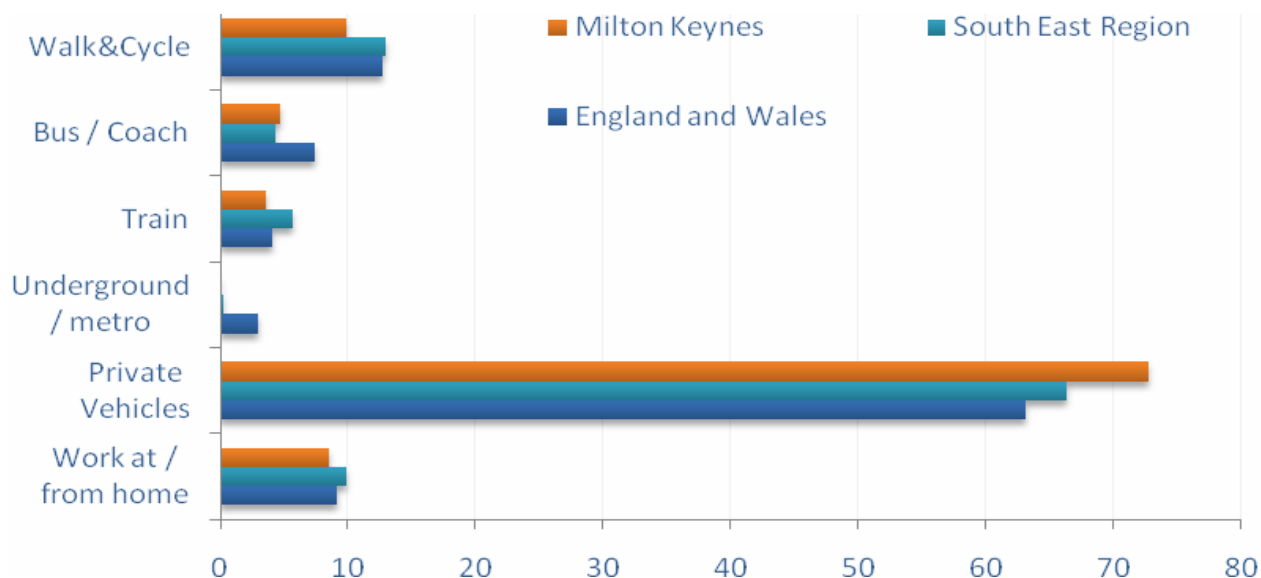
Car ownership forecasts are also shown in Table A.12. Central Government TEMPRO (V6.1) data suggests that car ownership will increase by 1.5% by 2031[63.] This will add more pressure on the road network, both local and on the M1.

TABLE A.12   CAR AVAILABILITY BY HOUSEHOLD AND FUTURE YEAR FORECASTS[64]

| Year	Number of Households	% of HH with car availability	% of HH with no Car availability
TOTAL 2001	**83,357**	**81%**	**19%**
TOTAL 2008	94,800	81%	19%
TOTAL 2011	**100,802**	**81%**	**19%**
TOTAL 2016	112,060	82%	18%
TOTAL 2021	**123,322**	**82%**	**18%**
TOTAL 2026	133,580	82%	18%
TOTAL 2031	**144,981**	**82%**	**18%**

There are approximately 25,000 private and public parking spaces in Central Milton Keynes. Charges for are significantly lower than those levied in neighbouring and

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[63] TEMPRO provides summaries of National Trip End Model (NTEM) forecast data for transport planning purposes. The forecasts include population, employment, households by car ownership and trip ends. All the data is available for free, for anyone to use.
[64] Source: Car availability by household composition from 2001 United Kingdom Census (Office of National Statistics, 2001); Source: Future year forecasts from TEMPRO V6.1 (Department for Transport, 2010)

comparable cities and do not encourage modal shift to other more sustainable forms of transport. However, it is recognised that the parking stock is important for Milton Keynes' economy, without attractive sustainable alternatives.

FIGURE A.28   PARKING AVAILABILITY IN CENTRAL MILTON KEYNES
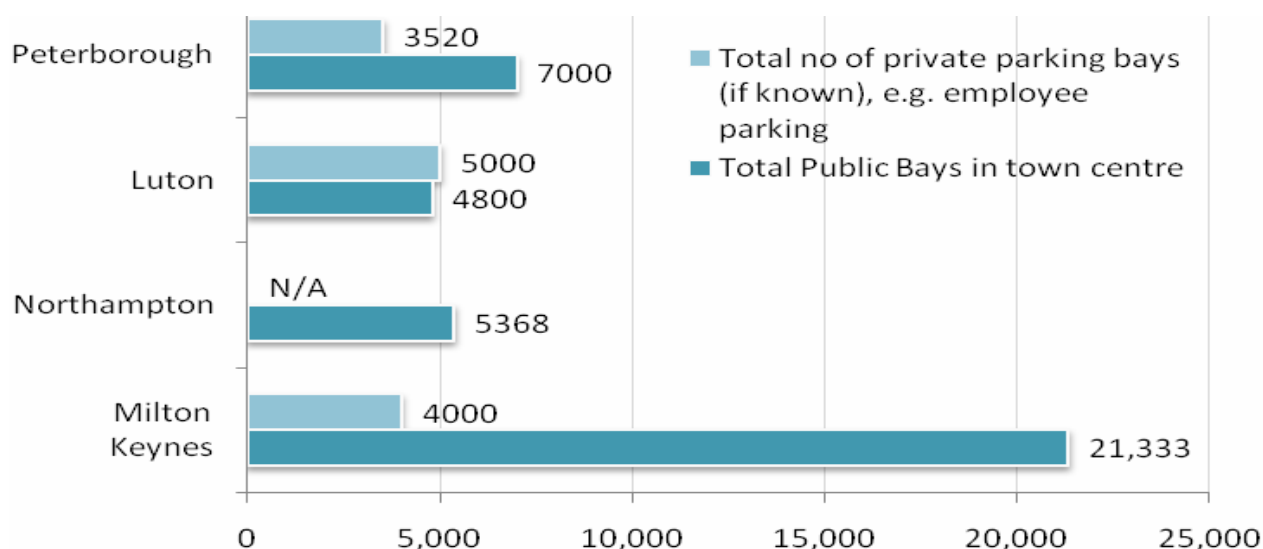
Source: Milton Keynes Parking Strategy (Milton Keynes Council, 2008)

Milton Keynes Council will introduce changes to parking at the end of January 2011. This will include:

- Extending premium rate parking by 981 spaces

- Extending standard rate parking by 3872 spaces (into free areas on North and South Row)

- Retaining standard rate tariff at 30 pence per hour

- Retaining Central Milton Keynes employee concessionary discount at 50% of standard tariff (equates to £1.20 per day to park)

- Allowing Central Milton Keynes Resident Parking Permit holders to park in standard rate parking spaces on North and South Row free of charge

- Introducing 'Green' parking permit for low emission vehicles at a cost of £75 per annum. Permit valid in standard rate bays only. Available to vehicles that emit less than 120g CO_2 emissions per km driven

- Abolishing free weekend parking in blocks C1 and C4 (C1 defined as area between Witan gate, Saxon Gate, North Row and Silbury Boulevard, C4 defined as area between Witan Gate, Saxon Gate, South Row and Avebury Boulevard) To revert to weekday parking charges.

- Increasing the cost of Hotel and Conference scratch-card to £5 per day

- Increasing the cost of long stay parking from £7 to £8 per day (in line with private rail parking operator) Retain 50% discount available to Milton Keynes residents when purchasing annual commuter parking permit

- Introducing three "Kiss and Drop" parking areas and two Hackney Carriage Stands (outside Marks and Spenser and at the Theatre District) as part of an experimental scheme. The experimental provision of Kiss and Drop and Hackney Carriage Stands will help facilitate visitors to the Shopping Centre, Theatre and Theatre District by locations for those customers to be picked up/dropped off safely.

Parking bays take up a vast amount of prime city centre space. Large areas of Central Milton Keynes are devoted to surface parking. As shown in Figure A.25 there are more than 21,000 publicly parking spaces within Central Milton Keynes[65]. There are also approximately 4,000 private spaces that belong to companies for use by their employees or visitors. By comparison, neighbouring towns of Northampton and Luton have approximately 4,000 town centre spaces. Meanwhile Peterborough (considered by Central Government to be a demographically comparative town) only has 7,000.

Road Transport Contribution to CO_2 emissions

Figure A.29 below provides a comparison between Milton Keynes, regional and national road transport contributions to CO_2 emissions[66]. In 2008 road transport contributed to approximately 31% of total CO_2 emissions produced by Milton Keynes. Although the contribution of road transport CO_2 emissions in Milton Keynes is comparable to the South East regional average, it is significantly higher that the United Kingdom average of just over 26%.

FIGURE A.29   **CONTRIBUTION OF ROAD TRANSPORT TO CO_2 EMISSIONS IN MILTON KEYNES, SOUTH EAST ENGLAND AND THE UK**
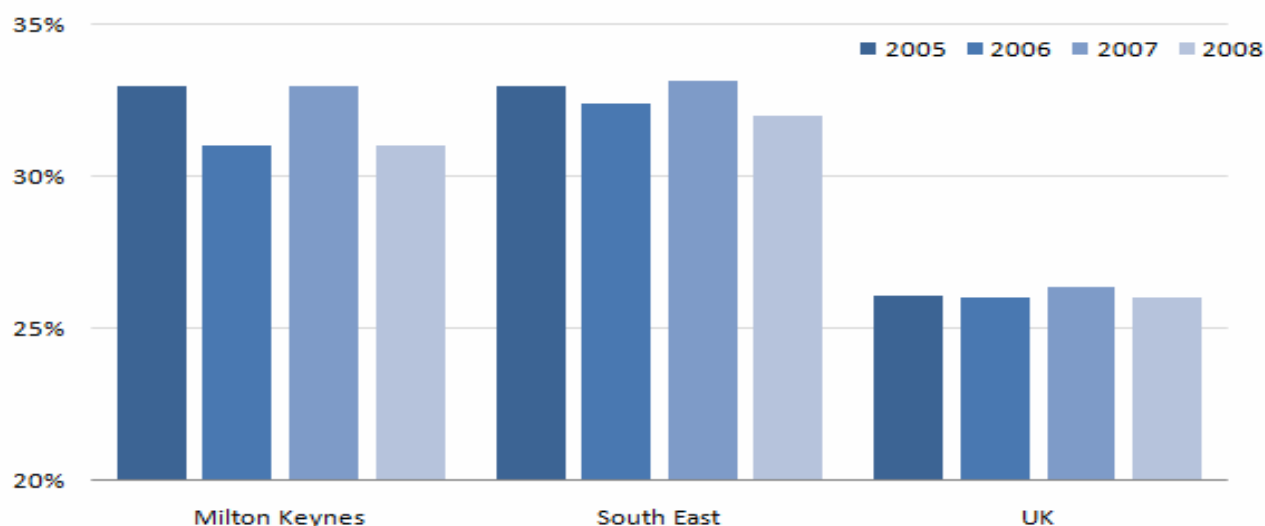
*Source: Local and Regional CO_2 Emissions Estimates for 2005-2008 (*AEA for the Department of Energy and Climate Change, 2010).

CO_2 emissions per capita in Milton Keynes are higher that the regional average, but in line with United Kingdom averages. Emissions per capita have fallen on a year by year basis since 2005. This is presented in Figure A.30 overleaf.

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[65] Central *Milton Keynes Parking Strategy* (Milton Keynes Council, 2008)
[66] *Local and Regional CO2 Emissions Estimates for 2005-2007* (AEA for the Department of Energy and Climate Change, 2008)

FIGURE A.30   CO$_2$ EMISSIONS PER CAPITA
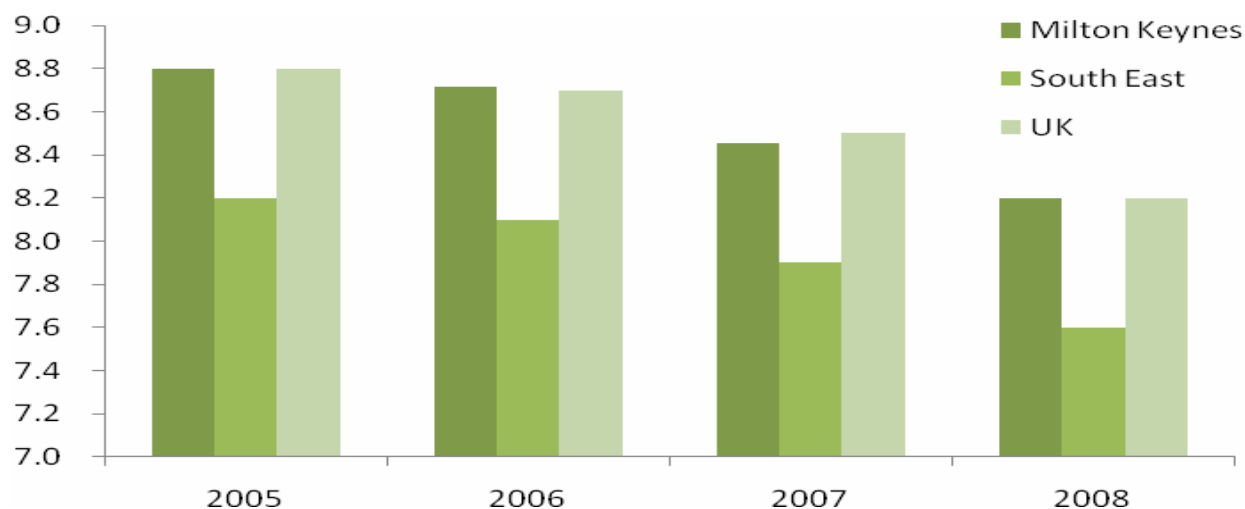
Source: Local and Regional CO$_2$ Emissions Estimates for 2005-2008 (AEA for the Department for the Environment and Climate Change, 2010).

CO$_2$ emissions based on transport flows are highest along the M1 corridor and in Milton Keynes City as well as the neighbouring large urban areas of Aylesbury, Luton, Bedford, Kettering, Corby, Northampton, and Daventry. CO$_2$ levels are also high along the A5 around and Dunstable, the A14, A45 and the A421[67]. Estimates for changes in CO$_2$ emissions from road transport suggest that in the MKSM area, emissions are forecast to increase 1% by 2021[68]. Central Government's response to the Committee for Climate Change sets out how the 2020 target of a 34% reduction in emission will be met across all sectors. The document is not clear on how transport is expected to contribute to this target, but it includes measures that will support reduced transport emissions by 14% from 2008 to 2020. It is likely that transport sector will have to accelerate beyond 2020 to meet the latter targets. Given that Milton Keynes is well above the regional average for road based CO$_2$ emissions, immediate actions need to be in place.

Peak Oil

The influence of peak oil should also be taken into consideration. Peak oil is the point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline. Optimistic forecasts suggest that the peak will occur in 2020, with more pessimistic forecasts suggesting that this peak has already happened. In light of both of these timescales it is key that Milton Keynes develops a transport strategy that takes peak oil (and associated prices) into account. This includes the promotion of active travel modes, electric vehicles and other sustainable transport means.

Technology

British Telecom has claimed that 99.8% of all households in Milton Keynes can get high-speed broadband and have recently announced a high-speed 'fibre to premises' trial. This will be trailed in 'brownfield' areas to begin with. Bradwell Abbey (the telephone exchange in Fishermead) in Milton Keynes has been selected for the trial during 2010/69. Milton

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[67] *MKSM Transmodal Study* (Atkins, 2010)
[68] See reference 67
[69] http://www.bb4mk.com/bt_FTTP_Trial.htm (accessed July 2010)

Keynes currently has six telephone exchanges, and faster connection speeds will be experienced within a two kilometre radius of each exchange. One of the current issues is that ADSL requires more exchanges (and shorter line length) in order to provide uniform high speed access – this means that there will be significant gaps in high-speed provision in Milton Keynes.

Milton Keynes currently has a city-wide 'WiMax' network that allows the population to access wireless high speed internet. Anecdotal evidence suggests that there are considerable gaps in the coverage of the WiMax network, as well as 'normal' Internet provision through telephone exchanges.

This type of wireless broadband technology makes home-working far more accessible and therefore could provide a viable option for commuters not to travel to their place of work on a daily basis. This, in the long term, could lower transport CO_2 emissions but would require better coverage and stable high speed connections. 2009 figures suggest that 70% of households in the United Kingdom have access to the Internet, 90% of which are using high speed broadband[70]. Internet access levels in the South East of England have been estimated at 75%.

Milton Keynes is one of the Government's 'Plugged in Places' that will benefit from a £30m grant to create a network of electric vehicle hubs across the UK. Earlier this year, it was announced that private and business motorists in Milton Keynes would receive a discount of up to £5,000 on new electric vehicles. This initiative is part of a £450 million Government strategy to support the creation of a flourishing early market for ultra-low carbon vehicles. The programme will help to meet the UK's commitment to reduce CO_2 emissions from transport; as well as creating new business opportunities for UK-based companies in the automotive and charging infrastructure sectors. Research commissioned by the DfT suggests that electric vehicles could realise up to a 40% benefit in CO_2 savings compared with a typical petrol family car, based on the current UK power mix[71]. The Plugged-In Places will provide the charge points to support these vehicles – demonstrating how electric vehicle charging works in practice in a range of different settings – urban, suburban and regional – as well as testing innovative technologies such as rapid charging, inductive charging and battery swap.

Technology currently does not play a major role in congestion and queue management in the borough. Other towns and cities of a similar size will use 'automated' approaches to traffic signalling, this allows signals to adapt their timings according to traffic levels. Milton Keynes currently does not have an automated system that operates across the borough, even though it has an available fibre optic network that could be used to connect signals together. Towns and cities such as Reading and York have established successful Urban Traffic Management and Control (UTMC) systems for providing more strategic control and monitoring of urban networks. The data captured by the UTMC common database can also be easily distributed to the public via the web and the media. This includes: journey time, air quality, car parking information, CCTV images etc.

Active Travel in Milton Keynes

To meet the targets of reducing road transport CO_2 emissions, Milton Keynes will need to experience an important modal shift from car to more sustainable transport such as cycling

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[70] Statistical Bulletin: Internet Access, Office for National Statistics, February 2009.
[71] *Investigation into the Scope for the Transport Sector to Switch to Electric Vehicles and Plug-in Hybrid Vehicles* (DfT 2008)

and walking; as well as technological improvements to automobile technology.

The Redways is a unique cycling network that runs through Milton Keynes. The Redways connect each developed area of the city often through quiet estate roads. The current network is 250 kilometres in length. More strategic routes, which are mainly parallel to the Grid Roads, provide a route for longer distance journeys. The latter routes are commonly referred to as leisure routes, which pass through the linear parks and are aimed at more casual users. The secluded semi-rural nature of many Redways and the leisure routes make them pleasant for leisure purposes, but raises peoples' security concerns, particularly after dark when many are not lit. The nature of the high-speed grid-network also provides pedestrians with a problem when crossing busy roads – although the leisure routes often have fewer at-grade crossings.

The Cycling Strategy for Milton Keynes set targets for increasing cycling modal share. In particular, it provides a modal share target of 12% for cycling by 2011. A recent study on household survey analysis for Milton Keynes suggested that in 2009 modal share for cycle trips accounted for only 4% of the total work trips[72]. It is clear that modal share is falling short of targets, even though there is significant walking and cycling infrastructure already in place. There are a number of issues currently associated with the Redways.

Within Central Milton Keynes and the district centres, highways infrastructure for cyclists is generally poor. Away from the segregated Redways, the highways offer no priority to cyclists who have to compete with vehicles for road-space[73]. Cyclists will need to have greater priority over motor vehicles if the highways are to be used for rapid access to places of work, education and leisure.

Provide access for all residents to key services and amenities in Milton Keynes, including employment, education, health, retail, and leisure

While many residents in Milton Keynes do have access to a car, car ownership in deprived estates such as Netherfield (57%), Beanhill (60%) and Coffee Hall (65%) is much lower[74]. The quality of the bus service is therefore critical to economic and social inclusion, as well as quality of life. Residents of the areas with low car ownership are less able to access jobs, hospitals, shops, facilities and other key services. Milton Keynes hospital, because of the limited bus routes in the urban area, is especially difficult to get to by public transport from certain areas. We will assist in partnership working with local bus operators to address this issue.

Lack of car accessibility exacerbates the plight of those already living in pockets of deprivation and social exclusion across the city. Table A.13 below also shows that elderly people and single occupancy households are among the most disadvantaged. Residents of the areas with low car ownership are less able to access jobs, shops, facilities and other services. The quality of bus services (including frequency and journey times) in Milton Keynes is therefore critical to economic and social inclusion.

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[72] *Milton Keynes Transport Model – Households Survey* (Halcrow, 2010)
[73] *Milton Keynes Cycling Strategy* (Milton Keynes Council, 2009)
[74] *United Kingdom 2001 Census* (Office of National Statistics, 2001)

TABLE A.13   CAR AVAILABILITY BY HOUSEHOLD COMPOSITIONS

Household Type	Number of Households	% of HH with car availability	% of HH with no Car availability
One Person	22,488	59%	41%
Pensioner	8,102	31%	69%
One Family and no others	55,968	89%	11%
Other households	4,901	84%	16%
All households	83,357	81%	19%

Source: United Kingdom 2001 Census (Office of National Statistics 2001) and *TEMPRO 6.1* (Department for Transport, 2008)

The grid network makes it difficult for pedestrians to cross roads as there is a lack of signalised crossings. The alternative is to use underpasses, but for some, these are considered unsafe to use, particularly after dark and by lone women. This is especially true of residents who may have disabilities, where the subway is the only option for getting around the city centre.

Table A.14 below presents wards that have areas of high deprivation and no access to a car.

TABLE A.14   PERCENTAGE OF HOUSEHOLDS WITH NO ACCESS TO A CAR BY WARD, INC. IOMD75 AND WALKING TIME TO BUS STOP (HOUSEHOLD SURVEY, 2010)

Milton Keynes Urban Ward	% of households with no access to a car	Contains residential areas within the 15% most deprived in England	Contains residential areas within the 15-20% most deprived in England	Contains residential areas within the 20-25% most deprived in England	Above average walking time to bus stop
Wolverton	22%		✓	✓	
Campbell Park	18%		✓	✓	
Bradwell	17%		✓		
Stantonbury	17%		✓		
Linford North	15%				
Woughton	15%	✓	✓	✓	✓
Walton Park	14%				✓
Eaton Manor	13%	✓			✓
Linford South	13%				
Bletchley and Fenny Stratford	11%		✓	✓	✓
Milton Keynes	*12%*	-	-	-	-
2001 Census	*19%*	-	-	-	-

Source: Office of National Statistics, 2007 and Milton Keynes Household Survey, 2010

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[75] *Index of Multiple Deprivation* (Department for Communities and Local Government, 2007)

Improve Safety, Security and Health

Road safety

According to the Second Local Transport Plan Progress Report 2008, the safety of all road users on the road network in and around Milton Keynes remains of concern, not only to the council but to many other key strategic partners, who deal with the consequences of people being killed or injured in road traffic collisions. These organisations include the emergency services, such as Thames Valley Police (TVP), Buckinghamshire Fire and Rescue Service (BFandRS), and health care providers, in addition to both businesses and the wider community. All of whom have to deal with the consequences of the trauma involved when an individual becomes the victim of a road traffic collision[76].

Casualty rate decline

The 2008 Killed or Seriously Injured (KSI) figure for Milton Keynes borough was 79. This includes data for the A5 and M1. This equates to a 53% fall in KSI rates compared with baseline data (1994-1998 average). This fall is higher than the majority of four other comparable Unitary Authorities in England (Swindon, Telford and Wrekin, Warrington, Peterborough). Only Telford and Wrekin have had a higher fall (-70%)[77]. Each Unitary Authority had statistically similar baseline figures.

The comparable fall in casualty rates per 100 million passenger KM has not been as successful in Milton Keynes (-22%), with rates in Milton Keynes falling slower than Swindon (-39%), Telford (-33%) and Warrington (-42%). Only Peterborough has a lower fall rate since baseline (-11%)[78]. The high level of car ownership and use in Milton Keynes could have a bearing on this statistic.

Falls in slight casualty rates per 100 million passenger kilometres in Milton Keynes are similar (-16%). Swindon (-39%), Telford and Wrekin (-22%) and Warrington (-42%) have all shown greater falls in slight casualties over baseline. Again, only Peterborough was lower with (-6%). Milton Keynes set a 10% fall in slight casualty rate by 2010 (on baseline data). In 2008 this figure was approximately 9%[79]. This is significantly lower than the national average, where slight casualty rates have decreased by -26% from baseline data (1994-1998 average)[80].

Whilst Milton Keynes is performing well in terms of casualty reduction and is exceeding targets, compared to other authorities it is clear that casualty levels in Milton Keynes are no better. Despite speed limit reductions proving successful in reducing both vehicle speeds and casualties, there is a general reluctance to reduce speed limits on grid roads. There appear to be sections of the community who favour the convenience offered by a road network that is quick to move around over any concerns about casualties particularly when casualties are being driven down below target levels. The nature of the grid road system gives convenient access to all areas of the city.

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[76] *Milton Keynes LTP2 Progress Report* (Milton Keynes Council, 2008)
[77] Department for Transport, 2009
[78] See reference 76
[79] See reference 76
[80] See reference 77

Redways safety and security

In a Milton Keynes adult lifestyle survey carried out in 2007, 47.5% of respondents reported that they use the Redways for leisure and travel, with 35-44 year olds having the highest rate of use (52%). More men (54%) than women (43%) used the Redways. Feeling unsafe being the main reason why women and men did not use them (38%). The second highest reason for both men and women were that they were 'overgrown'[81]. There does appear to be a perception that crime is a real problem on the Redways, but in reality only 1% of all crime in Milton Keynes occurs on the Redways[82].

There have also been a high number of reported accidents on the Redways, often head-on collisions. A survey carried out in 1997 concluded that the Redways had more reported accidents than in any other UK city with similar cycling networks[83.] The safety of the Redways network will be considered in more detail later on in this report.

Segregation of the routes from the main carriageway is also considered a safety issue. A survey carried out in 1997 concluded that the Redways had more reported accidents than in any other UK city with similar cycling networks. Another common accident cause is as a result of the very poor user discipline on Redways. Based on the results of cyclist surveys in the early 1990s, John Franklin reported on the safety of the Milton Keynes Redways:

"*Observation suggests that cycling on the left is more the exception than the rule and frequently cyclists and other users take insufficient care for the hazards that are present.*"

Arguably this is not helped by a complete absence of centre lines and other reminders to keep left, and the unsuitability of many paths for typical cycling speeds. 50% of respondents to the 1993 survey said that the Redways are not well suited for cycling at their preferred speed whilst others travel faster regardless.

Some of the most serious Redway injuries have been as a result of head-on collisions between cyclists... On Redways, bad forward visibility, sharp bends and wrong-side riding have invariably been the cause of cyclists colliding head-on. Serious injury has also resulted after collisions with dogs, which may leap unforeseen from dense path-side vegetation." (Franklin, 1999)

Damage to Redways paths should be reported to Milton Keynes Council. This includes potholes, broken glass, debris, and uneven surfaces. Safety inspections are carried out once every nine months.

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[81] Milton Keynes Adult Lifestyles Survey, 2007
[82] Milton Keynes Community Safety Partnership – Community Safety Audit, 2004
[83] Two decades of the Redway cycle paths in Milton Keynes – John Franklin, published in *Traffic Engineering + Control*, July/August 1999 http://www.cyclecraft.co.uk/digest/2decades.html#Ref2

Contribute to quality of life for all Milton Keynes residents, strengthening community structures

Milton Keynes is considered to be a relatively easy borough to get around by car. However, there are areas of peak congestion and associated localised poor air quality and noise pollution. This puts pressure on the natural environment and the quality of life of residents. In order to improve the quality of life of residents this issues should be addressed. It is also key to provide adequate transport information to the public, via modern methods including the mobile phone.

Air Quality

Milton Keynes has declared Olney as an Air Quality Management Area (AQMA). Olney is a market town in the Milton Keynes Borough covering 3,410 acres with a population of around 6,000 people[84]. The town is approximately seven miles from the M1 motorway (Junction 14). The A509 runs in a north-south direction and includes Bridge Street, High Street South and the High Street, as shown in Figure A.31.

Milton Keynes Council recently completed an Air Quality Detailed Assessment for Olney and declared an AQMA for annual mean nitrogen dioxide (NO_2) in December 2008. The AQMA includes sections of Bridge Street and High Street South where residential properties are located in close proximity to the road. In the narrowest section of the road, heavy goods vehicles are unable to travel in opposite directions at the same time. This leads to queuing traffic and increased emissions, and adversely affects the dispersion of vehicle pollutants. Annual NO_2 concentrations of approximately 43 µg/m3 were measured using diffusion tubes at locations on Bridge Street and High Street South in 2007. This amount exceeds recommended European Standard 40 µg/m3 limit value for the protection of human health[85].

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[84] *United Kingdom 2001 Census* (Office of National Statistics, 2008)
[85] European Commission Standard

FIGURE A.31   AIR QUALITY MANAGEMENT DESIGNATED AREA: OLNEY TOWN

Environment Act 1995, Section 83 (1)
Air Quality Management Area (Milton Keynes Council) (No. 1) Order 2008
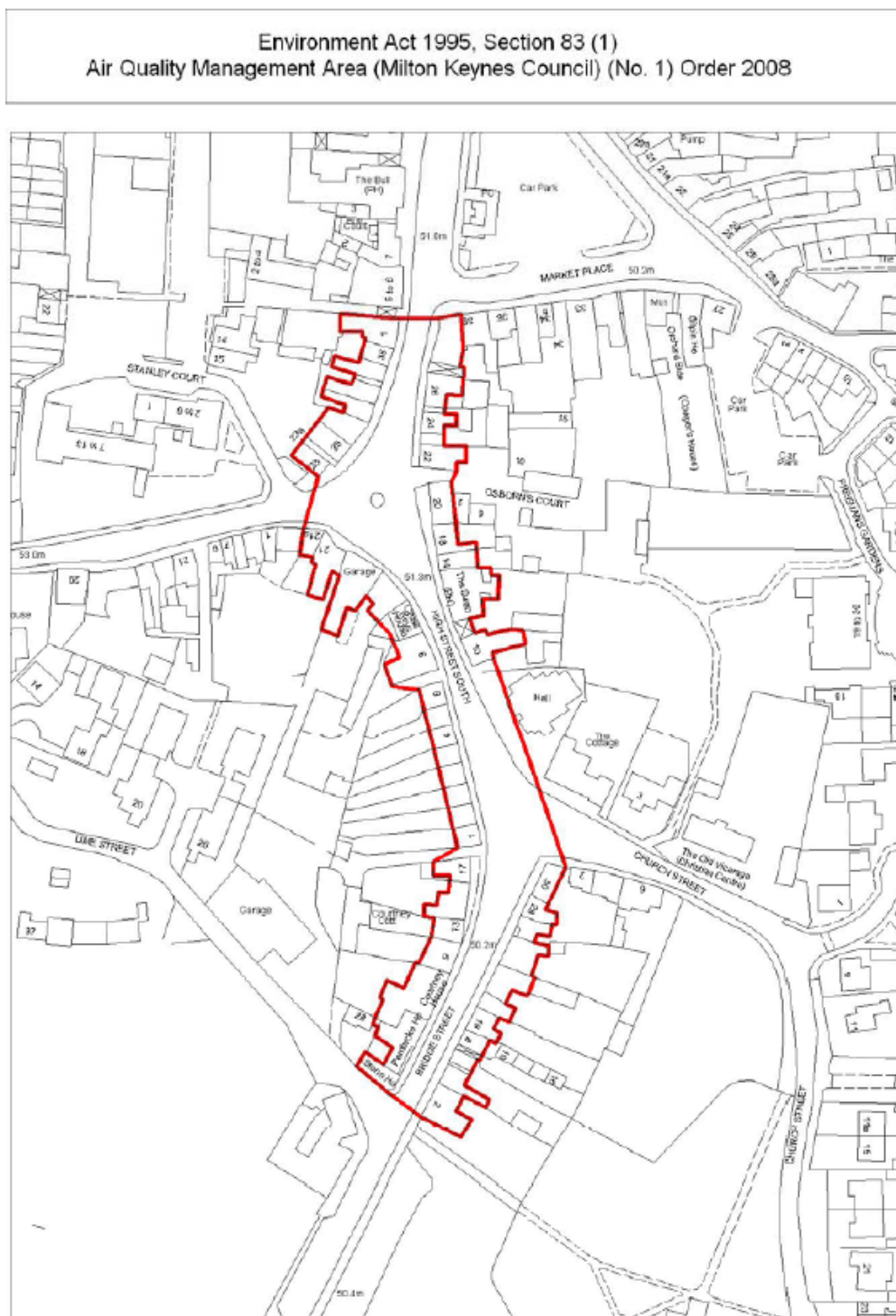
Door-to-door Journeys

Door-to-door journeys should also be possible by public transport, lessening the need for interchange. This is key for sustainable access to key services, employment areas and leisure facilities. Currently public transport trips can involve a number of interchanges and this can make travelling by bus unattractive.

Street Design

Attractive street design and urban realm help provide better connections between and

within neighbourhoods. New developments will need to have access to modern, attractive and reliable transport networks that form part of the urban and rural built environment, rather than create unintentional barriers between communities.

Transport Information Access

Accurate and easily accessible transport information can also improve a resident's quality of life by opening up available services to them. All but six buses operating on Routes 4, 5, 7, and 8 in Milton Keynes have been equipped with Real Time Passenger Information (RTPI) equipment[86]. This allows for bus location to be broadcast to the real time information system and for estimated departure times to be broadcast at-stop. 55 shelters on the four RTPI enabled routes are currently displaying real time information on three line LED signs (approximately 5% of all stops in Milton Keynes Borough). Eight larger signs have been installed in the Shopping Centre, the General Hospital, *Xscape* and in Bletchley Town Centre. These larger signs have nine to 18 lines of information.

However, because not all buses are equipped (including all smaller operators) and due to lack of funding, real time information is scarce at most bus-stops. Modern RTPI systems will normally show timetabled departure information when estimated times are not available, but in the case of the Milton Keynes system this functionality is not available.

It would be useful to see RTPI installed on less frequent routes, where delays can cause more significant delays to journeys – especially if buses are only running once an hour. All bus stops and vehicles should also be made DDA compliant – this includes access to bus stops for those who are physically disabled, have visual impairments or learning difficulties.

There are a number of websites that offer links to journey planning, timetable, ticketing and route information to the general public. These include:

- http://www.milton-keynes.gov.uk/transport/

- http://www.arrivabus.co.uk

- http://www.travelinesoutheast.org.uk

- www.nationalrail.co.uk

Milton Keynes Council does not have a single transport information portal that offers information for all modes. Ultimately, this could be confusing to passengers, with no single source of up-to-date information. Users have to visit separate websites to get information, instead of it being all in one place.

There is also no clear way to access bus real time information via the web or by mobile phone, which many other cities of a similar size to Milton Keynes have. Importantly, there is no clear link to 'Traveline' on the main Milton Keynes transport web page. Hampshire County Council, for example, has a clear link (with logo) to Traveline[87]. Consideration should be given for distributing journey planning tools and real time information updates via 'smartphones' and personal computers.

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[86] As of May 2010
[87] http://www3.hants.gov.uk/passengertransport.htm (accessed June 2010)

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A Transport Vision and Strategy for Milton Keynes

The Local Transport Plan 3 - 2011 to 2031

Appendix B: Option Generation and Appraisal

This document has been prepared by
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Appendix B: Option Generation and Appraisal

Overview

This appendix summarises the process used for generating options, appraising the options, forming three scenarios, and further appraisal to develop the preferred scenario. The appraisal draws on objective evidence where is reasonably possible, but it is not a fully objective process. Where certain options are on the cusp being accepted or rejected, they have remained accepted for now, until it is concluded otherwise through further consultation.

Option Generation

A long-list of options was developed from the following sources:

- option generated using the consultant team's experience and knowledge in response to the key issues identified in the evidence base

- workshops with officers, local councillors of the Transport Advisory Group (TAG), and the Sustainable Transport and Road Safety Forum (STARS)

- approximately 100 questionnaire responses

- interviews and meetings with officers, neighbouring authorities, and Arriva

Option Appraisal Framework and Long-List Appraisal

A framework was developed to appraise the long-list of options against the draft transport objectives of the Transport Vision and Strategy and deliverability criteria. Options were linked to the following factors:

- key issues addressed

- geography (Borough, CMK, Older Towns, City, Rural)

- timescale for implementation (Current, Ongoing, 1-3 years, 4-5 years, 6-10 years, 11-20 years)

- lead delivery partner and key partners

- an evidence statement providing the rationale / evidence for the option using quantitative data from the evaluation of similar schemes or a supporting qualitative statement

Each option was then appraised against the seven Transport Vision and Strategy objectives and 23 associated criteria. A score between "-3" and "+3" was given against each criteria. "+3" would suggest that the option would greatly assist in the meeting of a particular criteria; "-3" would have a strong negative impact on meeting the criteria; and "0" would have no impact. A sum was then made of the number of criteria each option satisfied minus the number of criteria that were negatively impacted, and an overall objective fit assessment was made ranging from "Very Good" to "Very Poor".

The next step in the process involved appraising each objective using a five grade scale against the following deliverability criteria:

- public and political acceptability

- capital and revenue costs

- value for money

- affordability

- technical feasibility risk

An overall score was then given from "1" to "5" for each option based on the results of the objective and deliverability criteria, where "5" was the highest performing option and "1" was the poorest performing option. Options were put forward to form three scenarios or rejected based on poor performance.

Scenario Development

Once the appraisal of the long-list was complete, the list of options was still too long to for all options to be implemented. Three packages or "scenarios" were developed based on different general approaches for achieving the objectives. These were "public transport"; "smarter choices, cycling and walking"; and "highway and traffic management". The aim of this stage was to further appraise the options and to understand the overall contribution to achieving the objectives of the Transport Vision and Strategy. The relative merits of each scenario were assessed.

Scenario 1: Public Transport

The public transport scenario would be the best performing scenario of the three, but would not perform well in increasing the mode share of walking and cycling and improving walking and cycling access to employment opportunities and key services. The scenario was particularly strong on criteria relating to supporting the local economy by improving journey times and reliability within the city; providing a real transport choice and promoting sustainable travel behaviour; reducing CO_2 emissions; improving accessibility to employment opportunities, key services including health and leisure facilities. It did however lack significant positive impact on economic growth criteria relating to more strategic and sub-regional connectivity; and was weak on walking and cycling criteria, and road safety and security criteria.

Most options in the scenario would have high levels of public support, but the scenario contained many very high cost schemes, which as a scenario would not be affordable. Not all major interventions would provide high value for money. There would also be a very high level of technical risk in delivering the scenario.

Scenario 2: Smarter Choices, Cycling and Walking

The options within the smarter choices, cycling and walking scenario would also perform very well, but would not have the same strength of impact overall as the public transport scenario. Strengths include providing a real transport choice by increasing walking and cycling mode share and improving access to employment opportunities and key services including health and leisure facilities. The scenario would also support the reduction of CO_2 emissions, and would perform well in improving safety, security and health. Weaknesses would be in supporting economic growth; rural accessibility improvements; and improvements in accessibility for the elderly and people with disabilities.

The scenario would be largely acceptable by the public, would be relatively low cost (certainly in terms of capital), would provide very high value for money, and have little technical risk in delivery. The affordability of such a scenario would be in question due to current low levels of revenue funding.

Scenario 3: Highway and Traffic Management

The highway and traffic management scenario performs extremely well in supporting the economic growth of the borough; as well as improving road safety; as well as being innovative and building resilience into the network. It does however, perform most poorly of the three scenarios overall. Poor performance would occur in meeting criteria for increasing the mode share of more sustainable modes; improving non-car access for all groups to employment opportunities, key services including health and leisure facilities; reducing CO_2 emissions; and reducing the impact of transport on the natural and physical environment.

The scenario would receive mixed public support. Interventions that could be seen as "anti-car" would receive least support, but their removal would increase CO_2 emissions and reduce the impact on the natural and physical environment. The scenario included many very high cost interventions, many of which have some negative impacts against objectives and criteria, and do not necessarily provide very high value for money, nor affordability.

Preferred Scenario – Transport Strategy

A preferred scenario was developed that would perform well across all objectives and criteria, as well as being deliverable. The starting point was the public transport scenarios, removing low value for money and unaffordable option; with interventions substituted from the other scenarios:

- to improve the positive economic impact (largely from the Highway and Traffic Management Scenario);

- to increase transport choice and accessibility by walking and cycling (form the Smarter Choices, Walking and Cycling Scenario);

- to improve road safety and security (from both other scenarios); and

- to increase value for money and affordability (largely from the Smarter Choices, Walking and Cycling Scenario).

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Appendix C: Consultation on the Transport Vision and Strategy

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Appendix C: Consultation on the Transport Vision and Strategy

Overview

Public and stakeholder consultation has been an integral part of the development of the Transport Vision and Strategy for Milton Keynes. The feedback gained has been used to develop the evidence base, vision, objectives, and strategy.

Initial Stage 1 consultation has been on-going since June 2010, and wider community engagement began in September 2010 through an online and postal questionnaire, and the Stage 2 consultation will run from 12th November 2010 to 4th February 2011.

Annex A contains the Consultation Report, Comments Log and detail of the amendments that have been made to the report as a result of the consultation and meetings of the Transport Advisory Group.

Stage 1 Consultation – Initial Engagement

Stage 1 consultation sought opinion on transport problems and issues concerning Milton Keynes. It involved the following:

- Public meetings and workshops with local councillors on the Transport Advisory Group (TAG)
- A meeting with STARS – Milton Keynes' Sustainable Transport and Road Safety Forum
- Meetings and workshops with Milton Keynes Council officers
- An online questionnaire and information on the council's website
- Paper versions of questionnaires at all public libraries within Milton Keynes
- Promotion of online questionnaire through Twitter and Facebook
- Promotion of consultation opportunities in the Growing MK e-newsletter, in parish newsletters and websites across the borough
- Promotion of consultation opportunities in The Citizen and MK News

Feedback from the above activities was used to inform the development of the transport objectives and helped identify priorities.

Stage 2 Consultation – Full Public Consultation on the Draft Transport Vision and Strategy (i.e. draft Local Transport Plan)

The draft Transport Vision and Strategy was out for public consultation for twelve weeks from 12th November 2010 to 4th February 2011. Numerous meetings and exhibitions were help across the borough, and people and organisations could submit their responses via:

- In writing using one of the freepost, self-completion questionnaires located in Milton Keynes Council's Civic Offices and all borough libraries;
- In writing to Transport Policy, Milton Keynes Council, FREEPOST ANG7058, Civic Offices, 1 Saxon Gate East, Milton Keynes, MK9 3EJ

- Online at http://www.milton-keynes.gov.uk/transport-strategy, where all documents are located, by completing the online questionnaire
- By email to Transport.Strategy@milton-keynes.gov.uk
- At one of our public events – see website, press releases and posters for details
- Via your local councillor (find your local councillor here: http://www.milton-keynes.gov.uk/councillors/)

We met community groups and their representatives during the consultation period, and sent links to the document to statutory and other key stakeholders. All comments were reviewed and the draft Transport Vision and Strategy was updated accordingly, with an Implementation Plan and Performance Management Plan added. The Transport Vision and Strategy was then approved by the council's Cabinet on 22 March 2011.

Stage 2 List of Consultees

The public
Council Members
Town and Parish Councils
Parish Assembly
MK Strategic Partnership Boards
Local County Councils and Unitary Authorities
Homes and Communities Agency
Disability Group (MK Centre for Integrated Living)
Community and Voluntary Sector
Older People's Groups (Age UK, Senior Voice)
MK Youth Cabinet
Sustainable Transport and Road Safety Forum
MK Chamber of Commerce
MK Forum
MK Transport Partnership
MK City Centre Management
The Parks Trust
Primary Care Trust including NHS
Local Cycling Groups
Local Bus Operators
MK Bus users Group
MK Rail Users Group
National Express
Local Rail Operators
Network Rail
Local Community Rail Partnerships
Highways Agency Hackney Carriage and Private Hire Organisations
British Motorcyclist Federation
British Waterways
Freight Transport Association
Road Haulage Association
English Heritage
Environment Agency
Natural England
Other Council Directorates

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Transport Department

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Appendix D: Lists of Interventions

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Appendix D: Lists of Interventions

Overview

This appendix lists the interventions included within the Transport vision and Strategy by strategy strand.

Public Transport

Bus and Rapid Transit

Bo1   'MK Star' bus network
Bo2   Semi-flexible, 'dial-a-ride' style bus services covering city estates
Bo3   Bus 'hopper' service for Central Milton Keynes
Bo4   Improved interchange facilities
Bo5   Park & Ride
Bo6   Bus priority
Bo7   Rapid Transit
Bo8   Semi-flexible, 'dial-a-ride' style off-peak rural bus services
Bo9   Increased frequency for morning and evening peak services
Bo10 Promotion of long-distance bus and coach services
Bo11 Increased promotion of bus services
Bo12 Improved information provision, including improved Real Time Passenger Information (RTPI) provision at bus stops and interchanges
Bo13 Journey planning website and 'smart phone' applications for dynamic journey planning
Bo14 Integrated ticketing between operators and across modes, including smartcard ticketing
Bo15 Accessibility improvements to buses and bus infrastructure, particularly in rural areas and for people with physical and sensory impairments
Bo16 Driver Training
Bo17 Integrated transport and land use planning
Bo18 Electric and other alternative fuel buses (e.g. hydrogen fuel cell)
Bo19 Increased partnership working
Bo20 Bus Strategy Refresh

Rail

Ro1   Improved marketing of rail-bus through ticketing
Ro2   Promotion and development of the Marston Vale Community Rail Partnership
Ro3   Improved station facilities and interchange at Milton Keynes Central and Wolverton and Bletchley rail stations (see Bo6 Improved interchange facilities above)
Ro4   Increased surveillance and supervision at stations and on trains
Ro5   Increased capacity by lengthening trains
Ro6   Direct peak services between Wolverton and Bletchley
Ro7   More evenly distributed London Midland services towards Northampton and London
Ro8   Longer operating hours

Ro9   Transfer of rail freight paths on the West Coast Main Line to night time

Ro10 East West Rail and connections to major urban areas and national networks beyond, including construction of additional platforms at Bletchley and extension of a fifth track between Bletchley and Milton Keynes Central

Ro11 High Speed 2

Ro12 Direct rail services to London Luton Airport, London Heathrow Airport, ports, and the Channel Tunnel

Ro13 Station reopening feasibility study

Community Transport

CTo1 Continued provision of community transport

Taxi and Private Hire

TPo1 Improved partnership working with taxi and private hire operators and drivers, key services providers and venue managers, and the police

TPo2 Review the number and location of ranking spaces at key destinations, and signage to ranks, and implement recommendations.

TPo3 Ultra low carbon taxis and private hire cars

Home to School, Special Educational Needs and Social Services Transport

HSo1 Greater efficiency savings in provision of specialist passenger services

Cycling and Walking

CWo1   Increase promotion, education and training for cycling and walking

CWo2   Improved signage

CWo3   Online journey planner

CWo4   More direct Redway routes

CWo5   Expansion of the Redway network into Central Milton Keynes, new developments, regeneration areas and where possible the older towns

CWo6   Improved maintenance of the Redway network (and footway and backways network)

CWo7   Improve lighting on the Redway network

CWo8   Improve pedestrian and cycling access to the public transport network

CWo9   Increased levels of cycle parking at bus stops, interchanges and facilities for carrying cycles

CWo10 More cycle parking, including GearChange at key destinations including workplaces

CWo11 Improve walking and cycling links to, and facilities at, rural employment centres and key services

CWo12 MK Waterway Park and development and promotion of cycling and walking corridors

CWo13 Widening the width of the Redway network

CWo14 Cycle hire

Smarter Choices

SCo1   Workplace travel plan for Milton Keynes Council

SCo2   More effective management and enforcement of development-related travel plans

SCo3   Increased promotion of car sharing

SCo4   Increased support for car and other vehicle pooling with developers and commercial operators

SCo5   Enhancements to the broadband network

SCo6   Continued promotion of Safer Journeys to School programme including school travel planning, walking buses, and expansion of "Walk and Roll" scheme

SCo7   Increased delivery of travel awareness campaigns and promotions

SCo8   Improved partnership working

SCo9   Development of effective travel plans for all stations in Milton Keynes and other key trip generators

SCo10   Introduction of personalised travel planning

Highways and Traffic Management

HTo1   Develop a Network Management Plan

HTo2   Peak spreading of traffic through spreading school and business working hours

HTo3   Lorry Management Strategy Refresh

HTo4   Improved partnership working

HTo5   Improved signage and routing, including routing HGV traffic away from estates and rural communities where appropriate

HTo6   Promotion of more sustainable freight movement

HTo7   Adoption of the Road Safety Audit Policy and Procedures

HTo8   Road Safety Strategy Refresh

HTo9   Engineering measures to reduce the number of collisions, fatalities and injuries where appropriate and justified

HTo10   Ongoing funding for safety education, training and promotion

HTo11   Refresh of Powered Two Wheeler Strategy

HTo12   Urban Traffic Management Control (UTMC) Common Database

HTo13   New Traffic Control Centre including reciprocal data links with the Highway Agency for strategic interventions and traffic management

HTo14   Improve coordination of traffic signals

HTo15   ITS for roadside traffic alerts

HTo16   ITS for parking management e.g. Variable Message Signs (VMS)

HTo17   CCTV for traffic monitoring

HTo18   Coordinate ITS with Highways Agency for management of traffic using the M1

HTo19   Junction capacity improvements

HTo20   Dualling of the A421 from M1 Junction 13 to the Kingston Roundabout (A5130) and on to M40 in Oxfordshire

HTo21   Olney Bypass

HTo22   Bletchley Southern Bypass

HTo23   Provision for freight parking / layover

HTo24   More co-ordinated delivery / distribution of freight

HTo25   In-vehicle Dynamic Journey Planning

HTo26 Maintain easy access to the M1 Motorway

Technology

To1   Development of a multi-modal transport information website portal and smart phone application, with potential linkages to an UTMC database

To2   The promotion of electric and other alternative fuel vehicles (such as hydrogen fuel cell)

To3   Expanded electric vehicle infrastructure (e.g. parking spaces with charging points)

To4   Ultra low carbon taxis and private hire cars

To5   Coordinated and adaptable traffic signals making best use of existing fibre optic network

To6   Purchase and delivery of an Urban Traffic Management Control (UTMC) common database

To7   Coordinate ITS and Traffic Control Room operations with Highways Agency for management of traffic using M1

To8   ITS for journey time and congestion monitoring

To9   ITS for roadside traffic alerts, event and parking management (e.g. Variable Message Signing)

To10   Improved bus Real Time Passenger Information (RTPI) system

To11   Improved broadband coverage across the borough for the increased provision of home working, video conferencing, telecommunications and e-shopping

To12   Smartcard ticketing

To13   SmartGrid integration

Infrastructure Management

IMo1   Improve Asset Management System

IMo2   Improve resilience of the network to winter weather conditions

IMo3   Improve resilience of the network to flash flooding

IMo4   Better maintenance of the Redway network

IMo5   Refresh Rights of Way Improvement Plan

IMo6   Improved lighting on the Redway network

Development Planning

DPo1 Develop a Highways Design Guide

DPo2 Expansion of the grid road and Redway networks into major new developments

DPo3 Define and defend alignments for high capacity transit in new development, including infrastructure for alternative fuel and future mode technology

DPo4 Appropriate parking standards and distribution across the borough

DPo5 Improved partnership working

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Transport Department

A Draft Transport Vision and Strategy for Milton Keynes

The Local Transport Plan 3 - 2011 to 2031

Appendix E: Milton Keynes Local Transport Plan 2006-07 to 2010-11 Performance

This document has been prepared by
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Appendix E: Milton Keynes Local Transport Plan 2006-07 – 20010-11 Performance

Section 3 of the main Transport Vision and Strategy document summarises Milton Keynes Council's performance against the indicators and targets set for the Milton Keynes Local Transport Plan 2006-07 – 2010-11 (LTP2).

This appendix provides a table of LTP2 indicators, baseline figures, annual targets and monitored actual performance, with 'traffic light' highlighting, for below (red), near (amber) and above (green) target performance.

As we are just at the end of the 2010/11 financial year, it has not been possible to report end of year performance on all indicators.

TABLE E.1   MILTON KEYNES LOCAL TRANSPORT PLAN 2006-07 – 2010-11 PERFORMANCE AGAINST TARGETS

Indicator Number	Indicator Name	Definition	Target	Baseline		2006/07		2007/08		2008/09		2009/10		2010/11	
				Year	Actual	Trajectory	Actual	Trajectory	Actual	Trajectory	Actual	Trajectory	Actual	Trajectory	Actual
BVPI 99x	Road casualties	Number killed or seriously injured on all roads	113	1994-98 ave	188	143	122 (2005)	136	137 (2006)	128	90 (2007)	121	86 (2008)	113	80 (2009)
BVPI 99y	Road casualties	Number of children killed or seriously injured on all roads (3 year rolling average)	13	1994-98 ave	25	18	19 (2005)	17	14 (2006)	15	13 (2007)	14	10(2008)	13	9 (2009)
BVPI 99z	Road casualties	Number of slight casualties on all roads	965	1994-98 ave	1,072	1,008	1,205 (2005)	997	1,171 (2006)	986	1,096 (2007)	976	1,040 (2008)	965	970 (2009)
BVPI 102	Bus patronage	Number of people carried on local bus services (financial year)	11.0m (8.5m)	2003/04	6.9m	6.9m	8.3m	7.2m	9.3m	9.5m [7.7m]	8.2m	10.25m [8.1m]	8.2m	11.0m [8.5m]	
BVPI 104a	Satisfaction with local bus services	Percentage of all respondents very/fairly satisfied with local bus services excludes don't knows	70%	2003/04	38%	43%	42%	48%	42%	53%	31%	58%	40%	70%	
BVPI 187	Footway condition	Condition of footways (Detailed Visual Inspection (DVI) data)	7.2%	2003/04	22.7%	9.0%	22.0%	8.5%	8.0%	8.0%	10.0%	7.5%	15.0%	7.2%	
BVPI 223	Road condition	Condition of principal roads (SCANNER data)	7.00%	2007/08	2.00%	Not set	3.00%	Not set	2.00%	5.00%	3.0%	6.00%	2.0%	7.00%	2%est
BVPI 224a	Road condition	Condition of non-principal roads (SCANNER data)	8.00%	2007/08	10.00%	Not set	13.00%	Not set	10.00%	8.00%	8.0%	8.00%	7.0%	8.00%	7%est
BVPI 224b	Road condition	Condition of unclassified roads (Course Visual Inspection (CVI) data)	10.50%	2003/04	15.98%	10.50%	14.00%	10.50%	9.00%	10.50%	7.0%	10.50%	6.0%	10.50%	6%est

Indicator Number	Indicator Name	Definition	Target	Baseline Year	Baseline Actual	2006/07 Trajectory	2006/07 Actual	2007/08 Trajectory	2007/08 Actual	2008/09 Trajectory	2008/09 Actual	2009/10 Trajectory	2009/10 Actual	2010/11 Trajectory	2010/11 Actual
LTP1	Accessibility	Percentage of households that can access a hospital within 30 minutes by public transport	85%	2004/05	65%	Not set	Not Applicable	Not set	Not Applicable	75%	Not available	80%	Not available	85%	
LTP2	Area-wide traffic flows	Area-wide vehicle kilometres measured as million vehicle kilometres (mvkm) from National Traffic Census	1,825 mvkm	2003	1,590 mvkm	1,665 mvkm	1,609 mvkm (2006)	1,720 mvkm	1656 mvkm (2007)	1,770 mvkm	1,662 mvkm (2008)	1,800 mvkm	1,651 mvkm (2009)	1,825 mvkm	
LTP3	Cycling trips	Number of cycles parked in CMK at 10.00 am on a weekday	600	2003/04	269	300	361	350	370	420	344	510	344	600	
LTP4	Mode share of journeys to school	Percentage share of journeys to school by car (including vans & taxis but not car share)	29%	2006/07	29%	N/A	27%	29%	28%	29%	28%	29%	29% (Provisional)	29%	
LTP5	a) Overall bus punctuality - on local bus services	Bus punctuality, within up to 1 minute early and 5 minutes late	90%	2002/03	84%	84%	70%	85%	71%	86%	74%	88%	76%	90%	
	b) Overall bus punctuality - on quality bus services		95%	2003/04	77%	85%	64%	86%	71%	88%	70%	92%	78%	95%	
LTP6	Changes in peak period weekday traffic flows	Number of inbound peak period vehicles crossing the CMK cordon (0700-1000)	26,900	2003	23,500	24,500 (2006)	22,700 (2006)	25,300 (2007)	23,300	26,000 (2008)	19,300	26,500 (2009)	19,300	26,900 (2010)	
LTP7	Congestion	Average journey time during morning peak period (07.00-10.00) on 'A' roads per mile (DfT Variant 3 - Sept. to Aug.)	Not Set	Not set	Not applicable	Not set	1 minute 51 seconds	Not set	1 minute 55 seconds	Not set	1 minute 45 seconds	Not set	1 minute 49 seconds	Not set	

Indicator Number	Indicator Name	Definition	Target	Baseline Year	Baseline Actual	2006/07 Trajectory	2006/07 Actual	2007/08 Trajectory	2007/08 Actual	2008/09 Trajectory	2008/09 Actual	2009/10 Trajectory	2009/10 Actual	2010/11 Trajectory	2010/11 Actual
LTP8	Air quality	Mean annual concentration of nitrogen dioxide (NO2) at continuous monitoring sites as measured in national air quality strategy	< 40 mg/m3	2004/05	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3 except for one site, which is not relevant in terms of public exposure	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	
		Mean annual particulate matter (PM10) at continuous monitoring sites as measured in national air quality strategy	< 40 mg/m3	2004/05	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	< 40 mg/m3	
MKC1	Community Transport	Number of passengers carried	87,350	2004/05	58,235	61,150	60,462	67,550	82,942	73,950	80,703	80,350	75,463	87,350	
MKC2	Road casualties	Number of people killed or seriously injured (council roads only)	85	1994-98 ave	169	118	103 (2005)	110	113 (2006)	101	81 (2007)	93	79 (2008)	85	73 (2009)
MKC3	Bus patronage on contracted services	Number of people carried on contracted local bus services	1,069,000	2004/05	869,000	904,000	1,315,000	939,000	1,193,000	982,000	1,234,000	1,025,000	1,310,000	1,069,000	

Figures in square brackets are original LPT2 targets before stretched as part of LAA Process in 2008.

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Appendix F: Preparing Milton Keynes for New Sustainable Transport Systems

A Personal View by Professor Stephen Potter

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Appendix F: Preparing Milton Keynes for New Sustainable Transport Systems

Stephen Potter

Professor of Transport Strategy

The Open University

Milton Keynes Transport Legacy

When, in 2007, Milton Keynes celebrated its 40th birthday, our negative-oriented national media found themselves in a quandary. They would have adored a story of a 40- year old economic and social disaster, but inconveniently for them, Milton Keynes has turned out a success. MK has enjoyed amazing employment growth, investment has poured in and, on the whole, the residents of Milton Keynes are pretty happy with the place. There are inevitable downsides; certain facilities are lagging behind the growth and there are (as anywhere) some less desirable housing estates, but broadly MK has got it right. It is a modern and attractive urban environment which fulfils aspirations for good quality suburban living.

But, as we now look towards the next 40 years, Milton Keynes has some unresolved 40 year old business, which needs addressing for its success to continue. And this unresolved business is all about the relationship between transport and Milton Keynes' urban design. It is important to understand the ingrained nature of Milton Keynes' transport legacy when considering a strategic transport vision for Milton Keynes' future.

The urban design of Milton Keynes was a reaction against the high rise, high density concrete urbanism movement of the 1960s. A guiding principle was that Milton Keynes should provide its residents with 'freedom and choice' and flexibility to accommodate the massive growth in wealth and consumption expected through to the 21st century. Key to this was the aim for Milton Keynes to have a flexible urban structure that could accommodate future anticipated and unanticipated economic and social changes.

Predominant among the anticipated changes that the *Plan for Milton Keynes* addressed was the need to accommodate 'saturation' levels of car use without road congestion. So, in the 1970 Plan for Milton Keynes, consultants Llewelyn-Davies designed a town around the operational requirements of the private car, in order that people could be free to use the car as much as they chose. To facilitate maximum expected use of cars for peak hour commuting, employment and all other major traffic generating land uses were to be highly dispersed. Traffic was to be spread as evenly as possible across a non-directional grid of dual carriageway roads spaced one kilometre apart. Added to this, residential densities would need to be very low with an average of 27 persons per hectare, around half that of a normal UK city. In summary, in a Radio 4 interview, Llewelyn-Davies referred to Milton Keynes as a *'modified Los Angeles system'* - the design is basically a tidied up southern Californian urban sprawl. The end result was that every element was designed to maximise the opportunities to drive cars for all conceivable purposes.

When Milton Keynes Development Corporation published the Plan for Milton Keynes in 1970 it was widely acclaimed as setting an example for planning to follow. In practice it has provided an excellent framework, demonstrating the flexibility to adapt from the Wilson years of its birth, refocus on attracting private investment and housing in the Thatcher era,

cope with the 1980s collapse of manufacturing and exploit the 1990s service sector boom – and even come through the current recession pretty well.

But even though the Plan for Milton Keynes was designed to provide flexibility and freedom of choice, inevitably a city-scale urban design to facilitate one freedom can be at the expense of curtailing the freedom of others. Conflicts in design specifications are inevitable and transport provided the key design conflict for Milton Keynes, and one that has never been successfully resolved.

The strategic transport conflict in urban design was understood at the time the Plan for Milton Keynes was prepared. Linked to the designation of Milton Keynes was a regional study of Northampton, Buckinghamshire and Bedford by the planning consultants Jamieson and Mackay. As part of this, Jamieson and Mackay examined the urban design implications of the operations of public and private transport, and concluded that they were *'diametrically opposed'* (Jamieson and Mackay, 1967). They noted that, in order to minimise road congestion, it is best to disperse facilities and traffic flow. By contrast, public transport works best along 'corridors' of movement, with the main journey origin and destinations located along such corridors. Such a design also increases pedestrian accessibility compared to car-oriented designs. These alternative approaches broadly represent the view that you can either give the operational conditions for the private car priority, and then fit public transport, pedestrian and cyclist needs in as best can be accommodated, or that the operational needs of public transport and pedestrian access determine the urban design of a town, with car travel accommodated within this structure. Arthur Ling, the designer of Runcorn new town, showed a clear awareness of what we would now call transport's social exclusion effects:

> *"To design the town dominantly for the motor car would require the maximum expenditure on highways to cater for peak period traffic and a more extensive provision of car parking spaces at the Town Centre and in the industrial areas. In addition public transport..... would be little used and therefore it would be uneconomic to operate a frequent service. This would cause a sense of social isolation for those without the use of a car, such as children and old people and also members of the family to whom the car is not available at a particular time."*

Arthur Ling: Runcorn New Town, 1967

Ling's argument was that urban design should be used to counter the social exclusion effects of high car ownership and suggested that this would not inhibit car users, but would provide conditions in which freedom of choice between modes could be real and effective.

In contrast, Milton Keynes opted fully for the car oriented structure. What is notable is that the fundamental design problem was realised from the very beginning, but kept quite. Indeed, the official line was that the *Plan* would deliver both unrestricted, uncongested access by car and also public transport of a quality that would ensure those without a car would have no restrictions on their freedom and choice. The published plan stated that:

> *"The Corporation regards the provision of a good public transport system as a public responsibility of the highest priority"*

The Plan for Milton Keynes, Vol 1 para 133.

Thus the published plan took the much emphasised goal to achieve freedom of choice to the town's residents, and developed this into a series of transport goals:

- A high degree of accessibility amongst all activities

- Freedom of choice between private and public transport

- High quality public transport (minibuses running at a 5 minute frequency)

- Congestion free driving

- Transport that allowed for expansion and change

There was also a goal for 'safe pedestrian movement', which was not a transport goal as such, but about developing segregated networks from the roads.

In practice, as noted in Potter (1983), the land use design of Milton Keynes was so hostile for public transport operations there was no way it could support a 5 minute frequency minibus service. Furthermore, the selected design would also result in very poor access by foot and cycle. Indeed all this was known as is revealed by the The Plan's *Transport Technical Supplement (*published at the same time as the main plan), which admitted that:

> "in the light of the selected land use plan, the provision of a competitive form of public transport does not make practical sense. This consideration of maximisation of freedom of choice has therefore been discounted. .... The appropriateness of providing a public transport service beyond the minimum level necessary to transport those not in a position to travel by car is solely a matter of policy."

<div align="right">The Plan for Milton Keynes, Technical Supplement No 7, Vol 2, p.34</div>

This indirectly-phrased passage buried in a little circulated technical supplement contains the admission by the designers of Milton Keynes that its urban structure was so hostile to bus operations that it was incapable of supporting more than a minimal public transport service, falling considerably short of offering an alternative to car users.

The phrase 'solely a matter of policy', of course, is code for subsidy.

Bendixson and Platt (1992, pp 57-60) detail how a fixed route public transport system was rejected in favour of minibuses. The concept in the *Plan* was for minibuses to run along the Grid Roads with interchanges at the Grid Road junctions. As such, estate roads were designed on the assumption that they would not need to accommodate buses, with no consideration for through routes. In practice the shift from traffic light Grid Road Junctions to roundabouts pushed bus stops so far back from junctions that interchange became impossible. Bus operations therefore needed routes that did not require frequent interchange, and running into estates soon became important. Yet for over 30 years the estates were designed and their roads built on the original assumption that no buses would run on them. This further worsened the already hostile operating conditions for buses and only in the last few years has this operational design failing been addressed in the plans for the expansion areas.

Possibly in recognition that the Grid Road minibus service would not be viable, the 1970 *Plan for Milton Keynes* also contained a vague reference to the possibility of a 'dial-a-bus' service (early demand responsive services were just starting in the USA at that time).

Overall, it appears that, because the land use design fulfilled all the other development requirements, then the transport failings were accepted in the hope that these deficiencies could be resolved by a combination of a technical fix and cash. This perhaps is understandable in the context of 1970. A key premise of the *Plan for Milton Keynes* was that by the 21st century we would be so wealthy that there would be plenty of public money around. So perhaps the idea was that this sheer affluence would provide the 70% subsidy levels for innovative bus services appropriate for a low density settlement.

In practice this proved little more than a passing hope. The Development Corporation did try a Dial-a-Bus service in 1975-78, but it proved too costly to continue, and conventional bus services became the norm. In 1986 bus privatisation and deregulation rendered illegal the whole notion of a highly subsidised quality bus service. From that time, the privatised operators concentrated on minibus services running on the inappropriate estate roads, but financially all services struggled. The 2004 Bus Strategy (Milton Keynes Council 2004), summarised post privatisation changes as follows:

> *"Since reaching a peak just after bus deregulation in 1986, urban bus frequencies in Milton Keynes have declined The principal local operator has had three changes of ownership in nine years. In previous years the average age of the buses has been high, with most of them being small, difficult to access, and having a very poor image. The quality of bus services in the urban area has generally been perceived as poor. Poor service provision is largely a consequence of the low density development policy, dispersed employment areas, the grid road system, considerable free parking, high bus fares and network instability"*

Today, despite improvements in recent years, bus services in Milton Keynes remain poor for a town of its size. As well as Milton Keynes' overall design and estate road layouts being inherently hostile to public transport, it is hostile to pedestrians and cyclists as well. Walking trips are very low (below half the national average) and even with segregated footpath/cycleways and much promotion, cycling is barely at the national average. The low density and dispersed design simply makes trips too long to walk and cycle. The low density of development in Milton Keynes means that the catchment areas for local facilities are small, so only very basic services are within walking distance. The end result is that Milton Keynes has a level of car use and dependency that is more characteristic of a rural shire than an aspiring city.

Today, there is no way that anything like the urban design of Milton Keynes would be considered as remotely appropriate for current and future needs. Indeed, car-oriented urban designs such as that of Milton Keynes, far from being an exemplar, are viewed professionally as environmentally irresponsible, economically extravagant, risky and socially divisive. There is very much a return to the urban design concepts espoused by Ling and others in the 1960s that planning powers should be used to develop high density urban corridors to support high quality public transport services. In big cities this is to the level to make fixed route systems (trams and guided bus) viable; in suburban areas the aim is for densified corridors for high frequency bus services.

For Milton Keynes this throws up a dilemma. Even though transport professionals may view Milton Keynes as a transport/land use aberration that is unsustainable and socially inequitable, the fact is that in all but transport sustainability, Milton Keynes has got things right. Milton Keynes is a very liveable and economically successful place. Furthermore, the bulk of urban Britain consists of low/medium density suburbia, most of which represents an attractive and successful environment. In the rest of suburban Britain the transport sustainability dilemma is less obvious than in Milton Keynes, but it is just as real.

Added to this are changes in travel patterns. In the past commuting was always seen as the key journey around which transport infrastructure and systems were planned. But over the past 40 years, commuting has declined and is now under 20% of travel demand. Even shopping trips are in decline. The growth areas are in leisure and 'personal business' travel, and these trips are more dispersed in space and time. The pattern of modern travel is one that is shifting away from peak hours on fixed corridors to one that is dispersed across a network and spread over time.

Overall, these trends suggest there is a major problem with the promotion of a single model for transport sustainability based around high density living, traditional forms of public transport and traditional patterns of travel behaviour. This casts serious doubts on the wisdom of shoehorning all types of settlement into this model. Is there only one way for places like Milton Keynes to move towards transport sustainability? Perhaps Milton Keynes have the opportunity to really take the lead in developing a transport sustainability approach that works for a suburban area - not a poor imitation of one that is only really suitable for large high density cities (and may be failing even then).

Achieving Sustainable Transport

Milton Keynes therefore has to address two issues. Firstly we need to face up to the legacy of Milton Keynes' transport design failures, but we need also to move towards an environmentally sustainable transport system. A successful approach will support economic development, helping Milton Keynes to be resilient to oil price shocks and allowing people and businesses to adapt their travel behaviour as their needs and economic conditions change.

The scale of this challenge is documented in the *Milton Keynes Low Carbon Prospectus*, which sets out a 40 year vision of how we can move towards a low carbon city. In Milton Keynes, as in all places, achieving a low/carbon-free transport system over the next 40 years will involve a mix of:

- New vehicle fuel technologies. Milton Keynes is already on the leading edge of supporting electric vehicle (EV) development. Over the next 40 years, the NAIGT 'roadmap'(NAIGT 2009) sees Britain moving on from the first EVs to plug in hybrids and then hydrogen vehicles. This transition is ambitious and involves major costs.

- Improved fuel efficiency. Replacing petrol gas guzzlers with hydrogen guzzlers will not deliver sustainability.

- New service designs. For both public and private transport possibilities are arising for the reinvention of how we obtain mobility - car clubs, public bike and car schemes, demand responsive buses and mobility service packages.

- Travel substitution. Mobility and interaction are key to our society and economy, but new technologies permit some trips to be made electronically and new service products can facilitate trip shortening to make walk/cycle possible.

There is a growing realisation that transport in the future could involve very different ways of obtaining mobility compared to today. The future will not necessarily be the 'business as usual' plus electric cars. Low carbon cars have a different cost structure compared to petrol and diesel cars. They are more expensive to buy, battery packs are costly, but this is counterbalanced by lower running costs. This cost structure is more suited to leasing

packages than outright ownership. It is also suited to the development of new service models like public car schemes. People may not buy one or two multi-purpose vehicles, but have a 'mobility package' whereby they have a lease car, plus the availability of specialist vehicles for specific uses coupled with 'add-ons' like discounted rail or public transport passes. Much wider options are opening up to obtain car use, and the distinction between 'public' and 'private' transport could well become blurred.

Exactly how these trends and developments will work through is very unsure. In the next 40 years, transport services, costs and behaviour for a place like Milton Keynes could develop in a number of different ways as the interplay between the above factors work through. Transport futures are far more open than we have been used to, and we need to ensure that Milton Keynes has a flexible strategic approach that can respond to these trends and is suited to the nature of the city we have.

This review suggests that there is a real danger in going along the path of the 'big city' public transport. Every so often there are calls for Milton Keynes to have the 'vision' to build a monorail or invest in a city-wide tram system (and such ideas have emerged as part of the recent consultation on the *Transport Vision*). Such ideas would lock us in to a rigid 'big city' approach suitable for only a minority of transport needs. If we are looking to retain the suburban, 'liveable city' nature of Milton Keynes and for it to be able to cope with future needs, such ideas need to be dismissed. They are totally incompatible with nature of Milton Keynes and make it very difficult to develop new mobility services. Regarding monorails, outside amusement parks, monorail systems don't really exist as an urban transport system and so something bespoke, developed from scratch and built specifically for Milton Keynes, would be at an immense cost and risk. Modern tram systems would perform the same function and are available, but a system covering most of Milton Keynes would cost about £2 billion to build and in our low density city would also need a high revenue subsidy as well (possibly another £50m per annum). In the UK, even large conurbations like Liverpool and Leeds/Bradford cannot make the economic case for a tram system and in Edinburgh the disruption, delays and cost overruns in building their first tram line have been horrendous. It now seems that it is very unlikely that the UK will ever see any more new tram systems built, although there will be extensions to the existing big city systems. Monorails and trams are unattainable dreams that, even were they built, would fail to address our needs.

The approach in Milton Keynes has therefore been to seek a frequent conventional bus service, epitomised by recent work around developing the MK' Star' network and developed in the *Transport Vision* consultation document. In the last few years, progress has been made in developing better bus services and the urban design of the expansion areas are far more appropriate for bus operations. However, for existing areas, despite the concentration of development on key corridors, it is hard to envisage that conventional bus services can be improved to the degree needed to attract choice users and to have the impact needed to achieve a sustainable transport system. The improvements to bus services look set to provide a decent level of mobility for captive users, but in terms of having an effect on providing a real alternative to car use and addressing long term sustainability goals, something more radical is needed.

Transport Systems for a Sustainable Suburbia

A number of new technologies and transport service systems are now emerging, some of which are very well suited to delivering a sustainable travel in a suburban area. Some are in service while others are emerging. Key developments include:

Guided Buses

Guided buses are being introduced in a number of smaller cities and towns including Luton/Dunstable, Northampton, Cambridge and Leeds. To a large extent, guided buses offer some of the benefits of a tram system for a lower capital costs and can be compatible with our deregulated bus market. However, operationally they have the same characteristics as a tram in that they are systems that require high demand corridors to be viable. Thus they share all the same problems of working in a dispersed low density suburban situation. However there could be scope for sections of guided bus in developing a regional system (e.g. linking into the Luton/Dunstable system or a lower cost way than rail to achieve good East-West links).

Demand Responsive Transport

Demand Responsive Transport (DRT) is a system design that is far better suited to the pattern of transport demand found in places like Milton Keynes. The Dial-a-Bus that was tried in Milton Keynes in the 1970s was when DRT was at its pioneering stages. It had trouble developing in other places as well, but now there are examples of successful systems in a number of countries and in some places in the UK. Several Canadian, Dutch French and German suburban-style towns have entirely replaced their conventional bus routes by semi-scheduled Demand Responsive Transport (DRT) systems (Enoch et al 2004). For example, in Wunstorf near Hanover, the whole conventional bus service was replaced by semi-scheduled DRT services operated by a mixed fleet of 50, 25 and 8 seater buses. Patronage increased by 75%. Lintz in Austria has shared night taxis rather than night buses (far more appropriate for smaller urban settlements). In the UK niche markets have emerged, including in Bicester where there is the Chiltern share taxi link to Bicester station that has provided a popular alternative for car users. In the Netherlands shared 'Traintaxis' are available at most rail stations.

DRT can offer a high quality alternative to car users and achieve modal shift in suburban situations. This is particularly so for links to places like stations or city centres where car parking costs are high. In the USA DRT airport shuttles are common as this is a market that can take a commercial fare. DRT services can be introduced incrementally starting with the most appropriate markets. Many UK DRT services proved costly and folded because they addressed the wrong market and failed to charge an appropriate fare for the quality of service (Enoch et al 2004). There is also an issue of introducing DRT under our system of deregulated bus operations, which is so structured around conventional 1980s style of registered services that it makes innovations that are commonplace elsewhere difficult to introduce. However there are opportunities, particularly for Council-sponsored services and in partnership arrangements with operators where niche services (like at Bicester) can be developed. A station DRT would seem a good market for Milton Keynes and possibly working with employers to introduce DRT services that would serve their employee, customer and business needs.

The latter example shows where the emerging tools of Smart Choices, Travel Planning, Car Share etc actually work better with the new transport model. Milton Keynes already has good experience in working with employers to support travel choice measures and this

can be built upon to support new transport service designs. The skills from travel planning could be vital for developing new service models.

Personalised Rapid Transit

One of the Heathrow PRT pods in their maintenance depot

Personalised Rapid Transit (PRT) perhaps represents a vision of a long term low carbon public transport system that has all the characteristics needed to provide a high quality service for the dispersed travel patterns in Milton Keynes (Rogers, 2007). The first PRT system in the UK has been built at Heathrow Airport to link the car parks to Terminal 5 (ULTra PRT, 2010), and a number of systems are close to market application in several countries throughout the world. PRT is not quite available for general application in urban areas, but is not far off.

A Heathrow PRT 'pod' descending from the elevated guideway to a car park station.

PRT offers a level of service that comes close to the convenience of the private car. It uses small automated battery electric vehicles that run on separate lightweight 1.5 metre wide one-way guideways. PRT track is generally elevated as it needs to be segregated, but can drop down to ground level for the stops. In a situation such as Milton Keynes, these guideways would make up a network taking people directly between the stop where they get on to their final destination stop. The sort of service PRT provides can be thought of as akin to a driverless taxi service. The vehicles are four seater 'pods' that wait for customers at local stops. When one pod is occupied another automatically replaces it to await the next customer. The customer simply enters the destination on a keypad at the

stop and the doors open to let them into the pod, which takes them directly to their destination stop. The passenger or group of passengers have the exclusive use of the pod for that trip. It does not stop enroute at any other stop. Payment is by a cashless card system (like London's Oyster or a credit/debit card for occasional users).

The vehicles guide themselves with side lasers keeping them to the centre of the track, transponders telling the onboard computer where it is on the network and links to a network control centre that routes the pods safely through the system. As it is automated, such PRT systems offer an on-demand 24/7 all year service. People do not wait for a service to turn up, but the service is there when they arrive at a station. This is a quality of transport service that well exceeds what even a high frequency tram can offer and at much lower capital cost. This quality of service can attract car users and is viable for the dispersed trip demands found in suburban locations. It is also good at providing the same on-demand service at whatever time people wish to travel - even the 3am shift worker. For higher demand routes (e.g. between a park and ride and a city centre), 20 seater 'people mover' type vehicles could use the same track between major stops for a lower fare.

A Milton Keynes-wide system would cost about £700m to build, possibly somewhat less as there would be no land acquisition costs as it could run along grid road reserves. Although this is considerably cheaper than for a tram system, it is still a substantial sum of money. However, a key thing about PRT is that development can be staged. For example it is viable to build a small network that would connect CMK destinations to the railway station and key car parks for around £10m and then add on to this as funding became available. This is a big advantage compared to a tram system, which requires and initial investment of at least £300m. PRT requires no revenue subsidy even if bus level fares and the usual concessionary fares are provided (being driverless, a major cost is eliminated). Indeed, it is estimated that in the UK a PRT system would operate at a moderate profit. That could be used to part-fund extensions and so cut overall capital funding needs.

In the much longer term, it is possible that developments in computing systems will allow the use of smart driverless vehicles that will be able to operate on normal roads. When that happens, PRT vehicles will be able to offer a full door-to-door service, with the use of segregated track to allow the vehicles to bypass congested spots. However such developments are unlikely before around 2050.

A Strategic Vision

The purpose of this paper has been to analyse the nature of the transport problem and challenge in Milton Keynes and to show the need for a transport vision that can accommodate the technical and service development opportunities that are beginning to emerge and could become significant sooner rather than later. The transport situation in Milton Keynes seems to produce one of four reactions:

- Denial – pretend we are still in a 1970s world and ignore environmental and transport realities

- Second-Best – try to get conventional buses to work

- Unattainable Dreams – expensive fixed track public transport systems inappropriate for Milton Keynes

- Stepping-stones Towards a Vision – innovate in fundable stages that keep options open

There is a danger of locking ourselves into the transport systems of today and yesterday rather than new systems and services that have the potential to be so appropriate to our needs. What is important is that it is possible to put in place steps that help develop a longer term path to a real revolution in transport quality in a flexible way, being able to adapt as development and funding opportunities arise. An incremental route might involve:

- First introduce DRT for appropriate markets; once running, it could spread with bus companies adopting it commercially. This is entirely compatible with developing conventional bus services as well.

- Introduce a starter PRT network in CMK

- Possibly incrementally develop a regional busway network

- PRT guideway extended to key destinations with DRT and ordinary bus services as feeders.

- By 2050 PRT using autonomous vehicles running on ordinary roads may well be possible – so extending service off the guideways into new areas.

The changing transport landscape could work through in many different ways. Some developments will not emerge for decades, but some may be remarkably sudden - so we need flexible approaches that can adapt to change and opportunities.

It is important to have a transport visions strategy that explores and develops stepping stone developments, whilst keeping wider options open on the path to an equitable carbon-free transport system.

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