
**Manchester City Council
Report for Information**

Report to: Neighbourhoods and Environment Scrutiny Committee – 6
December 2017

Subject: Transport and Carbon Emissions

Report of: Strategic Director, Highways, Transportation and Engineering

Summary

This report considers the policy context for carbon emissions from transport and the actions taking place to reduce these emission. Significant investment in transport infrastructure has taken place to support carbon reductions, which will be an important component of the citywide reductions necessary to achieve a zero-carbon city by 2050.

The report also identifies some of the uncertainties associated with forecasts to reduce these emissions.

Recommendations

Members are asked to consider and comment on the information in the report.

Wards Affected: All

Contact Officers:

Richard Elliott
Head of Policy, Partnerships & Research
& Research
0161 219 6494
r.elliott@manchester.gov.uk

Kim Dorrington
Strategic Director of Highways,
Transport and Engineering.
0161 234 4828
k.dorrington@manchester.gov.uk

Andrew Parkin
Principal Policy Officer
Policy, Partnerships & Research
0161 234 4681
a.parkin@manchester.gov.uk

Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

Manchester Climate Change Strategy 2017-50
Manchester Climate Change Strategy Implementation Plan 2017-22
<http://www.manchesterclimate.com/plan>

Manchester Local Plan
http://www.manchester.gov.uk/info/200074/planning/6572/local_plan_-_new

Draft Greater Manchester Spatial Framework
https://www.greatermanchester-ca.gov.uk/downloads/20018/greater_manchester_spatial_framework

Greater Manchester Local Transport Plan, including the GM 2040 Strategy
<https://www.tfgm.com/2040>

TfGM Low Emission Strategy and Air Quality Action Plan
https://www.greatermanchester-ca.gov.uk/homepage/131/greater_manchester_low-emission_strategy_and_air_quality_action_plan

Economy Scrutiny Committee October 11th 2017 – Evidence of Impacts of Recent Transport Investments
http://www.manchester.gov.uk/meetings/meeting/3075/economy_scrutiny_committee

Manchester: A Certain Future Strategic Report 2010-2017
http://www.manchesterclimate.com/sites/default/files/2017%20MACF_Annual-Report.pdf

1.0 Introduction

At the Neighbourhoods and Environment Scrutiny Committee meeting that was held on the 19th July 2017, it was resolved that a report be submitted for consideration at a future meeting of the Committee regarding transport and carbon emissions.

2.0 Policy context

2.1 There are a number of strategies that provide a policy framework for the delivery of carbon reductions in Manchester. In particular, the Our Manchester Strategy 2016-25 includes a number of commitments which will help to reduce carbon emissions and a number of these relate to the city's transport system. "We will" statements under a Liveable and Low Carbon City, and A Connected City including:

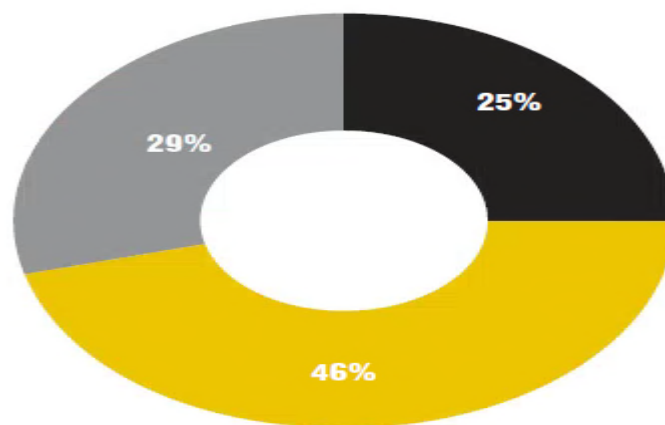
- *We'll encourage walking, cycling and public transport with more investment in the infrastructure needed.*
- *We will have more volunteering and by 2050 we will be a one hundred percent clean-energy city, encouraging a low-carbon culture, with our communities are protected from a changing climate.*
- *An integrated, smart, clean transport network will reflect the city's changing shape and the way people move around.*
- *We'll have more cycling and walking, with the improved infrastructure and signage needed.*
- *The city will be at the centre of first class networks – locally, regionally, nationally and internationally.*
- *The momentum created by high-speed rail network 'HS2' developments will drive growth and investment, and work as part of Transport for the North on long term investment to radically improve transport connections across the North.*
- *We'll create a framework for action as a 'digital city' and use digital technology to transform how we live in the city – looking, for example, at how it could reduce energy bills and carbon emissions.*

2.2 The Council's Local Plan, the main document of which is the Core Strategy guides the scale, form and spatial pattern of new development in the City and the emerging GMSF, which will provide a strategic context for, and is expected to become part of, the Local Plan; The Local Transport Plan, including the long-term GM 2040 Transport Strategy, with the five-yearly delivery plans sets out future transport investment, and the 2016 Greater Manchester Low Emission Strategy / Air Quality Action Plan, deals specifically with carbon emissions from transport, as well as air pollutants.

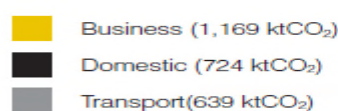
2.3 The spatial pattern of new development - where people live, work, shop, and spend recreational time – will affect how far people have to travel, and how integrated with public transport and active transport networks their homes and workplaces are. New development will also need to relate to existing developments within the city so that transport infrastructure, particularly walking, cycling and public transport infrastructure, can serve new and

existing developments and better connect them within the fabric of the city. The Greater Manchester Spatial Framework (GMSF) and the Council's Local Plan will guide the future pattern of development within the city, and along with new Transport Infrastructure in the Local Transport Plan will provide a policy framework to facilitate future growth. By reducing the need to travel, and by providing low carbon transport infrastructure, it should be possible to further reduce carbon emissions from transport in the city over time.

- 2.4 The Manchester Climate Change Strategy (MCCS) 2017-50 was launched in December 2016 by the Manchester Climate Change Agency and responds to the results of the 'Our Manchester' public consultation¹, and the 2015 United Nations Framework Convention on Climate Change ('the Paris Agreement')². It replaces the 2010-20 Climate Strategy, which has successfully delivered a broad range of activities. However, despite good progress in some areas the earlier strategy has not delivered the scale of change necessary.



Manchester's Scope 1 and 2 CO₂ emissions (2015 estimated)



- 2.5 The MCCS Vision for 2050 is:

Manchester is playing its full part in limiting the impacts of climate change, locally and globally. It is a thriving, zero carbon, zero waste, climate resilient city where all our residents, public, private and third sector organisations are actively contributing to and benefiting from the city's success.

¹ Over 700 people and organisations responded to the strategy's public consultation during July to October 2016. 97% of respondents believe it is important for Manchester to take action on climate change. 85% of respondents felt that the commitment to become zero carbon by 2050 is the right target for the city.

² The core objective of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise in the 21st century well below 2 degrees Celsius above pre-industrial levels, as well as pursuing efforts to limit the temperature increase even further to 1.5 degrees Celsius.

We compete and collaborate with cities around the world, ensuring that our collective efforts have limited global average temperature increases to well below 2 degrees Celsius, hopefully to 1.5 degrees Celsius relative to pre-industrial levels.

It will be achieved through the delivery of a number of broad Objectives, Enabling actions and Thematic actions. Many of these actions are cross-cutting and mutually reinforcing, and will be supported by more specific tasks to be undertaken over five year time periods up to 2050 and detailed in the MCCS Implementation Plans. All stakeholders in the city will have a role to play in delivering the MCCS, including businesses, residents, community groups, the Council and others. In addition to concerted action within Manchester, supportive Greater Manchester Combined Authority (GMCA) and UK Government policies will also be required.

2.6 The document sets out a vision for 2050 including the following elements:

- New green routes for cycling, walking and running will be created ;
- Digital communication technologies, new working arrangements, and well-planned and located new developments will reduce the need to travel.
- A reliable, affordable, and integrated public transport system will be the mode of choice for those not travelling on foot or bike. Private journeys will be via hydrogen or electric vehicles, in many cases using shared cars from neighbourhood car-sharing schemes, reducing the need for and expense of personal car ownership.
- Manchester Airport will continue to be a major hub for incoming and outgoing movements of people and goods, at the heart of the Northern Powerhouse. Emissions will be managed as part of an international aviation emissions scheme, to be developed within the framework of the Paris Agreement. In the meantime, the city and wider aviation industry will continue to benefit from world-class expertise at Manchester Metropolitan University's Centre for Aviation Transport and the Environment, including through planned work to look at options for preparing Manchester Airport and the city for the introduction of an international agreement on aviation emissions.
- Our existing and new transport infrastructure will be designed to ensure it can withstand high rainfall and temperatures, to prevent the disruption that could otherwise come from flooding and heat stress. Trams and buses will be designed to ensure that passengers can travel in comfort during periods of high temperatures.

2.7 The 2017–2022 MCCS Implementation Plan sets out the Enabling actions and Thematic actions to be delivered over the five-year period consistent with the overall MCCS 2017-2050. In terms of actions with direct transport implications, the Enabling actions EA10 and EA11 are worth noting:

- **EA10** Develop a framework of clear policies and guidance to support and enable the city's development partners to deliver technically and

commercially viable low carbon, climate resilient developments and infrastructure, consistent with Manchester's climate change objectives.

- **EA11** Work to influence the development of the Greater Manchester Spatial Framework so that it will support the delivery of Manchester's climate change objectives.

- 2.8 The current Greater Manchester Climate Change Strategy covers the period 2011-20 and sets out a CO2 reduction target of 48% by 2020, relative to 1990 levels. (Manchester's target by 2020 is consistent with this, a 41% reduction against a 2005 baseline.)
- 2.9 Work is currently underway to develop a refreshed GM climate change commitment, as set out in the GM Mayor's manifesto, for the city region to become carbon neutral by a date that is consistent with the Paris Agreement on Climate Change. The culmination of this work and the associated public consultation activities will be the GM Green City Summit on 21st March 2018. As previously announced publicly it is expected that the carbon neutral date will be set between 2030 and 2040.
- 2.10 There are likely to be differences in scope and definition between Manchester's 'zero carbon' commitment and GM's 'carbon neutral' goal. Further work will be needed to understand these differences and if and how Manchester's Climate Change Strategy may need to be refreshed to align with the forthcoming GM commitment. Another key consideration is the GM timescale. Again, to be subject to further work, Manchester will need to consider how the city wishes to align itself with the GM target.
- 2.11 As with previous Manchester policy development on climate change, this work will be undertaken in line with the Our Manchester approach, to ensure it is built on the latest views of the city's residents and organisations, and the latest policy and evidence on climate change. This work will be facilitated by the Manchester Climate Change Board (previously Manchester: A Certain Future Steering Group) and the Manchester Climate Change, working with the involvement of partners and stakeholders across the city
- 2.12 In addition to the work which is taking place to reduce carbon reductions and tackle climate change, there is a range of activity that is also addressed at improving air quality in the city. This is captured in the Air Quality Action Plan and Low Emissions Strategy referenced above. Often the activity directed at improving air quality improvement also achieves carbon reduction objectives and as the City Council works with the other Greater Manchester Authorities to further refine air quality improvement plans it will be important to ensure that the approaches are consistent. The Alignment between all relevant strategies will therefore be key to delivering long-term reductions in carbon emissions, whilst at the same time, providing new homes, jobs, shops and services, natural open spaces and other recreational facilities, together with the means to access them in a sustainable manner, that a growing population needs.

3.0 Recent Transport Investment

- 3.1 Manchester has benefited from considerable investment in its public transport infrastructure in recent years, given its position as the main hub of Greater Manchester, and a key location within the north and the UK as a whole. Further investment is planned over coming years to reinforce this investment and to continue to modernise and increase the capacity of its transport networks across different modes. These investments have had an impact in providing travellers with improved alternatives to travel by private car

Metrolink

- 3.2 Key projects that have been completed over the last year include the Second City Crossing that has added much needed extra capacity and resilience to the network across Greater Manchester. This followed the completion of lines to Ashton via East Manchester, to Oldham and Rochdale, to East Didsbury and to Manchester Airport via Wythenshawe. A further extension to the Trafford Centre via Trafford Park is currently under construction and is scheduled for completion in the winter of 2020/21.

Bus

- 3.2 The completion of the Cross City Bus scheme has provided a package of bus priority facilities linking the new Guided Busway to Leigh with the corridors along Rochdale Road to Middleton and Rochdale in the north and the Oxford Road Corridor in the South. The scheme has been designed to make bus travel across the city easier and more attractive by reducing journey times for bus passengers and improving overall levels of reliability and resilience. This has been accompanied by a package of traffic management measures in the core of the City Centre and along the Oxford Road corridor. The measures have included limiting access for general traffic to parts of some city centre streets including Portland Street, Princess Street and Oxford Road through the creation of 'bus gates', through which access is limited to buses and taxis. The introduction of these measures is consistent with the long term approach which sought to encourage traffic which is travelling from one side of the city centre to the other to use the Inner Ring Road, rather than traveling through the centre, while at the same time enabling those people who need to drive into the centre for work, shopping, leisure or other purposes to continue to do so.

Rail

- 3.3 The Ordsall Chord was officially completed last month, with the first passenger trains to use it in December 2017. This is the first key element of a wider package of measures designed to increase the connectivity and capacity of the rail network in central Manchester and Salford through the creation of a direct link between Victoria, Oxford Road and Piccadilly Stations, via a new bridge over the River Irwell. Further elements of the overall package, including additional platforms at Piccadilly Station and

capacity improvements at Oxford Road have been the subject of a public inquiry, the result of which is still awaited. Further major investment across the north of England is planned and is being taken forward by Transport for the North.

Cycling, Walking

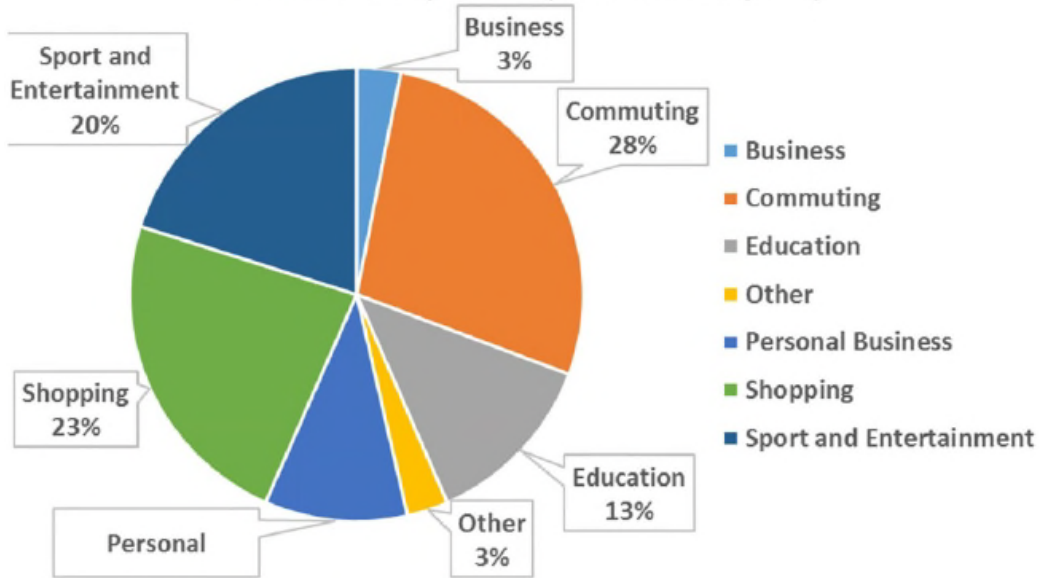
- 3.4 The Oxford Road corridor scheme is a comprehensive package of measures designed to increase the attractiveness of bus travel, make significant improvements to conditions for cyclists and improve public realm along the corridor to encourage walking. Segregated cycle lanes have been provided with “Dutch Style” bus stop bypasses at a number of locations. ‘Bus gates’ have also been introduced during the day to restrict through traffic. The Oxford Road scheme links to the Wilmslow Road cycle scheme which provides a continuous element of cycle way from the city centre to Didsbury in the South. It was recently announced that 1 million cycle trips have been made on the new cycleway since it opened.
- 3.5 A scheme to improve the appearance and functionality of a key stretch of Great Ancoats Street, particularly to improve pedestrian connectivity across the road, and linking the developments to the northeast of the Inner Ring Road with the core of the City Centre to the southwest is progressing and is expected to be completed within the next few years. This will help to ensure that the residents of new housing developments see walking as a genuine travel choice, minimising the need to travel by private car. This will be linked to measures to further improve pedestrian facilities in the heart of the City Centre.

4.0 City Centre journeys and Carbon implications

- 4.1 Figure 1 (below), taken from the Economy Scrutiny Committee Report of 11th October 2017, *Evidence of the Impacts of Recent Transport Investments*, provides data from the Greater Manchester Travel Diary (GMTRADS) Survey to estimate the journey purpose and mode share splits for trips with a trip - attraction end in the city centre. It is estimated that a total of around 260,000 daily trips currently have a trip - attraction end in the city centre. The chart shows the wide range of purposes for which people access the city centre. It is important to recognise that these purposes vary throughout the day and week.

Figure 1

Journey purpose share of trips with a trip-attraction end within the city centre (TfGM TRADS yr3-5)



Commuting remains the most important purpose for journeys, but shopping, sport and entertainment and education are also significant.

4.2 The City Centre economy is continuing to grow and with it the number of people travelling into the City Centre to work. Again, as detailed in the Economy Scrutiny Committee Report of 11th October 2017, since 2010/11 the number of journeys into the City Centre during the morning peak has been growing, and this trend is forecast to continue, as Figure 3 (below) illustrates:

Figure 2



- 4.3 The actual number of journeys into the City Centre undertaken by car during the morning peak is forecast to stay roughly the same up to 2040, however, as a proportion of all journeys made this is declining, and is expected to have almost halved from 30% in 2010/11 to 16% in 2040. The number of journeys into the City Centre undertaken by bus during the morning is forecast to increase, although as a proportion of all journeys this is also forecast to decrease although only slightly, from 25% in 2010/11 to 22% in 2040. By contrast, the number of inward journeys by rail, metrolink and cycling during the morning peak are all forecast to increase in both real and proportionate terms between 2010/11 and 2040; the number of journeys undertaken by walking is forecast to increase considerably between 2010/11-2040, although remain at 11% of all journeys made.
- 4.4 The key changes to the city, in terms of jobs, economic growth and a dramatic increase in vibrancy, have only been possible because of the improvements made to transport infrastructure and through a policy to support modal shift. If car journeys had not reduced as a proportion of overall trips since 2006, there would currently be 12,500 more cars entering the City Centre each morning.
- 4.5 Walking and cycling journeys produce zero carbon emissions, although there is some embedded carbon in cycle manufacture and maintenance; new or improved walking and cycling infrastructure, together with a greater co-location of homes, shops, workplaces, parks and recreation facilities and service centres through new development, should help promote these transport modes further in the future.
- 4.6 Metrolink and electric rail have embedded carbon in the manufacture of vehicles and some emissions from the electricity used to power them and the associated infrastructure, which is drawn from the national grid; as the generating composition of the grid changes over time with an increase in renewables and the phasing out of coal and eventually gas, then the emissions profile will also change. Diesel trains, and diesel and petrol buses, vans, cars and other road vehicles contain embedded carbon in their manufacture and in their use, although fuel efficiency has improved over time. As the composition of these vehicle fleets changes, through the uptake of electric vehicles and the roll-out of electric vehicle charging points, the carbon emissions will also change, making the sources of electricity generation, including from more localised decentralised systems, or even domestic scale battery storage devices, increasingly important in tackling climate change from transport. For this reason, whilst the forecast numbers and proportions of journeys referred to in paragraph 4.2 (above) is broadly helpful in understanding how transport mode popularity is expected to change over time, it isn't practical at present to quantify what the impact on carbon emissions might be as a result – there are just too many uncertainties at the present time.
- 4.7 Figure 3 (below) is taken from the Manchester: A Certain Future (MACF) 2017 strategic report, and shows that Transport emissions are falling since

2005, as cycling and public transport journeys into the city centre are increasing.

Figure 3

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
Indicator: Transport CO₂ emissions (Kilotonnes)											
775	755	760	728	711	694	686	675	660	667	675	667
Indicator: Cycling levels**											
n/a	n/a	n/a	n/a	13.4	15.6	16.9	16.3	23	19.2	18.2	Available July 2017
Indicator: Modal share of non-car trips into the key centre (Manchester)***											
n/a	n/a	n/a	n/a	69.7%	69.4%	70.2%	71.7%	72.7%	73.2%	74%	76%

*2005-2015 figures from BEIS. 2016 figures are estimated based on national trend in CO₂ figures in BEIS data.

**Refers to kilometres cycled on A and B roads in Manchester.

***Morning peak figures (07:30am – 09:30am) figures for Manchester regional centre

4.8 Aircraft carbon emissions are another complicated area, given the issues with apportioning emissions between origin and destination. Manchester Airport will continue to be a major hub for incoming and outgoing movements of people and goods, with aviation emissions managed as part of an international aviation emissions scheme, to be developed within the framework of the Paris Agreement. Since 2012, aviation emissions for internal flights within the European Economic Area have been included in the EU Emissions Trading Scheme, which seeks to create a market for carbon emissions and thereby encourage actions to reduce them. Globally, the International Civil Aviation Organisation (ICAO) is developing a carbon offsetting and reduction scheme, which aims to stabilise aviation emissions at 2020 levels by requiring airlines to offset emissions above this level from this time onwards.

5.0 Conclusion

5.1 The city has recently seen major investment in elements of its public transport infrastructure. This investment has been part of a consistent strategy to support the growth of the city's economy and to improve the connections between the places where people live and where they work, shop and spend their leisure time, whilst contributing to carbon reductions with the aim of making Manchester a zero-carbon city by 2050.

5.2 Manchester's population continues to grow alongside its economy. Reducing carbon emissions whilst facilitating this growth is challenging, but progress continues to be made. Change in transport modes people choose to use, including an increase in walking and cycling infrastructure, together with a change in the spatial pattern of growth for the city and wider region, should position the city well as it progresses towards zero-carbon status. However, despite the progress that has and continues to be made, it is unlikely that the objective of a 41% reduction in carbon emissions from a 2005 baseline by 2020, will be achieved; the current estimate for transport is that there will be

a 24% reduction in emissions from a 2005 baseline by 2020³. The Paris Agreement requires even greater ambition to keep global average temperature rises well below 2 degrees celsius above pre-industrial levels, making this work even more challenging.

- 5.3 Manchester and Greater Manchester continue to make significant investment into transport infrastructure and encouraging sustainable transport modes, and by carefully planning future developments and the infrastructure needed to support them, progress towards a low carbon future will continue to be made. However, it is important to recognise that achieving a zero – carbon city by 2050, and making a full contribution to delivering the Paris Agreement, will require the ‘culture–change’ referenced in the MCCS, not just within Manchester or Greater Manchester but across Government and will require all those who live, work, visit or do business in the city to play their part.

³ MANCHESTER: A CERTAIN FUTURE | STRATEGIC REPORT 2010-2017