

## Chapter 6: A connected city

### Strategic overview

For a city to be successful it needs to be well connected – internationally, nationally and locally. The level of connectivity of a city is determined by its capacity to connect people with each other, as well as to goods, services and places. Historically, people needed to be in the same place to connect, but modern technology is increasingly enabling these connections to happen virtually. This chapter considers physical connectivity brought about by transport, but also digital connectivity.

Connections are necessary so that people can access work opportunities, education and services, and so that businesses can access markets and their customers. Connectivity is not an end in itself, but a means to an end, underpinning all the other objectives contained in this Report. It is only through excellent connectivity that the economy can continue to grow, educational standards can increase, and the city can become more equitable and liveable.

To enable Manchester to compete on the world stage, it needs connections that are more effective and efficient in comparison to other cities. To fulfil its potential, it needs the capacity of the connections to not be a restriction on development and progress. To increase its competitiveness it needs to be able to increase the capacity of these technological and physical connections. A key challenge for Manchester and the wider region is how to continue to grow the city centre and the Airport as economic and cultural hubs.

This chapter sets out the present status of Manchester's level of connectivity, but also seeks to assess the direction of travel by reviewing the preceding years from 2015 to 2019. In relation to connectivity, the speed of change is often gradual, and so the measures throughout the chapter are included over a longer period to provide a better feel for the underlying trends.

The chapter takes account of the Greater Manchester 2040 Transport Strategy and is structured around the relevant themes contained in the Our Manchester Strategy, creating a city that is:

- **Connected** – considering connectivity by mode of travel and by virtual links
- **Integrated** – using connections between these modes to enable door-to-door journeys
- **Sustainable and thriving** – how demand is met and managed, and how technological opportunities are exploited to ensure that carbon emissions are reduced while enabling the city to grow
- **A place to live and innovate** – how people are put at the centre of the ways we manage, maintain and develop our streets, and how we accommodate and support innovation.

The COVID-19 pandemic has forced society into making immediate and drastic adaptations to the way people live. These changes have had the biggest impact in cities, where everyday activities are only possible because of the connectivity described above and the proximity of large numbers of people to each other, and the connections they make.

While in the long term, society may return to something broadly similar to the pre-COVID world, there is likely to be a lengthy 'interregnum' in which strict lockdown measures have been lifted but 'normal' is no longer possible. During this period, any form of recovery will depend on three things: how we manage to make public transport safe to use so that people can remain connected to the economic and cultural life of the city; how we enable people to move around safely on foot and by bicycle; and how we all connect remotely through digital technology.

Manchester has already joined the growing list of cities around the world to have accelerated plans to make their city centres more human-centred and less reliant on the use of private motor vehicles. We have closed part of Deansgate, Stevenson Square and Ducie Street to cars, and widened pavements on Whitworth Street on an experimental basis at

first. We have widened pavements to aid social distancing in our district centres at Cheetham Hill, Chorlton, Rusholme, Withington and Openshaw. These physical adaptations of our built environment have been brought forward on an accelerated timescale, but are very much seen as a blueprint for how to enable connectivity in a more sustainable, zero-carbon, people-friendly way.

## Analysis of progress

Having effective connectivity locally, nationally and internationally makes cities far more attractive places for people to live and for businesses to invest, leading to the creation of better-quality jobs. Manchester already benefits from strong connections, but is continuing to make improvements through major investment in infrastructure. It is essential that Manchester has world-class connections to realise the city's ambitions for economic growth and prosperity.

Working collaboratively with Transport for Greater Manchester (TfGM), we are taking a strategic approach to planning our city's transport network. In 2016, residents and businesses were consulted on the **Greater Manchester 2040 Transport Strategy**, which was adopted in 2017. We are continuing this

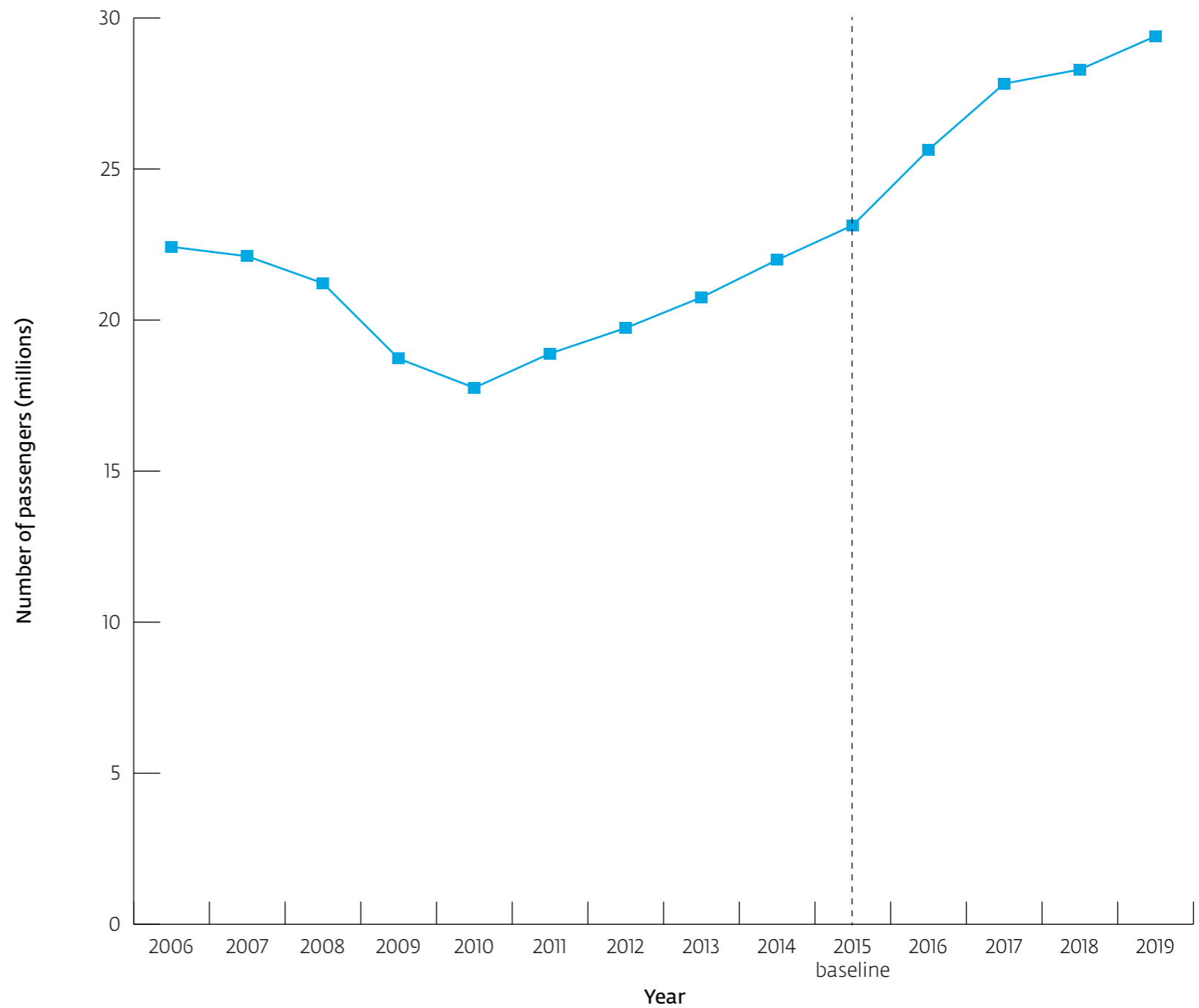
strategic approach with the development of a refreshed City Centre Transport Strategy, which is currently under review and due to be published in 2020/21.

## Connections by air Manchester Airport

Manchester Airport provides national and international connectivity and is the only two-runway airport outside the south east of England. It is the third-busiest airport in the UK in terms of passenger numbers and is the busiest outside of the two major London airports. Figure 6.1 shows that passenger numbers at Manchester Airport are continuing to grow, with a rise of 6.3million passengers since 2015, increasing to 29.4million passengers in 2019. Air traffic has been severely impacted by the COVID-19 pandemic, which has significantly reduced passenger numbers since March 2020. Monthly passenger figures from Manchester Airports Group reported reductions of 99% in April 2020, 99.3% in May 2020 and 98.6% in June 2020 compared to the same periods in 2019. These figures are a reflection of world trends.

The Airport is currently undergoing a £1billion transformation programme, which is due to be completed in 2024. This work will significantly increase the size of Terminal 2, and also involve other improvement and enhancement work, maximising the capacity of the Airport to be able to carry 55million passengers a year. The first phase of work, the extension to Terminal 2, is due to open later in 2020.

**Figure 6.1:**  
Number of passengers travelling through Manchester Airport



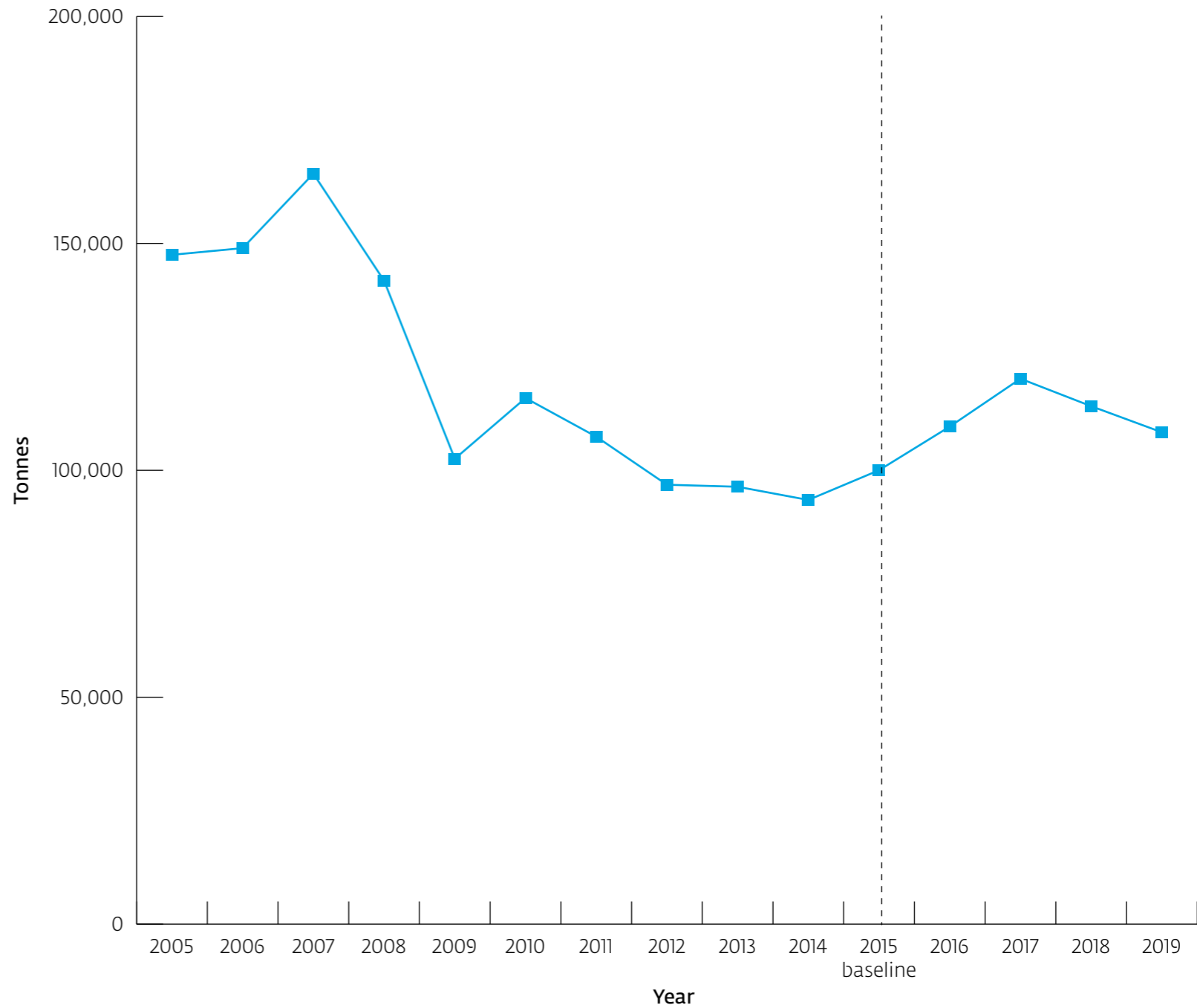
Source: Civil Aviation Authority © Crown Copyright 2020

**Air freight**

The World Freight Terminal located at Manchester Airport includes a dedicated cargo freight facility providing a base for approximately fifty freight-forwarding firms. Freight cargo can pass through the terminal in either freight-only flights or as cargo transported in the holds of passenger aircraft. The largest freight markets are North America, the Middle East and the Far East, with imports representing 55%–60% of the cargo volume.

Figure 6.2 shows that a significant decline in freight tonnage was experienced between 2007 and 2009. This was mainly as a result of the global recession and a spike in oil prices. Following the recession, the industry has shown signs of recovery and ongoing stability. The COVID-19 pandemic has significantly impacted on freight movements since March 2020, although reductions have not been as significant as passenger numbers. Monthly cargo tonnage figures from Manchester Airports Group reported reductions of 88.8% in April 2020, 85.9% in May 2020 and 80.3% in June 2020 compared to the same periods in 2019.

**Figure 6.2:**  
Amount of freight through Manchester Airport



Source: Civil Aviation Authority © Crown Copyright 2020

## Connections by rail

**HS2:** Work to develop the second phase of the High Speed 2 (HS2) rail line, connecting Manchester and the Airport with Birmingham and London, was approved by the Government in November 2016. The route will approach Manchester through a ten-mile tunnel, emerging at Ardwick, where the line will continue to its terminus at Manchester Piccadilly. It is planned that a major new station will be constructed at Manchester Piccadilly, supporting the regeneration of the surrounding area. A further station is planned to serve Manchester Airport. Prior to starting construction, a bill needs to be passed through Parliament placing in statute the necessary powers to construct and operate this second phase of HS2. It will be submitted to the Government in 2020. Construction is due to start on the leg to Manchester in 2033 and the scheme is expected to be completed in late 2038.

**Northern Powerhouse Rail (NPR):** Plans for high-speed rail links connecting Manchester to the other cities of the North of England are being developed by Transport for the North (TfN) – the UK’s first statutory subnational transport body. Formed in 2018, its role is to make the case for strategic transport improvements across the North of England in order to improve connectivity and drive economic growth.

TfN is driving forward NPR, which is a major strategic rail programme to transform the connectivity between the key economic centres in the North of England, including Manchester. The Strategic Outline Business Case for the programme to increase capacity, speed and resilience received agreement from the TfN board in February 2019, and represents an overall investment of £39 billion. It is hoped that this programme will be delivered over the next 30 years, subject to funding.

**Northern Hub:** The proposed improvements to rail capacity at Piccadilly and Oxford Road Stations, along with the Ordsall Chord, were key projects for improving rail connectivity in the North of England. To date, only the Ordsall Chord has been delivered. A decision is awaited from the Secretary of State for Transport in relation to the scheme, which would add two additional through platforms at Piccadilly Station and lengthen the platforms at Oxford Road. The additional rail capacity that this scheme would deliver remains vital for Manchester and the wider region.

**Williams Rail Review:** The Williams Rail Review was established in September 2018 to look at the structure of the whole rail industry and the way passenger rail services are delivered. The review’s findings are yet to be published,

but are intended to inform a Government White Paper on rail, followed by reforms, which could include an end to the franchising system established under privatisation.

On 29 January 2020, the Northern Rail franchise was stripped from its operator, Arriva Rail North. On a temporary and indefinite basis, services have been operated since 1 March 2020 by Northern Trains Ltd, a subsidiary of the Department for Transport’s Operator of Last Resort, a public sector company that reports directly to the Government. The Secretary of State for Transport has tasked the new operator with producing a detailed, top-to-bottom review of everything needed to improve its services. A review of the Castlefield Corridor is ongoing, including the Northern Hub project to relieve capacity pressures. The results of this, as well as the wider Williams Review and subsequent White Paper, are still awaited, and will have key implications for travel across the city and region.

## Highway connections

The strategic and key route road networks are essential to the economy of the city and wider region, and support the movement of people and freight locally and across the country.

### Strategic road network

An efficiently operating M60 is important to Manchester, as it not only distributes traffic throughout the city, but also provides a means of travelling around rather than through Manchester for longer journeys. The M60 supports local travel within Greater Manchester, national travel between Merseyside and Yorkshire, as well as international freight routes from the region's ports and airports. In 2018, work to improve the operation of the M60 was made by creating a section of smart motorway between junction 8 of the M60 to junction 20 of the M62. This was the first scheme of its kind in north west England. Smart motorways allow active traffic management by using variable speed limits. This makes the motorway a more attractive option to less suitable routes through our urban centres.

Further improvements to the region's major roads are being actively considered by the Department for Transport, Highways England, and Transport for the North. The M56 between junctions 6 and 8 are to be made into a smart motorway; work is due to commence in 2020 and completion is expected in 2022. Capacity improvement proposals are also being considered for the north west quadrant of the M60. These look at potential improvements to both the road network and public transport in

order to provide better options for local and long-distance trips. Further design, analysis and environmental assessment of the potential improvements for the strategic road network is currently being carried out, following a request from the Department for Transport. Once this work is completed, it is hoped there will be a decision for its commencement later in 2020.

The Transpennine Upgrade Project is looking at improving connectivity between Manchester and Sheffield. This particular journey has the worst per-mile journey time between any pair of UK cities, with particular issues of congestion and community severance. This project is looking at a package of improvement measures to improve traffic flows and journey times. Work is due to commence in the winter of 2021/22 with an opening date of 2024/25.

### Key route network

Within Manchester, the Manchester and Salford Inner Relief Road (MSIRR) is vital for distributing traffic around the city centre, and significant investment is now planned to improve this route. Improving this route will result in less traffic diverting from the key route network onto less suitable routes. The improvements completed last year at Regent Road and Water Street are improving orbital movements around the MSIRR, reducing the amount of traffic

through the city centre and other parallel routes, enabling further improvements to be made in and around the city centre.

Improvements are also underway on the MSIRR along Great Ancoats Street and at the junction of the Mancunian Way and Princess Parkway. The total investment is in the region of £30million, and will not only improve the flow of traffic around the MSIRR, but also improve access across the MSIRR into the city centre for cyclists and pedestrians. As the city centre expands, these links across the MSIRR will enable the city centre to grow and thrive.

There is limited scope to increase the extent of the highway; however, work is underway to improve the facilities for pedestrians and cyclists across the network. Manchester has secured programme entry for more than £79million of projects in the Mayor's Challenge Fund (MCF) programme. This programme will deliver improvements to the highway network to make it easier and more attractive for people to take shorter journeys on foot or by bike. Investment in active travel modes helps to promote healthier lifestyles, can reduce pollution and carbon emissions, offers the potential to increase the capacity of our finite highway network, and can free up space on public transport.

### Streets for All

TfGM, on behalf of the GMCA and the ten Greater Manchester local authorities, has been working to develop a Streets for All strategy (a sub-strategy to the Greater Manchester Transport Strategy 2040) to be published later this year. The strategy works towards creating better streets for people by balancing the competing movement demands of different road users; at the same time it creates streets people enjoy spending time in, where they are encouraged to travel by foot, bike or public transport. Work has been undertaken to test the approach and support scheme development through pilot studies, including a Streets for All city centre corridor study.

As the city centre continues to grow, including as a place for people to live and work, there is huge potential for change regarding short local 'neighbourhood' trips: car journeys that could reasonably be switched to walking or cycling. There is also a need for measures that could increase walking, cycling and use of public transport into the city centre, as demand for travel continues to grow from the surrounding areas. Therefore, Streets for All has a focus on enabling these types of journeys through the following commitments, which are a combination of good urban planning and measures to make streets safer and more welcoming:

- Enabling people to benefit from an attractive and inclusive walking environment
- Providing a safe and connected cycling experience
- Facilitating a reliable, integrated and accessible public transport network
- Ensuring goods will reach their destinations on time, with minimal impact on local communities
- Enabling us to harness future mobility innovations
- Making best use of existing assets
- Ensuring streets will feel like welcoming and healthy places to spend time.

Streets for All provides a 'people-centred' approach to addressing the challenges that people living and working in the city centre face. It is designed to help support economic growth and regeneration (through increased footfall and social interaction), reduce congestion and improve air quality. Ultimately, it will help to improve the health of people across the city, and support community cohesion by creating places where people want to live and spend time.

### Highway network five-year investment plan

Manchester's highway network includes over 1,350km of road length, 2,600km of footway length, and more than 350 bridges and structures. Based on the latest valuations, the total highway asset has an indicative gross replacement value of more than £2.7billion, making it the Council's most valuable asset.

The network is used daily by the majority of people who live and work in the city, and is fundamental to the economic, social and environmental wellbeing of the community. Our ability to offer a reliable and resilient highways system is not only important for existing businesses, but is also a determining factor in attracting new businesses, particularly those with a time-critical need for logistics and commercial transport links.

The current five-year (2017–2022) £100million highway investment programme is underway, with a primary goal of improving the condition of Manchester's roads, footways and drainage, as well as supporting maintenance of the bridge network. By the end of 2019, the Council had invested £30million to treat over 200 miles of roads and 20 miles of pavements. In addition, more than 40,000 highway defects have been repaired, over 100,000 gullies have been cleansed, and some 7,000 drainage repairs

have been carried out. The annual road condition GEIST surveys have reflected this work, showing an improvement in the percentage of the road network beyond mid-life grading (in 'poor' condition) from 25% in 2017 to 20% in 2019. £20.6million has been invested in this programme during the financial year 2019/20, and £47.3million has been invested since the programme started in the financial year 2017/18.

The following milestones were achieved in 2019:

- The Regent Road scheme was completed, significantly improving journey times in a congested area of the city.
- The Medlock Street roundabout congestion reduction scheme commenced, including cycling and walking improvements.
- The eagerly awaited road-widening and pedestrian-improvement project at Hyde Road has started.
- The Great Ancoats project, which will improve safe access across the busy road for pedestrians and cyclists, has commenced.
- School safety improved during the year, with the completion of 46 out of 81 school crossing improvement projects across the city.

### Emergency Active Travel Fund Activity

In May 2020 the Government announced a £250million active travel fund to support greater walking and cycling in response to COVID-19. The Government invited councils to bid for funding. In Tranche 1 of the bidding, Manchester obtained funding for the temporary closure of Deansgate, Ducie Street and Stevenson Square, and the making of Withy Grove one-way to support social-distancing measures. In Tranche 2, Manchester bid for a scheme to join the transport hubs in the city centre through a series of permanent road closures to traffic, and to provide a new permanent cycleway from Wythenshawe into the city centre. Those bids have an estimated cost of £5.5million and we are awaiting an announcement from the DfT on the outcome.

### An integrated transport system

An integrated network is more resilient, more accessible and provides greater choice. In order to enable residents to easily access jobs, education and services, our network of connections needs to be fully integrated, attractive to users, and affordable.

Integrated transport systems should allow for combining several different modes of transport across a journey to provide a seamless end-to-end service. Integrated journeys can include

elements that are active, and when integrated with virtual connectivity, time spent travelling can become more productive.

A fully integrated transport network should be easy to use and provide efficiency for the users in terms of time, costs, comfort, safety, accessibility and convenience, resulting in increased economic and social benefits. Investment in such a system should result in a higher uptake in active modes of travel (walking and cycling) and public transport, and reduce congestion and pollution.

Integration doesn't just mean locating transport services in proximity to each other; it also means ensuring that timetables are planned in a way that makes them fully co-ordinated, providing such infrastructure as cycle parking and Park and Ride schemes at transport hubs, integrated travel information and route planning, and ensuring that ticketing systems are integrated across different modes and routes. Delivering an integrated ticketing system could be one of the most effective measures in the short term to make public transport easier and clearer to use, making it a more attractive option.

Within Manchester, there are three Park and Ride schemes attached to Metrolink stops; these have 373 car parking spaces. Two further



sites just outside the city boundary at Sale Water Park and Hollinwood provide an additional 521 spaces. A further 139 Park and Ride spaces are provided at five railway stations within the city. This means that car journeys can be connected with Metrolink and rail trips, reducing the need to travel the full distance by car. Worsley Park and Ride provides access to Manchester by bus rapid transit and has 230 spaces. The Park and Ride schemes help to reduce journeys by car that would otherwise add to congestion within Salford and Manchester.

Manchester has two cycle hubs managed by Transport for Greater Manchester (TfGM). One of them is within the city centre at Tower City, and the other is located at East Didsbury, providing secure cycle parking for 234 cycles. There are a further 20 spaces at the Hollinwood Metrolink stop just outside the city's boundaries.

Contactless payments have been introduced on buses and Metrolink, although smart ticketing is not yet available across all modes in Manchester. However, the 'Get Me There' travel cards are available for use on buses and Metrolink trams; these can be purchased online. Full integration across all modes in terms of ticketing and timetables is hindered by a lack of local control over all services, fragmented ownership, funding

constraints, limited incentives to bus operators, and a lack of a culture for joined-up working. This is coupled with a lack of flexible tickets for those who work part-time and a lack of cross-city public-transport routes. The **Bus Services Act 2017** offers mayoral combined authorities, such as Manchester, the opportunity to address these issues. An initial public consultation for bus reregulation was carried out at the end of 2019, and a decision on bus reform is expected from the Mayor later in 2020.

Car Clubs provide access to a car without needing to own a car, and may be a way of supporting a more sustainable transport network as part of the wider transport mix. It is proposed to increase the number of Car Club

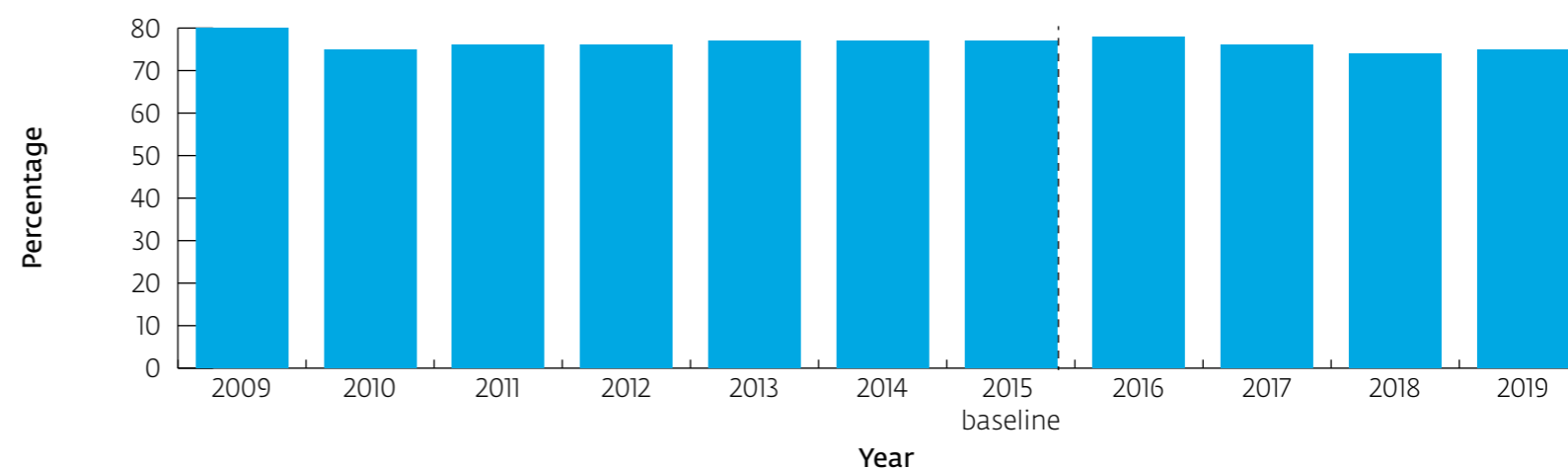
vehicles across the city, adding electric vehicles to the Car Club fleet, and expand the number of locations from which they are available.

### Encouraging walking and cycling, and the use of public transport

Currently within Greater Manchester, 88% of trips are shorter than five miles, and more than half of these are made by car. Although the percentage of single-occupancy cars travelling into the city centre during the morning peak time is reducing, as shown in Figure 6.3, car ownership overall is increasing (there was a growth of 11% in licensed cars in the city between 2015 and 2019: from 141,800 to 159,400).<sup>1</sup>

<sup>1</sup> Department for Transport vehicle licensing statistics

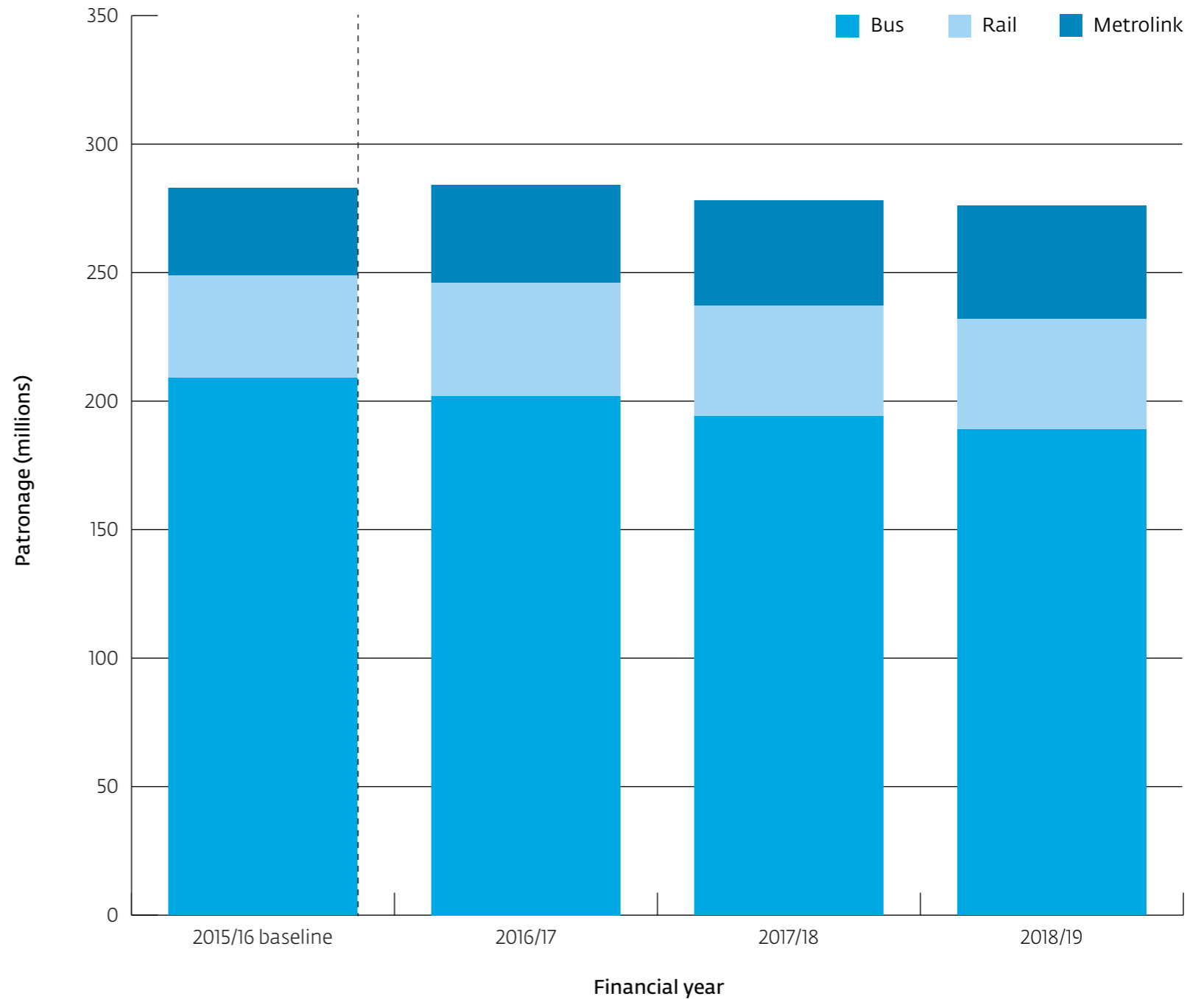
**Figure 6.3:** Percentage of single-occupancy car journeys into Manchester city centre (7.30–9.30am)



Source: TfGM © Crown Copyright 2020

Figure 6.4 shows that public transport patronage across Greater Manchester was 2% lower in 2018/19 than it was in 2015/16. Over the past ten years, rail and Metrolink use has increased significantly, while bus use has been slowly declining. A number of measures to support the continued growth of rail travel and Metrolink, and reverse the decline in bus travel, are described below.

**Figure 6.4:**  
Public transport patronage across Greater Manchester



Source: TfGM © Crown Copyright 2020

## Bus travel

Bus travel is supported by the Council and TfGM in the following ways:

- **Investment in Bus Priority infrastructure** on key routes into the city centre, including the Leigh Guided Busway, Rochdale Road, and the Oxford Road Corridor. Recent work included the reconfiguration of the Portland Street/Chorlton Street/Charlotte Street traffic signals, which improved pedestrian-crossing facilities and reduced bus-journey times along Portland Street. This was achieved by removing a stage from the traffic signals.
- **The CityPlan Agreement** between the Council, TfGM and bus operators. Agreed in 2012, this is designed to ensure that bus services entering the city centre are managed to minimise impacts on congestion, safety and the environment. The plan is currently subject to a review.

The Bus Services Act 2017 provides Greater Manchester with powers to reform the local bus market. The overall intention being that bus reform delivers some of the agreed objectives of the 2040 Transport Strategy for Greater Manchester. Transport for Greater Manchester, on behalf of the Greater Manchester Combined Authority, has prepared an assessment of

bus-reform options. This included assessing partnership and franchising options in accordance with the Bus Services Act. The assessment concluded that a proposed franchising scheme was the preferred option and a subsequent public consultation occurred, which ended on Wednesday 8 January 2020. As the proposed franchising scheme was designed on the basis of a pre-COVID-19 bus market, it may be necessary to make amendments to the scheme or alternative market structure a future report may propose. A further report will be presented to GMCA considering the impact of the COVID-19 pandemic on the bus market, with specific recommendations for the next steps to take on bus reform. The Mayor of Greater Manchester will make a decision in due course. This is currently expected to take place later in 2020.

The Council is working collaboratively with TfGM on its Local Bus Strategy, to ensure the right strategic framework informs decision-making on buses, no matter what decision is taken on bus reform.

## Metrolink

The Metrolink network has expanded to become the largest light rail network in the UK. Services now run on seven lines to 99 stops, covering nearly 105km. The network is currently

undergoing significant improvements, with further improvements in development:

- The Trafford Park extension opened in March 2020 and runs from the existing Pomona stop through the Trafford Park business area and on to the Trafford Centre. The line extension provides a further 5.5km of route and includes an additional six tram stops.
- Legal powers exist to extend the Airport Metrolink extension through the completion of a western loop, which would connect the existing line to the new Terminal 2 and then in the future to the proposed HS2 station, to Wythenshawe Hospital, and then back to the existing line. The current intention is to deliver the link to the new Airport terminal first, with the further extension following the construction of HS2.
- Proposals have been announced to extend the Metrolink network to Stockport using a tram-train system, whereby tram services share lines with trains. The new line would extend from the existing Metrolink stop at East Didsbury to the new transport interchange in Stockport. This scheme is in early development stages with a possible construction start date of 2025.

→ TfGM has committed to developing options by 2025 for a Metrolink station at Sandhills, to support the development of sustainable neighbourhoods of up to 15,000 homes in the Northern Gateway area to the north of the city centre.

The Council is working collaboratively with TfGM on its Rapid Transit Strategy, to ensure that decisions on investment in Metrolink and bus rapid-transit infrastructure and services are made according to a coherent strategic framework.

### Walking and cycling

There is great potential to increase the number of shorter journeys being made on foot or by bike. In order to improve health and access to jobs, and to alleviate pressure on our public transport system, levels of walking and cycling will need to continue to increase. There is a strong case to support walking and cycling in Manchester, and increasing the share of trips for these active modes has the potential to reduce car use, use our highway network more efficiently, and create more space on public transport. This will provide the capacity to support further sustainable growth. In addition, active modes improve the mental and physical health of our residents, reduce our carbon emissions, and improve air quality.

Walking and cycling have become significantly more popular in recent years and are beginning to be attractive alternatives to motorised transport for an increasing number of residents. This may partly explain why we are seeing fewer motorised vehicles on Manchester's streets, especially in the city centre; this is helping to make the city more accessible on foot and by bike, and more liveable, improving the feel of our public spaces.

Greater Manchester's Cycling and Walking Commissioner published the **Made to Move** document at the end of 2017. This document sets out 15 steps to be taken to create a genuine culture of cycling and walking within the city. The first step in this process is the production of a detailed Greater Manchester-wide walking and cycling infrastructure plan to be produced in collaboration with the district authorities, and which is now known as the **Bee Network**. The draft of the Bee Network was published in the summer of 2018; following consultation, a revised version was published at the end of June 2019.

In order to implement and develop the Bee Network, initial funding of £160million was made available through the Mayor's Challenge Fund (MCF). This is available for all Greater Manchester councils to apply for by submitting

qualifying schemes. Ten bids have been agreed (up to April 2020) for the programme entry stage for funding within the Manchester district; these were submitted by the Council and include the following schemes:

- **Chorlton Cycleway** – A 5km route partly funded by the MCF and the Cycle Cities Ambition Grant (CCAG). Work on the first phase of this scheme was completed in the summer of 2020, including the first Cycle Optimised Protected Signals (CYCLOPS) roundabout system in the UK, with further phases due to start later in 2020.
- **Levenshulme Active Neighbourhood** – An active neighbourhood scheme that includes a series of signalised and minor junction upgrades, parallel crossings, modal filters and investment in streetscapes to encourage local trips on foot or by bike. Partly funded by MCF and Manchester City Council. A number of consultation events took place throughout 2019, but the project was temporarily paused in the summer of 2020 following some concerns raised by local residents. Further consultation is likely to take place in the second half of 2020.
- **Princess Road/Mancunian Way** roundabout improvements – Full junction upgrade, including removing the existing

subways, and creating protected cycle tracks, pedestrian paths and a signalised crossing. Partly funded by MCF and local contributions. Work is almost complete on this project, and extensive landscaping is due to commence in the winter of 2020.

- **Northern Quarter** – Project to enhance the ‘on foot and by bike’ experience from Manchester Piccadilly to Manchester Victoria stations via the Northern Quarter. Funded partly by MCF and CCAG. An initial public consultation took place at the end of 2019 and as a result of the feedback, bolder options have been developed, and a further consultation is underway about those options. Temporary work in the area has been implemented as part of social-distancing measures, some of which may become permanent. More detailed design work is ongoing.
- **Rochdale Canal** – The project includes improvements to the canal towpaths, improved access under a low bridge at Butler Street, and improved accessibility to four sets of steps. This project is funded by the MCF with outline design work underway, but has been delayed due to the COVID-19 pandemic. Public consultation is due towards the end of summer 2020.
- **Northern and Eastern Gateway Connectivity** – A parallel route to Great Ancoats Street providing a safe and convenient cycle link to the north of the MSIRR. Public consultation took place in the spring of 2020, following which the plans are being updated. A further consultation exercise is due to take place in the autumn, with an anticipated construction start date of December 2020.
- **Beswick** – The project is to develop a network of streets that are not only safe, but also feel safe. This is to encourage the local community to confidently take to their bikes and walk more often; the project includes a filtered neighbourhood approach. A public consultation exercise commenced in July 2020 and the outline design stage is progressing. Commencement of construction is due in October 2020.
- **Oldham Road (Inner Radial)** – The project will add segregated cycleways to both sides of Oldham Road, from the Intermediate Relief Road to the North Manchester Connectivity project below. Approval is being sought to commence a feasibility study funded by MCF.

→ **North Manchester Connectivity** – This scheme provides a link (via Oldham Road) from the city centre to the north west of Manchester along Lightbowne Road. It was submitted jointly by Manchester City Council, Rochdale Borough Council and Oldham Council. Funding is currently being sought for this scheme.

Three further schemes submitted by other parties located within Manchester have also secured programme entry for MCF funding. These are:

- **Metrolink Cycle Parking** – Enhancements to the tram stops along the Bury line at Bowker Vale, Crumpsall, Abraham Moss and Queens Road to support integrated travel. This is a TfGM project.
- **Manchester Cycleway** – Improvements including additional lighting, better access points, and section widening to the existing Fallowfield Loop Cycleway and Stockport Branch Canal route. This is a Sustrans/TfGM project. Public consultation is underway and programming is linked to the completion of the Hyde Road project.
- **Manchester Cycle Hire** – This project will reintroduce a cycle hire scheme, initially to the city centre around Manchester, Salford and Trafford. This is a TfGM project due to be delivered by spring 2021.

During 2019/20, TfGM and Living Streets worked with 118 primary schools in Greater Manchester to encourage walking to school. Seventeen of the schools are located in Manchester. Overall, active modes of travel increased by an average of 27% across Greater Manchester, and in Manchester schools there was an increase in active journeys from 58% to 75%. Meanwhile, the Bikeability scheme has provided funding for the Council to carry out cycle training in schools during the period 2016 to March 2020; 18,287 cycle training places have been delivered, with 4,715 taking place in 2019/20.

### Mobile connections

Being able to work or access entertainment services while travelling has the potential to transform journeys by public transport. The opportunity to access such facilities has the potential to make public transport a more attractive option over travel by car.

Developing business cases for investment will usually involve assessing savings in journey times. Access to technology has the potential to require a rethink of how journey times are factored into investment decisions if this time can become productive.

Wi-Fi is becoming more readily available across various modes of travel, and many bus operators

now offer free Wi-Fi across most of their fleet. Some rail services also offer Wi-Fi, but it is not available across all franchise operators. Virgin and Transpennine Express are two rail operators that offer free Wi-Fi and entertainment services; however, for rail services the quality of the connection is determined by the coverage in the area through which the service is passing.

Charging facilities for devices is very limited across all modes. Overcrowding on most rail services in and out of Manchester limits the opportunities to work while travelling at peak times.

Data will be gathered for future State of the City Reports based on the availability of Wi-Fi and on the level of uptake of such facilities.

Mobile technology is also assisting motorists by providing navigational tools. The various apps available are making urban travel easier for the motorist, providing directions, intelligent route selection, live travel times based upon traffic conditions, and expected times of arrival. 'Connected vehicles' are therefore becoming more commonplace and will impact on how people use their vehicles and access parking spaces.

### Cleaner air and reduced emissions

Our transport system is a major source of emissions and contributor to poor air quality; these emissions damage our health by polluting the air we breathe and contribute to climate change. Reductions in these emissions are subject to both UK and EU legal limits, and the Government has mandated a number of cities, including Manchester, to produce Clean Air Plans. These are aimed at reducing concentrations of roadside nitrogen dioxide emissions to legal levels in the shortest possible time.

Between 2015 and 2019, monitoring stations at Piccadilly Gardens and Oxford Road recorded a reduction in concentrations of nitrogen dioxide (NO<sub>2</sub>) at the sites. While Piccadilly Gardens reached 36µg/m<sup>3</sup> in 2019, concentration levels of 59µg/m<sup>3</sup> at Oxford Road remained above the legal limit of 40µg/m<sup>3</sup>. Since the COVID-19 lockdown, there has been a substantial reduction at both monitoring stations, with provisional monthly concentrations of NO<sub>2</sub> falling to 20.1µg/m<sup>3</sup> at Oxford Road and 15.5µg/m<sup>3</sup> at Piccadilly Gardens in May 2020. Between May and September 2020, NO<sub>2</sub> concentration levels gradually increased, although levels remain well below the monthly figures reported in 2019. Air quality is discussed in more detail in the 'A liveable and low-carbon city' chapter.

Manchester is working with the other nine Greater Manchester authorities to develop a Clean Air Plan for Greater Manchester. This plan has yet to be finalised; however, the draft plan proposes the introduction of local measures, alongside a Clean Air Zone across all ten districts, to accelerate emission reductions to make Manchester a cleaner, healthier and safer place to live. The COVID-19 pandemic has limited the districts' ability to progress the Clean Air Plan to previous timescales; however, public consultation on a package of measures to support Clean Air Zones will begin in October 2020, bearing in mind the restrictions in place as a result of the COVID-19 pandemic.

The draft plan is seeking investment from the Government to help Greater Manchester's HGV, bus, coach, taxi and private-hire vehicle operators upgrade to cleaner vehicles. The introduction of a Clean Air Zone forms part of the plan. This is intended to encourage the switch to less-polluting vehicles. Initially, in 2022, this would cover HGVs, buses, coaches, taxis and private-hire vehicles; vans would be included in 2024. Vehicles in these categories would be subject to a daily charge to enter the Clean Air Zone, the boundary of which would be the ten Greater Manchester districts.

The Clean Air Zone does not include cars, because modelling showed that this would not bring forward the date at which NO<sub>2</sub> levels were within the legal limit. This is because privately owned vehicles are typically parked up and not in use for over 95% of the time. Including private vehicles would also have disproportionately affected those people who are least able to invest in a newer, cleaner vehicle.

### Sustainable connections supporting a thriving city

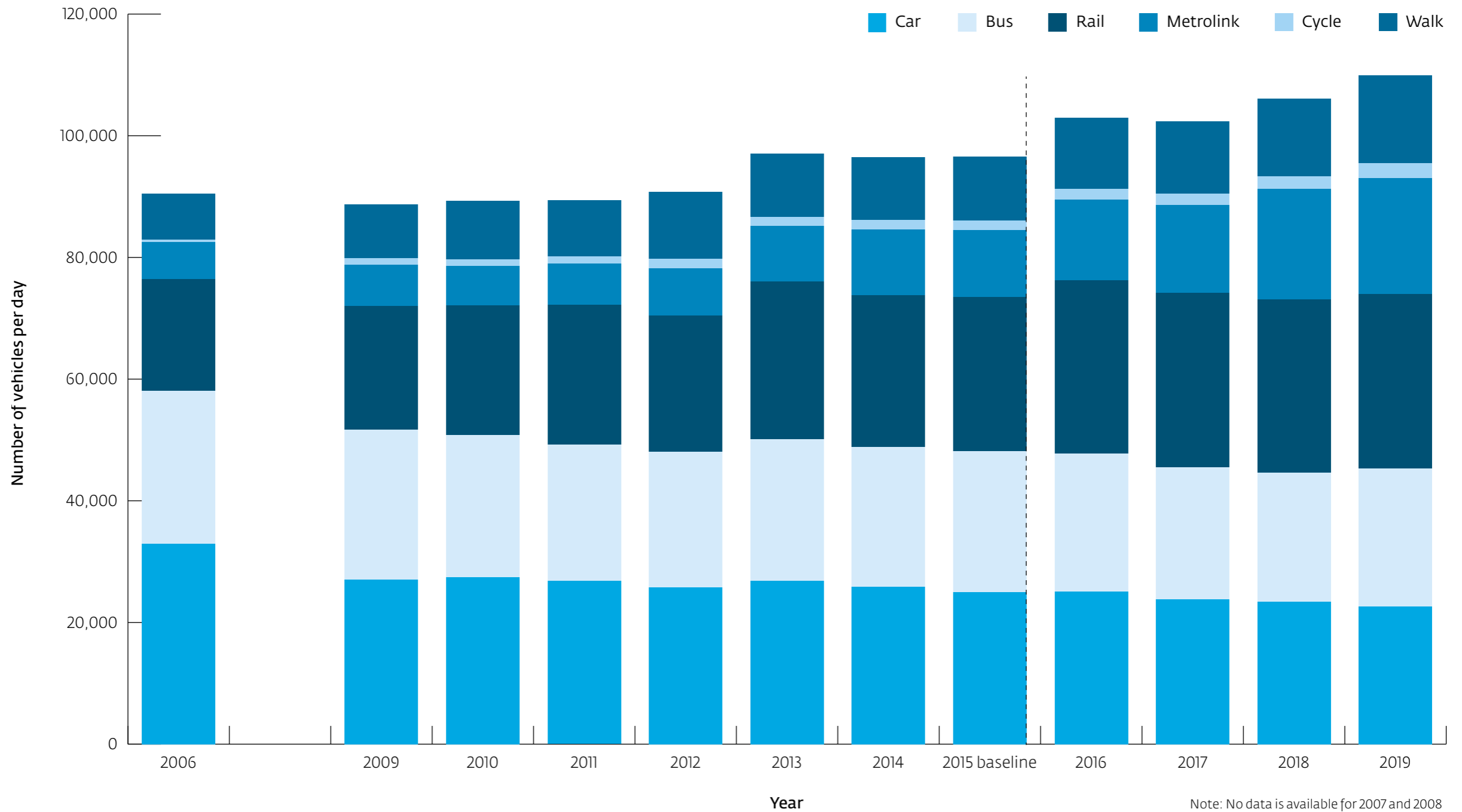
Ongoing increases in demand for travel, particularly into the city centre, illustrate the strong growth in the city's economy and population, as well as the challenge of accommodating further growth on our network. However, the fact that these increases are mainly being contained by sustainable, non-car modes of transport suggests that effective progress is being made to reduce the environmental impact of our transport network and make better use of sustainable transport infrastructure. Recent Metrolink expansion has enabled this trend to continue for more sustainable trips into the city centre. The challenge for the future is how this positive trend is maintained.

The award-winning Oxford Road and Wilmslow Road Cycleway, which carried nearly 1.1million cycle trips in 2019, is put forward by many as an example of how our highway network could potentially increase capacity by accommodating more space-efficient modes of travel such as cycling. It was cited as an exemplar case study in the Department for Transport's consultation paper 'Decarbonising Transport – Setting the Challenge' in April 2020. Another long-term option being explored is to increase the future capacity of our sustainable transport network by tunnelling across the city centre to further extend our Metrolink network, but this has not been considered in any detail and remains conceptual in scope.

### Modal shift to sustainable modes

Travel demand has grown significantly in recent years, to and from the city centre, reflecting increases in the number of jobs and the resident population; this is discussed in more detail in the 'A thriving and sustainable city' chapter. The number of morning peak-hour trips into Manchester city centre has increased by around 1% per year on average since 2006, but most of that growth has taken place since 2012, with an increase of 16% between 2015 and 2019. Trends in trips into the city centre vary across different modes of transport (Figure 6.5).

**Figure 6.5:**  
Trips into Manchester city centre (7.30–9.30am) by various modes of transport



Source: Manchester city centre cordon count, TfGM © Crown Copyright 2020



Between 2015 and 2019, the following trends have been noted in travelling into the city centre:

- **Car travel** has seen the most significant decline in recent years, with the number of trips falling by 9%. Car travel's share of city centre trips has fallen from 26% to 21%.
- **Bus travel** has declined by 2%; however, there was a slight upturn in trips between 2018 and 2019, with 1,459 more trips made into the city centre. This is the first increase in trips since 2013. Overall, bus travel's share of city centre trips has fallen from 24% to 21%.
- **Rail travel** over this period has increased by 13%. Despite these increases, rail's share of city centre trips remains at 26%.
- **Metrolink** accounted for most of the increase in trips over this period, growing by 73%. Metrolink's share of city centre trips has increased from 11% to 17%.
- **Walking and cycling** have increased by 38% and 50% respectively. Walking trips into the city centre have increased from 11% to 13%, with cycling remaining at a 2% share. Although starting from a low base, cycling trips into the city centre have continued to grow, from 1,648 in 2015, to 2,477 in 2019. Further work on the walking trips is needed to determine how many are made by people

parking outside the city centre and walking in, and how many are made by those who live nearby and walk into the city centre.

These changes are likely to have been driven by a range of factors, including:

- Improvements in public transport, particularly on the Metrolink network, which has expanded significantly in the past ten years. The decline in bus travel is of concern, but recent investments in Manchester's Bus Priority infrastructure should go some way to reverse this trend in future.
- Changing patterns of where people live and work. There have been increases in the city centre workforce and population, and more people now live in locations where public transport and active travel are attractive commuting options.
- Increasing journey times on the road network, which are likely to have made commuting by car and bus a less attractive option. While car traffic into the city centre has reduced, elevated journey times may be due to disruption from major roadworks in and around the city centre, alongside the rise of online deliveries, which have added to congestion. TfGM figures show that there have been increases in freight

traffic in the past five years, including a 10% increase in van and HGV trips into the city centre.

The COVID-19 pandemic has had a huge impact on the volume of patronage on public transport and on highway usage. It remains to be seen how long-lasting these changes will be, and we have already seen significant changes as lockdown measures have been eased. TfGM figures for the whole Greater Manchester network show that at the lowest point of demand, in mid-April 2020, compared to the early March 2020 pre-lockdown baseline:

- Metrolink usage was down 97%
- Bus usage was down 96%
- Rail usage was down 95%
- Highway usage was down 73%.

Since those mid-April lows, usage has rebounded to differing degrees across different modes. As of 31 July 2020, highway usage has risen to only 20% below the pre-lockdown baseline. Metrolink, rail and bus usage has trended upwards in a very gradual way, with patronage still below the pre-lockdown baseline: -71% on Metrolink, -58% on buses, and -62% on rail. The extent to which public transport can regain mode

share is likely to be dependent on a range of factors, including confidence in hygiene and cleanliness, the effectiveness and adoption of face coverings by passengers, and overall prevalence of COVID-19 in the community, as well as messaging and communication from public bodies and transport operators.

The initial messaging during spring 2020 was to avoid all non-essential use of public transport, which was successful in deterring passengers. As part of the lockdown response to COVID-19, the Government temporarily suspended rail franchises, assuming all revenue risk. Temporary revenue support funding was provided for Metrolink and bus operators in order to partially offset the almost total absence of fare revenue. Service frequency was cut severely, with a phased return to normal timetables currently underway. It is too soon to forecast how long it will take for public transport usage to return to pre-COVID-19 baseline levels. Greater Manchester districts and TfGM are considering various scenarios in assessing options and implications regarding key strategies such as the Greater Manchester Spatial Framework, TfGM 2040 Transport Strategy, and the Council's Climate Change Action Plan. A recovery scenario in which public transport's mode share remains indefinitely lower than pre-COVID-19 levels

and in which private car trips are increased would be significantly damaging for air quality, congestion, place-making, road safety and carbon reduction.

### Congestion

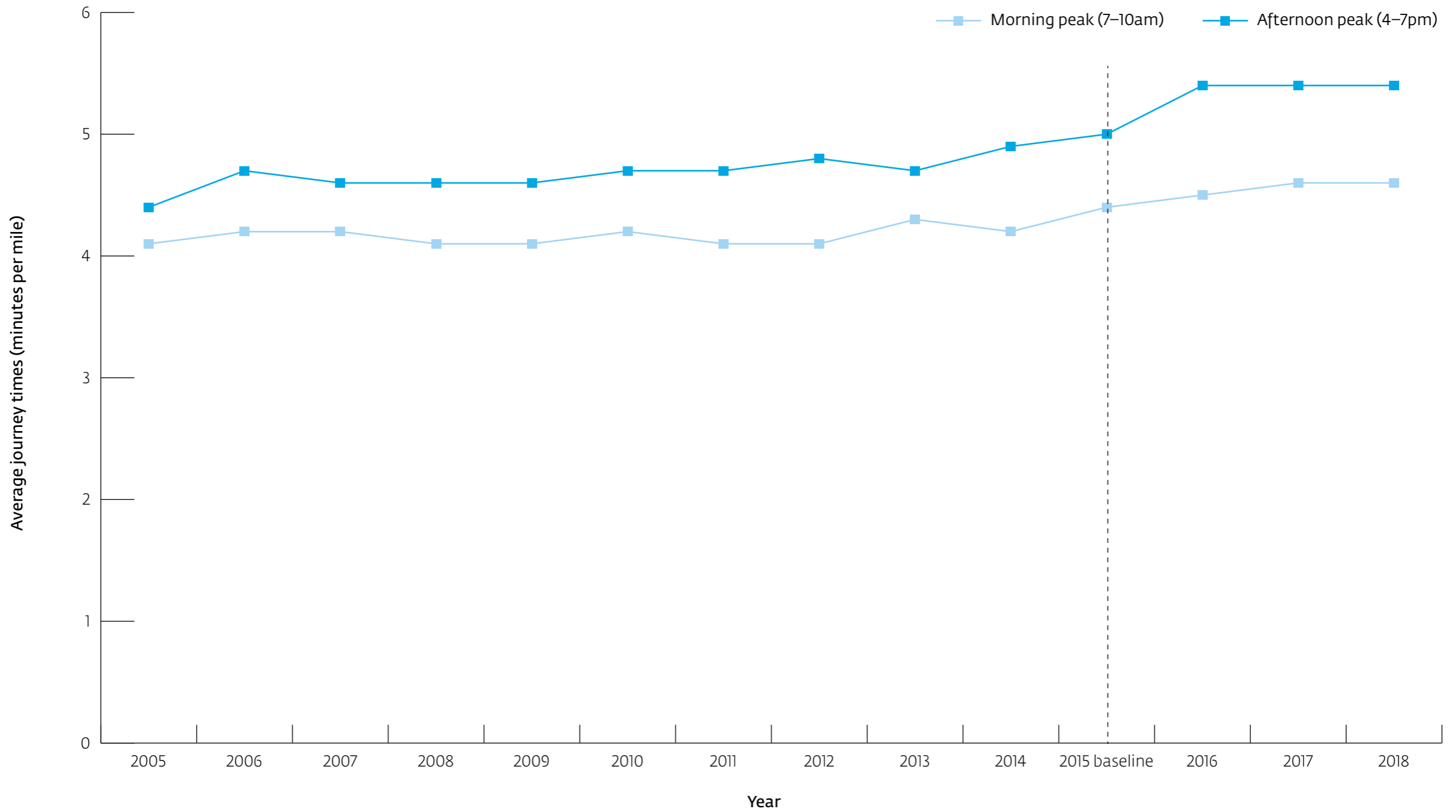
Figure 6.6 shows that average journey times on our network of A and B roads had been gradually increasing since 2005, with a greater increase in the afternoon peak, although this growth has stabilised since 2016. Journey times are an indication of the level of congestion on our roads.

It is assumed that most of the increase is due to more vehicles on the road and the amount of construction work underway across the city. The growth in delivery traffic is thought to be a major contributor to the additional traffic levels. Construction work is often an inevitable consequence of living in a successful and thriving city. Work is presently underway to improve the operation of the Manchester and Salford Inner Relief Road (MSIRR).

With increased congestion, the average speeds on A and B roads are reducing, albeit only marginally, from 14mph in the morning peak (7–10am) and 12mph in the afternoon peak (4–7pm), to 13mph and 11mph respectively.

The COVID-19 pandemic and resulting lockdown measures resulted in highway usage reducing 73% from the pre-lockdown baseline. However, private motor vehicle trips have risen more quickly and more significantly than public transport trips as lockdown measures have eased, and on 31 July 2020, traffic levels were only 20% lower than the early March 2020 pre-lockdown baseline.

**Figure 6.6:**  
Journey time rates for A and B roads (average minutes per mile)

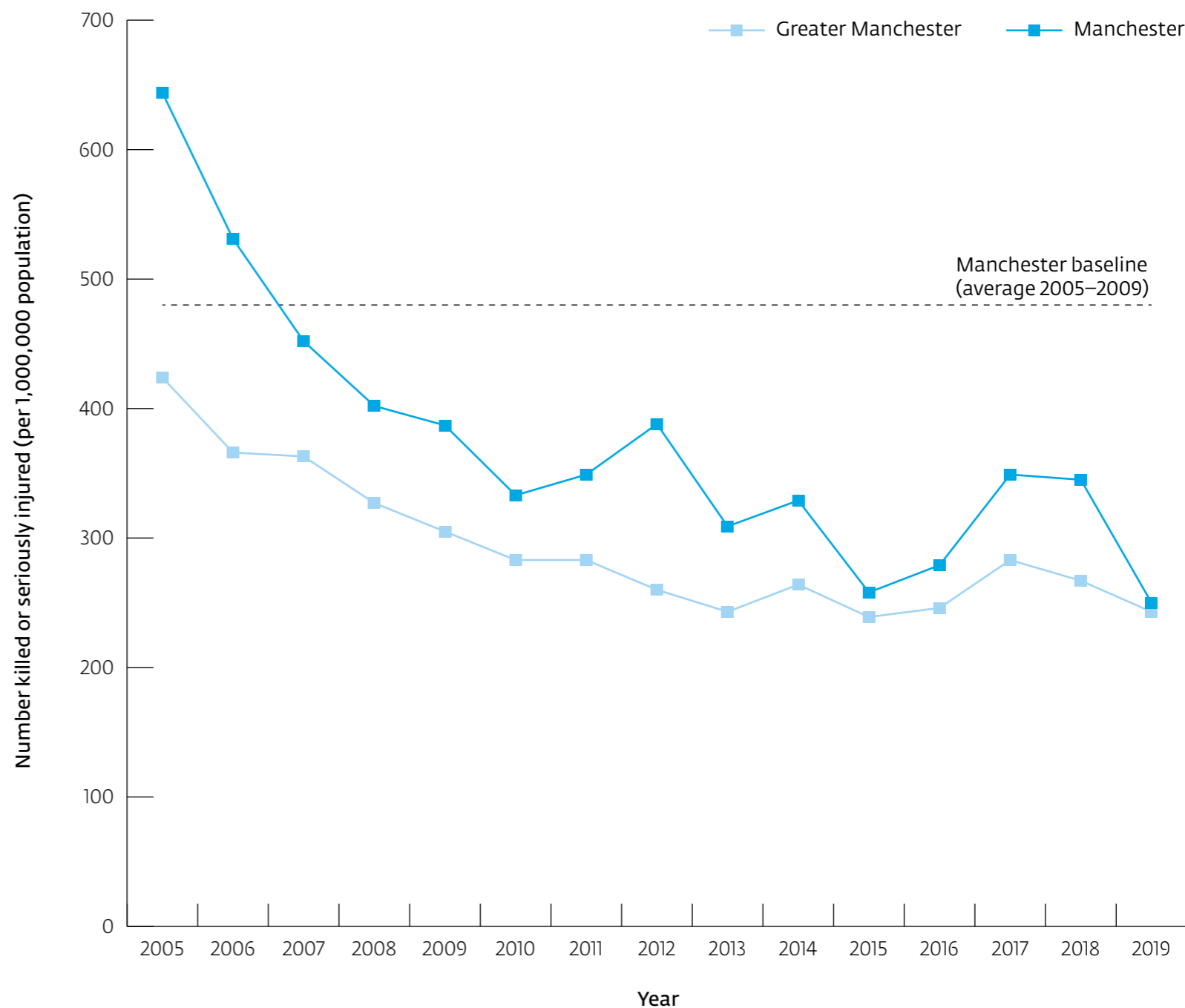


Source: TfGM © Crown Copyright 2020

### Road safety

The Council works in close partnership with TfGM and Greater Manchester Police to improve the safety of our highway network, including investment in infrastructure to reduce accidents, and targeted enforcement operations to prevent dangerous driving. The data shown in Figure 6.7 suggests that road safety in Manchester was moving in the right direction, with a 60% decrease in the rate of people being killed or seriously injured on our roads between 2005 and 2015. However, between 2015 and 2018 there was a marked increase of 34%, with a rate of 345 per one million population killed or seriously injured in 2018, equating to 188 people. In 2019, there was a significant reduction in the rate to 250 per one million population, equating to 137 people killed or seriously injured on Manchester’s roads. Figures remain below the Manchester baseline figures of 480 per one million population or 222 people killed or seriously injured (based upon an average of the five years 2005 to 2009) and are now on a par with the Greater Manchester rate.

**Figure 6.7:** Killed or seriously injured casualty rate on roads (per 1,000,000 population)



Source: TfGM © Crown Copyright 2020

## A place for people and innovation

### Electric vehicles

The Government aims to ban the sale of new petrol and diesel cars by 2040, and may even bring this date forward to 2035. Increasing the use of electric vehicles is a key way in which we can reduce our carbon and air-pollution emissions. The number of plug-in cars and light goods vehicles (LGVs) licensed within Manchester saw nearly a fivefold increase in growth between 2015 and 2019, increasing from 139 to 643. This still remains at a very low level, making up only 0.4% of the total number of cars and LGVs within Manchester, below the UK average of 0.7%

This is currently supported by provision of the Greater Manchester Electric Vehicles (GMEV) public recharging network. The GMEV network went live in July 2013, and GMEV membership grew from a very low base to 2,796 members by September 2019. From installation up to September 2019, there had been 252,398 individual charging sessions, with an average of 5,485 each month in 2018/19,<sup>2</sup> up from 4,918 each month in 2017/18.

<sup>2</sup> These figures are taken from October to September

The current GMEV network includes 159 double-headed 15kw fast charge points and three 50kw rapid chargers (one of which is restricted to buses) across the region. The network is currently under review, and in the short term a number of fast charge points will be reduced to 118 before proposals to expand the network are put in place. There are currently proposals to expand this network, including funding through Early Measures as part of the Clean Air Plan for an additional 300 charge points across Greater Manchester. A small number of additional charge points may also be provided through the eHubs pilot project. The GMEV network has predominantly focused on public car parks and destination locations, although it does include a small number of on-street locations, such as the one in Chorlton. The Council is working with TfGM to develop plans to expand the network further to support a range of vehicles, including taxis.

The Council's Facilities Management Team have recently replaced their fleet of diesel vans with electric vans and reduced the fleet by two vehicles. This change will bring an 80% reduction in the fleet's carbon emissions every year – approximately 12 tonnes. The Council's Fleet Services Team have provided support for this change along with funding from the Triangulum

Project – an EU initiative supporting innovation to develop frameworks bringing cutting-edge technology to Europe's cities. The Council is also in the process of purchasing 27 electric refuse vehicles, which it hopes to charge overnight using power generated from solar panels installed at the Hammerstone Road depot.

In March 2020, the Council submitted a bid to fund 23 e-cargo bikes and 18 e-trailers; within this were 14 e-bikes and 10 trailers for Council departments. Unfortunately, this bid was unsuccessful, but the Council is continuing to explore funding sources for decarbonising its own fleet.

### Automated vehicles

In 2017, a consortium – including the Council and TfGM – secured funding for £3.7million to trial a driverless electric shuttle service at Manchester Airport, and trial the use of autonomous vehicles between Stockport Railway Station and Manchester Airport in platooning formations of up to three vehicles. If platooning and EV technology become widely adopted, it would reduce congestion, improve air quality, and reduce the impact of transportation on climate change. In the short term it would deliver a novel and improved passenger experience at Manchester Airport, helping to boost Manchester's reputation as a

leader in technology and transport innovation. It is hoped that the widespread introduction of autonomous vehicles will make our roads safer. The trials are due to take place in 2021.

### Digital investment

Greater Manchester Combined Authority successfully made a bid to the Government's Local Full Fibre Network Challenge Funding – a £190million fund to stimulate commercial investment in full-fibre networks. This will have a transformational impact by encouraging further fibre investment, to the significant benefit of Greater Manchester residents, businesses and organisations. It will also enable public services across the region to benefit from future-proofed fibre connectivity and support innovation in public services.

Manchester technology firm UKFast has announced plans to expand onto vacant land opposite its Birley Field Campus, which will contribute to the ongoing regeneration of Hulme.

### Technology demonstrators

#### CityVerve

During 2018/19 Manchester successfully completed **CityVerve**, the UK's Internet of Things Demonstrator project. This was headquartered at the Bright Building on

Manchester Science Park, and involved a consortium of 21 technology partners. These included global companies such as Cisco and Siemens, alongside SMEs, public bodies and universities. CityVerve's work produced innovations in health, energy, environment and transport, and sought to overhaul and devise new ways for cities to deliver services to their citizens through smart technology. These have been adopted and piloted in Manchester, and will hopefully have a global impact in the near future. To assist this process, two large-scale dissemination events were held. The 'Everything is Connected' conference saw more than 150 delegates from across Europe and the UK attend a series of workshops, presentations and a solutions marketplace, and the final event was used to showcase the Demonstrator project to an audience of key stakeholders.

Following the project, further funding was obtained to complete the smart homes and chronic obstructive pulmonary disease health pilots, and undertake a project evaluation. The pilot has seen technology extended into 50 residents' houses. It has an impact on hospital referrals and has formed the basis of a larger scaling up of this work in 2019/20. It is also intended that the findings of the completed project evaluation will be used

to inform the future development of the city's digital strategy as a strand of the local industrial strategy of the city.

### Digital connectivity

Since 2015, new digital technologies have had an ever-growing impact on all areas of daily life, meaning that the provision and maintenance of high levels of digital connectivity have become increasingly important. Therefore, it remains vital for Manchester to continue to enhance and develop its existing digital infrastructure in order to sustain its ambitions to be a leading international city. Fast and reliable digital connectivity is needed not only to support and underpin growth across all sectors of the economy, and in particular build on industrial strengths in digital, data, artificial intelligence and cyber security, but also to address socioeconomic problems, transform public services, and to promote social inclusion.

A supportive environment is needed to enable the development and piloting of innovative and technological solutions to health, mobility and environmental challenges by utilising the power of connected devices in order to enhance the overall functioning of the city. The many benefits of the city's digital expansion must be made available to all residents and businesses, not only through greater investment in the

introduction of full fibre and 5G coverage across the city, but also by ensuring access to this is taken up where it is available.

It is estimated that at least 27,000 adults living in Manchester are digitally excluded, lacking one or more of the following: access to the internet, skills, confidence to use the internet, motivation to use the internet. This leaves residents at a higher risk of social isolation and financial disadvantage, with poor access to services, and poorer job prospects. The Digital Inclusion Working Group aims to develop a more collaborative approach to reduce digital exclusion, gain a better understanding of resident barriers, and improve access to provision. Identifying that motivation is a key challenge, and the group commissioned work to promote positive stories of how digital has transformed or enhanced residents' lives. The Council has worked with Barclays, MMU, and local work clubs that have a focus on over-50s, to deliver the Barclays Digital Eagles programme to support Manchester students to access industry-led training and gain digital and the softer skills for future employment. The Council has also supported projects focused on engaging those who are underrepresented in tech (women, ethnic minorities and those living in areas of deprivation), such as Digital

Her, InnovateHer, ADA, and Dicey Tech. Digital inclusion is discussed in more detail in the 'A highly skilled city' chapter.

As part of its journey to meet these goals and become a connected city, the Our Manchester Strategy has committed that the city will:

- Chart a course to becoming a leading digital city
- Harness the potential of technology to improve the city's liveability and connectivity
- Create a framework of action as a Digital City
- Use digital technology to transform the way we use energy in order to help reduce energy bills and carbon emissions.

However, the digital agenda underpins many of the other actions within the Our Manchester Strategy, including to:

- Collectively improve our health and wellbeing and be more active as adults and children
- Have an integrated, smart and affordable transport system
- Support the growth of established and emerging business sectors

→ Improve the carbon and environmental performance, and resource efficiency of all business sectors

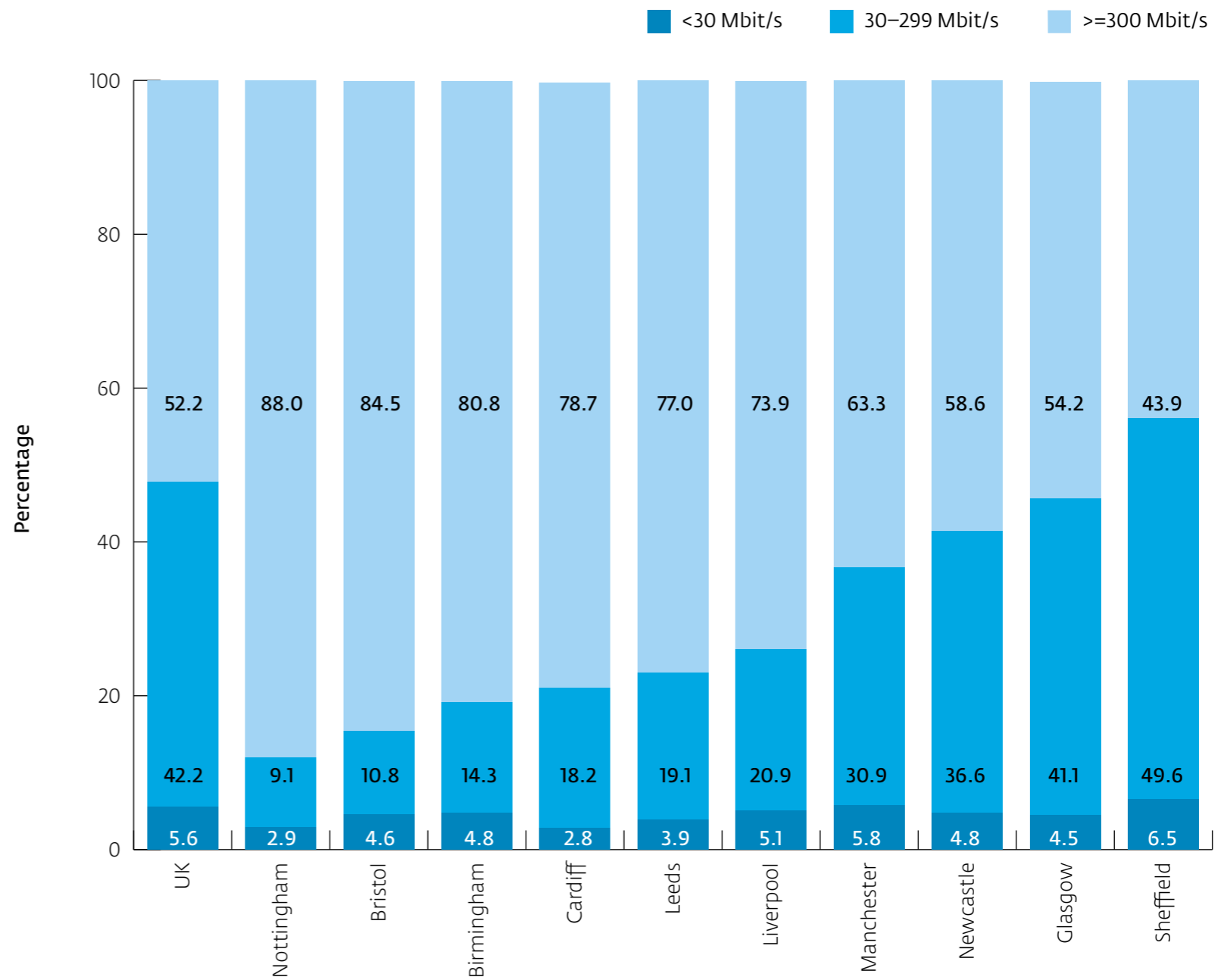
→ Continue to drive economic growth in high-value sectors, to retain and attract the best talent

→ Be a 100% clean-energy city by 2050.

Despite superfast broadband (>30Mbit/s) being available to more than nine in ten premises in the UK and momentum behind full-fibre broadband, 2019 Ofcom statistics show that people do not always sign up to faster broadband packages where they are available. Superfast broadband is available to 94.4% of homes and businesses in the UK, but only 66.1% have taken up these superfast services. Similarly, although 94.2% of premises in Manchester have access to superfast broadband, only 66.1% of them have an active broadband service that delivers a download speed higher than 30Mbit/s. However, this has increased 13.2 percentage points from 52.9% in 2018.

Figure 6.8 shows that ultrafast broadband (>300Mbit/s) was available to 63.3% of Manchester’s homes and businesses in 2019. This compared well to the UK average of 52.2%, but Manchester was lagging behind other Core Cities such as Nottingham, where 88% of homes and businesses had available speeds of more than 300Mbit/s.

**Figure 6.8:**  
Fixed broadband coverage by speed (Mbit/s), 2019

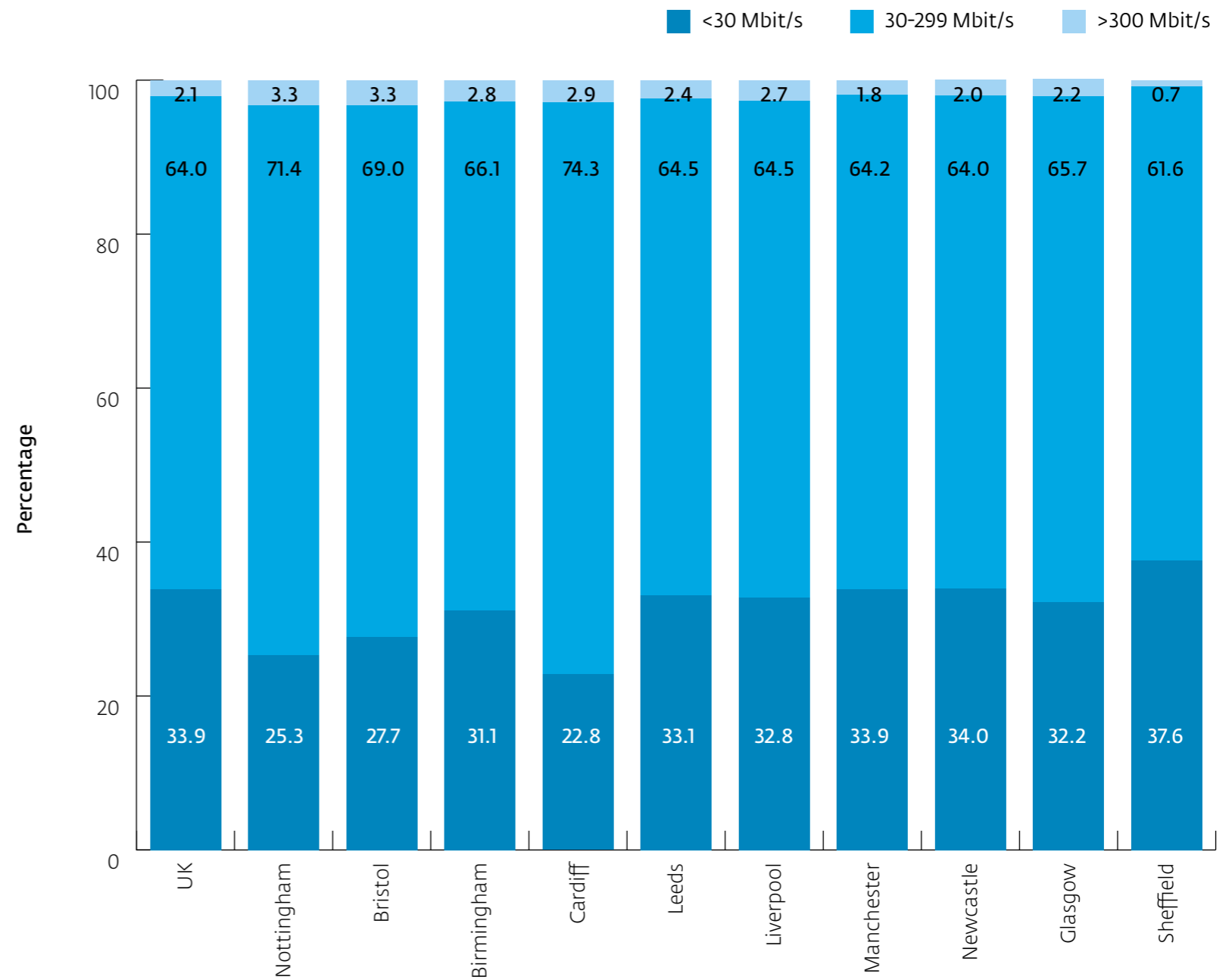


Source: Ofcom 2019 Connected Nations report



However, Figure 6.9 shows that only 2.1% of homes and businesses across the UK were signing up to an ultrafast broadband service in 2019. In Manchester, the 1.8% take-up in 2019 equates to just 2,937 homes and businesses (an increase from 200 premises in 2018). In addition, over a third of the city’s residential and SME premises have failed to take advantage of the superfast broadband speeds available to them. A similar picture is reported across all Core Cities, despite superfast and ultrafast broadband availability being much higher.

**Figure 6.9:**  
Fixed broadband take-up by speed (Mbit/s), 2019



Source: Ofcom 2019 Connected Nations report

Manchester is continuing to make progress in improving the coverage of ever-faster broadband speeds, but there is a need to ensure that the take-up of the available speeds is maximised. The availability of superfast broadband to residential and SME premises in the city has risen from 88% in 2015 to 94% in 2019. Meanwhile, the take-up of superfast broadband has almost doubled, increasing from 34% in 2015 to 66% in 2019. Average download speeds have also more than doubled, rising from 28.6Mbits in 2015 to 59.6 Mbits in 2019.<sup>3</sup> Despite the progress made since 2015, there remains a pressing need to improve superfast/ultrafast broadband availability in Manchester and to increase its take-up at a faster pace to secure the city's status as a leading digital centre.

This objective will be assisted by the recent appointment by the Greater Manchester Combined Authority (GMCA) of Virgin Media Business to deliver its Local Full Fibre Network project, which aims to deliver up to 2,700km of new fibre-optic broadband infrastructure serving 1,700 sites across the city region. It is hoped that the project, which is supported by £23million from the Government, will eventually encourage further private-sector investment of up to £250million. This new investment, plus existing local-authority investments in digital

infrastructure, makes it the UK's largest Local Full Fibre Networks programme. In addition, over the past year Vodafone and EE have both chosen to launch new 5G networks in Manchester.

Further investment in the introduction of full-fibre broadband and the development of a 5G network is needed by all businesses and not just those in the digital and tech sectors. It has the potential to deliver productivity and innovation benefits for existing businesses, accelerate the growth of new business start-ups, and enable the city to remain at the forefront of innovation.

The continued attractiveness of the city as a location for the digital and tech sectors is demonstrated by the fact that Manchester was ranked along with five other UK cities among the top 26 cities in the world for raising venture capital for tech projects during 2019.<sup>4</sup> According to the **Tech Nation 2020 report**, Manchester is also Europe's fastest-growing major tech cluster, with investment growing from £48million in 2018 to £181million in 2019. The year has also seen Amazon and GCHQ open offices in the city centre. Northcoders, the north west coding campus, has relocated to the Manchester Technology Centre at the heart of the city's innovation district along the Oxford Road Corridor. In addition, construction

has begun on Manchester Metropolitan University's School of Digital Arts (SODA) to support digital innovation and collaboration within the city.

Work continues on Citylabs 2.0 within the Manchester NHS Foundation Trust campus on Oxford Road, and it is due for completion later this year. This has been pre-let to global molecular diagnostics company Qiagen, which plans to build a team focused on medtech, clinical trials and data management, and to work with existing companies at Citylabs 1.0 at Manchester Science Park. Once this has been completed, work will commence on Citylabs 3.0, and planning permission has just been approved for the construction of Citylabs 4.0, with discussions already underway with potential occupiers who are looking for space to expand from other Manchester Science Park sites. Approval has also recently been granted for Manchester Metropolitan University to expand its science and engineering campus, which will provide lab and collaboration space for research in computing, health and wellbeing, smart cities and ageing.

<sup>3</sup> All data from this section is taken from the Connected Nations Reports published by Ofcom for 2015, 2016, 2017, 2018 and 2019

<sup>4</sup> <https://www.business-live.co.uk/technology/manchester-one-top-26-top-17577356>

Such clustering of expertise along the Oxford Road Corridor enables the city to remain at the forefront of developing and piloting innovative solutions to the health, mobility and environmental challenges that are faced by cities throughout the world. During 2019, Manchester completed the majority of its two European-funded Horizon 2020 projects, including 'smart energy' project Triangulum, and the city-data project Synchronicity.

Triangulum saw the continuation of energy-efficiency pilots at Manchester Art Gallery and Manchester Metropolitan University, including solar PV installation, building information modelling, battery storage, and the transition to electric vehicles – including electric vans and cargo bikes. The findings from these pilots will contribute to the city's zero-carbon ambitions, and a major dissemination event, Energising Manchester, took place at the Museum of Science and Industry in January 2020. In addition, work was undertaken with Ordnance Survey and Open Geospatial Consortium to host an innovation challenge and develop a 3D mapping application using Manchester data.

Synchronicity moved into its pilot deployment phase and in the second half of 2019 launched three data-driven pilots:

- Active Travel Insights: installing sensors along Deansgate to provide real-time data on cycle and pedestrian road usage
- Smart Cycling: providing smart bike lights for 200 cyclists, to share their journey data
- Neighbourly: using the insights from waste collection data to improve recycling and waste services in the city.

The three pilots were concluded successfully. In order to gain a greater understanding of how people are travelling across the city so that infrastructure investment can be targeted to support these patterns, the possibility of developing further Active Travel Insights pilots in other parts of the city is being explored.

## Case study: The Manchester Triangulum Project – mobility

Funded from the H2020 European Union Research and Innovation Programme, the Triangulum project was a five-year project that was completed in January 2020. Over twenty international partners worked together to demonstrate smart city solutions across three cities: Manchester (UK), Eindhoven (Netherlands), and Stavanger (Norway). Manchester City Council was the lead partner for the Manchester partners. The work covered three areas: energy, mobility, and data.

The project focused on the Oxford Road Corridor, as Manchester's innovation district. The area is located south of the city centre and is home to a unique concentration of knowledge, business and cultural assets, including the two universities. The mobility work focused on supporting the Council, Manchester Metropolitan University (MMU), and The University of Manchester.

In 2016, changes were made to Oxford Road, including protected cycle lanes and better pedestrian access, with sections of the road closed off to general traffic during the day (6am–9pm), allowing only buses, cyclists and taxis. While the improvements have had significant positive impacts on Oxford Road itself, some routes between various university sites have become significantly longer for cars and vans, which increases fuel consumption and therefore emissions.

Triangulum's objective was to build on the changes to Oxford Road and for the mobility component to introduce more electric vehicles (EVs) along with electric cargo bikes (e-cargo bikes). This enabled the partners to acquire 14 EVs and access to a fleet of six e-cargo bikes.

The introduction of EVs to the fleets provided the fleet managers with an opportunity to access different marques and models. By the end of the project, the total EV fleet across the three organisations comprised 35 vehicles, including electric cars, vans and a landscaper. This represents almost 10% of the total fleet of around 364 vehicles.

### E-cargo bike fleet

There was no history of e-cargo bike use across the three organisations, so rather than introducing e-cargo bikes into each organisation separately, the project leased a small fleet of e-cargo bikes. This meant that staff and a wider group of individuals, social enterprises and small businesses were able to try the bikes with no upfront investment. This approach reflects the step change in working practices required to use e-cargo bikes, and the need for education and trial before change can be achieved. The e-cargo bike trials were managed by Manchester Bike Hire via a contract with the Council.

Manchester Bike Hire provided a small fleet of e-cargo bikes with different specifications, and supported the project with try-outs and demonstrations at numerous events across the city, eg. Clean Air Day, Manchester Day, events hosted by TfGM, and the annual cycle event facilitated by Oxford Road Corridor. The three organisations also publicised availability for their staff. There were more than thirty enquiries and 20 trials, resulting in 2,876 days of e-cargo bike hire, the equivalent of two bikes being used each day over the four-year trial period.

The results of the project across the three organisations were very successful, with an overall saving of 20.43 tonnes CO<sub>2</sub>, 51.77kg NOx, 863g particulates, and 108.45kg CO.

The vehicles acquired through the Triangulum Project have been used in very different ways – as utility vehicles used daily by the same group of staff for similar routine journeys at one end of the spectrum, and as pool vehicles available to all staff with diverse trip requirements at the other. This diversity has meant that the evaluation could look at attitudes and behaviours across a range of circumstances.

Organisation	Triangulum fleet	Mileage	Emissions saved
Manchester City Council	3 electric vans 1 electric car 4 e-cargo bikes	10,112 miles (March to December 2019)	1.9 tonnes CO <sub>2</sub> 4.85kg NOx 81g particulates 10.19kg CO
Manchester Metropolitan University	2 electric cars (MMU funded 1 more), 1 e-cargo bike	34,278 miles (August 2016 to November 2019)	6.5 tonnes CO <sub>2</sub> 16.45kg NOx 274g particulates 34.28kg CO
The University of Manchester	7 electric vans 1 e-cargo bike	64,473 miles (August 2016 to November 2019)	12.03 tonnes CO <sub>2</sub> 30.47kg NOx 508g particulates 63.98kg CO
<b>Total</b>			<b>20.43 tonnes CO<sub>2</sub> 51.77kg NOx 863g particulates 108.45kg CO</b>

**Key findings**

- People who used the vehicles are positive about EVs.
- Providing pool EVs has improved people's commutes and working lives.

When asked about their attitudes to getting an electric car:

- 70% of those surveyed 'would recommend' getting an electric car.
- An additional 16% would recommend getting an electric car with some conditions or recommendations (eg. 'for short trips' or 'if you can afford it').
- Only 14% would not recommend getting an electric car at all.

**Electric cargo bikes**

Trialling e-cargo bikes proved to require a greater adjustment of behaviour than replacing an internal combustion engine vehicle with a very similar electric-powered vehicle.

The project has enabled the partners to look at ways of incorporating the project learning and legacy into their businesses. Just one example is how the Council is looking at ways to incorporate e-cargo bikes in the fleet.

## Conclusion

Political priorities, environmental concerns, changes to social expectations, as well as technological advances, are transforming the way people connect. The likely scale of transformation that will be seen over the coming years is starting to become more apparent within Manchester.

Although more needs to be done and significant further investment is needed, progress is being made, such as the continuing trend of more people travelling into the city centre by sustainable transport and the significant reduction in those killed or seriously injured on our roads. Changes are needed to tackle congestion, reduce journey times, improve air quality, and reduce emissions. Major infrastructure investments in rail and rapid transit are long-term projects requiring cross-boundary co-ordination delivered by Government funding. The Council will continue to work collaboratively with partners and lobby the Government to prioritise the right investments in Manchester's connections across the North of England to the wider world.

Transport is one of the key elements of the city's response to the COVID-19 pandemic. Economic and social recovery will only be

possible if safe ways can be found to enable people to move around on public transport, but beyond that it may be necessary to accommodate our residents' changes in behaviour, for example by enabling safer walking and cycling into and around district centres. Digital connectivity may become even more important as home working becomes more prevalent, and the city's growth sectors adapt to and create a different spatial structure. However, we are in the early days of scientific understanding of the COVID-19 virus, and should be wary of making assumptions about the long-term impacts at this stage.

In the realm of digital connectivity, since 2015 Manchester has established itself as a place where the transformative potential of the digital and technology sector can be harnessed and explored. The city continues to attract established firms and to be a magnet for entrepreneurs who are confident in the supportive environment the city has created.

It is essential that work continues to develop the city's smart city infrastructure, so that the lessons from the CityVerve and Triangulum programmes can be built upon. The continued development and application of digital technology will enable the city to capitalise on the opportunities that the Internet of

Things will bring and further enhance the city's status as a leading digital city.

However, the city's credentials as an aspiring global digital city and the continuing strength of the digital and tech sector may be adversely affected by the availability and take-up of superfast/ultrafast broadband by residential and SME premises which, although improving, is still lower than many other major UK cities. While work in this area is ongoing, a particular challenge regarding the provision of digital infrastructure is ensuring all residents can access it both physically and financially. It is not only necessary to improve connectivity throughout all the city's neighbourhoods, but also to ensure that this provision is affordable, so that all residents have the ability and the digital devices to be able to access it.

Although Manchester offers good transport connectivity and continues to increase capacity, it is very important that the network serves people's changing needs, and that public transport in particular is affordable and accessible, so that all residents can benefit fully from living in a truly connected city.