Transport for Greater Manchester


# Cross City Bus Package and Busway Programme

## Monitoring and Evaluation Early Findings Report

July 2020

**Contents**

# 1 Executive Summary

## 1.1 The Bus Priority Programme and its Core Aims and Objectives

1.1.1 This report provides early findings on the monitoring and evaluation of the Greater Manchester Bus Priority Programme, drawing on evidence from up to 2 years after the programme was completed. As well as providing bus priority and associated measures in the Regional Centre, the programme consists of interventions on three corridors radiating out of the Regional Centre:

- To the west, the Leigh to Ellenbrook Guided Busway and the A580 corridor;
- A664 Rochdale Road to the north; and
- Oxford Road to the south.

1.1.2 Although the programme features bus priority measures, the works on each of the corridors have also sought to improve facilities for pedestrians and cyclists, and general traffic where possible. Oxford Road has seen a particular emphasis on providing a high quality pedestrian environment along with segregated cycle lanes of a high standard, as well as highway improvements on parallel routes to help mitigate against any traffic displacement from Oxford Road.

1.1.3 A number of key aims and objectives were derived for the western corridor, most of which are shared with other parts of the programme and are used to structure later parts of this Executive Summary:

- **Shorter** passenger journey times, more **punctual** and **reliable** bus services along the route;
- Better **passenger** travel **experience;**
- More passengers to get to their destination in a **single bus journey** – without the need to interchange;
- **Increased direct access to employment** opportunities across Greater Manchester;
- **Improved access and connectivity** to the hospital site along Oxford Road for staff, visitors & patients;
- **Improved access and links** to Salford University and both Manchester universities;
- **Improved links** to the wider public transport network - rail and Metrolink;

- Improved **cycling and pedestrian** crossing facilities;
- **Investment along the corridors** in key towns and communities; and
- **Improved residential appeal** of local communities served by the scheme.

1.1.4 The main body of this report provides extensive monitoring and evaluation evidence and is structured as follows:

- Introductory section, including: scheme coverage; aims and objectives; and, scheme opening dates;
- Programme context, including: delivery in relation to plans; cost estimates and outturns; lessons learnt; and, development of bus services;
- Intermediate indicators of performance, including: before and after journey times and bus journey time variability; and, door–to-door measures of access to key destination types;
- Impacts on perceptions of bus travel and travel patterns; including: bus passenger satisfaction; and, cross city travel times and costs; and
- Early findings on the effectiveness of provision, including: modal shift from car; Oxford Road walking and cycling volumes; cyclist attitudes to provision; pedestrian, cyclist and equestrian path provision alongside the Busway; economic and environmental impacts on Oxford Road; economic impacts on Leigh, Atherton and Tyldesley; park and ride provision; carbon impact; bus patronage; and before and after traffic changes on Oxford Road and parallel routes.

## 1.2 Highlights from the Report on Progress Towards Achieving Aims and Objectives

1.2.1 A summary of the main benefits of the scheme and lessons learned experienced to date is provided below, structured around the aims and objectives.

**Shorter journey times, more punctual and reliable bus services**

1.2.2 Journey time findings from before and after surveys need to be considered in the context of overall economic growth, particularly in the Regional Centre. As an example, employment in the Regional Centre has increased by almost a quarter (23%) over the period 2013 to 2017 according to Office for National Statistics figures.

1.2.3 The implementation of the programme has allowed for a step-change in the level of service in terms of quality, journey time and reliability between Leigh, Atherton, Tyldesley, Salford and Manchester. In providing a greater range of bus services crossing the city centre, it has also allowed for greater resilience of the overall transport network and for capacity to cater for future growth of the city centre economy. In peak periods prior to the implementation of the scheme, bus journey times between Leigh and Manchester could reach up to 90 minutes on some days and varied on a daily basis, meaning that passengers often experienced an unreliable service. Following the completion of the Busway scheme and associated measures, journey times between Leigh and Manchester are consistently 50 minutes.

1.2.4 In the opposite direction, between Manchester and Leigh, overall bus journey times have not gone down significantly due to sections of route, where implementation of bus priority measures has not been possible, that still attract delay during some evening peak periods. Future planning needs to emphasise a whole corridor approach to the development and implementation of bus priority measures and minimise the number of sections/hotspots where delay may still be experienced.

1.2.5 In the Regional Centre and along Oxford Road, the variability of bus journey times has reduced by over 30% in some time periods in relation to the period before bus priority measures and associated infrastructure were introduced.

1.2.6 Due to consultation and stakeholder feedback, fewer bus priority measures than were originally planned were delivered on the A664. Delivery of approximately half the planned infrastructure, combined with higher than expected traffic growth, means that bus passenger journey times have not significantly improved in overall terms. Journey times have, however improved on those sections of route where bus priority measures were implemented. For future schemes bold decision making grounded in informed analysis is required to ensure benefits for bus passengers are maximised.

**Better passenger travel experience**

1.2.7 In relation to the Vantage services operating between the western and the southern corridors, the new services offer high quality vehicles, more frequent and reliable services, level boarding and better passenger information compared to the pre-existing bus services on the corridors.

1.2.8 Overall passenger satisfaction on the Vantage services is higher than the Greater Manchester average, at 89% and with a high proportion (48%) of passengers saying that they are ‘very satisfied’ with their overall journey

experience. Across the bus services that traverse the city centre between the corridors, the level of recommendation is high, with 91% overall saying that they would recommend the services to their friends or family.

1.2.9 This is in contrast, to other cross city services, such as the 18, 50 services where overall levels of satisfaction, and in particular levels of satisfaction linked with frequency of service and reliability of service are much lower than that recorded on the V1/V2 service. This is considered to be predominantly driven by the high level of priority and investment in vehicles and infrastructure on the V1/V2 service as opposed to the other services which only benefit from discrete sections of bus priority within the Regional Centre and on the A664 Corridor.

1.2.10 Levels of transfer from car are high, particularly for the Vantage service and illustrate the attractiveness of the service provision. Between 20-25% of bus passengers on the Vantage services say they would have travelled by car in the absence of the service.

1.2.11 This is in contrast to other cross city services, such as the 18 and 50 services where modal shift has been much more modest at between 5-7% of trips.

1.2.12 The above comparison emphasises the importance of delivery of the whole package: infrastructure; service; and vehicles rather than just individual elements in order to deliver success and maximise the benefits that can be achieved through the investment.

**More passengers able to get to their destination in a single journey**

1.2.13 The bus priority measures, particularly those focused on the Regional Centre, enable the more dependable operation of bus services across the Regional Centre. In doing so, a greater number of passengers are able to complete their journey using one bus and one ticket. Passengers who no longer need to interchange between buses in the city centre no longer need to experience the inconvenience of interchange, thereby avoiding the need to walk between buses, wait for a second bus and potentially face an additional bus fare.

1.2.14 From surveys of bus passengers who would otherwise have had to interchange between buses to complete their journey, removing the inconvenience of interchange has been assessed as being typically worth the equivalent of 10 minutes of journey time, with a maximum time saving of up to 50 minutes for some trips.

**Increased access to employment, healthcare and education facilities**

1.2.15 The programme offers a high quality alternative to car travel for journeys from the catchment areas to concentrations of employment, education and healthcare hubs and leisure trip attractors located in the Regional Centre, along the Chapel Street corridor in Salford and along Oxford Road.

1.2.16 Analysis of the degree to which door-to-door overall journey times by public transport have changed indicates that over 5% of the Greater Manchester population has benefited through a reduction in door-to-door public transport journey times by 5% or more.

**Improved links to the wider public transport network**

1.2.17 The bus services that now cross the Regional Centre provide good links that enable interchange with rail, Metrolink and other bus services in the Regional Centre. In the case of Busway services, these in themselves provide a high quality trunk service that is fed by local services in Leigh, Atherton and Tyldesley. Busway services link in with other high quality bus services at Salford Crescent, with Salford Central, Salford Crescent and Oxford Road rail stations also gaining better access. This is also the case for Metrolink, particularly at St Peter's Square. Over 12% of passengers using Vantage services interchange with other forms of public transport as part of their journey.

1.2.18 It was originally envisaged that operators may choose to provide a number of feeder services or other commercial initiatives, to interchange with the busway service at Tyldesley, or other locations along the route. This would broaden the opportunities for travel, particularly as at the time of Busway service introduction, a couple of similar but more circuitous services were withdrawn. While TfGM has been able to provide a limited number of tendered journeys that connect at Tyldesley (and others that serve the main stops on Elliott Street), the commercial operators have not to date brought forward the provision of further connecting services and demonstrated the necessary commercial appetite to do so. This may be due to the differential in price that may apply for passengers in terms of ticketing products, and the requirement for passengers to potentially purchase a multi-operator ticket to travel; or it may be due to other factors and changes which have taken place in the bus network in the north of Greater Manchester.

**Improved cycling and walking facilities**

1.2.19 As part of the programme, extensive pedestrian and cycling measures have been introduced throughout. A 4.5 metre wide path has been

constructed adjacent to the full length of the Busway, to enable pedestrians, wheelchair users, cyclists and horse riders to travel away from other road users. A recent survey of users of the path led to an estimate that approaching a quarter of a million trips are made on the path every year. The path's provision has led to an uplift in more active travel, with 58% of users surveyed saying it had led to a significant increase in their pursuit of a more active lifestyle.

1.2.20 On Oxford Road, following intensive consultation activity, the scheme was transformed by the introduction of award winning Dutch-style segregated cycle lanes, lanes that pass behind bus stops to lessen interaction between buses and cyclists. As well as contributing to a more than doubling of cyclist numbers, the survey indicated that 64% of cyclists on the route had been encouraged to cycle by the quality of the cycle lanes provided. Pedestrian facilities have also been improved, in particular with the widening of footways, narrowing of the carriageway and an increase in crossing facilities.

1.2.21 When considering bus priority measures on the A580 and A664, opportunities have also been taken to improve provision for pedestrians in particular, and for cyclists at many locations, through redesign of junctions to allow for safer crossing facilities and an increased number of crossing points. These measures have secured benefits in relation to reducing severance for pedestrians and cyclists in communities along the corridors. It is recognised that in some cases the introduction of these new facilities has had a minor adverse impact on journey times through the junctions. Whilst the scheme has led to some significant investment in improvements for cyclists and pedestrians, the emphasis of the original scheme was largely focussed around the bus. For future schemes it is therefore critical that the focus should be on the multi-modal benefits of the scheme from the early stages of development and not just focussed on one individual mode, thereby adopting and tying into TfGM's Streets for All approach.

**Investment along the corridors**

1.2.22 The Busway, in particular, serves as the focus for a corridor of development sites that are in various stages of planning and delivery and are seeking to benefit from improved access to employees and markets, thereby stimulating inward investment to the areas that it will serve. Examples include several residential developments facilitating over 1,000 houses once fully constructed, adjacent to the Busway at Higher Folds and Sale Lane and also adjacent to the A580 corridor in Walkden. While it is challenging to fully attribute these developments to the programme, all of these developments have commenced construction since the

opening of the scheme, with the Bus Priority Programme infrastructure featuring heavily in developer sales promotional material.

1.2.23 Stakeholder and business interviews to understand how the programme has influenced activity on Oxford Road and in Leigh, Atherton and Tyldesley were carried out in February 2019. While not seeking to provide statistics on impacts such as economic growth, these interviews highlighted a range of positive mechanisms for change, linking increased connectivity by bus and an improved pedestrian environment to better business performance.

1.2.24 The interviews also highlighted a small number of concerns such as limited vehicular access to Oxford Road may adversely impact on business; vehicle flow being displaced from Oxford Road to other parallel routes thereby making congestion worse on these routes; and increased accessibility/connectivity to Leigh may reduce the attractiveness of nearby smaller towns such as Atherton and Tyldesley.

**Improved residential appeal of local communities served by the programme**

1.2.25 In supporting improved bus services into the Regional Centre, the programme made areas served on the western and northern corridors more accessible and thus more attractive places to live.

1.2.26 The premium bus services on offer by means of the Busway infrastructure and associated bus priority measures, have resulted in a healthy uptake of bus services and strong growth in patronage over the first three years of operation on Vantage services, from 2.2 million passengers in 2016/17 to 3 million passengers in 2018/19.

1.2.27 This uptake has been in line with the forecasts made when the scheme was approved and has exceeded expectations in advance of launch. Based on strong patronage performance of the Vantage services, passenger survey feedback and evidence of modal shift from car, it has also shifted Greater Manchester expectations of the potential of bus in the conurbation as a potential solution to connectivity needs.

## 1.3 Conclusions on Critical Success Factors

1.3.1 The early findings monitoring and evaluation report for the Bus Priority Programme demonstrates that, while encountering significant challenges in both development and delivery, overall the programme has been delivered within budget, with significant bus patronage growth and modal shift, and has dramatically changed public opinions within the local communities it seeks to serve.

1.3.2 Fundamental success factors that have aided the achievement of programme benefits and which should be applied when developing and delivering the next generation of Bus Rapid Transit and Quality Bus Transit schemes set out in TfGM's five year Delivery Plan include:

- Constructing infrastructure that has enabled services to run reliably, offer shorter journey times for passengers and higher frequency services;
- Delivering infrastructure that is operationally flexible and able to respond to operational incidents and routing challenges;
- A high quality service, including high specification vehicles which all lead to a much improved passenger journey experience;
- Identifying and delivering routes that link from where people live to employment, healthcare, educational and leisure destinations thereby positively influencing travel behaviour change;
- Delivering attractive multi-modal schemes that appeal to a wide array of users;
- Strong political leadership, bold decision making and extensive and considered consultation, particularly when faced with strategic and local priorities that often conflict; and
- Delivering an affordable solution that combines service and vehicle enhancements with infrastructure improvements and meets the needs of the local communities served.

1.3.3 The delivery of the programme has provided real local examples in areas of transport provision where examples of such provision previously did not exist in Greater Manchester. This provides a platform for future delivery and innovation in the conurbation.

1.3.4 Evidence for a further report 5 years after programme completion will cover many of the areas included in this early findings report. In addition, analysis of accident records, the impact on travel patterns to the universities and health facilities on the Oxford Road corridor, and the re-visiting of value for money performance will be considered in the 5-years-after report.

# 2 Introduction

## 2.1 Purpose of this Report

2.1.1 The purpose of this report is to present the early findings of a range of monitoring and evaluation activities in relation to the Cross City Bus Package funded by the Department for Transport and the Greater Manchester Combined Authority (GMCA) and in relation to the Leigh-Salford-Manchester Busway works funded by the GMCA. Both of these schemes were prioritised by the Association of Greater Manchester Authorities (AGMA) as part of Greater Manchester's Transport Fund Investment Programme in May 2008.

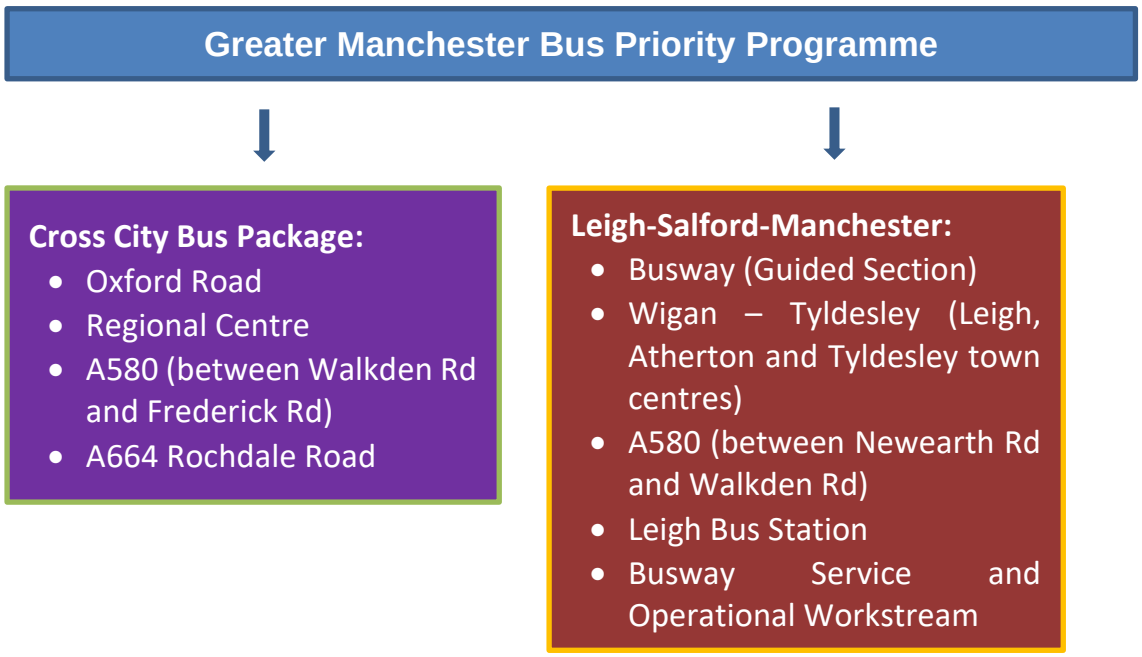
2.1.2 The schemes taken together are referred to as the Bus Priority Programme throughout this report. Findings relate to evidence collected in an early stage of the maturity of the Bus Priority Programme, generally within 1 to 2 years of the overall programme's completion in September 2017.

2.1.3 Infrastructure was delivered in a phased manner, as set out in Section 2.4, with the Busway service commencing in April 2016 operating on infrastructure completed between Leigh, Atherton, Tyldesley, Salford and the Regional Centre. September 2017 marked the time when the overall Bus Priority Programme was completed; based on the completion of all infrastructure and full enforcement of bus gate-related Traffic Regulation Orders on Oxford Road.

## 2.2 Scheme Coverage

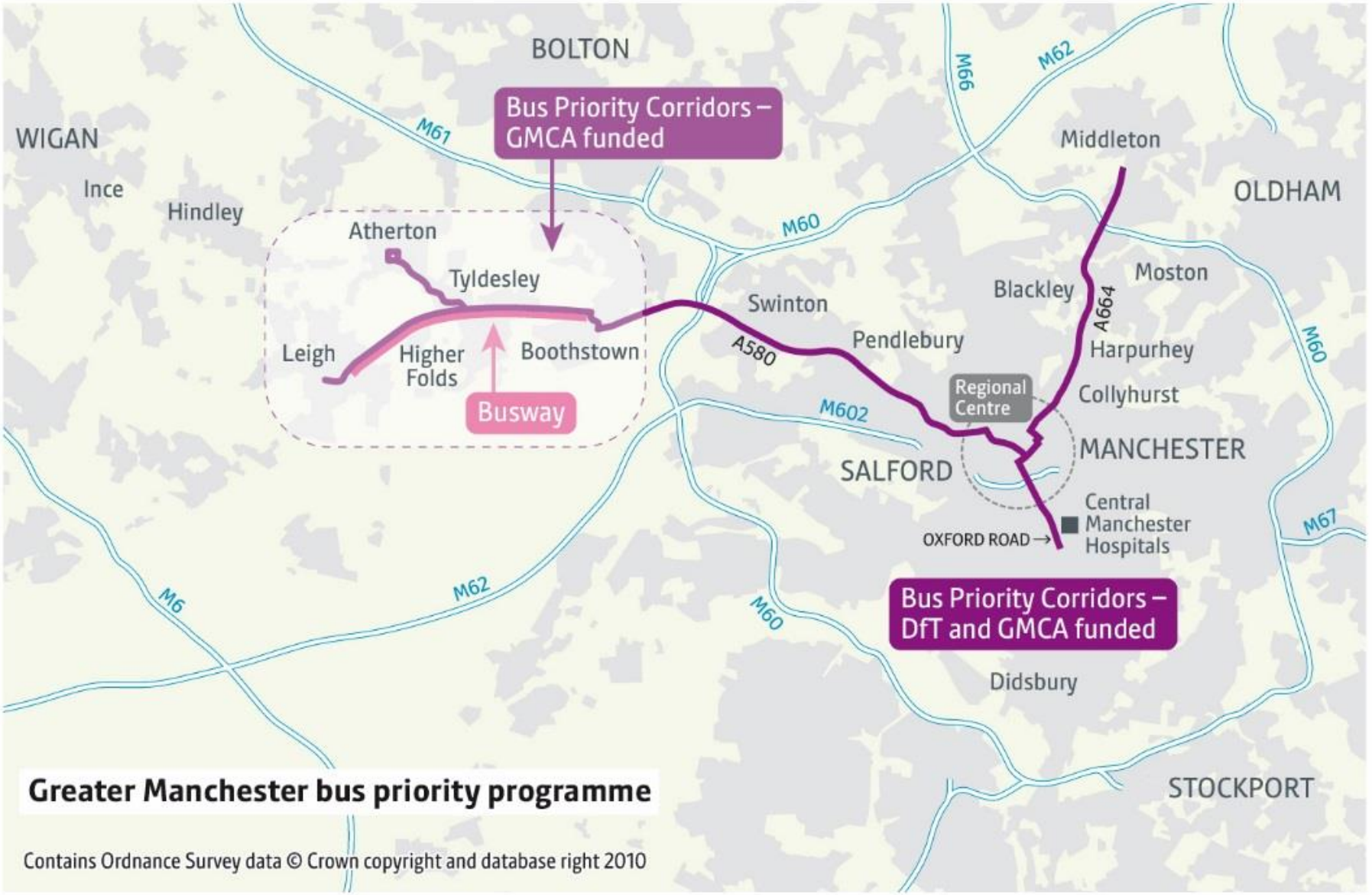
2.2.1 To provide an overview of the key elements of the Bus Priority Programme, Figure 2.1 sets out the main components of the Cross City Bus Package and the Leigh-Salford-Manchester Busway works.

**Figure 2.1: Key elements of the Greater Manchester Bus Priority Programme**




2.2.2 These main components of the Bus Priority Programme are also shown in the following map (Figure 2.2).

**Figure 2.2: Map Illustrating the Bus Priority Programme**



2.2.3 Section 3.1 provides more detail on the content of the main components delivered as part of the programme and how this relates to planned delivery.

2.2.4 As set out in the previous section, different mixes of funding, GMCA and DfT, were used for the different elements of the Bus Priority Programme. Where possible, analysis contained in this report separates out findings by those scheme elements funded by DfT and GMCA jointly from findings relating to scheme elements wholly funded by GMCA.

2.2.5 The overall aim of the report, however, is to provide a holistic perspective on the overall achievements of the Bus Priority Programme in relation to its original aims and objectives. For this reason, scheme element findings are not separated out by funder where it would be artificial to do this, e.g. where a bus service runs across Busway and Cross City infrastructure.

## 2.3 Aims and Objectives of the Programme

2.3.1 The Bus Priority Programme has a number of key strategic and local objectives which are set out below.

2.3.2 The corridor between Leigh, Atherton and Tyldesley, Salford and the Regional Centre, and to a lesser extent between Middleton and the Regional Centre, have suffered from poor public transport accessibility and connectivity for many years, characterised by lengthy and unreliable journey times into and out of the Regional Centre.

2.3.3 In the case of the Leigh, Salford, Manchester corridor this has resulted in bus journey times regularly being experienced of around 75-90 minutes in peak periods. Over time, consideration has been given to a range of modal options for this corridor including: heavy and light rail; and bus solutions. The strategic drivers of the scheme were:

- To provide a high quality public transport link between Leigh, Atherton and Manchester via Tyldesley, Ellenbrook, the A580 and Salford and to improve access to the local, regional and national public transport systems;
- To assist in traffic restraint and to reduce congestion, moderating the impacts of rising demand for car travel, by providing better quality public transport to retain existing passengers and attract existing car users;
- To improve labour market connectivity and reduce social exclusion i.e. removing barriers to accessing jobs and training for those without their own transport;

- To increase accessibility to the healthcare and education facilities on the A580 and Oxford Road corridors; and
- To stimulate inward investment in the surrounding areas and support the further development of Leigh as a commercial and business centre within Greater Manchester.

2.3.4 The scheme has a strong fit with national, regional and local strategic objectives and is an integral part of the Greater Manchester Strategy – the framework for achieving economic growth in the Manchester City Region and was central to Greater Manchester's Local Transport Plans 2 and 3.

2.3.5 The scheme and overall level of investment in bus priority infrastructure was also set in the context of diminishing levels of bus patronage across Greater Manchester. Between 2010 and 2018 overall bus patronage fell in Greater Manchester by around 30 million passengers, from 224 million passengers to 194 million passengers. Bus still, however, remains the key and dominant public transport mover of people with over three quarters of public transport trips in Greater Manchester made by bus.

2.3.6 From these strategic drivers a number of key aims and objectives were derived for the western corridor:

- **Shorter passenger journey times**, more **punctual** and **reliable** bus services along the route; (journey time saving in peak periods of 20-30 mins)
- Better passenger travel **experience;**
- More passengers to get to their destination in a **single bus journey** – without the need to interchange;
- **Increased direct access to employment** opportunities across Greater Manchester;
- **Improved access and connectivity** to the hospital site along Oxford Road for staff, visitors & patients;
- **Improved access and links** to Salford University and both Manchester universities;
- **Improved links** to wider public transport network - rail and Metrolink;
- **Improved cycling** and **pedestrian crossing facilities**;
- **Investment along the corridors** in key towns and communities; and
- **Improved residential appeal** of local communities served by the scheme.

2.3.7 Many of the above objectives also relate to the scheme developed for the A664 Manchester to Middleton corridor.

## 2.4 Scheme Opening Dates

2.4.1 To provide the chronology of the delivery of the Bus Priority Programme, Table 2.1 sets out the construction start and finish dates of the key components of the works. On a number of the scheme components advance or complementary works were carried out to minimise TfGM's overall risk profile and/or satisfy specific stakeholder requirements in advance of the commencement of the main contract works. These works are shown in the table.

**Table 2.1: Works start and completion dates**

| Works | Start of construction | Completion of construction |
|---|---|---|
| A580 | 23 April 2012 | 18 December 2015 |
| Busway | 2 July 2013 | 2 April 2016[1] |
| Oxford Road preparatory works, primarily on adjacent corridors | 20 January 2014 | 5 December 2014 |
| A664 Rochdale Road | 3 February 2014 | 19 December 2014 |
| Princess Street main works, Regional Centre | 4 March 2015 | 1 November 2015 |
| Regional Centre | 16 March 2015 | 31 March 2017 |
| Oxford Road | 30 November 2015 | 29 September 2017[2] |

[1] Some minor elements of works were completed in the period up to 27 May 2016.

[2] Vantage services were extended to the hospital site on Oxford Road on 24 April 2017, they formerly ran to Stevenson Square in the Regional Centre.

# 3 Programme Context

## 3.1 How does the delivered scheme compare to that at the Full Approval stage?

### Overview

3.1.1 The purpose of this section is to document what was delivered in relation to what was planned at the Full Approval stage. This enables later sections in this report on outputs and impacts to be better understood.

3.1.2 Table 3.1 provides an overview of the planned level of provision in the business cases for the bus priority schemes and what was ultimately delivered. In this table 'inbound' refers to towards the Regional Centre, while 'outbound' refers to away from the Regional Centre.

**Table 3.1: Planned and Delivered Bus Priority Measures**

| Scheme | Comments | Business case | | Delivered | |
|---|---|---|---|---|---|
| | | Inbound | Outbound | Inbound | Outbound |
| A664 Corridor (Rochdale Rd) | Provision of bus lanes | 6.5km combined | | 2.08km | 2.52km |
| Oxford Road | Existing carriageway changed to allow only bus, taxi & cycles to use.<br>Within the business case the restrictions were intended to be 24 hour however following consultation 0600-2100 restrictions were ultimately implemented. | 1.6km | 1.6km | 1.6km | 1.6km |
| City centre – Portland St & Piccadilly Gardens | 24 hour bus gates were introduced on Portland St and bus lanes were introduced on Portland St, London Road and Piccadilly. | 0.6km | 0.48km | 0.6km | 0.7km |

| Scheme | Comments | Business case | | Delivered | |
|---|---|---|---|---|---|
| | | Inbound | Outbound | Inbound | Outbound |
| City centre - Princess Street | Improvements made to bus stops but no dedicated bus lanes along the route incorporated in this scheme.<br><br>Princess St was made two way between Mancunian Way and Major St to assist general traffic access and bus access into the Regional Centre.<br><br>A bus gate was proposed in the business case at Princess St/Mosley St and was delivered as part of Metrolink second city crossing. | n/a | n/a | n/a | n/a |
| A580 Corridor | Created new bus lane and convert existing carriageway into bus lane. | 3.7km | 2.6km | 4.5km | 2.2km |
| Leigh Guided Busway* | East Bond Street to Newearth Road. | 7km | 7km | 7.14km | 7.14km |
| Wigan to Tyldesley* | Bus lanes on Spinning Jenny Way. | 0.125km | 0.25km | 0.125km | 0.25km |
| | Bus lane provision on Mealhouse Lane. | 0.125km | 0 | 0.125km | 0 |

Note: * Mainly locally funded as part of Busway programme.

3.1.3 Commentary on the different corridors' planned vs. delivered measures is set out below.

**A664 Rochdale Road**

3.1.4 In terms of the context for the scheme, the Booth Hall Children's Hospital, formerly located near the Rochdale Road corridor, was relocated to the Manchester Royal Infirmary site on Oxford Road. This was identified as a key opportunity for further bus enhancements and a major driver for the inclusion of the corridor as a cross city route in the proposals. The route was also identified as one that would benefit from improved public transport linkages between deprived residential areas to the north of the Regional Centre and areas where significant employment opportunities were being created in and to the south of the Regional Centre.

3.1.5 The scheme was managed by Manchester City Council using their own direct works department as the Principal Contractor, with the exception of a short section of improvements in Rochdale which were managed and delivered by Rochdale Council.

3.1.6 The scheme as planned, extended along Rochdale Road from Middleton bus station to the Regional Centre, comprised several kilometres of new bus lanes in each direction, largely within the existing carriageway, together with junction capacity enhancements, localised parking and loading restriction changes to reduce obstructive roadside activity, and upgraded pedestrian crossing facilities.

3.1.7 The proposed inbound bus lanes were designed to extend between Middleton bus station and the start of Alkrington Garden Village and from junction 20 of the M60 to Middleton Old Road. There were to be some shorter additional sections of bus lane towards the Regional Centre, including through the Queen's Road junction. Outbound bus lanes were proposed to extend from Collyhurst past Queen's Park and from Middleton Old Road to the M60 junction 20, with shorter sections on the approach to Middleton bus station.

3.1.8 The primary stakeholders for the A664 corridor are closely aligned with the benefit recipients, as those directly affected by the proposals. Highway users, residents, Manchester City Council, Rochdale Council, Middleton Township, bus operators and the Department for Transport, are the key stakeholders. Other influential stakeholders include the GMBOA (Greater Manchester Bus Operators Association, now replaced by OneBus) as well as local businesses.

3.1.9 A public consultation exercise on the proposed measures was held in October 2012. Significant feedback and comments were received, which in particular included: localised parking and loading issues, delays to general traffic and the provision of cycling facilities. As a result, the extent of the scheme was revised to meet the aspirations of stakeholders and to improve the operational efficiency of the scheme. The key changes were:

- The relocation of bus stops at a number of locations (e.g. at Victoria Avenue, also opposite the fire station);
- The removal of parking restriction proposals (e.g. the southbound side between Levedale Road and Whitemoss Road, on Whitemoss Road itself);
- Additional provision of laybys (e.g. at Kerr Street) or parking bays (e.g. outside the convenience store near Goodwin Square);

- The reduction of loading restrictions to cover peak periods only (0700-1000 and 1600-1900 on the southbound approach to Polefield Road and outside the cottages opposite Old Road);
- The removal of a proposal to make Shepherd Street one-way;
- The reduction in the length of bus lane near Middleton (on the southbound side of the A664);
- The reduction of northbound bus lane at Victoria Avenue; and
- The introduction of a cycle lane from Middleton Old Road onto Rochdale Road.

3.1.10 Following these changes the revised scheme delivered the following elements:

- The provision of 4.6km, combined in both directions, of new bus lanes between Shudehill in the Regional Centre and Middleton, largely within the existing carriageway;
- The creation of new cycle lanes;
- Traffic signal improvements, including the introduction of signal control technology (known as SCOOT), with upgraded pedestrian facilities at seven junctions; and
- The introduction of parking bays for residents and shoppers at four key locations within local centres along the route.

3.1.11 In summary for the A664 Rochdale Road corridor, as fewer kilometres of bus lane were delivered along the A664 due to community and stakeholder consultation feedback, the journey time and reliability benefits to bus users on the corridor were less significant than anticipated and this is reflected in subsequent sections on outputs and benefits on this corridor. Despite these issues, the 18 cross city bus service was introduced in anticipation of bus priority measures on this corridor and through the Regional Centre, and still runs at this time, enabling passengers to take advantage of the removal of an interchange penalty in the Regional Centre.

**Oxford Road**

3.1.12 The Oxford Road corridor has a strong concentration of education facilities, including sites relating to Manchester Metropolitan University and the University of Manchester. There is also a large cluster of hospital and healthcare-related facilities, many of which were recently relocated from other parts of Greater Manchester, at its southern end. In addition, it has a high density of employment opportunities along its length. Improving connectivity by bus to, across and beyond the Regional

Centre, along with providing a more pleasant and safer environment for pedestrians and cyclists, was therefore a key aspiration that the scheme was designed to meet.

3.1.13 The positioning, impact and high profile nature of the Cross City Bus Priority Programme made a proactive, concerted approach to stakeholder engagement an essential requirement of the Oxford Road project, and it was necessary to ensure that the maximum benefits are realised for customers. Establishment of effective working relationships with key partners and stakeholders greatly assisted in securing sign off of the approved design.

3.1.14 An extended period of design development followed the consultation and engagement process, during which the design team updated the proposals based on the comments received. TfGM and MCC undertook an inclusive, transparent approach to designing the Oxford Road cycle bypass lanes, which are the cycle lanes that pass behind bus stops reducing interaction between cyclists and buses (shown in Figure 3.1). This took the form of a series of design workshops in early 2014 with a range of disability, cycle and pedestrian user groups.

**Figure 3.1: Example of a cycle bypass lane**


3.1.15 The Oxford Road scheme and the stakeholder engagement process is widely seen as a leader in policy change for Greater Manchester and was the first scheme which truly catered for all users.

3.1.16 The Oxford Road scheme was managed by Manchester City Council using their own Direct Works department as the Principal Contractor.

3.1.17 A key component of the planned works was a 1.6km bus, hackney carriage/ taxi and cycle only section on Oxford Road, between Hathersage Road and Grosvenor Street. The scheme proposals were to be within the existing carriageway and to include the widening of pavements with segregated on-carriageway cycle lanes.

3.1.18 To ease the impact of the displacement of traffic on alternative routes and assist in the provision of servicing and access, complementary traffic management/ capacity provision measures were proposed on two parallel routes. Also included was provision for a bus terminus facility within the Manchester Royal Infirmary site at the southern end of the corridor.

3.1.19 In line with stakeholder requirements and in advance of the works on Oxford Road, the works on parallel routes, namely Upper Brook Street, Lloyd Street and Cambridge Street were completed. Specific measures that were delivered included:

- the introduction of 20mph restrictions on Lloyd Street (North, South and Upper) and Higher Cambridge Street, to reduce traffic speed and so develop a safer environment for pedestrians, and discourage displacement of traffic to this route;
- localised road widening on Upper Brook Street, adjacent to the Central Manchester Foundation Trust site, to minimise congestion and improve traffic flow;
- additional waiting restrictions introduced at strategic locations along Upper Brook Street to increase traffic capacity and improve traffic flow;
- junction improvements along Lloyd Street and Higher Cambridge Street to improve safety and crossing conditions for pedestrians;
- bus stop build-outs to enable safer, more convenient and efficient bus boarding, while protecting parking for residents and visitors;
- kerb build-outs to form a gateway into the residential area on Lloyd Street South; and
- pedestrian improvements, including build-outs and crossing upgrades on Upper Brook Street, to reduce severance and improve access to the Oxford Road corridor.

3.1.20 An extensive public consultation exercise was undertaken for the Oxford Road scheme in summer 2013 and as a result a number of changes and

additional measures were incorporated within the scheme. These included:

- the introduction of access restrictions for Oxford Road and Oxford Street. These restrictions were originally proposed as 24-hour restrictions but were reduced to access restrictions between the hours of 0600-2100 following feedback and to increase natural surveillance during the night time period along Oxford Road. Access is now limited to buses, taxis and cyclists between the following junctions:
    - Hathersage Road and Grosvenor Street, in both directions;
    - Whitworth Street West and Portland Street in a northbound direction; and
    - Charles Street and Grosvenor Street in a southbound direction.
- 4.5km of continuous, kerb segregated cycle lane - between the junction of Oxford Street and Portland Street, and the junction of Moss Lane East and Oxford Road, taking into account provision in both directions;
- cycle lanes passing behind traffic signals at Grafton Street junction, Sidney Street and in front of St James Buildings;
- 13 bespoke bus boarding platforms complete with high quality waiting facilities and cycle bypass lanes that pass around the back of the bus stops, avoiding the need for cyclists to interact with buses and allowing for two bus stops on the boarding platform that reduce passenger and driver confusion due to grouping of common destinations;
- 75 new Sheffield cycle stands at key locations along the Corridor;
- The creation of a high quality pedestrian environment with wider footways, enhanced crossing facilities and the introduction of York stone through the campus areas of the universities;
- Full carriageway and footway resurfacing;
- Increased provision of disabled parking bays to serve the Oxford Road corridor area; and
- The introduction of 20mph restrictions on Oxford Road and Oxford Street.

3.1.21 In summary, on the Oxford Road corridor the bus priority measures have been delivered largely as planned with significant benefits. Provision for pedestrians and cyclists has been significantly improved over and above the initial plans for the corridor.

**Regional Centre**

3.1.22 Within the Regional Centre, bus priority measures along the broadly east-west Portland Street and north-south Princess Street corridors were to be implemented to enable improved and more reliable cross city bus linkages between:

- Oxford Road in the south with the Middleton corridor in the north; and,
- Oxford Road and the A580 to the west.

3.1.23 Without this enabling infrastructure a number of the newly introduced cross city bus services would not have been introduced and passengers would still be required to change buses thereby incurring an interchange penalty.

3.1.24 The measures within the Regional Centre were also a key part of Manchester City Council's Regional Centre Transport Strategy.

3.1.25 The Regional Centre scheme was managed by Manchester City Council using their own Direct Works department as the Principal Contractor.

3.1.26 The main improvements for buses on and in the vicinity of Portland Street were:

- A new bus gate was provided on Portland Street in both directions between the Minshull Street/New York Street junction and Aytoun Street. Enforcement of this element of the scheme ensures that the aspirations of the Transport Strategy for Manchester City Centre are met by removing general through traffic from Portland Street. In turn this gives a higher priority and reliability to buses on Portland Street enabling the overall improvement of all bus services that use it;
- The north-east bound approach to this area, on Portland Street between Charlotte Street and New York Street, and the southwest bound approach via Lever Street and Piccadilly were restricted to buses and authorised vehicles;
- The bus lane on Portland Street between Oxford Street and Charlotte Street was consolidated into a new continuous 24/7 bus lane. The existing bus lane had a short section between Princess Street and Nicholas Street that operated 7am to 7pm while the remainder operated 24hrs;

- The northbound section of Princess Street between Portland Street and Reyner Street is restricted to only allow cross city buses to access the route that connects through to Salford and onto Leigh;
- On Portland Street at the southwest bound approach to Princess Street, only buses are permitted to make the right turn into Princess Street in a north westerly direction. Cyclists are not permitted to make this turn on safety grounds and hackney carriages are restricted due to the volumes of buses needing to make this manoeuvre;
- From this junction, services heading south out of the city were all originally routed southbound along Princess Street and then westbound along Whitworth Street to reach Oxford Street. The new two-way section of Oxford Street for buses between Portland Street and Whitworth Street allows these services to be split so that some are routed along Portland Street to Oxford Street and then turn left onto the new southbound section of Oxford Street;
- The existing northeast bound bus lane on Portland Street outside No1 Piccadilly Gardens was reconfigured to suit the new road layout;
- The existing bus lane on Aytoun Street between Chatham Street and Portland Street was relocated to allow two-way working of Aytoun Street between Portland Street and Chatham Street;
- A new bus lane has been provided on London Road and Piccadilly southbound between Lena Street and Store Street to protect buses from displaced traffic no longer able to use Portland Street;
- A new right turn pocket has been created on Shudehill to improve access into the Shudehill Interchange; and
- Signage for the existing contra-flow bus lane on Church Street and Dale Street was updated to latest guidance.

3.1.27 All works were completed in the Regional Centre with the exception of making Lever Street two way. In early 2016, it became apparent that Lever Street was of insufficient width (and could not be widened further), to support two way operation at its Piccadilly end, and due to the presence of an existing double length bus stop which effectively formed a third lane and which could not be relocated on site live bus trials were carried out. After review, MCC (as Highway Authority) determined that Lever Street should remain single direction (north east bound).

3.1.28 Bus stop improvements in the area were as follows:

- The two existing northeast bound bus stops on Portland Street between Oxford Street and Princess Street were upgraded to provide raised platforms that assist with boarding and alighting and provide direct access to low-floored buses for wheelchair users;
- The southwest bound bus stop on Portland Street immediately southwest of Princess Street was relocated to immediately southwest of Dickinson Street to improve traffic flow across the junction and removes the need for a bus to make a sharp manoeuvre into the bus stop should it be in the outside lane of the two lanes on the approach to the junction. A raised platform was provided at this stop;
- The existing southwest bound bus stop on Portland Street between Chorlton Street and Sackville Street was reconfigured to suit the new kerbline and a double platform provided to allow passengers to safely board and alight from two buses at the same time. The existing buildout at the end of this stop was removed to allow easier exiting for buses from this stop;
- The existing northeast bound alighting only bus stop on Portland Street between Charlotte Street and New York Street became a boarding and alighting stop, upgraded to provide a raised platform;
- The existing northwest bound bus stop on Piccadilly between Portland Street and Lever Street was reconfigured to suit the new kerbline. A raised platform and new shelter are also provided at this stop;
- Opposite to the above, a new bus stop was provided for southeast bound cross city buses. A raised platform and new shelter were also provided to match the shelter opposite;
- A new bus stop was created on Church Street between Red Lion Street and Tib Street for southeast bound cross city buses with a raised platform and new shelter provided at this stop;
- A new northwest bound bus stop with raised platform was provided on Church Street between Joiner Street and Birchin Lane.
- The existing southwest bound bus stop on High Street between Back Turner Street and Turner Street was upgraded with a raised platform;
- The existing southwest bound bus stop on Shudehill between New George Street and Thomas Street were relocated further back from the Thomas Street junction to improve traffic flow. A double raised platform was provided at this stop;

- The existing northeast bound bus stop on Shudehill between Hanover Street and Mayes Street was upgraded with a double platform; and
- The existing northwest bound bus stop on John Dalton Street between Ridgefield and Deansgate was upgraded with a raised platform.

3.1.29 In terms of the Regional Centre works focusing on Portland Street, the proposals were subject to a public consultation exercise in summer 2013 and were subsequently, largely delivered as planned.

**Princess Street**

3.1.30 The Princess Street scheme was delivered as a standalone project in advance of the main Oxford Road scheme as it acted as an enabling scheme to the main Oxford Road works. For efficiencies in resourcing and cost, the Princess Street scheme was delivered in parallel with the Regional Centre (Portland Street) element of the Cross City Bus Programme described above.

3.1.31 The Princess Street scheme was managed by Manchester City Council using their own Direct Works department as the Principal Contractor.

3.1.32 Features included in the scheme were:

- Brook Street and Princess Street became two-way between the Mancunian Way overpass and Major Street;
- A new dedicated right turn slip road was provided on Brook Street for northbound traffic to be able to turn directly into the Mancunian Way slip road;
- The existing gyratory arrangement at Cloak Street was removed;
- The three southbound lanes between Cloak Street and the river Medlock bridge were converted to one northbound and two southbound lanes on the approach to the Mancunian Way slip road junction;
- Controlled pedestrian facilities were incorporated and upgraded at the Brook Street junction, across the Mancunian way slip road, Charles Street and Whitworth Street junction;
- New Advanced Cycle Stop Lines (ACSL) were provided on Brook Street for north and southbound cycles at the new signalised junction with the Mancunian Way slip road. Existing ACSL's were retained on Charles Street and Whitworth Street;

- The existing southbound bus stop on Princess Street (south of Charles Street) was upgraded to provide raised platforms that assist with boarding and alighting;
- Overall, there was a net loss of six pay and display parking places in the Princess Street project. Replacement bays were proposed as part of the Oxford Road and Regional Centre proposals;
- The new lay-by on the west side of Princess Street, in front of No.82 Asia House, provides a new loading bay that is shared with the existing taxi rank;
- A new 24/7 loading bay was provided on the west side of Princess Street just north of Whitworth Street outside the Atrium serviced apartments; and
- The junction of Charlotte Street and Portland Street was adapted to allow both sides of Portland Street to run at the same time whereas previously each arm of Portland Street ran under a separate signal stage.

3.1.33 The Princess Street measures in the Regional Centre were delivered largely as planned.

**A580 Corridor**

3.1.34 In terms of context for the A580 corridor, Manchester Children's Hospital was previously located at Pendlebury in Salford, close to the corridor and was relocated to the Manchester Royal Infirmary site adjacent to Oxford Road. Corridor improvements were also designed to support the re-development of Chapel Street in Salford and the environment surrounding the University of Salford.

3.1.35 The measures introduced on the A580 also played a key part in facilitating greatly improved public transport access between residential areas in the west of Greater Manchester and the Regional Centre and Oxford Road corridor. The A580 corridor had been identified previously as one that was lacking in regular and reliable public transport alternatives and where private car was dominant for many trips.

3.1.36 Proposals included the introduction of 24 hour bus lanes on the A580 along with enhancements to bus priority at a number of key junctions with traffic signals, waiting/ loading restrictions and bus stop upgrades. The DfT-funded elements of this section of route were intended to be delivered alongside the creation of the Busway scheme, which was locally funded.

3.1.37 Following business case approval, design changes were made to ensure that a minimum of two lanes was maintained for general traffic along the route. Further junction improvements were also identified in order to improve bus reliability, provide better crossing facilities for pedestrians and to minimise delays to general traffic.

3.1.38 The element of the Bus Priority Programme from A580 Ellenbrook to Walkden Road was funded locally. The proposals were delivered as part of the same contract previously described and comprised:

- Widening of the eastbound carriageway and re-allocation of road space on the A580 East Lancashire Road between Newearth Road and Walkden Road to accommodate a largely continuous bus lane;
- Junction improvements at A580/ Newearth Road and Walkden Road;
- Improved bus priority at all signalised junctions; and
- 2 new and 2 upgraded fully accessible bus stops provided with shelters.

3.1.39 The scheme was managed by Salford City Council using Galliford Try as the Principal Contractor.

3.1.40 In summary for the A580 corridor, other than the changes noted above the measures were delivered as originally anticipated in the business case.

**Leigh to Ellenbrook Guided Busway**

3.1.41 The corridor between Leigh, Atherton and Tyldesley and Manchester city centre historically suffered from poor public transport accessibility and connectivity for many years. Over time, consideration to a range of modal options has been given - including heavy and light rail and bus solutions. Following this consideration, it was determined that the construction of a guided Busway was the preferred option and an outline scheme was developed in the late 1990's, in order to provide a segregated, reliable and affordable public transport alternative to the private car.

3.1.42 The Busway ties directly in with the measures on the A580 to provide a coordinated set of measures aimed at improving reliability and passenger journey times along the route.

3.1.43 The Busway scheme was managed by TfGM and delivered by Balfour Beatty who were procured on an OJEU competitive basis.

3.1.44 The key elements of the delivered Busway scheme are:

- 7.1 km of off-highway dedicated guided bus lanes in each direction between East Bond Street and Newearth Road, including a new structure and retaining walls;
- Seven pairs of fully accessible bus stops incorporating shelters, lighting, CCTV, real time passenger information and cycle parking;
- Seven new traffic signal-controlled junctions where the Busway crosses existing highways and where buses are given 'on demand' priority;
- 14 crossing points of the guideway, in order to maintain existing footpaths and rights of way and also encourage active travel access to and from the Busway corridor;
- a combined path that can be used by a range of users as it serves as a footpath, cycle path and equestrian way, known as the multi-user path;
- Park and ride facilities for 130 vehicles in Leigh and 50 spaces in Tyldesley; and,
- environmental mitigation works to rehome and provide for amphibians including Great Crested Newts and to plant trees and create a new area of woodland to more than compensate for the trees lost as part of the construction works.

3.1.45 The Busway was completed as per the intended scheme within the business case.

**Wigan to Tyldesley including Leigh, Atherton and Tyldesley Town Centres**

3.1.46 Recognising the need to provide complementary infrastructure to support the provision of effective bus services feeding into and using the guided Busway, a range of measures between Wigan and Tyldesley, alongside improvements in Leigh, Atherton and Tyldesley town centres were planned.

3.1.47 These measures ensure that the guided Busway services are able to connect into and out of these town centres in a quick and reliable way without compromising the benefits of the core scheme. The measures have also been designed to support the wider regeneration of each of the town centres.

3.1.48 The Leigh, Atherton and Tyldesley town centre schemes were delivered on behalf of Wigan Council by North Midland Construction as the Principal Contractor.

3.1.49 The bulk of this scheme was delivered as planned, with some elements altered, as identified below, in response to stakeholder feedback. The extent to which the main aspects of the business case were completed is also set out below:

- Improvements to Atherton town centre to provide improved bus priority and bus waiting and layover facilities alongside congestion easing measures were completed according to the original scope;
- Improvements to Tyldesley town centre to provide improved bus priority and bus waiting facilities were completed as planned. This included restricting the use of Stanley Street to bus only traffic in a southbound direction, the creation of two new traffic signal controlled junctions with pedestrian facilities and enhanced public realm areas for use by the local community. In response to issues raised by local residents, 42 parking spaces were provided at Railway Street in echelon form, i.e. diagonal to the kerb, whereas previous parking had been parallel to the kerb;
- Nine bus stops that are served by Vantage services were upgraded included raise kerbs, new markings and shelters where appropriate;
- Traffic Regulation Orders on the route were rationalised, so that all road users were faced with a consistent set of regulations and in order to improve traffic flow;
- Within Leigh town centre, junctions were improved and connected via signal technology (known as SCOOT) to improve traffic flow. New bus stops and cycle lanes were also provided. Additional infrastructure, not part of the original plans, was provided including:
    - ducting to enable real time information to be provided to the bus station;
    - public realm improvements;
    - infrastructure improvements to Leigh bus station. These included a full upgrade to the Travelshop, including extended opening hours, a brighter and more pleasant waiting environment at all stands throughout the bus station, achieved through a re-glazing of the stands, refurbishment of toilets including accessible WC and baby change facilities, a new retail unit, provision of improved

passenger information, enhanced and extended CCTV coverage and the introduction of a new cycle hub, providing 45 secure cycle parking stands. The improvements were delivered on behalf of TfGM by Jamieson Contracting as the Principal Contractor.

- Some Traffic Regulation Orders were introduced along the A577 Corridor between Hindley and Tyldesley to improve traffic flow along the route. These also complemented a series of bus stop upgrades.
- The following scheme elements were not progressed for delivery following detailed value for money analysis and stakeholder feedback:
    - The upgrade of the signalised junction at Ince Bar (A577 Manchester Road/ Birkett Bank) would not deliver benefits well in excess of costs, this was dropped;
    - Bus priority measures in Hindley town centre; and
    - Junction improvements at Tyldesley Road/ Hamilton Street and at Tyldesley Road/ Shakerley Road.

**Overall conclusion – how the delivered scheme compares to that at Full Approval stage**

3.1.50 In overall conclusion on planned vs. delivered provision, the core bus priority measures have been delivered in key respects in relation to anticipated programme benefits as planned for the Oxford Road and A580 corridors. This is also the case for the Regional Centre measures. Bus priority measures on the A664 have, however, not been delivered to the extent planned, with resultant implications for bus user benefits that are described later in this report.

3.1.51 Investment in pedestrian and cyclist facilities has been as planned for the A580 corridor, the Busway, and over-and-above that originally planned for the Oxford Road corridor.

## 3.2 How have cost estimates developed over time and been managed in relation to the scope of the scheme?

3.2.1 A detailed summary of how cost estimates have developed over time will be provided in the 5 years after monitoring and evaluation report once all final accounts have been closed out. Any cost changes will be reflected in

the overall value for money offered by the Bus Priority Programme that will also be included in the 5 years after report.

3.2.2 Table 3.1 sets out the original budget for the main programme components.

**Table 3.1: Original costs and forecast outturn**

| Programme Component | Original budget (incl QRA) £000 |
|---|---|
| A664 Rochdale Road | 6,634 |
| Regional Centre | 6,728 |
| Oxford Road | 15,649 |
| A580 | 11,157 |
| Programme costs & contingency | 14,397 |
| **Cross City Bus total** | **54,564** |
| Busway | 52,659 |
| Programme costs & contingency | 15,227 |
| **Busway total** | **67,886** |
| **PROGRAMME TOTAL** | **122,450** |

3.2.3 It is anticipated that while some of the individual programme components may have exceeded their original base budget, all of the schemes will ultimately be delivered within their overall programme budgetary allowances. This will have positive implications for the value for money achieved by the overall programme, which will be considered as part of the 5 years after report.

## 3.3 What lessons can we learn from the scheme build process and effectiveness of delivery?

### Context for the review of lessons learnt

3.3.1 Following the completion of the Busway Programme and Cross City Bus Package, which together comprise the Bus Priority Programme, a comprehensive set of lessons learnt activities have been undertaken so that TfGM and its delivery partners can deliver future infrastructure in an effective manner and so that other scheme promoters beyond Greater Manchester can benefit from our experience.

3.3.2 The nature of the lessons learnt activities varied depending on the delivery strategy for each element of the Programme and therefore has been summarised separately.

**Busway – Leigh to Ellenbrook Guided Busway**

3.3.3 The Leigh to Ellenbrook Guided Busway is Greater Manchester's first scheme of this nature and prior to entering into contract in May 2013 was the subject of a significant assessment and challenge of the technical solution being put forward by the Preferred Bidder at the time, to ensure lessons learned on similar Busway schemes in Cambridge and Luton were taken into account.

3.3.4 The scheme was delivered on a design and construct basis using the NEC3 Option A Form of Contract (Fixed Price based on an Activity Schedule) with TfGM directly awarding the Contract. The Contractor that was selected to design and deliver the scheme was Balfour Beatty in conjunction with their designer Atkins. TfGM appointed Capita as their technical advisors and Contract (NEC) Project Manager.

3.3.5 The Busway opened to the public on 3 April 2016 and was delivered within the overall Busway Programme budget.

3.3.6 In order to ensure the identification of a wide range of lessons learned a comprehensive set of workshops were held. These covered a diverse range of subject / theme areas, engaging with a wide range of internal and external stakeholders. The broad themes were as show in Table 3.2.

**Table 3.2: Lessons Learnt Themes**

| Theme | Coverage |
|---|---|
| **Design and Construction** | All technical aspects of the scheme in both the design and construction phase. |
| **Operations and Handover** | All aspects of handing over the Busway from the project team to TfGM's Operational team, including engagement with First, the Busway operator. |
| **Communications** | All aspects of stakeholder and public communications during the development and predominantly the delivery phase of the scheme. |
| **Contractual and Procurement** | Arrangements, actions, documentation both Pre-Contract and during the Contract. |
| **Environmental** | All environmental elements of the scheme including the arrangements with the Forestry Commission and management of protected species. |

| Theme | Coverage |
|---|---|
| **Health & Safety** | All safety related aspects of the scheme development and delivery. |
| **Information Systems** | All elements of design and delivery relating to Information Systems infrastructure. |

3.3.7 The findings from the workshops above were classified into three categories:

1. Strategic lessons learned that need to be considered across all projects and initiatives within TfGM;
2. Lessons learned that will be considered/applied across a range of TfGM's capital infrastructure schemes in the future; and
3. Lessons learned that are more detailed and relevant to linear/Busway specific schemes in the future.

3.3.8 The key lessons learned and associated actions identified for Leigh to Ellenbrook Guided Busway are summarised below.

**Design and Construction**

3.3.9 The Busway was constructed using an innovative design solution and as such was rightly subject to significant challenge and due diligence prior to placing the Contract. Sufficient time should be built into the programme up front to allow for these extended activities and to ensure stakeholder expectations are met.

3.3.10 The Busway was constructed along the alignment of a disused railway and in order to ensure all stops were fully accessible and attractive to users the height of the Busway was raised thereby removing a number of bridges and the need to create bus stops within cuttings. By raising the Busway to highway level this meant a significant number of utilities required diversion many of which were time critical and benefited from early engagement with the Contractor, specialist advisors and utility providers.

3.3.11 The level of resource deployed by the Contractor to monitor, manage and control their supply chain during construction was considered to be low and as such led to delay as a result of work needing to be repeated. Greater scrutiny and challenge of the Contractor's resourcing proposals in relation to the management of their supply chain should be applied and adherence to their commitments should be ensured throughout the Contract.

3.3.12 Third party legal agreements that were essential to the delivery of the main contract works were not all finalised at the time the main Contract

was signed leading to delays to works. This was due to the coverage and requirement for these agreements not being confirmed at that time. Any crucial agreements with third parties should be secured prior to entering into Contract to limit the potential for delays during construction.

3.3.13 The emphasis of the scheme was largely focussed around the bus and whilst the service has been a huge success it is important to note the role played by other elements of the scheme, for example the multi user path, in contributing to the overall success of the scheme. This will be brought out in greater detail when discussing the lessons learned on the on-highway elements of the scheme, however the key message is that within scheme development and delivery the focus should be on the multi-modal benefits of the scheme and not just focussed on one individual mode.

3.3.14 The scheme benefited from strong political leadership and bold decision making, particularly when faced with strategic and local priorities which often were in conflict. Without this, the scheme would never have been delivered.

**Operational**

3.3.15 The handover period between construction and operation can be a challenging phase of project delivery and often is reduced in length due to construction pressures and also pressures in respect of opening the new facility in line with stakeholder expectations, as was the case with the Busway. It is of paramount importance that a designated handover period is protected to ensure sufficient testing of the new infrastructure and systems can be carried out and operational readiness can be assured. Despite the challenges faced on the Busway with regard to the handover of the facility and commencement of the new service, opening was still achieved on 3 April 2016 in line with stakeholder expectations.

*3.3.16* Early engagement with and from the team who are set to operate the new facility is also essential to ensure that the product being delivered meets their requirements and handover is carried out as smoothly as possible. This activity also needs to be funded and resourced appropriately.

*3.3.17* From an operational perspective the Busway has been a huge success with significantly more passengers using the service than originally anticipated by the operator in the first 3 years of operation. During the construction of the scheme the concept of a guided Busway was difficult to promote locally due to it being a new type of infrastructure within the north west of England. If similar schemes are delivered they will benefit from a proven concept and a track record of operational success and

therefore this should be capitalised upon when promoting future schemes and initiatives.

3.3.18 One of the key reasons for the success of the scheme has been the introduction of a high quality service, including high specification vehicles which all lead to a much improved passenger travel experience. Without this high quality service which complements the investment in the infrastructure the schemes success would have been extremely limited.

3.3.19 One of the key operational lessons learned is to ensure, wherever possible along a designated corridor that measures are introduced to give the bus priority and reduce any potential adverse impact on journey time and reliability, thereby protecting the benefits of the scheme. This can be summarised in the phrase 'Think Tram, Do Bus.'

3.3.20 The Busway service has been in operation for over 3 years and as such it has been possible to identify three key locations along the route where reliability is still a challenge for the service at certain times and days of the week. These are:

- Newearth Road, Salford between the Guided Busway and the A580 in a southbound direction;
- A580, Salford westbound in the vicinity of Irlam O'th Heights roundabout (underpass); and
- Regional Centre – the junction of New Bailey Street/Chapel Street

3.3.21 Each of these locations have been considered in relation to potential solutions to improve service reliability, both as part of the original design and also post completion of the scheme. A summary of these considerations is provided below:

*Newearth Rd, Salford (Guided Busway to A580) southbound*

3.3.22 As part of the original scheme the left turn lane from Newearth Road onto the A580 eastbound was extended in order to provide additional capacity at this junction. Whilst to some extent this does mitigate delays from queuing at this junction for the Busway service under normal peak hour traffic conditions, there are still occasions when the queue from the straight ahead lane extends beyond the left turn lane thereby delaying the Busway service. This primarily occurs following incidents on the nearby Motorway network. Work has been undertaken to determine whether any further mitigations could be introduced, however this has concluded that without significant widening (involving demolition and land purchase) this is not possible.

*A580, Salford westbound in the vicinity of Irlam O'th Heights roundabout (underpass)*

3.3.23 There is a section of the A580 westbound carriageway in the vicinity of Irlam O'th Heights roundabout in Salford that has two general traffic lanes and which on occasions during the PM peak period queues from the Lancaster Road junction. At this location it has not been possible due to physical constraints to implement any dedicated bus priority measures and therefore the Busway service is required to queue with general traffic.

*Regional Centre – the junction of New Bailey Street/Chapel Street*

3.3.24 The junction of New Bailey Street/Chapel Street in Salford in the Regional Centre has been identified as a location where delays and journey time unreliability are experienced by bus services in an outbound direction during the evening peak period. Work is ongoing with Salford City Council and Manchester City Council to develop a scheme that seeks to give improved priority to the bus at this location whilst balancing the needs of other users of the junction and the impacts of changing traffic flows at this location across the wider network.

**Communications**

3.3.25 The project benefitted from a dedicated TfGM communications team who provided invaluable support across the Bus Priority Programme as a whole and specifically to the Busway. The support ranged from promoting the Programme at a strategic level to supporting the project site team and Contractor in day to day dealings with the public and other key stakeholders. Without this team and their support TfGM's reputation could have been damaged significantly based on the level of issues that were experienced and at times the level of negativity and bad feeling towards the scheme, particularly during construction.

3.3.26 For future capital programmes, it is recommended that similar scale and capability of resource (proportionate to the size, complexity and stage of the programme) are provided and budgeted for to support the project teams in communications and stakeholder management activities. Flexibility of resources and the team to deal with peaks and troughs in activity as schemes progress is also important.

3.3.27 A range of communications activities were undertaken during construction including drop-in sessions in local venues, attendance at local town centre group meetings, and newsletters to stakeholders. Positive feedback was received in relation to these activities across the Busway Programme, with key stakeholders appreciating that they were

kept informed throughout the design and delivery process. Given some of the challenges that were experienced on some of the highway elements of the scheme, leading up to construction, it is critically important that effective ways of communicating with the local community are found. Particular focus should be given to levels of engagement during the early stages of scheme development to secure buy in to the scheme proposals and reduce the risk of delays during delivery.

**Cross City Bus Package (On highway schemes)**

3.3.28 Lessons Learnt workshops have been held in respect of the Cross City Bus Package (on-highway schemes) with internal and external stakeholders.

3.3.29 The workshops covered a range of key areas: Design and Scheme Development; Communications and Stakeholder Engagement; Construction and Delivery Approach; Health and Safety; Resources and Capacity; and Governance and Approvals.

3.3.30 The key lessons learnt from the workshops above are summarised below.

**Design and Scheme Development**

3.3.31 The Cross City Bus Package was funded through a combination of DfT grant funding and local borrowings and this funding was largely secured through the demonstration of a range of benefits to bus passengers. As a result in the early stages of scheme development the focus of the scheme proposals was largely around enhanced and new bus priority infrastructure. As the scheme developed however and a wider network of stakeholders were engaged it was clear that there were opportunities to deliver much more than a bus priority scheme. As a result additional measures were introduced on both the A580 and Oxford Road corridors to enhance cycling and walking.

3.3.32 On the A580 corridor, improvements were made at six junctions to enhance pedestrian crossing facilities. Whilst the introduction of these measures has meant that journey times along the corridor have been marginally increased from that which were originally proposed they have reduced the level of severance for pedestrians caused by the A580 and therefore have balanced the scheme for a range of users.

3.3.33 On Oxford Road a more radical approach was undertaken through the reallocation of road space to cyclists, pedestrians and buses, the introduction of innovative bus stop layouts with segregated cycle lanes to the rear and the removal of general traffic off the corridor between the

hours of 6am and 9pm. Through extensive consultation the scheme evolved from a predominantly bus based scheme to a truly award winning multi-modal scheme which whilst maintaining the benefits for bus passengers also offered a significant uplift in facilities for cyclists and pedestrians. One of the key tools of engagement was the creation of a trial bus stop with segregated cycle lanes to the rear, in advance of delivery of the main scheme accompanied by detailed surveys and consultation. Feedback from this trial was used to inform the final scheme design.

3.3.34 The key lesson learned therefore is that from the outset schemes should consider the benefits and disbenefits for all modes with a view of optimising the scheme rather than focussing on individual modes. Whilst accepting that this will not always be possible or practical and will often involve difficult decisions and prioritisation, every effort should be made to develop schemes that deliver multi-modal benefits. This is reflected in the emerging TfGM Streets for All approach being adopted to support scheme development and delivery moving forward.

3.3.35 An important element of on-highway bus priority scheme development is the securing of the required Traffic Regulation Orders. The process involved in this should not be underestimated in terms of time and resources required, the level of stakeholder engagement required to minimise the likelihood of objections and also the need to balance benefits and impacts of the required Traffic Regulation Orders.

3.3.36 On Oxford Road there was a significant number of Traffic Regulation Orders required ranging from waiting and loading restrictions to the introduction of bus gates. The key challenge when promoting these Orders related to the need to maintain the integrity of the Strategic Case for the scheme when faced with local issues and challenges which arose as a direct result of the Traffic Regulation Orders, such as servicing and access. TfGM do not have any powers to make Traffic Regulation Orders and are therefore reliant on the local highway authority to buy into the Strategic Case and support the promotion of the required Orders.

3.3.37 In the case of Oxford Road, significant additional evidence was required such as a large access audit and additional modelling to justify the scheme benefits and associated Orders. Ultimately this additional work helped TfGM/Local Highway Authority to resolve the objections and avoid a Public Inquiry however the production of this information took a considerable period of time. Consideration should be given to the provision of this information earlier in the scheme development process to minimise delays.

3.3.38 In the case of the A664 Rochdale Road the support locally was not as strong as it was for Oxford Road and therefore the scheme scope was reduced in order to meet stakeholder aspirations thereby reducing the benefits that the scheme ultimately delivered for bus passengers.

*3.3.39* On the A580 due to delays in both the scheme development and delivery phases and the fact that once made, Orders can only be held for 2 years before they are implemented, the Traffic Regulation Orders related to the bus lanes provided by the scheme had to be advertised on several occasions, giving potential objectors a number of opportunities to express their concerns about the scheme. Timing therefore of the promotion of the Orders needs to be carefully considered to minimise duplication of work.

**Communications and Stakeholder Engagement**

3.3.40 The positioning, impact and high profile nature of the Cross City Bus Priority Programme made a proactive, concerted approach to stakeholder engagement an essential requirement of the scheme. Establishment of effective working relationships with key partners and stakeholders greatly assisted in securing sign off of the approved design at the various stages of scheme development and delivery.

3.3.41 The primary stakeholders for the Oxford Road corridor were closely aligned with the benefit recipients, as those directly affected by the proposals. TfGM liaised with key corridor partners on a monthly basis through attendance at the Corridor Manchester Working Group which was chaired by the University of Manchester. This ensured that partners were kept up to date with the proposals and any design changes, and then the construction of the scheme, and that their support and involvement was retained throughout the project.

3.3.42 Both the TfGM and MCC communication's team worked closely to ensure that key messages and sentiments were echoed across any communication campaign. TfGM ensured that the delivery of the Oxford Road scheme was communicated as a joint working partnership and as such, it was promoted in that way in any activity undertaken.

3.3.43 Similar to the Busway, the Cross City Bus Package benefitted from a dedicated communications team who provided consistent, high quality communication and stakeholder management resources across the whole Cross City programme from the start of the project until completion of delivery.

3.3.44 As the Cross City Bus schemes were delivered by the local Highway Authorities it was important to establish clear roles and responsibilities in

terms of Communication at the outset of the scheme. This resulted in TfGM managing and delivering the Strategic Messages and the Local Authorities managing and delivering the local scheme messages and updates. Once in construction there was an added dimension of Contractor information and engagement with the local community regarding works planned and potential impact.

3.3.45 In the case of the Oxford Road scheme, which was delivered on behalf of TfGM by Manchester City Council, to support the wider team a named Public Liaison Officer (PLO) was identified from within the Council. This role helped to actively maintain relationships with stakeholders, answering queries and dealing with issues. The PLO worked closely with the dedicated communications team and was essential when managing stakeholder relationships and ensuring that works and associated Traffic Management were clearly communicated.

3.3.46 The final important lessons learned related to Communications was the tools utilised to communicate to key stakeholders. Visual communications, such as fly through videos, were an essential element of the scheme to help stakeholders understand what would be delivered. On the Oxford Road project, the fly through video was a successful method of communicating the changes to a wide audience and helped stakeholders to understand what and why changes were happening.

**Construction and Delivery Approach**

3.3.47 The Contracting Strategy varied for the different scheme elements. Manchester City Council chose to manage and deliver their scheme elements (Regional Centre, Oxford Road and the A664 Rochdale Road) utilising their own in-house Contractor. In contrast Salford City Council procured a commercial contractor to deliver the A580 scheme utilising their framework partner Urban Vision for Contract Management. Each approach had advantages and disadvantages. The main advantages of utilising an in-house contractor included: fewer commercial disputes; and more flexibility in programme and delivery, particularly when faced with emerging issues. In contrast, the advantages of utilising a private sector partner were a more organised and structured approach to delivery.

*3.3.48* The biggest challenge experienced during delivery of the on-highway schemes was maintaining operational arrangements along the corridors during construction. Each of the specific scheme elements presented different challenges with the priority on the A580 given to trying to maintain as many lanes as possible to accommodate the heavy throughput of traffic. On Oxford Road the most significant challenge was

accommodating the large number of buses that still needed to use the road during construction and phasing the construction activities around the large number of stakeholder requirements, such as exam times, graduations and maintaining access to the hospital. If a similar scheme was undertaken in the future it will be important to adopt a number of travel demand management activities that were implemented in the latter stages of the scheme to help manage and mitigate the impact of the construction works.

*3.3.49* During the construction of Oxford Road, Regional Centre and A664 project elements, significant Third Party works and events placed significant constraints on project timescales and construction approach. By proactively engaging with the third parties through an extensive coordination exercise, a coordinated work schedule was produced which minimised programme delay and additional costs. This was accompanied by monthly coordination meetings with bus operators to seek design input and provide information on construction timescales and methodology.

**Health and Safety and Resources and Capacity**

3.3.50 The delivery strategy adopted on the Oxford Road, Regional Centre and A664 schemes whereby the local authority (Manchester City Council and for a part of the A664 scheme Rochdale Council) managed and delivered the scheme had a number of benefits which are highlighted above, however one of the key challenges and lessons learned was the level of availability of resource that the Council could provide to the projects to manage and supervise the works. This in turn led to health and safety concerns being raised around some contractor working practices. It is therefore essential that prioritisation is given to supervision levels when determining the appropriate delivery strategy and associated level of resource in order to reduce the potential of issues arising.

3.3.51 In contrast the A580 scheme which was delivered on behalf of Salford City Council by Galliford Try had considerably fewer health and safety issues during construction, despite the numerous site constraints and challenges experienced as part of the scheme.

3.3.52 The lessons learnt have been presented here for the benefit of scheme promoters in Greater Manchester and, in particular, beyond Greater Manchester.

### 3.4 To what extent has the process of working with bus operators to encourage or secure appropriate services been effective?

3.4.1 Clearly, infrastructure provision without accompanying bus services would not achieve the anticipated benefits of the programme. Therefore, the purpose of this section is to document bus service developments within and across the corridors covered by the programme.

3.4.2 Provision of bus services making use of the bus priority infrastructure has come about in a number of ways. In a deregulated bus market, where operators can choose the services they wish to run on the basis of commercial decisions, for services that run on the road network away from the guided Busway, the cross city services that have emerged have been based on bus operators' choices. Some operators have chosen to provide services in advance of the completion of the bus priority infrastructure once the commitment was made to invest in the bus priority measures. These services have included the 18 service that has taken advantage of the commitment to bus priority measures from Middleton, through the Regional Centre, and down the Oxford Road corridor to the Manchester Royal Infirmary. This replaced bus services that operated from Middleton to Shudehill, a bus station in the northern part of the city centre.

3.4.3 The 18 service has eliminated the inconvenience of interchanging from Shudehill bus station to the main bus station in the Regional Centre at Parker Street for cross city journeys heading for the Oxford Road corridor. This previously involved a walk of approximately 10 minutes duration between the two bus stations, as well as the wait for a second bus and the general inconvenience of interchanging. Where different bus operators would have been used to make the overall journey, the through service now also avoids the need to pay an additional fare to be able to make use of two different operators.

3.4.4 Another service that it is understood has been revised as a result of the commitment to bus priority measures in the city centre is the 50 service, that ran from the south of the city centre (East Didsbury) and was extended to run from Albert Square in the city centre to run west to Salford Quays and MediaCity, areas of significant employment growth.

3.4.5 As with the 18 service, the cross city 50 service has avoided the necessity to interchange and the inconvenience involved.

3.4.6 Another cross city service that has become available since the introduction of the bus priority measures has been the 41 service that runs from Sale in the south of the conurbation via the Oxford Road

corridor, through the city centre and north to the North Manchester General Hospital and then Middleton.

3.4.7 For many cross city bus passengers, this service has avoided the need for an interchange and long walk, similar to that previously required for the 18 service.

3.4.8 In terms of travel from the west of the conurbation in Leigh, Atherton and Tyldesley through the Regional Centre and down Oxford Road to the Manchester Royal Infirmary, the V1 and V2 services were introduced in April 2016 and operate commercially under a contractual framework. These services make use of TfGM's Busway infrastructure, with the V1 serving Leigh and the V2 Atherton.

3.4.9 The V1 and V2 services also enable cross city bus journeys to be made without the need to interchange in central Manchester, thus avoiding the inconvenience of interchange, the walk between services, the need to wait for another bus service and potentially pay another fare.

3.4.10 Since the introduction of the V1 and V2, various measures have been put in place to take account of passenger numbers being in excess of expectations and hence service capacity. These have included the addition of more peak services for the V1 and V2 and also part-route running via the services V3 and V4. These additional services now mean that between 07.00 – 09.00 there are 32 Busway arrivals into the Regional Centre and between 16.00 - 18.00 there are 24 Busway departures from the Regional Centre. This compares with an initial base service of 8 buses per hour in peak periods.

3.4.11 Where the introduction of bus priority measures has been possible, bus operators have offered feedback about the measures that has generally been positive.

3.4.12 In summary, in response to the measures contained in the Bus Priority Programme a range of bus services has emerged and been provided that serve bus passenger needs. These services eliminate the often lengthy and costly need to interchange between buses in the city centre to make a through journey.

# 4 Intermediate Indicators of Performance

## 4.1 Have the anticipated bus journey time savings and reliability improvements been achieved and how have car journey times been affected?

### Overview

4.1.1 The purpose of this section is to document key indicators of intermediate performance of the Bus Priority Programme, passenger journey time and bus journey time variability, as a result of the programme. This section also records how removal of elements involved in interchange between buses has benefited passengers who previously had to change buses to complete their journey.

4.1.2 As discussed in the previous section, the development of cross city bus services facilitated by new bus priority infrastructure within the Regional Centre has enabled cross city services to be operated with an acceptable degree of reliability from the operators' perspective and has removed the need to interchange for many bus passengers travelling from the north to the south and from the west to the south of the conurbation.

4.1.3 The removal of the need to interchange for these passengers has eliminated the journey time elements typically faced by bus passengers for north-south and west-south movements (Table 4.1).

**Table 4.1: Interchange journey time components removed**

| **Interchange component** | **North-south e.g. Middleton to Manchester Royal Infirmary** | **West-south e.g. Leigh to Manchester Royal Infirmary** | **Comments** |
|---|---|---|---|
| Additional walk time between bus stops | 10 mins | 2 mins | North-south from Shudehill bus station to Parker Street bus station; West-south within Parker Street bus station |
| Additional wait time for the second bus | 5 mins | 5mins | Typical wait for onward services that run every 10 minutes |
| **Total interchange time eliminated** | **15 mins** | **7 mins** | **Note elements below not included in this total** |

4.1.4 In relation to this table:

- The additional fare if switching between different bus operators or needing to buy a multi-operator ticket is difficult to quantify and has not been included in the calculations;
- Similarly, the interchange inconvenience factor, above and beyond the journey time components quantified in the table has not been included – typically, in TfGM appraisal work, interchange and the need to board another bus is worth 7.5 minutes; and
- Lastly, walk and wait time involved in making an interchange are typically disliked more than time spent in the bus, but the weighting often applied to walk and wait time saved has not been factored in to these calculations. In addition the walk times utilised have been based on able bodied passengers. For those passengers who may have mobility impairments the actual time benefit may be higher and the value of the benefit could be considerably higher.

4.1.5 It is within the context of having removed the time, cost and inconvenience of the need to interchange for many cross city bus movements that the findings in this section are presented.

4.1.6 In addition to having removed the inconvenience of interchange for some passengers completely, another group of bus passengers also benefit from interchange having been eased. These passengers are people that cannot make a complete journey by the new cross city services and continue to need to interchange between buses or onto rail or Metrolink services to make their journey. For these passengers, the existence of cross city bus services means that they can make this journey in a more straightforward manner than previously, e.g. interchanging to another bus at a single bus stop in the city centre in contrast to having had to walk between bus stops to catch a second bus in the city centre.

4.1.7 This section sets out the findings of the monitoring of bus journey times and reliability that were carried out on a before and after scheme delivery basis, i.e. pre and post construction. This is not the same as a direct comparison between the with and without bus priority infrastructure scenarios, as other factors such as traffic volumes may have changed in intervening years and impacted on bus journey times. For this reason, it is recognised that the before and after monitoring approach has its limitations.

4.1.8 As an example, one key economic trend has been for the Regional Centre to grow significantly in employment terms. Office for National Statistics employment data indicates a growth in employment over the period of

2013 to 2017 from 208,000 to 256,000, an increase of 23%. It has not been possible to control for the impacts of increased economic and therefore increased transport activity in a before and after journey time survey context.

**Northern Corridor – A664 Middleton to Manchester, Rochdale Road**

4.1.9 Observations of bus passenger journey times and journey time reliability, alongside records of the journey times of vehicles other than buses, were made before and after the bus priority works on the A664 Rochdale Road. Bus observations were made of the 18 service by means of GPS devices and from detailed notes on service performance made by survey staff.

4.1.10 The original business case presented to the Department for Transport (DfT) assumed background traffic growth of 3.7% between the 2012 base year and the 2016 forecast year. This was based on DfT approved appraisal guidance.

4.1.11 TfGM continuously monitors traffic levels across Greater Manchester using Automatic Traffic Counters (ATC). In the north and east of Greater Manchester between 2013 and 2015, ATC data for corridors close to Rochdale Road indicate traffic levels increased by an average of 6%. This growth exceeded that which was forecast, and in particular is greater than the volumes which the forecast bus priority journey time savings were predicated on.

4.1.12 The Cross City Bus improvements for Rochdale Road aimed to deliver a series of integrated improvements designed to bring benefits to not only bus passengers, but also to pedestrians, cyclists and motorists, through the use of signal optimisation technology and improved crossing facilities.

4.1.13 In addition to sections of bus lane, the Rochdale Road scheme introduced 3 new signalised pedestrian crossings to aid pedestrian safety as well as junction changes to improve highway operation and help manage the growth in traffic volumes, both now and in the future. While serving the needs of pedestrians, as the most vulnerable road user group in terms of accidents, improvements such as the additional signal-controlled crossings are likely to have caused an increase in journey times along Rochdale Road for buses and other vehicles.

4.1.14 A further factor is that, as reported in Section 4.1, following public consultation the full set of bus infrastructure measures planned was not delivered.

4.1.15 It is set against this context that the changes in journey times on A664 Rochdale Road as a result of the introduction of the Bus Priority Package need to be considered.

4.1.16 The 2015 after scheme monitoring indicates that overall inbound AM peak average bus journey times between Middleton and Manchester have increased by circa 90 seconds (Table 4.2). Increases in bus dwell time, the time the bus has to wait at the stop, accounts for over a minute of this increase. Other vehicle journey times during the morning peak were 75 seconds quicker in 2015 than in 2013.

**Table 4.2: Journey time observations, Middleton to Manchester Shudehill Interchange**

| Journey time aspect | | 2013 | 2015 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 0730-0930 | 00:31:26 | 00:32:58 | +5% |
| | 1300-1500 | 00:24:06 | 00:24:43 | +3% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 0730-0930 | 00:21:03 | 00:19:48 | -6% |
| | 1300-1500 | 00:15:29 | 00:16:26 | +6% |
| **Variability of bus journey times (coefficient of variation)** | 0730-0930 | 14.95 | 18.00 | +20% |
| | 1300-1500 | 10.66 | 11.37 | +7% |

4.1.17 In the AM peak periods, average bus occupancy increased (the average increase across both AM peak inbound and PM peak outbound time periods was 11%), which is the likely cause of the increase in bus dwell time at stops as more passengers were boarding and alighting. In addition, the overall growth in traffic may well have led to increased difficulty for buses exiting bus stops. This may also have contributed to the increase in dwell times. Work is ongoing to ascertain what actions could be taken to reduce dwell times with ticketing and the promotion of a smartcard or other technological solution should one be delivered seen as key in assisting. Operators have also reported that the recent introduction of contactless payment technology has assisted in this respect.

4.1.18 Off-peak bus journey times, remained broadly similar between the two comparison years. Journey times for vehicles other than bus increased by about 1 minute in the off peak between 2013 and 2015.

4.1.19 As well as some lengthening of bus journey times a measure of bus service reliability is shown in the table. This is indicated by the coefficient of variation shown at the end of the table. This measure has also increased, most likely due to similar factors that have affected bus journey times.

4.1.20 While overall average bus journey times have seen an increase along the corridor, an assessment of the individual sections of route suggests that in both the AM and PM peaks, where there has been investment in bus priority measures, journey times have generally either remained consistent or in some instances reduced. Conversely, where bus priority measures have not been implemented journey times have seen an increase. Given the overall increase in traffic growth, this is not unexpected.

4.1.21 By way of example, the inbound journey time data shows that following the introduction of Cross City Bus improvements, journey times have decreased between Victoria Avenue East and Moston Lane, despite higher than forecast traffic growth. In contrast, between Moston Lane and Lathbury Road inbound journey times have increased in an area where no dedicated bus priority measures have been implemented.

4.1.22 For cross city movements from the northern corridor through the city centre, the above bus journey times have been combined with the time taken to interchange in the before situation (15 minutes, taken from Table 4.1 at the start of this section) and a 10 minute allowance for the part of the bus journey beyond Shudehill and across the Regional Centre.

4.1.23 A journey time comparison with the interchange time components included for 2013 and removed for 2015 is given in Table 4.3. This demonstrates that when the interchange penalty previously experienced is taken into account, passengers making cross city movements benefit significantly from the introduction of the Cross City Bus Infrastructure and services.

**Table 4.3: Journey times for passengers previously interchanging between buses, Middleton to beyond the city centre**

| Journey time aspect | | 2013 | 2015 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 0730-0930 | 00:56:26 | 00:42:58 | -24% |
| | 1300-1500 | 00:49:06 | 00:34:43 | -29% |

4.1.24 These statistics demonstrate the scale of benefits to bus passengers through more straightforward bus movement across the Regional Centre.

4.1.25 From Manchester to Middleton during the PM peak, overall average bus journey times have increased by 2 minutes and 20 seconds (Table 4.4). Bus dwell times contributed 50 seconds of the increase. Vehicles other than bus average journey times remained unchanged between 2013 and 2015.

**Table 4.4: Journey time observations, Manchester Shudehill Interchange to Middleton**

| Journey time aspect | | 2013 | 2015 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 1300-1500 | 00:24:26 | 00:24:32 | 0% |
| | 1630-1830 | 00:28:38 | 00:31:01 | +8% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 1300-1500 | 00:15:24 | 00:17:38 | +15% |
| | 1630-1830 | 00:20:43 | 00:20:40 | 0% |
| **Variability of bus journey times (coefficient of variation)** | 1300-1500 | 9.43 | 10.04 | +6% |
| | 1630-1830 | 11.12 | 12.69 | +14% |

4.1.26 In the outbound PM peak period, average bus occupancy increased (the average increase across AM peak inbound and PM peak outbound time periods was 11%), which is the likely cause of the increase in bus dwell time at stops. In addition, again the overall growth in traffic may well have led to increased difficulty for buses exiting bus stops and an increase in dwell times.

4.1.27 Off-peak bus journey times remained broadly similar between the base and forecast years. Journey times for vehicles other than bus increased by about 2 minutes outbound between 2013 and 2015.

4.1.28 As for the towards-Manchester direction, in the direction of Manchester to Middleton where bus priority measures have been introduced conditions for bus operations have improved. The outbound journey times indicate that between Osborne Street and Kingsbridge Road bus journey times have remained consistent, and in some areas improved, following the introduction of a length of bus lane. By contrast, bus journey times have worsened between Moss Lane and Middleton Interchange, a section where, following public consultation, it was decided not to introduce bus priority measures.

4.1.29 Significant reductions in bus journey time are demonstrated for bus passengers making cross city movements, as shown in Table 4.5.

**Table 4.5: Journey times for passengers previously interchanging between buses, beyond the city centre to Middleton**

| Journey time aspect | | 2013 | 2015 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 1300-1500 | 00:49:26 | 00:34:32 | -30% |
| | 1630-1830 | 00:53:38 | 00:41:00 | -24% |

4.1.30 These journey time reductions for cross city bus travellers in the corridor amount to journey time reductions of 24% or more.

4.1.31 In summary for the A664, the areas of Rochdale Road where bus priority measures have been introduced have seen improvements in bus passenger journey times. Due to traffic volumes increasing above forecast in areas where bus priority measures have not been introduced, however, overall bus journey times on the corridor have still increased.

4.1.32 Nevertheless, the introduction of bus priority measures has protected benefits for bus passengers. It should also be noted that between the 2009 and 2014 consultations, the scale of bus priority measures and investment on Rochdale Road was significantly scaled back in response to concerns from residents and other stakeholders.

**City Centre and Oxford Road**

4.1.33 This section summarises the main findings of the comparison between baseline and after journey time surveys undertaken between Manchester Royal Infirmary and Manchester City Centre (in both directions) to monitor the effects of improvements to both Portland Street and the Oxford Road Corridor which form part of the cross-city component of Greater Manchester's Bus Priority Package.

4.1.34 Baseline surveys were conducted in June 2013 and after surveys in June 2018. The bus route surveyed between Manchester Royal Infirmary and Manchester City Centre was Service 18 in both 2013 and 2018. At that time service 18 was operated by First Bus. Findings are reported in Table 4.6.

**Table 4.6: Journey time observations, Manchester Royal Infirmary to Manchester Shudehill Interchange**

| Journey time aspect | | 2013 | 2018 | % Difference |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 0730-0930 | 00:16:33 | 00:19:14 | +16% |
| | 1300-1500 | 00:17:55 | 00:18:40 | +4% |
| | 1630-1830 | 00:19:15 | 00:22:10 | +15% |
| **Variability of bus journey times (coefficient of variation)** | 0730-0930 | 10.96 | 10.78 | -2% |
| | 1300-1500 | 12.26 | 8.36 | -32% |
| | 1630-1830 | 14.39 | 11.12 | -23% |

4.1.35 Between Manchester Royal Infirmary and the Regional Centre, bus passenger journey times have increased in the three time periods in which surveys were carried out.

4.1.36 Bus journey times have been affected by changes to the speed limit on Oxford Road, brought about to improve the overall environment and road safety for those travelling through or visiting the area. Maximum road speeds were reduced from 30 to 20 mph by the time of the after bus journey time surveys.

4.1.37 Another factor affecting bus journey times that was observed for travel in both directions on the surveyed route was that bus journey times are quicker than timetabled bus journey times. The implication of this was that some time was spent by drivers at bus stops awaiting departure times and that, in due course and not reflected in the journey time figures, opportunities to tighten up bus timetables exist.

4.1.38 Between the peak periods and in the PM peak the level of bus journey time variability has decreased significantly, while it has remained largely unchanged in the AM peak.

4.1.39 These statistics are encouraging given that a key aim of bus priority infrastructure, particularly in relation to the Regional Centre, was to enable more reliable bus service operation.

4.1.40 Portland Street is a major bus corridor in the Regional Centre and once the planned works were carried out in the Regional Centre, bus operators were concerned about the time taken to access and exit Parker Street bus station due to delays at the junction of Portland Street and Charlotte

Street. In response, and also as part of the evaluation activity, in June 2018 TfGM commissioned after journey time surveys. These confirmed that the junction was causing delay to operations of buses on Portland Street. In response to the detailed findings from the journey time surveys, minor works were carried out in summer 2018 to introduce a right hand turn lane from Portland Street into Charlotte Street and amended the junction signal staging to improve capacity. This change to the junction now enables traffic/buses to flow both northbound and southbound on Portland Street at the same time, as opposed to sequentially in each direction thereby reducing delays and improving reliability.

4.1.41 Table 4.7 shows the average weekday speed (mph) on the section of Portland Street between Princess Street and Charlotte Street.

**Table 4.7: Traffic Speeds on Portland Street (mph)**

| Period | September | | October | |
|---|---|---|---|---|
| | 2017 | 2018 | 2017 | 2018 |
| 06:00 to 07:00 | 7.4 | 15.3 | 7.4 | 13.6 |
| 07:00 to 08:00 | 6.7 | 7.3 | 7.1 | 10.6 |
| 08:00 to 09:00 | 6.2 | 7.7 | 6.0 | 9.2 |
| 09:00 to 10:00 | 6.1 | 6.9 | 6.0 | 6.8 |
| 10:00 to 11:00 | 5.6 | 7.0 | 5.4 | 8.4 |
| 11:00 to 12:00 | 6.0 | 7.8 | 5.4 | 9.4 |
| 12:00 to 12:00 | 6.5 | 8.2 | 4.8 | 8.3 |
| 13:00 to 14:00 | 5.6 | 7.3 | 5.4 | 7.8 |
| 14:00 to 15:00 | 6.2 | 8.2 | 5.4 | 8.8 |
| 15:00 to 16:00 | 5.7 | 6.1 | 5.4 | 6.6 |
| 16:00 to 17:00 | 4.9 | 6.0 | 3.9 | 6.3 |
| 17:00 to 18:00 | 2.9 | 5.9 | 3.8 | 5.6 |
| 18:00 to 19:00 | 5.5 | 5.3 | 4.3 | 5.9 |
| 19:00 to 20:00 | 6.7 | 7.3 | 4.8 | 11.6 |

Notes: September dates refer to 10th-29th in September 2017 and 11th-30th September in 2018.
Source: Trafficmaster data analysed by TfGM.

4.1.42 The table shows a consistent improvement in speeds throughout the day after the works at the Portland Street/ Charlotte Street junction were completed.

4.1.43 Once again, and as illustrated in Table 4.8, bus passengers making journeys across the city centre are major beneficiaries from the removal of the need to interchange between bus services.

**Table 4.8: Journey times for passengers previously interchanging between buses, MRI to beyond the city centre**

| Journey time aspect | | 2013 | 2018 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 0730-0930 | 00:37:33 | 00:29:14 | -22% |
| | 1300-1500 | 00:38:55 | 00:28:40 | -26% |
| | 1630-1830 | 00:40:15 | 00:32:10 | -20% |

Note: interchange times included in the 2013 bus journey time in this table include an average of west-south and north-south interchange time components, amounting to an additional 11 minutes in 2013.

In the direction of Manchester Royal Infirmary, Table 4.9 summarises the journey time observations for different time periods and demonstrates little change in bus journey times between the survey years.

**Table 4.9: Journey time observations, Manchester Shudehill Interchange to Manchester Royal Infirmary**

| Journey time aspect | | 2013 | 2018 | % Difference |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 0730-0930 | 00:20:03 | 00:20:21 | +1% |
| | 1300-1500 | 00:20:13 | 00:19:20 | -4% |
| | 1630-1830 | 00:19:38 | 00:19:25 | -1% |
| **Variability of bus journey times (coefficient of variation)** | 0730-0930 | 11.94 | 6.58 | -45% |
| | 1300-1500 | 10.11 | 6.98 | -31% |
| | 1630-1830 | 12.11 | 10.39 | -14% |

4.1.44 As mentioned previously for this section of route, the variability of bus journey times is significantly reduced in the coefficient of variation statistics reported here, enabling more dependable bus services to be operated.

4.1.45 Furthermore, and as with MRI to Manchester journey times, since the time of the journey time surveys in 2018 there will have been a reduction in bus passenger journey times due to the redesign of the junction at Portland Street/ Charlotte Street.

4.1.46 Table 4.10 demonstrates the scale of overall passenger journey time reduction involved for passengers traversing the city centre from the

western or northern corridors to reach Oxford Road, again illustrating major benefits for bus passengers who previously caught two buses.

**Table 4.10: Journey times for passengers previously interchanging between buses, beyond the city centre to MRI**

| Journey time aspect | | 2013 | 2018 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 0730-0930 | 00:41:03 | 00:30:21 | -26% |
| | 1300-1500 | 00:41:13 | 00:29:20 | -29% |
| | 1630-1830 | 00:40:38 | 00:29:25 | -20% |

4.1.47 In overall terms, this section on the Regional Centre and Oxford Road has illustrated the significant reduction in bus journey time variability achieved through the measures adopted, plus the major reductions in journey times for bus passengers who cross the Regional Centre.

**Western Corridor**

4.1.48 This section summarises the main findings of the comparison between baseline and after journey time surveys undertaken between Leigh and Manchester (in both directions) to monitor the effects of improvements to the Leigh-Salford-Manchester Busway which forms part of Greater Manchester's Bus Priority Package.

4.1.49 Baseline surveys were conducted in March 2013 and after surveys in February / March 2017. The bus routes surveyed between Leigh and Manchester were Service X34 in 2013 and Service V1 in 2017. Other vehicle journey times have been obtained from Trafficmaster GPS data for both the baseline and after surveys (for the period 1st June to November 30th in 2012 and 2016).

4.1.50 Table 4.11 reports the changes in bus journey times, with the reduction of journey times by over a quarter in the morning peak to under 50 minutes from Leigh to Manchester.

**Table 4.11: Journey time observations, Leigh to Manchester**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 0730-0930 | 01:06:55 | 00:48:52 | -27% |
| | 1300-1500 | 00:46:12 | 00:39:01 | -16% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 0730-0930 | 00:45:34 | 00:48:52 | +7% |
| | 1300-1500 | 00:30:25 | 00:30:44 | +1% |
| **Variability of bus journey times (coefficient of variation)** | 0730-0930 | 7.73 | 6.01 | -22% |
| | 1300-1500 | 5.75 | 6.08 | +6% |

4.1.51 There is also a large decrease in interpeak bus journey times. Bus journey time variability has substantially reduced in the morning peak period and slightly increased in the interpeak. Other vehicle journey times have increased slightly in the morning peak and remained largely unchanged in the interpeak period.

4.1.52 Where interchange has been eliminated for bus passengers traversing the city centre, from the western corridor to the southern one, major reductions in overall journey times have been achieved (Table 4.12).

**Table 4.12: Journey times for passengers previously interchanging between buses, Leigh to beyond the city centre**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 0730-0930 | 01:23:55 | 00:58:52 | -30% |
| | 1300-1500 | 01:03:12 | 00:49:01 | -22% |

4.1.53 For shorter bus trips crossing the city centre, percentage changes in overall journey times will have been even more significant.

4.1.54 In the case of the outbound journey, towards-Leigh direction, bus journey times have fallen in the interpeak but increased in the afternoon peak (Table 4.13). Other vehicle journey times have increased and bus journey time variability has fallen in the interpeak but risen in the afternoon peak.

**Table 4.13: Journey time observations, Manchester to Leigh**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 1300-1500 | 00:47:59 | 00:42:45 | -11% |
| | 1630-1830 | 00:52:02 | 00:55:34 | +7% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 1300-1500 | 00:28:27 | 00:32:26 | +14% |
| | 1630-1830 | 00:39:39 | 00:51:04 | +29% |
| **Variability of bus journey times (coefficient of variation)** | 1300-1500 | 10.11 | 7.09 | -30% |
| | 1630-1830 | 7.03 | 8.65 | 23% |

4.1.55 In recent months there has been a continual improvement in general traffic conditions in the westbound direction, with, for example, the average journey time for all traffic (including buses) falling from 10 minutes 28 seconds in the year to June 2018 to 7 minutes 46 seconds in the year to June 2019. This has occurred in the section of the A580 between Frederick Road and Lancaster Road where few bus priority measures were implemented but it illustrated the general improvement in traffic conditions in the western direction since the time of the bus journey time surveys. Taking this improvement into account, bus journey times in the evening peak are likely to be similar to those recorded in the before surveys.

4.1.56 When combined with the time taken to interchange between buses in the city centre in 2013, and its removal in 2017, Table 4.14 indicates that overall journey times in both the interpeak and afternoon peak periods have fallen.

**Table 4.14: Journey times for passengers previously interchanging between buses, beyond the city centre to Leigh**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time for services across city (hh:mm:ss)** | 1300-1500 | 01:04:59 | 00:52:45 | -19% |
| | 1630-1830 | 01:09:02 | 01:05:34 | -5% |

4.1.57 Further journey time surveys were carried out on the Atherton to Ellenbrook route, on the 32 bus service in 2013 and the V2 in 2017 (Table 4.15).

**Table 4.15: Journey time observations, Atherton to Ellenbrook**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 0730-0930 | 00:22:41 | 00:20:59 | -7% |
| | 1300-1500 | 00:20:12 | 00:17:10 | -15% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 0730-0930 | 00:13:25 | 00:14:37 | +9% |
| | 1300-1500 | 00:12:08 | 00:12:42 | +5% |
| **Variability of bus journey times (coefficient of variation)** | 0730-0930 | 10.75 | 14.29 | +33% |
| | 1300-1500 | 18.84 | 4.72 | -75% |

4.1.58 The table indicates that bus journey times have fallen, other vehicle journey times have risen marginally, and that bus journey time variability exhibits a different picture in morning peak and interpeak time periods, for reasons that are unclear at this time.

4.1.59 In the reverse direction, from Ellenbrook to Atherton, bus journey times have fallen in both time periods (Table 4.16), while other vehicle journey times have increased.

**Table 4.16: Journey time observations, Ellenbrook to Atherton**

| Journey time aspect | | 2013 | 2017 | % change |
|---|---|---|---|---|
| **Bus average journey time (hh:mm:ss)** | 1300-1500 | 00:19:13 | 00:17:10 | -11% |
| | 1630-1830 | 00:22:17 | 00:17:34 | -21% |
| **Vehicles other than bus average journey time (hh:mm:ss)** | 1300-1500 | 00:12:46 | 00:14:24 | +13% |
| | 1630-1830 | 00:16:00 | 00:16:52 | +5% |
| **Variability of bus journey times (coefficient of variation)** | 1300-1500 | 10.71 | 7.87 | -27% |
| | 1630-1830 | 14.10 | 9.12 | -35% |

4.1.60 Bus journey time variability has fallen substantially in both time periods on this section of route.

**Overall summary on journey time and variability impacts**

4.1.61 In overall summary for this section, due to limited bus priority provision on the A664 relative to what was planned and increased traffic levels, bus journey times and journey time variability impacts have not been achieved to the extent originally anticipated. In the Regional Centre and on Oxford Road, the most notable achievement of the Bus Priority Programme has been the reduction in bus journey time variability. On the A580 corridor, significant reductions in bus journey time have been achieved in the eastbound direction, while the picture in the westbound direction shows signs of improving over time, and the variability of bus journey times has reduced in certain time periods.

4.1.62 On all corridors, where the need to interchange has been removed there have been substantial journey time savings to bus passengers who previously had to take two buses to complete their journey.

## 4.2 In what ways has accessibility to the key destination types highlighted in the business case changed - e.g. employment locations, hospitals?

4.2.1 The scale of door-to-door accessibility change is a key factor influencing eventual outcomes and impacts, as the greater the scale of accessibility improvements the larger the extent of benefits and has thus been subject to scrutiny. This section provides an overview of the impacts on door-to-door access, also known as network accessibility, of the Bus Priority Programme.

4.2.2 In order to provide this in reasonably concise format, the numeric findings of this analysis are presented at a network-wide level rather than for individual corridors. The figures included in this section show how accessibility change varies across the corridors.

4.2.3 The approach used to determine changes in door-to-door accessibility by means of public transport made use of a generalised cost framework, i.e. the full set of time and cost components of a journey, weighted to take account of their relative importance to passengers. Therefore, walk access, wait time, fares, time spent in the vehicle, any transfer penalty and walk egress were all taken into consideration.

4.2.4 The analysis was based on outputs from the Greater Manchester Public Transport Model. This model takes public transport timetables and allocates public transport passengers to the least overall time and cost

sets of services between their origin and destination zones. Two scenarios were run:

- one with bus services directly or indirectly thought to have been influenced by the Bus Priority Programme; and
- one without these bus service changes.

4.2.5 Services that are understood to have been enabled by the Bus Priority Programme, in terms of running cross city, were:

- V1 Leigh-Tyldesley-Manchester-Manchester Royal Infirmary;
- V2 Atherton-Tyldesley-Manchester-Manchester Royal Infirmary;
- V3/V4 Ellenbrook-Manchester- MRI;
- 18 Middleton-Langley-Manchester-MRI;
- 41 Sale-Northenden-West Didsbury-Manchester- Middleton; and
- 50 East Didsbury-Kingsway-Manchester-Salford Shopping Centre-Salford Quays.

4.2.6 The without Bus Priority Programme scenario removes all the Vantage services, namely V1-V4. It also makes alterations to other cross city services, by curtailing them on one side of the city centre. There are also reintroduced services, where the programme may have led to the removal of services or have led to frequency reduction, as well as some alterations to the bus services as follows:

- 18 – this service is assumed to terminate at Shudehill Interchange, and therefore omitting the cross city and southern leg of its current journey route;
- 32 – this bus service running between Wigan and Manchester is reinstated;
- 34 – this service runs with higher frequency than in the with-programme scenario;
- X34 – this service runs more often than in the with-programme scenario;
- 41 – the southern half of a cross city 41 service in the with-programme scenario;
- 42 – the northern half of a cross city 41 service in the with-programme scenario; and
- 50 – this service is curtailed to run between East Didsbury and Albert Square only.

4.2.7 Reflecting the business case objective of greater network accessibility to key destination types, accessibility changes were assessed for:

- healthcare, i.e. major hospitals – for the population as a whole;
- employment – for those aged 16-70; and
- colleges of further education – for 16-19 year olds.

4.2.8 There was some exploration of the impacts of the improved bus services on the 10% and 25% most deprived areas, making use of the 2015 Index of Multiple Deprivation. While these areas are indicated on the figures contained in this section, the spread of deprived and non-deprived areas is fairly typical of Greater Manchester for the corridors when taken as a whole. For this reason, the statistics do not vary a great deal for deprived areas of Greater Manchester and are therefore not reported here.

4.2.9 Zones in the public transport model were linked to 2011 Census output areas. The approach used to estimate accessibility made use of a Hansen index, which, for any given origin, takes account of the opportunities in the destination zones and their 'distance' in generalised cost terms. Opportunities further away from people in generalised cost terms have a lower level of importance compared to closer opportunities. Improvements in accessibility are reflected in an improvement in the accessibility index.

4.2.10 Figures 4.1 to 4.3 provide maps showing changes in accessibility at output area level. Healthcare (Figure 4.1) accessibility change is shown for the interpeak time period, because much of the travel to medical appointments occurs outside of the morning and evening peaks, whereas the other destination types are shown for the morning peak period.

**Figure 4.1: Changes in Public Transport Accessibility to Healthcare in the Interpeak Period**

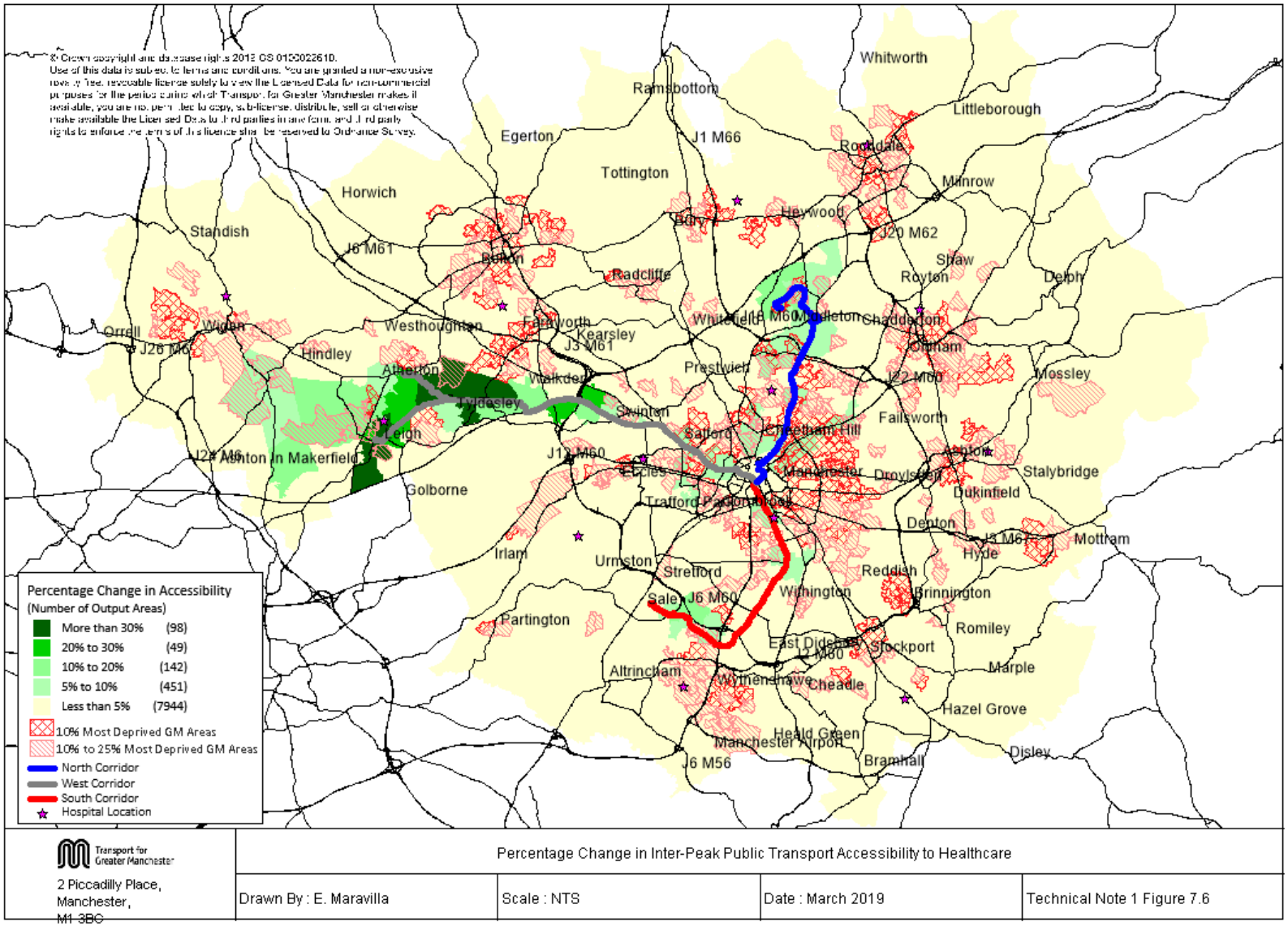


**Figure 4.2: Changes in Public Transport Accessibility to Employment in the Morning Peak**

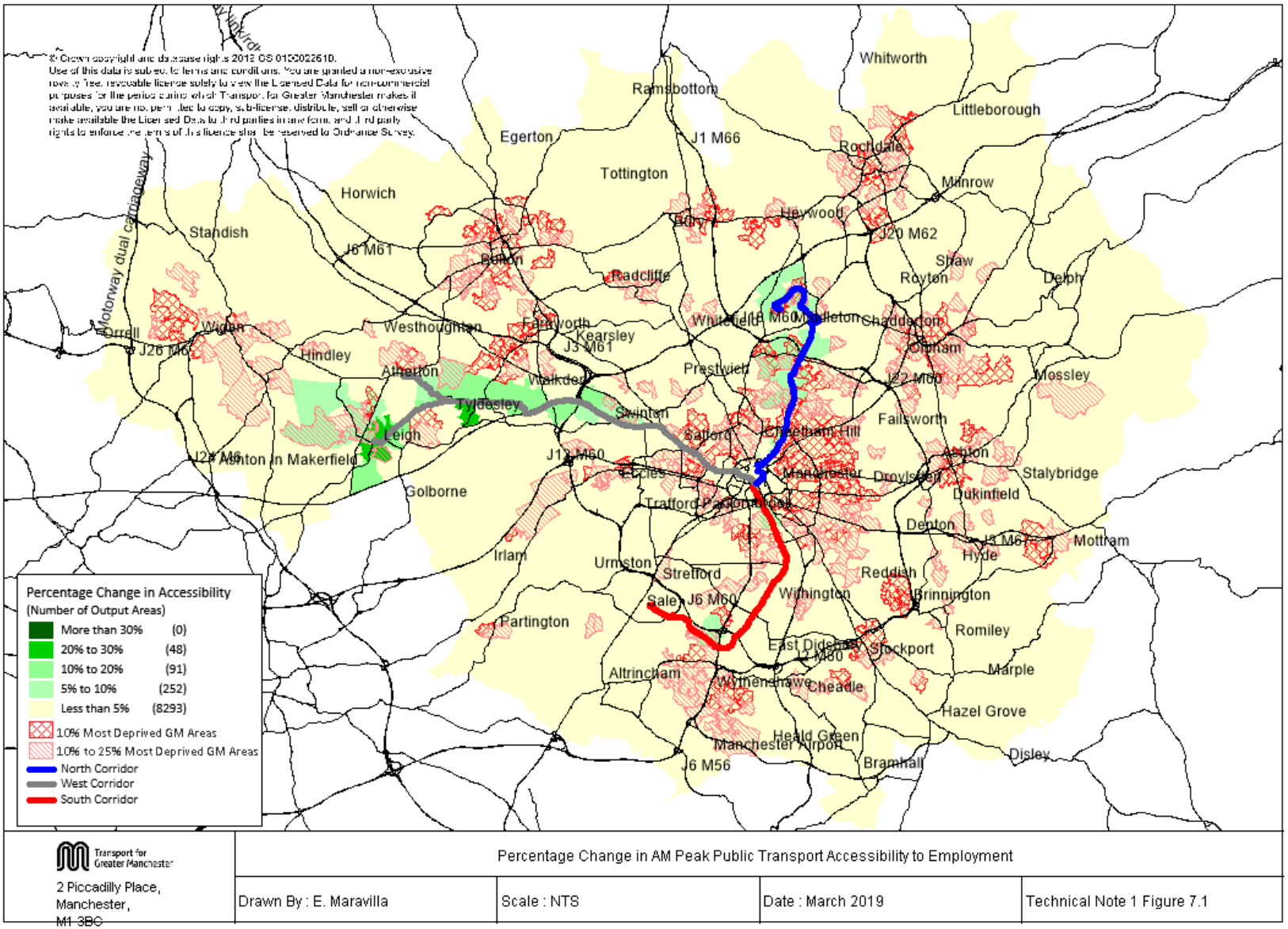
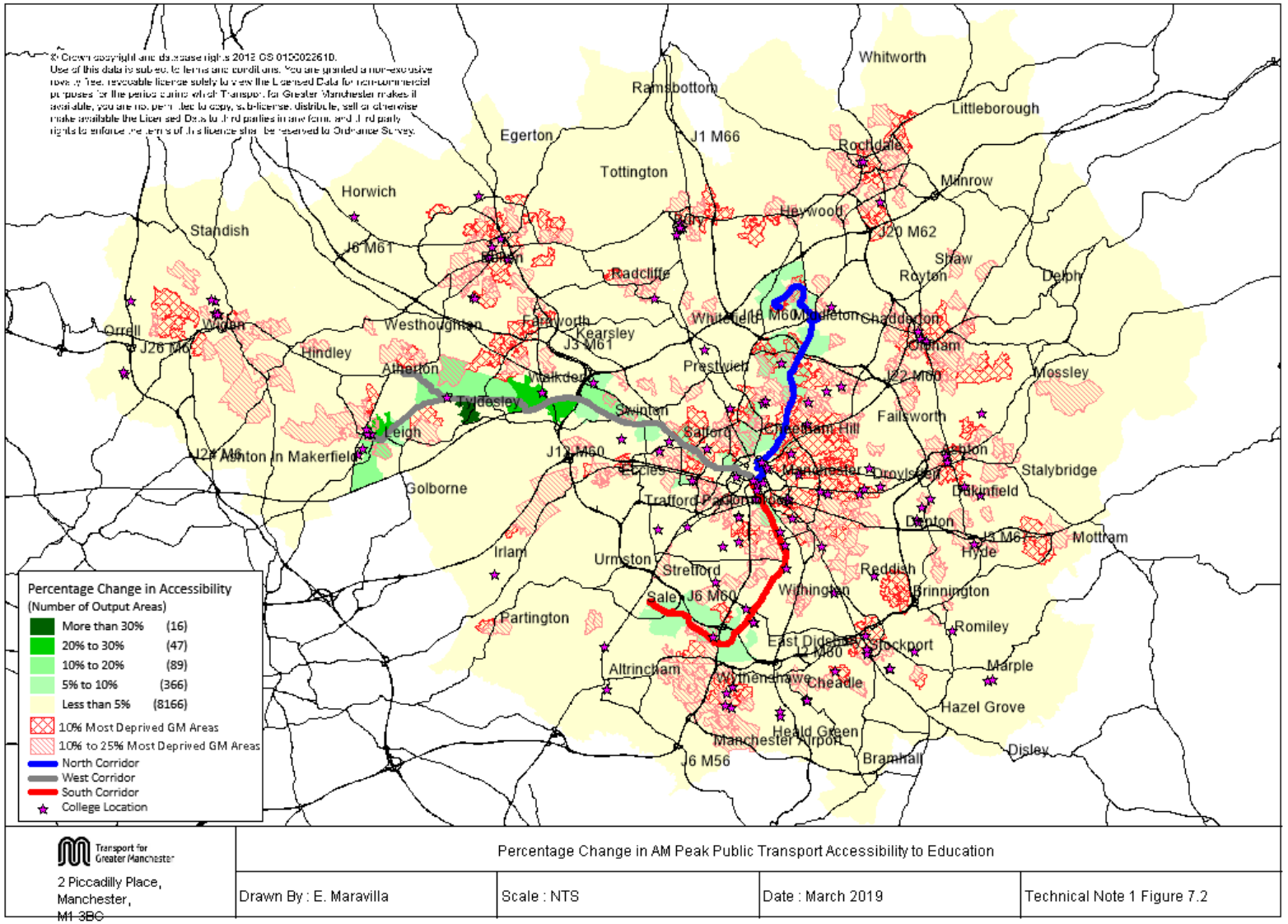


**Figure 4.3: Changes in Public Transport Accessibility to Further Education in the Morning Peak**



4.2.11 The results are broadly in line with expectations, with the areas showing the greatest changes in accessibility being geographically close to the corridors on which the buses operate and, in particular, to the area of greatest change in bus service level – namely the western corridor.

4.2.12 The results for the different attractor types are similar, although improvements in access to healthcare opportunities are more distinct (in Figure 4.1, the dark green on the western corridor in particular) as hospitals are less dispersed compared to employment sites and further education colleges in Greater Manchester.

4.2.13 The results for healthcare are shown in numerical terms in Table 4.17. The table shows modelled changes in accessibility weighted by population for the whole of Greater Manchester. The columns headed 'Improvement in accessibility index' show the modelled percentage change in the accessibility index, ranging from a change of less than 1% to more than 30%. The columns headed 'Proportion of population' show the percentage of the population in each of the index change categories (1% to 5%, 5% to 10% etc.). The columns headed 'Cumulative population' show cumulative percentage totals summed from the top.

**Table 4.17: Changes in Public Transport Accessibility to Healthcare in the Interpeak – Greater Manchester Level**

| Improvement in accessibility index | Population affected | Proportion of population | Cumulative population |
|---|---|---|---|
| More than 30% | 29,250 | 1.1% | 1.1% |
| 20% to 30% | 14,353 | 0.5% | 1.6% |
| 10% to 20% | 44,065 | 1.6% | 3.3% |
| 5% to 10% | 143,724 | 5.4% | 8.6% |
| 1% to 5% | 646,125 | 24.1% | 32.7% |
| Less than 1% | 1,805,011 | 67.3% | 100.0% |
| All | 2,682,528 | 100% | |

4.2.14 The figures indicate that access to healthcare by public transport has improved by more than 5% for 8.6% of the population in Greater Manchester (over two hundred and thirty thousand people). Given the connectivity the Vantage service provide direct to the hospitals on or adjacent to Oxford Road, this is the area of greatest expected change.

4.2.15 The results for employment accessibility change are presented in Table 4.18.

**Table 4.18: Changes in Public Transport Accessibility to Employment in the AM Peak – Greater Manchester Level**

| Improvement in accessibility index | Population affected | Proportion of population | Cumulative population |
|---|---|---|---|
| More than 30% | 0 | 0.0% | 0.0% |
| 20% to 30% | 10,559 | 0.6% | 0.6% |
| 10% to 20% | 19,637 | 1.0% | 1.6% |
| 5% to 10% | 56,281 | 3.0% | 4.6% |
| 1% to 5% | 451,088 | 23.8% | 28.4% |
| Less than 1% | 1,356,298 | 71.6% | 100.0% |
| All | 1,893,863 | 100% | |

4.2.16 The figures indicate that access to employment for 16-70 year olds has improved by more than 5% for approaching 5% of the population in the county (some eighty six thousand people). Due to the wider distribution of employment opportunities, this scale of change is less pronounced than for healthcare.

4.2.17 The results for access to colleges of further education are presented in Table 4.19.

**Table 4.19: Changes in Public Transport Accessibility to Further Education in the Morning Peak – Greater Manchester Level**

| Improvement in accessibility index | Population Affected | Proportion of population | Cumulative population |
|---|---|---|---|
| More than 30% | 254 | 0.2% | 0.2% |
| 20% to 30% | 659 | 0.5% | 0.6% |
| 10% to 20% | 1,257 | 0.9% | 1.5% |
| 5% to 10% | 7,189 | 5.0% | 6.6% |
| 1% to 5% | 40,579 | 28.5% | 35.1% |
| Less than 1% | 92,422 | 64.9% | 100.0% |
| All | 142,360 | 100% | |

4.2.18 The figures indicate that access to further education for 16-19 year olds has improved by more than 5% for over 6% of the population in Greater Manchester (over nine thousand people).

4.2.19 In summary, for each of the three destination types considered in this section – healthcare, employment and further education - the bus services enabled by the Bus Priority Programme have resulted in an increase in accessibility of 5% or more for over 5% of the Greater Manchester population. This improvement is most notable for access to hospitals, with an increase in accessibility of 5% or more for 8.6% of the conurbation's population.

# 5 Impacts on Perceptions of Bus Travel and Travel Patterns

## 5.1 How does bus passenger satisfaction on the affected corridors compare to that for Greater Manchester as a whole?

5.1.1 Bus passenger satisfaction is an important aspect of the performance of improved services in the Bus Priority Programme corridors. Surveys of bus passengers were carried out on the 18, 50, V1 and V2 services in March 2019. These surveys give an indication of the passenger perspective on bus service provision in and across the corridors in the programme.

5.1.2 The surveys were undertaken by means of a self-completion survey handed out to passengers by TfGM fieldworkers while travelling on the services in question, with passengers encouraged to hand the surveys back on bus or by means of a mailback envelope in which each survey was held.

5.1.3 4,489 largely complete surveys were returned of 13,406 handed out among 20,928 passengers counted. The bulk of the completed surveys, 4,080, contained both an address at the start of the journey being made and an end-of-journey address. In part, these address details were obtained in order to check whether or not the journey could have been made before the service changes as a result of Bus Priority Programme infrastructure. E.g. it was possible to make a comparable journey from Middleton to Shudehill prior to the introduction of cross city services.

5.1.4 Those trips that could have been readily made prior to the infrastructure and service developments have been excluded from the survey findings reported here. The process underlying this is explained in more detail in the follow section. The result of removing the trips that could have been made readily prior to the investment programme is that 2,858 remained in the survey sample.

5.1.5 Opportunities to benchmark passenger satisfaction findings are reported in the following narrative. These opportunities relate to:

- For the Vantage V1 and V2 services, a baseline survey was carried out on the X34 (Leigh-Manchester section) and 32 (Wigan-Manchester) services in January 2014. 2,569 surveys were completed; and
- Transport Focus' Bus Passenger Survey for Greater Manchester, carried out towards the end of 2018 and with a sample size of 2,074.

5.1.6 In the following tables, findings relating to those giving a definite answer are given – e.g. excluding "don't knows" and "prefer not to say" responses.

5.1.7 Some of the characteristics of the 2,858 responses from the March 2019 survey are set out first here. These provide context for the findings presented later in the section. Where "peak" is referred to in the tables, this relates to travel starting before 0930 on weekdays, or between 1600-1800 on weekdays. Other times are labelled "off peak".

5.1.8 Table 5.1 gives the main purpose of survey respondents' journeys.

**Table 5.1: What is the main purpose of the journey you are making?**

| Service | Travelling to/from work | Travelling to/from education | Leisure e.g. day out | Shopping trip | Visiting friends or relatives | Medical | Personal business | Sample Size |
|---|---|---|---|---|---|---|---|---|
| 18 | 53.8% | 15.7% | 4.6% | 7.5% | 5.3% | 8.3% | 1.8% | *205* |
| 50 | 43.6% | 34.0% | 7.4% | 6.4% | 5.2% | 1.5% | 1.0% | *726* |
| V1/V2 | 54.6% | 12.7% | 12.8% | 8.7% | 5.2% | 3.8% | 1.0% | *1,927* |
| Peak | 73.9% | 18.6% | 3.5% | 0.9% | 1.1% | 0.9% | 0.3% | *965* |
| Off-Peak | 36.4% | 23.7% | 13.3% | 11.4% | 7.6% | 4.6% | 1.5% | *1,893* |
| All | 50.0% | 21.8% | 9.7% | 7.6% | 5.2% | 3.3% | 1.1% | *2,858* |

Note: rows to not sum to 100% as some journey purposes with less than 1% of trips across all routes have been removed. These are: travel on employer's business (0.6% of total trips); travel for religious reasons (0.5% of trips); and other journey purposes (0.2% of trips).

5.1.9 The V1/V2 travel to/from work proportion (54.6%) is higher than that in the baseline survey of X34/32 users, which was 45%.

5.1.10 Participants in the survey from service 50 include a high proportion of students travelling to or from education. This is also reflected in the age profile reported later in this section. As younger adults tend to be less satisfied than older age groups in terms of bus satisfaction in general, subsequent tables tend to reflect lower levels of satisfaction for the 50 service relative to the 18 and V1/V2.

5.1.11 Table 5.2 presents findings in relation to journey frequency. As an on board survey, the findings are representative of the proportion of trips being made, i.e. more frequent travellers have a higher change of being surveyed than infrequent travellers.

**Table 5.2: How often do you make this journey?**

| Service | Every day | At least once a week | Fort-nightly | Once a month | Less than once a month | This is the first time | Total | Sample size |
|---|---|---|---|---|---|---|---|---|
| 18 | 62.1% | 23.3% | 2.6% | 3.6% | 3.7% | 4.7% | 100% | *205* |
| 50 | 66.3% | 23.1% | 2.2% | 1.9% | 3.1% | 3.4% | 100% | *726* |
| V1/V2 | 57.8% | 19.9% | 5.1% | 6.1% | 7.7% | 3.5% | 100% | *1,927* |
| Peak | 75.5% | 16.6% | 1.7% | 1.2% | 3.5% | 1.6% | 100% | *965* |
| Off-Peak | 54.1% | 24.3% | 4.7% | 5.7% | 6.4% | 4.7% | 100% | *1,893* |
| All | 61.8% | 21.5% | 3.6% | 4.1% | 5.4% | 3.6% | 100% | *2,858* |

5.1.12 Notable among the findings are a large number of people stating that 'this is the first time' for their journey, with an emphasis on off-peak travel.

5.1.13 Table 5.3 sets out a gender split that reflects the typical proportions associated with bus use in Greater Manchester.

**Table 5.3: Are you …?**

| Service | Male | Female | Total | *Sample size* |
|---|---|---|---|---|
| 18 | 36.1% | 63.9% | 100% | *205* |
| 50 | 39.7% | 60.3% | 100% | *726* |
| V1/V2 | 40.1% | 59.9% | 100% | *1,927* |
| Peak | 38.1% | 61.9% | 100% | *965* |
| Off-Peak | 40.3% | 59.7% | 100% | *1,893* |
| All | 39.5% | 60.5% | 100% | *2,858* |

5.1.14 The findings for the Vantage services reveal a slightly higher proportion of female travellers than in the baseline X34/32 surveys (54%).

5.1.15 A notable feature of Table 5.4 is the younger demographic of adults travelling on the 50 service.

**Table 5.4: In which age group are you?**

| Service | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| 16 - 18 | 7.9% | 6.0% | 4.9% | 4.6% | 6.3% | 5.7% |
| 19 - 25 | 16.7% | 45.3% | 16.9% | 26.3% | 29.8% | 28.5% |
| 26 - 34 | 12.3% | 17.4% | 19.5% | 22.4% | 15.4% | 17.9% |
| 35 - 44 | 12.7% | 11.5% | 15.1% | 17.2% | 11.2% | 13.3% |
| 45 - 54 | 19.5% | 8.3% | 17.2% | 16.9% | 12.1% | 13.8% |
| 55 - 59 | 3.9% | 4.0% | 7.2% | 6.4% | 5.0% | 5.5% |
| 60 - 64 | 10.0% | 2.4% | 5.0% | 3.0% | 5.2% | 4.4% |
| 65 - 69 | 8.0% | 1.9% | 5.4% | 1.8% | 5.6% | 4.2% |
| 70 - 79 | 6.6% | 2.7% | 7.6% | 1.1% | 7.9% | 5.5% |
| 80+ | 2.4% | 0.6% | 1.3% | 0.2% | 1.6% | 1.1% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Sample size* | *202* | *707* | *1,913* | *952* | *1,870* | *2,822* |

5.1.16 Table 5.5 suggests that a large proportion of bus users are interchanging between bus services in order to complete their journey. This is most notable for the 18 service.

**Table 5.5: How did you get from your start address to the bus stop/When you get off this service what means of transport will you use to complete the journey?**

| Service | Walk | Another bus | Car as driver | Car as pass-enger | Metro-link | Train | Bicycle | Other | Total | Sample size |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 78.8% | 14.7% | 1.2% | 1.7% | 1.4% | 1.6% | 0.2% | 0.3% | 100% | 205 |
| 50 | 86.5% | 9.0% | 0.5% | 1.3% | 1.0% | 1.5% | 0.1% | 0.2% | 100% | 726 |
| V1/V2 | 77.1% | 9.1% | 7.0% | 3.7% | 1.7% | 1.1% | 0.1% | 0.2% | 100% | 1,927 |
| Peak | 80.2% | 8.8% | 5.1% | 2.4% | 1.6% | 1.6% | 0.1% | 0.1% | 100% | 965 |
| Off-Peak | 81.7% | 10.1% | 2.9% | 2.5% | 1.3% | 1.2% | 0.1% | 0.2% | 100% | 1,893 |
| All | 81.2% | 9.6% | 3.7% | 2.5% | 1.4% | 1.3% | 0.1% | 0.1% | 100% | 2,858 |

5.1.17 Reflecting the attractiveness of the service to people who have a car available, as well as the dedicated provision of car parking at three sites along the Vantage routes, there is a higher proportion of V1/V2 users accessing the service by driving to it.

5.1.18 Coming on to findings on headline measures of satisfaction, Table 5.6 shows the results in relation to overall satisfaction with the bus services in question. The overall figures for Greater Manchester, from the Bus Passenger Survey for 2018, is an 87% level of satisfaction.

**Table 5.6: Overall, taking everything into account, how satisfied are you with your bus journey?**

| Level | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| Very satisfied | 36.5% | 25.1% | 47.8% | 26.0% | 43.4% | 37.2% |
| Fairly satisfied | 48.2% | 51.4% | 40.9% | 52.1% | 42.6% | 46.0% |
| Neither satisfied nor dissatisfied | 8.5% | 12.7% | 5.8% | 10.8% | 7.9% | 9.0% |
| Fairly dissatisfied | 5.3% | 8.4% | 4.0% | 9.3% | 4.1% | 6.0% |
| Very dissatisfied | 1.5% | 2.4% | 1.5% | 1.7% | 1.9% | 1.9% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Of which:* Very or Fairly Satisfied | 84.6% | 76.5% | 88.6% | 78.1% | 86.0% | 83.2% |
| *Sample size* | *201* | *716* | *1,907* | *952* | *1,872* | *2,824* |

5.1.19 The figure for the V1/V2 surveys in March 2019, approaching 89% overall satisfaction, compares to a baseline statistic of 85% for the X34/32 surveys in January 2014.

5.1.20 While these figures show a valuable uplift in satisfaction for the Vantage services, an interesting aspect of satisfaction levels for these services is that those:

- "Very satisfied" with the Vantage services is nearly 48%; whereas
- In the baseline survey for the X34/32 service the comparable statistic was just 33%.

5.1.21 An early post implementation survey was carried out two months into the operation of Vantage services, in July 2016. This revealed passenger satisfaction at a very early stage of operation at 98%, a satisfaction level that is likely to have dropped over time as the 'newness' of the service has worn off and as usage levels have increased and impacted on crowding.

5.1.22 Table 5.7 provides another headline statistic on overall opinion, the degree to which bus users would recommend the service that they are making use of.

**Table 5.7: Are you likely to recommend this bus service to a friend or relative?**

| Response | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| Yes | 95.3% | 84.0% | 95.9% | 90.1% | 91.8% | 91.2% |
| No | 4.7% | 16.0% | 4.1% | 9.9% | 8.2% | 8.8% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| *Sample size* | *182* | *600* | *1,807* | *852* | *1,737* | *2,589* |

5.1.23 There is a high level of recommendation for all the services surveyed in March 2019 and this is particularly high for the 18 and Vantage services. In contrast to the 96% recommendation level for V1/V2 services shown in the table, the comparable figure for the X34/32 services was 77% in January 2014.

5.1.24 Further detail on some key aspects of satisfaction with service provision is provided in the following five tables. The first of these homes in on bus stop provision (Table 5.8).

**Table 5.8: Thinking of the bus stop you used today, how satisfied or dissatisfied were you?**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 52.5% | 27.6% | 14.9% | 2.0% | 3.0% | 100% | *200* |
| 50 | 33.2% | 34.6% | 20.6% | 7.4% | 4.1% | 100% | *697* |
| V1/V2 | 53.5% | 28.8% | 12.1% | 3.4% | 2.3% | 100% | *1,890* |
| All | 45.1% | 31.0% | 15.9% | 4.9% | 3.1% | 100% | *2,787* |

5.1.25 Here findings for the 18 and Vantage services are on a par with overall figures for Greater Manchester from the Bus Passenger Survey in 2018 (81%). Figures for the 50 service are slightly lower, though this may in part reflect the younger demographic making use of that service.

5.1.26 In terms of service frequency, Table 5.9 sets out levels of satisfaction with the different services. The figures for the Vantage services, at 85% satisfaction, demonstrate a 24 percentage points increase on the baseline figure of 61% for the X34/32 services

**Table 5.9: Thinking generally about this bus route, how satisfied are you with the following? The frequency of services on the route**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 34.5% | 36.4% | 8.4% | 14.3% | 6.4% | 100% | *200* |
| 50 | 31.3% | 34.7% | 8.3% | 14.4% | 11.4% | 100% | *713* |
| V1/V2 | 53.3% | 32.0% | 4.6% | 6.8% | 3.3% | 100% | *1,906* |
| All | 42.2% | 33.6% | 6.5% | 10.7% | 7.0% | 100% | *2,819* |

5.1.27 Table 5.10 shows a high proportion of V1/V2 users who are "Very satisfied" with levels of reliability on the Vantage services (48%) with 82% either very or fairly satisfied. This compares to 65% from the baseline X34/32 services, i.e. an uplift of 17 percentage points.

**Table 5.10: The reliability of services on the route**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 27.8% | 41.7% | 12.2% | 10.8% | 7.6% | 100% | *192* |
| 50 | 22.7% | 30.3% | 12.1% | 17.5% | 17.4% | 100% | *704* |
| V1/V2 | 47.9% | 34.1% | 6.5% | 7.7% | 3.8% | 100% | *1,864* |
| All | 35.3% | 33.3% | 9.4% | 12.1% | 9.9% | 100% | *2,760* |

5.1.28 Vantage services are more protected than typical bus services in Greater Manchester from traffic congestion, and this is echoed in the findings reported in Table 5.11 – with only 49% satisfied with the levels of traffic congestion in the January 2014 surveys rising to 63% in the March 2019 V1/V2 surveys.

**Table 5.11: The levels of traffic congestion along the route**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 14.2% | 41.7% | 24.3% | 10.3% | 9.4% | 100% | *195* |
| 50 | 13.3% | 31.2% | 23.4% | 19.7% | 12.3% | 100% | *698* |
| V1/V2 | 29.5% | 33.7% | 15.4% | 11.8% | 9.7% | 100% | *1,848* |
| All | 21.2% | 33.5% | 19.7% | 14.9% | 10.7% | 100% | *2,741* |

5.1.29 Finally, in this section, results on satisfaction in relation to the ability to change to other forms of transport are set out (Table 5.12). For the V1/V2 this stands at 68%, up from 50% from the surveys on the X34/32 services. These figures reflect the greater range of opportunities to connect at different points within and across the city centre brought about by bus services that traverse the city centre.

**Table 5.12: The ability to change to other forms of transport on this route**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 32.0% | 29.0% | 22.7% | 8.9% | 7.3% | 100% | *171* |
| 50 | 23.7% | 33.7% | 26.2% | 6.9% | 9.6% | 100% | *620* |
| V1/V2 | 38.6% | 28.6% | 21.9% | 5.0% | 5.9% | 100% | *1,540* |
| All | 31.5% | 30.8% | 23.8% | 6.2% | 7.6% | 100% | *2,331* |

5.1.30 In summary, this section has set out a range of performance measures in relation to bus passenger satisfaction for the cross city services. Uplifts in satisfaction have been particularly dramatic for the Vantage services in relation to the service surveyed in January 2014 – in overall journey satisfaction terms and also in respect of key service features. Further passenger survey evidence is presented in Appendix 2 and results on modal shift using evidence from the passenger surveys are given in Section 6.1.

## 5.2 Do the new bus services enable a wider range of journeys to be made across the city centre?

5.2.1 This section provides additional findings of the analysis of bus passenger surveys that were carried out in March 2019. It examines the types of

journey being made on bus services that cross the city, specifically on the 18, 50, V1 and V2 services. It also builds up an understanding of how these journeys would have been made in the absence of enhanced or new bus services. This enables the scale of benefits associated with the measures taken and bus service developments to be assessed.

5.2.2 Of 4,489 completed surveys returned by passengers, 4,080 contained sufficient information for a valid starting point and end address to be identified for the journey being made at the time of the survey.

5.2.3 To examine how these journeys could have been made with and without the cross city services in question, the TfGM public transport model (described in more detail in Section 5.1) was used to determine the best means of making each journey recorded in the passenger survey. By means of the public transport model, an overall time and cost or 'generalised cost' was calculated with and without the cross city bus service changes.

5.2.4 For some journeys, e.g. from Middleton to Shudehill on the 18 service, passengers would not have experienced any change in their generalised cost relative to the without-cross city service scenario. Therefore, the passenger journey records where survey participants were assessed as not having experienced a reduced generalised cost were removed from the survey database.

5.2.5 The remaining 2,858 records were further analysed and the analysis of their change in overall time and cost is reported in Table 5.13.

**Table 5.13: Journey time characteristics of passenger benefiting from cross city bus services**

| Statistic | 18 | 50 | V1 | V2 |
|---|---|---|---|---|
| Surveys with valid addresses | 354 | 1,121 | 1,556 | 1,049 |
| And overall lower journey time | 205 | 726 | 1,163 | 764 |
| Mean time saving | 8.8 mins | 3.4 mins | 14.4 mins | 11.8 mins |
| Median time saving | 4.8 mins | 1.0 mins | 12.4 mins | 7.5 mins |
| Maximum time saving | 37.4 mins | 38.9 mins | 50.7 mins | 52.9 mins |
| Standard deviation of time saving | 9.73 | 5.17 | 11.10 | 11.76 |

Note: time savings are expressed in the equivalent of minutes of time spent in vehicle.

5.2.6 Given the scale of infrastructure provision change and the nature of the changes to bus services, the changes experienced by passengers on different bus routes are, as expected, quite different. As can be seen, some of the largest changes were experienced by passengers using the V1 and V2 services. In the case of the V1 service, the mean time saving was just over 14 minutes, with the median changes slightly less (12 minutes).

5.2.7 The maximum equivalent overall time and cost saving, of over 50 minutes, is experienced by passengers making use of the full length of the V1 or V2 services. As well as journey time savings brought about by the bus priority infrastructure, a range of benefits accrue from no longer having to interchange between buses to complete their journey. These benefits include: no longer needing to walk between buses when interchanging, not having to wait for a second bus and not having the inconvenience of interchanging, and not (in many cases) having to pay a second fare or increased fare to make use of a second bus service.

5.2.8 While the previous table provides overall time and cost summary statistics, to bring some examples to life a selection of journeys was chosen for each bus service (Table 5.14 onwards). For each service, several of these were chosen to illustrate the maximum generalised cost saving that some passengers have experienced. A handful clustered around the mean time saving were also picked out.

**Table 5.14: Examples of generalised cost savings, service 18**

| | **Start** | **End** | **Overall time and cost (mins)** | | | **Comments** |
|---|---|---|---|---|---|---|
| | | | **before** | **after** | **diff.** | |
| 1 | Middleton | Manchester University, Oxford Road | 137 | 101 | -36 | Removal of need to interchange |
| 2 | Collyhurst | Manchester Royal Infirmary | 92 | 59 | -33 | As above |
| 3 | Manchester Royal Infirmary | Blackley | 96 | 65 | -31 | As above |
| 4 | Dance House Theatre | Higher Blackley | 98 | 91 | -7 | Reduction in walk time |
| 5 | Manchester University, Oxford Road | Harpurhey | 80 | 71 | -9 | As above |
| 6 | Manchester University, Oxford Road | Hollinwood | 97 | 89 | -8 | As above |

5.2.9 The examples given illustrate the dramatic reduction in the overall time and cost of a journey where an interchange can be removed, as in the case of the first three examples. Less dramatic, though still significant, reductions in overall time and cost are achieved when walk time is reduced.

5.2.10 Some case studies are shown for service 50 in Table 5.15.

**Table 5.15: Examples of generalised cost savings, service 50**

| | Start | End | Overall time and cost (mins) | | | Comments |
|---|---|---|---|---|---|---|
| | | | before | after | diff. | |
| 1 | Eccles New Road | Manchester Royal Children's Hospital | 85 | 63 | -22 | Removal of need to interchange |
| 2 | Chapel Street | The Lowry | 74 | 53 | -21 | Reduction in wait time, for two bus services |
| 3 | Langworthy Park | Manchester Royal Infirmary | 88 | 72 | -16 | Reduction in walking time |
| 4 | Manchester Royal Infirmary | BUPA, Salford Quays | 89 | 87 | -2 | As above |
| 5 | Eccles New Road | Manchester University | 74 | 71 | -3 | As above |
| 6 | Manchester University | Salford University | 71 | 68 | -3 | As above |

5.2.11 This table shows significant reductions in overall journey times and costs, in some cases just in relation to walk time but in others due to the large change brought about by not longer needing to interchange.

5.2.12 Finally, for this section, Table 5.16 provides a series of case studies for two of the Vantage services.

**Table 5.16: Examples of generalised cost savings, services V1 (1-3) and V2 (4-6)**

| | Start | End | Overall time and cost (mins) | | | Comments |
|---|---|---|---|---|---|---|
| | | | before | after | diff. | |
| 1 | Walkden | Oxford Road | 130 | 79 | -51 | Removal of time and cost associated with interchanging |
| 2 | Tyldesley | Manchester School of Art | 126 | 78 | -48 | Reduction of wait time for multiple buses |
| 3 | Leigh | Piccadilly | 110 | 95 | -15 | Shorter time on board buses |
| 4 | Tyldesley | Manchester University | 133 | 80 | -53 | Removal of interchange elements, lower waiting time |
| 5 | Hindsford | Manchester Museum, Oxford Road | 145 | 93 | -52 | As above |
| 6 | Worsley | Arndale Centre | 86 | 75 | -11 | Reduction in time on board bus |

5.2.13 Here the biggest overall time and cost savings can be seen where the need to interchange has been removed, with other journeys benefiting mainly from a reduction in time on the bus.

5.2.14 In summary, the analysis of journey patterns presented in this section demonstrates the significant level of change in overall times and costs of journeys. This is particularly the case where the benefits of bus priority measures have compounded by the major benefits of removing the need to interchange between buses.

# 6 Early Findings on Effectiveness of Provision

## 6.1 What form of transport would bus passengers have used otherwise?

6.1.1 This section focuses on evidence of what previous means of transport bus passengers using the 18, 50 and Vantage services have come from, i.e. it focuses particularly on evidence of modal shift from car. The findings come from the surveys first referenced in Section 5.1 and again relate to bus journeys that could not have been readily made prior to the introduction of bus services that cross the city. As well as being an indicator of progress in achieving decongestion and environmental benefits, the extent of modal shift also gives an indication of the level of attractiveness to passengers of the bus services being provided.

6.1.2 Table 6.1 sets the scene by demonstrating the degree to which users of the bus services surveyed declare themselves to be 'car available'.

**Table 6.1: Could you have made your journey today by car?**

| Response | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| Car Available - as a Driver | 20.4% | 17.0% | 45.1% | 35.6% | 28.2% | 30.8% |
| Car Available - as a Passenger | 14.9% | 18.5% | 12.9% | 12.4% | 17.2% | 15.4% |
| No Car Available | 64.7% | 64.4% | 42.0% | 52.0% | 54.7% | 53.7% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Sample Size* | *205* | *726* | *1,927* | *965* | *1,893* | *2,858* |

6.1.3 High levels of car availability are exhibited for the Vantage passengers surveyed, with levels more typical for bus users in Greater Manchester on the other services surveyed.

6.1.4 Building on this context, Table 6.2 sets out passengers' response to a question about their previous travel behaviour. As with most travel services, there is a high degree of turnover of passengers coming into and out of the market for the bus services in question, as indicated by the response "I didn't make this journey". This is particularly high for the 50 service, in part due to a high proportion of students that make use of the service.

**Table 6.2: Before this service was introduced, how did you make this journey?**

| Previous behaviour | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| I didn't make this journey | 33.8% | 56.8% | 27.6% | 40.6% | 40.3% | 40.3% |
| This service has always been available to me | 1.9% | 3.1% | 1.5% | 2.9% | 1.8% | 2.2% |
| Another bus | 47.7% | 16.1% | 34.0% | 27.9% | 28.0% | 28.0% |
| Car – driver | 5.5% | 3.2% | 17.9% | 11.0% | 10.4% | 10.6% |
| Car – passenger | 2.1% | 2.5% | 3.1% | 2.8% | 2.7% | 2.8% |
| Taxi | 1.7% | 1.9% | 1.0% | 1.2% | 1.5% | 1.4% |
| Train | 0.5% | 3.2% | 11.2% | 6.5% | 6.9% | 6.8% |
| Metrolink | 1.0% | 3.2% | 0.8% | 1.6% | 1.8% | 1.8% |
| Walked | 4.5% | 7.5% | 2.2% | 4.0% | 4.9% | 4.6% |
| Bicycle | 0.2% | 1.2% | 0.4% | 0.7% | 0.6% | 0.7% |
| Other | 1.1% | 1.3% | 0.4% | 0.7% | 0.9% | 0.8% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Sample Size* | *205* | *726* | *1,927* | *965* | *1,893* | *2,858* |

6.1.5 When the responses "I didn't make this journey" and "This service has always been available to me" are removed from the table[3], with percentages of remaining responses re-calculated to add to 100%, the results are as shown in Table 6.3.

**Table 6.3: Before this service was introduced, how did you make this journey? with "I didn't make this journey" responses removed**

| Previous behaviour | 18 | 50 | V1/V2 | Peak | Off-Peak | All |
|---|---|---|---|---|---|---|
| Another bus | 74.3% | 40.2% | 47.8% | 49.5% | 48.5% | 48.7% |
| Car - driver | 8.6% | 8.0% | 25.3% | 19.4% | 18.0% | 18.4% |
| Car - passenger | 3.2% | 6.2% | 4.4% | 5.0% | 4.7% | 4.8% |
| Taxi | 2.6% | 4.6% | 1.4% | 2.0% | 2.7% | 2.5% |
| Train | 0.7% | 8.0% | 15.7% | 11.6% | 11.9% | 11.8% |
| Metrolink | 1.6% | 8.1% | 1.1% | 2.9% | 3.2% | 3.2% |
| Walked | 6.9% | 18.8% | 3.1% | 7.1% | 8.5% | 8.0% |
| Bicycle | 0.4% | 3.0% | 0.5% | 1.3% | 1.1% | 1.2% |
| Other | 1.7% | 3.1% | 0.6% | 1.3% | 1.5% | 1.4% |

[3] "I didn't make this journey" is removed because the bulk of these passengers will have changed home or job/ other destination, so there is limited attribution to the bus service itself. "This service has always been available to me" is removed as these passengers were not in a position to recall a before situation.

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Sample Size* | *136* | *314* | *1,396* | *573* | *1,131* | *1,707* |

Note: question as previous table but re-based to 100% removing "I didn't make this journey" and "This service has always been available to me"; sample size also reduced.

6.1.6 These statistics reveal a high level of modal shift from car from the introduction of Vantage services. Figures for the introduction of the 18 and the westward extension of the 50 service appear more typical for the introduction of a new bus service.

6.1.7 Of course, asking passengers about their travel behaviour in relation to services that have been introduced or changed several years ago is quite a challenge to survey participants' recall. Taking account of this, bus passengers were also asked what they would do in the absence of the service they were using, with Table 6.4 reporting the findings.

**Table 6.4: If the service were not available, what would you do instead?**

| **Response** | **18** | **50** | **V1/V2** | **Peak** | **Off-Peak** | **All** |
|---|---|---|---|---|---|---|
| I would use another bus service | 78.0% | 50.4% | 42.5% | 48.8% | 49.9% | 49.5% |
| I would drive to my destination | 3.8% | 5.7% | 23.5% | 14.8% | 13.7% | 14.1% |
| I would get a lift to my destination | 1.1% | 3.3% | 3.4% | 2.1% | 3.7% | 3.1% |
| I would take a taxi | 3.7% | 3.9% | 1.6% | 1.8% | 3.3% | 2.8% |
| I would walk to a rail or Metrolink stop | 0.9% | 10.5% | 6.8% | 10.1% | 6.4% | 7.7% |
| I would drive to a rail or Metrolink stop | 0.9% | 1.2% | 7.8% | 5.4% | 3.8% | 4.3% |
| I would catch the train | 0.0% | 0.0% | 1.5% | 0.9% | 0.6% | 0.7% |
| I would walk | 3.6% | 13.2% | 1.9% | 4.7% | 7.9% | 6.7% |
| I would cycle | 0.7% | 4.3% | 0.9% | 2.3% | 2.3% | 2.3% |
| Combination of modes | 0.6% | 1.1% | 0.8% | 1.2% | 0.8% | 0.9% |
| I would not make this journey | 4.6% | 5.2% | 7.7% | 6.3% | 6.3% | 6.3% |
| I would change job | 0.0% | 0.2% | 0.9% | 0.9% | 0.3% | 0.5% |
| Other | 2.0% | 1.1% | 0.8% | 0.8% | 1.2% | 1.0% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| *Sample Size* | *205* | *726* | *1,927* | *965* | *1,893* | *2,858* |

6.1.8 Again, the findings here reveal a high level of modal shift from car for the Vantage services, with more modest modal shift for the other services.

6.1.9 In summary, it appears that modal shift from car to Vantage services has been in the range 20% to 25%, with a lower level of modal shift achieved by the other services' introduction or extension. In the case of the Vantage services, modal shift is comparable to that achieved by the introduction of Metrolink services in Greater Manchester.

## 6.2 How has the Oxford Road re-design affected walking and cycling volumes?

6.2.1 A key component of the works on Oxford Road was a 1.6km bus, hackney carriage/ taxi and cycle only section on Oxford Road, between Hathersage Road and Grosvenor Street. The scheme proposals were to be within the existing carriageway and to include the widening of pavements, improved crossing facilities, reduced levels of general traffic, and 4.5km of segregated on-carriageway cycle lanes.

6.2.2 To assess the impact on pedestrians and cyclists, one-day counts of pedestrian volumes were carried out on Oxford Road. One-day counts of cyclists were undertaken on Oxford Road and also, in case of any displacement to Oxford Road, on the two parallel corridors – Upper Brook Street and Lloyd Street. Both sets of surveys were carried out before and after the construction period. A survey among users of Oxford Road was also carried out and is reported in the next section.

6.2.3 Table 6.5 reports the findings of the pedestrian counts, by location.

**Table 6.5: Pedestrian counts on Oxford Road**

| Location | At or Between | Thu 12 Mar 2015 | Thu 21 Mar 2019 | Change, number | % Change |
|---|---|---|---|---|---|
| A34 Oxford Road | All Saints Park/ Grosvenor Square | 10,697 | 11,287 | +590 | +6% |
| B5117 Oxford Road | Outside the Students Union | 13,477 | 14,244 | +767 | +6% |
| B5117 Oxford Road | Hathersage Road & Moss Lane East (outside Lidl) | 13,472 | 13,757 | +285 | +2% |

Notes: counts conducted between 0700-1900. Numbers represent the sum of flows in both directions.

6.2.4 All three sites have experienced a modest increase in the numbers of pedestrians counted at the locations. While the basis of these findings is a one day count with consequent limitations, and other factors may be affecting footfall, these remain encouraging findings.

6.2.5 In contrast to the pedestrian count figures, cycle count statistics demonstrate a dramatic increase in cycle usage on the Oxford Road corridor (Table 6.6).

**Table 6.6: Oxford Road Cycle Counts**

| Location | Site | Wed 4 Mar 2015 | Wed 20 Mar 2019 | Change, number | % Change |
|---|---|---|---|---|---|
| A34 Oxford Street, Manchester City Centre | At Great Bridgewater Street | 772 | 2,580 | +1,808 | +234% |
| A34 Oxford Road, Manchester City Centre | 20m north-west of Cavendish Street | 1,264 | 3,499 | +2,235 | +177% |
| B5117 Oxford Road, Manchester City Centre | At Bridgeford Street | 1,799 | 3,922 | +2,123 | +118% |
| B5117 Oxford Road, Rusholme *combined with* Whitworth Park Footpath 1, Rusholme | At York Place (immediately south of pedestrian crossing)<br><br>Opposite York Place (immediately south of pedestrian crossing) | 1,876 | 4,425 | +2,549 | +136% |
| U Hathersage Road, Rusholme | At junction with B5117 Oxford Road | 50 | 124 | +74 | +148% |
| Whitworth Park Footpath 2, Rusholme | Diagonally crossing the park to/from B5117 Oxford Road | 331 | 649 | +318 | +96% |
| Total of above locations | All sites | 6,092 | 15,199 | +9,107 | +149% |

Notes: count carried out 0600-2100 on both days. As summing across sites counts some cyclists twice, count across all sites is included for change calculation purposes only.

6.2.6 Across the sites surveyed on Oxford Road, the increase in cycling between 2015 and 2019 has been almost 150%, or an increase of a factor of approaching 2.5 times the pre-construction figure. The provision for safer cycling on the corridor, alongside other trends in cycling, has clearly been reflected in this large increase in the numbers of cyclists.

6.2.7 A check was made on parallel routes, Lloyd Street and Upper Brook Street, to determine the extent of possible diversion from those routes to Oxford Road. The findings for Lloyd Street are reported in Table 6.7.

**Table 6.7: Lloyd Street Cycle Counts**

| Location | Site | Wed 4 Nov 2015 | Wed 20 Mar 2019 | Change, number | % Change |
|---|---|---|---|---|---|
| Upper Lloyd Street, Moss Side | Immediately south of Moss Lane East | 617 | 477 | -140 | -23% |
| Higher Cambridge Street, Manchester City Centre | Immediately south-east of Booth Street West | 751 | 595 | -156 | -21% |
| Total of above locations | All sites | 1,368 | 1,072 | -296 | -22% |

Notes: count carried out 0600-2100 on both days. As summing across sites counts some cyclists twice, count across all sites is included for change calculation purposes only.

6.2.8 While there has been a decrease in cycling volumes, there is a challenge in interpreting the figures in that they relate to different seasons. While the change in cycling on Lloyd Street is significant in percentage terms, in terms of absolute numbers the scale of change is relatively minor compared to the growth in cycling on Oxford Road, and it may be assumed that many of the cyclists are now using Oxford Road for their journeys.

6.2.9 Figures for the route paralleling Oxford Road to the east are set out in Table 6.8.

**Table 6.8: Upper Brook Street Cycle Counts**

| Location | Site | Wed 3 Jun 2015 | Wed 20 Mar 2019 | Change, number | % Change |
|---|---|---|---|---|---|
| A34 Upper Brook Street, Rusholme | Between Oxford Place & Hathersage Road | 727 | 752 | 25 | +3% |
| A34 Upper Brook Street, Manchester City Centre | Between Plymouth Grove & Brunswick Street | 889 | 915 | 26 | +3% |
| A34 Upper Brook Street, Manchester City Centre | Between Booth Street East & Grosvenor Street | 725 | 740 | 15 | +2% |
| Total of above locations | All sites | 2,341 | 2,407 | 66 | +3% |

Notes: count carried out 0700-1900 on both days. As summing across sites counts some cyclists twice, count across all sites is included for change calculation purposes only.

6.2.10 Again, there are some differences in the time of year when counts of cyclists were made on Upper Brook Street. The overall picture, however, appears to be one of stability in cyclist numbers on this route.

6.2.11 In summary, pedestrian numbers have increased by a small amount on Oxford Road in comparison with the pre-construction period. In contrast, numbers of cyclists have more than doubled on the route, with very limited abstraction from parallel routes.

## 6.3 What are cyclist attitudes to provision of segregated lanes on Oxford Road?

6.3.1 In order to understand how cyclists were making use of the new provision for cyclists on Oxford Road, a survey was carried out of cyclists using the route on Wednesday 7 March 2018. These were administered by means of a flyer directing cyclists to an online survey, with flyers handed out at traffic signals in the northbound and southbound directions at the southern end of Oxford Road.

6.3.2 Of 3,325 cyclists offered a survey, 1,100 accepted a leaflet and among these cyclists 352 (10% of cyclists approached and 32% of cyclists who

took a leaflet) completed the full survey. While the survey was carried out on a strike day for some of the staff at the Manchester universities, the purpose split nevertheless was very close to cycle survey carried out at the same location in a university term-time period in 2016.

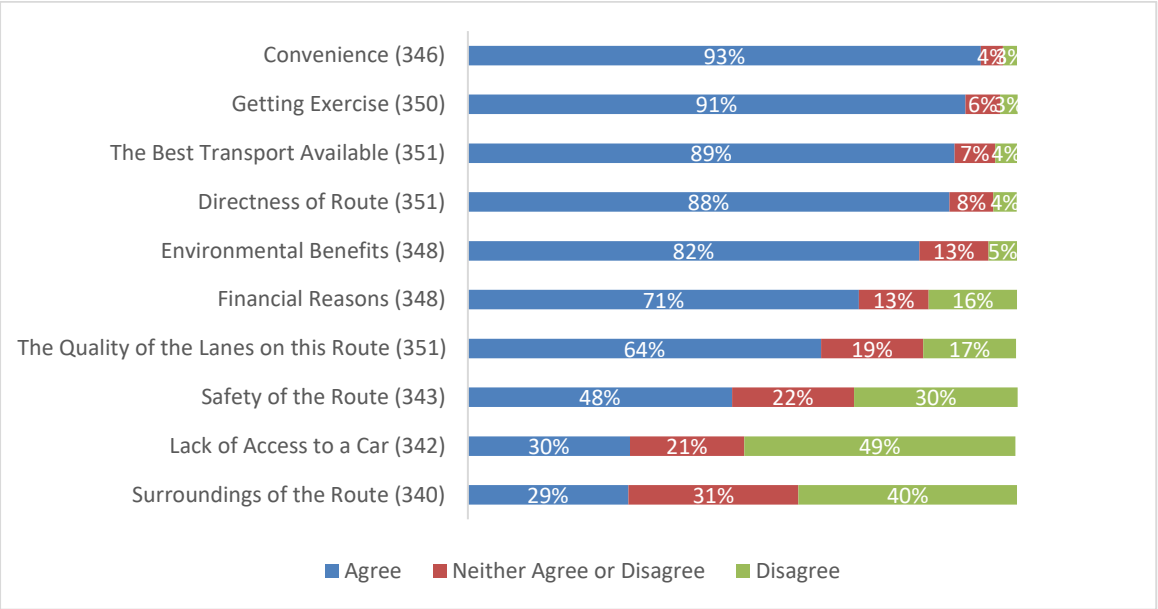
6.3.3 Reflecting the catchment areas of the Manchester universities, 55% of cyclists surveyed were aged 20-29, with 5% in the 16-19 age group and 24% in the 30-39 age band. The split by gender was 32% women, 68% men.

6.3.4 The proximity of the universities was also echoed in the findings on employment status, with 46% studying, 47% in full time employment and 5% in part time employment (up to 30 hours a week).

6.3.5 The most common distance cycled was 3-4 miles (40%); 1-2 miles (31%), with 5-6 miles cycled by 13% and 6 or more miles also by 13%.

6.3.6 Cyclists were also asked “to what extent did the following factors influence your decision to cycle on this journey?” and the findings in relation to this question are shown in Figure 6.1.

**Figure 6.1: Factors influencing decision to cycle**



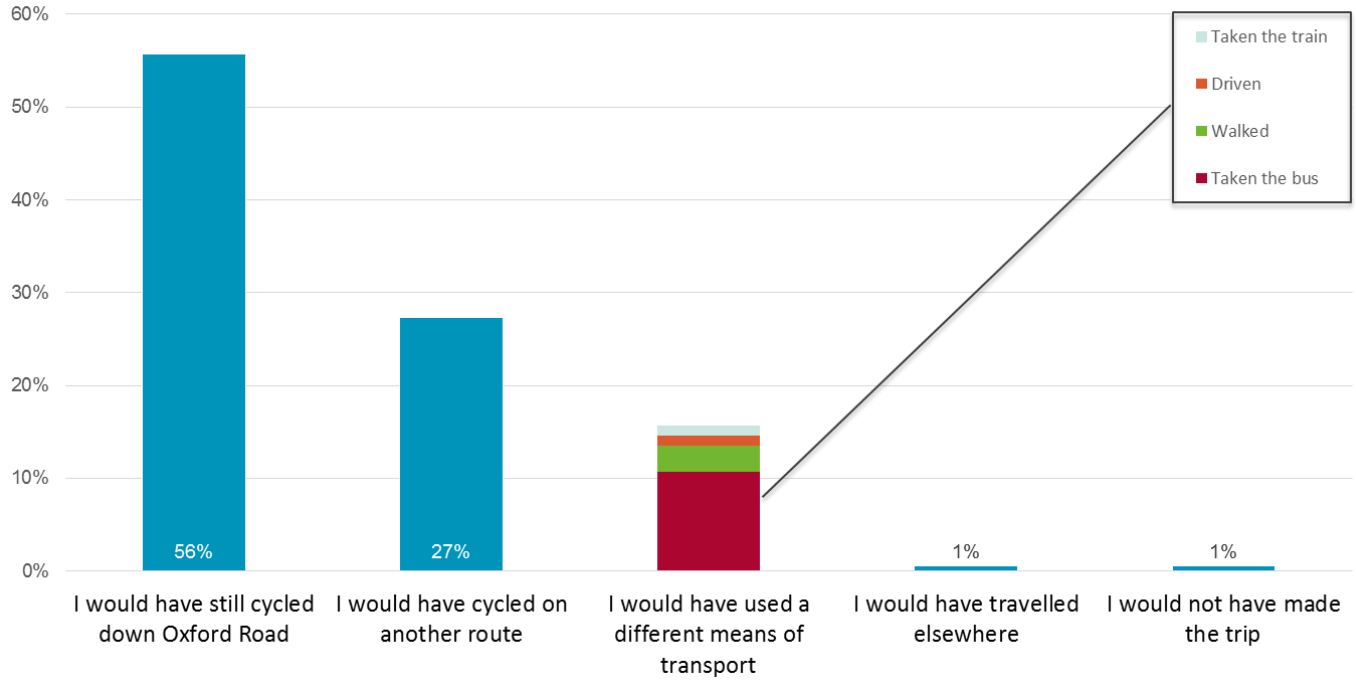

6.3.7 Interest in cycling as a way of getting exercise was a strong factor in the decision to cycle, with 91% of survey participants agreeing that it was a factor in their decision making.

6.3.8 Cyclists were also asked how they chose to use the cycle lanes, with:

- 66% saying “Yes, I cycled in these lanes whenever they were available”;
- 28% saying “I cycled in these lanes for most of my journey, but occasionally left the lane”;
- 5% saying “I used the cycle lanes, but no the lanes behind the bus stops”; and
- 1% saying “No, I cycled in the roadway”.

6.3.9 Survey participants were asked “If the new cycle lanes on Oxford Road were not there, how would you travelled on your journey?”, with the findings show in Figure 6.2.

**Figure 6.2: Travel choice without new cycle lane provision**




6.3.10 The main choices the cycling provision is influencing are choice of route and modal choice. There is limited influence on modal shift from car, at 1% of cyclists, in part reflecting the demographics of the corridor and the very limited opportunities for low cost or free parking on the corridor.

6.3.11 Survey participants also identified a range of possible improvements that would make cycling easier on the Oxford Road corridor. These included: the need to discourage pedestrians from obstructing the segregated cycle lanes, particularly around the back of bus stops; the need for good maintenance of road surfaces and regular cleaning; and, issues to do with car driver behaviour, particularly in relation to inconsiderate behaviour at junctions and where cycle lanes let cyclists re-join the roadway.

6.3.12 In summary, the surveys of cyclists suggest that the new segregated cycle lanes on Oxford Road are making a significant positive contribution to the quality and safety of cycling provision on the corridor and are effective in encouraging active means of travel. The findings are positive, particularly when considered in relation to the large increase in cycling volumes outlined in the previous section.

## 6.4 How has the multi-user path that parallels the Busway affected walking, cycling and other uses?

6.4.1 Counts and surveys were carried out on the multi-user path provided alongside the Busway to understand the extent to which the path is being used, user characteristics and types of travel. The multi-user path is available for use by pedestrians, wheelchair users, cyclists and equestrians. It runs alongside the Busway and consists of a bound surface that is 4.5m wide, with vegetation on each side. It was designed to provide a new path to replace the disused railway alignment now used by the Busway, a path that was often muddy, uneven and not particularly accessible.

6.4.2 The counts and surveys were carried out across 4 days in 2017: Saturday 19th & Tuesday 22nd August, Saturday 7th and Tuesday 10th October. Counts of usage levels and types of use were obtained from observation of video footage between 0700-2000 on the August days and 0700-1900 on the October days.

6.4.3 Surveys were carried out over the same days and time periods to understand usage of the path and for use with the count information to work out the number of trips made on the path. Over 1,100 surveys were completed.

6.4.4 Both video footage and surveys were carried out at 6 points along the 7.1 km multi-user path alongside the guided Busway.

6.4.5 In terms of steps involved in analysis:

- firstly, the typical trip length from the surveys was calculated, to avoid counting the same person at multiple count points; and
- secondly, the pattern of cycle and walk trips that is typical across the course of a year was examined, to take account of seasonal variation in factoring up to an estimate for the year as a whole.

6.4.6 Taking into account these considerations, it is estimated that in a year's use of the path:

- 160,000 trips are made by pedestrians, wheelchair users and joggers; and
- 60,000 trips are made by cyclists.

6.4.7 When asked 'what is the main purpose of your journey on the path today?', the dominant response was recreation/ exercise, with 76% of survey participants stating this purpose. Other purposes included

travelling to/ from work at 10.9%, shopping at 5.7%, and social/ visiting friends or family at 3.7%.

6.4.8 Survey participants (1,098) were asked 'When did you start using this route/path (old or existing)?', with a large proportion of those surveyed having not previously used the old path:

- 71% had started using the path when the guided Busway opened;
- 6% had been using the old path during the Busway's construction; and
- 23% were longstanding users, having started using the route prior to the construction of the guided Busway.

6.4.9 Survey participants (1,093) were asked 'did you previously make this trip by car or on foot?'. In response:

- 48% said 'on foot'
- 37% said 'I didn't make this trip'
- 7% said 'car – as driver'
- 3% said 'car – as passenger'
- the remaining 6% saying they made the trip previously by alternative means.

6.4.10 The figures on car transfer suggest a modest yet valuable degree of modal shift.

6.4.11 Survey respondents were asked 'Has the availability of the path alongside the guided Busway encouraged you to pursue a more active lifestyle?', with feedback to this question (1,096 responses) indicating that this had been a notable impact, with 58% saying 'Yes – significantly' and an additional 26% saying 'Yes – a small increase'.

6.4.12 95% of users indicated that they were satisfied with the path, with only 2% dissatisfied in overall terms. Some suggestions were made for improvements to the path, including better lighting and a smoother surface.

## 6.5 What economic impacts has the scheme had on the Oxford Road corridor? How have perceptions of noise, local air quality and the local environment changed among stakeholders on the Oxford Road and parallel corridors?

6.5.1 The Cross City Bus Package and Busway Programme has delivered substantial infrastructure and service changes within Greater

Manchester, and research among stakeholders sought to understand the positive and negative impacts of such schemes upon pertinent stakeholders. Ultimately we were keen to focus on the impacts that have transpired beyond transport developments, yet may still be hinged on such change; such as the economic and environmental implications for the areas explored below.

6.5.2 Transport for Greater Manchester commissioned qualitative research with key stakeholders from AECOM along the Oxford Road and Upper Brook Street corridors, as well the western leg of the Busway at Leigh, Atherton and Tyldesley (reported in the next section). In total, 21 in-depth interviews were conducted in the Oxford Road area (including 1 on Upper Brook Street). The interviews explored the wider impacts of these schemes upon relevant stakeholders and to what extent strategic drivers, such as improved connectivity and economic regeneration, have been achieved.

6.5.3 While stakeholders favour largely rests with the infrastructure developments, such as the bus priority, cycling and pedestrian improvements, the following summary shall concentrate on the wider economic and environmental impacts of such schemes.

6.5.4 The majority of stakeholders along Oxford Road were very positive about the scheme, impressed with the quality of the implementation and the positive effects it has had on both safety and the atmosphere/ environment of the public realm. Conditions have served to encourage walking and cycling, which in turn increases economic footfall and fosters a sense of neighbourhood identity. However one business remains perturbed by the limited vehicular access and the negative impact this has had on their revenue. While the removal of the majority of traffic, in conjunction with the planting of trees, have improved the immediate perception of air quality there are concerns that traffic has merely been superficially diverted and that this alone cannot respond to the larger issue of congestion.

6.5.5 On the whole, stakeholders responded positively to the environmental and safety developments in the area, and the effect this has upon the public realm.

*"…when I go outside now and I see tree lined streets, I see nice architecture, I see nice quality paving, I see smart new bus terminals, yeah, the public realm in terms of the quality is much, much better."*
Large, Education

6.5.6 Some participants were happy that they had planted trees along Oxford Road, making it a more pleasant place to be and work. It was felt that it is

now more desirable to walk along the route. There were some small increases reported in the number of staff commuting to work by foot, because of the changes.

*"…we definitely saw an increase in people walking to work, again it's small, but there has been an increase."* Large, Health

6.5.7 Participants tended to be full of praise for the effect the changes had had on the atmosphere of the area. There was a feeling that making it easier to cycle had opened it up to new people. The desirability of the area was seen to have improved. There has been a perceived increase in food/retail sites, more student accommodation, leading to a "buzz" around the area:

*"I think it's becoming more desirable, certainly, with the developments that are happening on the corridor…I feel like it's picking itself back up again now."* Oxford Road Corridor Partnership

6.5.8 The Universities felt the changes had improved the atmosphere of the area for their students.

*"I think it's helped us to feel a bit more like a campus than just a campus by a major arterial route."* Large, Education

6.5.9 Overall there were mixed views on the perceived impacts on air quality on the route. Some felt there were noticeable improvements:

*"I suppose the change I think is because the car traffic's not travelling up and down, the air quality, I can definitely tell the difference on that."* Large, Health

6.5.10 It was felt by some that congestion in the wider area had increased since the restrictions were put in place, with Hathersage Road and Upper Brook Street bearing the brunt of the diverted traffic. However, an organisation based on Upper Brook Street suggested the change in congestion had been minimal and with no noticeable effect on their business.

*"It's always been busy along here… it's not noticeably busier than it was beforehand"* Large, Hospitality

6.5.11 One stakeholder suggested that the measures had served to divert traffic and subsequent pollution to the parallel corridor of Upper Brook Street. (Section 6.11 counters this viewpoint with evidence of a smaller increase in traffic on Upper Brook Street compared to the decrease in traffic on Oxford Road):

*"Upper Brook Street has just become so much busier... I mean it would be interesting to know the air quality stats on Upper Brook Street, I wouldn't mind betting they'd gone up a lot, but I think the experience of walking down Upper Brook Street now is quite unpleasant..."* Large, Education

6.5.12 Another participant suggested the air quality had declined due to increased congestion at junctions avoiding the restrictions.

*"I think it's actually getting worse…the convergence of big chunks of traffic further up the road, they are causing tremendous problems"* Large, Developer

6.5.13 There were also several complaints that buses were not green enough, and that the lack of investment in electric or hybrid engines was negating a lot of the work done to improve air quality on the road.

*"I think our hope is that they'll roll out the low emission buses, because we did have some pretty nasty buses, the old Magic Buses going up and down here, very grim, so clearly if we can get a low emissions fleet that is going to be better"* Large, Education

6.5.14 It was widely thought (by respondents) that the signage along Oxford Road is insufficient and has led to many car users accidentally travelling through the restrictions and receiving tickets. This may serve to inhibit visitors if not rectified.

*"…everybody I know has actually had a fine in that first year, I think more could have been done to make that clearer for people"* Oxford Road Corridor Partnership

6.5.15 The view above is not shared by Manchester City Council who has confirmed their view that the signage meets all legal and DfT requirements.

6.5.16 There is some concern that patients may consider using other hospitals due to issues they may have previously encountered.

*"…if individuals have got tickets coming here and they get to choose their hospital, then next time they're going to say, well, I'm not going to Manchester anymore, because I got a ticket last time I tried to go there."* Large, Health

6.5.17 Overall organisations along Oxford Road felt the impacts of the changes had been positive, however there were some who had been negatively impacted. Limitation and removal of parking bays, in conjunction with restrictions on traffic, were perceived to have adversely affected accessibility and revenue for some businesses near All Saints Park.

*"…it's had such a negative impact on us…our yearly sales up until the point of the works were just increasing every year, you know, we were a successful little business and we're a safe, stable place for people to work, but we have lost sales and we have lost revenue and we're not in a financially as secure position as we were prior to the works."* Eighth Day Café

6.5.18 Whereas for other businesses, the cycle lane had opened up new opportunities. One organisation, which deals with cycle deliveries, commented that the changes made it easier for them to operate a mobile delivery service by bicycle.

*"It's just made it easier for the riders to get in and out."* Medium[4], Food

6.5.19 Widened paths have also allowed some organisations to utilise space outside their business for stalls or for tables and chairs.

*"… we have more space outside the shop…so we can actually put some (clothing) rails out there, once in a while in the summer."* Medium, Retail

6.5.20 Organisations reported there were initially a lot of delivery issues when the vehicle restrictions were put in place, but over time these have dissipated as the scheme access arrangements have been embedded.

6.5.21 In summary, among the stakeholders interviewed on Oxford Road there was an overall positive verdict on the range of measures that had been taken to improve the corridor. Having said this, a range of concerns remain about customer and delivery access.

[4] Small businesses estimated to have fewer than 20 employees, Medium estimated to have 20 – 150 employees, Large estimated to have more than 150

## 6.6 What economic impacts has the scheme had on Leigh, Atherton & Tyldesley

6.6.1 Alongside the stakeholder interviews carried out on Oxford Road and reported in the previous section, 9 stakeholder interviews were carried out – 3 each in Leigh, Atherton and Tyldesley. Again, the focus of these in-depth interviews was on the wider impacts on businesses and organisations in the area, beyond immediate transport impacts.

6.6.2 These stakeholder interviews complement evidence relating to a number of housing developments along the western corridor, with at least 4 new major residential developments having been built since the Busway opening between Leigh and Walkden Road on the A580.

6.6.3 Sentiments towards the Busway and the reported impacts were largely positive amongst organisations in Leigh, Atherton and Tyldesley. It is perceived that the Busway has stimulated the local economy and acted as a catalyst for regeneration. The development was seen to have improved public transport accessibility and connectivity between the areas and beyond. It has served to increase travel horizons and the labour market catchment area, as well as diminish the likelihood for social isolation of those in nearby residential care. Fear lingers with some organisations as the Busway is seen to divert customers into the Regional Centre. However, even those previously reticent about the scheme appear to have changed their opinion and recognise the benefits.

6.6.4 There was perception that the Busway was bringing people into Leigh during the day, and had improved connectivity to the area from Manchester and some of the smaller surrounding towns. It was suggested the Busway had opened up employment opportunities in Leigh for residents in Tyldesley and Atherton as there is now an easy direct connection between the locations.

*"I think it's opened up possibilities for people like from Tyldesley who don't drive, they can get here, so it's opened that up… and we've had more applicants from all around the borough really"* Cineworld

6.6.5 One organisation suggested the Busway had attracted people to the town from the wider area, as people were driving to Leigh, spending some time in Leigh, then using the bus service to get into Manchester for the rest of the day. The market in Leigh has benefitted from the increased connectivity.

*"I think we've thrived myself as I've seen people here who would never have normally visited, I see neighbours from Tyldesley who just jump on the bus now because it's easy… I know people from Walkden who have*

*visited Leigh Market because they don't have a market in Walkden"* Large, Retail

6.6.6 There has been a noticeable increase in people heading into Manchester more frequently, particularly for large events such as the Christmas markets, which is a benefit for residents but has drawn some custom away from pubs and other amenities in the area.

*"Business wise it's had an effect on our business…it's easier for people to get into the centre of Manchester now mainly during the weekend, specifically Saturday and Sunday afternoons… customers are going straight into Manchester (instead of visiting their organisation)"* George & Dragon

6.6.7 Interestingly, some organisations based in Leigh perceived that the Busway may be damaging smaller towns like Atherton and Tyldesley, by drawing people and revenue away. However, organisations in Atherton were very positive about the scheme, suggesting that the new services had opened up the area to new customers.

6.6.8 Beyond improved accessibility, it was suggested that the developments have led to some degree of regeneration in Atherton. Reports of boutique shops opening up, as well as bars to service customers returning on the last buses from Manchester on a night out, as a direct consequence of the introduction of the Vantage services. It was felt the area was going through a similar resurgence to areas such as Monton.

*"That's happening in Atherton, you know, these little pop-up bars and gin bars and they're opening a club and it's starting to become the place to be and people want to be seen round there and it's definitely the fact that it's now accessible and on the map."* Medium, Leisure

6.6.9 Footfall has also reportedly increased in Atherton, and although it was recognised that this was not solely down to the Busway it was felt it had certainly been a contributing factor.

6.6.10 With new houses being built some felt as though the Busway had put Atherton on the map, opening up opportunities for those living in the area and increasing the catchment area for employees. The Busway has also allowed young people to travel into Manchester more easily, whether for education, leisure, or work. It was felt the Busway had improved quality of life for residents by the improved connectivity, not only into Manchester but between the towns themselves.

*"I mean it's probably just as easy and quick for them to come into Manchester now as it is people living on the tram stops in Eccles, you*

*know, because it's just one route and it's not a stressful journey, it's not getting off one bus to have to get on another bus, because that is what people hate"* Belong (residential care village), Atherton

6.6.11 However, unlike Leigh and Tyldesley, Atherton does have a train station, which one organisation felt lessened any perceived benefit to the Atherton area as it is already well connected.

6.6.12 All organisations interviewed in Tyldesley were very positive about the effect it was having on the area. The improved connectivity to Manchester, Leigh, and Salford was praised and all organisations felt the Busway was being heavily used. It was felt it had made it a lot easier for customers and staff to get around. One organisation suggested it had helped their business as people are meeting at their establishment before catching a bus into Manchester for a night out.

*"Yeah, they all come in before, so it's not too bad, really, we're not really losing out, if anything it's helped."* Skenning Bob's

6.6.13 Reflecting the previous suggestion of regeneration, organisations felt that Tyldesley had become a more desirable place to live and that the high street was "on the up" following tough times in recent years.

*"New shops have opened up in the last few months on the high street… over the road, I don't think they would have done before the Busway, the town was on the decline to be honest with you"* The Tattoo Shop

6.6.14 Despite some initial scepticism about how effective the Busway would be, and whether it would be a worthwhile use of money, participants now felt that it had been a real boon for the area and their businesses.

*"A lot of people have said it's better, even the people what used to moan…but they've all used it and they all like it, so it's managed to turn their minds."* Small, Hospitality

## 6.7 How effective has the provision of park and ride been?

6.7.1 There are three bus stops that have dedicated parking for Vantage bus users who choose to access the bus services by car. These are at Leigh (East Bond Street, 130 spaces), Tyldesley (Astley Street, 49 spaces) and A580 Wardley (265 spaces).

6.7.2 To find out more about park and ride users travel behaviour, in the hypothetical situation where parking was not available at these bus stops, surveys were administered by TfGM data collection staff at each site. For

Leigh, surveys took place on Thursday 14 February 2019, Tyldesley on Tuesday 12 February 2019 and Wardley on Thursday 12 October and Wednesday 18th October 2017.

6.7.3 The main findings from these surveys are shown in Table 6.9.

**Table 6.9: If no parking were available at this stop, what would you do instead?**

| Response if no parking available at bus stop | P&R impact on overall car mileage | Leigh | Tyldesley | A580 Wardley |
|---|---|---|---|---|
| **Drive all the way** | Reduction | 6% | - | 29% |
| **Use same Vantage stop in a different way:** | | | | |
| Park nearby | Neutral | 57% | 63% | Not asked |
| Walk | Increase | 4% | 29% | 2% |
| Other means, e.g. lift or taxi | Uncertain | 6% | 4% | 3% |
| **Use another Vantage stop:** | | | | |
| Walk | Increase | 3% | - | 14% |
| Drive all the way | Uncertain | 19% | 4% | 27% |
| Access by bus | Increase | 3% | - | 3% |
| Other means, e.g. lift or taxi | Uncertain | - | - | 2% |
| **Go by train:** | | | | |
| Drive to station | Uncertain | - | - | 6% |
| Walk to station | Increase | 1% | - | 2% |
| Bus to station | Increase | - | - | 1% |
| **Take a non-Vantage bus all the way** | Increase | - | - | 7% |
| **Other - not make the trip** | Increase | - | | 3% |
| **Sub-total - reduction in car mileage** | | 6% | 0% | 29% |
| **Sub-total - neutral or uncertain impact** | | 82% | 71% | 38% |
| **Sub-total - increase in car mileage** | | 12% | 29% | 32% |
| *Park & ride users interviewed, excl don't knows/ unspecified* | | *68* | *24* | *126* |

Notes: due to the lack of nearby parking at A580 Wardley site, "Park nearby" was not given as an option.

6.7.4 While it is challenging to generalise from these stated park and ride user responses due to their varied nature, the overall evidence across sites does not point to a particular overall level of either effectiveness or ineffectiveness of the provision of park and ride on reducing car mileage. Collection of further evidence on this matter appears warranted, particularly in relation to the 20-25% of Vantage users who say they would drive if the bus services were not available (Section 6.1).

6.7.5 The popularity of the three park and ride locations, with each site full and in the cases of Leigh and Tyldesley oversubscribed and filling up well

before the morning peak period is over, does indicate that strong user benefits are associated with the provision of car parking capacity.

## 6.8 What overall carbon impact does the scheme have?

6.8.1 This section explores the impact of additional bus kilometres from the cross city services set out in Section 3.4, relative to without scheme bus service provision, and the degree to which their carbon impact is counteracted by a reduction in car kilometres from bus passengers who previously travelled by car.

6.8.2 With the current mix of vehicles (source: national data from the DfT via WebTag), additional bus vehicle kilometres and car kilometres are estimated to have the following carbon dioxide equivalent impact:

- car km, 0.18 kg $CO_2$ equivalent per km (based on an assumed speed of 25 kph);
- bus km, 1.05 kg $CO_2$ equivalent per km (based on an assumed speed of 18 kph, for a hybrid bus of the type used for the Vantage services).

6.8.3 Using the Greater Manchester public transport model, also described in Section 4.2, additional bus kilometres were estimated at 1,529,000 per year. Using the conversion factor above, this equates to approximately 1,600 additional tonnes of $CO_2$ per year.

6.8.4 Making use of available estimates of bus patronage from the following section, modal shift figures of 25% for car and taxi summarised in Section 6.1, and a typical bus passenger distance of 11.4 km (from the surveys described in Section 5.1), it is estimated that the provision of cross city bus services has resulted in a reduction in car or taxi km of 7,880,000 per year, equivalent to a decrease of 1,400 tonnes of $CO_2$ per year.

6.8.5 The net impact of increased carbon dioxide from running more buses and reduced carbon from modal switch is a small net increase and a programme that is therefore fairly neutral in carbon terms. The reduction in traffic brought about by the measures will have led to the improved operation of the transport system and therefore lower carbon emissions. This further impact on carbon reduction has not, however, been quantified at this time.

## 6.9 Changes in Bus Patronage

6.9.1 In order to understand the degree to which the benefits from bus priority have been achieved, patronage data has been sought from bus operators in relation to commercial services that run across the Regional Centre of relevance to the Bus Priority Programme. Patronage data on services affected by the introduction of new or extended services has also been sought, to understand the net impact on overall bus patronage of the programme.

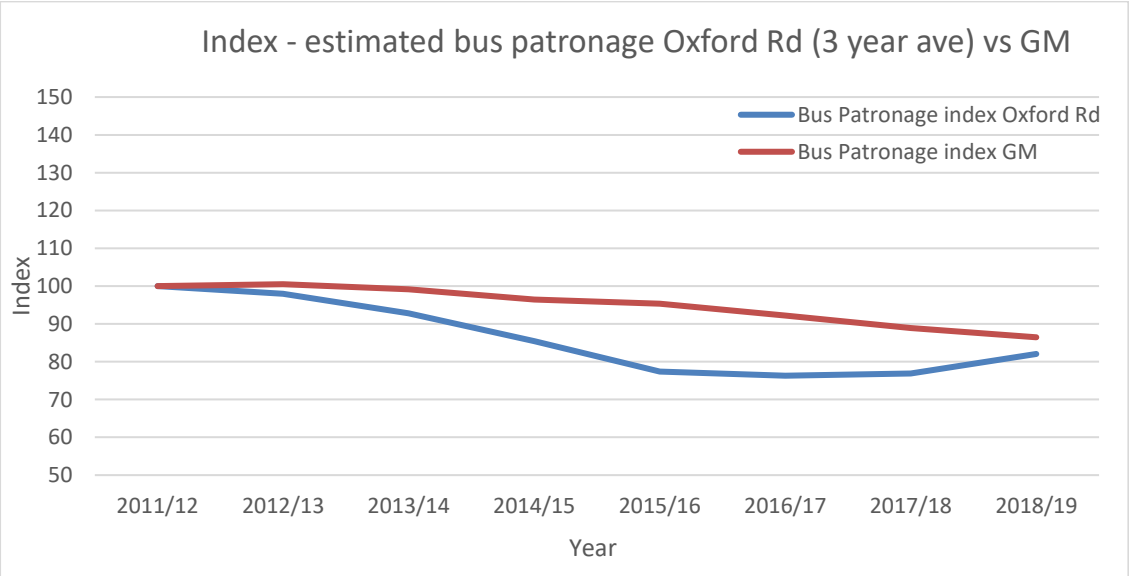
6.9.2 As a contracted service, patronage on the Vantage services is available for publication by TfGM. Patronage on the Vantage bus services has risen steadily since the introduction of the services in early April 2016. Patronage estimates provided by the operator of Vantage services were:

- 2,164,478 for 2016/17;
- 2,644,101 for 2017/18; and
- 3,015,659 for 2018/19.

6.9.3 Patronage levels are now in excess of the forecasts used by the operator at the stage of competing for the contract to run Vantage services.

6.9.4 Figure 6.3 depicts the 3-year rolling average patronage performance of services that pass along all or part of the Oxford Road corridor, relative to the patronage position for Greater Manchester as a whole.

**Figure 6.3: Estimated bus patronage on services using Oxford Road**




Note: Source is TfGM's continuous passenger sampling survey, published with operators' consent. . Note that figures are also indexed so that the confidentiality of the data relating to Oxford Road patronage can be protected.

6.9.5 The figure indicates that patronage performance on services passing along Oxford Road has been strong in recent years in relation to a picture of gradual overall decline in bus patronage in Greater Manchester.

6.9.6 Unfortunately, and perhaps due to the constraints of commercial confidentiality, bus operators have not responded to the more general request for patronage data on bus services affected by the bus priority programme. The increase in overall bus patronage can nevertheless be calculated from Tables 6.3 and 6.4 in Section 6.1.4

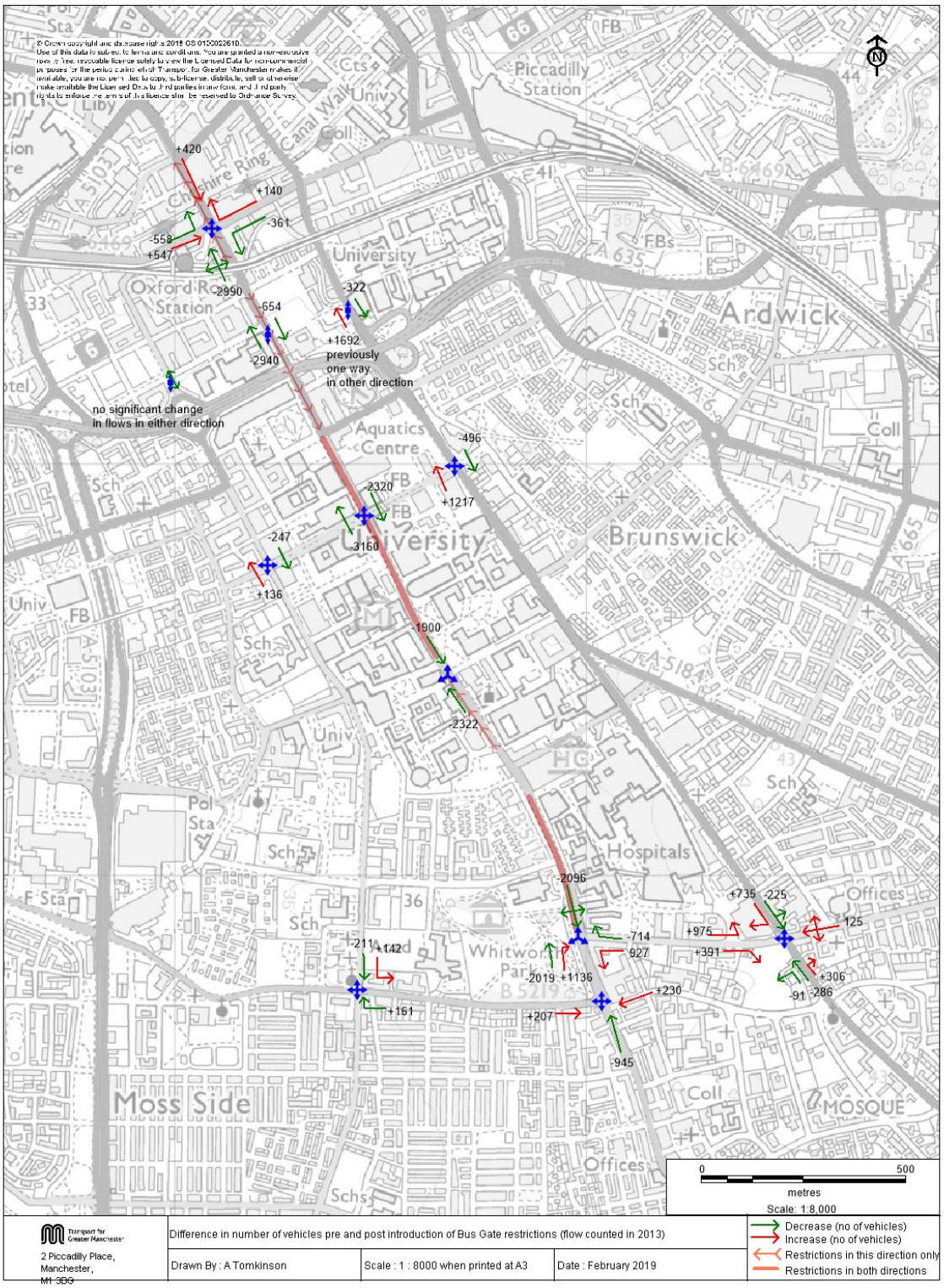
## 6.10 To what extent has general traffic on the Oxford Road corridor been displaced to parallel corridors?

6.10.1 As part of the planning process, work was carried out to forecast the impact of traffic routing changes on Oxford Road and parallel corridors, with an extensive programme of traffic count data collected on neutral (i.e. non-school holiday) periods in late 2012 and early 2013.

6.10.2 To examine the impact of the measure on traffic redistribution in the area, twelve sites were repeated in June 2018.

6.10.3 The original surveys were carried out over the period 0700-1900 in selected time periods and with standard vehicle types recorded. In order that there could be consistent comparison over all sites surveys from 2012/2013 and 2018 only weekday counts were used and only the time periods 0730-0930, 1000-1200 and 1600-1800 were examined. The results are presented as a total change in number of vehicles in Figure 6.4.

**Figure 6.4: Traffic count changes 2012/ 2013 to 2018, Oxford Road Corridor**




6.10.4 The figure shows the change in vehicle flow (where this is greater than 100 vehicles) over the compared time periods.

6.10.5 Oxford Road (see centre of the figure) shows a total daily decrease of 5,500 vehicle journeys, over 3,160 northbound and 2,320 southbound have been displaced by the restrictions across the course of the day, and falling by 560 northbound and 450 southbound in the morning peak period (Figure 6.5). Some of this displaced traffic has re-routed to Upper Brook Street and Higher Cambridge Street (site to the west of the Oxford Road count site).

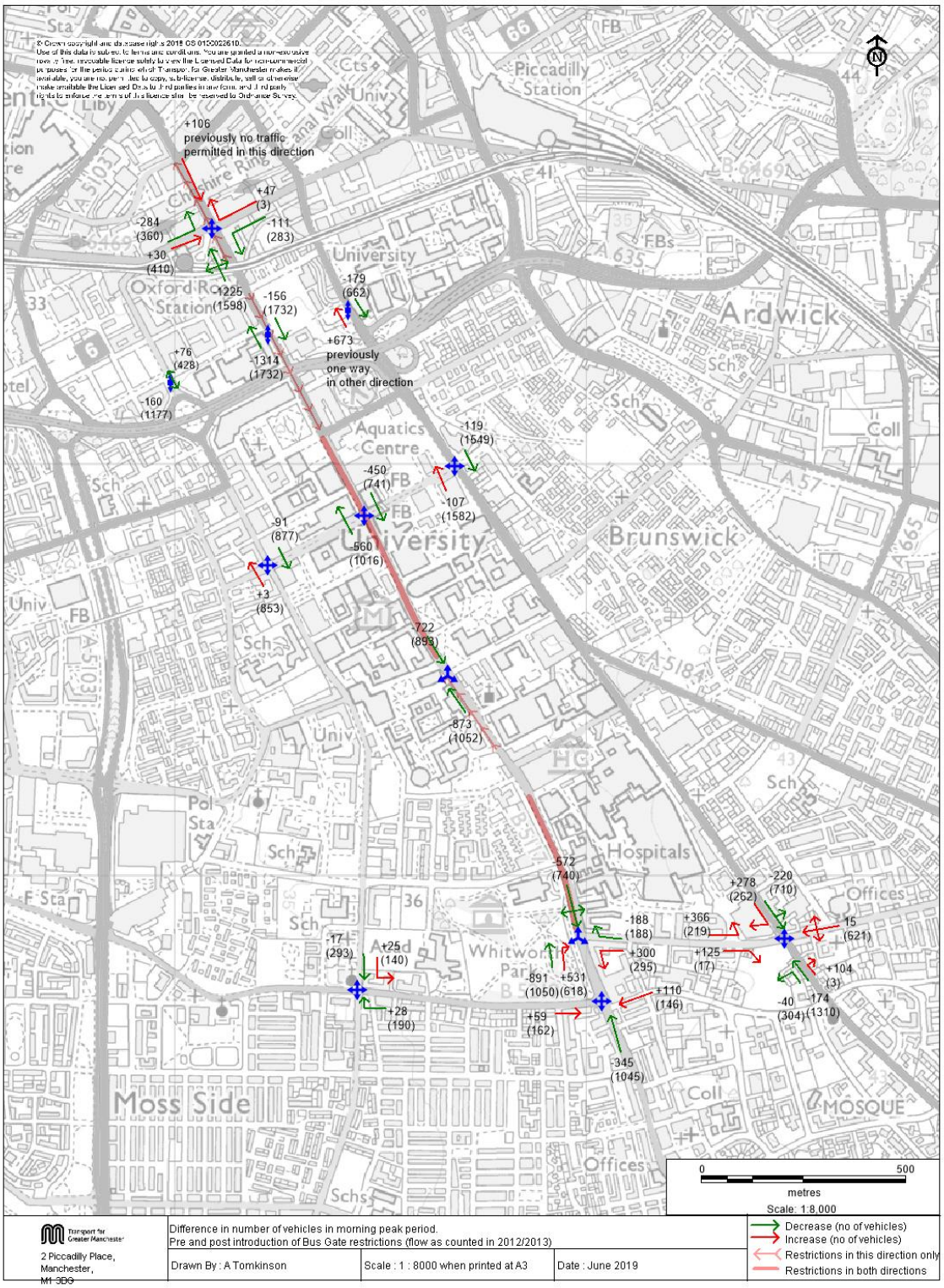
6.10.6 Upper Brook Street on the east of Oxford Street has an additional 1,217 vehicles travelling northbound in a day (falling by 107 in the morning peak), while Higher Cambridge Street, to the west, has an increase of 136 vehicles per day (3 additional vehicles in the morning peak). Both routes show a decrease in southbound traffic, for reasons that are unclear.

6.10.7 There is an increase in the number of vehicles travelling along Hathersage Road (the east-west route just south of the hospitals site). There are in the order of 1,600 additional vehicle journeys per day in both directions along this route, or 353 vehicles in the morning peak period.

6.10.8 As expected, the displacement of traffic due to the restrictions put in place along Oxford Road has resulted in additional northbound traffic using Upper Brook Street and to a lesser extent Higher Cambridge Street. This demonstrates that the complementary measures introduced in advance of the Oxford Road scheme have been successful in guiding vehicles to the correct alternative route. The additional vehicle journeys recorded along these northbound routes account for 43% of the original number of journeys using Oxford Road northbound 5 years ago. Vehicles travelling southbound out of the City Centre has not increased at any of the surveyed sites, with the exception of the site at Whitworth Street/ Oxford Street.

6.10.9 The surveys included only take into consideration the immediate alternative routes in and out of the city centre. Wider displacement of traffic is likely to have occurred and the survey sites to the north and south show that there are additional vehicle journeys being made along these east-west corridors, in particular Hathersage Road, which indicate that further displacement is occurring beyond the survey sites. There may also be a degree of modal switching to means other than car, though the traffic counts were not designed to pick this up.

**Figure 6.5: Traffic count changes 2012/ 2013 to 2018, Oxford Road Corridor, Morning Peak Period (0730-0930)**



# 7 Concluding Observations

## 7.1 Overview

7.1.1 This report has summarised the findings of an extensive programme of monitoring and evaluation activity in relation to Greater Manchester's Bus Priority Programme, drawing on evidence available up to 2 years after the programme was completed.

7.1.2 For an overview of the key early findings from this activity, please refer to this document's Executive Summary.

## 7.2 To come in the 5-years-after report

7.2.1 As well as revisiting many of the topics covered in this 'Early Findings' report, a report will be produced approximately 5 years after the completion of the Bus Priority Programme with expanded coverage.

7.2.2 Additional evaluation questions that are to be covered in the 5-years-after report include:

- What has been the impact on travel patterns to the universities and hospitals on Oxford Road?
- How do forecast and outcome accident changes compare?
- What difference did the scheme make to scheme outcomes, including pathways[5] to prospective outcomes?
- Does the scheme represent value for money to the extent anticipated?

[5] 'pathways' because not all outcomes may have emerged in full by the time of the 5-years-after report, but there may be some indications of future prospects for achievement of future outcomes.

## APPENDICES

### Appendix 1: Additional evaluation questions

This appendix sets out the additional evaluation questions that were not included in the original monitoring and evaluation plan but are included in this report. These are areas where additional evidence was thought to be of value.

The additional questions reported on in this early findings report are:

- How does bus passenger satisfaction on the affected corridors compare to that for Greater Manchester as a whole?
- Have new travel patterns been established for students at the University of Manchester or patients at hospitals on Oxford Road?
- How has the Oxford Road re-design affected walking and cycling volumes?
- What are cyclist attitudes to provision of segregated lanes on Oxford Road?
- How has the multi-user path that parallels the Busway affected walking, cycling and other uses?
- What economic impacts has the scheme had on Leigh, Atherton & Tyldesley?
- How effective has the provision of park and ride been?
- What changes in patronage have come about as a result of the new infrastructure and services?
- To what extent has general traffic on the Oxford Road corridor been displaced to parallel corridors?

## Appendix 2: Further findings from the 2019 bus passenger surveys

This appendix provides further details on the findings from the March 2019 bus passenger surveys.

**Thinking about the bus that you are on, how satisfied are you with the following?**
**The length of time your journey on this bus takes**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 37.5% | 37.7% | 13.3% | 5.9% | 5.6% | 100% | *200* |
| 50 | 29.9% | 45.7% | 12.4% | 8.9% | 3.1% | 100% | *714* |
| V1/V2 | 47.1% | 36.6% | 7.2% | 6.9% | 2.1% | 100% | *1,903* |
| All | 39.0% | 40.5% | 10.0% | 7.6% | 2.9% | 100% | *2,817* |

**The value for money of this journey**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 36.9% | 35.2% | 15.5% | 7.8% | 4.6% | 100% | *184* |
| 50 | 30.9% | 31.2% | 17.0% | 12.5% | 8.5% | 100% | *675* |
| V1/V2 | 44.9% | 33.4% | 11.0% | 8.1% | 2.6% | 100% | *1,840* |
| All | 38.3% | 32.7% | 13.9% | 9.9% | 5.2% | 100% | *2,699* |

**The greeting/welcome you got from the driver**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 28.9% | 36.9% | 26.5% | 3.7% | 4.0% | 100% | *192* |
| 50 | 29.4% | 34.1% | 26.4% | 6.1% | 4.0% | 100% | *686* |
| V1/V2 | 49.3% | 31.0% | 16.0% | 2.4% | 1.3% | 100% | *1,875* |
| All | 39.1% | 32.9% | 21.4% | 4.0% | 2.7% | 100% | *2,753* |

**The helpfulness and attitude of the driver**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 35.2% | 29.8% | 28.3% | 4.3% | 2.4% | 100% | *186* |
| 50 | 31.8% | 34.1% | 26.9% | 3.0% | 4.2% | 100% | *670* |
| V1/V2 | 50.7% | 30.1% | 16.2% | 2.0% | 1.0% | 100% | *1,841* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| All | 41.4% | 31.7% | 21.8% | 2.6% | 2.4% | 100% | *2,697* |

**The cleanliness and condition of the bus**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 18.5% | 40.2% | 23.6% | 10.9% | 6.8% | 100% | *194* |
| 50 | 19.3% | 40.8% | 24.0% | 12.2% | 3.7% | 100% | *709* |
| V1/V2 | 49.0% | 40.2% | 7.0% | 3.1% | 0.7% | 100% | *1,901* |
| All | 33.6% | 40.4% | 15.8% | 7.7% | 2.6% | 100% | *2,804* |

**The travel information provided inside the bus**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 14.8% | 29.6% | 35.6% | 10.2% | 9.9% | 100% | *165* |
| 50 | 14.9% | 21.4% | 37.3% | 10.5% | 15.9% | 100% | *591* |
| V1/V2 | 48.3% | 32.2% | 13.2% | 3.8% | 2.5% | 100% | *1,837* |
| All | 32.2% | 27.8% | 24.6% | 7.0% | 8.4% | 100% | *2,593* |

**The availability of seating or space to stand**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 38.8% | 37.8% | 14.9% | 6.3% | 2.2% | 100% | *198* |
| 50 | 34.6% | 43.5% | 13.4% | 5.2% | 3.2% | 100% | *712* |
| V1/V2 | 42.2% | 32.8% | 7.2% | 8.5% | 9.3% | 100% | *1,896* |
| All | 38.7% | 37.7% | 10.6% | 6.9% | 6.0% | 100% | *2,806* |

**The availability of space for luggage, buggies, wheelchairs**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 34.2% | 30.0% | 25.0% | 6.2% | 4.6% | 100% | *176* |
| 50 | 25.8% | 40.0% | 25.1% | 4.9% | 4.1% | 100% | *634* |
| V1/V2 | 38.0% | 29.3% | 22.8% | 6.1% | 3.9% | 100% | *1,615* |
| All | 32.4% | 33.9% | 24.0% | 5.6% | 4.1% | 100% | *2,425* |

**The comfort of the seats**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 30.9% | 40.9% | 16.0% | 9.3% | 2.9% | 100% | *196* |
| 50 | 21.5% | 46.7% | 20.0% | 9.1% | 2.8% | 100% | *709* |
| V1/V2 | 54.2% | 34.7% | 7.1% | 2.9% | 1.0% | 100% | *1,896* |
| All | 38.3% | 40.3% | 13.4% | 6.1% | 1.9% | 100% | *2,801* |

**The temperature inside the bus**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 29.4% | 36.1% | 25.4% | 5.9% | 3.3% | 100% | *197* |
| 50 | 24.8% | 48.1% | 19.2% | 5.8% | 2.2% | 100% | *708* |
| V1/V2 | 42.3% | 38.8% | 11.7% | 5.4% | 1.7% | 100% | *1,897* |
| All | 33.7% | 42.4% | 16.2% | 5.6% | 2.1% | 100% | *2,802* |

**Your personal security while on the bus**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 34.2% | 39.9% | 19.5% | 4.1% | 2.3% | 100% | *195* |
| 50 | 30.4% | 45.9% | 19.8% | 2.3% | 1.5% | 100% | *693* |
| V1/V2 | 50.5% | 37.5% | 11.0% | 0.7% | 0.4% | 100% | *1,860* |
| All | 40.5% | 41.2% | 15.5% | 1.7% | 1.0% | 100% | *2,748* |

**Availability and quality of WiFi**

| Service | Very satisfied | Fairly satisfied | Neither satisfied nor dissatisfied | Fairly dissatisfied | Very dissatisfied | Total | *Sample size* |
|---|---|---|---|---|---|---|---|
| 18 | 20.1% | 23.7% | 30.9% | 17.1% | 8.2% | 100% | *151* |
| 50 | 21.4% | 26.5% | 28.2% | 12.4% | 11.5% | 100% | *546* |
| V1/V2 | 37.5% | 29.5% | 18.6% | 8.3% | 6.1% | 100% | *1,527* |
| All | 29.2% | 27.7% | 23.7% | 10.8% | 8.5% | 100% | *2,224* |

**What was the main reason you chose to take the bus for this journey?**

| Service | Didn't have the option of travelling by another means | More convenient than car (e.g. parking) | More convenient than other transport | Cheaper than the car | Preferred bus to walking/ cycling | Cheaper than other transport | Other | Total | *Sample size* |
|---|---|---|---|---|---|---|---|---|---|
| 18 | 49.0% | 23.4% | 13.4% | 7.2% | 2.7% | 1.9% | 2.5% | 100% | *205* |
| 50 | 38.6% | 18.5% | 9.8% | 11.2% | 9.4% | 6.0% | 6.5% | 100% | *726* |
| V1/V2 | 28.3% | 36.3% | 13.3% | 10.0% | 2.1% | 3.3% | 6.8% | 100% | *1,927* |
| Peak | 32.9% | 29.4% | 11.7% | 10.7% | 4.1% | 4.0% | 7.1% | 100% | *965* |
| Off-Peak | 35.9% | 26.4% | 11.9% | 9.9% | 5.8% | 4.4% | 5.8% | 100% | *1,893* |
| All | 34.8% | 27.4% | 11.8% | 10.2% | 5.2% | 4.2% | 6.2% | 100% | *2,858* |

Note: 'Other' reasons included Traffic congestion (0.9%), Social reasons (0.8%), Environmental reasons (0.7%), Journey time (0.6%), I get free travel (0.5%), Health reasons (0.4%), Weather (0.3%) and other miscellaneous categories (2.1%).