

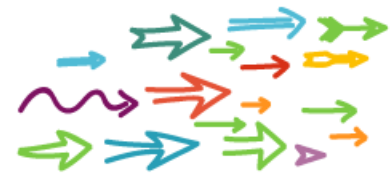


European Union  
European Regional  
Development Fund

# Resolve Study Visit: Manchester

18th January | Greater Manchester Study Visit

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**BUILD2LC**  
Interreg Europe



European Union  
European Regional  
Development Fund

# Resolve Study Visit: Manchester

Welcome to the Programme:

Councillor Andrew Fender: Chair of TfGMC

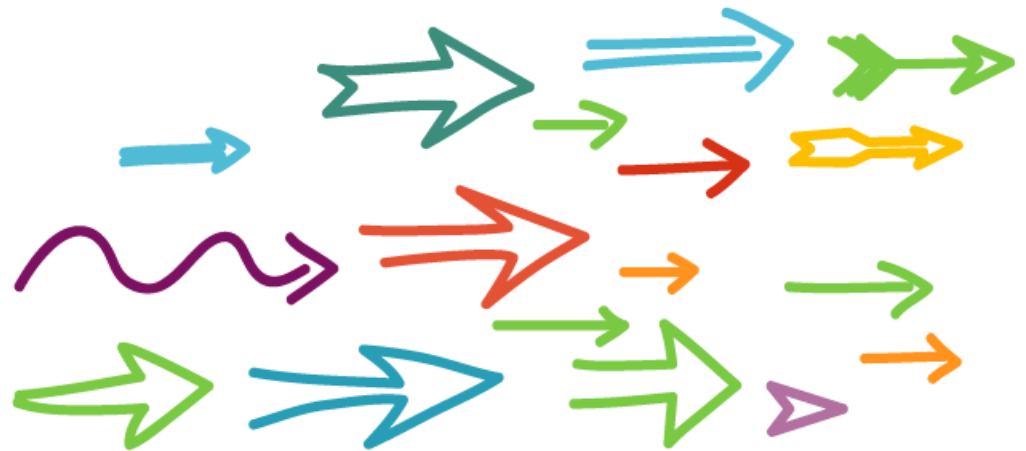
18th January | Greater Manchester Study Visit

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# Keeping Greater Manchester moving

Rafael Cuesta: Head of Innovation, TfGM





# Who we are

**Transport for Greater Manchester** oversees transport and travel across Greater Manchester – home of the UK's largest city region economy outside London.

*We keep Greater Manchester moving.*





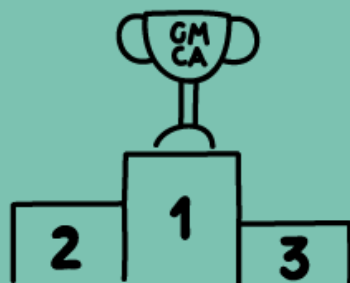
  
  
  


# 2.7million residents

 **10**  
authorities  
working  
together



The heart of  
the north



UK's first  
Combined  
Authority



Centre of innovation,  
education, industry  
and culture



Economic potential  
**exceeds** all other  
UK city regions



# Heart of the North





“

This is Manchester.  
We do things differently here.

– Anthony H. Wilson, Journalist, TV Presenter

”





## Pioneering innovation

1780



**WORLD'S FIRST  
INDUSTRIAL  
CITY**

1830



**WORLD'S FIRST INTER-  
CITY PASSENGER RAIL  
SERVICE**

1894



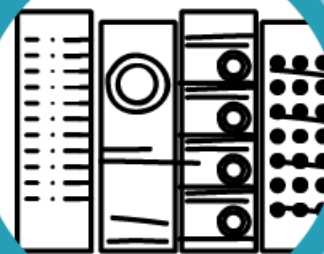
**MANCHESTER  
SHIP CANAL**

1917



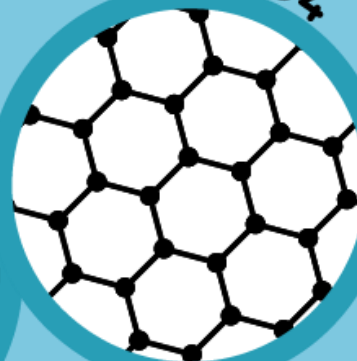
**FIRST  
OBSERVED  
NUCLEAR  
REACTION**

1948

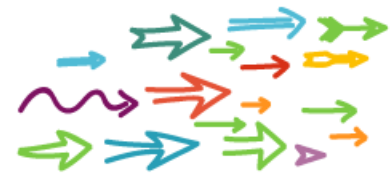


**WORLD'S FIRST  
STORED-  
PROGRAM  
COMPUTER**

2004



**DISCOVERY  
OF  
GRAPHENE**



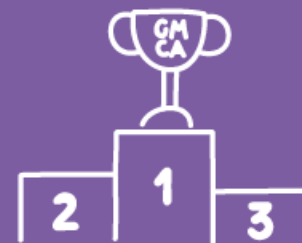


## Economic importance





# GREATER MANCHESTER: GROUNDBREAKING GOVERNANCE MODEL





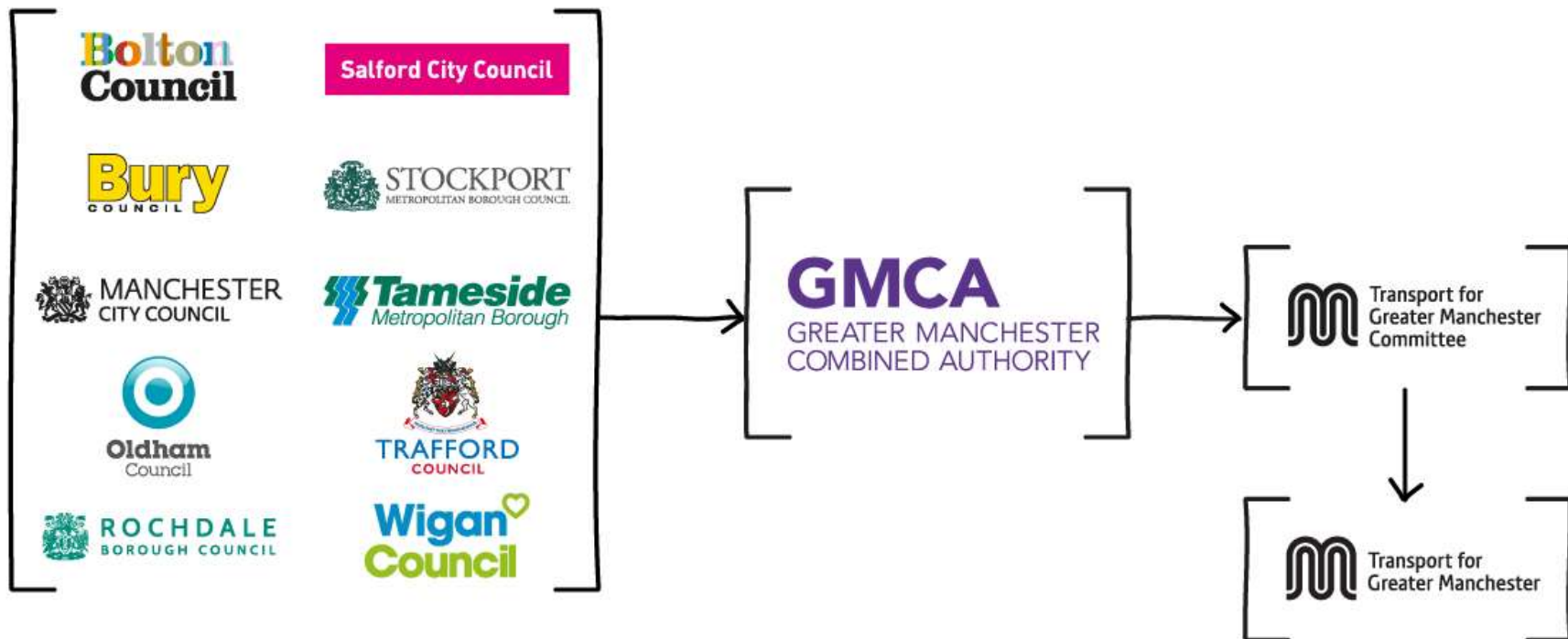
# Greater Manchester







# Governance structure





**LOCAL COLLABORATION**



**NATIONAL CONVERSATION**



**INVESTING & DEVELOPING**



**GLOBAL POTENTIAL**



“

# The belly and guts of the nation

– George Orwell, Author

”





# CITY REGION SUCCESSES: GREATER MANCHESTER TRANSPORT FUND

GMTF  
£1.5bn





## COLLABORATION



## FUNDING



## OUTCOME



## BENEFIT





“

They return the love  
around here, don't they?

– Guy Garvey, Lead singer in the band *Elbow*

”



# CITY REGION SUCCESSES: CITY DEALS





## METROLINK

Since **APRIL 2010**,  
the network has  
grown from...

**24 & 37**  
MILES & STOPS

ACROSS **3** LINES



to

**48 & 77**  
MILES & STOPS

ACROSS **6** LINES

Around Increasing to

**28M 44M**

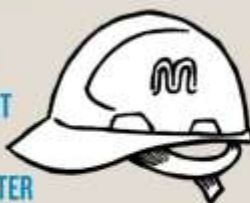
JOURNEYS EVERY YEAR

JOURNEYS BY 2019



## BUS

BUILD AND MANAGE BUS  
STATIONS AND TRANSPORT  
INTERCHANGES ALL  
OVER GREATER MANCHESTER



INSTALLED AND  
MAINTAINED



**12,000**

BUS SHELTERS  
AND STOPS

**225 MILLION**



BUS JOURNEYS IN  
GREATER MANCHESTER  
EACH YEAR

**FREE**

METROSHUTTLE  
BUS SERVICES

MCR CITY CENTRE | ROCHDALE | BOLTON | STOCKPORT

## RAIL

**£580M**



NORTHERN HUB  
INVESTMENT  
FROM CENTRAL  
GOVERNMENT

**25 MILLION**

journeys each year

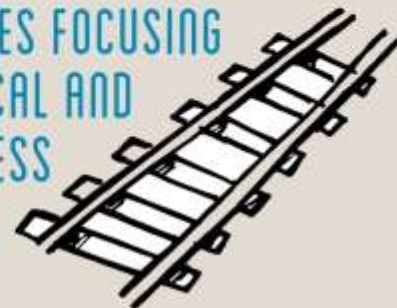
**21,000** PASSENGERS

travelling during  
morning peak hours



RAIL NORTH KEY PARTNER

CARRYING OUT STRATEGIC  
POLICIES FOCUSING  
ON LOCAL AND  
BUSINESS  
NEEDS





## ROAD

MANAGE THE ROAD NETWORK AND CO-ORDINATE MAINTENANCE, INVESTMENT AND STRATEGIC MODELLING TO KEEP TRAFFIC FLOWING



INSTALL AND MAINTAIN TRAFFIC SIGNALS AND OVERSEE LOCAL ROAD SAFETY ISSUES



## ENVIRONMENT

We are currently running **SUSTAINABLE TRANSPORT SCHEMES** that will reduce carbon emissions, improve the health of the region's population, reduce congestion and help people get **BACK TO WORK**



## TRAVEL CHOICES

WORKING WITH JOB CENTRES AND BUSINESSES TO MAKE PEOPLE AWARE OF THEIR DIFFERENT OPTIONS FOR TRAVELLING TO WORK OR EDUCATION, USING PUBLIC TRANSPORT OR COMMUTING BY BIKE



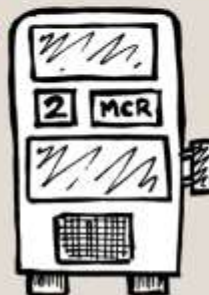
## PROVIDE CYCLE TRAINING

OVER 2,000 CYCLISTS TAKING UP THE FREE OFFER SO FAR.



## BUS PRIORITY

Overseeing a bus priority package that includes improvements to the region's most important bus routes, as well as a busway from Leigh to Manchester city centre.



## SMART TICKETING

Investment in a smart ticketing system called...



which will use a touch-in, touch-out smart card system.

**GET ME THERE**

Will be rolled out progressively on METROLINK, then on BUSES, and then on the RAIL NETWORK.



YOU CAN FIND OUT MORE ABOUT TFGM AND ITS WORK AT...

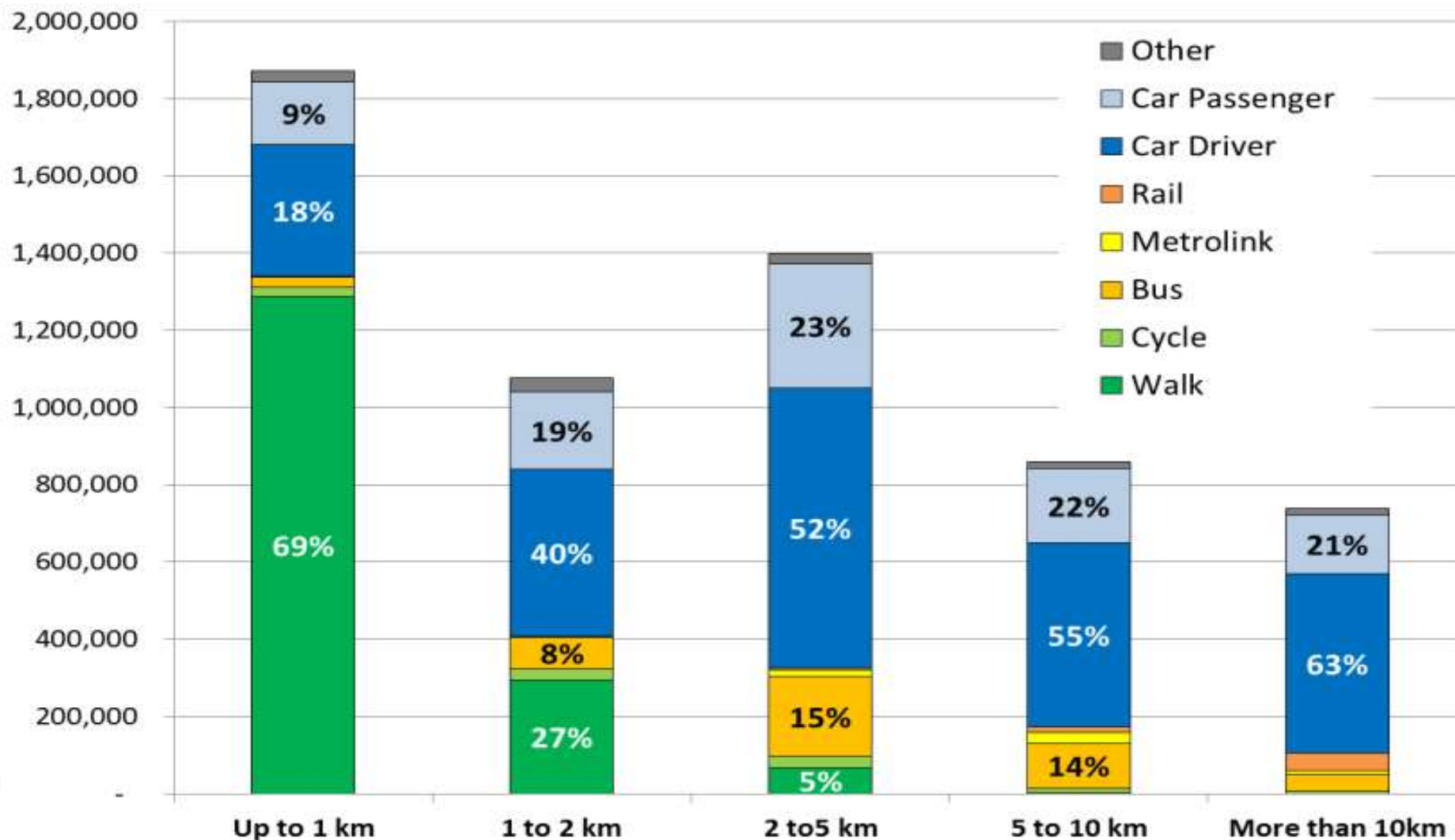
[www.tfgm.com](http://www.tfgm.com)





Ref: Draft 2040 Transport Strategy, evidence base

## Mode of travel by distance







## Intelligent Mobility

- Internet of Things City Demonstrator – CityVerve
- Autonomous & Connected Vehicles
- Open source and open data solutions
- ITS & Freight



Autonomous upgradable mini-bus





## Advanced Solutions

- Development of shared mobility solutions
- Includes a large-scale Ultra Low Emission commercial car club
- Expanding our EV charging infrastructure network
- Looking at other shared mobility solutions – cycle share
- Mobility as a Service





## Place Making & Healthy Streets

- GM Connected - Creating a next generation way-finding solutions for the city.
- Delivering a simple and iconic system that encourages walking
- Ensure that people can easily find their way to and from the key retail, commercial, civic, cultural, leisure and transport destinations
- 1<sup>st</sup> Phase delivered within the Regional Centre by mid-2017









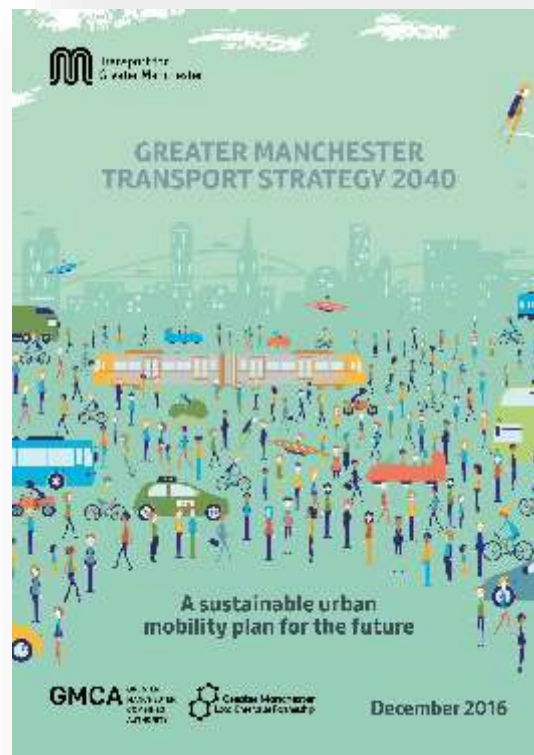
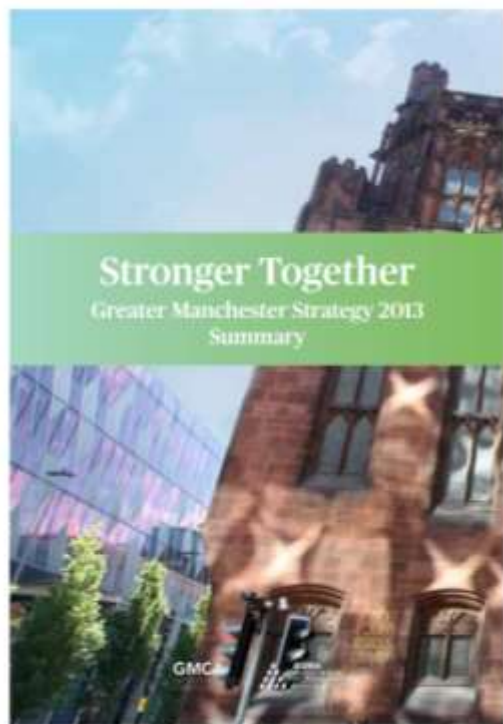


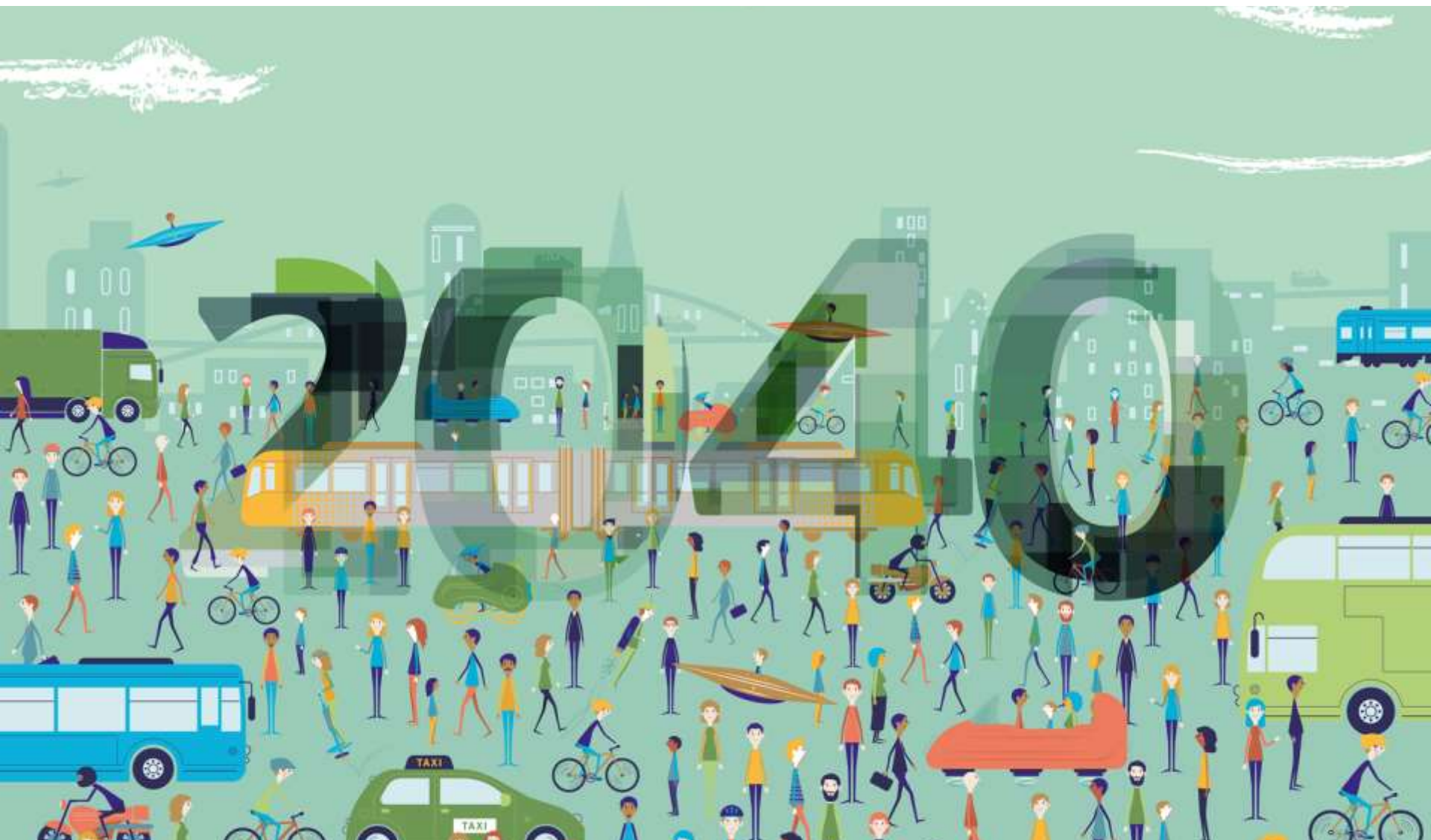


# Greater Manchester Transport Strategy 2040: **A Sustainable Urban Mobility Plan for the Future**

**Resolve Study Visit  
18 January 2017**





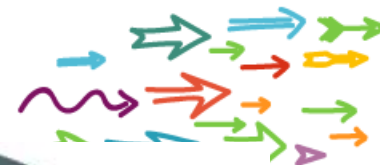






# 2040 Vision, Strategy and Delivery Plan Structure





Supporting sustainable  
economic growth

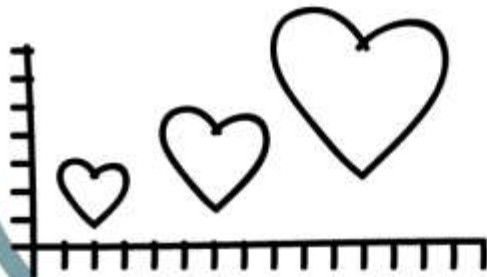


Protecting our  
environment

## Transport Vision

World class connections  
that support long-term,  
sustainable economic  
growth and access to  
opportunity for all

Improving quality  
of life for all

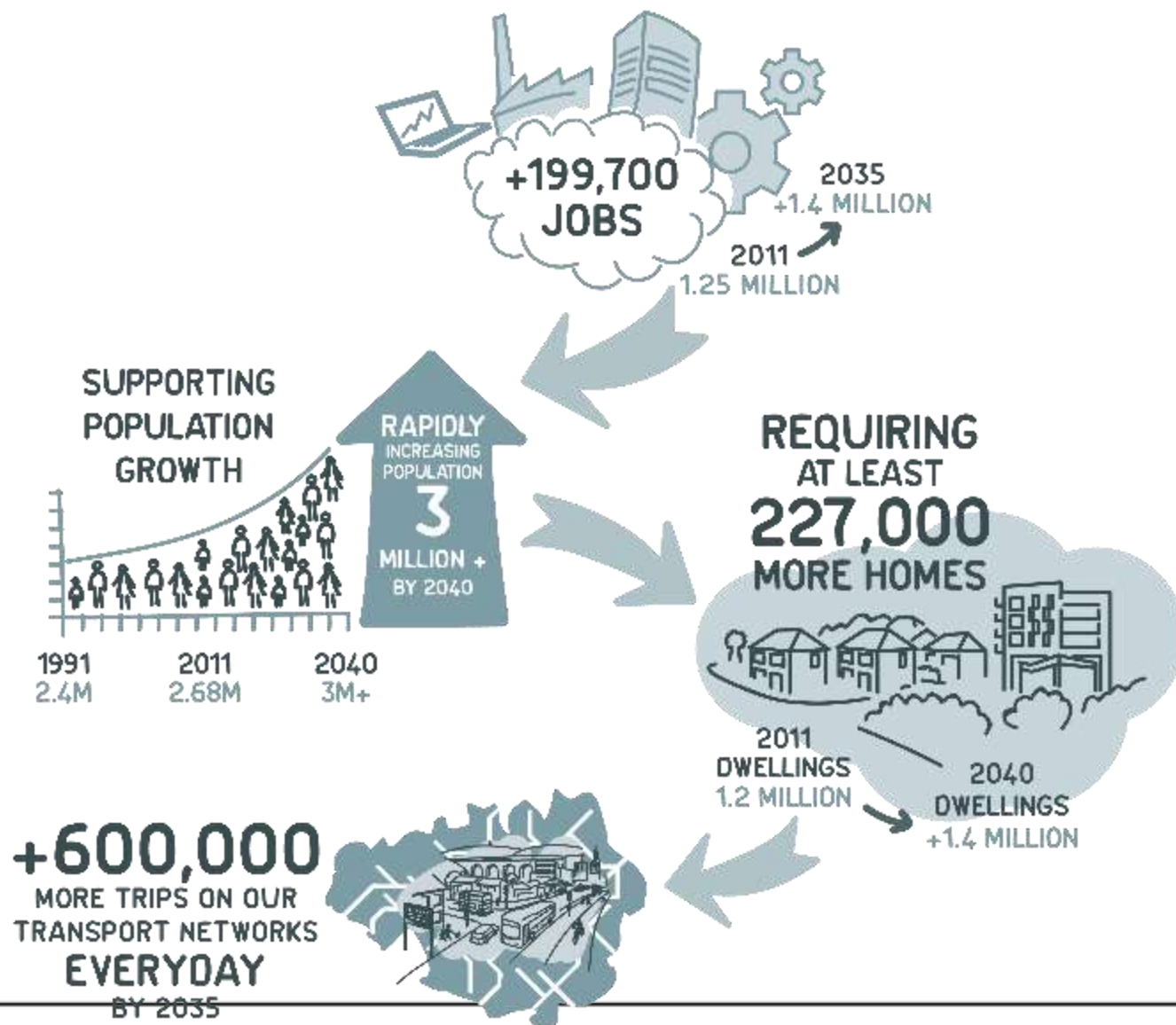


Developing an  
innovative city-region





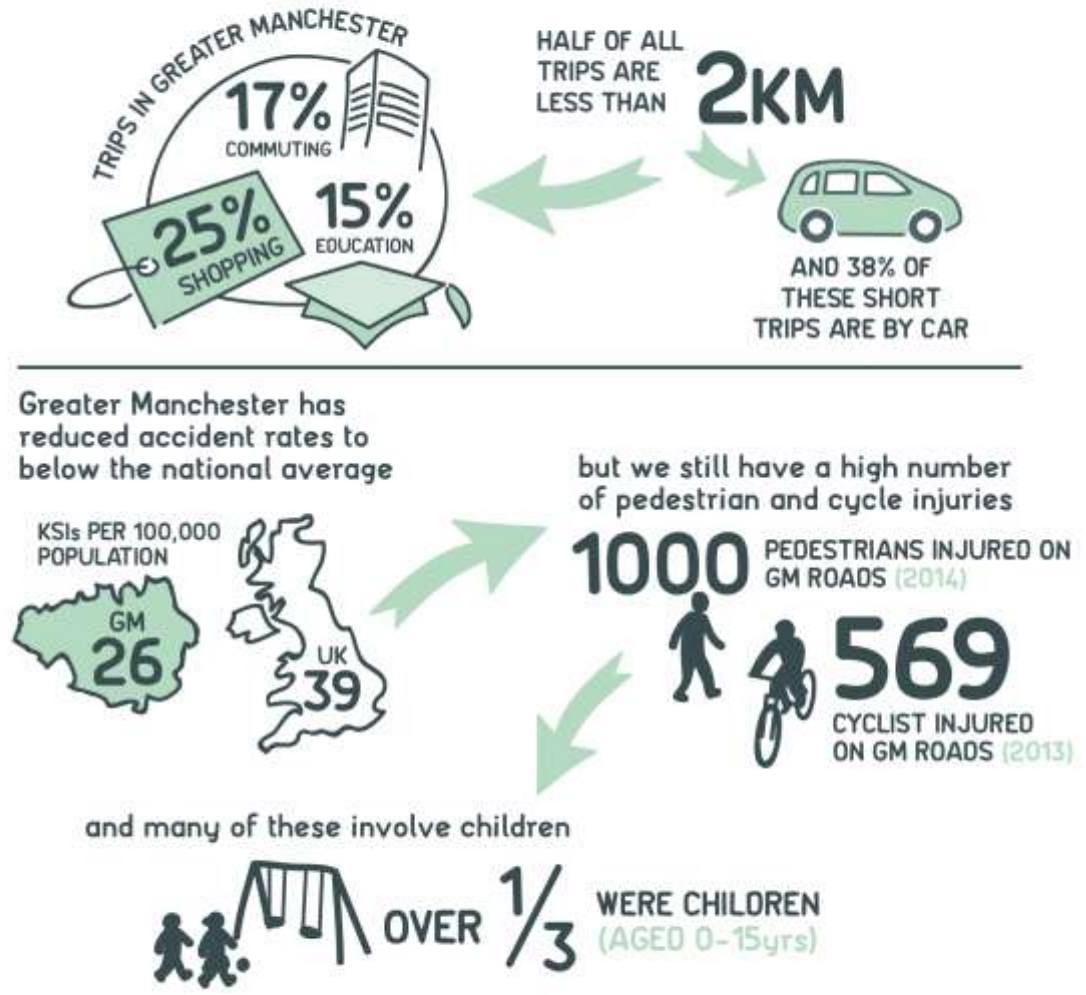
## AN INCREASE IN EMPLOYMENT







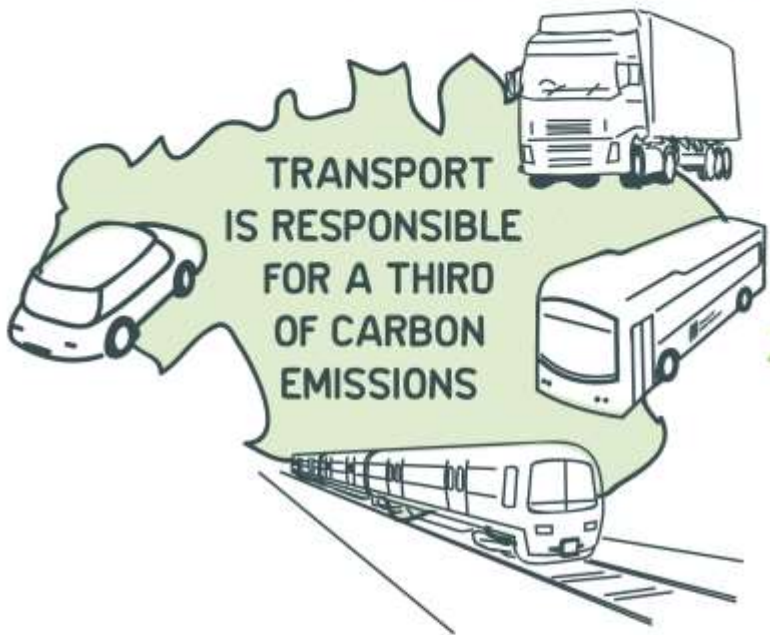
# IMPROVING THE QUALITY OF LIFE





# PROTECTING OUR ENVIRONMENT

TRANSPORT  
IS RESPONSIBLE  
FOR A THIRD  
OF CARBON  
EMISSIONS



48%  
CARBON  
REDUCTION  
BY 2020



£20bn

ECONOMIC  
COST IF WE DO  
NOT TACKLE  
CLIMATE CHANGE



13%

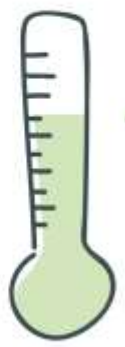
INCREASE IN  
WINTER RAINFALL



AND ANNUAL MEAN  
TEMP RISE OF UP TO

+2.3°C

BY 2050



1000

DEATHS  
PER YEAR  
FROM AIR POLLUTION





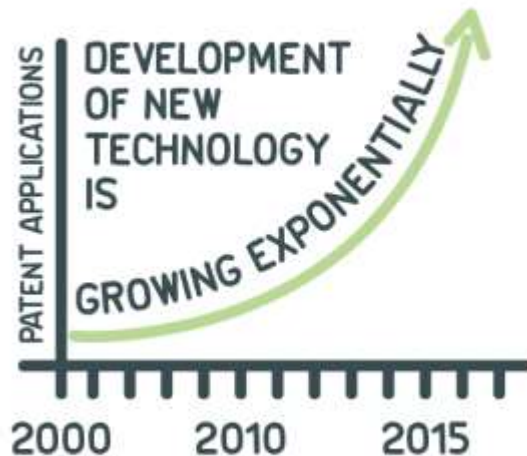
# TECHNOLOGY AND INNOVATION

BY 2020  
**68%**  
OF UK ADULTS  
WILL BE DAILY  
MOBILE INTERNET  
USERS



**60%** OF ONLINE CONSUMERS  
WILL USE MOBILE SOCIAL  
NETWORKING APPS

MORE THAN  
**50 BILLION**  
THINGS WILL BE CONNECTED  
TO THE INTERNET BY 2020



AUTOMOTIVE  
TECH WORTH  
ESTIMATED

**£900bn**  
GLOBALLY BY 2025





**Four Part Document:**

- 1. Vision & Context**
- 2. Policy Framework**
- 3. Strategy Priorities by Spatial Theme**
- 4. Delivery**

**Plus:**

**5-year Delivery Plan**

**2040 Evidence Base**

**Integrated Assessment**

***Go to: [tfgm.com/2040](http://tfgm.com/2040)***





## Old way

By mode



By district



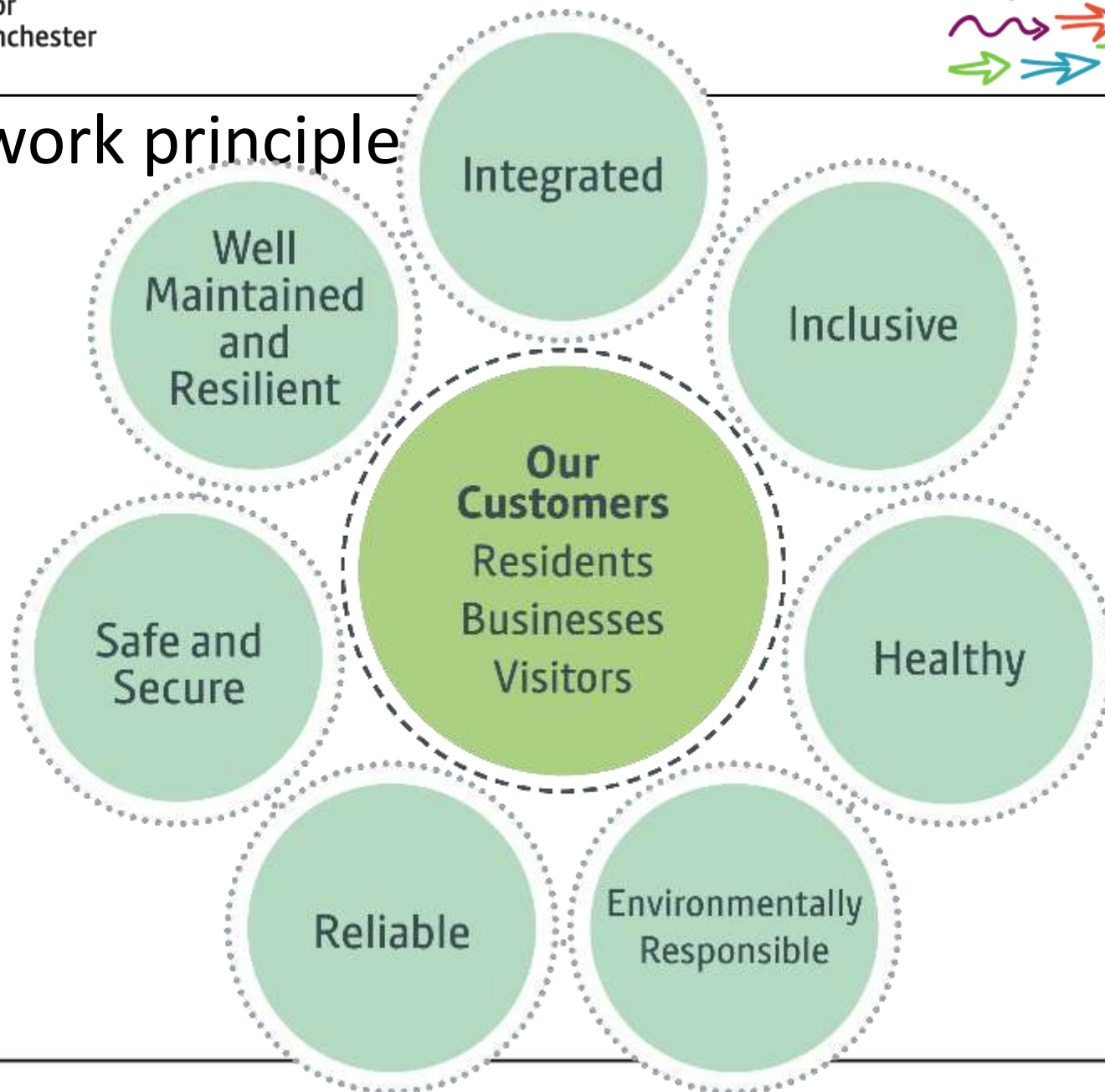
## New way





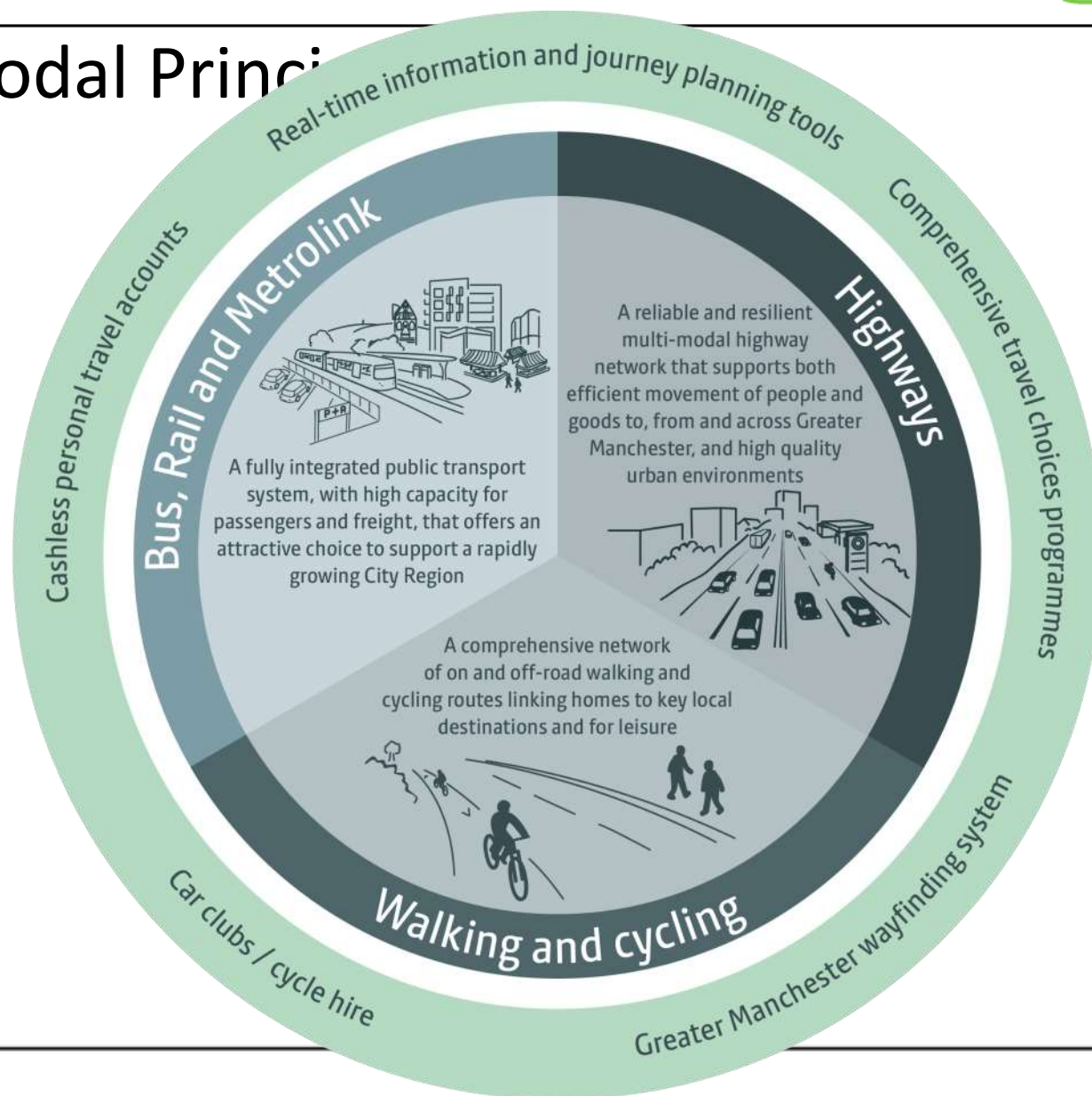


# Our network principle





# Our Modal Principles

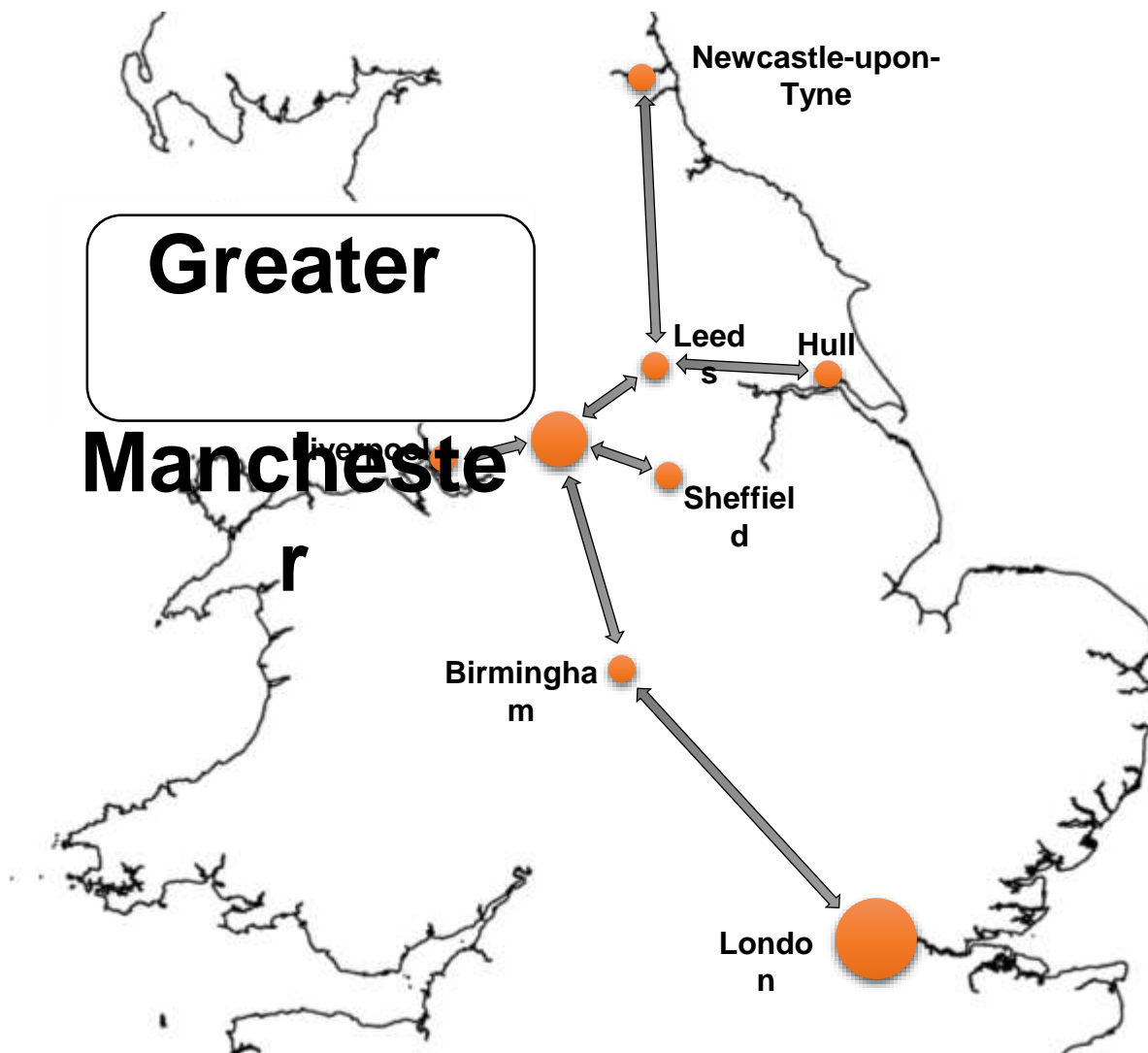




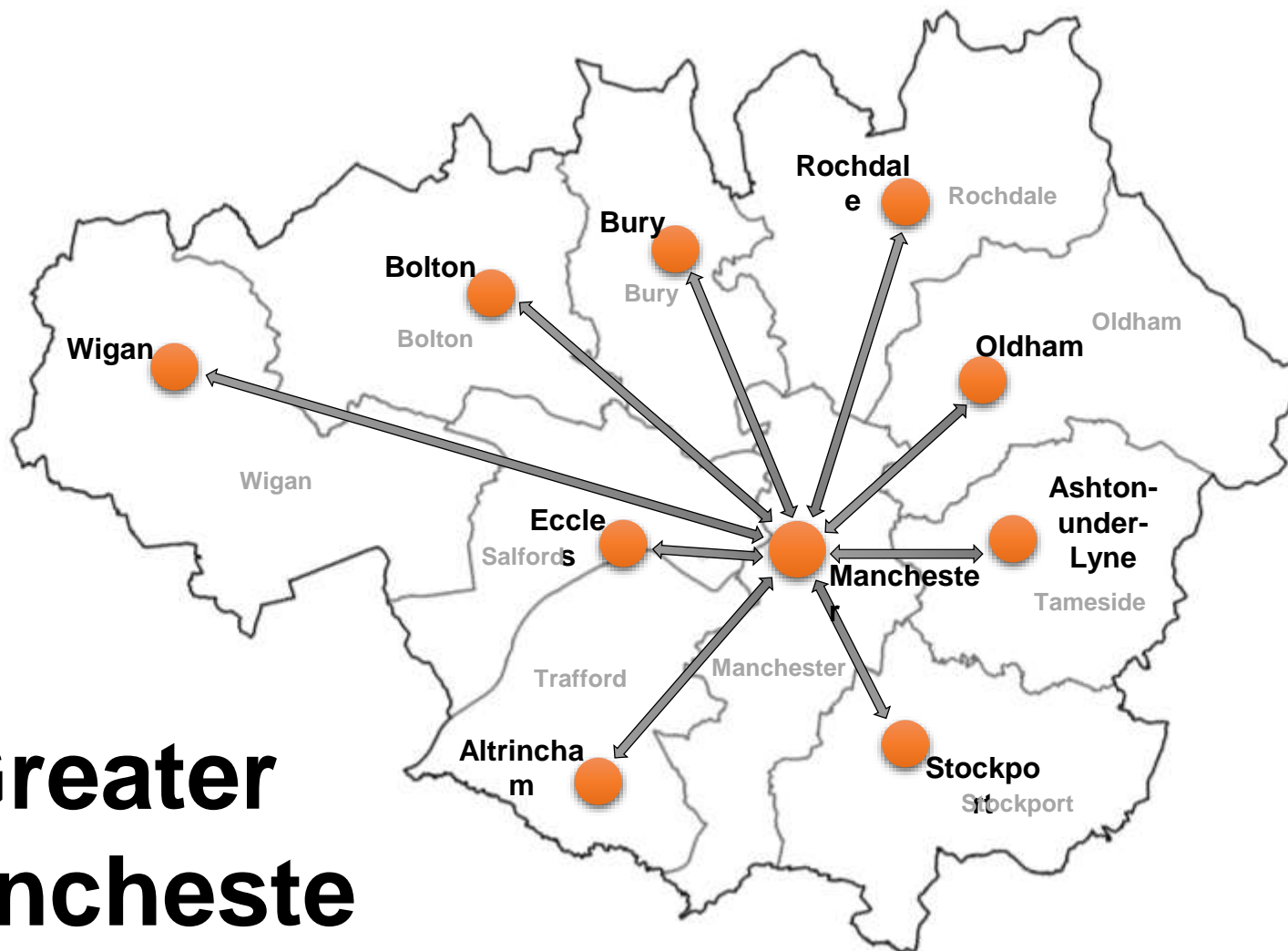


# Greater Manchester - A Global City Region





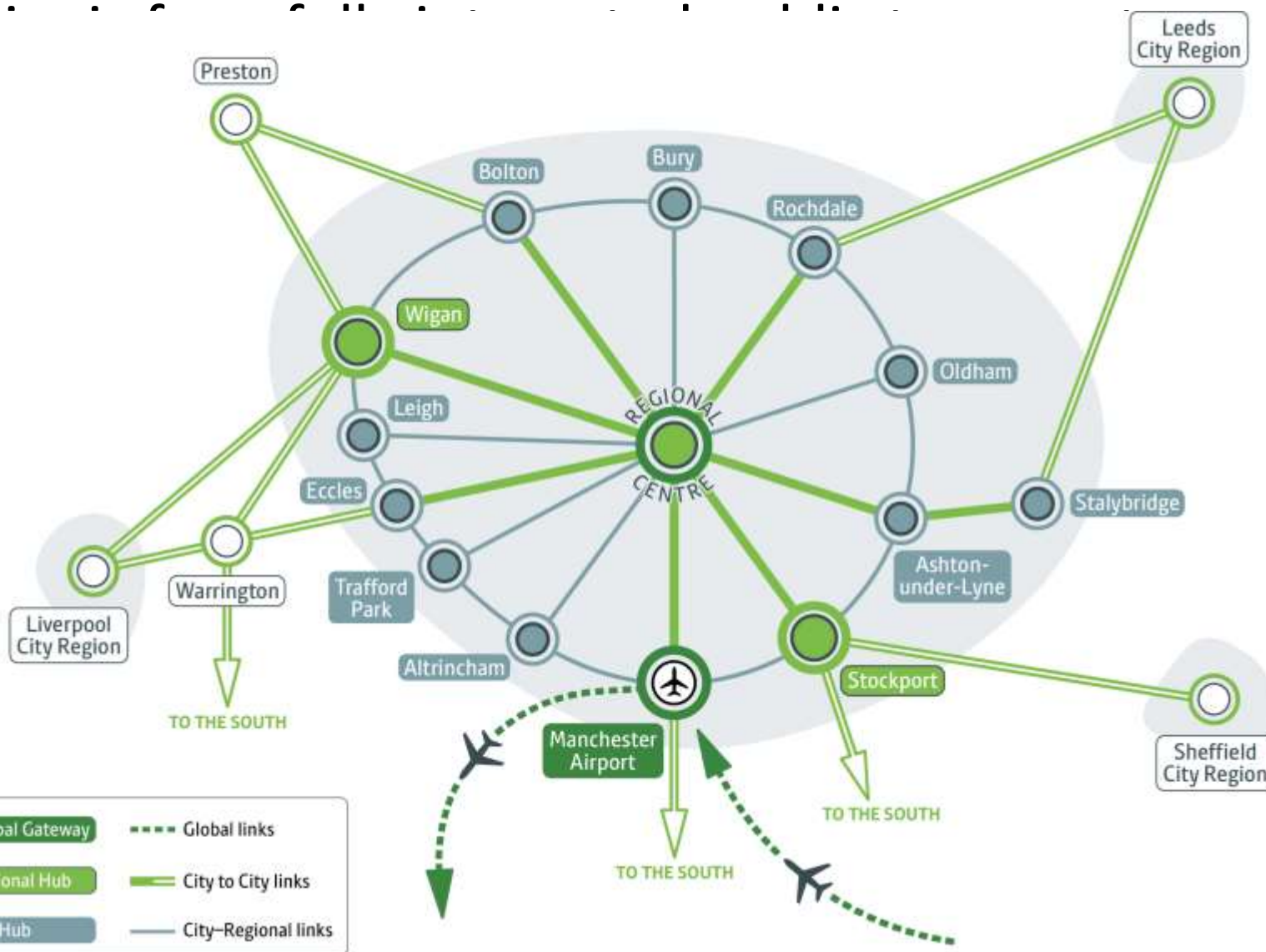




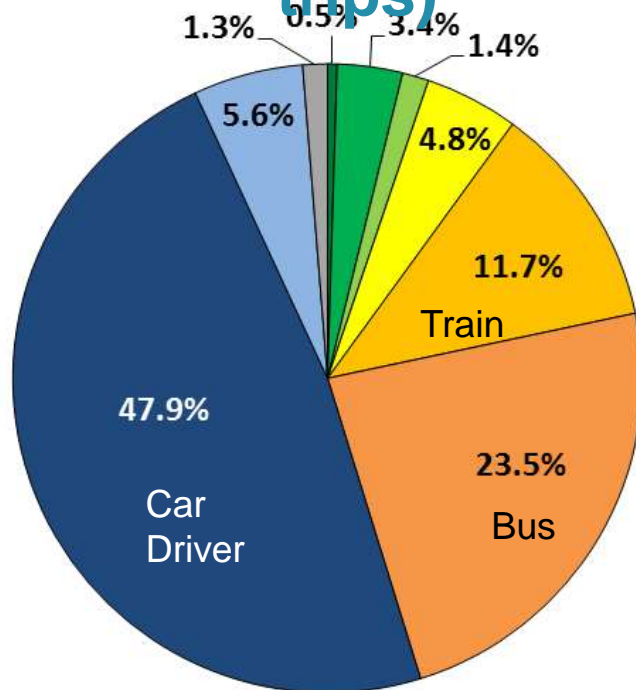
# Greater Manchester



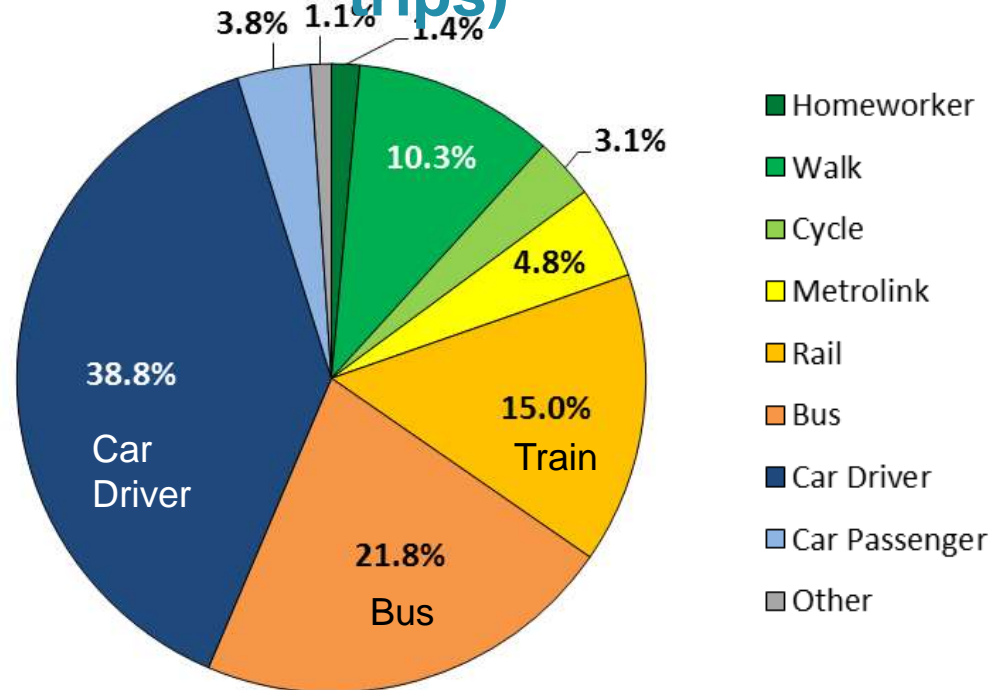
O  
n



2001 (142,383 total trips)



2011 (149,574 total trips)



- **11% reduction in car-based mode share**
- **Large increase in walking and cycling**
- **Significant increase in rail use** (Census pre-dates Metrolink Ph3 opening)



## New Investment

- Global connectivity
- City-to-city links
- Regional centre connectivity
- Travel across the city-region
- Connected neighbourhoods
- GM-wide programmes

## Service Delivery

- Integrated planning and funding
- Key route network
- Rail station devolution
- Integrated bus network

## Maintenance and Renewal

- Highways
- Rail and Metrolink
- Passenger facilities
- Off-road pedestrian and cycle routes



# An Evidence-Based Strategy

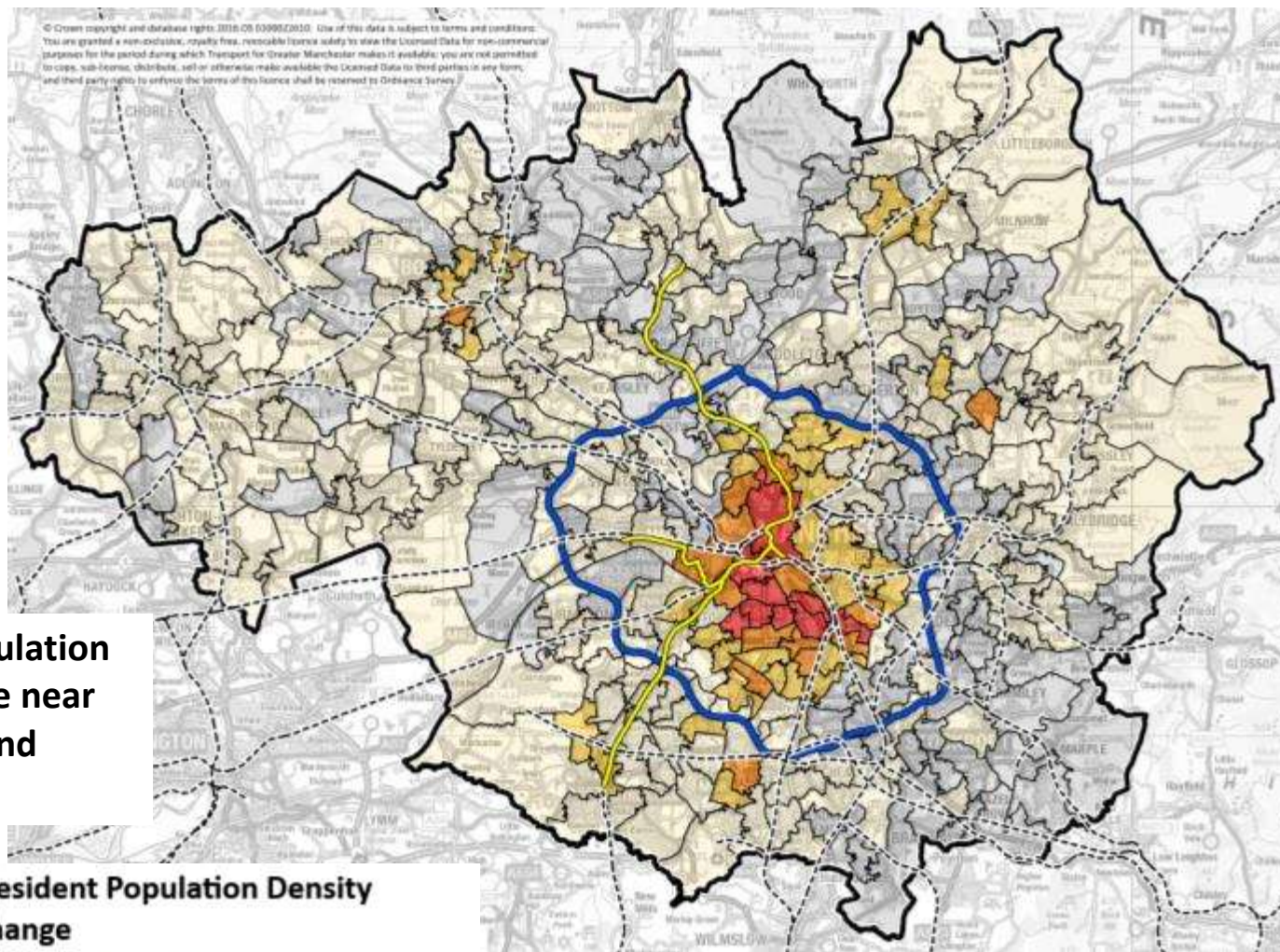
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Transport for  
Greater Manchester

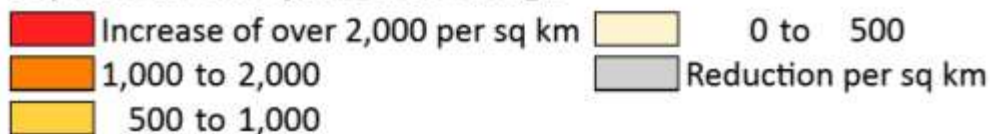
# 1. Urban living increasingly popular...



Greatest increases in population densities 2001 to 2011 are near Manchester City Centre and some town centres.

Census 2001 and 2011: Usual Resident Population Density

Population Density Absolute Change

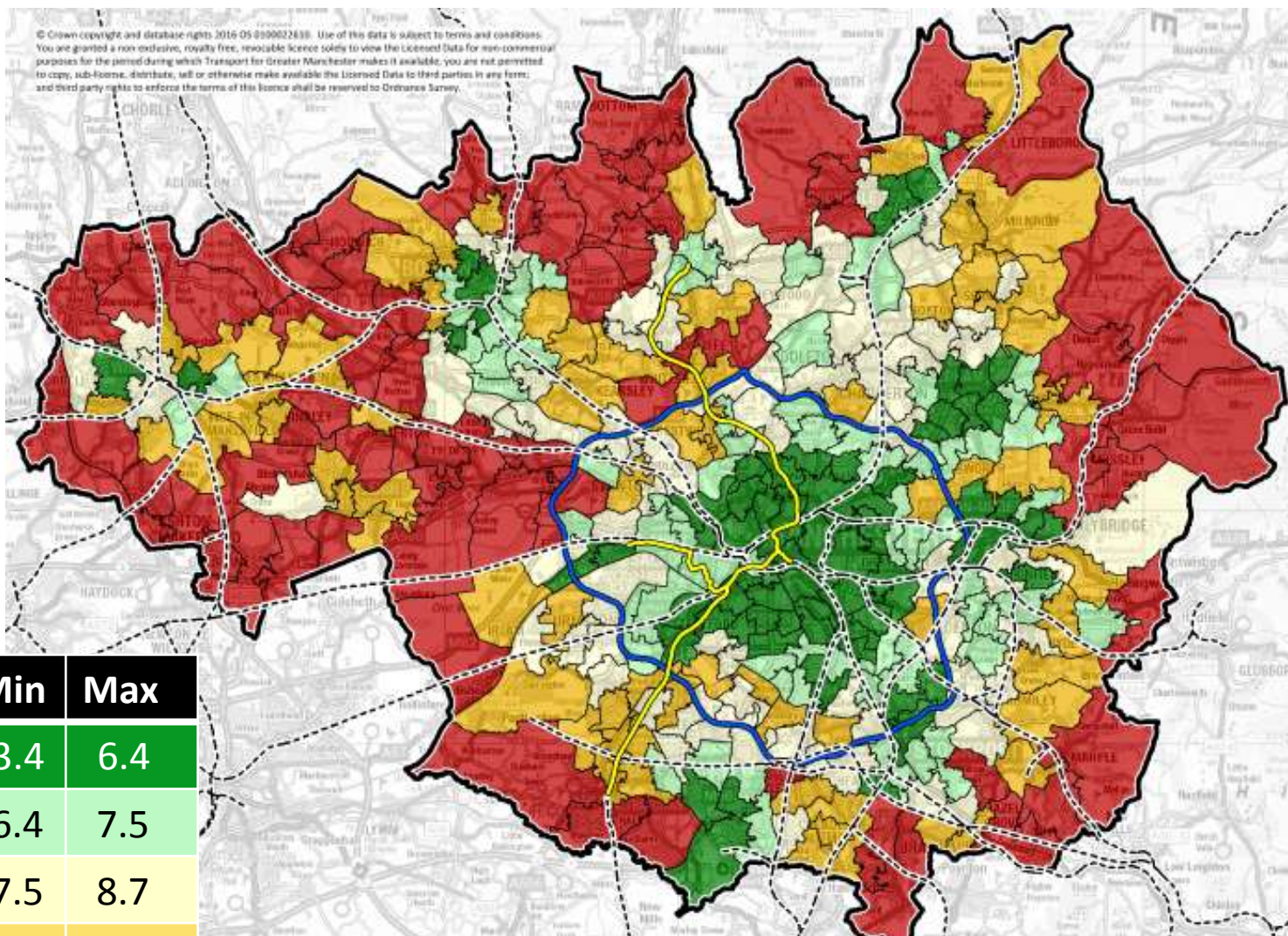






Transport for  
Greater Manchester

# ...which supports less car-dependent lifestyles



Quintile	Min	Max
5 (least)	3.4	6.4
4	6.4	7.5
3	7.5	8.7
2	8.7	10.2
1 (most)	10.2	14.3

**Average distance travelled to work (km)  
by car per resident worker**

**2011**



## 2. Young people's travel attitudes are changing

### ATTITUDES TO CAR USE ASPIRATIONS ARE CHANGING

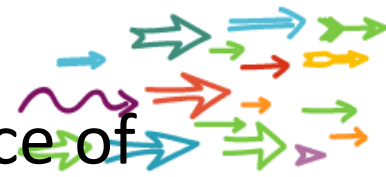
FOR PEOPLE UNDER 30 CARS  
ARE LESS OF A STATUS  
SYMBOL THAN OTHER  
CONSUMER PRODUCTS



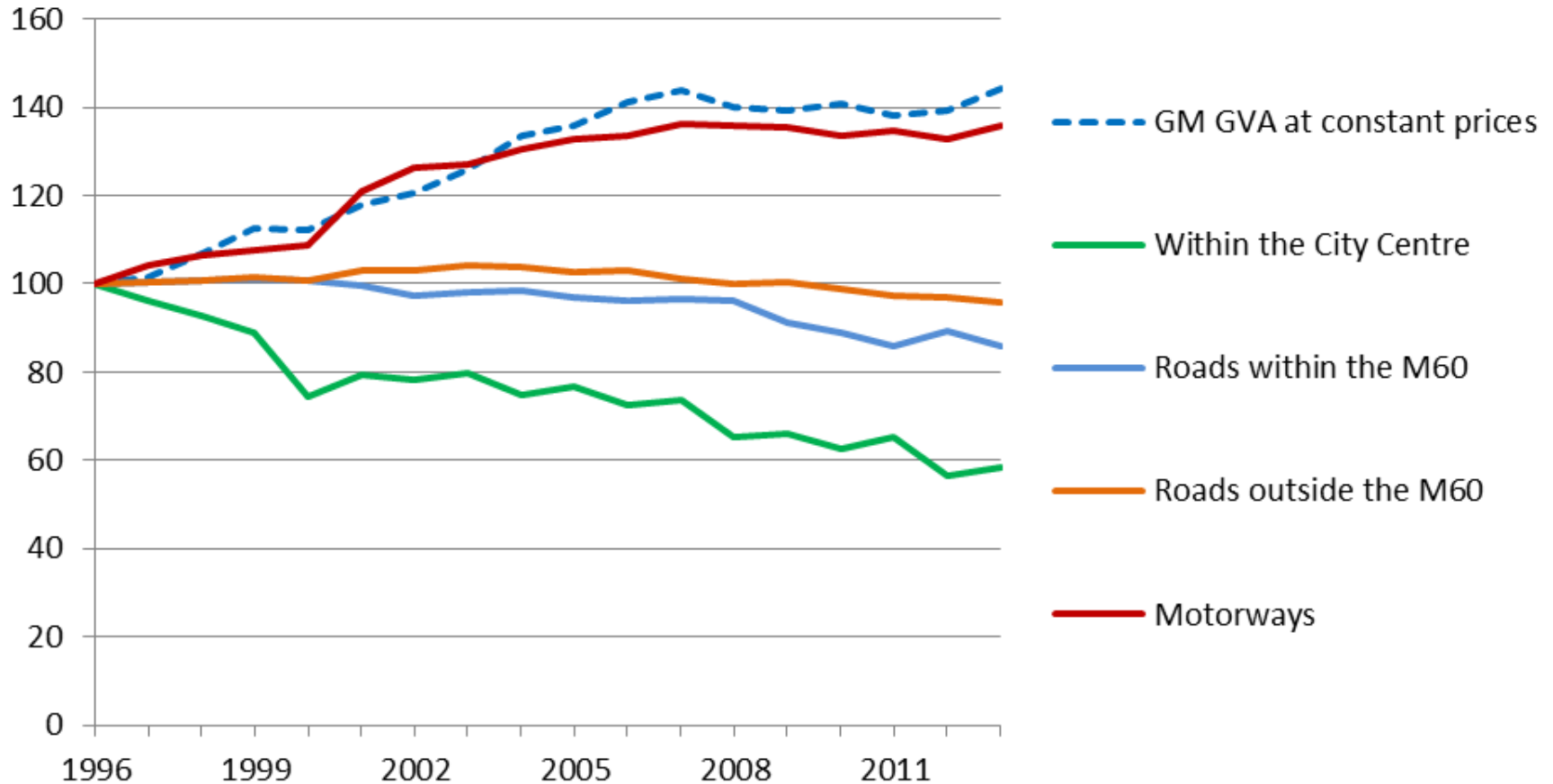
IN 2005/07  
20-YEAR-OLD MEN  
DROVE APPROX. **2000**  
FEWER MILES  
THAN IN 1995/07

**77% of 18–35 year olds  
plan to live in urban  
centres – “*In vibrant,  
compact, and walkable  
communities full of  
economic, social and  
recreational activities.*”**

(2010, Brookings Institution)



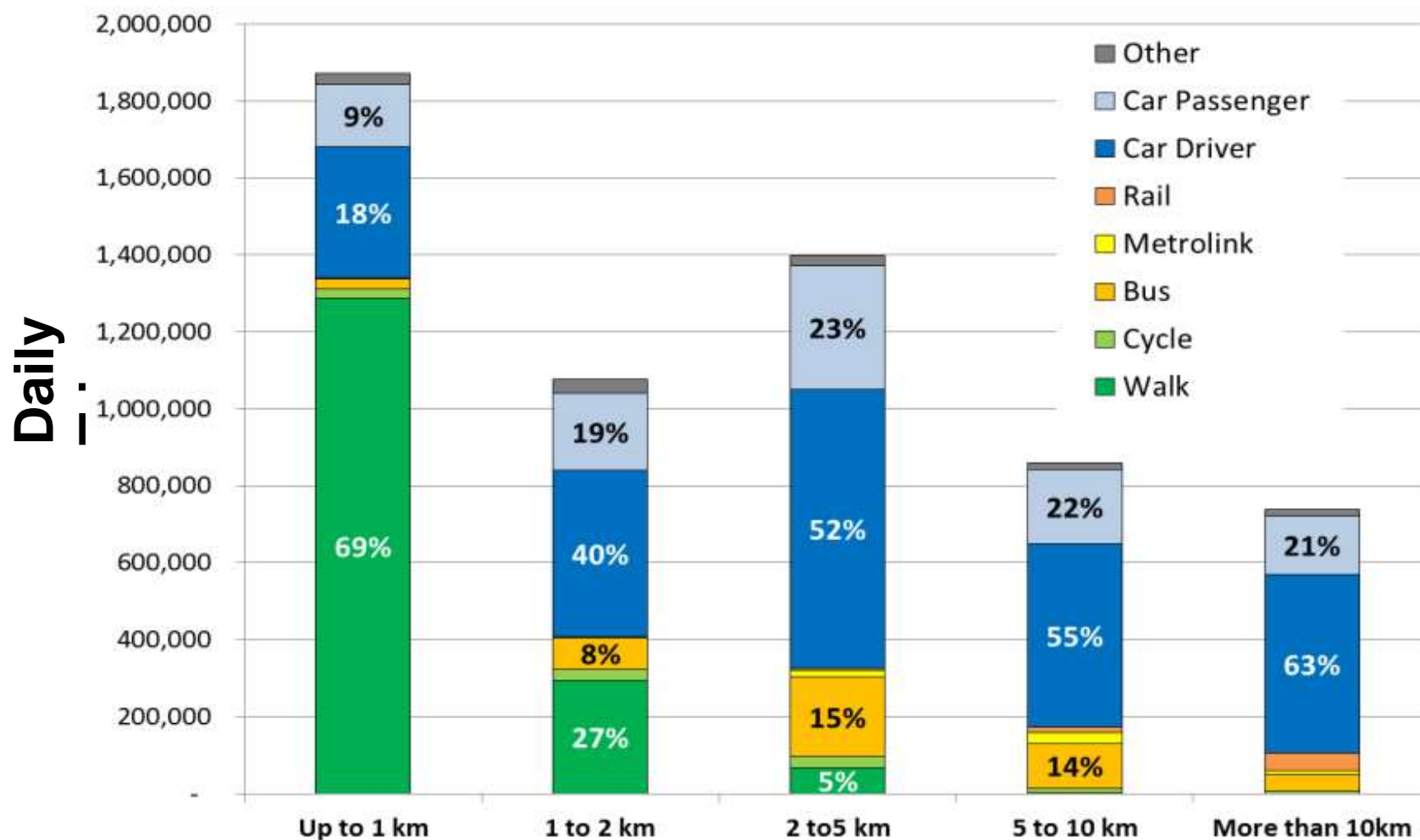
### 3. Traffic growth isn't an inevitable consequence of economic growth







## 4. Don't forget about the short trips!



*\* All trips by GM residents - including those that end outside GM*





# 2040 Transport Strategy Consultation

## Qualitative feedback: common themes

### Rail

- Interchanging
- Flexibility
- Personal security
- Accessibility
- Reliability
- Freight potential

### Bus

- Pricing
- Cashless payments
- Reduction / withdrawal of services
- Reliability
- Information
- Night buses

### Metrolink

- Pricing / ticketing
- Capacity
- Reliability
- Weekend services
- Car parking
- Network Expansion suggestions

### Highways

- Maintenance
- Smart traffic signals
- Roadworks
- Managing disruption
- Bus lanes

### Active Travel

- Safety
- Cycle storage
- Education / training
- Learning from international best practice



Town and city centres are no places for private vehicles. Make life hard for drivers, make life easy for people following sustainable travel options. A private car takes up huge amounts of space and rarely carries more than one person, you must banish these from our busiest environments.

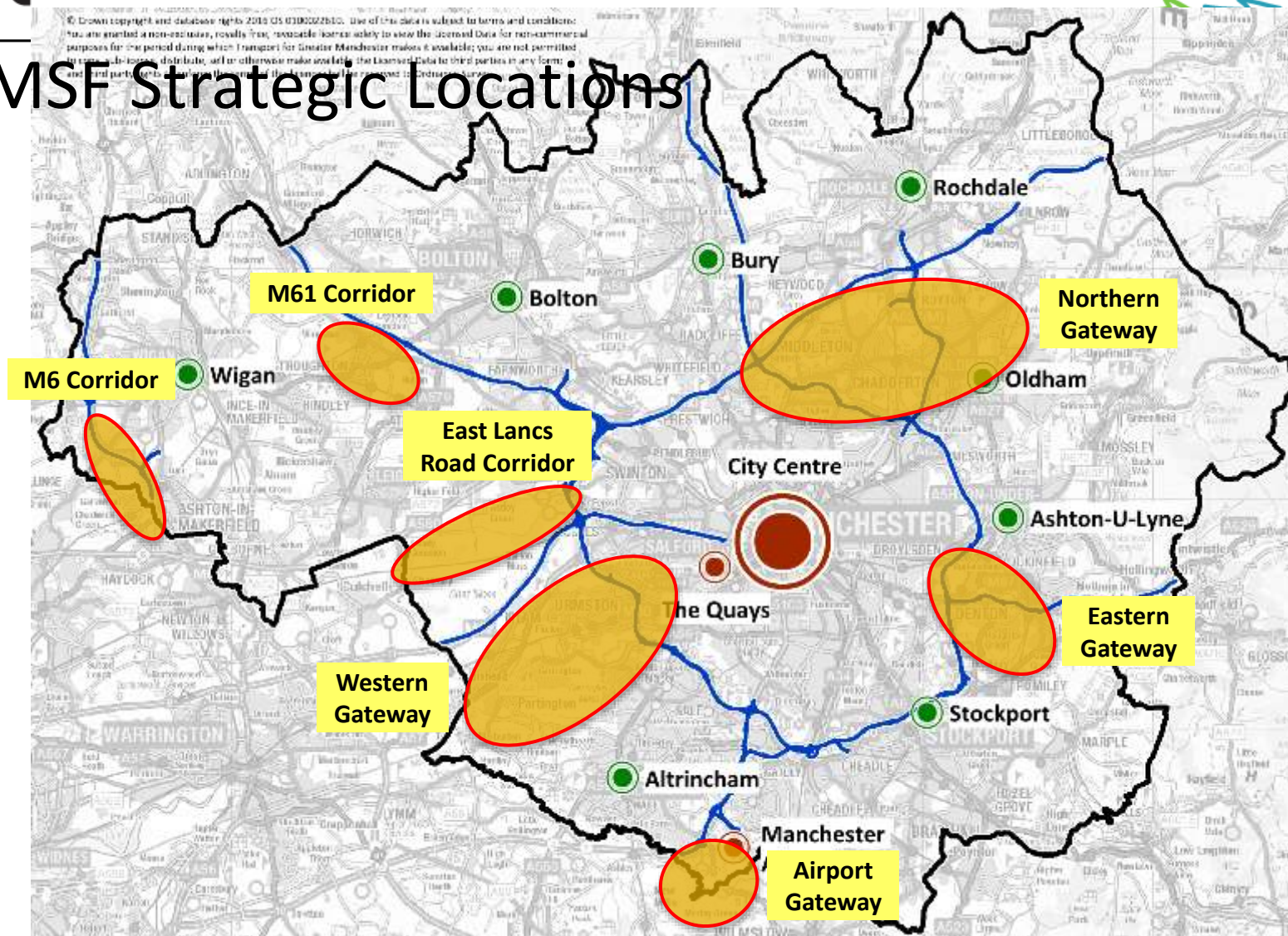
You wish to drive car users off the roads, I do not want to use unsafe, unclean, and expensive public transport! I live in Trafford and if I wish to use my car, I should under a free democratic society be allowed to do so!"



Transport for  
Greater Manchester



# GMSF Strategic Locations





# 2040 Transport Strategy



2040 supporting strategies

Strategy  
Access to Public

Transport

Rapid Transit  
Strategy 2040

Rail Plan 2025

Bus Strategy  
2025

Agenda for  
Intelligent  
Mobility

Transport  
Strategy/Piccadilly  
Growth

Airport Surface  
Access Strategy  
GMSF

Gateway/Corridor  
Transport

Town Centres &  
other GMSF  
growth areas

Highways  
Strategy  
2025

Cycling  
Strategy/  
Active Travel

Freight &  
Logistics  
Strategy  
Low

Emission  
Strategy &

Link and place typologies  
Travel Demand Management  
Customer Insight & Market Segmentation

2040 Pipeline

2040 5-Year Delivery Plans

# Thank you

[nicola.kane@tfgm.com](mailto:nicola.kane@tfgm.com)

[ben.brisbourne@tfgm.com](mailto:ben.brisbourne@tfgm.com)

[simon.warburton@tfgm.com](mailto:simon.warburton@tfgm.com)







**BUILD2LC**  
Interreg Europe



European Union  
European Regional  
Development Fund

# Resolve Study Visit: Manchester

Welcome to the Programme:  
Dr Jon Lamont, TfGM Chief Executive

18th January | Greater Manchester Study Visit

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# Manchester Metroshuttle

Martin Shier  
Bus Partnerships Delivery  
Manager





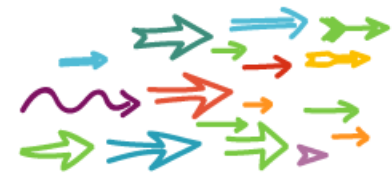
# Manchester Metroshuttle

- Introduced in 2002
- Provides a free bus link between the city's train stations and car parks with shops and businesses.
- Funded by TfGM/C, Manchester City Council.
- Service was re-launched in November 2010 with greater emphasis on customer care.
  - Customer Satisfaction Survey
  - Drivers to be customer focused
  - Increase supervision
  - Performance Targets introduced



# Manchester Metroshuttle

- In 2010, Green Bus Funding allowed 20 low-carbon hybrid vehicles to be introduced.
- Reduce carbon emissions by 140 tonnes
- Reduce fuel usage by up to 30%
- Vehicles equipped with latest technology, combining automatic passenger counting, on board information and vehicle diagnostics.
- In 2014 three Electric Buses were introduced.
- Audio Visual Displays added during 2016.



# Manchester Metroshuttle







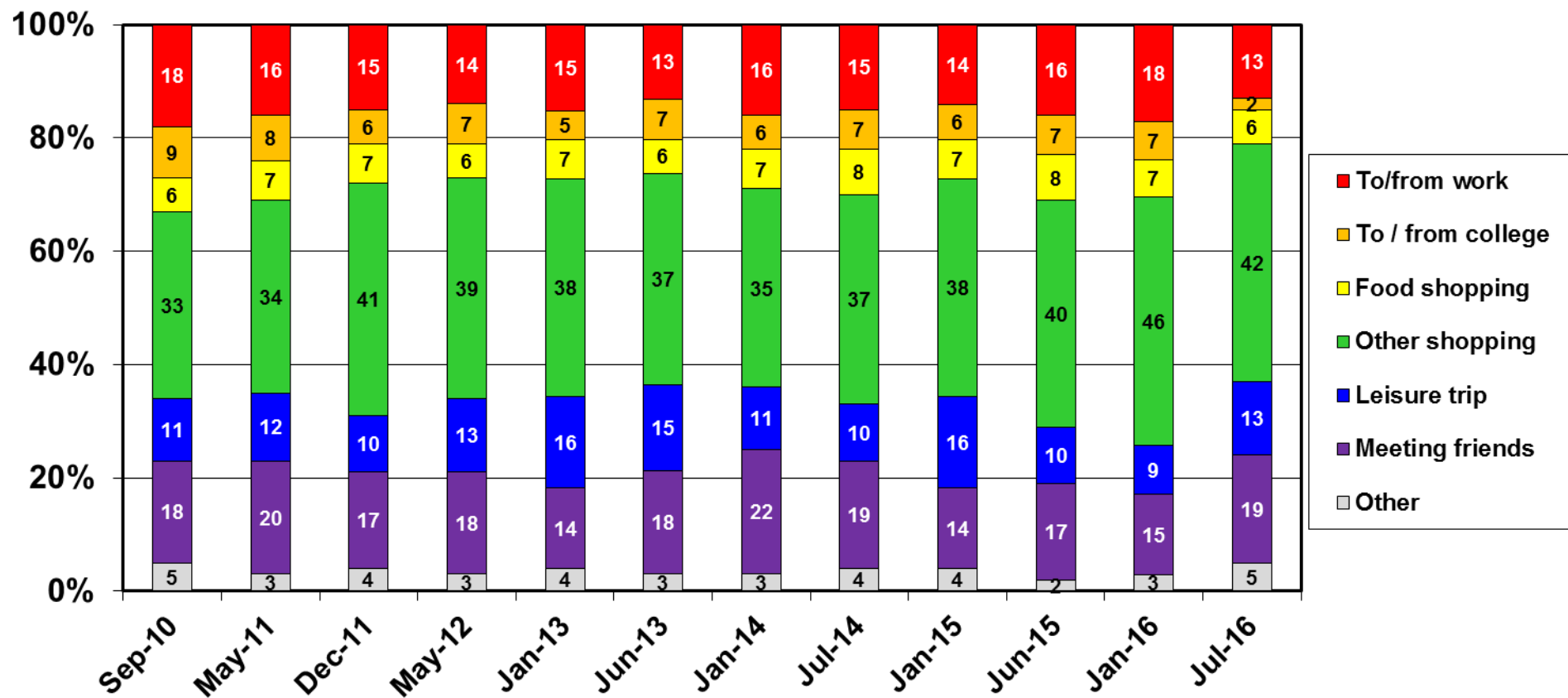
# Cost

- The cost per passenger went up during 2016 to £1.21.

Service	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	1,082,518	1,100,868	1,204,310	1,172,822	1,083,018	1,098,576	1,149,098	1,256,728	1,221,615	795,325	623,550
2	648,072	653,598	726,230	749,544	705,289	769,456	838,600	910,338	824,300	815,776	679,727
3	415,235	494,595	600,829	663,772	572,808	617,664	639,854	666,274	620,565	315,156	115,036
<b>Total Patronage</b>	2,145,825	2,249,061	2,531,368	2,586,138	2,361,115	2,485,696	2,627,552	2,833,340	2,666,480	1,926,257	1,418,313
Annual Cost	£1,253,358	£1,284,470	£1,539,005	£1,556,143	£1,500,935	£1,532,455	£1,570,766	£1,570,766	£1,715,980	£1,715,981	£1,715,981
<b>Cost per Passenger</b>	£0.58	£0.57	£0.61	£0.60	£0.64	£0.62	£0.60	£0.55	£0.64	£0.89	£1.21

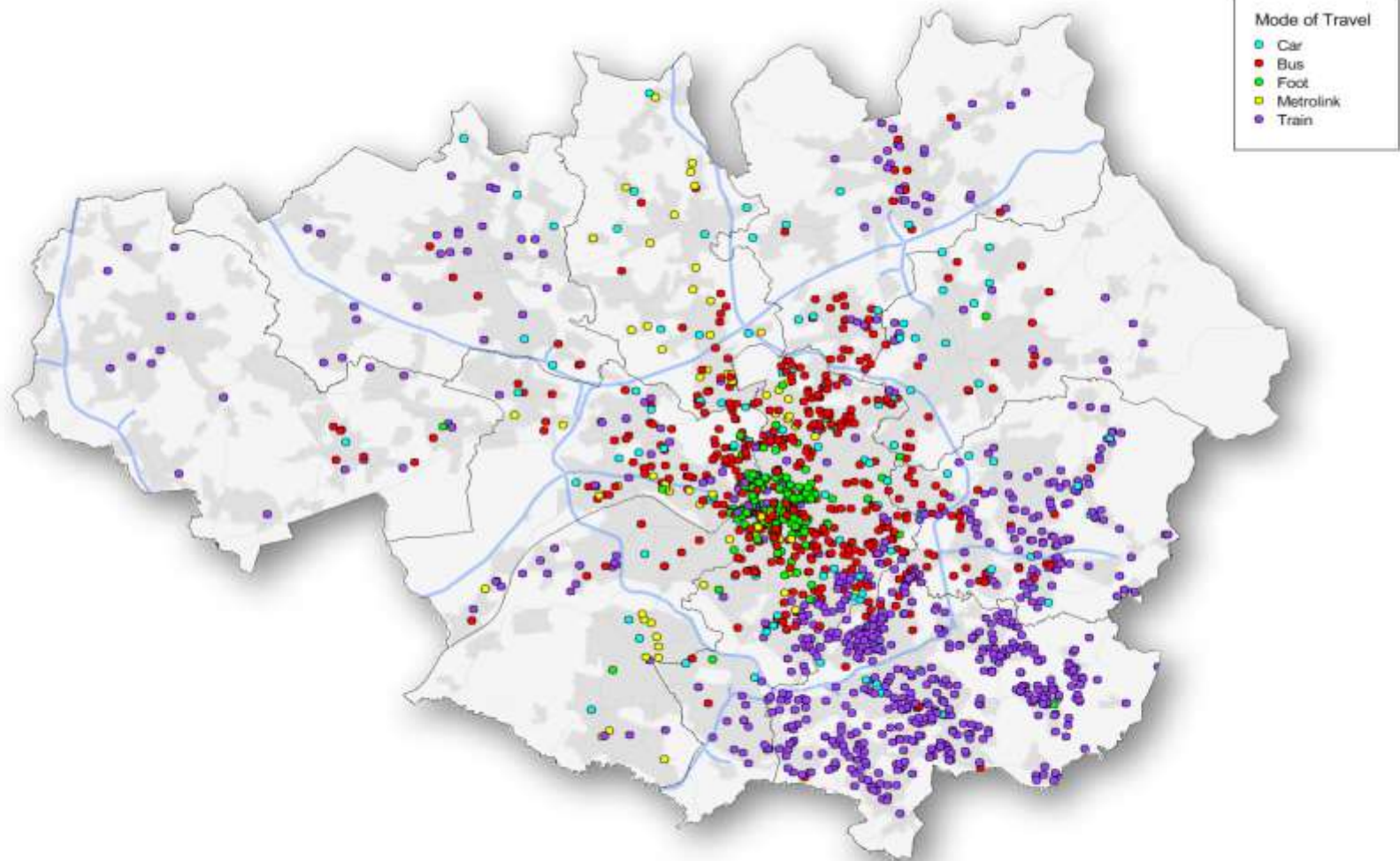


# Journey Purpose





# Service attracts widespread usage





# Customer Satisfaction

- Survey undertaken twice yearly
- Latest results achieve overall satisfaction score of 90.7%

Attributes showing the highest levels of satisfaction are:

- Driver attitude (94.9%)
- Safety of driving (94.9%)
- Security on board (93.5%)

Most improved areas are;

- Destination display (+6.5%)
- On-board information (+6.0%)
- Comfort of seating (+4.5%)
- Driver appearance (+3.6%)
- Temperature / ventilation (+3.2%)
- Security on board (+2.6%)



# Stockport Metroshuttle

- Introduced in 2008
- Provides a free bus link between the town train station and bus station with shops and leisure facilities.
- Funded by TfGM/C and Stockport Council.
- Operated with TfGM Hybrid vehicles
- Patronage during 2016 was 244,504
- Annual cost is £249,995                      £1.02 per passenger







# Bolton Metroshuttle

- Introduced in 2008
- Provides a free bus link between the town train station and bus station with shops and leisure facilities.
- Funded by TfGM/C and Bolton Council.
- Operated with TfGM Hybrid vehicles
- Patronage during 2016 was 78,058
- Annual cost is £124,521                      £1.60 per passenger





Thank you.

Any questions?

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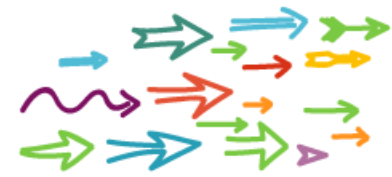
# TfGM Bus Priority Programme

## Resolve Study Visit January 2017

Anthony Murden,  
Projects and Programmes  
Manager

Martin Shier,  
Bus Partnerships Delivery  
Manager





# Contents

---

- The Strategic Context
- The Bus Priority Programme
- The Busway Service - the first 9 months of Operation





# The Strategic Context





## COLLABORATION



## FUNDING

GM LOCAL  
COUNCILS



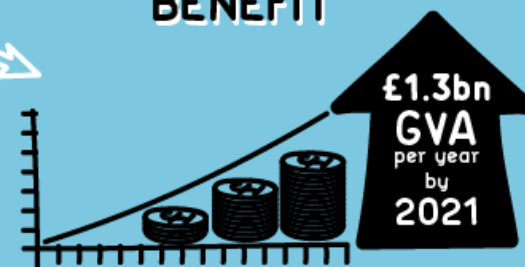
 Metrolink

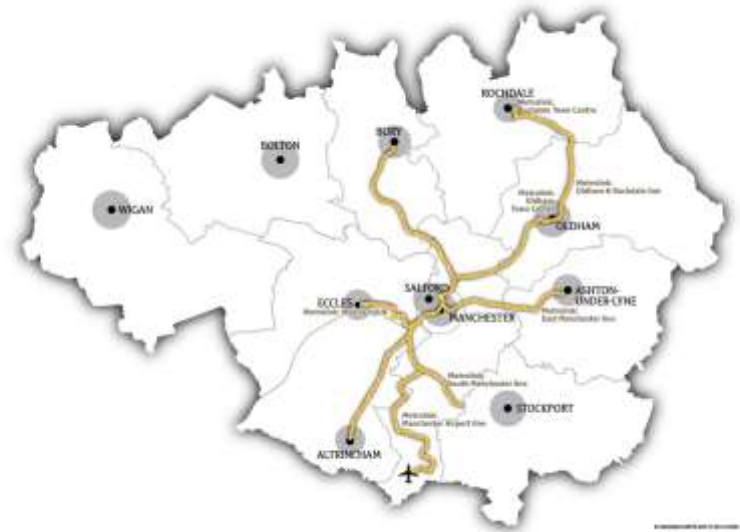


## OUTCOME



## BENEFIT





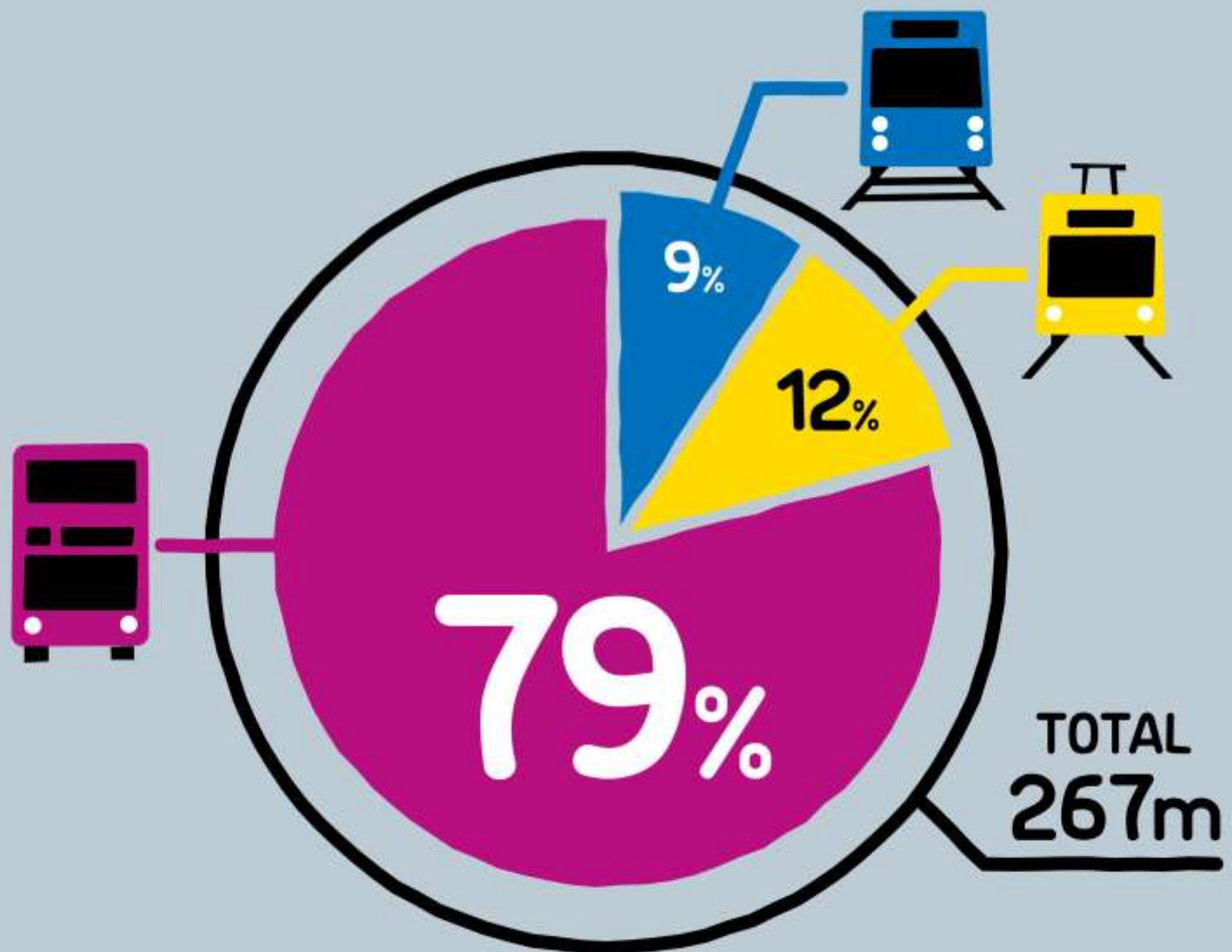


## Public Transport Patronage

Year	Bus	Train	Metrolink	TOTAL
<b>2010/2011 Patronage (m)</b>	224.0	22.1	19.3	265.4
<b>2011/2012 Patronage (m)</b>	218.6	24.9	22.0	265.5
<b>2012/2013 Patronage (m)</b>	219.7	25.3	25.4	270.4
<b>2013/2014 Patronage (m)</b>	216.7	24.7	29.2	270.6
<b>2014/2015 Patronage (m)</b>	<b>210.9</b>	<b>25.0</b>	<b>31.1</b>	<b>267.0</b>



Buses are important









(2015)

# INFRASTRUCTURE DELIVERY: BUS PRIORITY PROGRAMME



## What is the Bus Priority Programme?

Key to map

-  Bus routes to be improved
-  Guided busway and bus stop
-  Park and Ride
-  Rail line
-  Metrolink line
-  Metrolink line under construction/  
Second City Crossing

Contains Ordnance Survey data  
© Crown copyright and database right 2010  
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14-0106-150145



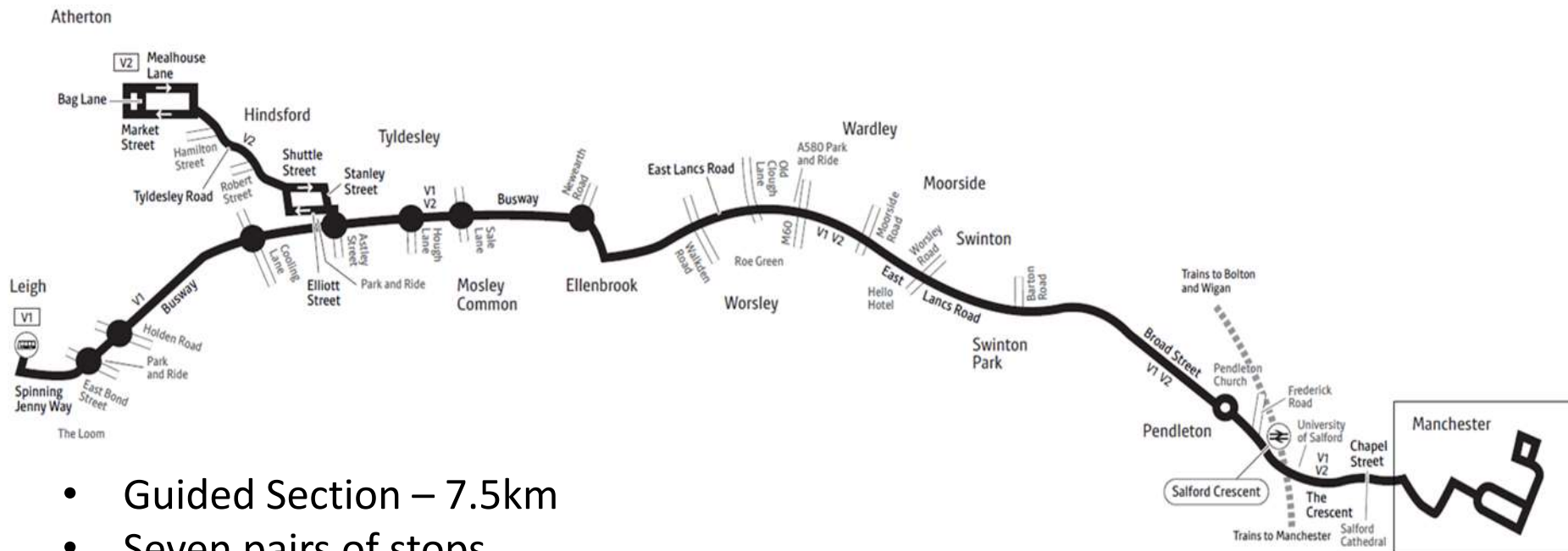


## Strategic Package Benefits

- **Shorter journey times**, more **punctual** and **reliable** bus services;
  - 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 Manchester Universities;
  - **Improved links** to wide 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.
-



# The Busway Route



- Guided Section – 7.5km
- Seven pairs of stops
- 4.5m – multi-user path
- Dedicated on highway bus lanes - 6km
- 10 major junction improvements
- Opened 3 April 2016















# Busway Operational Model

- The guided busway is a **TfGM owned asset** where TfGM (Service Infrastructure) are responsible for its operation and maintenance (also the A580 P&R site)
- Infrastructure is operational on practically a **24 hour** basis
- TfGM generally not previously set up to operate on 24 hours basis and are not a Highway Authority, so don't have established highway maintenance type arrangements
- Business as usual** activities managed by **two Busway Officers** during 'normal' working hours, **out of hours incidents** coordinated through **Incident Managers and Control Centres**
- For incidents - **TfGM Control Centre** from **6am to 8pm Mon to Fri**, **Wigan Control Centre all other hours**
- Maintenance contracts mainly established through existing term maintenance contracts in place for TfGM's other infrastructure; Balfour Beatty responsible for soft landscaping for 5 years
- Vehicle incursions at level less than expected**; arrangements in place for quick removal of vehicles; recovery of costs being progressed

# Busway Service (the first 9 months)

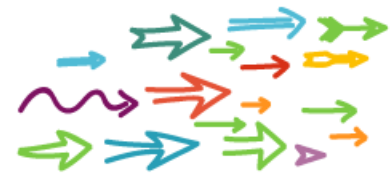






## Service levels and performance (9 months in)

- **4 buses per hour** to/from Leigh and Atherton respectively – merging to form **8 per hour** between Tyldesley and Manchester City Centre
- Journey times **consistently 50 mins** to/from the Regional Centre
- Over **50,000 passengers per week** were carried prior to Christmas on the service, having increased from 28,000 at service launch.
- 1 millionth passenger travelled during mid October and the 1.5 millionth passenger in late December.
- Particularly **high rate of use by concessionary and leisure travellers**. Saturday patronage is especially strong.
- **Fares are standard First network fares allowing the service to be branded as a ‘premium service at everyday prices’**. Day ticket - £4.50, Weekly ticket - £15. Also Guideway £1.50 fare
- Planning on extending the service through to Oxford Road when traffic conditions permit – limited service starting in January 2017



## The Busway Service - A first class travel experience

The new infrastructure and service provides passengers with a premium journey experience.

The service is operated by First Manchester and all buses feature:

- **‘Next stop’ audio and visual announcements;**
- **CCTV;**
- **Free Wi-fi;**
- **Climate control;**
- **High quality seating; and**
- **low emissions.**





## Feedback since opening - headlines

- Passenger Satisfaction survey carried out in June/July 2016 – **3800 responses**
  - **67% use the guided busway at least once a week.**
  - While **the majority of respondents (73%) live within one kilometre of the busway**, over a quarter are travelling more than that distance to reach it.
  - **98% of customers surveyed within the evaluation were satisfied** with their overall journey. This is a significant increase upon both the baseline (85%) and the wider GM BPS score (82%).
-



## Feedback since opening - headlines

- **97% of those from the evaluation survey claim they would recommend the guided busway** to a friend or relative; which is a significant increase upon the baseline survey (77%).
- Prior to the guided busway the majority of respondents previously made their journey via a different bus, however there is some **encouraging extraction from solo car driving (20%)**.
- **More than a third (36%)** of respondents from the evaluation could have made their journey by driving a car.
- Even though relatively small in number, the only significant area for potential improvement was **accessibility of the provided WiFi**, and reducing delays brought on by city centre congestion.



Initial views of the new guided busway are predominantly positive.

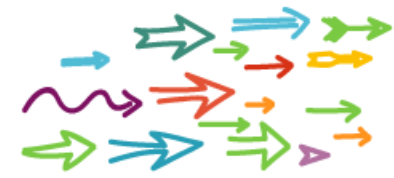






While the majority positively assert that there are no obvious improvements to make, the improvement of Wi-Fi, and increased frequency during peak times are obvious areas for development.





**Thank you for listening**









Transport for  
Greater Manchester

**Manchester Metrolink**

**Peter Cushing**

**Transport for Greater Manchester**

**18<sup>th</sup> January**



# Metrolink Network - 2008

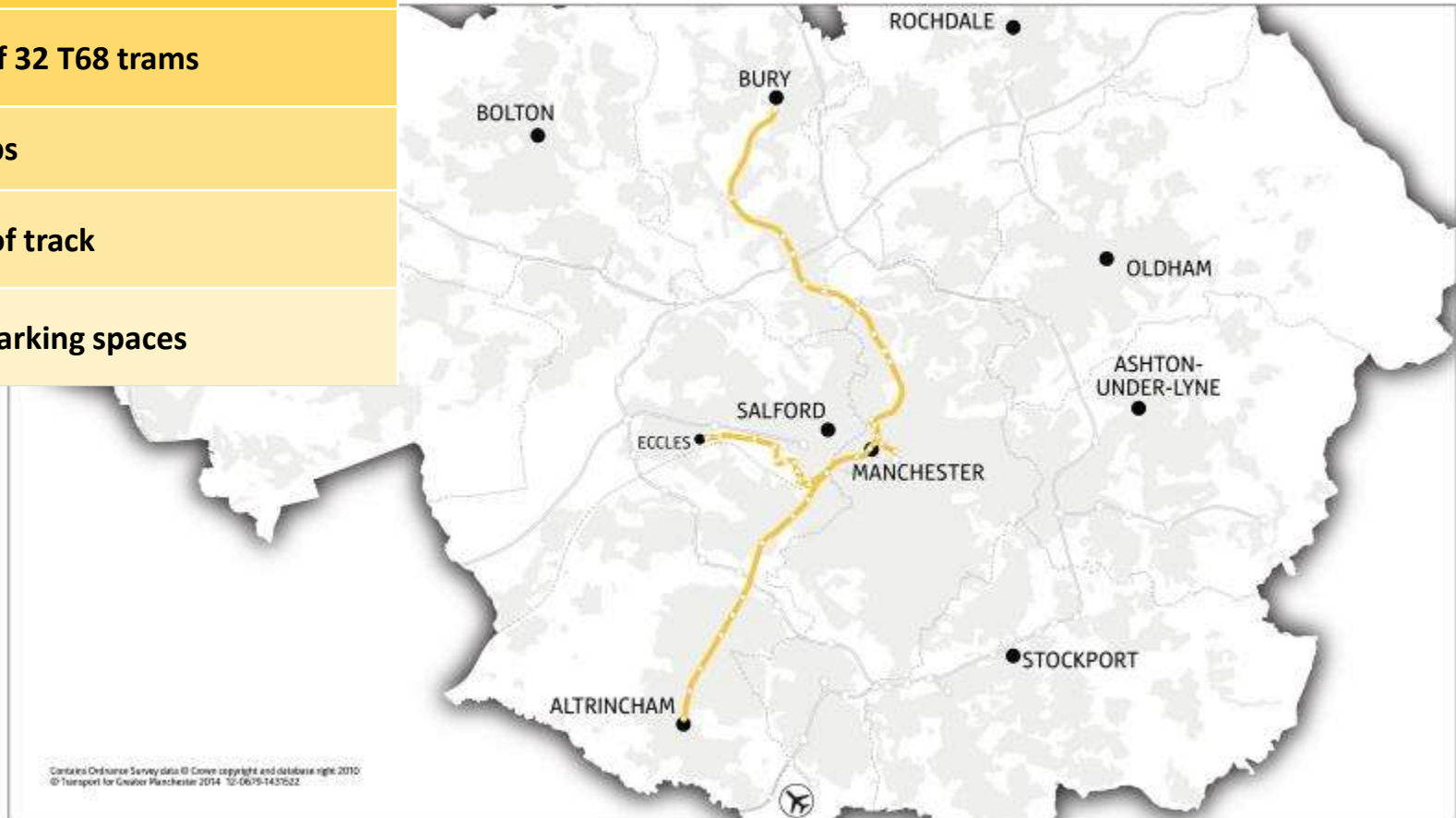
**2008**

**Fleet of 32 T68 trams**

**37 stops**

**37km of track**

**1146 parking spaces**





# Metrolink Overview

- £1.9 billion investment
  - Tripling the size of the network
  - Tripling Park & Ride facilities
  - Brand new fleet of trams
  - New ticketing systems
- Significantly improving reliability and capacity
- Now the largest Light Rail system in the UK
- 36 million passengers per annum and growing.



# Metrolink Network

2008	2016
Fleet of 32 T68 trams	120 M5000 trams ordered
37 stops	94 stops
37km of track	96km of track
1146 parking spaces	3302 parking spaces







Transport for  
Greater Manchester

# Trafford Park Line Scheme Objectives

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**Regeneration & Growth**

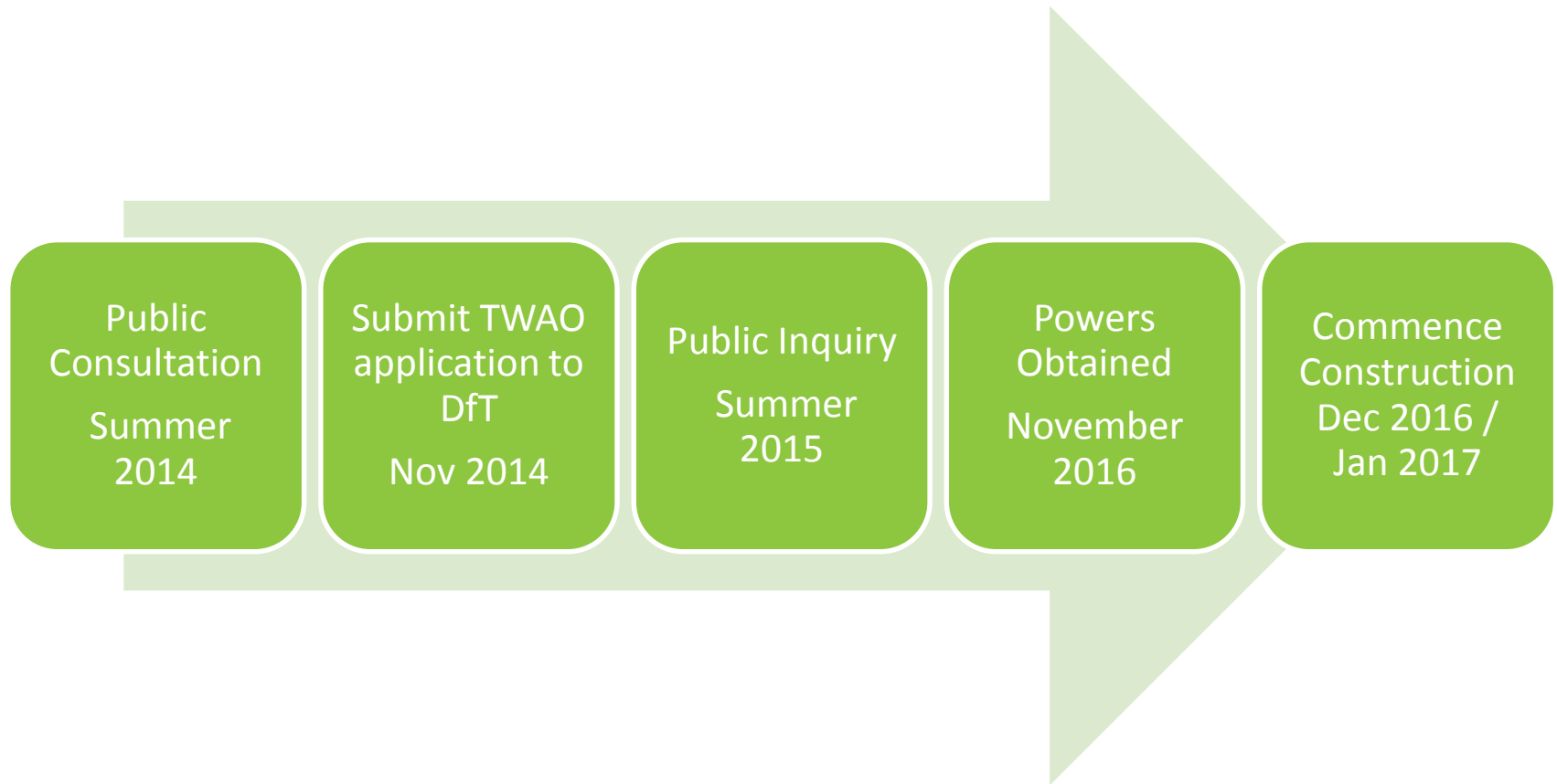
**Connectivity – Employment Catchment**

**Viable Alternative to Car Use**

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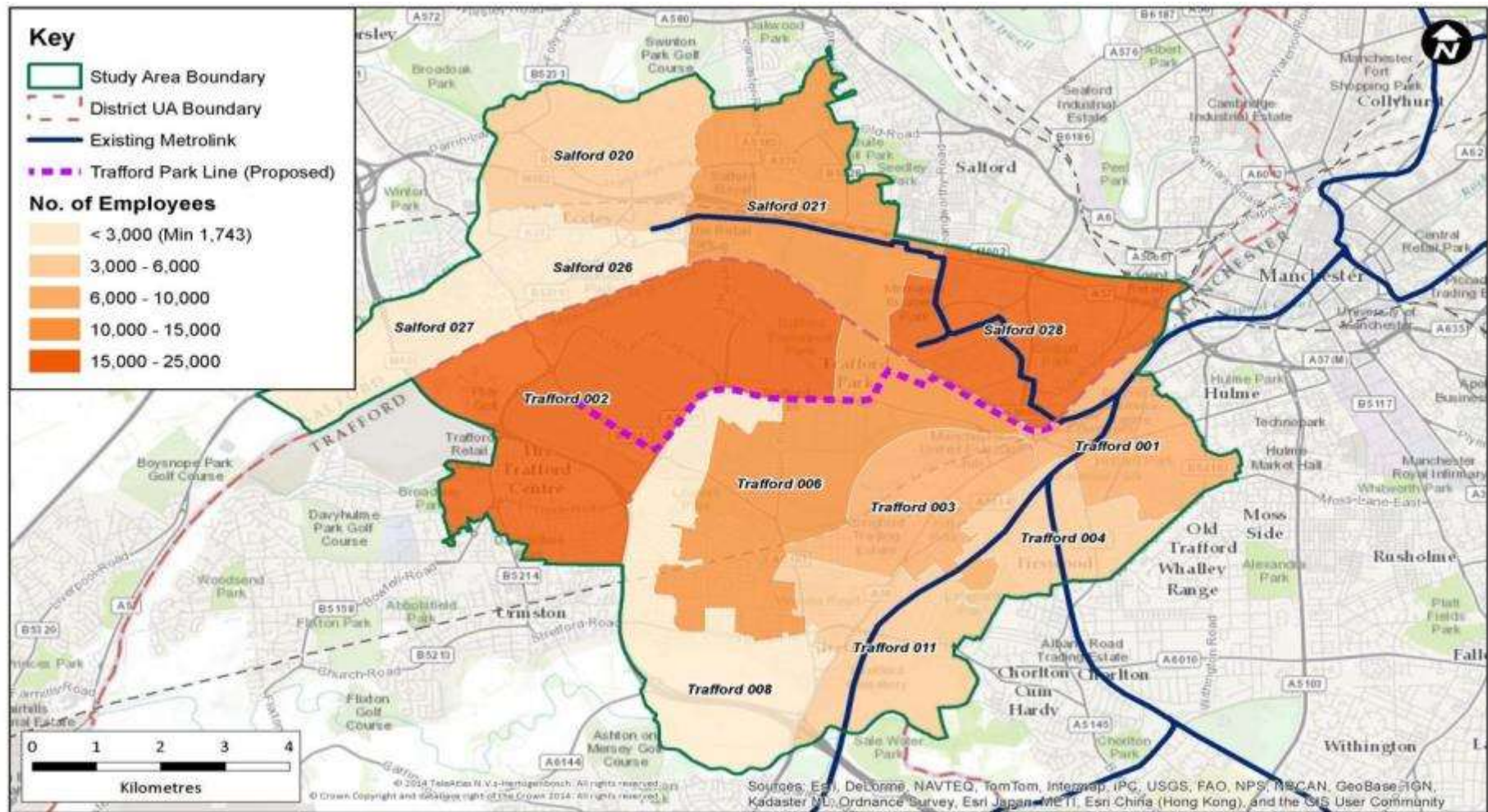


# Application process





# Trafford Park employment



# Communication Challenge

- Communicate with
  - 35,000 employees of the Trafford park area
  - Over 75,000 football fans
  - Intu Trafford Centre's annual footfall of 31 million
  - Event goers, road users
- Approach
  - Pro-active
  - Utilise digital communications
  - Working with stakeholders to communicate with customers, visitors, distributors and staff
  - Joint communications plans



- Building through Europe's largest industrial estate
  - Large number of interfaces along the route which directly impacted stakeholder
  - Co-ordinating works with businesses
  - Integrating tramway with existing Metrolink and canal structures from Pomona and along Trafford Wharf Road
  - Managing 3<sup>rd</sup> party agreements
-



# Benefits of Using BIM



Appropriate Level of Detail



Automated Clash Detection

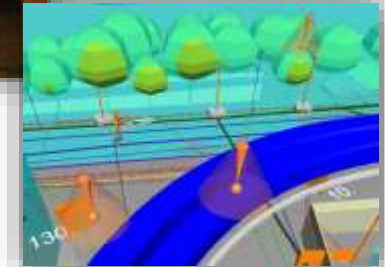
3D BIM



Collaborative Design Reviews



Audited comments and resolution



Hazards and risks identified & mitigated

## Federated 3D Project Information Model



4D BIM

Model Linked To Construction Sequence

ID	Name	Start	End	Duration	Resources
100	Site Preparation	2010-01-01	2010-01-31	31	1000000000
101	Site Preparation	2010-01-01	2010-01-31	31	1000000000
102	Site Preparation	2010-01-01	2010-01-31	31	1000000000
103	Site Preparation	2010-01-01	2010-01-31	31	1000000000
104	Site Preparation	2010-01-01	2010-01-31	31	1000000000
105	Site Preparation	2010-01-01	2010-01-31	31	1000000000
106	Site Preparation	2010-01-01	2010-01-31	31	1000000000
107	Site Preparation	2010-01-01	2010-01-31	31	1000000000
108	Site Preparation	2010-01-01	2010-01-31	31	1000000000
109	Site Preparation	2010-01-01	2010-01-31	31	1000000000
110	Site Preparation	2010-01-01	2010-01-31	31	1000000000
111	Site Preparation	2010-01-01	2010-01-31	31	1000000000
112	Site Preparation	2010-01-01	2010-01-31	31	1000000000
113	Site Preparation	2010-01-01	2010-01-31	31	1000000000
114	Site Preparation	2010-01-01	2010-01-31	31	1000000000
115	Site Preparation	2010-01-01	2010-01-31	31	1000000000
116	Site Preparation	2010-01-01	2010-01-31	31	1000000000
117	Site Preparation	2010-01-01	2010-01-31	31	1000000000
118	Site Preparation	2010-01-01	2010-01-31	31	1000000000
119	Site Preparation	2010-01-01	2010-01-31	31	1000000000
120	Site Preparation	2010-01-01	2010-01-31	31	1000000000

Programme of Work

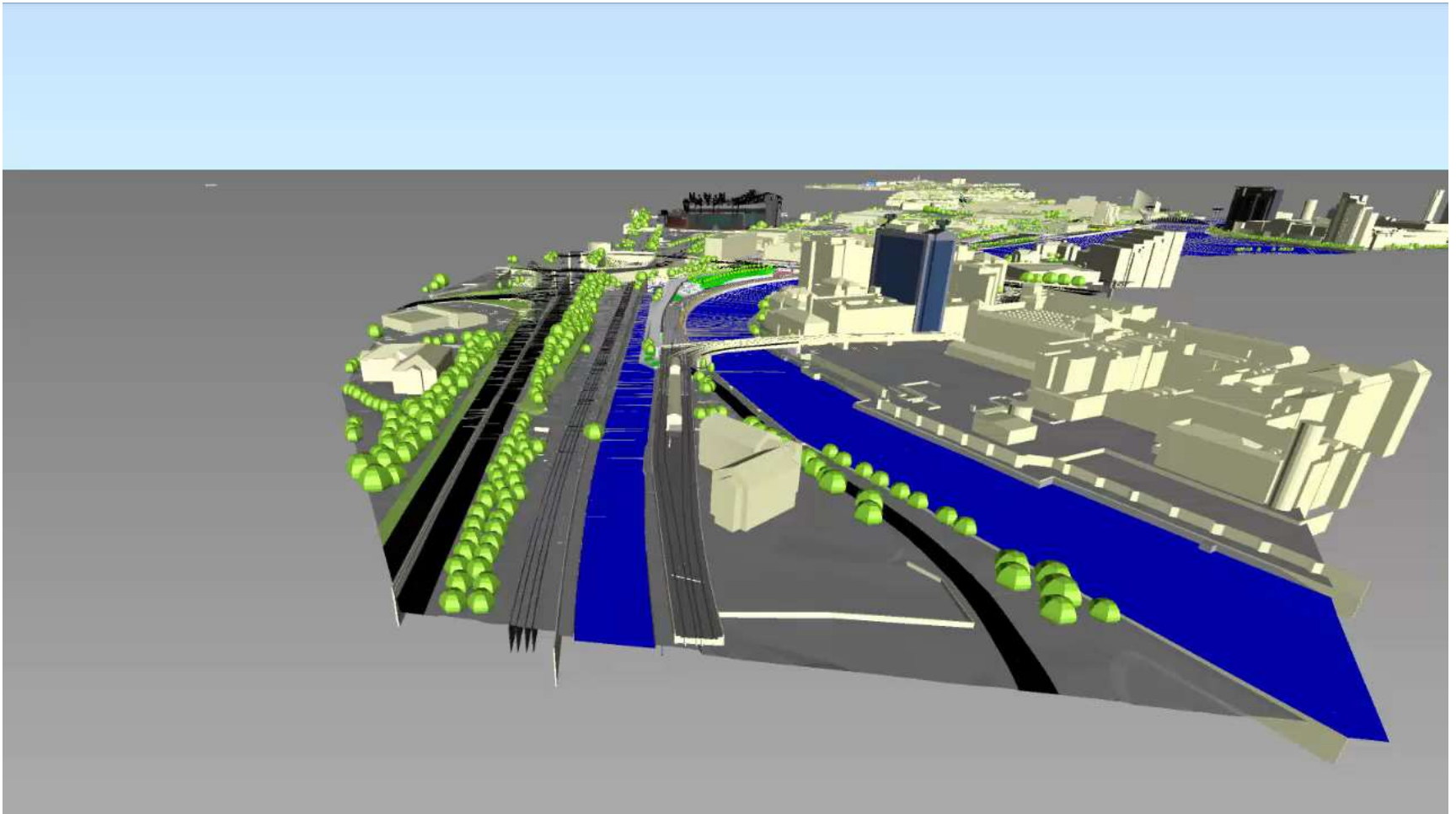
5D BIM

Model Linked To Cost Items

Bill of Materials		Bill of Materials		Bill of Materials	
ID	Name	Quantity	Unit	Cost	Material
100	Site Preparation	1000000000	m3	1000000000	1000000000
101	Site Preparation	1000000000	m3	1000000000	1000000000
102	Site Preparation	1000000000	m3	1000000000	1000000000
103	Site Preparation	1000000000	m3	1000000000	1000000000
104	Site Preparation	1000000000	m3	1000000000	1000000000
105	Site Preparation	1000000000	m3	1000000000	1000000000
106	Site Preparation	1000000000	m3	1000000000	1000000000
107	Site Preparation	1000000000	m3	1000000000	1000000000
108	Site Preparation	1000000000	m3	1000000000	1000000000
109	Site Preparation	1000000000	m3	1000000000	1000000000
110	Site Preparation	1000000000	m3	1000000000	1000000000
111	Site Preparation	1000000000	m3	1000000000	1000000000
112	Site Preparation	1000000000	m3	1000000000	1000000000
113	Site Preparation	1000000000	m3	1000000000	1000000000
114	Site Preparation	1000000000	m3	1000000000	1000000000
115	Site Preparation	1000000000	m3	1000000000	1000000000
116	Site Preparation	1000000000	m3	1000000000	1000000000
117	Site Preparation	1000000000	m3	1000000000	1000000000
118	Site Preparation	1000000000	m3	1000000000	1000000000
119	Site Preparation	1000000000	m3	1000000000	1000000000
120	Site Preparation	1000000000	m3	1000000000	1000000000

Bill of Quantities

# Trafford Park Line BIM





Any Questions...?

