



# Change a region to change a nation

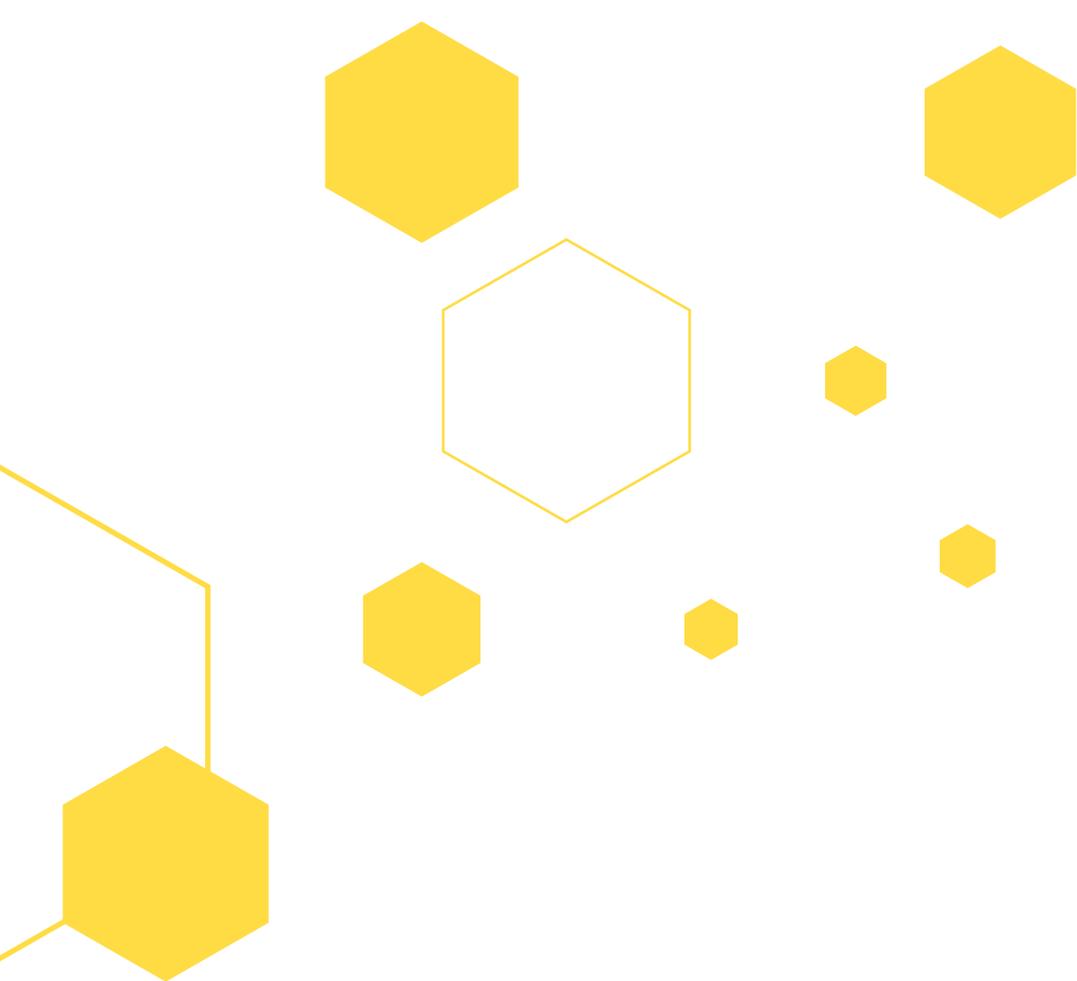
Greater Manchester's walking and cycling investment plan

January 2020

**ANDY BURNHAM**  
MAYOR OF  
GREATER  
MANCHESTER

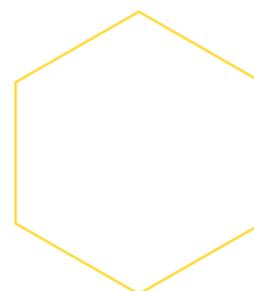
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MANCHESTER  
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AUTHORITY

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Greater Manchester



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Bee Network

**Walking allows me  
to enjoy more of  
my local area**

[tfgm.com/bee](https://tfgm.com/bee)



# Foreword

Last year I published 'Our Network' – a plan setting out everything we want to achieve over the next ten years to improve our public transport system and revolutionise cycling and walking.

I did so because a city-region which embraces sustainable travel is one that is a happier, healthier and more prosperous place to live.

The Bee Network sits at the very heart of this. The 1,800-mile network of walking and cycling routes will connect neighbourhoods, ensure children can make safe journeys independently and – most crucially – give people within our communities genuine choice about the way they make short journeys.

If we can get more people walking and cycling it will help improve our air quality, reduce congestion on our roads and do wonders for health and wellbeing.

Thanks to Chris Boardman, our Cycling and Walking Commissioner, the ten Greater Manchester districts and the communities within them, we now have a plan to deliver. Crucially it is a plan residents have helped design based on what they want their neighbourhoods to look like.

We have already made good progress. Last year we opened the first Bee Network scheme in Astley, near Leigh, with many more due for completion this year. Work has also started on several other schemes, like the groundbreaking Chorlton cycle scheme – a 3.4 mile route providing a high-quality segregated link between Chorlton and Manchester City Centre.

So we have a world-class plan and we know how to deliver it, but we cannot do it alone. We need the government to back us with sustained funding over the next ten years to enable us to complete the Bee Network. If they do so they will be helping create a model that can be replicated across the rest of the country.

Put simply, if they help us change our city-region, we can help change the country.

**Andy Burnham**  
Mayor of Greater Manchester



# A word from Chris Boardman

Over the past 12 months, public awareness of the climate crisis has led to a widespread demand for immediate and tangible action. We are now more aware than ever that the way we travel, using cars for even for the shortest of journeys, is one of the biggest contributors to the problem.



Private cars have become embedded in the very fabric of our society and it will be a hard habit to break. The Prime Minister described our car dependency as a “very, very politically difficult problem to solve”. Nevertheless it is essential we do so and quickly. Whilst it will be a challenging task, there is much cause for hope.

We have a Prime Minister who understands the huge harm caused by our car-centric culture and, more importantly, has firsthand experience, whilst Mayor of London, in creating a successful, large-scale alternative to driving.

The Cycle Superhighway network he spent eight years setting up in the capital demonstrated the huge benefits that can be derived by giving people a viable way to cycle their journeys. He provided proof it can be done and evidence that people prefer it.

His experience in London and role of Prime Minister, combined with a public demanding action on climate change, mean the timing is perfect to wean a nation off its automobile addiction. To do this, we must create more large-scale examples outside the capital, showing what less car-focused conurbations can be. We must demonstrate how this not only makes nicer places to grow up, get on and grow old, it also makes economic sense.

With 30% of all journeys less than one kilometre being made by car, Greater Manchester is ready to be one of those demonstration regions. And it has leadership eager to tackle the challenge.

Over the past two years, the Mayor of Greater Manchester, Andy Burnham, and the ten leaders of Greater Manchester’s local authorities have





demonstrated their commitment to the task. A plan for the largest walking and cycling network the country has ever seen has been created in record time, and £160 million pounds allocated from the government's Transforming Cities Fund to kick-start delivery. Each of Greater Manchester's ten local authorities has a significant pipeline of schemes that are being developed for delivery.

The mission, to give people in Greater Manchester an attractive alternative to driving, is well underway. However, even with this level of commitment and activity, eventual success is still not certain.

It will take at least 10 years and £1.5 billion to deliver the whole Bee Network and supporting services. This investment will be essential to ensure that walking and cycling play a central role in delivering Greater Manchester's vision for at least 50% of all trips to be made by sustainable modes of transport by 2040 (which equates to at least 1 million more sustainable trips on our network every day). The benefits of this switch, outlined in this document, will be enormous.

Greater Manchester courageously allocated the majority of its Transforming Cities Fund to drive this transport culture change; however, this equates to just 10% of what is needed. Despite this sizeable commitment, it is not enough and remains a time-limited fund. With local authority finances at breaking point, it is impossible to invest in the skills and training to deliver such a programme efficiently, without assurance of continuity.

Alongside Greater Manchester's commitment, a long-term funding settlement, such as the arrangement for London, is essential to ensure eventual success.

Greater Manchester leaders have shown their desire, vision and courage; they now need government to back them, by committing the remaining funds to enable the region to realise the dream. The evidence outlined in this paper demonstrates that it would not make economic sense to do otherwise.

This investment would return a benefit of at least four to one, returning £6 billion in public benefits. To put this in context, enabling a whole city-region to change the way they travel and tackle the health, social and air quality crisis (benefitting 2.8 million people every day) will cost the same as the amount already committed to a single junction improvement scheme in Bedford<sup>1</sup>. We know which investment will return the best outcome for the UK and, ultimately, our species.

We cannot afford to wait any longer to make the change in how we travel. Greater Manchester is ready to change itself and, in doing so, create an example for a nation. As Prime Minister Boris Johnson himself has said, "It's the right thing to do."

**Chris Boardman**

Cycling and Walking Commissioner  
for Greater Manchester

1 <https://www.transport-network.co.uk/Black-Cat-junction-to-go-triple-deck-under-14bn-scheme/15674>



Bee Network

**I cycle to the  
train station**

[tfgm.com/bee](https://tfgm.com/bee)

# Executive summary



Greater Manchester has set itself ambitious targets in the 2040 Transport Strategy to increase sustainable journeys by 50%, enabled by the delivery of this investment plan as part of 'Our Network'. Alongside improvements in public transport, this will create an additional 1 million more sustainable journeys every day, the majority of which will be made by walking and cycling. The economic benefit of these new trips – largely through improvements in health – is forecast to be £6 billion.

Market research shows that a significant proportion of Greater Manchester residents would use their cars less if the alternatives were more attractive. This means providing a safe and comfortable experience for walking and cycling through the provision of a network that is built to the highest standards, where danger on the road is reduced and a culture is developed where the car is not king. Improving access to bikes is also essential to ensure that every person has the opportunity to embrace more sustainable options.

Significant progress has been made since Greater Manchester's first Cycling and Walking Commissioner, Chris Boardman, was appointed. In his initial report to the Greater Manchester Combined Authority, 'Made to Move', he detailed the essential steps required for the city-region to see a step-change in walking and cycling numbers.

Following this, Greater Manchester's local authorities used innovative planning techniques to develop the Bee Network plan. Crucially this involved the people who live, work and travel in Greater Manchester, with wide-ranging public consultation to refine and improve the plan. At 1,800 miles in length, it will be the country's largest walking and cycling network, taking 10 years to deliver at a total cost of £1.5 billion.

Since its publication in 2018, Greater Manchester's local authorities have already developed a pipeline of high-quality schemes to be delivered over the next four years, with a value in excess of £500 million. When delivered, these schemes will enable 420 miles of the Bee Network, including 35 miles of Dutch-style cycle lanes.

Delivery has already begun, funded principally by the government's Transforming Cities Fund. However, the scale of the proposals developed across Greater Manchester has led to an initial funding gap of £215 million. Filling this gap would enable us to build the 82 high-quality schemes already in the pipeline; however, an overall investment of £1.5 billion is required to deliver the full Bee Network. This document sets out the case for the total investment – to be delivered over a ten-year period.

The Network will be supported by a range of vital activities to ensure the targets associated with this ground-breaking programme are delivered. Community engagement has been at the heart of the planning process and will be central to the development of all future schemes. This approach has allowed residents to have a say in the design of their local streets, empowering them to create safe, more liveable spaces for their children to grow up in.

Increasing access to bikes, partly through the new Greater Manchester Bike Hire scheme, will remove a key barrier to cycling for people unable to store or afford their own bicycle. This will be supported by a major review to reduce road danger, with the intention of delivering a strategy that makes significant progress towards zero road casualties.

This plan is achievable, and a priority for Greater Manchester, but could be delivered more efficiently and at a lower cost to the public purse. A number of asks which recommend changes to regulations, policy and local powers are made within this report, to ensure that any investment unlocks maximum value for money. Principal amongst these is a call for strong national design standards to avoid hundreds of millions of pounds being wasted on road 'improvement', which evidence confirms is both insufficient to make people feel safer – and in many cases, increases danger.

Greater Manchester is ready to partner with government to deliver these outcomes.

# 1. Introduction

Greater Manchester has the same societal problems as the rest of Britain: an obesity epidemic, air pollution issues and streets that are often clogged with motor traffic during peak hours. A massive contributing factor to this is the 200 million trips of under one kilometre that are made by car in Greater Manchester every year. This is the equivalent of a 15 minute walk or a four minute bike ride. 800 million trips by car are under 5 kilometres which is a comfortable 20-minute ride.

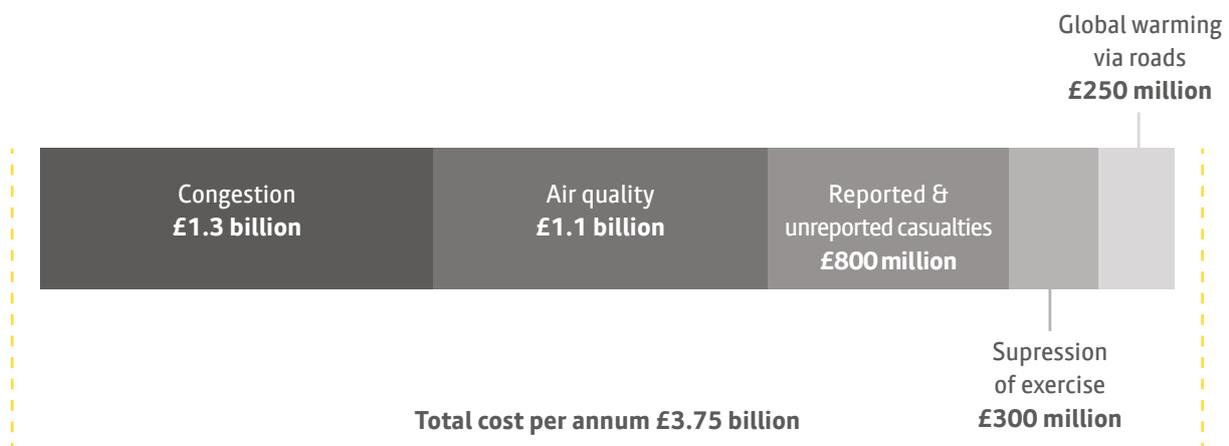
Contributing to climate change, congestion and poor air quality, this over-reliance on private cars for transport also contributes to significant external costs.

- Around two-thirds of adults in Greater Manchester are overweight or obese, and around 50% of adults in Greater Manchester are physically inactive, costing the local NHS over £500,000 every week
- More than 700 people are killed or seriously injured on Greater Manchester's roads every year, with around half being people who were walking or riding bikes, despite them making up just 4% of total distance travelled
- Congestion currently costs Greater Manchester £1.3 billion<sup>2</sup> annually, while air pollution contributes to around 1,200 premature deaths each year across the region<sup>3</sup>.

Evidence shows that Greater Manchester residents want an alternative to driving. Market research into customer preferences show that there is suppressed demand for active travel, predominantly due to current and perceived levels of road danger. 47% of the Greater Manchester population would cycle more if the conditions were better. This includes feeling safer on the road, more cycle routes and easier access to bikes. 21% of people said they would walk more if conditions were better, including more crossings and better-maintained surfaces.

Including those already walking and cycling, more than two thirds of people would walk and cycle more if they felt safer. In addition to this:

- 69% say our city-region would be a better place to live and work if more people cycled
- 76% of people would like to see more money spent on cycling
- 65% of Greater Manchester residents would find protected roadside cycle lanes very useful to help them cycle more
- 77% of residents support building more protected roadside cycle lanes, even when this could mean less space for other road traffic



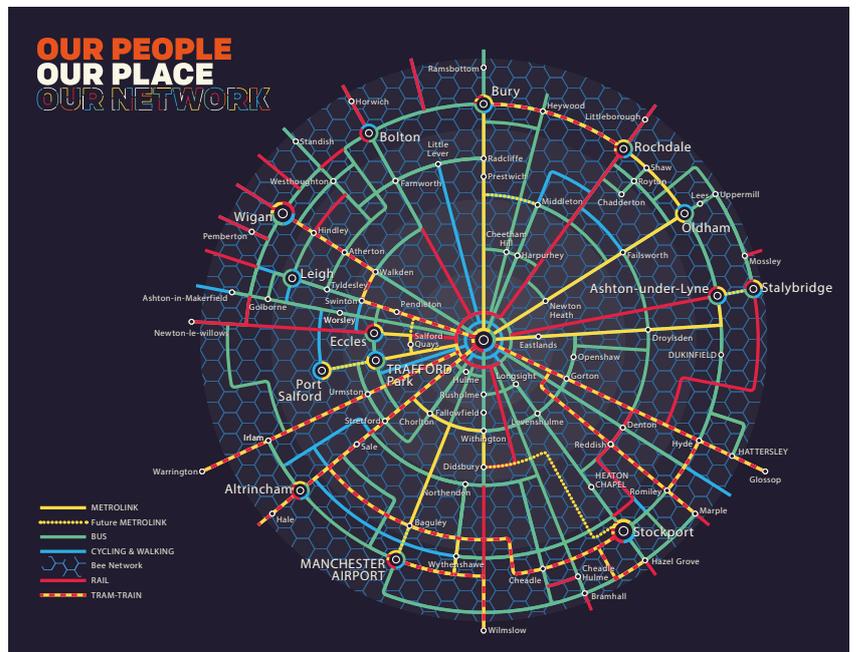
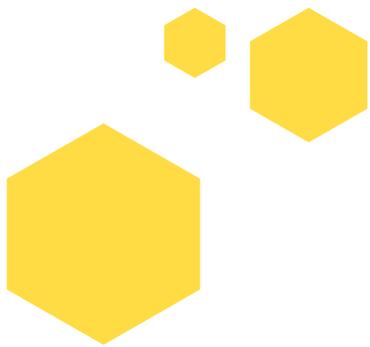
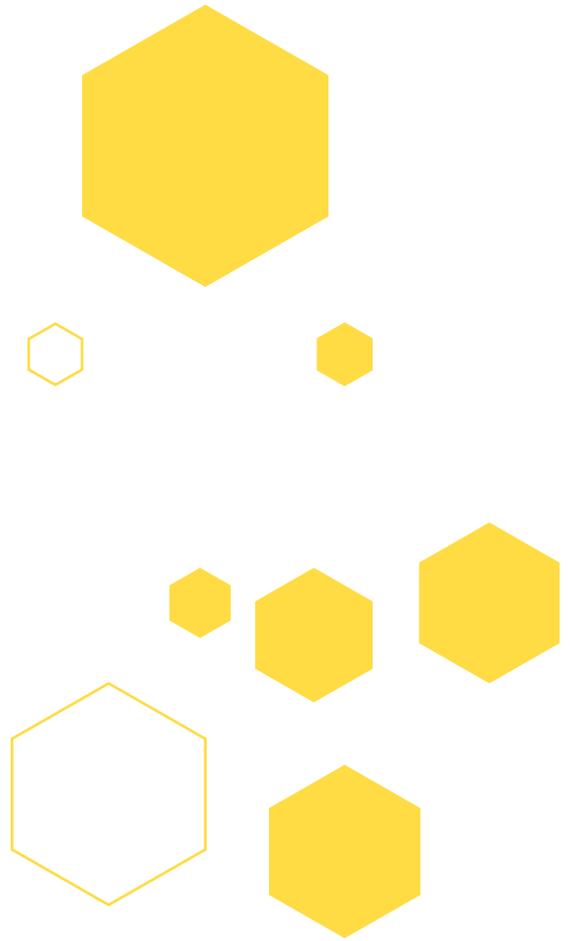
<sup>2</sup> <https://tfgm.com/news/congestion-conversation-closes>

<sup>3</sup> [https://assets.ctfassets.net/nv7y93idf4jq/1XtfykQs0g22g8cYCyAag/dee5732015f23c5df3a338afc2353b74/Made\\_to\\_Move.pdf](https://assets.ctfassets.net/nv7y93idf4jq/1XtfykQs0g22g8cYCyAag/dee5732015f23c5df3a338afc2353b74/Made_to_Move.pdf)



This investment plan provides details of how the Bee Network will support the delivery of 'Our Network': Greater Manchester's plan for an integrated, simple and convenient London-style transport system. It will allow people to change easily between different modes of transport, with simple affordable ticketing and an aspiration to have a London-style cap across all modes. This would include orbital routes that allow people to travel around the city-region, as well as in and out of the centres.

These activities will all work to deliver the Greater Manchester Transport Strategy 2040 which sets out a vision for at least 50% of all journeys in Greater Manchester to be made by walking, cycling and public transport by 2040



# 2. Comprehensive plan

To ensure every penny spent gives people what they have said they need to walk and ride more, a coordinated approach is needed across many areas. These include: an inclusive design process that lets local people influence where the network needs to go; high quality infrastructure that gives a constant sense of comfort; a danger reduction strategy that encourages safe behaviour by road users; and ensuring people in Greater Manchester have access to a bike for all or part of their journey.

Alongside this, a region-wide, targeted behaviour change programme to encourage people to try something different and to provide people with the skills they need to travel differently is essential. This section outlines how such a complex set of activities will be put into practice.

## 2.1 Greater Manchester Combined Authority

Since the Mayor of Greater Manchester was first elected, the Greater Manchester Combined Authority (GMCA) has consistently prioritised and supported the vision for active travel. Following the appointment of Chris Boardman as Greater Manchester's first Cycling and Walking Commissioner, his report 'Made to Move' was unanimously endorsed by the GMCA<sup>4</sup>. The GMCA then approved the allocation of £160 million from the Transforming Cities Fund to deliver walking and cycling infrastructure in line with the proposals in 'Made to Move' and the emerging Streets for All strategy<sup>5</sup>. Action has followed words with all ten Greater Manchester districts developing and delivering schemes<sup>6</sup> as outlined in this document.



Protected space on busy roads



Crossing point



Filtered neighbourhood

4 GMCA 15 December 2017 [https://democracy.greatermanchester-ca.gov.uk/Data/GMCA%20-%20Greater%20Manchester%20Combined%20Authority/20180126/Agenda/4\\_gmca\\_minutes\\_-\\_15\\_december\\_2017.pdf](https://democracy.greatermanchester-ca.gov.uk/Data/GMCA%20-%20Greater%20Manchester%20Combined%20Authority/20180126/Agenda/4_gmca_minutes_-_15_december_2017.pdf)

5 GMCA 29 March 2018 [https://democracy.greatermanchester-ca.gov.uk/Data/GMCA%20-%20Greater%20Manchester%20Combined%20Authority/20180427/Agenda/item\\_4\\_gmca\\_minutes\\_29\\_march\\_2018.pdf](https://democracy.greatermanchester-ca.gov.uk/Data/GMCA%20-%20Greater%20Manchester%20Combined%20Authority/20180427/Agenda/item_4_gmca_minutes_29_march_2018.pdf)

6 GMCA 25 November 2019 <https://democracy.greatermanchester-ca.gov.uk/documents/s4004/14%20GMCA%20Walking%20Cycling%20Report%2021%20Nov.pdf>





Bee Network

I cycle because  
it's quicker

7gen.com/bee

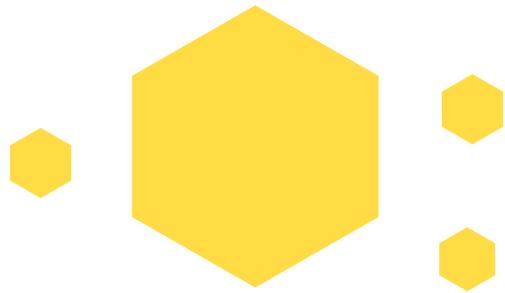


School Road, Sale (visualisation)



Park Bridge, linking Oldham and Ashton (visualisation)





## 2.2 Network planning

The Bee Network is the longest planned walking and cycling network in the UK and when complete, it will connect every neighbourhood of Greater Manchester. With continuous, high-quality provision for walking and cycling, people will have a viable and attractive alternative to driving, enabling them to leave the car at home, visit friends on foot or ride to the shops. This section describes the innovative way the network was planned and – with government’s help – how it will be delivered.

The network is made up of three core components:

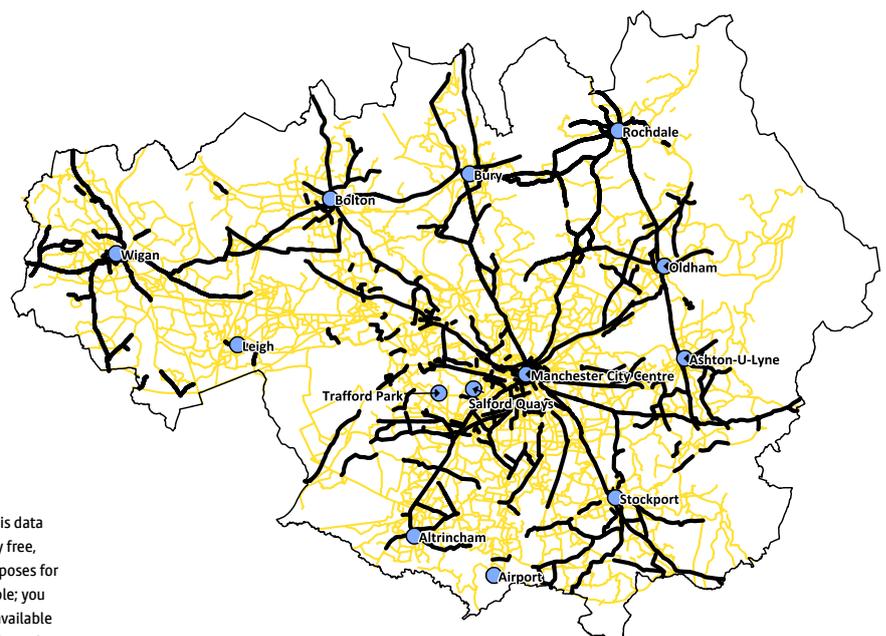
- Protected Space\* 435 miles of main road corridors and town centre streets with protected links, junctions and public realm improvements
- Removing points of severance† 2,400 crossings of busy roads or other points of severance to connect quieter streets, providing 1,397 miles of the Network
- Filtered neighbourhoods‡ 17 identified to date where walking and cycling is prioritised

Adhering to extremely high design standards and alongside a comprehensive wayfinding system, these elements will deliver a network that removes many of the barriers currently preventing the majority of Greater Manchester residents from walking and cycling for short, everyday journeys.

\*These corridors have been identified by district prioritisation, the LCWIP process and many are part of the Streets for All corridor studies project to identify improvements for walking, cycling, public transport and managing traffic.

†As these routes are quiet, little or no intervention will be needed to meet the required design standards for cycling, but measures such as crossings at all side roads and keeping footways clear of parked vehicles will be needed in order to meet the double buggy test for walking.

‡Where people travelling on foot and by bike can pass freely through but people driving must go around except for access for residents and visitors.



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## 2.3 Wayfinding

The Bee Network wayfinding system is based on the proven Knooppunten system used in the Netherlands and Belgium. This will visually connect quiet routes to and from the network. With strict adherence to agreed design principles, Bee Network signage will serve as a guarantee of a good riding or walking experience. Decision points will be found where two or more routes meet. People will travel along the routes following the vertical signs, which will show how long it will take to get to the next neighbourhood. It is worthy of note that the approach could be extended beyond Greater Manchester.



## 2.4 Design standards

The Bee Network is being delivered to the highest quality standards ever seen in the UK, based on the design principles outlined in 'Bee Network: Greater Manchester's cycling and walking infrastructure proposal' published in June 2018<sup>7</sup>. Our walking environments must meet the double buggy test, where a parent or a carer would feel comfortable, and would want to walk. This person also represents someone who may be partially sighted or in a wheelchair. For cycling, whatever is built must be something a 12-year-old would choose to use and their parents would have the confidence to let them. That 12-year-old also represents a pensioner, or someone who hasn't ridden a bike since childhood; all the people who could cycle instead of driving.

To ensure adherence to these rigorous standards, each scheme that makes up the network is subject to a Streets for All Check (currently in beta testing phase) before its full business case is approved. The Check is similar to the Healthy Street Check used in London; however, it has been expanded to provide a quantification of place making, as well as movement considerations. This important addition ensures approved schemes deliver for all users and that the needs of any one individual mode do not diminish the level of service quality for others. The Streets for All Check is still in development and is being tested on the first wave of schemes outlined in this document. The full version will be published as part of the Streets for All Strategy.

The Streets for All checklist is 74 different metrics (Appendix C) that ensure the factors in Appendix A are fully considered and accounted for in the design. A system of weighted scores are combined to give one overall measure of quality, presented in the form of a radar diagram as in Appendix B. In addition, a flagging system is used to indicate any critical safety issues. No scheme on the Bee Network can progress without first resolving any flagged critical issues.





Bolton Old Road (visualisation)



Stevenson Square, Manchester (visualisation)



## 2.5 Design guide

A Streets for All Design Guide is currently in development to provide technical guidance on highway engineering. This will be a critical tool to ensure consistency and quality are standard across the whole region.

## 2.6 Best practice Bee Network training

New principles, standards and ways of working require new skills. In response to this, a comprehensive training programme has been developed and is being delivered by some of the country's leading active travel experts. Throughout 2019, officers from Greater Manchester's ten local authorities took part in extensive professional development and to date have completed more than 5,000 hours of training. This pioneering programme has proved so useful it has been opened up to Greater Manchester's elected members, who are crucial to the success of local schemes, as well as officers in neighbouring authorities where routes cross boundaries.

## 2.7 Embedding a culture of walking and cycling

Without compelling reasons to try a new way of travelling and the means to do so, it is unlikely that investment in infrastructure will be fully realised.

Activities that have proven successful in changing travel culture, alongside a comprehensive network delivery, include community street events, school streets, skills training and mass participation rides, all underpinned by sufficient marketing activity. These local and regional activities give people an attractive reason to step outside their personal norm and discover something new.



Transport for London has instigated programmes which seek to engage the community through a combination of grants, campaigns, cycle training, partnerships, promotion of active travel for first/last mile trips, and to/from public transport hubs. Evidence from the capital and elsewhere in the UK is currently being used to inform Greater Manchester's behaviour change strategy.

Transport for London's total annual budget for these activities is approximately £15 million per year for a population of 9 million people (£1.60 per person). In Scotland, £9.5 million is invested annually in behaviour change, education advocacy programmes and projects (£1.70 per person).

In contrast, Transport for Greater Manchester (TfGM) currently invests £1.2 million annually in walking and cycling behaviour change initiatives for a population of 2.8 million people (£0.43 per person).

The learning from elsewhere suggests it is likely that a budget of circa £4.76 million (£1.70 per person) will be required for Greater Manchester.

A significant proportion of this funding will be administered by Greater Manchester's ten local authorities, who will tailor activity to match their residents' needs, and tie in with the delivery of Bee Network infrastructure. A resource toolkit, including training, is being created to support local authority partners, ensuring they are equipped with the required knowledge, information and best practice examples from around the world.

## 2.8 Increasing access to bikes

74% of households in Greater Manchester do not have access to a bicycle<sup>8</sup>, limiting their travel options. Greater Manchester Bike Hire seeks to address this issue and make accessing a bicycle more convenient. The first phase will provide public bikes within 500 metres of 100,000 households.

The scheme will be an important element of the 'Our Network' vision by providing an affordable and accessible transport option for short trips, first and last mile journeys and shrinking the size of town and city centres. In early 2020, Greater Manchester will seek an experienced partner to help design, build, operate and maintain the first phase of the scheme. The roll-out of the region-wide scheme will be phased. Phase 1 will focus on the regional centre which will help to develop the right model for a Greater Manchester-wide approach.

Complementary measures, such as bike libraries and bike giveaways, will also be used to make bikes more accessible to people who do not traditionally use bike hire schemes. This includes the existing TfGM and GMCA initiative, providing around 300 job seekers each year with a free refurbished bike for accessing employment and training.





Market Place, Leigh (visualisation)



Stamford Street, Ashton (visualisation)



## 2.9 Monitoring and evaluation

Greater Manchester residents currently make around 1.5m walking trips and around 122,000 cycle trips every day. This equates to around 233 walking trips and 18 cycling trips per person, per year<sup>9</sup>. Walking makes up around 27.7% of all trips and cycling makes up around 2.1% of all trips<sup>10</sup>. 14.1% of commuting trips by Greater Manchester residents are made on foot and 5.0% are cycled<sup>11</sup>. This compares to 61.8% of people who travel by car (the majority as drivers), and 16.8% who travel by public transport (11.5% by bus, 2.1% by train, and 3.2% by Metrolink)<sup>12</sup>. In total 26.2% of households in Greater Manchester have access to at least one bicycle<sup>13</sup>.

Walking and cycling levels within Greater Manchester will be tracked using data from the annual travel diary survey. Key indicators will include the amount of walking and cycling per person, per year, walking and cycling as a proportion of all trips, and the demographics of people walking and cycling. The proportion of people walking or cycling as their main mode of travel to work or school, and the proportion of Greater Manchester households with access to a bike, will also be tracked. Greater Manchester's travel diary survey has found that cycle trips by Greater Manchester residents are already increasing, with the number of cycle trips made residents by over the last four years (2015-2018) increasing from 31.8m to 44.7m<sup>14</sup>.

Attitudes and perceptions are also an important indicator of progress in making walking and cycling the natural choice for short journeys. The biennial 2040 Transport Strategy attitudinal survey (the Network Principles survey) will be used to track perceptions of provision for walking and cycling in Greater Manchester.

This will be supplemented with monitoring of the actual delivery of the Bee Network through key metrics such as the length of the network and number of crossings delivered across the region.

Bee Network schemes will also be evaluated to understand the impact they have had on a particular route or area. Whilst evaluation will be specific to each scheme, it will be based on a common logic-mapping approach. This assesses whether the design of each scheme delivers what it is expected to.

Bee Network schemes are expected to increase walking and cycling and contribute towards broader objectives like helping to improve health or reduce the impact of travel on the environment. Scheme evaluation will observe walking and cycling levels before and after implementation, and combine findings with other data to understand the effect of the scheme. Where appropriate, road danger will also be monitored through police collision data, supplemented with other sources to understand the source or level of road danger and trends over time.

As well as creating a step-change in provision for walking and cycling, the Bee Network is also expected to improve substantially our streets and public spaces. This will be measured at a scheme level through assessment methods such as the Streets for All check and perception surveys.

A monitoring and evaluation plan will be published in early 2020 and annual reports will be published to update on progress against identified targets.

9 TRADS Years 5-7 data, TfGM analysis.

10 TfGM. 2019. TRADS Household Travel Survey Expanded Results for Year 5, 6 & 7 July 2019, Table 4.2, p. 24

11 TfGM. 2019. TRADS Household Travel Survey Expanded Results for Year 5, 6 & 7 July 2019, p. 9.

12 TfGM. 2019. TRADS Household Travel Survey Expanded Results for Year 5, 6 & 7 July 2019, p. 9.

13 TfGM. 2019. TRADS Household Travel Survey Expanded Results for Year 5, 6 & 7 July 2019, Table 2.2, p. 6.

14 GM TRADS Years 5-7 data, TfGM analysis.





# 3. Community engagement

Community engagement has and will continue to be at the heart of transport planning. The techniques used in the last two years in Greater Manchester have built on best practice and introduced innovative new methods to increase the speed of development. Pioneering new public engagement through the district-led Neighbourhood Network Planning sessions (NNP method)<sup>15</sup> and community-led scheme development is increasing the deliverability of schemes by making them more popular than traditional, top-down approaches.

## 3.1 Neighbourhood network planning

The Bee Network plan was created by combining results from the NNP method, evidence from the Department for Transport's (DfT) Local Cycling and Walking Infrastructure (LCWIP) process, Greater Manchester's Streets for All corridor studies and public consultations.

The NNP method evolved from the 'area porosity analysis' in the LCWIP technical guidance<sup>16</sup> and the London Cycling Design Standards<sup>17</sup>. By identifying severance and using point interventions to overcome that severance, large parts of the existing road network which are already close to a suitable standard can be joined together. Crucially, the process involves local residents and officers, creating a strong sense of ownership and pride.

Alongside the process outlined above, the DfT's Propensity to Cycle Tool was used. In combination with other datasets such as the existing quality cycling provision and knowledge of historical/existing cycle flows, the network design was further enhanced.

The Bee Network plan brings together all of this evidence to guide Greater Manchester's approach to the delivery of walking and cycling infrastructure.

## 3.2 Enhancing the plan

The first version of the Bee Network was published in June 2018 and made available for public comment for a period of four months. Over 4,000 geo-referenced online comments were received from the public, as well as a large number of offline comments from public meetings and other forums during this period. The overwhelming majority of feedback (98%) was supportive.

The feedback fell into three categories: 56% was deemed likely to result in a change to the map, 40% provided information as to the quality of the route and would be kept on record to inform future scheme delivery and only 3% were deemed to have no relevance to the Bee Network. An updated network plan was then published in June 2019<sup>18</sup>.

15 Bee Network proposal, chapter 2 [https://assets.ctfassets.net/pa0g0kendylq/4arLoMhnSw64GIHkkSMJQk/9bb6717ecaff87a72ff87a9bc8da24aa/Bee\\_Network\\_proposal\\_FINAL.pdf](https://assets.ctfassets.net/pa0g0kendylq/4arLoMhnSw64GIHkkSMJQk/9bb6717ecaff87a72ff87a9bc8da24aa/Bee_Network_proposal_FINAL.pdf)

16 DfT LCWIP Technical Guidance [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/607016/cycling-walking-infrastructure-technical-guidance.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/607016/cycling-walking-infrastructure-technical-guidance.pdf)

17 TfL London Cycling Design Standards, Chapter 2 <http://content.tfl.gov.uk/lcds-chapter2-toolsandtechniques.pdf>

18 <https://tfgm.com/press-release/bee-network-tranche-five-announced>



### 3.3 Community consultation

Efficient scheme delivery relies on community support. This is usually obtained by ensuring a community has full knowledge of what is being proposed in their area and has a meaningful say in the proposals. To ensure this crucial foundation is laid can cost as much as 10% of a total scheme's costs. Nevertheless, to ensure the scheme is right for a community and that it is well supported, this is an essential step<sup>19</sup>.

Based on learning from other authorities around the UK, TfGM has produced a best-practice consultation guide. One of the guide's first recommendations is to ensure that the very first public engagement activities related to a scheme create the opportunity to discuss potential solutions.

The feedback is then used to inform the initial scheme design. This ensures local people feel they have a real stake in the process and subsequently a desire to see 'our' scheme succeed.

### 3.4 Community schemes

Manchester City Council's Levenshulme 'active neighbourhood' scheme<sup>20</sup> is an excellent example of a community group leading and working with the council. Engaging community groups in local meeting places helps everyone understand the shared objectives and find solutions that are suitable for their community. Community-driven schemes have also been supported in Stockport, Salford and Bolton with more in development across Greater Manchester.



19 Landor Links (2019) Liveable Neighbourhoods  
20 <https://levenshulmebeenetwork.commonplace.is>

# 4. Delivery

To deliver the full network within 10 years requires, on average, each of Greater Manchester's ten local authorities to complete at least 18 miles of the network every year. The total cost of delivering the network is estimated at £1.5 billion. To date, the pipeline of schemes in development exceeds £500 million. When complete, these will enable 420 miles of the Network.



## 4.1 Infrastructure costs

The cost of delivering Dutch-style segregated cycle lanes and junction improvements on main roads and in town centres is estimated to be £3 million per mile.

Of the new crossing points required, it is estimated that 30% will be signal crossing upgrades at £80,000 each; 20% will be new signal crossings at £140,000 each; 40% will be new parallel zebras at £60,000 each and the final 10% will be priority crossings at £50,000 each. This means the average price per mile of delivering the network, away from busy roads, is £100,000 per mile. There will also be the need for bridges to cross major points of severance such as motorways and railways, some of which are already in development.

To date, filtered neighbourhoods are averaging around £3m each depending on size; however the size and scale of these vary greatly from location to location.

## 4.2 Scheme identification

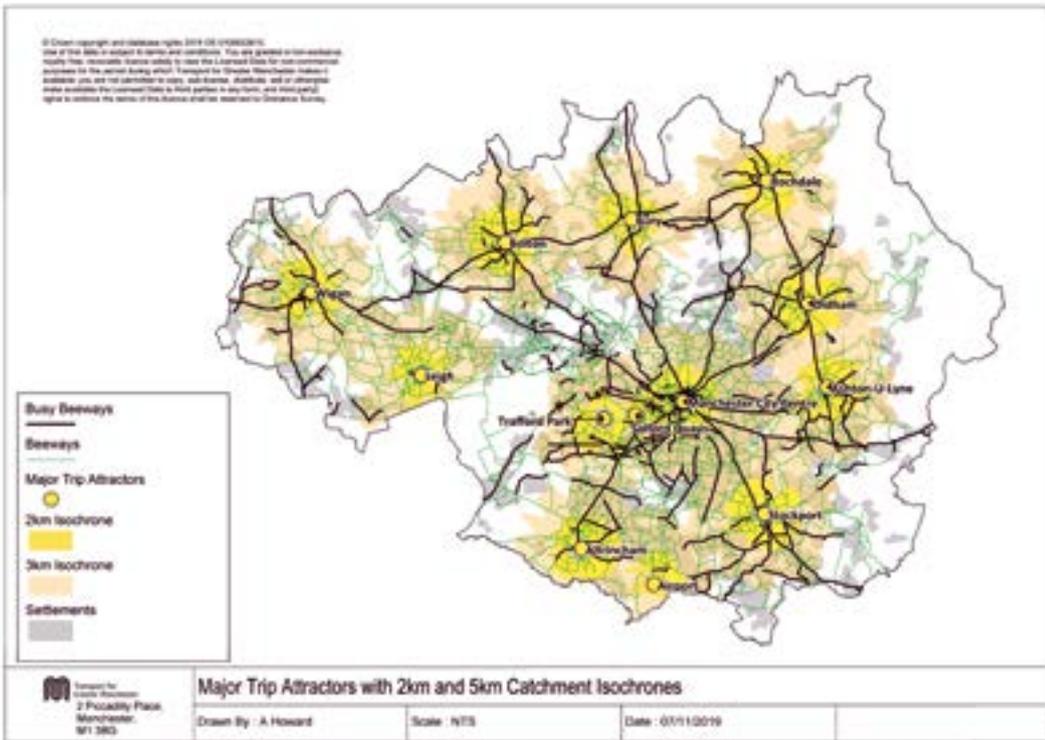
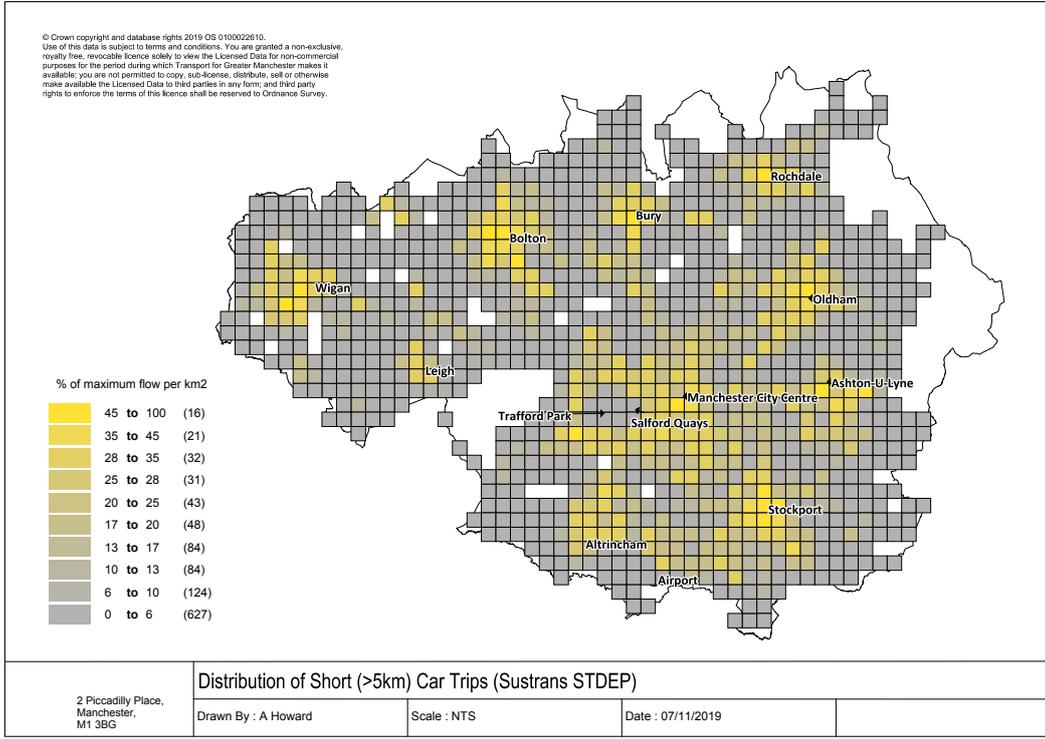
Scheme identification and delivery is undertaken by Greater Manchester's local authorities, with support from TfGM and the Cycling and Walking Commissioner. Guidance from DfT's LCWIP process has identified geographical areas that have the greatest potential for increases in walking and cycling trips. The dataset showing the number and location of short car trips is an indicator of areas with the greatest propensity for modal shift to walking and cycling.

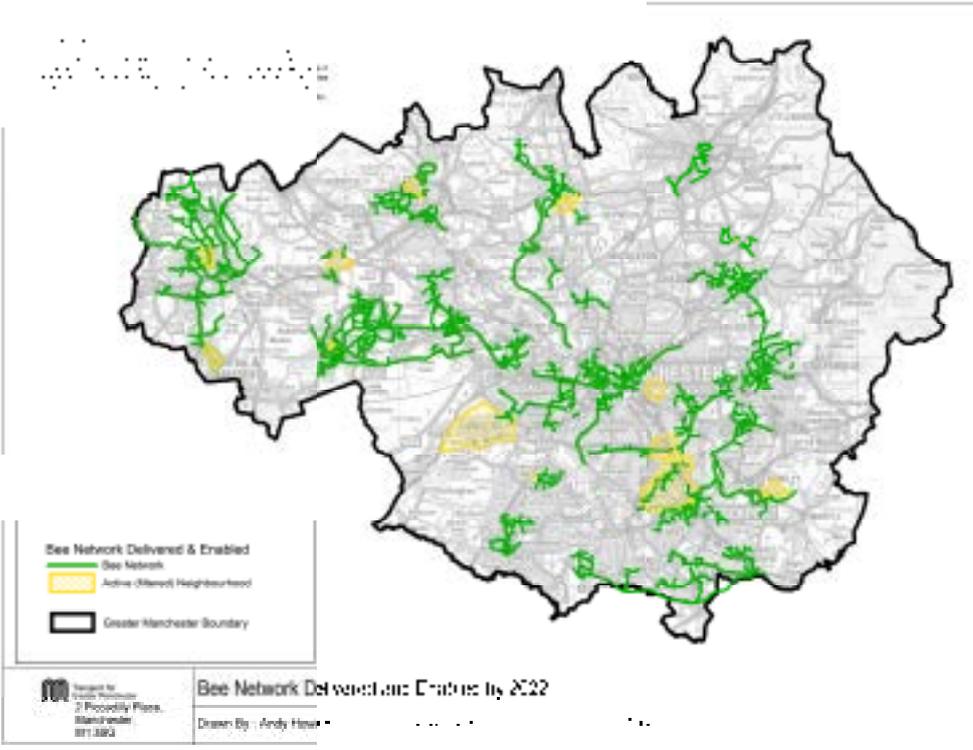
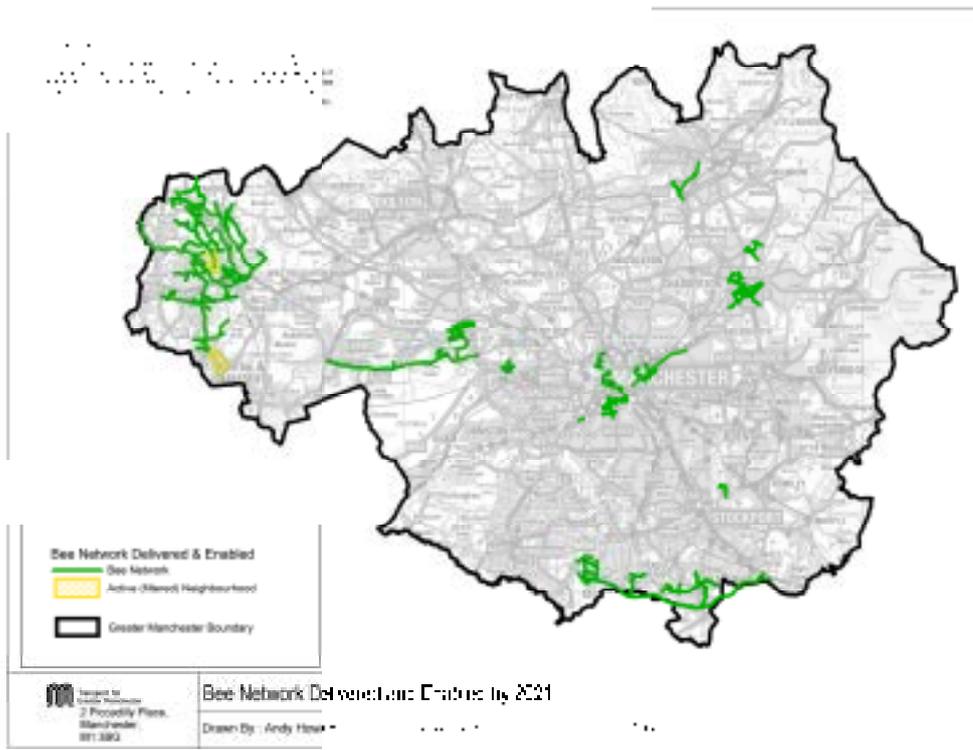
Thirteen 'major trip generators' in Greater Manchester have been identified on the basis of:

- highest population density
- employment density
- age profile of the population
- Propensity to Cycle Tool outputs
- 2011 census journey to work data
- short car trips
- public transport accessibility
- air quality
- land allocation, including both housing and commercial sites

These areas have been defined with catchments at 2 kilometres and 5 kilometres based on expected average trip length. Catchments were then adjusted for accessibility via the existing highway network to refine them further. The resulting zones incorporate the largest Greater Manchester district centres, the city centre, plus other major employment centres like Trafford Park, MediaCityUK and Manchester Airport. Whilst these areas have the highest potential to increase trips, Greater Manchester believes all residents should have easy access to the Bee Network no matter where they live.









## 4.3 Schemes

To date, the GMCA has granted programme entry for 82 schemes (Appendix D). The schemes have a total forecast value of around £510 million and a funding ask from local authorities for £375 million. With the existing available Transforming Cities funding, combined with local contributions (totalling £135 million), there is a funding gap of £215 million.

In total, these schemes will enable at least 420 miles of the Bee Network, including 35 miles of Dutch-style segregated cycle lanes, 20 bridges and major junctions and 815 new or upgraded crossings. The total length enabled does not include the 17 filtered neighbourhoods which are currently in development which will also deliver significant sections of the Bee Network.

Confirmation of the scheme elements and total network contribution will be confirmed on approval of the full business case. Further work will continue to identify which existing routes meet the quality standard so adding to the total network enabled.

## 4.4 Learning delivery lessons

The first 18 months of the 10 year delivery programme have yielded significant learning as to how development and implementation efficiencies can be achieved. Through varying our ways of working and reviewing existing governance arrangements, we have identified opportunities to bring forward the rate of delivery. These include streamlining decision making, supplementing resource levels across Greater Manchester and enabling pragmatic issue resolution. This evolution of working practices may end up being as valuable to Greater Manchester as the Bee Network itself.

# 5. Economic case for investment

The implementation of the Bee Network will not only improve travel across the region, it will also positively contribute to a number of related agendas, such as improved health outcomes, decarbonisation, cleaner air and reduced congestion – making Greater Manchester a better place to grow up, get on and grow old.

These factors, unique to active travel modes, are the reason investment in walking and cycling gives the highest possible value for money rating, a fact widely recognised and then equally widely ignored.



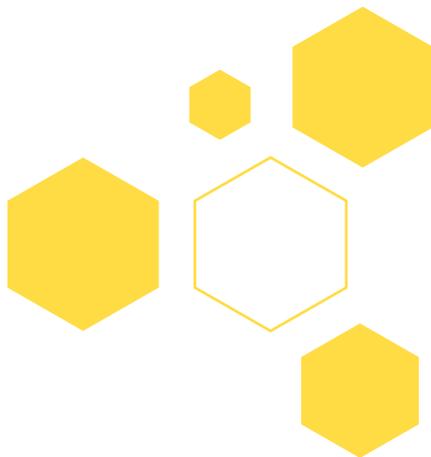
## 5.1 Economic appraisal

To demonstrate good use of public funds, the programme will follow Economic Appraisal best practice. This is done by assembling an evidence base to answer five key questions:

1. How will the investment support the delivery of strategic objectives?
2. How much will it cost?
3. How much societal value will be created?
4. How will the project be managed and delivered?
5. What commercial and legal arrangements need to be put in place to achieve delivery?

The monetary benefits of the Bee Network are mainly focused on improvements in health and productivity with a potential £6 billion benefit from a £1.5 billion spend. This is the highest possible 'Value for Money' rating in accordance with the DfT and HM Treasury 'Value for Money' ratings system.

In addition, each component of the plan is appraised thoroughly to ensure a good fit with other strategic objectives. An example of this is the Salford-Bolton Network Improvement scheme in Bolton town centre. This scheme will include a new CYCLOPS junction, a pioneering design that prioritises walking and cycling, whilst also improving journey times for bus users.

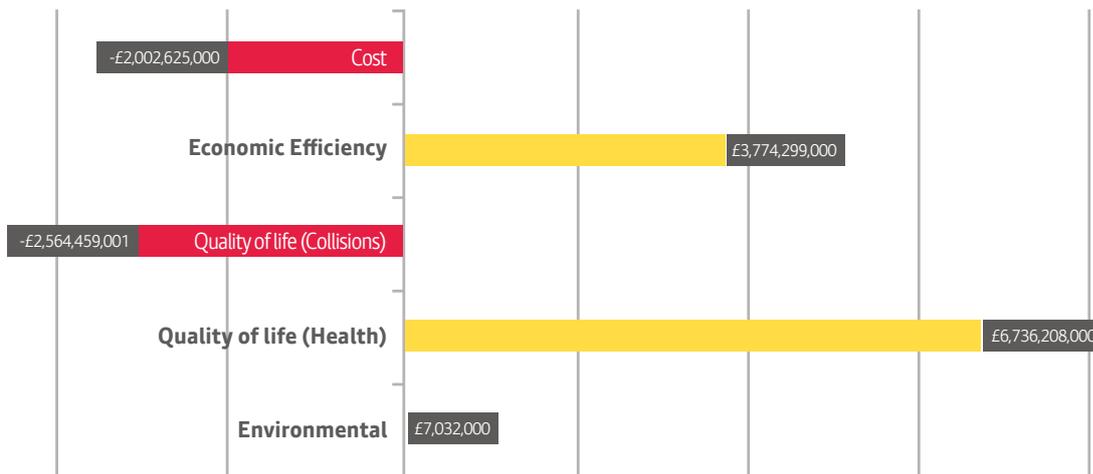


## 5.2 Economic benefits

The following chart summarises the monetised impacts of achieving new walking and cycling trips. The new trips attributable (within the economic case analysis) to achieving the 2040 mode splits compared with 'Business as Usual' are 2,050,000 minus 1,700,000 walk and 450,000 minus 110,000 cycle. These are attributed to the £1.5 billion investment programme to estimate the 'What if?' value for money story.

The new trips that would have happened anyway are 1,700,000 minus 1,480,000 walk and 110,000 minus 100,000 for cycle. All figures are quoted in 2010 values and prices.

**Monetised impacts**  
(2010 prices and values, discounted)



## 5.3 Costs

Costs are assumed to reflect a 10-year £1.5 billion programme of capital investment. A suitable allowance has been made for maintenance and renewal over an appraisal period of 30 years.

The Greater Manchester Transport Strategy 2040 lays out a target of 1 million more sustainable trips a day. This would mean a total of 2.5 million daily trips on foot and by bicycle, with walking trips increasing by a third and cycling trips doubling and doubling again from current levels. When these targets are achieved it will create approximately £6 billion of monetised public benefits in a number of different areas.

## 5.4 Health benefits

Physical activity has beneficial effects on many aspects of health. In particular, risk of death (mortality risk) is significantly less for those who are active compared with those who are not, and the value of this impact has been assessed to be £6.74 billion<sup>21</sup>. Those who are more active are also known to suffer less illness. These beneficial impacts of better health (often referred to as morbidity impacts) are not currently capable of direct monetisation but are estimated to add approximately 20% to the mortality benefit<sup>22</sup>.

Improved health of the Greater Manchester population is likely to release funds within the health system, which can either be saved directly or recycled into improvements in the range and quality of healthcare in Greater Manchester. These second-order impacts are potentially very substantial<sup>23</sup>.

Daily Trips	Walk	Cycle
<b>Today</b>	1,480,000	100,000
<b>2040 no change to mode split</b>	1,700,000	110,000
<b>2040 with more active travel</b>	2,050,000	450,000

21 The calculation is based on DfT Transport Appraisal Guidance Unit A5.1 Active Mode Appraisal section 3.2.1 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/712970/tag-unit-a5-1-active-mode-appraisal-may-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712970/tag-unit-a5-1-active-mode-appraisal-may-2018.pdf)

22 Cycling to work is associated with a 45% lower risk of developing cancer and a 46% lower risk of heart disease, compared to a non-active commute in [https://www.gla.ac.uk/news/archiveofnews/2017/may/headline\\_522765\\_en.html](https://www.gla.ac.uk/news/archiveofnews/2017/may/headline_522765_en.html)

23 Being inactive increases the risk of cancer, heart disease, stroke and diabetes by 25–30%, and shortens lifespan by 3–5 years in Wen CP, Wu XF. Stressing harms of physical inactivity to promote exercise. *Lancet* 2012, 380:192–193





## 5.5 Benefits to business

Walking and cycling will be increasingly important modes of access to Greater Manchester’s district centres, where greater levels of active travel will help to animate public spaces and go hand-in-hand with efforts to enhance the attractiveness of these locations. Such improvements to the urban realm will strengthen the economic vitality of these locations<sup>24</sup>.

Employees who cycle also provide direct benefits to businesses through reduced absenteeism; on average, cyclists take 1.3 fewer sick days per year than non-cyclists<sup>25</sup>. The monetised benefit of this impact has been calculated and is estimated to deliver savings of over £3.7 billion for Greater Manchester’s businesses.

## 5.6 Congestion benefits

Congestion has a direct £1.3 billion annual cost to businesses in Greater Manchester<sup>26</sup>. Nearly 200 million journeys under 1 kilometre every year are taken by car. Yet on the vast majority of A and B roads within the 5 kilometre catchments identified, cycling would not be significantly slower than the current average speed in the morning peak period<sup>27</sup>.

Shifting a proportion of short trips to active modes, such as the school run, would have a significant impact on congestion for those driving. A familiar example of how relatively small changes have a big impact is the traffic volume change during the school holidays. At these times, morning peak traffic drops by as much as 10%, cutting journey times on some routes by up to 50%<sup>28</sup>.

## 5.7 Environmental benefits

Every trip switched from a mechanised mode to walking or cycling will see a reduction in both local pollutants and greenhouse gases. 19% of new walking and cycling trips are assumed to be shifting from car and taxi. This assumption is considered to be at the low end of the scale but is aligned with national guidance published by the DfT<sup>29</sup>.

Using this assumption, environmental benefits to Greater Manchester will arise from the estimated 130,000 daily trips by 2040 that are expected to switch to walking and cycling from private car and taxi use. This equates to around 735,000 vehicle kilometres per day not driven, a reduction of around 1.5% of vehicle kilometres travelled in Greater Manchester.

The beneficial impacts of reducing greenhouse gas emissions, reducing vehicle-related noise pollution, improving local air quality and reducing congestion on the roads are estimated based on this reduction in vehicle kilometres.

Significant reductions can be achieved via the filtered neighbourhood approach. Waltham Forest Council has reduced the number of households exposed to higher-than-EU-recommended levels of nitrogen dioxide by 90% over 10 years – from 2007 to 2017<sup>30</sup>.

24 Living Streets Pedestrian Pound <https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf>

25 DfT TAG A4.1 3.2.16 suggests a 25% reduction in absenteeism for those that are active for 30 minutes a day compared with those that are not. This is based on research in the following two references: Van Amelsvoort et al (2006): Leisure time physical activity and sickness absenteeism: a prospective study 18 Lechner et al (1997): Effects of an Employee Fitness Program on Reduced Absenteeism

26 [https://assets.ctfassets.net/nv7y93idf4jq/1JkCTKjf3Gg4cCG6SMOQil/4de8eb327adb2c8fec2a654c6ce24c9/17-1821\\_GM\\_Congestion\\_Deal\\_2018\\_Final.pdf](https://assets.ctfassets.net/nv7y93idf4jq/1JkCTKjf3Gg4cCG6SMOQil/4de8eb327adb2c8fec2a654c6ce24c9/17-1821_GM_Congestion_Deal_2018_Final.pdf)

27 TfGM traffic master data

28 [https://assets.ctfassets.net/nv7y93idf4jq/1JkCTKjf3Gg4cCG6SMOQil/4de8eb327adb2c8fec2a654c6ce24c9/17-1821\\_GM\\_Congestion\\_Deal\\_2018\\_Final.pdf](https://assets.ctfassets.net/nv7y93idf4jq/1JkCTKjf3Gg4cCG6SMOQil/4de8eb327adb2c8fec2a654c6ce24c9/17-1821_GM_Congestion_Deal_2018_Final.pdf)

29 DfT TAG Databook v1.12, Table A5.4.7 <https://www.gov.uk/government/publications/tag-data-book>

30 <https://www.enjoywalthamforest.co.uk/blog-post/bold-actions-continue-to-reduce-the-dominance-of-cars-and-improve-air-quality/>



## 5.8 Community severance

Community severance is the separation of residents from facilities and services they use within their community. Severance is typically caused by transport infrastructure, but also by natural barriers (such as rivers) or other manmade structures and/or land uses (e.g. large industrial sites).

Severance is an issue where pedestrian or cyclist movement is impeded or where infrastructure presents a physical barrier to movement. In Greater Manchester, there are many instances where the scale of the streets infrastructure and the volume of traffic using those streets combine to make movement within local communities very difficult.

Three quarters of the Bee Network is delivered by installing or improving crossing facilities at points of severance. This impact is not monetised at a programme level but is captured at a scheme level. The value of reducing severance is believed to be significant and TfGM are working with UCL researchers to improve methods of capturing the value of reducing community severance caused by roads.

## 5.9 Collision impacts

The risk of being involved in a collision that can result in minor injury, serious injury or death is not equal between modes. Undertaking one kilometre of walking or cycling currently carries much greater risk of injury or death (KSI) than one kilometre of travel in a car, bus or train.

In addition to the fatal and serious injuries caused directly by road danger, the media coverage of incidents negatively affects people's perception and suppresses walking and cycling levels. In monetary terms, it has been calculated that left unchecked, the impact of the increased danger experienced by vulnerable road users to be -£2.56 billion over the 30-year appraisal period.

As safe walking and cycling infrastructure is rolled out and other safety initiatives are implemented to help make progress towards zero road casualties, it is anticipated that the collision rate will reduce. Nevertheless, Greater Manchester is unlikely to meet its transport targets without a marked reduction in road danger.

GMCA, Greater Manchester Police (GMP) and TfGM are undertaking a major review of current policy with the intention of developing a new strategy to tackle road danger. To implement the anticipated elements of the emerging strategy, additional roads policing revenue will be essential.

This is clear when making comparisons to other cities on a similar path. Transport for London provides significant funding to the Metropolitan Police Service Roads and Transport Policing Command. A total of 2,300 officers are available for road and surface transport duties. In contrast, Greater Manchester Police has approximately 150 officers available. Within Greater London the number of people killed and seriously injured has reduced by 37% over the long term average whereas in Greater Manchester there has been no significant change.





Bee Network

**I don't need a gym,  
I walk everywhere**

[tfgm.com/bee](https://tfgm.com/bee)

# 6. Unlocking potential

The plan for the Bee Network and all associated activity is robust and well evidenced. It is both achievable and is seen as a priority for Greater Manchester. However, with targeted changes to regulations, policy and local powers it could be delivered more efficiently and at lower cost to the public purse. This section identifies the specific areas where practical changes would allow the full potential for this investment to be realised.

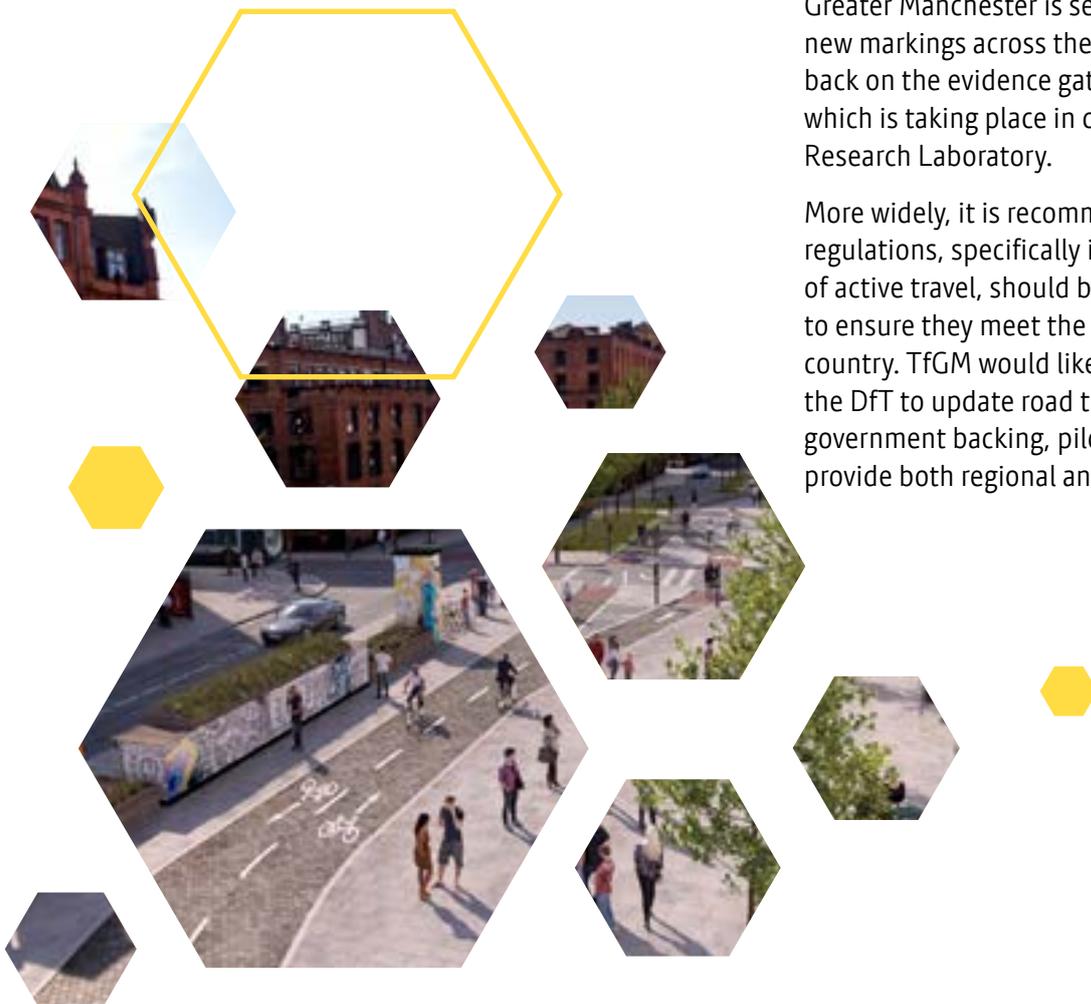
## 6.1 Regulatory changes

The UK has a centralised regulatory system for highways and no efficient way to innovate or trial new ideas at a time when rapid change in transport habits is required. To enable more people to walk and cycle we need a framework that enables innovation.

An example of this can be seen in Greater Manchester's desire to give priority to those wishing to walk when crossing side roads. Most other countries across the world use zebra crossings for this purpose; however, despite inventing the zebra crossing, their use in this way (at the mouth of side roads with no zig-zags or beacons) is not currently sanctioned in the UK. In addition, there is currently no easy way even to trial this established method.

Greater Manchester is seeking DfT approval to trial new markings across the city-region and will report back on the evidence gathered via the ongoing study which is taking place in conjunction with the Transport Research Laboratory.

More widely, it is recommended that traffic regulations, specifically in the rapidly-developing area of active travel, should be kept under constant review to ensure they meet the needs of cities across the country. TfGM would like to work collaboratively with the DfT to update road traffic regulations and, with government backing, pilot ideas with real promise to provide both regional and national solutions.





## 6.2 Fair traffic offence enforcement

Delivery of the Bee Network will reduce danger for people using it; however, significant enforcement work will be needed to normalise safe behaviour. Despite this being a recognised need, significant cuts to road policing budgets have led to a dramatic reduction in operations and a marked increase in road danger and casualties. Greater Manchester is proposing a practical strategy to self-fund the necessary enforcement activity to ensure people feel safe enough to leave the car at home.

It is recommended that the revenue from fixed penalty notices from road offences be kept locally and reinvested in road safety activity in the community where the offences are taking place. This approach would not only give local police forces the means to improve road safety, but it would also generate public support for such activity, where funds generated can be seen to be invested back into their community.

This strategy is already being utilised in Scotland where 19 local authorities are reinvesting the income from enforcement activities into public transport, car clubs and public parks. Greater Manchester would be happy to trial this approach with government.

## 6.3 New approaches to scheme appraisal

Building on a body of knowledge contained in the DfT transport analysis guidance (TAG), Greater Manchester has worked to develop an appraisal system to support the Made to Move programme that captures more comprehensively the costs and benefits of both streets and active mode schemes. TfGM has worked closely with the DfT and others nationally to develop and agree the innovative approaches embedded within this work.

Currently, economic appraisal methods are often applied in a way that does not take full account of the negative impacts of making private car use easier. There are also gaps in the methodology for valuing the benefits of walking and cycling. If the full impact of car-led development, particularly in urban areas, were to be fully factored into transport investment decisions, it would affect investment decisions, moving a greater proportion of funds towards investment that enables use of sustainable modes.

Appraisal methods are constantly evolving and TfGM will continue to be at the vanguard of these discussions, working closely with partners locally and nationally to ensure appraisal evidence used to support investment decisions is comprehensive and fit for purpose. Greater Manchester would like to trial this work in conjunction with the DfT.

Bee Network

**I walk because  
it's free**

[ifm.com/bee](http://ifm.com/bee)

Bee Network

**I cycle because it  
makes me feel good**

[ifm.com/bee](http://ifm.com/bee)



## 6.4 Design standards

Across Britain, hundreds of millions of pounds have been spent and continue to be spent on road 'improvement' projects which involve only painted cycle lanes to cater for cycling. Evidence now confirms this type of provision is often insufficient to make people feel safer. Recent studies show that in many cases, the white line approach can actually make people less safe<sup>31</sup>.

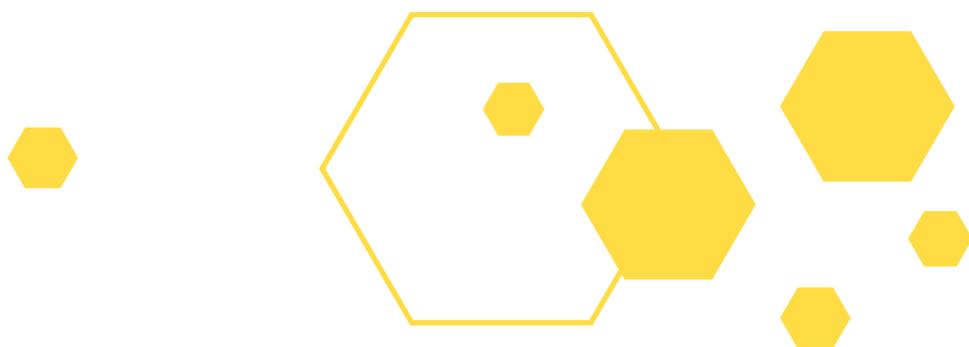
Greater Manchester is developing its own Streets for All design guide to ensure consistency and quality of scheme design across all modes. It would undoubtedly still be beneficial to Greater Manchester local authorities if there were national design standards endorsed by the DfT to give greater confidence to scheme promoters introducing design elements for the first time in their area. Investment in walking and cycling infrastructure should be contingent on meeting the latest safety standards. This will protect people and ensure value for public investment.

## 6.5 Long term funding settlements

In the last decade there has been a succession of initiatives that have helped make progress towards getting more people walking and cycling. Whilst these initiatives are welcome, their short-term nature has not enabled delivery bodies to invest in the specialist resources and expertise necessary to develop and deliver high quality schemes. It has added to cost and significantly increased delivery times.

Greater up-front investment in this area would improve efficiency and value for money in several ways. It would enable the retention of experience and specialised skills which are often lost when funding is tied to specific infrastructure projects. In addition, provision of longer-term funding gives the necessary confidence to the whole supply chain, leading to faster, more efficient delivery.

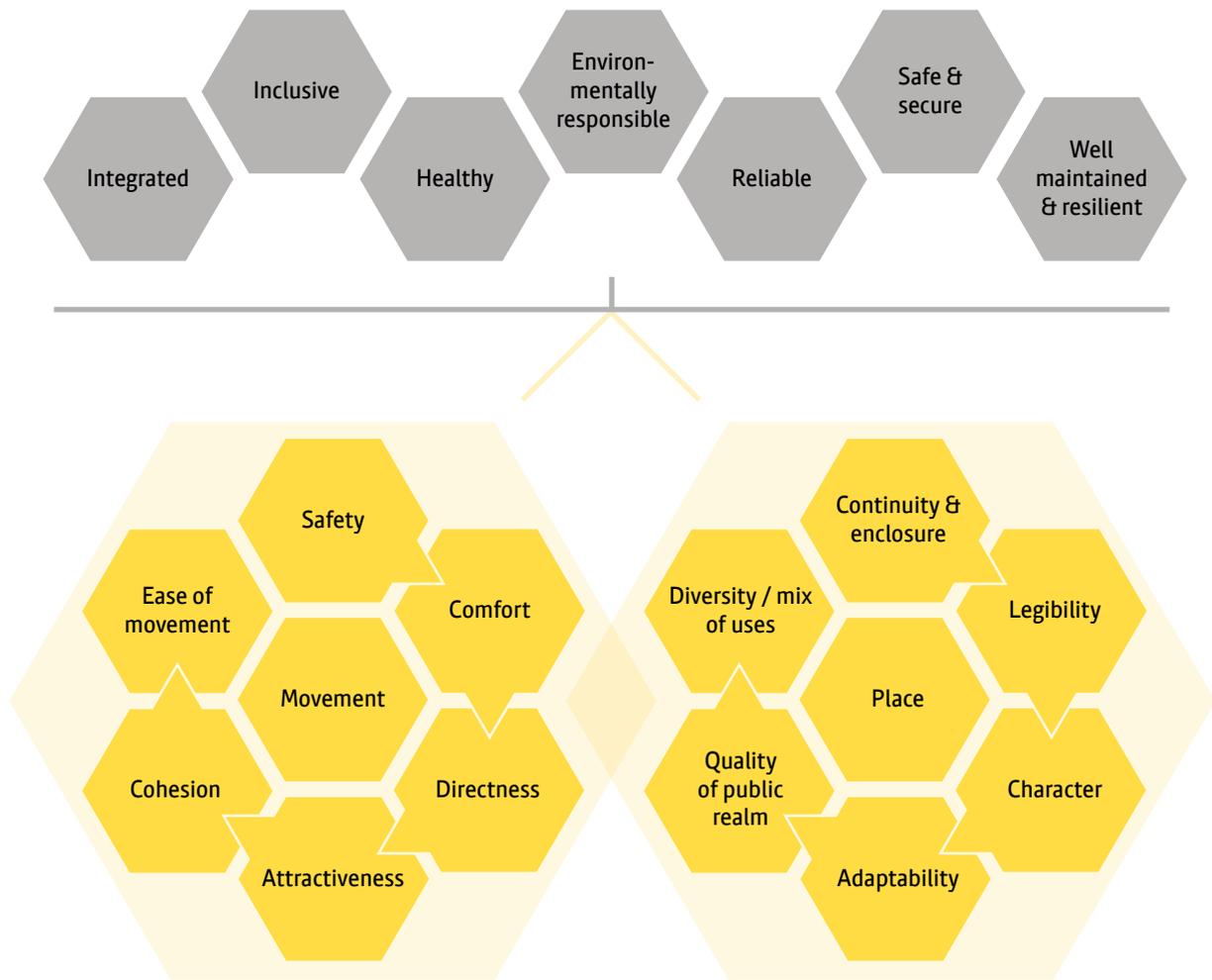
This position was endorsed by the National Infrastructure Commission, which called for long-term transport funding settlements for cities and city-regions.



31 Ben Beck, Derek Chong, Jake Olivier, Monica Perkins, Anthony Tsay, Adam Rushford, Lingxiao Li, Peter Cameron, Richard Fry, Marilyn Johnson. How much space do drivers provide when passing cyclists? Understanding the impact of motor vehicle and infrastructure characteristics on passing distance. Accident Analysis & Prevention, 2019; DOI: 10.1016/j.aap.2019.03.007

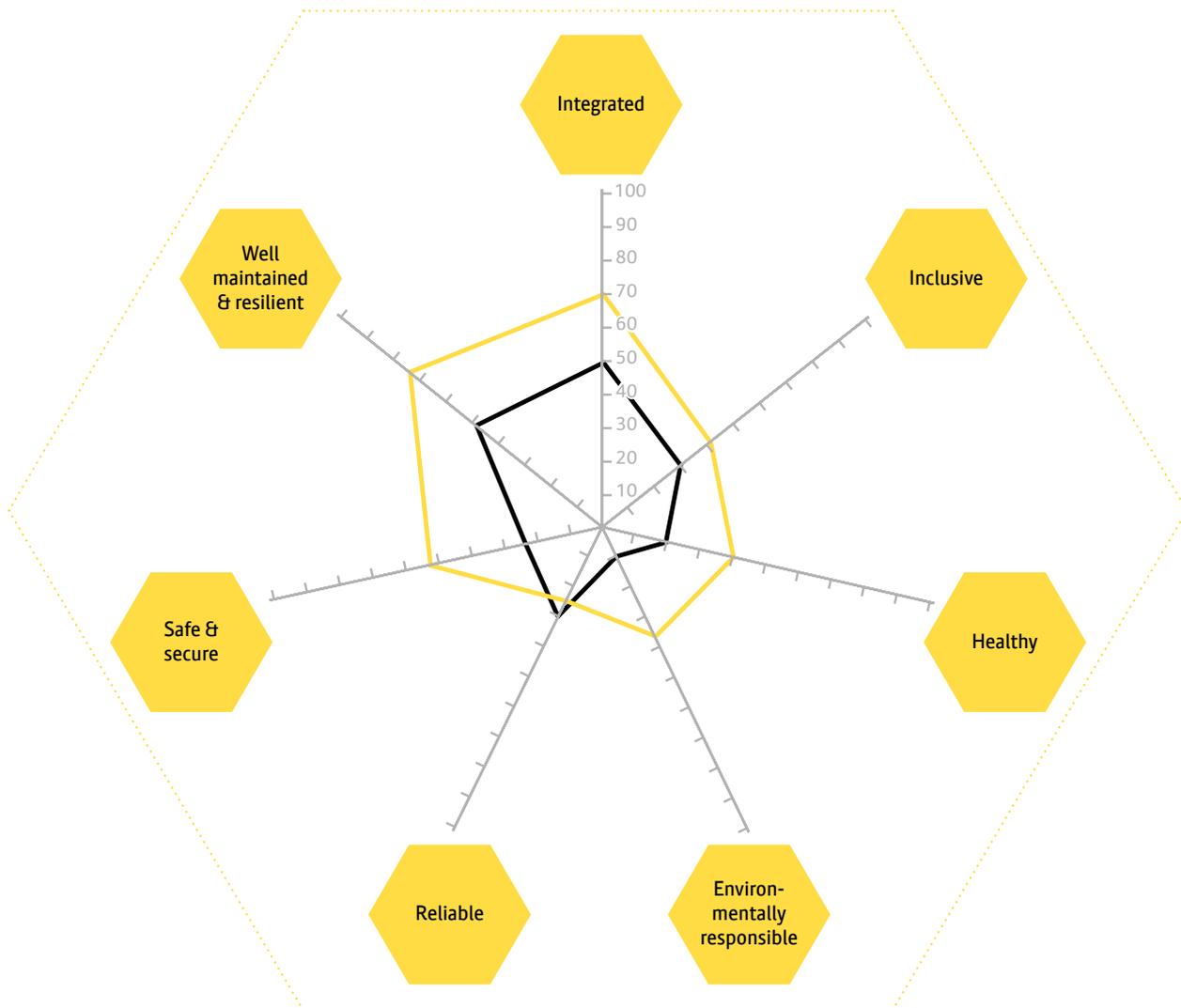
# Appendices

## Appendix A: Streets for All indicators and factors (beta testing phase)



## Appendix B: Streets for All check results page (beta testing phase)

**Key**  
 Existing layout ———  
 Proposed layout ———



Network principle	Existing layout	Proposed layout
<b>Integrated</b>	50%	70%
<b>Inclusive</b>	33%	43%
<b>Healthy</b>	20%	43%
<b>Environmentally responsible</b>	7%	36%
<b>Reliable</b>	29%	25%
<b>Safe &amp; secure</b>	26%	56%
<b>Well maintained &amp; resilient</b>	50%	76%
<b>Overall Streets for All score</b>	<b>66</b>	<b>109</b>
<b>Number of critical issues</b>	<b>7</b>	<b>1</b>

## Appendix C: Streets for All check metrics (beta testing phase)

1. Left/right hook at junctions
2. Collision alongside or from behind
3. Trip hazard
4. Kerbside activity or risk of collision with door
5. Kerbside activity or risk of crossing conflict
6. Other vehicle fails to give way or disobeys signals
7. Standard of crossing facility
8. Speed of traffic (where cyclists are not separated or pedestrians crossing uncontrolled)
9. Total volume of traffic (where cyclists are not separated or pedestrians cross uncontrolled)
10. Interaction with HGVs
11. Clear nearside space in secondary position or motor vehicle speed/volume in primary position
12. Clear continuous walking spaces free of obstructions and furniture
13. Defects: non cycle friendly ironworks, raised/sunken covers/gullies
14. Defects: non flush tables, misleading tactile information, cracked paving
15. Construction (footway)
16. Construction (carriageway)
17. Vertical deflections
18. Ability to maintain own speed on links
19. Crossing speed
20. Delay to cyclists at junctions
21. Delay to pedestrians at crossings
22. Deviation of route (against straight line)
23. Desire line crossing
24. Ability to join/leave route safely and easily
25. Walking distance between resting points
26. Walking distance between shelter points
27. Shared use
28. Measures taken to restrict the use of private cars
29. Bus stop connectivity with other public transport services
30. Factors influencing bus passenger journey time
31. Effective width next to tram line
32. Crossing angle of tramlines
33. Area porosity
34. Impact of highway design on behaviour
35. Bus stop accessibility
36. Uphill gradient over 100m
37. Street to station step free access



38. Building and amenity access
39. Impact of surroundings on natural surveillance
40. Ground floor activity from buildings
41. Spatial street syntax arrangement impact on activity
42. Signing
43. Smooth transition between modes or route continuity maintained through interchanges
44. Risk/fear of crime
45. Importance to society
46. Quality and distinction
47. Materials matched to surroundings
48. Facility can be expanded or layouts adopted within area constraints (walking)
49. Facility can be expanded or layouts adopted within area constraints (cycling)
50. Route matches predicted usage and has exceedance built into the design
51. Pedestrian Comfort matches predicted usage and has exceedance built into the design
52. Cover/exposure
53. Green infrastructure or sustainable materials incorporated into design
54. Does form follow function
55. Signing required to support highway layout
56. Ease of access to secure cycle parking on- and off-street
57. Standard of lighting
58. Efforts to curb poor motor vehicle behaviour
59. Isolation
60. Proximity to social space
61. Conditions for pleasant interaction
62. Street engagement for children
63. Noise level from footway
64. Resilience to extreme weather events
65. Sustainability of habitat for wildlife
66. Exposure to PM10 & NOX concentration
67. Proximity to PM10 & NOX concentration
68. Amount of trees
69. Sunlight penetration
70. Wind chill effect from street structure. X,Y,Z
71. Amount of planting
72. Technology to optimise efficiency of movement (pedestrians, cyclists, buses & general motor traffic)
73. Continuous provision: a route is only as good as its weakest link
74. Impact of on-street loading

## Appendix D: List of schemes with programme entry

Estimated completion dates are in brackets.

Final completion dates to be confirmed at full business case approval.

### Bolton

- B6226 town centre route (July 2021)
- Bolton town centre phase 1 (March 2022)
- Westhoughton (March 2022)
- Astley Bridge/Crompton (March 2022)

### Bury

- Cycle parking facilities on the Bury Metrolink line (January 2021)
- 16 new and upgrades crossings and junctions (March 2022)
- Bury Fishpool (March 2022)
- Radcliffe Central Bee Network (December 2021)
- Elton Bee Network (December 2021)
- Pimhole Neighbourhood Bee Network (December 2021)

### Manchester

- Manchester to Chorlton (February 2022)
- Active neighbourhood in Levenshulme (May 2021)
- Upgraded junction at Mancunian Way / Princess Road (May 2020)
- Rochdale canal improvements (September 2020)
- Piccadilly to Victoria (February 2022)
- Northern and Eastern Gateway (September 2021)
- Beswick Filtered Neighbourhood (August 2021)
- Manchester Cycleway (March 2022)
- Oldham Road (Inner Radial) (TBC)

### Oldham

- King Street bridge renewal (July 2020)
- Union Street West bridge renewal (September 2020)
- Park Bridge-NCN 626-Ashton under Lyne (August 2021)
- Oldham Town Centre Improvements (TBC)
- Chadderton Pedestrian and Cycle Access Improvements (May 2021)
- Higginshaw Link to Royton (September 2020)
- Royton Town Centre (TBC)
- Chadderton Broadway Canal (TBC)
- Park Road-NCN 626-Town Centre Connection (June 2021)

### Rochdale

- Castleton to Rochdale town centre route phase 1 (January 2021)
- Castleton to Rochdale town centre route phase 2 (March 2021)
- Rochdale/Manchester/Oldham (March 2022)

### Salford

- Chapel Street East phase 1 (February 2021)
- Swinton and Walkden junction improvements (June 2021)
- Broad Street / Frederick Road junction improvements (August 2020)
- Trinity Way / Springfield Lane junction (May 2021)
- Swinton Greenway traffic free route (September 2021)
- Monton access improvements (October 2020)
- Trafford Road cycle track, walking route and fully protected junctions (January 2022)
- Barton aqueduct – traffic-free route between Salford and Trafford Park (December 2021)
- Liverpool Street cycling and walking corridor (November 2021)
- Active neighbourhood in Ordsall (June 2021)
- Salford City Centre package (August 2021)
- RHS Bridgewater links (April 2021)
- Innovation Triangle (February 2022)



## Stockport

- Welkin Road – Town Centre Severance Package (March 2021)
- Gillbent Road crossing enhancement (June 2020)
- Hazel Grove access improvements (December 2021)
- A6 to Manchester Airport Relief Road links (March 2021)
- Hazel Grove and Bramhall link (December 2021)
- Cheadle crossing improvements (June 2021)
- Heatons Link (March 2022)
- Ladybrook Valley (March 2022)
- Stockport interchange cycling and walking elements (March 2022)
- Heaton Norris Park Bridge (March 2022)
- Hempshaw Lane (March 2022)
- Romiley Neighbourhoods and Links (March 2022)
- Thomson Street Bridge (TBC)
- Heatons Filtered Neighbourhoods (TBC)

## Tameside

- Package of new routes and filtered neighbourhoods (June 2021)
- Crown Point, Denton (January 2022)
- Ashton West Retail Centre Link Bridge (March 2022)
- Ashton Streetscape Scheme (March 2022)
- Ashton South (October 2021)
- A57 Denton to Hyde (July 2021)

## Trafford

- Talbot Road, White City Way to Seymour Grove (April 2021)
- Talbot Road junction upgrades (July 2021)
- Wharfside Way – Moss Road (January 2021)
- Sale to Sale Moor to Sale Moor Water Park (May 2022)
- Urmston Area Active Neighbourhood (March 2022)
- Seymour Grove (June 2022)
- North Altrincham Bee Network (May 2021)

## Wigan

- Victoria Street / Warrington Road junction (October 2020)
- Standish Mineral Line traffic free route (October 2020)
- Bridgewater canal improvements (Completed)
- Gidlow Lane crossings – Wigan central (December 2020)
- Leigh, Atherton and Tyldesley network (September 2022)
- Standish to Ashton (October 2022)

## Greater Manchester

- Bike hire scheme (March 2022)
- Safety camera digitisation and upgrade (March 2022)
- Active neighbourhood support (March 2021)
- National Cycle Network Upgrade (December 2021)
- Bee Network Crossings Package 1 (TBC)





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