

Bee Network Safety Plan

2025



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Foreword

Vernon Everitt, Transport Commissioner

The Bee Network is transforming how Greater Manchester moves, bringing together buses, trams, walking, wheeling, cycling, and ultimately local rail into a fully integrated system. We have designed the Bee Network for the people and businesses of our dynamic, fast-growing city-region.

Efficient transport is paramount for economic growth. By improving connectivity, we enable higher productivity, better access to homes and jobs, and wider opportunities for everyone across Greater Manchester. Our entire network has been purposefully designed to maximise economic potential while ensuring Greater Manchester is an inclusive, accessible place to live and work.

We want the very highest safety standards for the Bee Network. The safety of everyone who uses and works on the Bee Network is, and always will be, our top priority. We're committed to delivering the very best standards for everyone and central to this is our Bee Network Safety Plan, which supports the long-term Vision Zero ambition: to eliminate deaths and life-changing injuries on Greater Manchester's roads by 2040.

This is a network built around people - not just the infrastructure. I'm incredibly proud of what we've achieved to make it a success. We know this is just the beginning. Our commitment to continuous improvement and safe operations is absolute, and we'll keep evolving to meet the needs of our communities and businesses as we play our part in the Safe System.





Executive summary

Greater Manchester's pioneering public transport and active travel system – the Bee Network – is a shared enterprise, involving all those responsible for its delivery, as well as all those who live, work and travel in the city-region.

We understand people's safety is critical to the Bee Network's success, and fundamental to all we do now and in the future, and we're committed to working with our partners to make our transport system the safest in the world. We've also got ambitious plans to expand safe, sustainable and active mobility and transport across our region.

That is why we have created the Bee Network Safety Plan (BNSP), which represents our shared ambition to make the Bee Network safe for everyone. It sets out our commitments and associated actions over both the short and longer-term, and has been created with the Safe System in mind - the internationally endorsed model of best practice. Our BNSP has also been designed as an extension of our Vision Zero Strategy to 2040, with safety at the heart of everything we do – enabling safe journeys across all modes of travel.

As part of our ambitious Vision Zero Strategy, we are committed to halving the number of deaths and life-changing injuries on our roads by 2030 and eliminating

them completely by 2040. We're working closely with our partners to ensure safety is at the centre of all we do. We have agreed an action plan which is summarised in this report, which identifies safety measures to reduce risks for the Bee Network trams, buses and active travel modes across Greater Manchester. Plans are underway for bringing rail into the Bee Network, and will be considered in the Bee Network Safety Plan as rail integration progresses in the future.

Having successfully brought buses under local control within Greater Manchester, now is a crucial time to ensure bus passengers feel safe travelling across the Bee Network. However, the BNSP does not stop at bus travel, instead it spans multiple modes of travel. Prioritising safety for all those travelling within Greater Manchester will help secure the Bee Network's future, strengthening its chances of future expansion and the broader wellbeing of those using it across the city-region.

We recognise that as we expand the Bee Network further, ensuring that passengers feel safe when travelling will be vital to encouraging more people to use our services and making sure the Bee Network is the natural choice for travel in our region.



This plan represents an opportunity to formalise our commitments to safe walking, wheeling and cycling as a non-negotiable goal of the Bee Network and highlights the key areas where we and our operators continue to manage safety for the tram system. We are actively adopting best practice measures. Taking learnings from various transport modes, notably the light rail industry, which is regulated by the Office for Rail and Road. In Greater Manchester we recognise more is achieved when we work closely with others in developing the evidence and business cases for safety; learning from what has worked elsewhere and applying those lessons.

Engagement with key delivery partners confirms that Greater Manchester is well positioned to reduce harm holistically across the Bee Network. Safe travel is intimately connected to tackling shared challenges around the operation of all parts of the network. Our shared commitments to both Vision Zero and the Safe System, which acts as the vehicle to deliver and guide

implementation have come together in recent years to build shared understanding and organisational co-ordination. Based on this solid foundation, we're building a culture of shared responsibility where safety is a priority for all those who operate, manage, design and use the Bee Network.

This is our first Bee Network Safety Plan, which will drive the work and focus on safety over the coming years. We will continue to regularly review progress against commitments set out here but also recognise that effective delivery takes time and considerable resource across the entire network. We're committed to improving safety within the Bee Network as quickly and as effectively as possible. When rolling out the safety measures a strategic approach will be adopted, prioritising programmes of work that are nearing completion and where actions can make the most significant safety improvements.



Safe Streets:

The Bee Network began as a vision for safer walking and cycling and has grown into providing a safe environment for all including tram and bus travel. We recognise the importance design, infrastructure and route dynamics play in minimising the potential for danger, creating a safe space for people to travel. In the short and medium-term, we are committed to implementing measures with proposed safety enhancements to new and upgraded bus corridor schemes, as well as publishing new bus operational and design guidelines. Continued work on tram and bus safety audit schemes and operator reporting programmes are in place, as well as reviewing and assessing how all modes of transport interface with each other as part of the integrated Bee Network.

Safe Road Users:

The Bee Network will continue to promote safe travel and work towards continuous improvement and the promotion of a safety culture amongst bus and tram drivers, as well as engagement with members of the public who use and interact with the network, and those who walk, wheel and cycle.

This includes the launch of new Certified Professional Certificate (CPC) training modules for Bee Network bus drivers and the introduction of a new audit programme for bus operators, which is already established within Greater Manchester's tram system and its effectiveness has prompted the same system to be used for buses. Enhanced safety protocols will also be introduced, as well as continued efforts to support behaviour change through public campaigns to support safe behaviour by all road users in order to build trust in the Bee Network. This is in line with our Bee Network active travel initiatives and GM Moving in Action Strategy. Over the long-term we will continue to trial behavioural measures based on evidence of efficacy, alongside our own evaluations. Safe and responsible user behaviour is a cornerstone of our no tolerance approach to behaviour that risks the safety of others using the Bee Network.





Safe Speeds:

The Bee Network will continue to facilitate management of safe speeds across the network, reducing both the likelihood and severity of incidents. Our focus is on protecting the most vulnerable, so that everyone can feel safe when travelling within Greater Manchester and benefit from our integrated transport system.

For buses, this will include introducing new measures so that new and revised Bee Network bus routes prioritise lower speed limit roads, especially in urban areas where routes are used by multiple transport modes, alongside higher pedestrian numbers. We will continue to proactively monitor and manage speeds in partnership with operators, strategically utilising new route planning powers and embedding a culture of transparent monitoring and reporting on speed profiles when appropriate.

For trams this includes delivering a new overspeed protection programme; providing on-board equipment and detection systems to support prevention of tram-overspeed in high-risk areas across the entire network.

Safe Vehicles:

The Bee Network will continue to implement a variety of vehicle design and in-vehicle safety measures proven to be effective for our buses and tram. Rail vehicles are not within the remit of the Bee Network.

For buses, we will begin the implementation of our new Bus Safety Standard and Direct Vision Zero Standard for Greater Manchester, as well as completing a review of in-vehicle safety technologies suitable for Bee Network operator buses. Embedding safety features across our bus fleet, alongside ongoing renewal and procurement processes, will take considerable planning and management. We will ensure we align to best practice and learn from the experiences of our tram system and other similar authorities in developing and implementing public fleet vehicle safety measures.

For trams, TfGM and tram operators both have an established safety management process with compliance to the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS), regulated by the Office of Rail and Road (ORR), ensuring our trams and their associated infrastructure are operated and maintained as safely as reasonably practicable.

For active travel we will continue to supply and enable access to safer cycling by working with industry and Government to provide products such as e-cycles for hire, potentially e-scooters for hire, and, similar schemes where individuals and groups can access cycles that are compliant with all relevant legislation.

Post-Crash Response:

The Bee Network will continue to ensure that measures are in place, and continually improved, to support post-collision response outcomes and for any other operational incidents involving our buses or trams. This component places a strong emphasis on prevention of incidents. We will continue to enable collaborations and forums with operators to ensure standardised systems are developed and followed to monitor, report and publish collision and incident data to inform regional intelligence. Over the long-term we will look to leverage insights collected by operators to support emergency response capabilities and planning across our region.

For our trams, the Rail Accident Investigation Branch (RAIB) independently investigates incidents, accidents and near misses, depending on severity - providing recommendations to TfGM, operator and the wider industry. The ORR will also provide independent review as required.

The Bee Network Safety Plan is a shared vision, reflecting our view that delivery is best achieved by dedicated individuals, organisations and communities working in partnership with one another. Whilst the Bee Network continues to deliver accessible, seamless, affordable and sustainable mobility for the people of Greater Manchester, road safety is and will continue to be a key marker of its success. As we deliver the UK's largest walking, wheeling and cycling network together, alongside accelerating the expansion and integration of public transport, safe journeys will be at the heart of our ambitious plans now and in the future.



Our Bee Network Safety Plan: Introduction

This is our Bee Network Safety Plan (BNSP) which sets out our ambitions to make the Bee Network - Greater Manchester's fully integrated transport system - one of the safest transport systems in the world. The Bee Network includes services that we own, operate, manage and commission. This includes elements such as our cycle hubs, cycle hire, bus services, interchanges, stations, tram services, and more as we start to integrate further with rail.

As part of the Vision Zero Strategy, we're committed to achieving zero fatal and life changing injuries across the network by 2040: the only acceptable long-term goal for transport safety in our region. As with our Vision Zero Strategy and Action Plan, the Safe System will guide our collaborative efforts to achieve this.

Ensuring that the Bee Network is safe for everyone, both now and in the future, is our number one priority and imperative for its continued growth and success. Having a safe network is a crucial aspect of attracting more users and it is only through high levels of usage that the Bee Network can enable Greater Manchester to be a thriving, fair, and sustainable city region, where everyone can live a good life.

The Bee Network's status as a fully integrated transport system means seriously we can develop a safety plan that spans the whole network. This plan calls on strategic local innovation, as well as using learnings and best practices from outside the city-region. This plan adopts both new and emerging best practices, alongside well tested and established measures that don't re-invent the wheel.

Our Bee Network Safety Plan has been specifically designed in a way that reflects this view - that innovating together and applying learning in an integrated way is the way forward.

This plan outlines both short-term and longer-term commitments with our operators. As the first Bee Network Safety Plan, we recognise that delivery of a safe Bee Network is a significant undertaking for Greater Manchester and all partner organisations and operators involved. It is therefore important that we plan for what are immediate priorities (12 months) and longer-term priorities (3 years) and beyond. Naturally, it is envisaged that we will update and review the Bee Network Safety Plan as we progress with its implementation. This plan is intended to build on existing successes and enhance the safety of the Bee Network as a central priority for Transport for Greater Manchester and its delivery partners in the years ahead.

The publication of this Bee Network Safety Plan comes at a pivotal time for Greater Manchester. Earlier this year, the third and final phase of bus franchising took effect, bringing a multi-year process to an end with all bus services and routes now under public control in the region. We are the first region outside of London to do this, and as we continue to deliver a Bee Network that provides safe, secure, and sustainable transport options for the people of Greater Manchester, we believe now is the time to follow up this significant milestone with a practicable plan of action for its safe use and operation.

Our approach will be a holistic and joined up exercise across the Bee Network. We will continue to make the most of the opportunities afforded by the work of all partners, creating a safe network today, and in the years ahead.

What is the Safe System?

To achieve Vision Zero on our roads, Greater Manchester adopted the Safe System through our Vision Zero Strategy and Action Plan¹. The Safe System is internationally recognised as best practice across the road safety industry.

To make the Bee Network one of the safest transport systems in the world, we are adopting the Safe System across all Bee Network modes. As our network includes trams, we will therefore be applying the Safe System to include light rail safety, as well as road safety.

A Safe System is one where people, vehicles and infrastructure interact in a way that secures a high level of safety. This requires us to take a systemic approach to reducing road and light rail danger, strengthening all parts of the system so that where there are failures, as there inevitably will be, the rest of the system is able to minimise the outcomes.

At the heart of the Safe System are six principles, (shown in the centre of Figure 1) which are values that guide how road and light rail safety will be approached by all of those involved in designing, delivering and running the Bee Network.

Based on these principles, five Safe System components are identified. These are: Safe Streets (including our light rail network), Safe Road Users, Safe Speeds, Safe Vehicles and Post-Crash Response. Together they reduce the risk and severity of a collision and reduce the likelihood of fatal and life changing injuries if a collision does occur.

To deliver the Safe System, multiple change mechanisms have been identified. These go beyond the traditional safety mechanisms of engineering, education and enforcement to involve a wider range of organisations and approaches, including legislation, regulation, standards, training, innovation and research.

This Bee Network Safety Plan uses the Safe System to eliminate life changing and fatal injuries on our Bee Network. It builds upon and enhances the work already undertaken by the Safer Roads Greater Manchester Partnership (GM local authorities, TfGM, GMP, GMFRS and other partners) in implementing the Vision Zero Strategy to 2040 and Vision Zero Action Plan 2024-27.

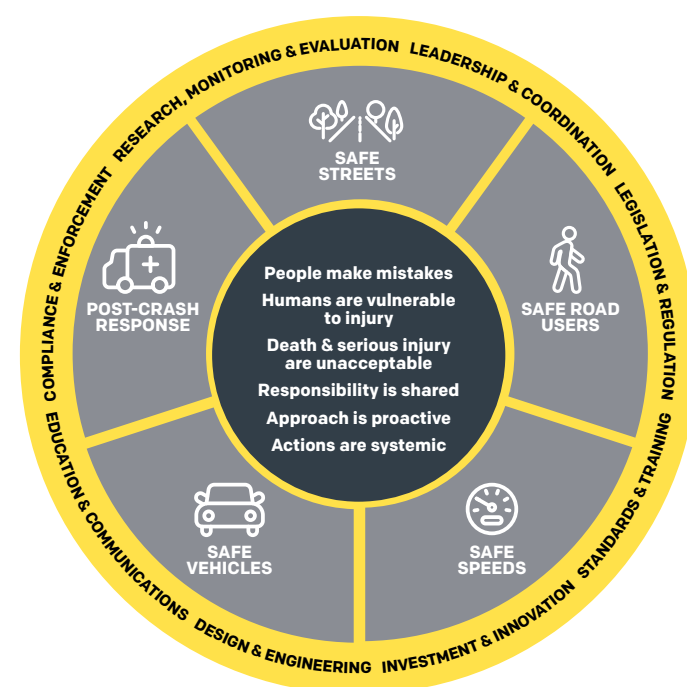


Figure 1: Safe System - Agilysis (2023) building on models from Australia, Canada, New Zealand, and Loughborough University

Bee Network casualties and collision data

This section provides an overview of bus, tram, cyclist and pedestrian casualties resulting from collisions on the network.

Measuring Vision Zero

The Department for Transport (DfT) has strict definitions for road death and injury; it introduced a new Injury Based Reporting System (IBRS) and in February 2021 it was adopted by Greater Manchester, this has changed how injury types are recorded. It is now possible to understand in much greater detail the types of injury sustained by casualties and to classify them beyond the broad 'seriously injured' category. This system is known as CRaSH (Collision Reporting and Sharing System)².

CRaSH provides greater accuracy in determining injury severity, but casualties recorded as "serious" may have been recorded as "slight" under the previous system meaning that direct comparison between the two requires adjustments to be made. The Office of National Statistics have developed a methodology to identify the likely casualty figures for historical data, had IBRS been in use previously to enable the continuity of monitoring casualty trends; this is why the term 'adjusted' is used to describe the datasets.

The summary below is based on the last five years (2019 – 2023) of available casualty and CRaSH data where possible (2022 and 2023 as full years of data). These casualties could have occurred anywhere on the Greater Manchester network, regardless of whether the casualties were residents of Greater Manchester or from elsewhere. All comparative analysis which covers this five-year period uses severity adjustments to account for the introduction of the new reporting system in 2021.

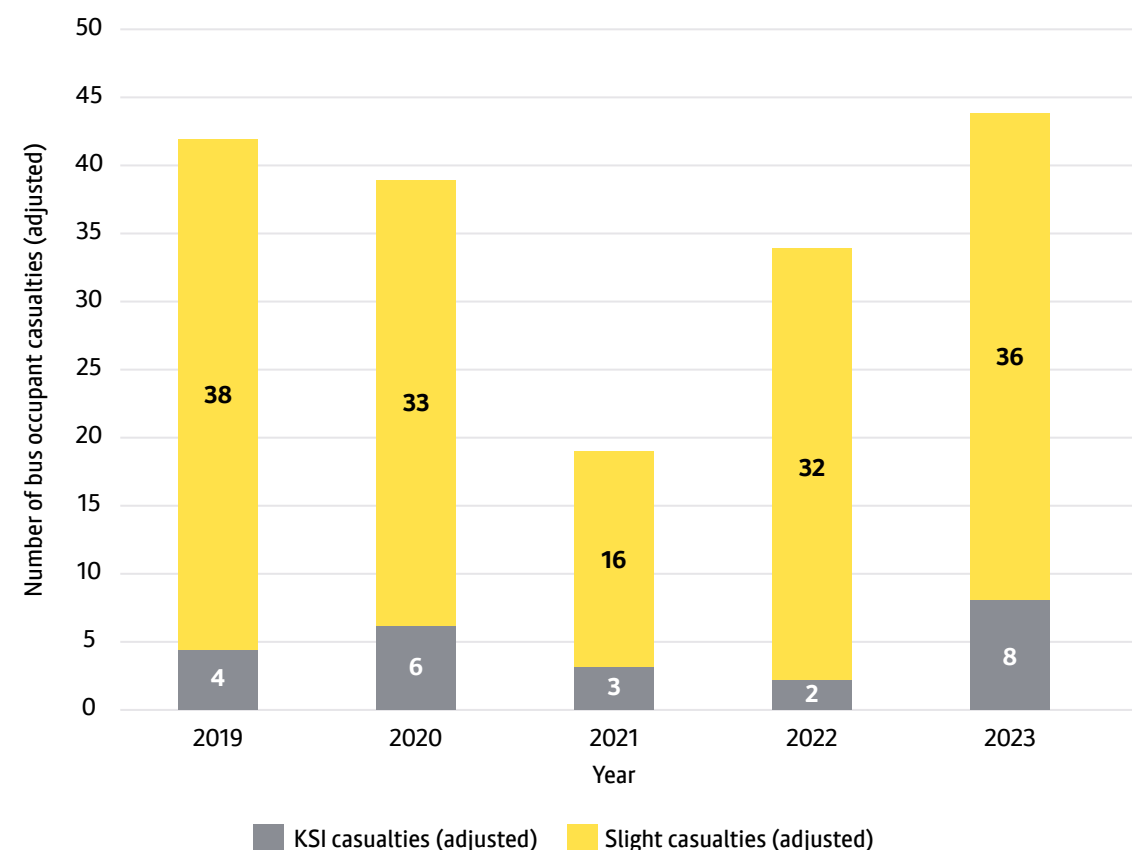
The main analysis that supports our monitoring of the Bee Network, including its safety and overall performance, can be found in our most recent Bee Network Annual Committee Report (November 2024). Similarly, analysis of road risk and key measures are set out in our Vision Zero Strategy.

Bee Network bus casualties

The number of bus occupant casualties (including drivers and passengers) has remained relatively stable with the exception of 2021, when both the number of killed or seriously injured (KSI) and slight bus occupant casualties were much lower than in the preceding two years, and two most recent years of data that followed.

¹ Vision Zero - Greater Manchester Combined Authority

² Guide to severity adjustments for reported road casualties Great Britain - GOV.UK

Figure 2 – Bus occupant casualties (adjusted) 2019-2023


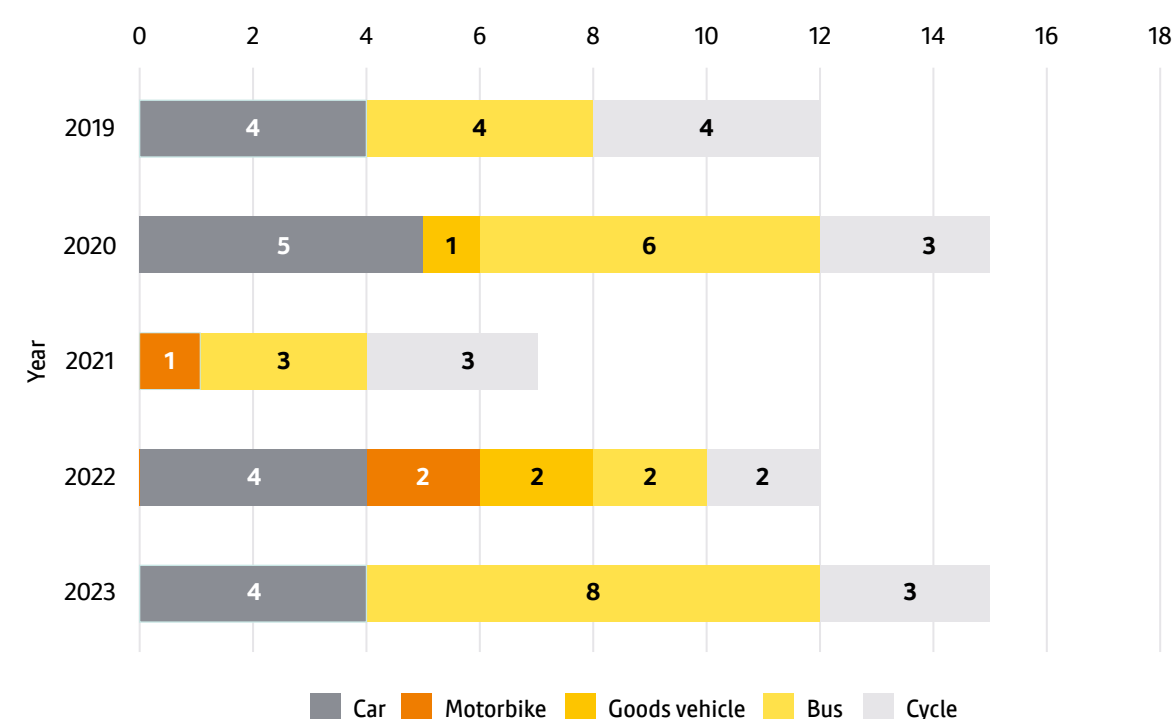
The majority of bus occupant KSI casualties between 2019 and 2023 were bus passengers, with only one bus driver KSI casualty, which occurred in 2020.

Table 1 – Bus occupant KSI casualties (adjusted) 2019-2023

Year	Bus Driver KSI Casualties	Bus Passenger KSI Casualties
2019	0	4
2020	1	6
2021	0	3
2022	0	2
2023	0	8
Total	1	23

The number of related casualties, when looking at those injured in other vehicles (including both drivers and passengers of those vehicles) involved in collisions with a bus has remained low over the last five years of available data.

Most of the time bus occupants were the most likely to be injured in collisions involving a bus and another vehicle, although again numbers were very low.

Figure 3 – Related In-Vehicle KSI casualties (adjusted) 2019-2023


Conversely over the last five years of available data, there have been 55 pedestrian casualties who were injured in collisions involving a bus. The average number of pedestrian casualties killed or seriously injured in collisions involving buses over the last five years was therefore 11, with slightly higher numbers of pedestrians featuring as these casualties in 2022 and 2023 than in previous years (17 and 16 KSIs respectively).

Bee Network tram casualties

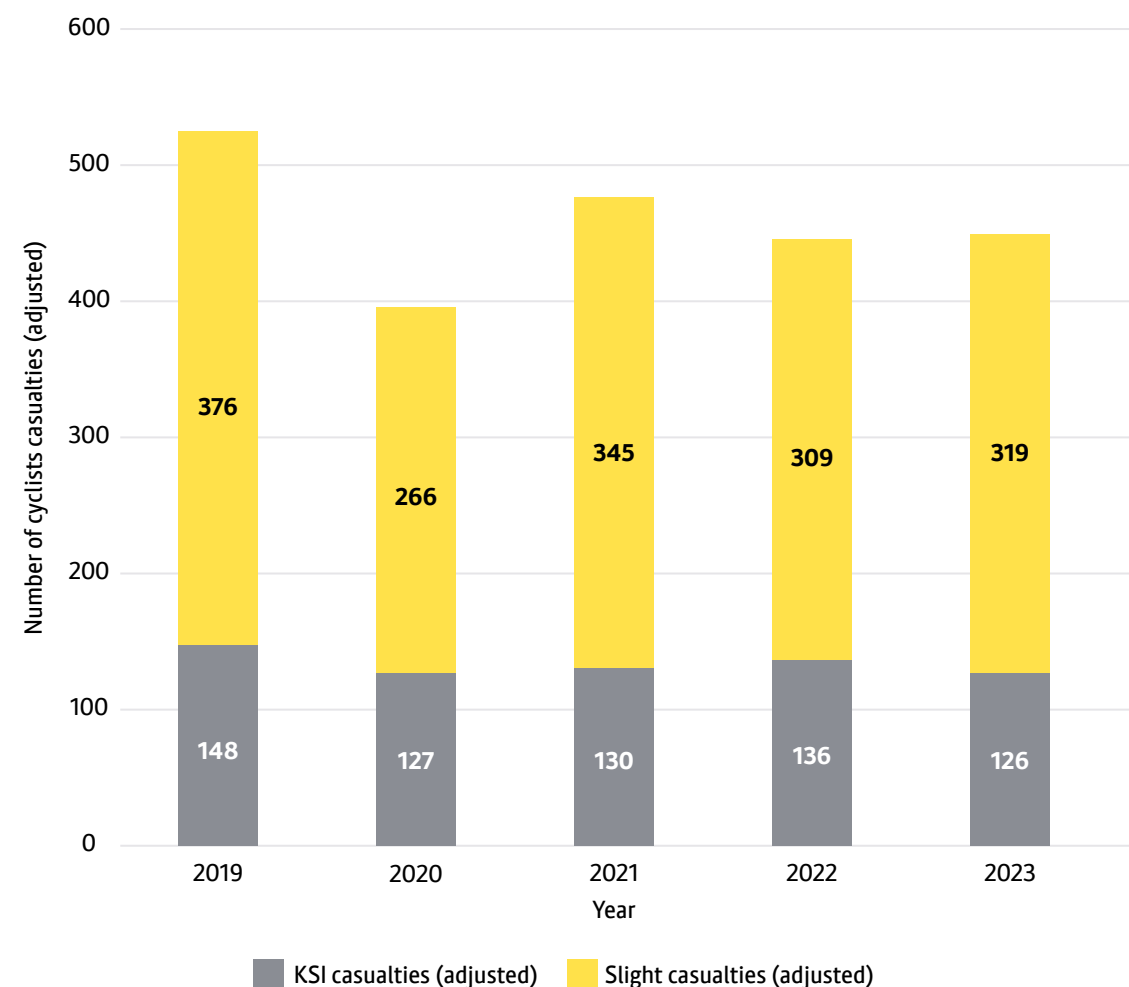
The number of tram casualties, including those both inside trams (including drivers and passengers) and those resulting from collisions with a tram, have been very low in the last five-year period (2019-2023). There have been no killed or seriously injured tram occupant casualties over this period, with 18 related KSI casualties resulting from collisions involving a tram. Ten of these related casualties were pedestrians. Of the remaining eight KSI casualties, four were cyclists, three were car occupants and the last casualty was a goods vehicle occupant. Delivering a safe tram network for

tram drivers, their passengers and other Bee Network users who may come into contact with trams will be key to not only keeping these numbers very low in the short to medium-term, but to fully eliminating serious tram network harm in the long-term. In Greater Manchester we will continue our commitment to improving tram safety on the Bee Network. Building on the relatively positive safety performance of our tram network so far, the programmes outlined in this plan will ensure Bee Network trams contribute to our Vision Zero goal and wider strategic implementation of safety countermeasures.

Bee Network cyclist casualties

The number of cyclist casualties has decreased slightly overall over the last five years. Although the decrease in 2020 reflected pandemic-related measures, the number of cycling related KSI casualties has continued to decrease slightly up to the most recent year of data in 2023.

Figure 4 – Cyclist casualties (adjusted) 2019-2023



The majority of people killed or seriously injured whilst cycling in Greater Manchester have been male, between the ages of 11 and 54. Female cycle casualties who have

been killed or seriously injured have tended to be aged between 20 and 49 years of age.

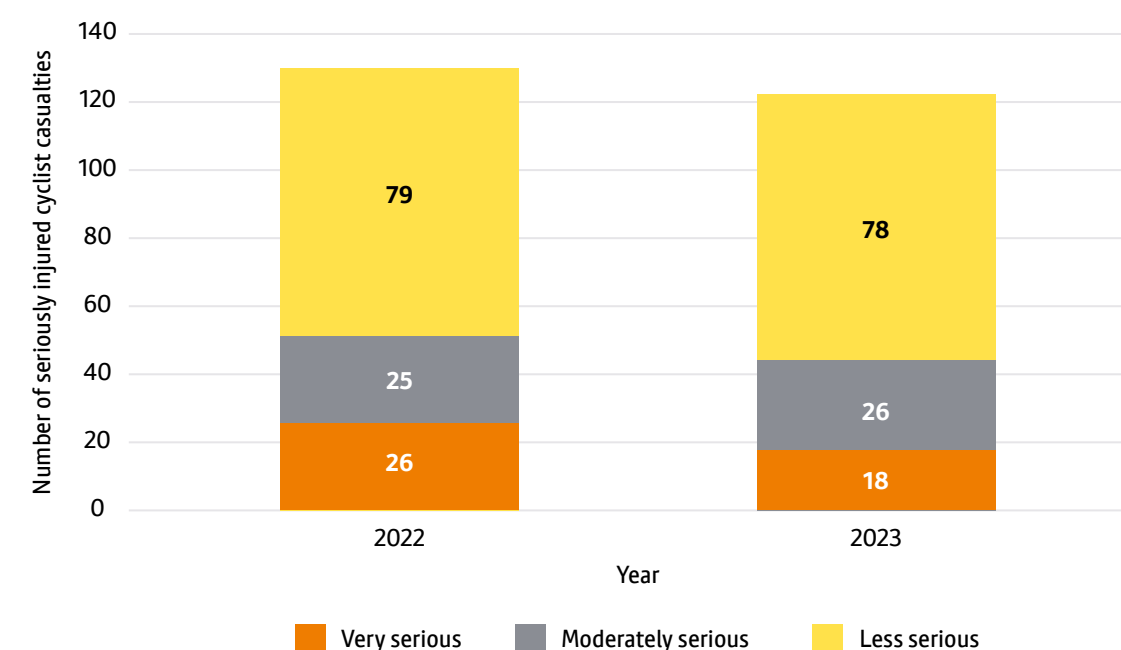
Table 2 – Cyclist KSI casualties (adjusted) by age group 2019-2023

Age group	Female	Male	Age band	Female	Male
<5	0	0	50-54	7	46
5-10	4	13	55-59	3	38
11-15	3	54	60-64	5	25
16-19	1	40	65-69	2	11
20-24	16	44	70-74	0	7
25-29	5	57	75-79	1	5
30-34	11	64	80-84	0	2
35-39	10	50	85-89	0	3
40-44	8	56	Not known	1	7
45-49	10	48	Total	90	570

When looking at cyclists seriously injured in Greater Manchester, the number of very seriously injured cyclists was noticeably lower in 2023 than it was in 2022 (the first year of a full dataset under the new system). The number of moderately injured and less seriously injured cyclists was similar across these two years of full data, since the introduction of the new reporting system.

Overwhelmingly cyclist casualties who were killed or seriously injured in Greater Manchester between 2019 and 2023 were involved in a collision with a car, representing 78% of KSI cyclist casualties over this time period.

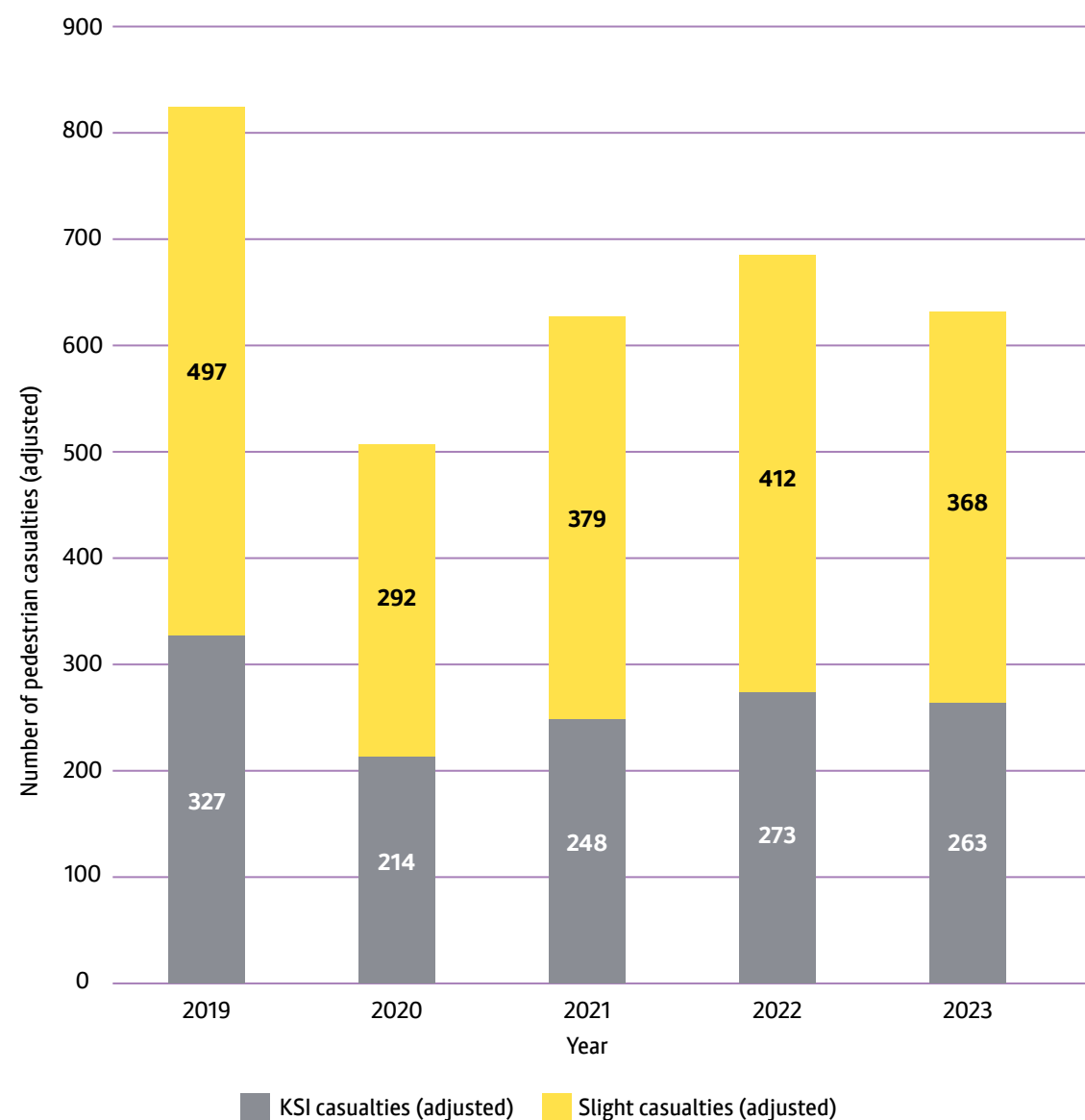
Figure 5 – Seriously injured cyclist casualties by enhanced casualty severity 2022-2023



Bee Network Pedestrian Casualties

The number of KSI pedestrian casualties has shown signs of increasing steadily since the 2020 pandemic, when the number of reported casualties decreased. However, the figure reported in 2023 was still much lower than that reported in 2019. The same pattern is true of slight pedestrian casualties.

Figure 6 – Pedestrian casualties (adjusted) 2019-2023



Pedestrian KSI casualties are much more dispersed between different age groups and between female and male pedestrians killed or seriously injured in

Greater Manchester. There were notably high levels of pedestrian KSI casualties within the younger age groups.

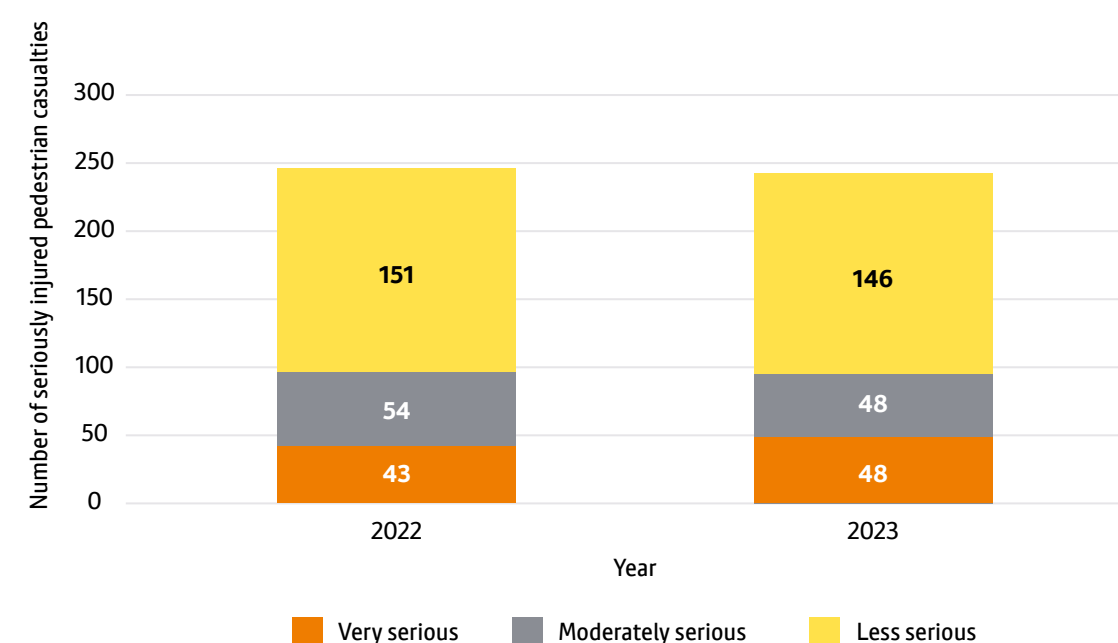
Table 3 – Pedestrian KSI casualties (adjusted) by age group 2019-2023

Age group	Female	Male	Age band	Female	Male
<5	13	23	55-59	31	44
5-10	38	86	60-64	22	42
11-15	78	109	65-69	34	30
16-19	29	50	70-74	25	25
20-24	24	45	75-79	18	23
25-29	28	55	80-84	24	26
30-34	33	67	85-89	12	17
35-39	22	43	90+	7	4
40-44	14	36	Not known	1	3
45-49	23	56	Total	501	824
50-54	25	39			

Looking at seriously injured pedestrians, the number of moderately serious and less seriously injured pedestrians has decreased slightly between 2022 and 2023, although the number of very seriously injured pedestrian casualties is slightly higher.

Overwhelmingly pedestrian casualties who were killed or seriously injured in Greater Manchester between 2019 and 2023 were involved in a collision with a car, representing 83% of KSI pedestrian casualties over this time period.

Figure 7 – Seriously injured pedestrians by enhanced casualty severity 2022-2023



Safety at the heart of Bee Network success

Our commitment to integrated, seamless, and most importantly safe and sustainable travel, demands that we recognise that safety is a primary enabler of the Bee Network's success. We are fortunate that in Greater Manchester we have a strong network of dedicated partners, stakeholders and supporting organisations, who make the Bee Network what it is. In the years ahead, we will look to continually enhance the safety of the Bee Network as an area of action, which is closely intertwined with a variety of strategic and operational priorities for Greater Manchester.

Our key areas and programmes of work, our Bee Network Actions, provide a roadmap over the next 5 years and beyond. We're committed to ensuring these safety measures are delivered in a practical and quality-assured manner, where interventions are evidence based, carefully planned and cost effective. Reducing fatal and life-changing injuries on the Bee Network provides opportunities to maximise the natural co-benefits of a safe transport system. As a forward-looking, locally controlled network, we will continue to develop the Bee Network in a way that contributes to Greater Manchester's wider ambitions:

Public safety and security: The Bee Network is at the heart of public life in Greater Manchester. By ensuring people's experiences of travel are one where they are safe and feel safe, we can contribute to wider public safety and security. We will always look to prioritise measures that enhance public safety on the Bee Network, as well as working closely with our transport

partners, policing, and TravelSafe colleagues to support safety enforcement. The policing of our roads and enforcement directly support a safe Bee Network and we will work closely with partners to facilitate a healthy culture of transport use.³ This includes the continued support of safety campaigns which highlight unacceptable behaviour on the network, as well as supporting those at risk of harassment or abusive behaviour.

Operational safety culture and shared responsibility: Whilst it's essential we work towards our common goals and shared priorities, fostering a culture of transparency, dialogue, and mutual support is also essential if we're going to truly advance the safety of all Bee Network transport modes and active travel initiatives across Greater Manchester. For the Bee Network, we recognise support, buy-in and organisational culture across our operators are primary enablers of success in creating an ever-safer Bee Network. The level of cultural maturity across transport sector organisations, both locally and nationally, is a key determinant of success.⁴ We are committed to continuous improvement; ensuring all Bee Network stakeholders share a safety culture that is generative, reflecting safety as a core collective value, and we will do this by utilising practical tools such as training, leadership and engagement.

³ Norbury, F. (2020). Roads policing and its contribution to road safety. PACTS.

⁴ Fosdick, T., Campsall, D., Kamran, M., & Scott, S. (2024). Creating a Cultural Maturity Model to Assess Safe System Readiness Within Road Safety Organisations. Journal of Road Safety, 52-64.



Safe and healthy mobility: Delivering a safe Bee Network is an essential part of growing the network and encouraging high levels of patronage on buses, trams and trains, as well as active travel use; allowing everyone to benefit from Greater Manchester’s integrated transport system. Increased levels of walking, wheeling and cycling produce significant health and socio-economic benefits for communities.

Increasing participation in active travel not only enhances public health and reduced environmental impact, but also contributes to improved safety outcomes - especially with cycling. Evidence consistently shows that as more people walk and cycle, the risk per individual decreases. This is due to greater driver awareness, demand for safer infrastructure, and a cultural shift toward more considerate road use. Importantly, the long-term health benefits of active travel significantly outweigh potential risks from injury or pollution exposure.⁵

To make active travel the preferred choice for road users, greater protection should be provided through the delivery of high-quality and safe cycling, walking and wheeling infrastructure, speed reducing measures, road design and user culture. Our annual reporting will be central to achieving continued improvement of active

travel across the Bee Network, ensuring actions are progressed and safety is improved.

Engagement and innovation: To drive continuous safety improvements across the Bee Network, we’re committed to engaging with partners and industry representatives on both a national and international scale. We will ensure we are fully receptive to opportunities to innovate locally, whilst adding our voice and social value to evidence-led policy proposals at all levels.

In Greater Manchester, engaging with the evidence on what works and what doesn’t within transport safety has been a guiding principle when deciding plans for the Bee Network. Whether on vehicle and infrastructure safety standard development, or active travel measures including the safety of electrically assisted pedal cycles and e-scooters (whether for hire, commercial or personal use, or multi-modal transport planning) the Bee Network is the beneficiary of engaged partners. As partners we share in the view that contributing to and being receptive to the evidence base through research, monitoring and evaluation is fundamental to unlocking innovation across all modes of transport in the region.



⁵ Public Health England. (2018). Cycling and walking for individual and population health benefits: A rapid evidence review for health and care system decision-makers.



Dialogue on key challenges: The Bee Network is a locally controlled network through which we will continue to strive to implement the Safe System and make Vision Zero a reality. Whilst we are committed to positive change, we recognise that opportunities for dialogue should be leveraged at all levels, reflecting the fact that not everything is within our direct control.

The evolving transport policy landscape, social, cultural, and behavioural and economic factors all have an influence on the safety of the Bee Network. The Safe System is itself a socio-technical system; with such influences interacting in complex ways to impact the overall level of safety experienced by users of the Bee Network and levels of behaviour change of all road users.⁶

We will work proactively with partners and external stakeholders to manage existing and emerging challenges on the road, and within the tram system, to deliver a Bee Network free from unacceptable levels of harm.

⁶ Agilysis. (2024). Behaviour in the Safe System.

System connectivity: The Bee Network is complex. Its integrated functions collectively serve all users across numerous journeys of varying complexity and duration every day. To be attractive and effective our transport system needs to be resilient, accessible and inclusive. Physical and digital connectivity will continue to deliver the dual benefits of smart and seamless travel, enabling opportunities to acquire cutting-edge as well as more traditional measures of the system’s performance.

A core determinant of this will be the use of ‘real time’ up-to-date data on the safety performance of the network (including vehicle-to-vehicle or vehicle-to-infrastructure connectivity), which will continue to develop as we expand the Bee Network.

Bee Network Safety Plan key areas

Our approach to the Bee Network is underpinned by a recognition that safety enhancements across the transport system in Greater Manchester are complementary to each other, building layers of protection into the network for shared resilience across all modes. This plan is based on building capacity and capability of application for the Bee Network in the years ahead. We have designed this plan with actions which we will deliver within the next 12 months; actions we will carry out over the next 3 years; as well as those areas where more longer-term development and application is necessary on the journey to support the interim Vision Zero target of halving the number of deaths and life-changing injuries on our roads by 2030 and eliminating them completely by 2040.

Our programmes of work in building capacity for safety across the Bee Network are closely integrated with those areas that sit within our Vision Zero Strategy to 2040.

Bus Network

‘All Bee Network buses and their routes must have safety at the heart of their design, operation and use’

Bus safety standard for Greater Manchester

Our safety plans will be underpinned by a new Bus Safety Standard for Greater Manchester, spanning both design and operation. This will be brought in line with best practice and the innovative development of Bus Safety Standard measures in other cities. We will learn from the work of other transport authorities in the development of Bus Safety Standard measures, and we will look to incorporate evidently effective mitigation measures against fatal and life-changing injuries over time. Transport for London’s innovation in the development of research and the business case underpinning Bus Safety Standard measures has provided an important benchmark for the bus industry, and we will utilise and contribute to this work where appropriate for the Bee Network.

Driver assistance helping Greater Manchester’s bus drivers to avoid or mitigate the severity of collisions involving buses.

We will complete our gap analysis work into the benefits of various in-vehicle safety features and technologies for the Bee Network and report on this in January 2026. We will continue our collaborative work with bus operators to develop a feasible rollout plan for priority technologies, as part of the Bee Network bus fleet. We will ensure that the outputs and decisions made are linked to our commitments with partners on fleet renewal and procurement processes in the years ahead.



This work will continue to look at where the most effective features can be practicably and efficiently embedded into the Bee Network’s bus fleet. We are committed to ensuring that Advanced Driver Assistance Systems (ADAS) make it into our network in a way that optimises the active and passive safety features available to bus drivers on the Bee Network.

In this work, we will continue to assess both the integration into our fleet of features with more expansive evidence bases (Intelligent Speed Assistance and improved direct / indirect vision for bus drivers) and those in the earlier stages of development for buses internationally (Advanced Emergency Braking and pedal application error).

Occupant safety: Ensuring that bus and tram drivers, and their passengers are protected from serious levels of harm whilst using Bee Network transport.

We will ensure that as Bee Network buses are maintained and renewed, and as new vehicles are introduced to the fleet, that buses are designed with safety and accessibility in mind. This means they provide interiors that reduce the likelihood of injury when collisions do occur and that they help avoid related injuries, such as slips and falls.

As part of this work, we will continue to monitor the safety performance of bus interiors alongside intermittent reviews of the interior and design ergonomics of those vehicles currently in the fleet, as well as those scheduled to be introduced. We are considering an array of measures for rollout that support the safety and positive experience of bus users in Greater Manchester.

Partner assistance and protection: Helping other network users to avoid collisions with Bee Network buses and reduce the likelihood of serious harm if they do occur.

As part of our unwavering commitment to Vision Zero, our key safety areas start with those most likely to be exposed to harmful collision forces when using the Bee Network. This means that we have prioritised the safe travel of those for whom bus collision involvement poses a particular risk. We will help both bus drivers and other road users avoid these collisions in the first instance and look to implement evidence-based measures to support this, such as making the Bee Network bus fleet easier to see and hear through enhanced visual and acoustic features.

We will continue our work to enhance the accessibility of the Bee Network for everyone, and especially those with additional support needs. We know that for those who wish to travel actively, via public transport or travel using multi modes, safe access to the network can be a key barrier. Our Bee Network Active Travel Programme is being rolled out with onward travel in mind, to ensure that people feel safe when walking, wheeling or cycling to and from Bee Network bus and tram stops across Greater Manchester.

We are committed to ensuring that those who walk, wheel, or cycle on the Bus Network can do so free from the prospect of being seriously harmed in a collision with a bus. We will continue our work locally and with bus industry partners to prioritise buses designed with safety in mind, to lessen the injuries faced and the potentially devastating impact that buses have if involved in a collision with a vulnerable road user.



National advocacy and co-ordination

Our commitment to shared progress across the industry on Bus Safety Standards and application, means that we will continue to be at the forefront of our role in the national conversation and strategy to support positive outcomes for all bus users nationally. We support the government's 'Plan for Change'⁷ and will continue to work with partners via national forums such as the Bus Centre of Excellence to deliver on the government's missions of creating safer streets and growing the economy.⁸

In Greater Manchester, thanks to local control through franchising, we are in a unique position to deliver our plan for safe buses as an extension of our successes and experience in integrated transport development over the years. We will continue to work with partners nationally across the bus industry to advocate for, and help co-ordinate efforts to ensure legislation and regulation provide an optimal policy environment, equipping local transport bodies with the means to deliver meaningful safety improvements to their networks.

We are in a unique position to deliver our plan for safe buses as an extension of our successes and experience in integrated transport development over the years.

Driver capability and training

We will work with operators to devise and deliver a new Certified Professional Certificate (CPC) training modules for Bee Network drivers of buses and trams.

This aligns to our ongoing efforts to support the safety and well-being of all drivers who operate public vehicles on the Bee Network, reflecting our view that shared responsibility for safety is key to the values of operation we promote with our drivers. We know that up-to-date training will help all bus and tram and drivers maintain the capability, opportunity, and motivation to ensure that safety is at the heart of how the Bee Network operates.



⁷ Plan for Change - GOV.UK

⁸ <https://www.ciht.org.uk/bus-centre-of-excellence/>

Tram Network

'All Bee Network tram operations must have safety as a principle of their development'

Ongoing regulatory and industry-level sharing

Tram operations and maintenance activity is governed by regulatory requirements defined in the ROGS regulation, ultimately overseen by the Office of Rail and Road. This process ensures that both TfGM and the tram operators outline requirements and responsibilities to manage safety accordingly.

We continue to share best practice on safety management and key risks with the wider light rail industry in the UK via forums established by the Light Rail Safety and Standards Board (LRSSB). The LRSSB also publish guidance documents for all UK tram operators to refer to.

Our tram operators utilise an industry-level reporting software established by the LRSSB on any tram incidents and near misses. This provides safety risk modelling for our tram network, enabling decisions on any areas for continued improvement on our network. Additionally, it provides a shared platform for the light rail industry to identify key risks from multiple tram networks. This collaborative approach means more data and research is gathered and development initiatives and operational risk considerations are shared across the industry.

Safety Management System

Both the tram operator and TfGM have an established Safety Management System that provides a process to manage safety on our operations and maintenance activities. This is also followed for any new and proposed infrastructure projects as a live ongoing process, as required by the ROGS regulation.

Renew and enhance infrastructure

A continued renewal programme is in place for our tram trackside infrastructure, adding new systems to tram rolling stock, improving the resilience of the tram network and subsequent safety critical systems.

Rolling stock development will be put in place

Continued improvements to ensure tram vehicles enhancements and future fleets are aligned with best practice and support optimal safety outcomes for passengers and other Bee Network users. We are committed to sharing our experiences and learning from the experiences of other tram operators in the UK via Light Rail Safety and Standards Board and the wider light rail industry. As our existing fleet reach the end of its lifespan, procurement plans are underway for next generation tram vehicles.



Rail Network

Integrating rail into the Bee Network

While the heavy rail system in Greater Manchester is operated and managed by national duty holders (train operators and infrastructure managers), we will use the Bee Network to co-ordinate and champion a joined up approach to safety, so the experience for customers and communities is consistently safe across modes. We will continue to work through established industry arrangements, supporting operators to meet their legal duties (including ROGS) and ensure our own assurance activities dovetail with rail partners' Safety Management Systems. Our role is to convene, share data and insights, and help remove friction between organisations so safety mitigations are delivered quickly and coherently across the Bee Network.



Stations, interchanges and the PTI

We will continue our focus to reduce slips, trips and falls, crowding and Platform Train Interfaces (PTI) risks, while improving personal security and accessibility: lighting, wayfinding, CCTV, customer information, tactile surfaces and clear sightlines. We will incorporate "safe by design" principles into all Bee Network station projects and ensure rail assets connect safely to Bee Network active travel corridors so people can walk, wheel or cycle to rail with confidence. Where we already own and operate station assets (Horwich Parkway) or build new rail stations, we will ensure continued management of the safety measures and risk assessments required in accordance with regulatory requirements of heavy rail safety within ROGS for existing and proposed rail infrastructure.

Strengthening community interfaces

Working with rail partners and local authorities, we will prioritise measures that deter trespassing, reduce self harm risk, and target hotspot locations with evidence led interventions and community engagement.

Operations, fleet and technology

We will support operators to strengthen risk control (fatigue management, competence and incident learning) and the introduction of technology that demonstrably lowers risk (enhanced real time information and safety critical asset monitoring). Where national renewals or digital upgrades are planned, we will help partners realise their safety benefits at Greater Manchester locations and interchanges.

Data, reporting and learning

We will promote consistent reporting and shared analysis across modes, so insights from incidents and near misses on rail inform improvements on bus and tram (and vice versa). This includes sharing Bee Network evidence with industry forums and feeding partner findings back into our own programmes and design standards.



Walking, wheeling and cycling

The Bee Network Safety Plan supports work already underway to deliver the ambitious Active Travel Mission and Bee Network Active Travel Programme.

Greater Manchester's Active Travel Commissioner, leads the region's Active Travel Mission. The aim is to enable more people to walk, wheel and cycle. Research has shown consistently that a lack of perceived safety reduces participation in walking, wheeling and cycling and that active travel becomes safer as usage increases.⁹ See Figure 8, Greater Manchester's Active Travel Mission.

Reporting on Bee Network safety outcomes and its overall performance will be a key commitment.¹⁰ This programme (as part of our Active Travel Mission) is our vehicle to connect every area and community in Greater Manchester to active and healthy mobility options and reflects our mission for walking, wheeling and cycling.

Safer travel to school

The School Travel Strategy sets out the vision and approach of the Greater Manchester Combined Authority (GMCA), Transport for Greater Manchester (TfGM) and the ten local authorities towards school travel.

Our vision is for more young people to choose to walk, wheel, scoot, cycle or use public transport to get to school and access further education. We also want to help support Greater Manchester's ambitions for improved air quality, by developing a Travel to School programme in line with the Mayor's manifesto commitment to deliver 100 School Streets by 2028.

Through working with Greater Manchester's local authorities and the Voluntary Community and Social Enterprises (VCSE) sector we will create a wide range of training offers to suit local needs, open to all Greater Manchester residents in 2025. This includes continuing to work with Bikeability to support Local Authorities in ensuring 80% of school-aged children are offered Bikeability Level 2.

This programme also involves supporting schools to improve access to cycles for school children, more cycle storage, and improved crossings. To help remove the barriers people face when considering walking, wheeling or cycling to school, we must continue to improve infrastructure so that people feel safe when travelling. We're also committed to helping make active travel a cost effective and accessible option, reducing people's need to use a private car.

⁹ Adams, T., & Aldred, R. (2020). Cycling Injury Risk in London: Impacts of Road Characteristics and Infrastructure. Transport Findings.

¹⁰ Transport for Greater Manchester. (2024). Active Travel in Greater Manchester Annual Report.



Safer infrastructure

Information gathered as part of the 2023 comprehensive network audit is being used to shape future active travel network planning, including investing more in walking, wheeling and cycling infrastructure, developing a Strategic Cycle Network, piloting an approach to wayfinding on the network and progressing a policy in Access Controls.

We estimate that improvements to footpaths, junctions, crossings and cycle facilities will be needed across 2,700km of Bee Network routes for walking, wheeling and cycling, to deliver safer and healthier communities. This includes creating a connected regional Strategic Cycle Network of protected cycle tracks, greenways and quieter streets over the next decade, linking all our towns and major public transport interchanges.

Having completed an assessment of how bus routes and their environments can be optimised for safe travel, we are reviewing and upgrading our streets based on this information. This includes updating infrastructure plans and policies; auditing; reviewing bus hubs and stop design guidance; and building a supportive culture of safety reporting between our delivery partners who manage and operate different parts of the bus network in Greater Manchester.

The city-region's vision and plan for active travel is ambitious and the delivery of the active travel network continues at pace. By spring 2025, 130km of segregated walking, wheeling and cycling routes were completed across the city-region. We expect that to reach 176km by 2027. But there is a lot more to do. Once completed, the network will put 95% of residents in Greater Manchester living within 400 metres of a Bee Network standard route.

Ensuring that everyone has access to the Bee Network is integral to its shared success. This is especially important for those with additional needs and access requirements, including those with disabilities, the elderly, or those living with a long-term health condition. As part of this work, we are developing supporting provision to ensure that non-standard cycles as well as buggies and wheelchairs can access these, and off-road routes, with the same ease as conventional cycles.

Public transport and active travel hubs will be designed to be inclusive so that everyone can use the Bee Network with the same level of comfort, affordability, and convenience. Research has shown that women, ethnic minorities, and those with disabilities are often the most underserved in relation to accessing their day-to-day-transport needs.¹¹

¹¹ Ciriaco, T. G., Zehra, S. N., Wambura, V., & Wong, S. D. (2025). Equitable transportation and resilience hubs: Analysis of underserved population needs, usage, and travel behaviour. Transportation Research Interdisciplinary Perspectives, 1-18.



Integrating with bus, tram and train

Safety on our Bee Network will help us realise our plans to continually enhance the level of integration between the different functions. Reaching our goal of seamless travel across the network will make it more convenient for people to make journeys easily to and from public transport hubs and stops without having to rely on private motor vehicles.

Reducing road danger: To tackle unacceptable levels of harm, both where and when they occur on our roads, Greater Manchester adopted Vision Zero in 2024. Vision Zero was adopted to galvanise efforts and strategic focus on collaboration between all partners and users in

order to half the number of people killed or sustaining life-changing injuries by 2030; and reducing it to zero by 2040. Implementing our Vision Zero Strategy is Greater Manchester's joint plan to achieve this.

Improving access to walking, wheeling and cycling: Active travel in Greater Manchester is for everyone. We are working hard to ensure more people than ever have access to cycles which are affordable and convenient. Greater Manchester's Starling Bank Bike hire scheme has also played an integral role in enabling more people to cycle, and we are committed to expanding the scheme further across our region, as well as making sure cycle storage hubs are safe, secure, and accessible to all. We are also continuing to expand and improve our cycle training courses, so that more people can benefit from the Bee Network.



Figure 8 – Greater Manchester's Active Travel Mission

Greater Manchester's Active Travel mission: Enabling more travel choice for all



These five priority areas underpin our approach to ensuring that both now and in the future the Bee Network directly contributes to more people travelling actively in a better connected and more prosperous Greater Manchester.

Action Plan

Safety is a non-negotiable feature of how transport is used, operated, and maintained across Greater Manchester. Together we can make the Bee Network one of the safest transport systems in the world, by combining interventions across all the Safe System components. Irrespective of when, where, or in what context risks emerge, we will act to reduce the safety risks and levels of harm.

The contents of this plan have been developed with key Bee Network partners who, as one, recognise the scale of opportunity, challenge, and vision incumbent in making the UK's second largest integrated transport system one where safety is at the heart of its development and use.

For clarity, references to 'Safe Road Users' throughout this document will include tram occupants, and references to 'Safe Streets' will encompass the tram network. This ensures consistency across all Safe System components and recognises the shared responsibility for safety across all modes of the Bee Network.

In the Vision Zero Strategy and Action Plan, we have committed to a series of targeted actions to eliminate fatal and life-changing injuries by 2040. Key commitments from Vision Zero will be highlighted throughout each section of this Safety Plan to demonstrate how they underpin our approach to safe mobility across Greater Manchester.

1. Safe streets

In order to establish a safe network, roadside and track infrastructure need to be designed to reduce both the risk of collisions occurring and their severity when mistakes do occur. This means proactively managing spaces shared by different modes to protect vulnerable road users, targeting the most dangerous sections of the network and undertaking network-wide improvement programmes.

Vision Zero Action Plan commitments

Through our Vision Zero Action Plan we are creating safer streets by:

- Having standardised design standards (such as the Streets for All Design Guide), and increasing the number of segregated cycleways and footpaths, pedestrian crossing facilities, School Streets and Active Neighbourhoods across Greater Manchester.
- Adhering to the Safe System during the planning and design phase, and when engineering new and existing schemes, as well as using the Manual for Streets and the Streets for All Design Guide. Our aim is to put vulnerable road users first when designing our roads, streets, and neighbourhoods.

Safer Streets: Bee Network Safety Plan Actions:

Number	Deliverable/milestone
1.1	Interface safety enhancements We will collaborate with local councils to enhance safety at tram junctions, especially at known hotspots with planned improvements such as better signage, clearer road markings, and public awareness campaigns.
1.2	Infrastructure safety and operational standards A continued implementation of our Bee Network safety programme will be maintained and developed with industry best practice. This will include clearly defined safety enhancements and operational reviews as required.
1.3	Safety audits across network assets A rolling programme of safety audits and upgrades will continue to be conducted across tram assets, street tram corridors, bus stations, and depots. This includes infrastructure renewals, SUSAs assessments for manoeuvre risks, and implementation of safe systems of work. Tram-specific audits will include, but not limited to, tram depot safety inspections, and track condition assessments. All findings will inform continuous improvement and engagement with our operators on a periodic basis.
1.4	Risk and seasonal safety reporting Both bus and tram systems will continue to review vegetation-related mitigation measures, seasonal maintenance (e.g. gritting), and route-specific risks. The Operations Control Centre will be notified of any actions affecting service safety and reliability. Reports will include mapped locations, impact assessments, and operator actions. Both modes of transport will maintain their own Route Risk Registers.
1.5	Operational safety and network reliability Operational safety and reliability will be enhanced through the continued management of bus and tram safety measures, via the adoption of a standardised Safety Management System across all operators, and coordinated support during major events. This includes scalable service adjustments and staffing measures to ensure safe and efficient passenger movement during periods of high demand. This will ensure consistent safety practices, improve service reliability and resilience, and support continuous improvement across the network.

2. Safe road users

The safety of our roads and how we treat fellow transport users on day-to-day journeys is a core value within Greater Manchester.

Buses and trams are some of the largest vehicles on our roads. We therefore have a responsibility to ensure that we minimise the risk that our vehicles pose to more vulnerable road users. Through our Bee Network Safety Plan, we are enhancing our existing training programmes for all involved in the safe operation and use of the Bee Network. Across local authorities, operator directors, bus and tram drivers, and network users themselves - everyone has a role to play, and we will ensure that provision is in place to uphold high standards of operation and use. This will be secured through evidence-led and evaluated programmes of change.

All drivers will receive enhanced training and testing and are expected to comply with road traffic laws. We are actively updating our bus driver and passenger intervention packages to ensure they are up-to-date and fit for the future. This includes launching new Certified Professional Certificate (CPC) modules; piloting novel fatigue management and wellbeing initiatives for drivers; as well as launching new public awareness safety campaigns and measuring their impact.

We are committed to delivering a Bee Network that is safe for all, and we therefore take a no tolerance approach to incidents of antisocial behaviour and associated activity that put the safety of those who operate and use the Bee Network at risk. We have established collaborations with key delivery partners and the police to maximise our efforts at detecting and dealing with any incidents of antisocial behaviour should they occur. We will look at further measures (where appropriate) to deter and prevent antisocial behaviour and similar actions on the Bee Network.

We are rolling out educational provision and publicity campaigns to actively support the safe operation of the Bee Network. Our approach to behaviour change by all road users is grounded in the understanding that behaviour is complex and shaped by the wider system - including infrastructure, policy, and culture. We believe that resilience across the Bee Network depends on shared responsibility: not just the capability and motivation of individuals, but also the opportunities created by the network itself. Fostering a culture of mutual respect between all users will require co-ordinated action from operators, partners, and the public alike.

Meanwhile, provision must be made to support children, pedestrians, and cyclists to travel in safety through Bikeability cycle training and pedestrian training. We regularly review our approaches to ensure we support all of those who use our roads.

Vision Zero Action Plan commitments

Through our Vision Zero Action Plan we are creating safer road users by:

- Preventing vehicles being driven while the driver is under the influence of alcohol and / or drugs.
- Encouraging everyone to wear a seat belt and preventing people using their phone while driving.
- Educating drivers on the consequences of dangerous driving and inappropriate speeds.
- Creating a safer road environment where all road users feel safe, including those who walk, wheel, ride or cycle on our roads.

Safer Streets: Bee Network Safety Plan Actions:

Number	Deliverable/milestone
2.1	Driver health and fatigue management A programme for driver health reviews and fatigue management will be maintained and developed. The tram network will continue an established protocol implemented by the operator with continuous improvements considered as necessary. The bus network will develop at minimum, standard approach to health screening, fatigue awareness, and pre-shift driver checks.
2.2	2.2 Driver training and risk awareness Bus and Tram driver competence will be continuously refined through targeted training modules. Rostering policies will be reviewed periodically between operators. Training plans will be reviewed annually and aligned with incident trends and changes to operational procedures.
2.3	Operator compliance and accreditation All operators will be required to meet Bee Network safety standards through annual audits. Welfare facilities at depots and interchanges will be reviewed and upgraded where necessary to support bus and tram driver wellbeing.
2.4	Passenger engagement and feedback systems Passenger safety will be supported through proactive engagement strategies such as safety campaigns, mystery passenger assessments, and digital feedback platforms such as Rate My Journey and TfGM surveys. Feedback will be analysed quarterly to inform service improvements.
2.5	Incident reporting and passenger safety A confidential incident reporting system will be launched to encourage transparency and early intervention. Passenger injury data will be reviewed monthly to identify trends and reduce onboard incidents. Reports of poor driving will be prioritised for investigation and operator follow-up.
2.6	Onboard information and service updates Onboard systems will be upgraded to provide real-time service updates, including incident alerts and diversion notices. This will help passengers make informed decisions and reduce unsafe movement during disruptions.

3. Safe speeds

The ability to avoid collisions and the survivability in the event of a collision are directly affected by the speed and energy involved. Posted speed limits and the speed of public fleet vehicles on the Bee Network must be those which are appropriate for the type of road or track they are on, and the users present. This means we must consider whether there is infrastructure which separates motorised and non-motorised road users (in the case of trams running on-road or on segregated trackways) and the capabilities of both infrastructural and vehicle features to mitigate collision impacts.

Lower speeds are appropriate where vulnerable road users share the roads with motorised forms of transport, whereas higher speeds are suitable only in contexts where all these factors can offer sufficient protection, such as dividing the carriageway or running along segregated lines.

We know that perceptions and experiences of vehicle speeds significantly impact the levels of willingness to participate in active travel. Many people don't feel comfortable or safe when cycling or walking where there are high speeds. Speed also causes noise stress and worsening air quality. A speed management strategy is therefore a vital component of the Safe System. We aim for the Bee Network to be trusted and reliable, in addition, as part of our ongoing commitment to Vision Zero we will prioritise safety when timetabling our services.

Vision Zero Action Plan commitments

We can have safer speeds by:

- Ensuring that drivers obey the speed limit.
- Setting the appropriate speed limit for the type of road (allowing a road to fulfil its role as an Active Neighbourhood, High Street, Connector Road, or Motorway / Strategic Road).

We are proactively looking to integrate speed management policies and the setting of local speeds limit approaches into all new bus route planning proposals; investing in speed monitoring capabilities across the Bee Network operator fleets; as well as facilitating collaboration between local authorities and Bee Network bus operator partners in the implementation of 20mph zones.

Safer Streets: Bee Network Safety Plan Actions:

Number	Deliverable/milestone
3.1	Tram overspeed risk management and route planning We will continue implementation of the Tram Safety Improvement Programme (TSIP) in line with RAIB recommendations. This provides an integrated driver vigilance device and a tram overspeed prevention system to the M5000 fleet of trams. The continued management of tram timetabling will be implemented, ensuring services are planned with safety in mind whilst responding to network demands.
3.2	Speed and behaviour monitoring at bus interchanges Monthly enforcement checks will be conducted at major interchanges and bus facilities to monitor speed and driver behaviour. Violations will be summarised in quarterly reports, with corrective actions tracked. A feasibility study will assess the introduction of centralised speed monitoring and ANPR systems to enhance enforcement and data collection. TfGM will coordinate with operators and local authorities to manage transport operations during major events. Event-specific safety plans will include crowd control measures, temporary signage, and adjusted service timetables. Real-time monitoring and contingency planning will ensure responsive action to emerging risks, with post-event reviews informing future improvements.
3.3	Telematics and driver feedback systems Telematics systems will be standardised across all bus operator fleets. Monthly driver performance reports will be issued, and mandatory speed awareness training will be provided to drivers who exceed set thresholds.
3.4	Electric vehicle driver training Driver training programmes will be reviewed to address the operational differences of electric vehicles, such as rapid acceleration and reduced engine noise. This will ensure drivers are equipped to operate EVs safely and confidently.
3.5	Network timetable review A rolling programme will be undertaken to review and optimise bus and tram timetables across the Bee Network, with a focus on improving road safety and operational reliability. Reviews will prioritise locations identified by operators and assess the impact of timetable changes on passenger safety, service reliability, and crowding - particularly during peak periods and major events. Emergency timetable procedures will be maintained to ensure timely and coordinated responses during disruptions, helping to minimise risk and support safe travel across the network.

4. Safe vehicles

We will continue to ensure the vehicles owned and operated by the Bee Network meets the highest of vehicle safety standards. This includes proactively managing the risks to those both in these vehicles (bus and tram drivers and passengers) and those injured in collisions with those vehicles (especially those who walk, wheel, or cycle). This also means that we leverage the maximum safety that can be feasibly built into these vehicles by their manufacturers and that, where appropriate, we look to retrofit the best safety features where this is practicable and can be delivered cost efficiently based on benefits realisation.

We have invested significantly in the introduction of the Zero Emission Bus Fleet, and where possible upgrades to the existing fleet through bus franchising have brought in new vehicle safety features. This includes features which ensure vehicles follow the speed limit, prevent bus runaways, and improve driver’s visibility. This work directly complements our efforts in updating guidance on bus design, safety auditing, and fleet safety standards, along with engagement in quality-assured fleet recognition schemes.

We are working on the requirement strategy for our next generation fleet of tram vehicles, replacing the existing M5000 trams as they come to their end-of-life within the next decade and beyond.

In the future, we will look at how we can work with organisations at both the national and local level to support Government in developing future legislation on new bus vehicle technologies - such as autonomous vehicles - where there is strong evidence of their benefits and that they can be used safely on our roads.

Vision Zero Action Plan commitments

Through our Vision Zero Action Plan we are creating safer vehicles by:

- Helping vehicle owners and operators choose the safest vehicle.
- Procuring safer vehicles for Safer Roads Greater Manchester Partnership (SRGM).
- Removing dangerous vehicles from the road.

Safer Streets: Bee Network Safety Plan Actions:

Number	Deliverable/milestone
4.1	GM bus safety and compliance standards An updated GM Bus Design/Fleet Standard will be published and adopted across all new fleet procurements. Operators will submit compliance plans for existing vehicles. 100% participation in national schemes such as DVSA’s Earned Recognition Scheme and FORS will be required, with annual reporting to monitor progress. In addition to tram surfing mitigation, upgrades to tram signalling technology will be explored to enhance operational safety and reduce risk. These upgrades will focus on improving system responsiveness, reliability, and integration with driver alert systems, supporting safer tram movements across the network. The Ordnance Survey dataset will be reviewed biannually to identify and correct bridge height anomalies. Updates will be shared with OS and operators, with confirmation integrated into operator systems.
4.2	Bus interior safety audit A full audit of bus interiors - including handrails, signage, and seating - will be conducted. Incident data (e.g. slips, trips, and falls) will be centralised to inform corrective actions and future design improvements.
4.3	Vehicle and operational safety enhancements The Bee Network is committed to improving safety across its fleet and infrastructure through the adoption of advanced technologies, standardised operational systems, and proactive risk mitigation measures. This includes enhancing vehicle safety features, improving detection and alert systems, and ensuring consistent safety protocols across all operators. These efforts aim to support safer journeys, reduce operational risks, and foster a culture of continuous improvement in transport safety.
4.4	Tram and bus CCTV upgrades CCTV systems across trams, buses, stations, and highways will undergo a comprehensive review. Upgrades and regular maintenance schedules will ensure high-quality coverage to support safety and incident investigations.

5. Post-crash response

In any incident resulting in injury, we will co-ordinate with and support emergency services so that all possible points of intervention to mitigate against life-changing injuries or fatalities are prioritised and planned for. In managing a system as extensive and complex as the Bee Network, this makes the entire chain of survival, from initial response, triage, and in-hospital treatment and beyond all the more important. There are elements of this component which expand into collision prevention as well as response.

Vision Zero Action Plan commitments

We regularly review our approach to supporting services and victims of road traffic collisions.

We can improve the post-crash response by:

- Providing a quick and high-quality response to incidents.
- Continuing to invest in specialised incident training.
- Undertaking thorough investigations when collisions do occur. Using the findings to improve data on the causes of the collision. This will be fed into systems to rehabilitate roads and evaluate how the system can be strengthened. To this end, investigations into the causes of each fatal and life-changing injury collision will go beyond reviewing the data, to understanding what has happened and how we can prevent similar tragedies happening again.
- Improving support and information for persons involved in incidents.

We recognise that mitigating against fatal and life-threatening injuries when safety is compromised on the Bee Network is just as important as the preventative measures in place across the system. Everyone can play their part in supporting the best post-crash response outcomes. This includes supporting bus and tram drivers to intervene where appropriate, with enhancements being made to CPC and training provision. We are working closely with bus operators themselves on reporting procedures and an open dialogue to create a culture of generative compliance and communication when things do go wrong on the Bee Network that affect the safety of its users. We will work with our partners to ensure regular and timely reporting of incidents in this regard to enable monitoring of insights over time.

Safer Streets: Bee Network Safety Plan Actions:

Number	Deliverable/milestone
5.1	Safety leadership, governance and data standardisation A cross-modal GM Safety Standards Board will be launched to oversee safety across all transport modes. A unified safety data standard will be implemented across all modes, requiring 100% operator compliance. TfGM will embed safety leadership across all levels to ensure the Bee Network is delivered to the highest standards. Governance will be provided through the Executive Board's Health, Safety and Environmental Committee, with operational oversight by the Operations Board and HSE Steering Group. This framework ensures safety remains a strategic and operational priority, with clear accountability and a culture of shared responsibility across all modes and partners.
5.2	5.2 Behavioural and location-based risk management A lead coordinating body will oversee risk assessments, mitigation audits, and incident reviews at shared-risk locations as required. Human factors specialists will be engaged to support incident investigations, training design, and behavioural risk assessments.
5.3	Integrated emergency response and support programme Emergency preparedness will be enhanced by integrating Driver First Assist training into CPC modules for all bus drivers, targeting 100% compliance. Certified first aid training will be offered with an 80% uptake goal and biennial refreshers. A feasibility study will assess eCall system integration in new vehicles, with a pilot to evaluate incident response improvements. A central Post Incident Support Line will be established to provide compassionate, timely assistance to victims and families.
5.4	Integrated safety reporting and incident oversight TfGM will implement a consistent, cross-modal approach to safety reporting and incident management across the Bee Network. This includes standardised processes for incident and near-miss reporting, post-incident reviews, and collaborative data sharing with national safety bodies. Insights from industry-wide systems and safety forums will inform continuous improvement, ensuring that lessons learned are embedded into operational practice and support proactive risk mitigation across all transport modes.
5.5	Safety communication and engagement framework A Duty of Candour policy will be published to ensure transparency and public accountability. A joint post-incident communication protocol will be developed with Local Authorities and operators, exploring the Joint Emergency Services Interoperability Principles model. The Bee Network Safety Forum will meet quarterly to share.

Conclusion

The safety of our Bee Network passengers and all those who live, work and travel within Greater Manchester is our priority. We will lead by example, taking seriously our statutory responsibilities across our portfolios, where we can embed, contribute to, and advocate for best practice in areas of national importance when it comes to transport safety policy for the benefit of all.

In this sense, we are committed to utilising opportunities to embed what has worked elsewhere but also to engage partners in other regions; both through our ongoing work and experience in building a network that delivers journeys that are safe for its users.

This safety plan directly supports the targeting of known transport needs for continually increasing public transport patronage across our region, providing personal safety and security, convenience, reliability, as well as social and monetary value for everyone in Greater Manchester.¹²

To effectively deliver the Bee Network Safety Plan amongst partner organisations, Safe System capacity and capability will underpin all actions,

so interventions are delivered to these principles and by everyone involved in the Bee Network's operation and maintenance.

Working in partnership across the Bee Network, we will facilitate travel experiences and perceptions around guaranteed safety, as 'our way of doing things' through delivery of this plan. This will be based on the guiding imperatives of the Safe System as the internationally recognised model to achieving safe road mobility. We are continually learning from our transport partners across the UK, as well as international partners, to deliver significant progress in making our transport systems safer for all.

We look forward to continuing this important work with all involved partners, whether directly in Greater Manchester or indirectly with bus, tram, and active travel stakeholders elsewhere, to deliver the benefits of a safe Bee Network for the people of Greater Manchester.

¹² Department for Transport (2023). Increasing bus patronage through an audience strategy. Yonder Consulting Ltd.



Recommendations

This Bee Network Safety Plan, as the first action plan for safety across the whole Bee Network, is an ambitious plan to keep up the momentum gathered so far in the delivery of safety as a central feature of travel across the city region. As we pursue the highest standards of safety, across the use, management and expansion of the Bee Network, we will endeavour to fulfil key recommendations stemming from the co-ordination and continued commitment we share together to ensure this plan is a success:

- Vision Zero, and the Safe System, are now well established as the long-term goal and delivery vehicle for transport safety across Greater Manchester. Transport for Greater Manchester, in partnership with delivery partners (including all operators and stakeholders) should use this plan as a springboard to embed safety, and resilience for it across the Bee Network, as a core development goal in all existing and future plans for expansion of the network;
- There are strong governance and co-ordination systems in place for reducing road danger and eliminating fatal and life-changing injuries by 2040. All organisations involved in making the Bee Network a success should be a part of making it as safe as possible by learning from the successes and challenges of others and the ongoing implementation of the region's Vision Zero Strategy to 2040. This should involve ensuring shared ways of working and collaboration are embedded across all work streams with key lessons actioned. This is especially critical where there are real opportunities for shared resilience between the Vision Zero Strategy and this Bee Network Safety Plan;
- The success of this plan is as much about looking to the future as it is consolidating achievements to date. Technology and technical interventions are the heart of this now and in the future; delivery partners should be bold in supporting cutting edge and evidentially effective technologies that can help optimise the design, implementation and monitoring of safety on the Bee Network. Ensuring the most effective and contemporaneous solutions are utilised where appropriate on the Bee Network should be reviewed annually;

- Innovations across the Bee Network are transforming safety for its transport users, drivers and passengers. To ensure that equitable perceptions and experiences of safety are realised, so that the benefits of the Bee Network are shared by all, all programmes of work and technologies introduced should be assessed for their impacts on accessibility and inclusivity;
- Leadership on the safety of the Bee Network is part of what we do; supporting national and local efforts alike in transport safety is at the heart of realising the benefits of the Safe System for everyone. Looking ahead, opportunities to advocate for best practice and collaborate with external partners should be leveraged.
- Research, monitoring and evaluation will continue to be critical to reviewing and securing our collective progress in relation to the safety performance on the Bee Network. Just as we are committed to advocating for best practice and working to ensure the best technologies benefit all Bee Network users, contribution to the evidence base should be forthcoming as a standard output for this type of activity alongside partners.
- Eliminating harm on the Bee Network, as a strategic, long-term goal that supports integrated and seamless travel, should be an holistic exercise. The implementation of this Bee Network Safety Plan should be co-ordinated as to maximise systems-level safety, well-being and broader transport improvements. This should recognise the role of shared responsibility, culture, and transparency – that achievement results from the efforts of many being leveraged for positive change across our communities in Greater Manchester.

Appendices

Appendix 1: Our partners

- Bolton Metropolitan Borough Council
- Bury Council
- Manchester City Council
- Oldham Council
- Rochdale Borough Council
- Salford City Council
- Stockport Metropolitan Borough Council
- Trafford Council
- Tameside Metropolitan Borough Council
- Wigan Council
- Bus Operators
- Train Operators
- Tram Operator
- Safer Roads Partnership
- Greater Manchester Combined Authority

Further Reading

A selection of associated policy and strategy documents for Greater Manchester's Bee Network

Adams, T., & Aldred, R. (2020). Cycling Injury Risk in London: Impacts of Road Characteristics and Infrastructure. Transport Findings.

Agilysis. (2024). Behaviour in the Safe System.

Anderson, E. (2018). Developing safe system road safety indicators for the UK. London: Parliamentary Advisory Council for Transport Safety.

Behavioural Insights Team. (2014). EAST Framework: Four Simple Ways to Apply Behavioural Insights. London: Cabinet Office.

Ciriaco, T. G., Zehra, S. N., Wambura, V., & Wong, S. D. (2025). Equitable transportation and resilience hubs: Analysis of underserved population needs, usage, and travel behaviour. Transportation Research Interdisciplinary Perspectives, 1-18.

Department for Transport. (2021). Bus Back Better: National Bus Strategy for England.

Department for Transport. (2023). Increasing bus patronage through an audience strategy. Yonder Consulting Ltd.

Elliot, M., & Broughton, J. (2005). How methods and levels of policing affect road casualty rates. TRL .

Fosdick, T., Campsall, D., Kamran, M., & Scott, S. (2024). Creating a Cultural Maturity Model to Assess Safe System Readiness Within Road Safety Organisations. Journal of Road Safety, 52-64.

Greater Manchester Combined Authority. (2021). Greater Manchester Strategy 2021-2031: Good Lives for All.

Greater Manchester Sports Partnership. (2021). GM Moving in Action Strategy.

International Transport Forum. (2022). The Safe System Approach in Action. ITF / OECD.

Maier, M. (2018). 20mph Research Study: Process and Impact Evaluation Headline Report. Department for Transport / Atkins, AECOM.

Monclús, J. (2019). Road Safety and the SDGs: A Guide for Private Sector Organizations. Fundación MAPFRE. Retrieved from <https://noticias.mapfre.com/media/2020/01/Road-Safety-and-the-SDGs.pdf>

Norbury, F. (2020). Roads policing and its contribution to road safety. PACTS.

Public Health England. (2018). Cycling and walking for individual and population health benefits: A rapid evidence review for health and care system decision-makers.

Safer Roads Greater Manchester Partnership. (2024). Vision Zero Action Plan 2024-2027.

Safer Roads Greater Manchester Partnership. (2024). Vision Zero Strategy to 2040.

Third Global Ministerial Conference on Road Safety. (2020, February 19-20). Stockholm Declaration. Retrieved from Road Safety Sweden: <https://www.roadsafetysweden.com/contentassets/b37f0951c837443eb9661668d5be439e/stockholm-declaration-english.pdf>

Transport for Greater Manchester. (2024). Active Travel Annual Report Bee Network Committee Paper.

Transport for Greater Manchester. (2024). Active Travel in Greater Manchester Annual Report.

Transport for London. (2022). Bus Action Plan.

Transport for London. (2023). Bus Safety Strategy.

Turner, B., Job, S., & Mitra, S. (2021). Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work. Washington, DC.: World Bank.

Van den Berghe, W., Fleiter, J., & Cliff, D. (2020). Towards the 12 voluntary global targets for road safety. Guidance for countries on activities and measures to achieve the voluntary global road safety performance targets . Brussels and Geneva: Vias Institute and Global Road Safety Partnership.

WHO. (2017). Save LIVES - A road safety technical package. Geneva.

WHO. (2021). Global Plan for the Decade of Action for Road Safety 2021-2030. Geneva.

WHO. (2023). Speed Management: A road safety manual for decision-makers and practitioners (Second edition). Geneva: Global Road Safety Partnership, International Federation of Red Cross and Red Crescent Societies.

Yannis, G., & Michalaraki, E. (2024). Review of City-Wide 30km/h Speed Limit Benefits in Europe. Sustainability 16, 4382.

Filtress, A., Anund, A., Maynard, S., Miller, K. A., Pilkington-Cheney, F., Dahlman, A. S., & Ihlstrom, J. (2019). Bus Driver Fatigue: Final Report. Loughborough University.



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