Transport for Greater Manchester

# Greater Manchester Transport Strategy 2050

# Environment Evidence Report

Consultation Draft

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## Executive Summary

This report forms a key part of the evidence base for the Greater Manchester Local Transport Plan (LTP). Its purpose is to provide a clear understanding of the environmental context within which the LTP is being developed, ensuring that transport policies and interventions contribute to a sustainable, low-carbon and biodiverse future for the city region. The document brings together information on climate change, pollution, biodiversity, the built and natural environment, and resource use, reflecting the priorities set out in the Greater Manchester Five-Year Environment Plan (2025–2030) and the Greater Manchester Strategy (2025–2035).

The evidence presented here has been drawn from a wide range of national, regional and local sources, including technical reports, statutory plans, and monitoring data. Key sources include the Greater Manchester Clean Air Plan, Climate Change Risk Assessment, Local Nature Recovery Strategy, and Integrated Water Management Plan. This information has been supplemented by findings from the Integrated Appraisal Scoping Report for the LTP, which identifies the sustainability issues most relevant to transport planning. Practical examples of how environmental improvements can be delivered through transport schemes are also included to illustrate best practice.

The report does not seek to provide an exhaustive account of all available evidence. Instead, it offers a strategic overview of the most significant trends, challenges and opportunities, alongside relevant targets and indicators from existing plans. This approach ensures that the LTP is informed by robust, proportionate evidence while remaining focused on the areas where transport can have the greatest impact.

By synthesising this information, the report establishes a clear link between environmental priorities and transport strategy. It highlights the need for urgent action to reduce carbon emissions, improve air and water quality, enhance biodiversity, and make efficient use of resources. These insights have shaped the development of the LTP's vision, policies and delivery measures, ensuring that Greater Manchester's transport system supports economic growth and social inclusion while responding to the climate and biodiversity emergencies.

# 1. Introduction

## 1.1 Purpose of this document

**A refresh of the Greater Manchester Local Transport Plan** (LTP) **is being undertaken** collaboratively between Transport for Greater Manchester (TFGM), the Greater Manchester Combined Authority (GMCA) and the 10 Greater Manchester Authorities. The LTP will be supported by Local Implementation Plans (LIPs) prepared by each authority, and will sit within the broader Greater Manchester Transport Strategy 2040.This document is part of a broader evidence base, which has supported the development of the Greater Manchester Local Transport Plan (LTP) on behalf of GMCA, the 10 Greater Manchester authorities and TfGM.

Building consensus and awareness of the evidence base promotes decision making that supports the long-term vision for Greater Manchester.

In this document evidence is presented to demonstrate the key trends and policy drivers relating to a range of environmental factors across Greater Manchester. This has helped to develop a vision, strategy and supporting policies that are 'environmentally responsible' as well as seeking to deliver economic growth and social equality.

The document contains a chapter for each of the following topics, which correspond with important environmental issues and cover the aims set out in the Greater Manchester Five-Year Environment Plan 2025-2030 (GMCA, December 2024).

| Chapter Topic | Corresponding 5-Year Environment Plan Aims |
|---|---|
| Climate change mitigation and resilience | • Aim 1: Our energy infrastructure is smart, flexible and fit for a low carbon future.<br>• Aim 3: Our transport system is reliable, integrated, inclusive, affordable and enables sustainable travel.<br>• Aim 6: Our city-region is better adapted and more resilient to the increasing impacts of climate change.<br>• Aim 8: Our economy will grow sustainably because of the interventions we make, benefiting our residents and businesses |
| Pollution | • Aim 7: Our air quality enhances the health, well-being and quality of life of the city region<br>• Aim 4: Our natural environment is enhanced, providing benefits for people, economy and nature. |
| Biodiversity, green and blue infrastructure | • Aim 4: Our natural environment is enhanced, providing benefits for people, economy and nature.<br>• Aim 3: Our transport system is reliable, integrated, inclusive, affordable and enables sustainable travel. |
| Built environment | • Aim 4: Our natural environment is enhanced, providing benefits for people, economy and nature. |
| Natural resources and waste | • Aim 2: Our buildings are sustainable and energy efficient<br>• Aim 5: Our city region transitions to a circular economy and our waste is reduced, reused, recycled or recovered<br>• Aim 8: Our economy will grow sustainably because of the interventions we make, benefiting our residents and businesses |

The aim of this document is to provide a summary of the key policy drivers, baseline trends, issues and opportunities. The report is a synthesis of this information and intended to be used to signpost to the policy papers and reasoned justification for each LTP policy (rather than being a complete encyclopaedia of all the evidence that has been gathered and considered).

## 1.2 Key sources of information

It is important that the LTP is prepared with a robust understanding of the environmental baseline and policy context. There is a substantial amount of data and information sources relating to environmental factors available nationally, regionally and locally. However, to ensure a proportionate and strategic approach in the LTP there has been a stronger focus on the following key sources of information in this evidence report.

- The Greater Manchester Strategy 2025–2035 (and performance framework)
- Greater Manchester Clean Air Plan Technical Documents
- Greater Manchester Climate Change Risk Assessment
- Greater Manchester Five-Year Environment Plan
- Five-Year Environmental Plan Dashboard / Progress reports
- Greater Manchester Places for Everyone Plan
- Greater Manchester's Local Nature Recovery Strategy
- Greater Manchester Local Transport Plan Integrated Appraisal Scoping Report
- Greater Manchester Air Quality Annual Status Report
- Greater Manchester Integrated Water Management Plan
- Greater Manchester Joint Waste Management Plan
- Greater Manchester Sustainable Consumption and Production Plan
- Greater Manchester Emissions Inventory Reports

## 1.3 Approach to presenting evidence

Evidence that relates to the environmental factors listed in section 1.2 has been reviewed with a view to presenting the following information.

### Key facts

This section sets out a summary of relevant information to provide a 'snapshot' of the environmental baseline. There is a focus on key issues, trends, projections and policy drivers.

### Relevant targets and indicators

The Greater Manchester Places for Everyone Plan, Greater Manchester Strategy 2025–2035 and the Greater Manchester Five-Year Environment Plan include a number of targets, indicators and actions that will be used to monitor strategic trends.

Some of these targets, indicators and actions are not finalised and may change, but are useful indications of the key environmental issues across Greater Manchester.

The targets, indicators and actions that are relevant to the LTP (i.e. where there is scope for the LTP to be influential) are replicated in each chapter to reiterate the importance of actions that address these environmental factors.

It is important to note that these measures will not be monitored by the LTP itself, but outcomes could be influenced by the strategy and delivery schemes (hence being included within this background evidence report).

### Integrated Appraisal

An Integrated Appraisal (IA) is being undertaken as part of the suite of LTP documents. Its purpose is to present an appraisal of the transport plan against a range of sustainability issues, with the aim of avoiding and mitigating any negative effects and maximising the positives. The first step in the process is called 'scoping' and involves gathering baseline information to identify key issues that should be dealt with in the LTP and IA.

An Integrated Appraisal Scoping Report for the LTP update has been established which documents the process referred to above. For the purpose of this Environment Evidence Base Report, relevant information has been drawn from the scoping report in relation to the following topics:

- Climate change mitigation and resilience
- Pollution
- Biodiversity, green and blue infrastructure
- Built and natural environment
- Natural resources and waste

### Practical examples

Where available, practical examples have been provided illustrating the action that has been (or could be) undertaken to address environmental issues through strategic transport planning.

### The role of the transport plan / how can the plan respond

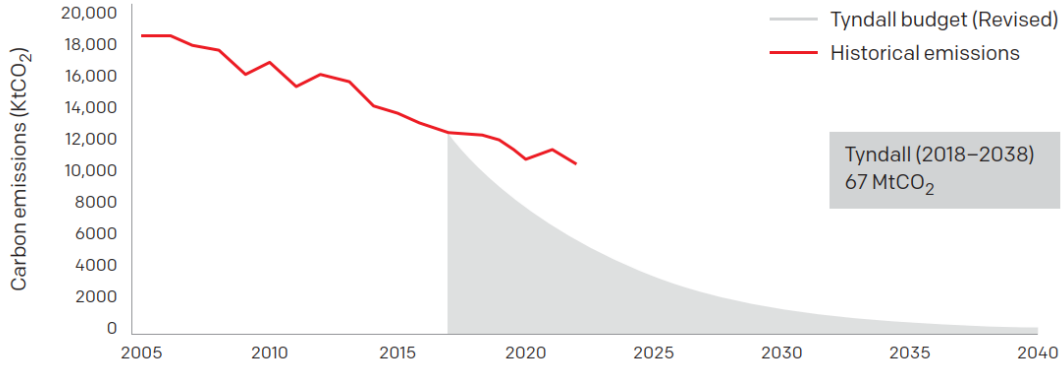
Building on the information presented in each chapter, this section summarises the key points/take-aways for development of the LTP from an environment perspective (i.e. the types of policies and interventions that need to be pursued to meet the identified challenges).

# 2. Climate Change Mitigation and Resilience

## 2.1 Key Facts: Carbon Emissions

- Greater Manchester is at risk of exceeding its allocation of the science-based carbon budget to 2100 (Kuriakose, J. et al, 2018). Significant measures are needed to ensure that GM meets its target of carbon neutrality by 2038.

**Figure 1: Historical Carbon Emissions relative to Carbon Budget for Greater Manchester**




*Source:* *Greater Manchester Five-Year Environment Plan 2025-30*

- Transport remains the highest contributor of direct emissions in GM, as illustrated in Figure 2 below. Transport contributes to 39% (3.9 $MtCO_2$) of carbon emissions in Greater Manchester, followed by domestic sources (30%) and industry (15%). The largest sub-sector contributor of emissions in GM is domestic gas (22%), followed by minor roads (14%), motorways (12%) and A-roads (11%). Although the share of transport-related emissions as a proportion of total carbon emissions has increased over the past five years, overall transport-related carbon emissions have actually decreased by 15% (GMCA, December 2024). This indicates a continuing downward trend in emissions from the transport sector.

## Figure 2: Sources of direct emissions in Greater Manchester in 2022


*Source: Workbook: Five-Year Environment Plan (2025 - 2030) Dashboard*

## The Bee Network: Integrated Low Carbon Public Transport Network

The Bee Network is an integrated, low carbon transport system for Greater Manchester combining buses, trams, walking and cycling on a single 'tap-in-tap-out' ticketing system that uses real time journey-planning.

One of the key aims is to encourage a shift from private car use to low-carbon public transport and active travel, thereby reducing emissions across the network. The following key features seek to contribute towards Greater Manchester's transport decarbonisation pathway.

- Zero emission bus fleet - Transitioning to electric buses (and supporting infrastructure) is expected to cut thousands of tonnes of $CO_2$ annually.
- Promoting walking, cycling and wheeling as the primary modes for short trips will reduce vehicle movement and associated carbon emissions.
- Expanding electric vehicle charging infrastructure.
- Cycling infrastructure expansion, with over 139 km of segregated cycle lanes completed by August 2025.


The Manchester Direct Emissions Report 2024 shows a 7.4% fall in direct carbon emissions in Greater Manchester between 2021 and 2022, higher than national figure of 5.7%. This is likely due to a reduction in industry related emissions, particularly in Wigan and Trafford which together account for 44% of the Greater Manchester industry total emissions and where emissions fell by 7% each (Manchester Climate Change Agency, 2024).

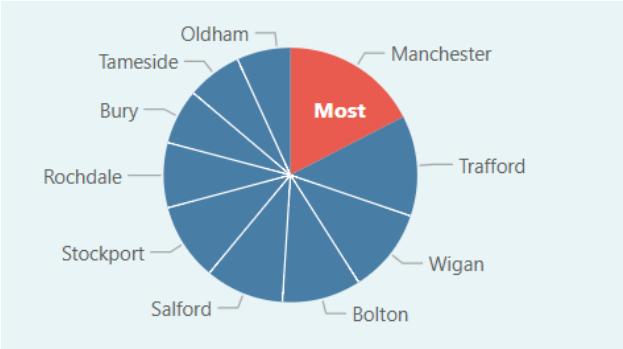
Figure 3 and Table 1 show the total carbon emissions across Greater Manchester Authorities, illustrating that Manchester has the highest, followed by Trafford. When factoring in population, the per capita emissions are highest in Trafford and lowest in Oldham (Table 2 and Figure 4).

**Table 1: Carbon Dioxide Emissions in 2022**

| Local Authority | Total Emissions (tCO2e) | Per Capita Emissions (tCO2e) |
|---|---|---|
| Bolton | 1,065.19 | 3.56 |
| Bury | 745.78 | 4.04 |
| Manchester | 1,849.18 | 3.26 |
| Oldham | 725.59 | 2.97 |
| Rochdale | 874.31 | 4.01 |
| Salford | 1,061.26 | 3.96 |
| Stockport | 1,041.45 | 3.50 |
| Tameside | 743.35 | 3.26 |
| Trafford | 1,352.32 | 5.86 |
| Wigan | 1,139.52 | 3.42 |

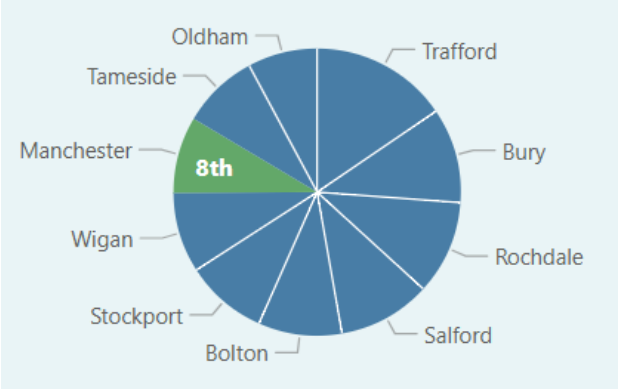
*Source: Manchester Direct Emissions Report 2024*

**Figure 3: Total Emissions in 2022 (ktCO2e)**




*Source: Manchester Direct Emissions Report 2024*

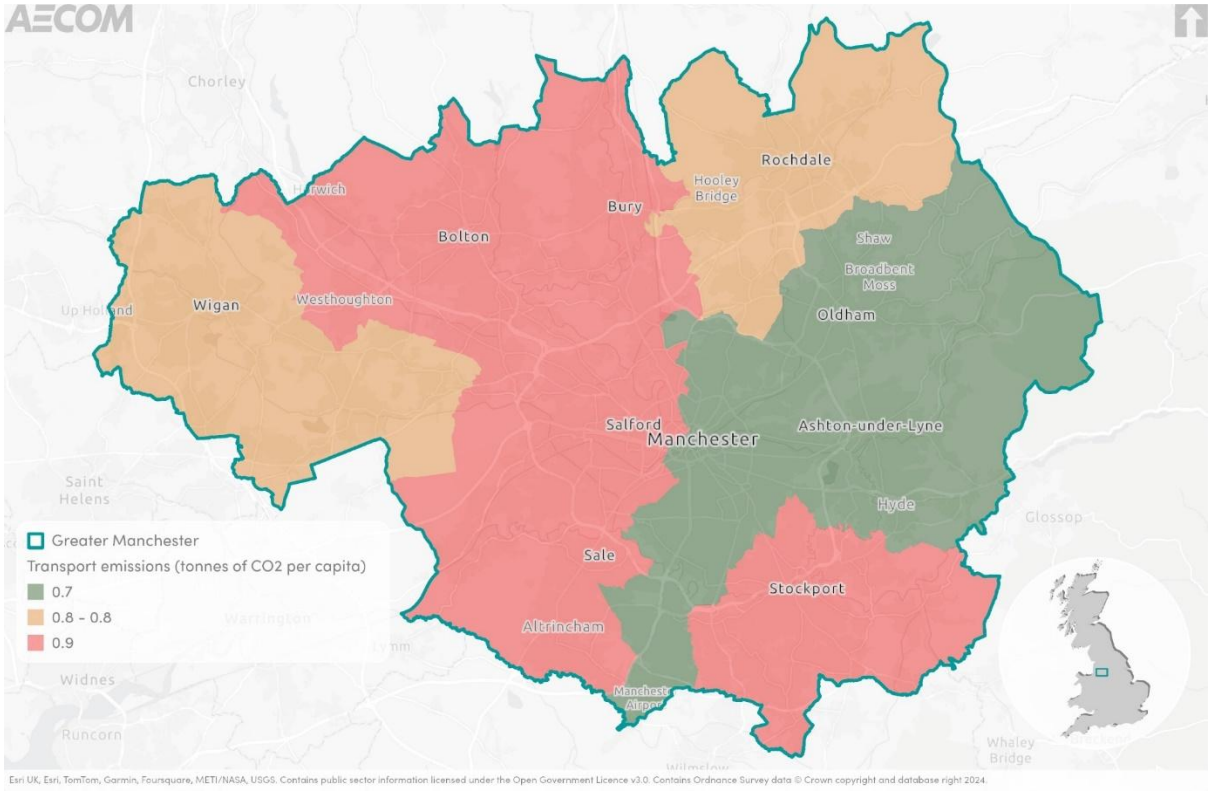
**Figure 4: Emissions per capita in 2022 (ktC02e)**




*Source: Manchester Direct Emissions Report 2024*

Transport related emissions across the region are mapped in Figure 5 according to the local authority area. This demonstrates that on a per capita basis, transport related carbon emissions are lower in Manchester City, Oldham and Tameside. The lower transport related emissions in Manchester City are likely to be attributed to the greater density of development and high availability of public transport links in this area, as well as higher income deprivation and social mobility issues. High income deprivation and social mobility issues are also known to be prevalent in other areas illustrated in Figure 5 with lower transport emissions per capita. In the contrary, areas with the least deprived populations, such as those to the south of Trafford and Stockport fall within areas with highest per capita transport emissions. This aligns with research by CREDs (2023) which suggests that the wealthiest 10% of the population is responsible for 25% of all personal transport emissions.

**Figure 5: Transport emissions per capita across Greater Manchester in 2021**




*Source: LTP Integrated Assessment Scoping Report*

## 2.2 Key facts: Climate change impacts

- Greater Manchester is already feeling the impact of climate change through changing weather patterns, rising health problems, reduced biodiversity and other indicators.
- Five of the warmest years on record in Greater Manchester have occurred since 2006, and across the UK, the most recent decade (2012 to 2021) has been on average 1.0°C warmer than the 1961 to 1990 average (GMCA, October 2024).
- There has been a decrease between 10% and 25% in average summer rainfall and an average increase in winter rainfall of between 10% and 50% across North-West England between 1961 and 2006 (Jenkins, G.J., 2008).

Projected changes in climate for the North-West region are summarised in Table 2, Figure 6 and Figure 7 below.

**Table 2: UKCP18 climate projections for the North West region under a 'business as usual' climate model**

a)Mean Average Air Temperature (°C)
b)Mean Precipitation Rate (mm/day)
c)Mean Relative Humidity (%)

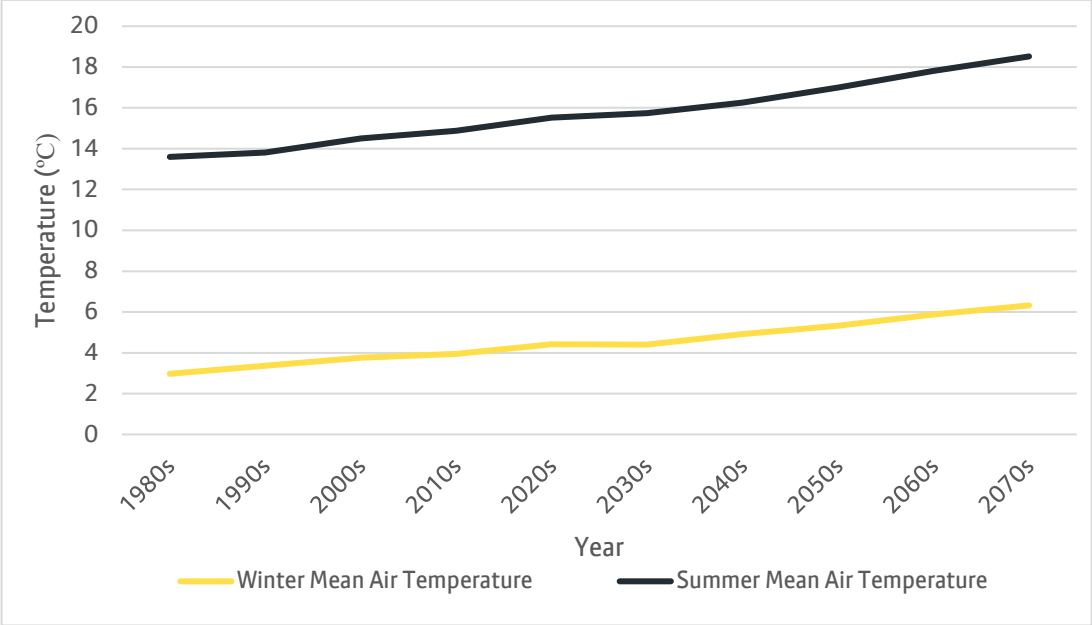
| | a)Winter | a)Summer | b)Winter | b)Summer | c)Winter | c)Summer |
|---|---|---|---|---|---|---|
| 1981-2000 | 3.19 | 13.74 | 5.56 | 3.55 | 88.33 | 79.56 |
| 2021-2040 | 4.42 | 15.65 | 5.83 | 3.19 | 88.08 | 77.66 |
| 2061-2080 | 6.12 | 18.23 | 6.79 | 2.47 | 87.52 | 75.12 |

*Source: UK Climate Projections 2018 (UKCP18)*

The above table indicates that in a 'business as usual' (i.e., 'do nothing') scenario:

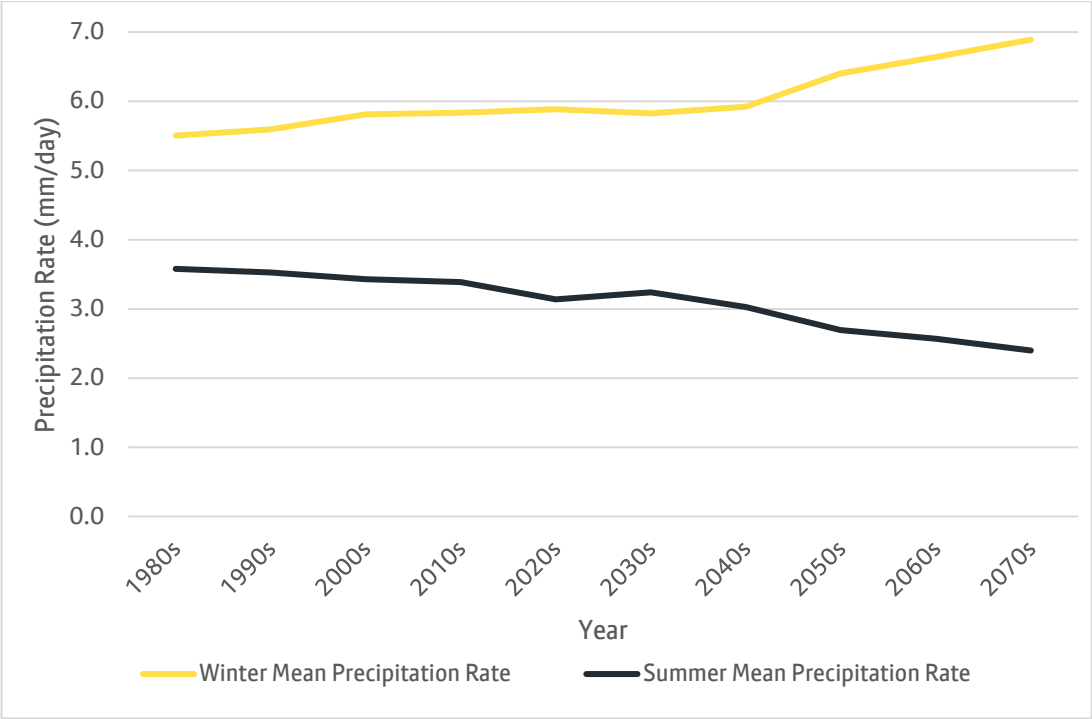
- Potential 1.7°C increase in mean average winter air temperatures between 2021 and 2080, and an increase of 2.58°C in summer air temperatures over the same period.
- In the 2061-2080 period there could be a 0.96mm / day increase in winter precipitation, and a 0.72mm / day decrease in summer precipitation.
- The mean Winter relative humidity could decrease by 0.56%, and summer humidity decrease by 2.54% between 2021 and 2080.

**Figure 6: Change in mean air temperature (°C) for winter and summer seasons in the North West region (1980s - 2070s)**




*Source: UK Climate Projections 2018 (UKCP18)*

**Figure 7: Change in mean precipitation rate (mm / day) for winter and summer months in the North West region (1980s - 2070s)**




*Source: UK Climate Projections 2018 (UKCP18)*

As outlined above, projected climate change in Greater Manchester includes increased temperatures (particularly in summer) and wetter winters which

could lead to more extreme weather events. This is likely to have implications for transportation and travel, which need to be planned for and mitigated or adapted.

**Impacts on infrastructure** – change in temperatures and extreme weather events such as increased storms, heatwaves, heavy rainfall and flooding can damage infrastructure (such as buckling of rail tracks and degrading of road surfaces), increase operational difficulties (such as through docking at ports and take-off and landing at airports) and disrupt services by temporary making infrastructure unusable, such as through high snowfall and flooding of infrastructure. Heavy rain or surface flooding could also cause structural collapse, landslips and sinkholes. Dry weather can also have a significant impact, as it can cause cracks to form in the soil, reducing the ability of soil to bind together as firmly as it once did.

**Reduced uptake of public transport and active travel** – extreme heat, cold weather and poor air quality may reduce the attractiveness of more sustainable travel modes i.e. extreme hot or cold weather is not ideal for active travel so people may revert to private travel and vehicles, which may exacerbate climate issues and congestion further.

Public transport may also become less attractive if services become less pleasant and reliable due to extreme heat, such as from inadequate air conditioning and increased mechanical failures or reduced capacity.

**Higher maintenance costs** – extreme heat and low temperatures will accelerate the wear and tear on transport systems reducing the lifespan of infrastructure and therefore requiring higher maintenance costs to keep the infrastructure safe and fit for purpose. Higher maintenance costs could also reduce investment opportunities for improvements and expansion of the transport network.

**Disruption of supply chain logistics** – climate change events may disrupt the transportation of goods and essential supplies, which could be prolonged where this results in damage to infrastructure. This could have longer-term economic impacts on manufacturing and retail. Some impacts could be long-term when not addressed, such as flooding or deterioration of road infrastructure as a result of extreme heat or low temperatures.

## 2.3 Targets, indicators and actions relevant to the LTP

The GM Places for Everyone Plan and the Greater Manchester Five-Year Plan both include targets, indicators and actions related to climate change.

- Target: Greater Manchester aims to become a carbon neutral city-region by 2038 (5YEP)
- Target: 100% of the GM bus fleet that is zero emission (at tailpipe) by 2030 (GMS 2025)
- Target: 50% of trips to be made by public transport, walking and cycling by 2040 (5YEP)
- Target: Increase the % of journeys that do not emit any greenhouse gases or air pollutants from their use (5YEP).
- Action: Advocate, support and facilitate GM logistics move to zero emissions fleets (5YEP)

## 2.4 Integrated Appraisal

The box below summarises the key issues identified within the LTP Integrated Appraisal that are relevant with regards to 'Climate Change'.

### Summary of key sustainability issues relevant to Climate Change

- Transport remains a key contributor to carbon emissions in the region.
- More extreme weather patterns predicted with higher temperatures (drier summers) and higher rainfall (wetter winters) and increase in the frequency of storms and associated damage.
- Increased flood risk in the region due to increased infrastructure which impacts on natural drainage systems.
- Estimated decline in per capita emissions in GM.
- Adapting transport infrastructure to meet challenges is costly; careful cost planning to be undertaken.
- Electric vehicles present huge potential to reduce transport -based tailpipe emissions.

Source: LTP Integrated Assessment Scoping Report

## 2.5 What does this mean for the Transport Plan Update?

- There is a need to prepare for adaptation to climate change and an increased potential for extreme weather events such as flooding and heatwaves.
- Transport remains a key contributor to carbon emissions, but there are opportunities to reduce (mitigate) future emissions through modal shift, electric vehicles and reducing the need to travel by car.
- Greater Manchester has challenging targets for carbon reduction that require immediate action in all sectors.

# 3. Pollution

## 3.1 Key Facts: Air quality

- Road transport accounts for 32% of NOx emissions and around 12% of PM10 and 14% of PM2.5 (particulate matter) (GMCA, December 2024).

- For road transport, 32% of Greater Manchester residents' car (driver or passenger) trips are less than 2km in distance (TFGM, 2024). Trips of 2km or less have the most potential to be completed by sustainable modes and therefore the greatest potential to more immediately reduce local air pollution.

- Greater Manchester is committed to delivering compliance with the legal limit for nitrogen dioxide by 2026 through an investment-led, non-charging Greater Manchester Clean Air Plan.

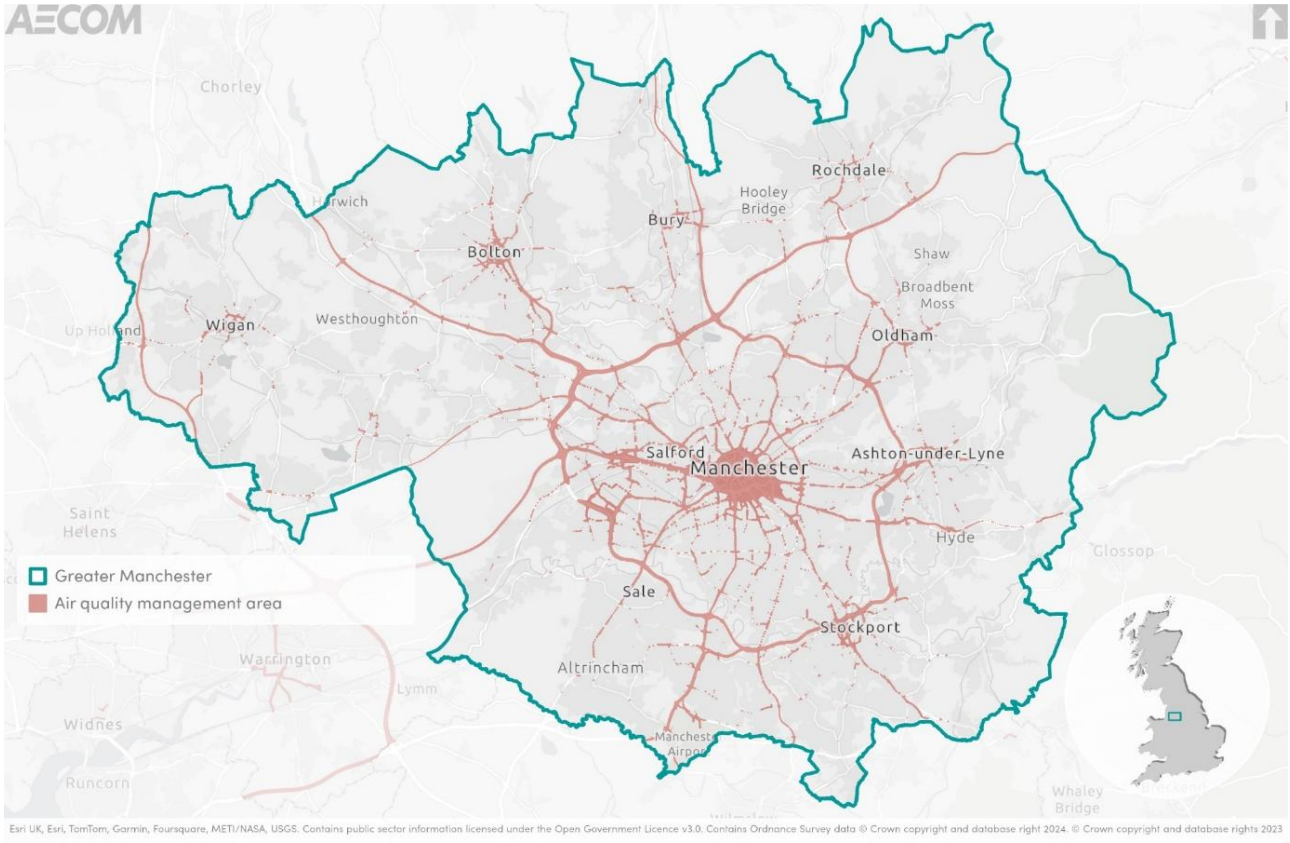
- The 2024 Air Quality Annual Status Report (ASR) sets out that long-term trends have shown an improvement in air quality in Greater Manchester, with the exception of a short-term fluctuation in $NO_2$ emissions relating to the travel restrictions associated with the COVID-19 pandemic.

- Particulate matter (PM2.5) is becoming an increasing health concern across Greater Manchester and nationally. Though tailpipe emissions are decreasing, trips are increasing and PM2.5 is generated from break and tyre wear and road dust. PM2.5 can also be increased through construction and industrial activities.

- The risk of adverse effects on air quality due to development and transport is a key issue, with a variety of air pollutants harmful to human health and the environment (DEFRA, 2020) (Mabahwi et. al. 2014) (Rebmann et. al. 2016).

- In 2016, the Greater Manchester Combined Authority declared a joint Air Quality Management Area (AQMA) across the region. This designation is linked to $NO_2$ emissions associated with transport and industrial sources and is subject to review once the Clean Air Plan has delivered compliance with the legal limit for NO2 at the roadside.

**Figure 8: Greater Manchester Joint Air Quality Management Areas**




*Source: DEFRA UK Air Information Resource*

## 3.2 Key Facts: Water

- The Greater Manchester area sits within five water management catchments: Aire and Calder (in the northern extent of Rochdale), Irwell, Douglas, Lower Mersey, and Upper Mersey. Within these catchments the majority of watercourses (88%) are categorised as having 'moderate' ecological status (DEFRA, 2025).

- Less than 5% of watercourses in Greater Manchester are categorised as having 'good' or 'high' ecological status, which is reflective of their quality. A slightly higher proportion of watercourses (7%) are categorised as having 'poor' or 'bad' status (DEFRA, 2025). Physical modifications to water bodies linked to urban and transport usage / infrastructure is the greatest reason as to why water bodies are not reaching a good status (DEFRA, 2025).

- Over 80% of waterbodies in Greater Manchester have been changed by human activities by being buried or built over and there are over 1000 barriers to fish movements along them (GMCA, December 2024).

- 13% of land in Greater Manchester forms transport routes, like train/Metrolink lines and roads/streets. These provide opportunities to integrate nature alongside new and existing infrastructure, and to use nature to help us adapt to climate change by slowing the flow of water through Sustainable Drainage Systems or provide shading through street trees, making them better places to walk and cycle.

- Population growth, development and climate change is likely to increase pressure on water resources in Greater Manchester. Transportation is likely to continue to impact upon water bodies. New transport infrastructure has the potential to lead to increased pollution to water sources, particularly through contaminated surface water runoff and physical alterations to watercourses, such as re-routing.

- The Greater Manchester Integrated Water Management Plan has three overarching objectives to be achieved by 2030:

    - Improve the water environment by meeting storm overflow reduction targets for 35% of the high priority sites in Greater Manchester.

    - Work together to invest more than £1bn to reducing flood risk and improve water quality.

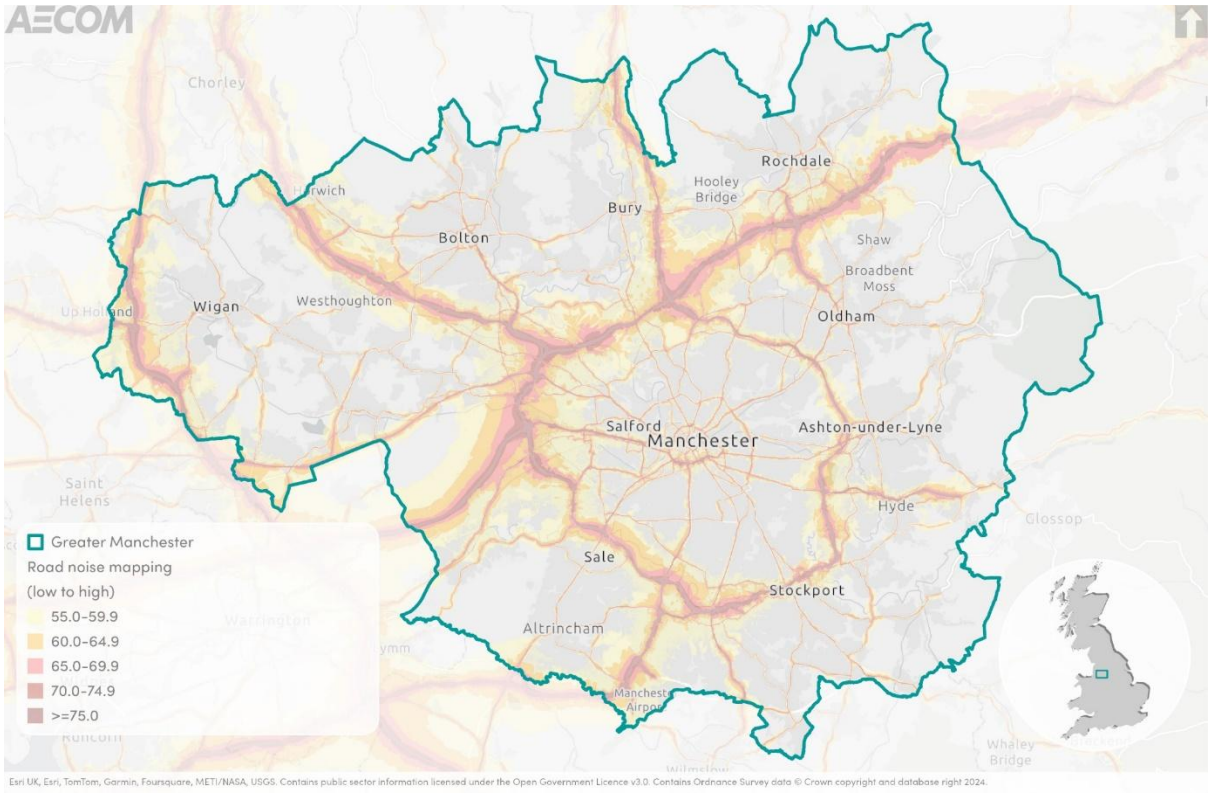
    - Leverage an additional £200m benefit from more than £1.2bn investment in Transport, Regeneration and other infrastructure investment programmes.

## 3.3 Key Facts: Noise

- The primary sources of noise pollution in the Greater Manchester area linked to transportation relate to motorways, A roads, railways and Manchester Airport.

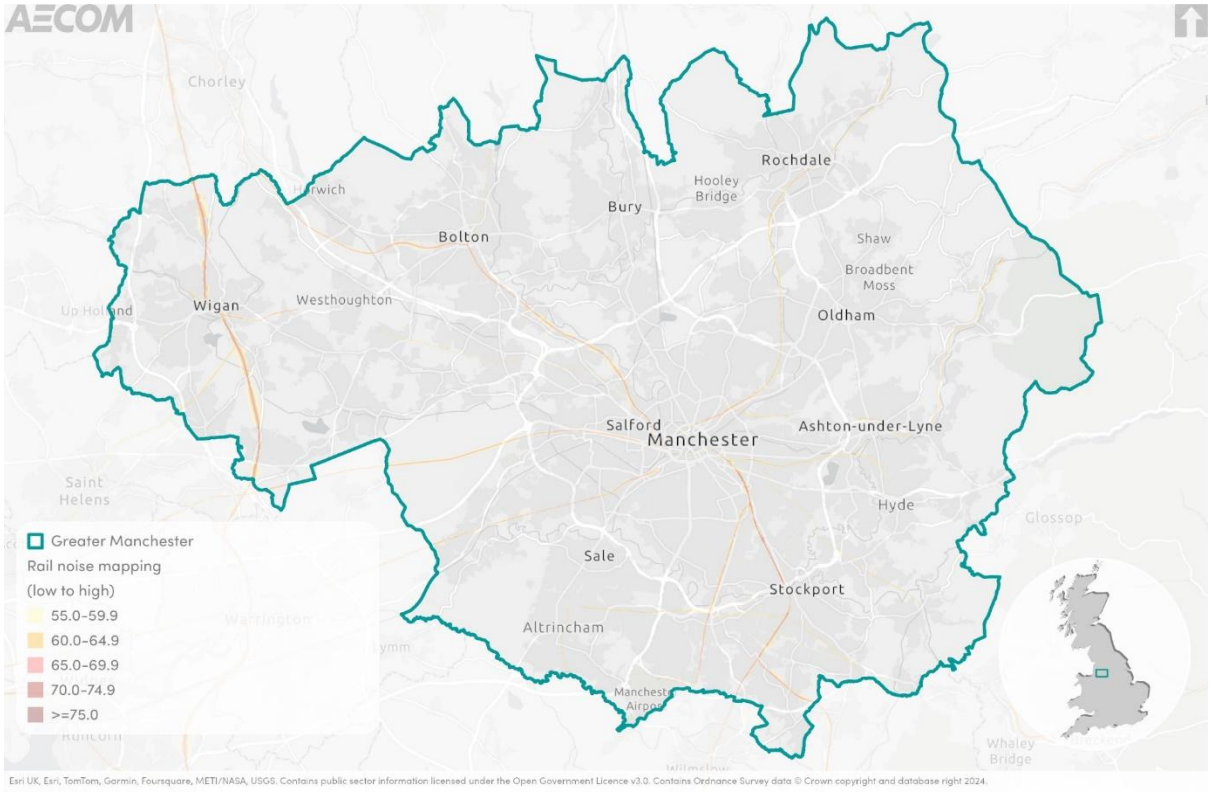
- Figure 9 illustrates road related noise throughout Greater Manchester. It shows that the M62 running south-west to north-east, the M60 circling around the city centre, the M61 and M6 in the north-western area, and the M66 to the east of Bury have great levels of noise pollution associated with them. This is to be expected, given these roads provide strategic connectivity within and beyond Greater Manchester.

**Figure 9: Road noise contours**



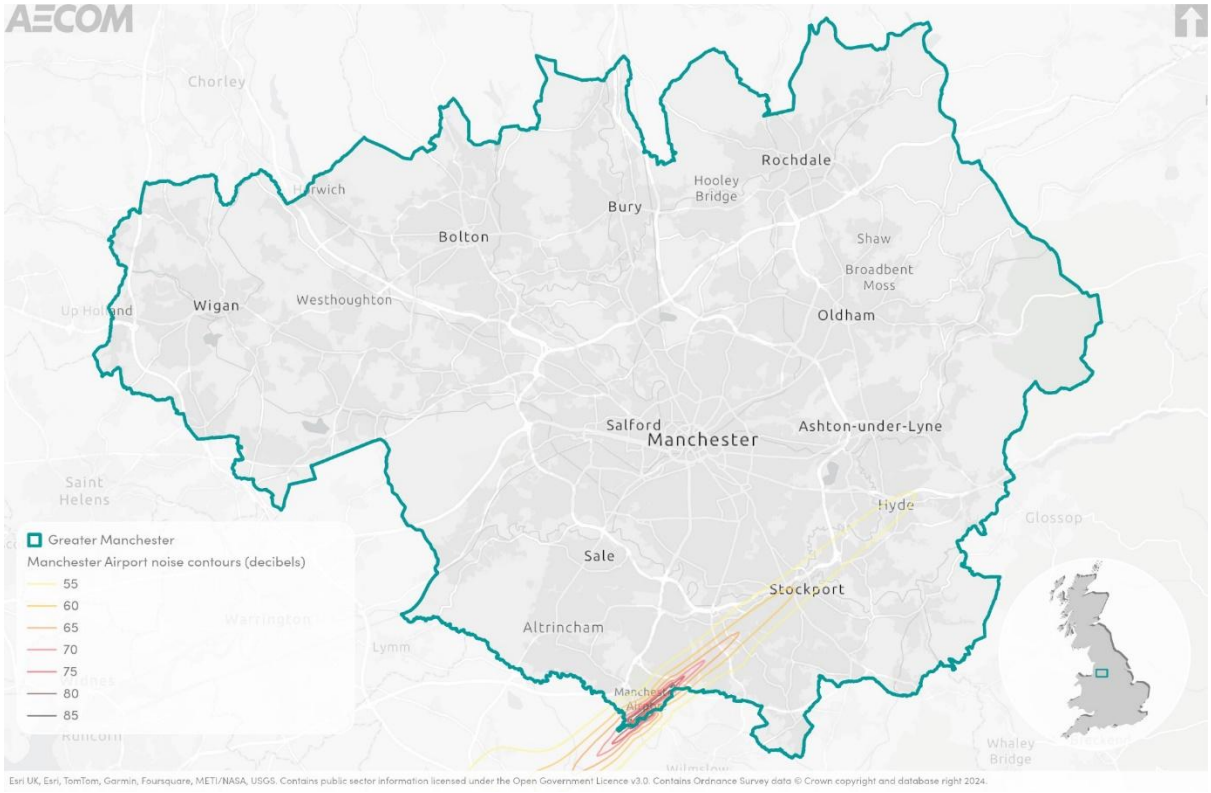

- Figure 10 illustrates railway related noise throughout Greater Manchester. It indicates that rail transport into Manchester city centre generates relatively low amount of noise. There is a greater level of noise associated with rail links between Manchester and Stockport, and also along the route that passes through Wigan to the north-west. This section of railway line forms a component of the West Coast Main Line from London to Edinburgh and Glasgow.

**Figure 10: Rail noise contours**




- Figure 11 illustrates noise associated with Manchester Airport. The direction of the noise contours correlate with the direction of the runway, which suggests impacts are primarily associated with noise generated during take-off and landing of aircrafts.

**Figure 11: Airport noise contours**




- It is likely that additional transport infrastructure will lead to an increase in noise, related to additional vehicular movements. Encouraging sustainable and active transport should help reduce noise pollution, as this should reduce the number of vehicles on the road which is a key contributor to noise.

## 3.4 Targets, indicators and actions relevant to the LTP

The GM Places for Everyone Plan and the Greater Manchester Five-Year Environment Plan (GMCA, December 2024) both include a number of targets, indicators and actions related to pollution. Those that are relevant to the LTP (i.e. where there is scope for the LTP to be influential) are replicated below to reiterate the importance of actions that address these environmental factors.

- Target: Increase the % of journeys that do not emit any greenhouse gases or tailpipe air pollutants from their use (5YEP)

- Target: 22% reduction in PM2.5 exposure by January 2028 compared to 2018 (measured using DEFRA's criteria) (5YEP)

- Target: Zero exceedances of the $NO_2$ of the legal limit by 2026 (measured using CAP criteria) (5YEP)

- Target: % of monitoring sites that meet WHO interim Target 2 (30ug/m3), Target 3 (20ug/m3) and the Guideline value (10ug/m3) Annual Mean for $NO_2$ by 2030 (5YEP)

- Indicator: Exceedance of the legal level of $NO_2$ (as an Annual Mean) in local AQMA and Clean Air Plan Monitoring (PfE).

- Action: Through the Integrated Water Management Plan, deliver improvements in the sustainable management of water and implementation of SuDS to the standards set out in the SuDS Design Guide.

## Example Action – Integrating Sustainable Urban Drainage Systems and Transport Improvements

The transformation of Howard Street in Salford demonstrates how public realm improvements can be made that help to manage water resources whilst creating safer, more resilient and pedestrian friendly environments. In this example, a range of measures were implemented that will help to reduce pollution and surface water run off including:

- Widened footways with permeable paving.
- Reconfigured parking spaces with permeable paving
- Improved junction treatments
- Street tree planting with tree pits that collect and filter runoff from the road.

## 3.5 Integrated Appraisal

The box below summarises the key issues identified within the LTP Integrated Appraisal that are relevant with regards to 'Pollution'

### Summary of key sustainability issues relevant to Pollution

- Economic growth, with associated transport infrastructure has the potential to increase the amount of traffic on key routes, which would likely lead to an increase in air and noise pollution. Conversely, investment could help to enhance public transport networks, deliver modal shift to sustainable and active transport and improve the efficiency of road networks, helping to minimise pollution issues.

- The Greater Manchester Combined Authority AQMA has been designated for tackling exceedances in $NO_2$. There is an AQAP in place to address air quality within the AQMA and across the wider Greater Manchester area. The Greater Manchester investment-led Clean Air Plan seeks to achieve $NO_2$ compliance with legal limits across all monitoring locations in Greater Manchester by 2026.

- Long-term trends have shown that emissions have reduced and air quality has been improving in Greater Manchester.

- Motorways, A roads, railways and Manchester Airport are major contributors of noise pollution in Greater Manchester.

- The quality of water courses across Greater Manchester is mostly 'moderate', with very few 'good' or 'high' classifications. Though this is an improvement on past quality levels, there is room for further improvement through the better management of these resources and mitigating impacts from development.

- The key pressures on water bodies within Greater Manchester linked to transportation include pollution from run-off and physical modifications to water courses to deliver new infrastructure.

## 3.6 What does this mean for the Transport Plan Update?

- More action is needed to achieve 'good' status for the watercourses throughout the region. In particular, there is a need to support sustainable drainage systems that include natural solutions.

- There is a need to improve air quality across Greater Manchester, especially in areas with poor air quality including areas within AQMAs. Transport is a major contributor to poor air quality and there is clear potential to improve air quality by addressing transport-related emissions.

- Additional transport infrastructure, particularly those involving vehicles, is likely to lead to an increase in noise. Promoting active transport modes such as walking and cycling which generate lower levels of noise is important to reducing noise pollution. Promoting public transport as an alternative to private vehicle should reduce the number of vehicles on the road and therefore also help reduce noise pollution.

# 4. Biodiversity, Green and Blue Infrastructure

## 4.1 Key facts

- The UK has a strong legislative framework for the protection, management and enhancement of the natural environment. The Wildlife and Countryside Act (1981) and the Conservation of Habitats and Species Regulations (2017) are key pieces of legislation for wildlife protection, setting out important principles, and identifying priority habitats and species.

- Under the Environment Act 2021, all planning projects (including transport projects and schemes) are required to deliver at least 10% biodiversity net gain (BNG) compared to pre-development levels.

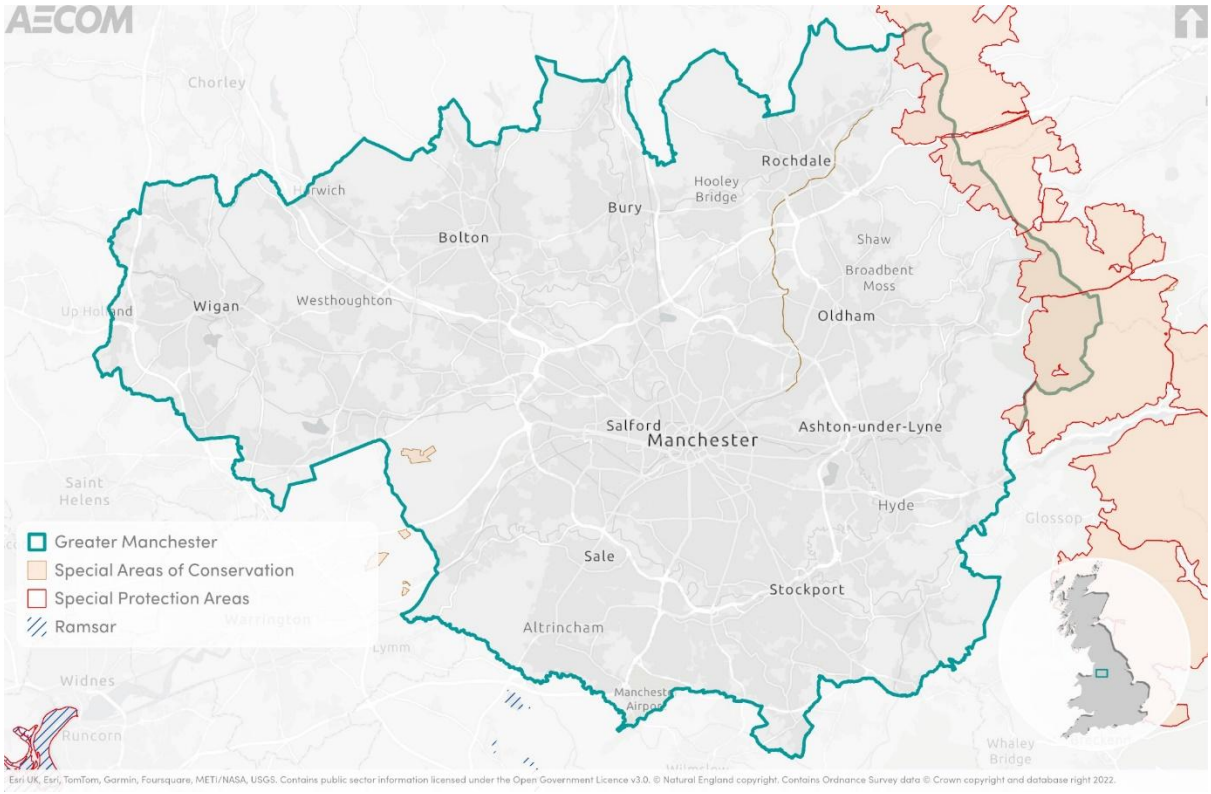
- Greater Manchester Combined Authority acknowledges that there is a 'biodiversity emergency' and has published a draft Local Nature Recovery Strategy (GMCA, no date), which seeks to reverse the trends in biodiversity decline. In 2022 it became a signatory of the Edinburgh Declaration, which calls for action to reverse biodiversity loss globally, with an emphasis on local action.

- Greater Manchester contains a range of habitats that are designated for their importance internationally, nationally and locally. This includes 5 internationally important designations: Manchester Mosses Special Areas of Conservation (SACs); Rochdale Canal SAC; South Pennine Moors SAC; Peak District Moors (South Pennine Moors Phase 1) Special Protection Areas (SPAs); and South Pennine Moors Phase 2 SPA. The international designations are illustrated in Figure 12.

- The international designations are sensitive to nitrogen deposition, which can be linked to transportation. For three of the five designations, local transportation was responsible for less than 5% of the nitrogen deposition in 2018 (UKCEH, no date). In 2018, Rochdale Canal SAC transportation was responsible for 8.61% of local nitrogen deposition, and for the Manchester Mosses SAC it was responsible for 14.9% (UKCEH, no date). This suggests that whilst transportation is a contributor to air quality, and subsequently pollutant deposition on sensitive sites, there are other sources that have a greater impact.

- Protected nature sites provide valuable refuges for nature but cover just 11% of Greater Manchester and are highly fragmented rather than forming a connected network for nature (GMCA, March 2024).

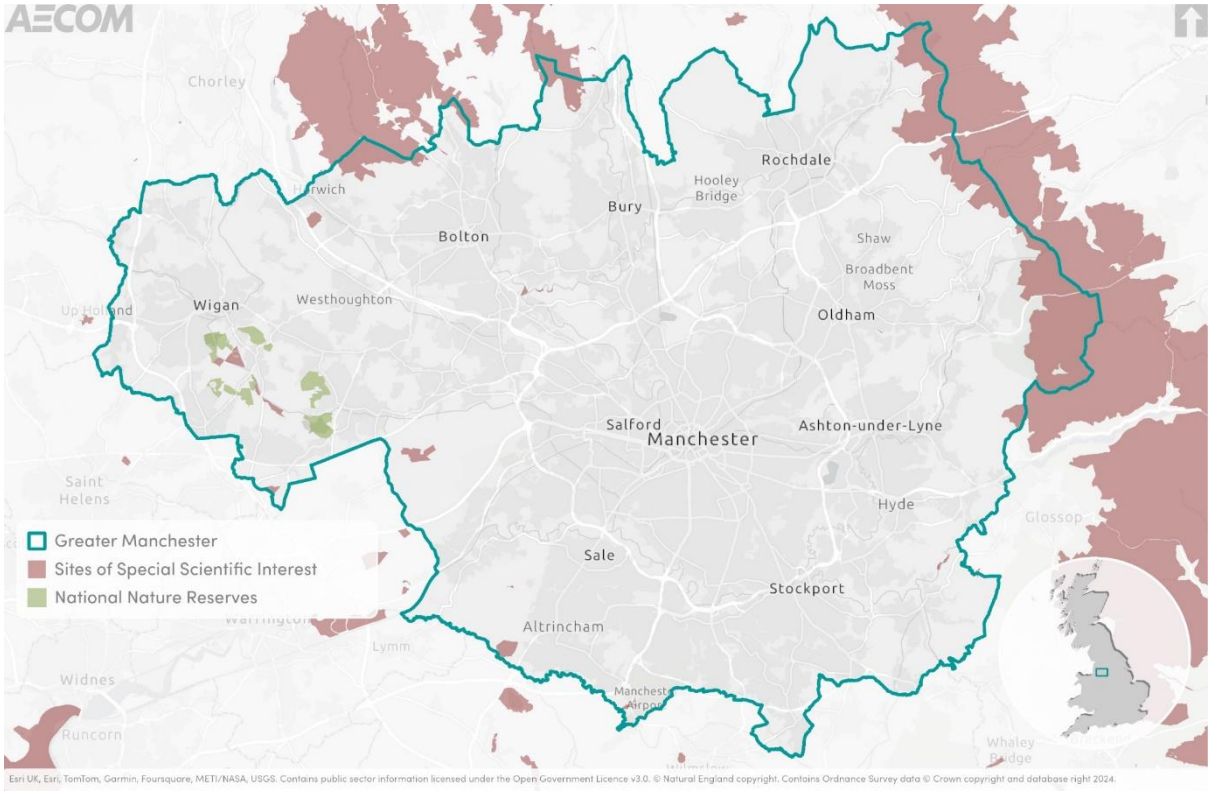
**Figure 12: International biodiversity designations**



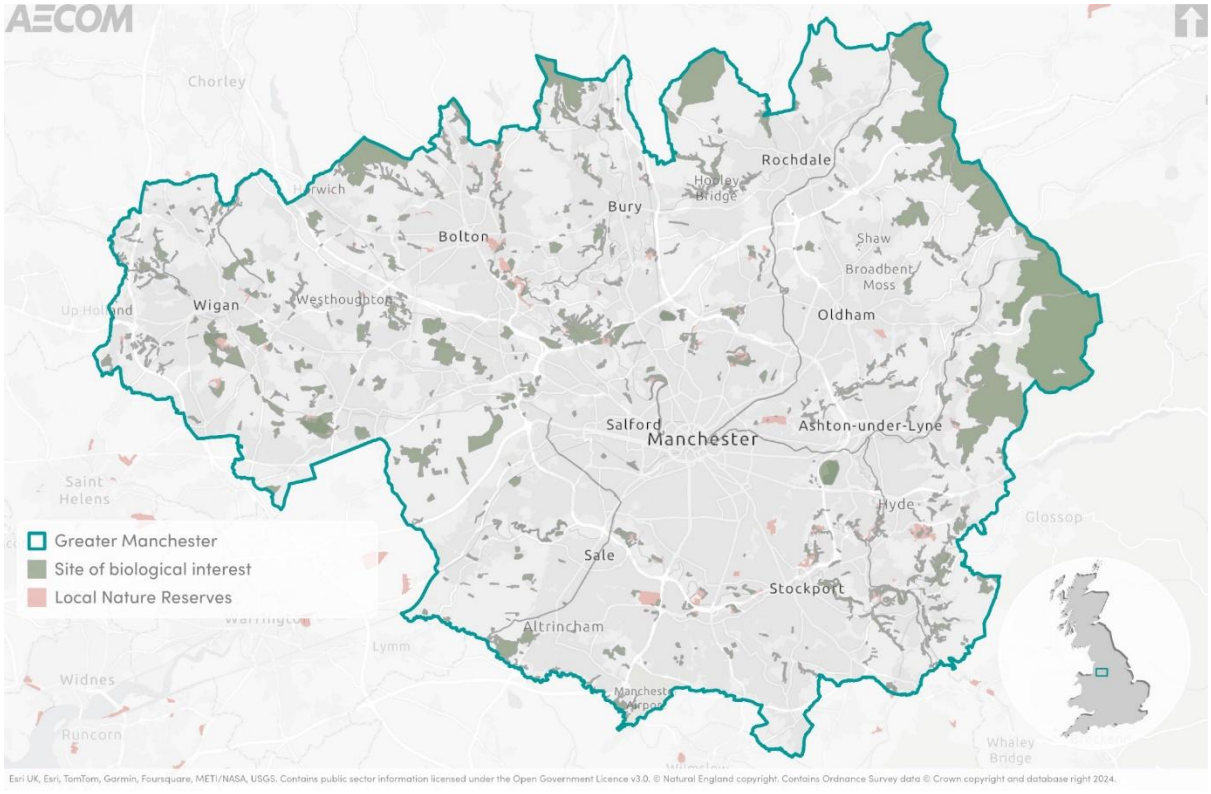

- National designations in Greater Manchester include 23 Sites of Special Scientific Interest (SSSIs) and two National Nature Reserves (NNR); the Risley, Holcroft and Chat Moss NNR and The Flashes of Wigan and Leigh NNR. Whilst most SSSIs in Greater Manchester have a 'unfavourable recovering' status, three SSSIs have an 'unfavourable declining' condition: Bryn Marsh and Ince Moss SSSI; Nob End SSSI; and Hollinwood Branch Canal SSSI (Natural England, no date).

- Other designations in Greater Manchester include 533 Sites of Biological Interest (SBI) and 79 Local Nature Reserves (LNRs).

## Figure 13: National biodiversity designations




## Figure 14: Local biodiversity designations



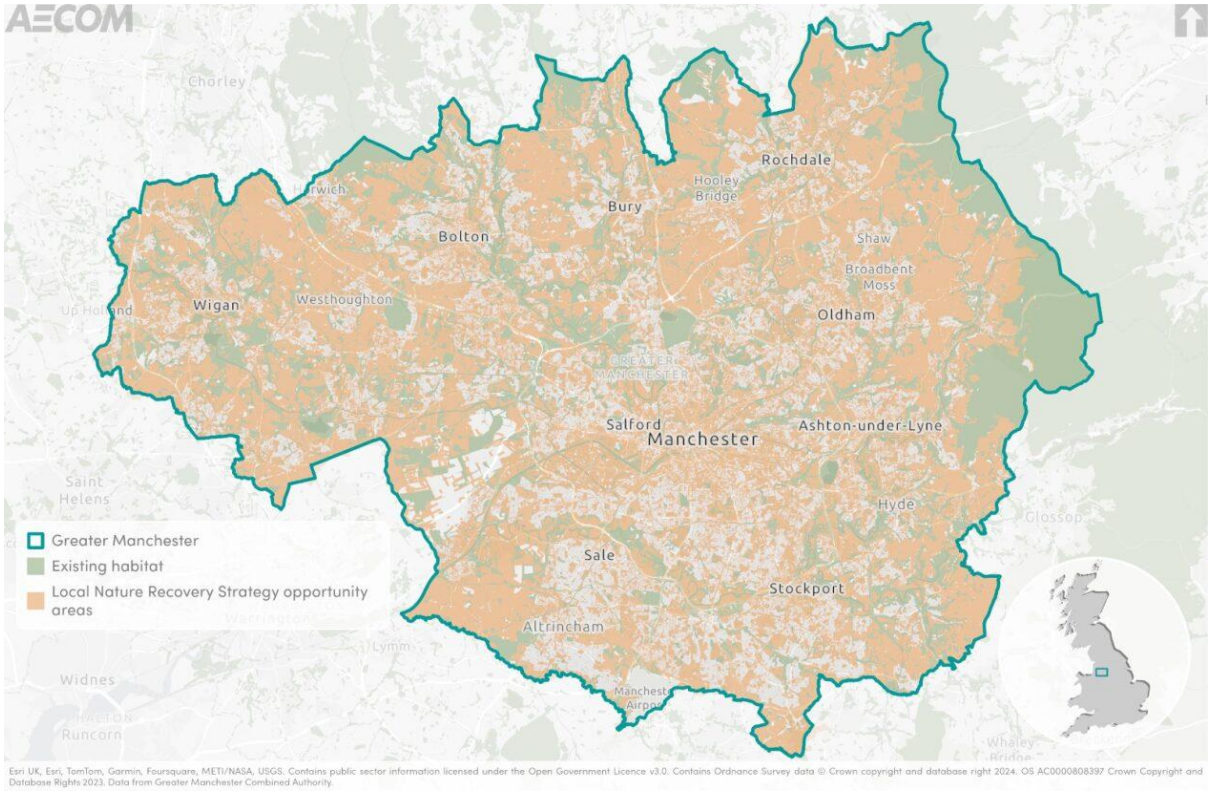
- Figure 15 shows priority Green Infrastructure throughout Greater Manchester, with larger concentrations found along the eastern periphery and north. Priority Green Infrastructure links to both health and biodiversity, linking to wildlife, habitats and land types including rivers and flood storage, green space and land of use for climate change mitigation.

**Figure 15: Priority Green Infrastructure across Greater Manchester**


*Source: Greater Manchester Combined Authority*

- A large proportion of the Greater Manchester area (broadly outside of Manchester City) is desirable for habitat creation and expansion. There is potential to promote increased levels of biodiversity connectivity, building habitat/ green infrastructure corridors and addressing fragmentation. Figure 10 below illustrates these opportunity areas.

**Figure 16: Biodiversity opportunity areas for enhancement**




*Source: Greater Manchester Combined Authority*

- 13% of land in Greater Manchester forms transport routes, like train/Metrolink lines and streets. These provide opportunities to integrate nature alongside new and existing infrastructure, and to use nature to help us adapt to climate change by slowing the flow of water through Sustainable Drainage Systems or provide shading through street trees, making them better places to walk and cycle. This aligns with the priorities in the Nature Recovery Strategy to maximise multiple benefits through development where possible, such as improving health and wellbeing, storing carbon or reducing flood risk (GMCA, no date).

## Delivering environmental improvements to existing transport infrastructure

The Trafford Road Corridor scheme in Salford was primarily aimed to improve capacity and efficiency for all modes along the corridor, whilst improving safety and increasing opportunities for active travel.

The scheme aimed to make the most of opportunities to integrate nature by incorporating green infrastructure and Sustainable Drainage Systems (SuDS). This included transforming the highway's central reservation with planting designed to serve a dual purpose: managing surface water sustainably and enhancing biodiversity. The central reservation featured a combination of SuDS-enabled tree pits and rain gardens, planted with a diverse mix of perennials, ornamental grasses, and extensive areas of wildflowers.

- A study into Accessible Natural Greenspace Standards (ANGST) (Natural England, no date) in Greater Manchester reveals the following:
    - 44% of residents live within 300m from accessible natural greenspace that is at least 2ha in size.
    - 79% of residents live within 2km from an accessible natural greenspace of at least 20ha in size
    - 74% of residents in Greater Manchester live within 5 km from an accessible natural greenspace of at least 100 hectares in area
    - 61% of residents in Greater Manchester live within 10 kilometres from an accessible natural greenspace of at least 100ha in area.
- This demonstrates that people generally have good access to nature if they are willing and able to travel longer distances. However, it also shows that there is a need to improve access to green space at the 'neighbourhood level' and connectivity to green spaces further afield.

## Delivering environmental improvements through transport schemes

The Great Ancoats Street Scheme in Manchester seeks to improve transport connectivity for pedestrians and cyclists whilst also delivering significant improvements to the public realm to help support continued economic growth and healthy places to live.

The incorporation of green infrastructure into the street scene is a vital component of the scheme and demonstrates how environmental improvements can be achieved through transport infrastructure upgrades.

Landscaping of the area has involved planting 71 trees and the incorporation of sustainable urban drainage systems will help to manage surface water flooding, support biodiversity and improve resilience to climate change.

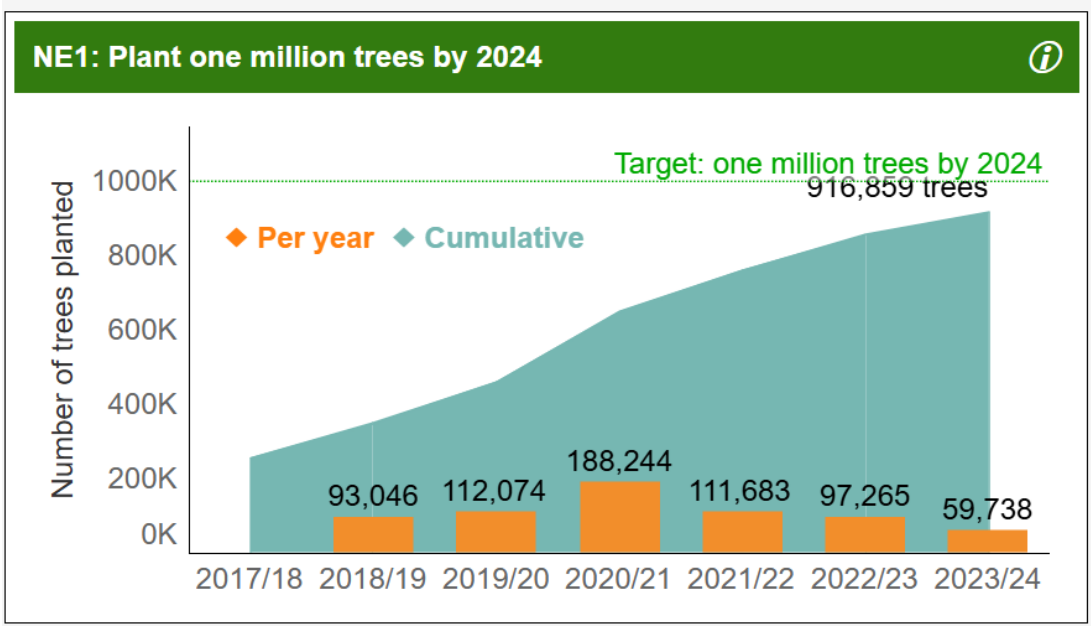
## 4.2 Targets, indicators and actions relevant to the LTP

The GM Places for Everyone Plan, the Greater Manchester Five-Year Plan and the Greater Manchester Nature Recovery Strategy include targets, indicators and actions related to 'biodiversity, green and blue infrastructure'.

- Target: Work towards the restoration and creation of 1,800ha of wildlife-rich land by 2035 (5YEP)
- Target: Increase tree canopy cover to 18.5% by 2035 (5YEP)
- Target: Target the delivery of new wildlife-rich land and tree planting within the Nature Network (5YEP)
- Target: Increase streets, roads, pedestrian and cycle routes that are greener, nature-rich and tree lined, acting as corridors for nature (NRS)
- Indicator: Gross area of new habitat created from the application of biodiversity net gain (PfE)
- Indicator: Number, area and condition of sites of biological importance (PfE)
- Indicator: Number of trees planted annually (PfE / GMS)
- Indicator: Number of hectares of green infrastructure (PfE)
- Action: Manage areas alongside transport routes for nature, for example through wildflower areas on verges and tree planting (5YEP)
- Action: Implement green and blue infrastructure in all transport schemes (5YEP)
- Action: Allow space for water and install sustainable drainage along existing and new streets, highways and cycle paths (NRS)
- Action: Reduce key barriers to wildlife movement across our major highways (NRS)

The Greater Manchester Five-Year Plan Dashboard tracks progress against Natural Environment (NE) targets outlined in the 2019-2024 Plan. Those relevant to this topic (with links to transport) are replicated in the boxes below.

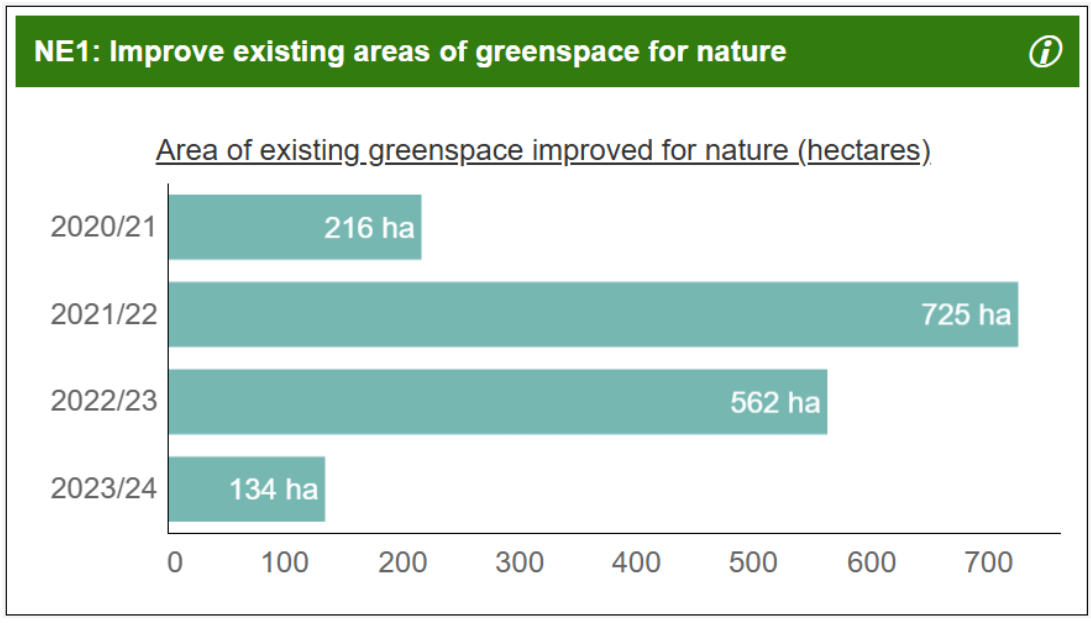
**Figure 17: Number of trees planted in Greater Manchester**




*Source: Workbook: Five-Year Environment Plan (2019 - 2024) Dashboard*

As illustrated in Figure 17, just over 900,000 trees were planted overall by 2023/24, which is a significant proportion of the target.

**Figure 18: Area of existing greenspace for nature**




*Source: Workbook: Five-Year Environment Plan (2019 - 2024) Dashboard*

1637 ha of existing greenspace was enhanced for nature over a four-year period 2021-2024 (the equivalent of approximately 2340 football pitches).

## 4.3 Integrated Appraisal

The box below summarises the key issues identified within the LTP Integrated Appraisal that are relevant with regards to 'Biodiversity, Green and Blue Infrastructure'.

### Summary of key sustainability issues relevant to biodiversity, green and blue infrastructure

- There is a strong legislative and policy framework seeking to protect and enhance biodiversity. In particular there is a need to reverse the declines that have been experienced in biodiversity and to achieve 'net gain'.
- There are a range of European protected biodiversity sites within Greater Manchester, which are sensitive to air quality changes.
- It is important for transport interventions to support nature recovery across the combined authority area, and restore losses suffered.
- The quality of water courses across Greater Manchester is mostly 'moderate', with very few 'good' or 'high' classifications. Though this is an improvement on past quality levels, there is much room for further improvement
- Any development should consider the protection and enhancement of restorable peat and protected wetland sites. Improved management of peat soils can contribute towards tackling climate change through

## 4.4 What does this mean for the Transport Plan Update?

- There are legal requirements and policy drivers that require environmental protection, conservation and enhancement. Furthermore, there is a need to reverse the decline in biodiversity and to achieve a 'net gain in biodiversity'.
- Green and blue infrastructure has multifunctional benefits and should be incorporated into transport schemes.

- There is a need to improve access to natural greenspace, particularly at the 'neighbourhood' level.

# 5. Built Environment

## 5.1 Key facts

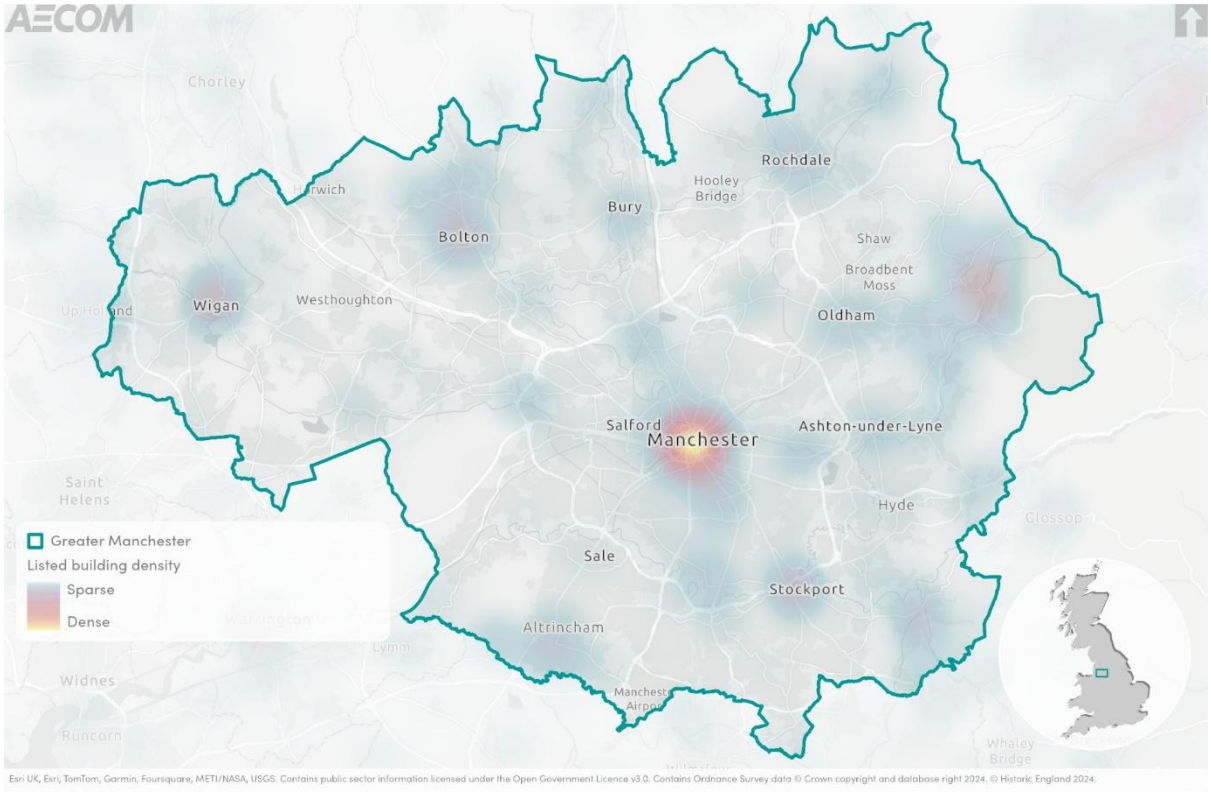
- There are 3,925 listed buildings within Greater Manchester: 49 Grade I, 241 Grade II*, and 3,635 Grade II (as of 2023, according to Historic England). A significant amount of heritage in Greater Manchester relates to its' vital role in the industrial revolution.

- There are 48 scheduled monuments, 31 registered parks and gardens and 241 conservation areas within Greater Manchester.

- Greater Manchester has significant transport heritage, ranging from the first public passenger railway, a network of important canals, former tramways and rail lines. Some of these features are still well preserved and contribute towards the heritage of Greater Manchester. Former routes and associated infrastructure / buildings also contribute towards recreational routes and help to connect people to heritage and the natural environment (for example, walking and cycling trails along disused rail and tram routes).

- There are opportunities to improve access and active travel connections to heritage assets, which can improve opportunities for their use and interpretation whilst promoting more sustainable travel to these sites.

**Figure 19: Concentration of listed buildings across Greater Manchester**




*Source: Historic England 2024*

- There are ten landscape character types (LCTs) identified through the Greater Manchester Landscape Character and Sensitivity Assessment[1], and 46 component landscape character areas (LCAs).

- Greater Manchester has over 500 parks and greenspaces which contribute towards the character of townscapes and landscapes. There are thousands of protected trees throughout the region that contribute to landscape character. In addition, there are several initiatives to increase tree cover across greater Manchester.

[1] LUC (2018): Greater Manchester Landscape Character and Sensitivity Assessment

## 5.2 Targets, indicators and actions relevant to the LTP

There are no direct indicators, targets or actions that explicitly relate to built heritage or townscape character within the Five-Year Plan or other relevant plans and strategies. The following measures that promote improvements to the public realm and townscape character are relevant as they will likely improve the built environment.

- Target: Increase our tree canopy cover from 16.5% (5YEP)
- Action: Integrate greening into regeneration projects, to bring nature into town centres
- Action: Provide funding to community groups to create or improve green spaces, including through funding 100 Green Spaces Fund

## Heritage – led regeneration and transport measures

Transport measures can have a direct and indirect impact on the built environment and are often important elements of regeneration schemes. The 'Rediscovering the Underbanks' project in Stockport is a good example.

This area, once a bustling and important market street has fallen into decline, and since 2017 is the focus of a heritage-led regeneration scheme. The aim is to re-establish the area as a cultural and commercial hub, whilst retaining its historic character.

Several transport measures have been implemented that have helped to support active travel, improve access to heritage and preserve the character of the area. This includes timed and permanent road closures, support for walking and cycling improvements and pocket parks.

New walking and cycling routes connect the Underbanks to nearby landmarks like the Market Hall and Viaduct, encouraging exploration of the wider historic environment.


*Source: Stockport.gov.uk/visit-the-underbanks*

## 5.3 Integrated Appraisal

The box below summarises the key issues identified within the LTP Integrated Appraisal that are relevant with regards to the 'built environment'

### Summary of key sustainability issues relevant to the built environment

- Greater Manchester has a rich historic environment, with a variety of designated and non-designated features across its area.
- Past transportation infrastructure has shaped the historic landscape of Greater Manchester – especially the canals, trams and railways, and the road network.
- New transport infrastructure provides an opportunity to positively impact on the setting and significance of historic environment features, through enhancements to the visual interpretation of structures.
- New transport infrastructure could increase the number of visitors travelling to view specific historic environment features. This could lead to increased pressure on these features but could also provide a greater opportunity to undertake conservation work where appropriate.
- Consideration should be given to disturbance of heritage assets and their settings as a result of activities including noise from transport, use of land for new infrastructure, as well as investment/ restoration of travel networks.
- The Refresh of the LTP should seek to ensure transport interventions avoid sensitive landscape areas.
- Street trees contribute positively to the character of urban environments and can help to disperse pollution, manage climate change impacts and improve biodiversity and wellbeing.

## 5.4 What does this mean for the Transport Plan Update?

- Wider access - Affordable and sustainable access to built and natural heritage supports economic viability whilst improving wellbeing both for locals and visitors alike.

- Opportunities for placemaking – The historic environment can enhance transport environments and encourage modal shift if integrated well. Likewise, transportation investment measures can help to protect, conserve and enhance heritage assets.

- Sensitive design – Greater Manchester has a rich historic environment that has been influenced heavily by past industrial activities, including transport heritage. New infrastructure needs to be sympathetic to historic character and natural environments.

# 6. Natural Resources and Waste

## 6.1 Key facts

- To transition to a circular economy there is a need to support and adopt new business models through procurement mechanisms and strategies, that consider the full life cycle of products and consider new service models which encourage reuse and repair of goods to protect natural resources. Businesses need to consider offering consumers sustainable alternatives to purchasing, supporting package reduction through 'refillable' products and taking a full lifecycle approach particularly within the food system to maximise redistribution and minimise waste. (5YEP)

- Transport infrastructure will be an enabling factor in supporting a transition to a circular economy as it can support the efficient movement of materials and waste and support the movement of reused and recycled materials.

- Port Salford is being developed as a major inland port and logistics hub, integrating rail, road, and waterway transport. It is designed to reduce HGV traffic and support bulk mineral movement via rail and canal

- The Greater Manchester Sustainable Consumption and Production (SCP) Plan 2022 - 2025 (GMCA, 2022) focuses on four priority areas namely: moving to a circular economy, managing waste sustainably, reducing food waste, and promoting sustainable lifestyles.

- The Joint Local Aggregate Assessment 2020 to 2023 (GMCA, January 2025) highlights the growing reliance on recycled and secondary materials to meet demand, especially as local primary aggregate sources decline.

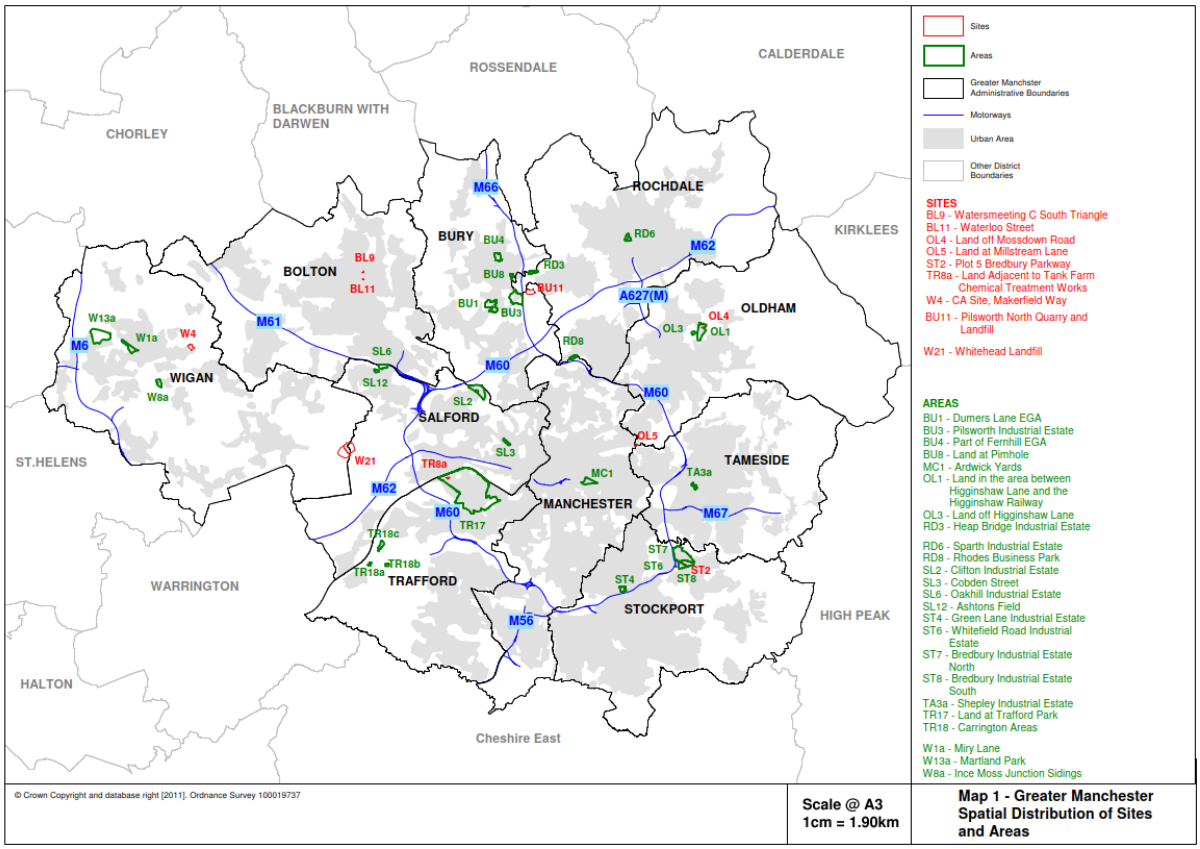
- Changes to the way goods are procured is an important way to minimise emissions associated with freight movement. Ideas for Greater Manchester include decarbonising freight, shifting from road to rail and waterways via Manchester Ship Canal and Atlantic Gateway initiatives (GMCA, no date). Although, marine fuels and emissions are less stringently regulated and thus this would need to be considered to ensure emissions can be minimised through freight.

- The purpose of the Greater Manchester Joint Waste Plan (AGMA, 2012) is to set out a waste planning strategy to 2027 which enables the adequate provision of waste management facilities in appropriate locations for municipal, commercial / industrial, construction / demolition and hazardous waste. The Waste Plan identifies different types of waste and consideration of the most suitable sites for disposal and management. Wigan has its own separate waste plan but works collaboratively with the Greater Manchester authorities. Following a review, a new plan is being prepared across Greater Manchester.

- Road transport remains the most common method for the movement of goods, waste and minerals within and out of Greater Manchester. However, there is an opportunity for rail to play a growing role in the movement of goods, waste and minerals.

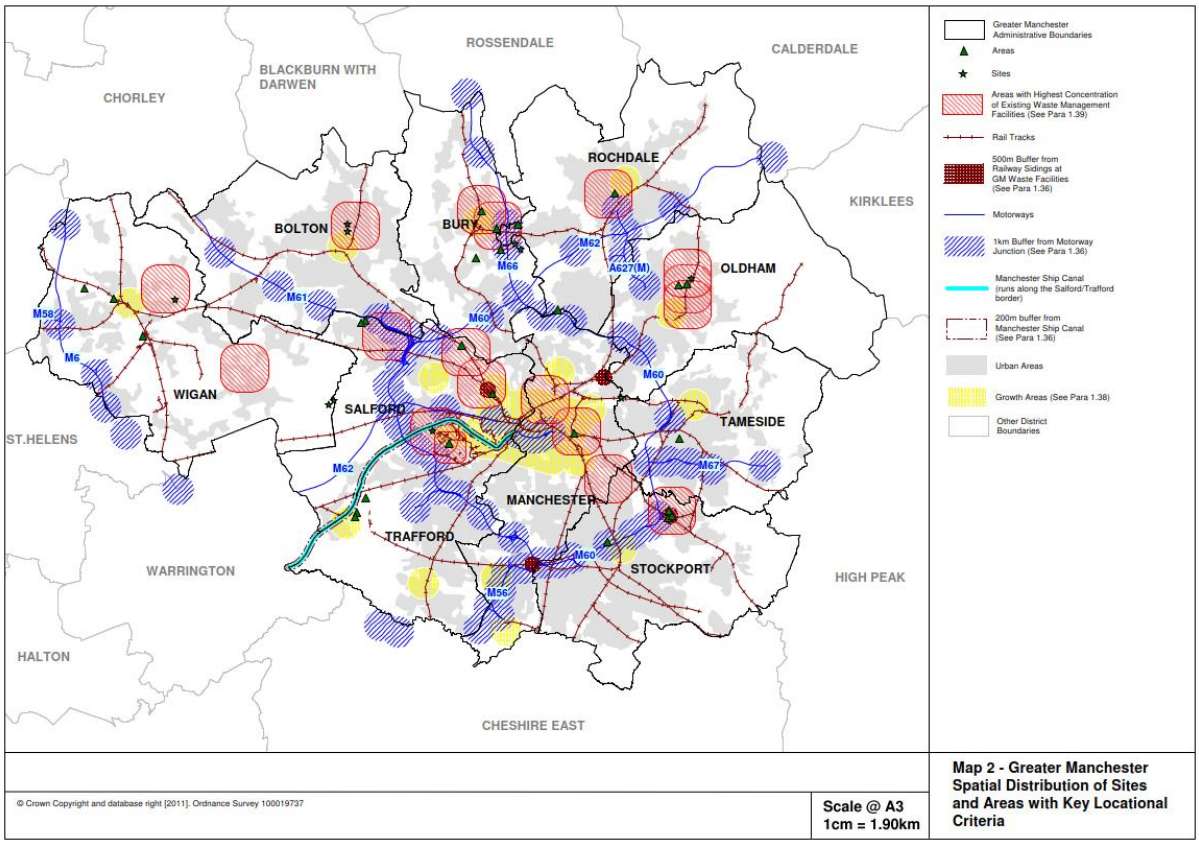
- There are more than 20 household waste recycling centres (HWRCs) across Greater Manchester. Figures 20 and 21 show the distribution of waste management sites and areas in relation to the transport network in GM. This suggest that some areas of Greater Manchester have poor access to HWRCs, including areas such as south Manchester, western parts of Stockport and eastern parts of Wigan.

## Figure 20: Location of waste management sites across Greater Manchester




*Source: Greater Manchester Waste Plan*

## Figure 21: Spatial distribution of waste management sites and areas




*Source: Greater Manchester Waste Plan*

- Greater Manchester's waste management relies heavily on efficient transport infrastructure—transfer stations, collection fleets, waste-to-energy, and railheads. While transport isn't the biggest carbon source in the waste lifecycle, changes such as expanded food-waste collections and new recycling capacities mean more vehicles and nuanced logistics. Smart routing, electrification, modal shift towards rail/canal, and policy alignment (e.g. clean air initiatives) are key to balancing the system's operational needs, emissions, and environmental impact.

- Waste that cannot be reused, recycled or composted is sent to an Energy from Waste plant where it is burned to generate electricity. Four mechanical treatment facilities produce fuel sent to Runcorn CHP. Bolton Energy from Waste (EfW) plant processes around 85,000 t/year converting heat to electricity (approximately 11 MW annually).

## Electrifying Manchester's Waste Collection Fleet

Manchester City Council made a £9.8 million investment into decarbonising its waste collection fleet by replacing 50% of the original diesel fleet with electric vehicles. This project started with enhancement of electrical infrastructure at Council depots followed by the roll-out of electric waste collection vehicles during 2021 and 2022. A range of positive environmental impacts have been achieved, whilst maintaining the quality and standard of services.

- Saves **900 tonnes of $CO_2$ annually** (≈4% of the Council's direct emissions).
- **Zero tailpipe emissions** improving air quality and public health.
- **Noise Reduction:** Quieter operation reduces noise pollution.

## 6.2 Targets, indicators and actions relevant to the LTP

The GM Joint Waste Management Plan and the Greater Manchester Five-Year Plan (2025-2030) includes targets, indicators and actions related to 'natural resources and waste'. The Greater Manchester Joint Minerals and Waste Plan (GMJMWP) is being updated to reflect current needs and sustainability goals and therefore targets and indicators are likely to be amended.

- Target: 38% reduction in industrial emissions by 2025 and a 50% - 77% reduction by 2038 (5YEP)
- Indicator: Compliance with the proximity principle (JWMP)
- Indicator: Increase in use of recycled / secondary material (PfE)
- Action: Explore feasibility of optimising existing infrastructure or commission new facilities to maximise capture of recyclable materials (5YEP)

## 6.3 Integrated Appraisal

The box below summarises the key issues identified within the LTP Integrated Appraisal that are relevant with regards to 'Natural Resources and Waste'

**Summary of key sustainability issues relevant to natural resources and waste**

- It is recognised that most physical resources required for development in the Greater Manchester area are imported (and transported) to the region rather than extracted / developed locally. Opportunities should be sought through the freight industry to transport construction materials efficiently, reliably and sustainably to sites in Greater Manchester and throughout the North West; delivering economic and environmental benefits.

- Construction of new transport interventions contributes to increased levels of waste generated. The Refresh of the LTP should seek to reduce consumption of resources such as construction materials e.g. through encouraging the use of recycled or secondary materials, which will reduce the need to transport these materials and waste by-products. This will align with the commitment by GMCA to implement PAS2080 standards in the delivery of infrastructure funded through the City Region Sustainable Transport Settlement and thus help generate greater reductions in capital carbon.

## 6.4 What does this mean for the Transport Plan Update?

- There is a need to decarbonise the waste sector by minimising waste, increasing rates of recycling and reuse, managing waste close to source and supporting the sustainable transport of materials (including decarbonising the vehicles transporting waste).

- There is a growing role for multi modal freight networks for the sustainable transport of minerals and waste.

- The transport sector has an important role to play in supporting the use of recycled and secondary materials and reducing embodied carbon.

# 7. Summary / how does the Transport Plan respond

The evidence gathered throughout this report provides a range of key messages that the LTP can respond to (i.e. the types of policies and interventions that need to be pursued to meet the identified challenges).

This section replicates the key messages recorded in the preceding chapters of this report. For each environmental topic, the key messages are presented alongside signposts to the most relevant parts of the LTP that respond to these issues.

## Climate change resilience and mitigation

| Key messages | Relevant parts of the Transport Plan |
|---|---|
| There is a need to prepare for climate change and an increased potential for extreme weather events such as flooding and heatwaves.<br><br>Transport remains a key contributor to carbon emissions, but there are opportunities to reduce emissions through modal shift, electric vehicles and reducing the need to travel.<br><br>Greater Manchester has challenging targets for carbon reduction that require immediate action in all sectors. | **Network Ambitions**<br><br>• Environmentally Responsible<br>• Well maintained and resilient<br>• Healthy<br><br>**Network policies**<br><br>• *Climate change (NP12)*– the policy sets out a range of measures that seek to reduce emissions from transport and improve resilience to climate change.<br><br>• *Green and blue infrastructure (NP13) / Built and Natural Environment (NP14)* – both seek to deliver environmental enhancements which will contribute to improved climate resilience.<br><br>• *Growth Locations and Town Centres (GL1)* – takes a 'sustainable transport first' approach that will help to reduce emissions associated with growth.<br><br>• *Land Use and Development (NP5)* – aims to reduce the need to travel and support sustainable patterns of growth, which will help to manage air quality.<br><br>• *Maintenance and Asset Management (NP18)* – supports whole life approach to asset management and 'environmentally responsible approaches'.<br><br>**Delivery policies**<br><br>• *Ultra Low Emission Vehicles (DP18)* - is supportive of measures that will encourage reduced vehicular emissions.<br><br>• *Collaboration with Neighbouring Authorities and Other Organisations (DP26)* - promotes sustainably located developments and strategic infrastructure that reduces emissions from vehicle trips.<br><br>• *Bus Infrastructure (DP5) / Car Clubs (DP13) / Walking and Wheeling (DP3)* – Several policies are aimed at achieving greater mix of sustainable transport and travel, which will help to reduce emissions. |

## Pollution

| Key messages | Relevant parts of the Transport Plan |
|---|---|
| More action is needed to achieve 'good' status for the watercourses throughout the region. In particular, there is a need to support sustainable drainage systems that include natural solutions. There is a need to secure continued improvements to air quality across Greater Manchester and there is potential, with transport being a major contributor, to achieve betterment particularly in areas with existing low air quality including areas within AQMAs. Additional transport infrastructure, particularly those involving vehicles, is likely to lead to an increase in noise. Promoting active transport modes such as walking and cycling which generate lower levels of noise is important to reducing noise pollution. | **Network Ambitions**<br>• Environmentally Responsible<br>• Healthy<br><br>**Network policies**<br>• *Pollution (NP11)* – Seeks to address air quality, noise and water quality issues.<br>• *Green and Blue Infrastructure (NP13)* – Seeks to improve sustainable water management. Green infrastructure has benefits for air quality.<br>• *Built and Natural Environment (NP14)* – Seeks to improve water management and address pollution.<br>• *Climate Change (NP12)* - Promotes water efficient solutions and sustainable drainage.<br>• *Land Use and Development (NP5)* – aims to reduce the need to travel and support sustainable patterns of growth, which will help to manage air quality.<br>• *Tackling Transport Related Social Exclusion (NP7)* – seeks to improve air quality in locations that are worst affected.<br><br>**Delivery policies**<br>• *Ultra Low Emission Vehicles (DP18)* - is supportive of measures that will encourage transition towards vehicles that are less harmful in terms of air quality.<br>• *Streets and Roads (DP2)* – The policy promotes measures that should help to reduce vehicle trips and improve environmental quality, with benefits for air quality.<br>• *Freight and Logistics (DP8)* – Supports sustainable freight movement and zero exhaust emissions. |

## Biodiversity, green and blue infrastructure

| Key messages | Relevant parts of the Transport Plan |
|---|---|
| There are legal requirements and policy drivers that require environmental enhancement.<br><br>There is a need to achieve a 'net gain in biodiversity'.<br><br>Green and blue infrastructure has multifunctional benefits and should be incorporated into transport schemes.<br><br>There is a need to improve access to natural greenspace, particularly at the 'neighbourhood' level. | **Network Ambitions**<br><br>• Environmentally Responsible<br>• Healthy<br><br>**Network policies**<br><br>• *Green and blue infrastructure (NP13)* - policy seeks to enhance biodiversity.<br><br>• *Built and Natural Environment (NP14)* - policy seeks to deliver biodiversity net gain<br><br>• *Climate Change (NP12)* – promotes nature-based solutions.<br><br>**Delivery policies**<br><br>• *Streets and Roads (DP2)* - policy seeks to create green streets |

## Built Environment

| Key messages | Relevant parts of the Transport Plan |
|---|---|
| *Accessibility*<br><br>Affordable and sustainable access to built and natural heritage supports economic viability whilst improving wellbeing both for locals and visitors alike.<br><br>*Opportunities for placemaking*<br><br>The historic environment can enhance transport environments and encourage modal shift if integrated well. Likewise, transportation investment measures can help to protect, conserve and enhance heritage assets.<br><br>*Sensitive design*<br><br>Geater Manchester has a rich historic environment that has been influenced heavily by past industrial activities, including transport heritage. New infrastructure needs to be sympathetic to historic character and natural environments. | **Network Ambitions**<br><br>• Environmentally Responsible<br>• Healthy<br><br>**Network policies**<br><br>• *Built and Natural Environment (NP14)* – A key element is the need to minimise or avoid impacts on townscapes, heritage and other environmental features.<br><br>• *Green and Blue Infrastrucrure (NP13)* – Supports street trees and other environmental improvements that contribute to townscape character.<br><br>**Delivery policies**<br><br>• *Streets and Roads (DP2)* – Will create safer, more attractive and accessible streets that support the built and natural environment.<br><br>• *Walking and Wheeling (DP3)* – Supports walking and wheeling as leisure activities, seeking to create attractive environments (which could incorporate built and natural environment features). |

## Natural resources and waste

| Key messages | Relevant parts of the Transport Plan |
|---|---|
| There is a need to decarbonise the waste sector by minimising waste, increasing rates of recycling and reuse, managing waste close to source and supporting the sustainable transport of materials.<br><br>There is a growing role for multi modal freight networks for the sustainable transport of minerals and waste.<br><br>The transport sector has an important role to play in supporting the use of recycled and secondary materials and reducing embodied carbon. | **Network Ambitions**<br><br>• Environmentally Responsible<br><br>**Network policies**<br><br>• *Maintenance and Asset Management (NP18)* – promotes improved environmental management and efficiency in the use of assets, which will reduce waste and resource use.<br><br>**Delivery policies**<br><br>• *Freight and Logistics (DP8)* – supports sustainable freight trips, which could apply to the movement of waste and minerals. |

# Annex 1: References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# Annex 2: Glossary

The terms in this glossary refer to their use in this document and may have different meaning when used in different contexts elsewhere.

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|---|---|
| 5YEP | Five-Year Environment Plan |
| ANGST | Accessible Natural Greenspace Standards |
| AQMA | Air Quality Management Area |
| ASR | Air Quality Status Report |
| CAP | Clean Air Plan |
| DEFRA | Department for Environment Food and Rural Affairs |
| GMAL4 | Greater Manchester Accessibility Level 4 |
| GMCA | Greater Manchester Combined Authority |
| GWS | Green Waste Shredding Facility |
| HWRC | Household Waste Recycling Centre |
| IA | Integrated Appraisal |
| IVC | In-Vessell Composting Facility |
| LAEP | Local Area Energy Plan |
| LCA | Landscape Character Areas |
| LCT | Landscape Character Type |
| MBT | Mechanical Biological Treatment Facility |
| MRF | Materials Recycling Facility |
| NE | Natural Environment |
| NRS | (Greater Manchester) Nature Recovery Strategy |
| PfE | Places for Everyone Plan |
| SAC | Special Areas of Conservation |
| SPA | Special Protected Area |
| TLS | Transfer Loading Station |
| TRF | Thermal Recovery Facility |