

Date: 26 October 2018

Subject: Greater Manchester Clean Air Plan: Update on Local Air Quality Modelling

Report of: Councillor Alex Ganotis, Portfolio Lead for Green City

PURPOSE OF REPORT

This report contains the results of one element of the feasibility study that will underpin the forthcoming Greater Manchester Clean Air Plan: the local modelling of predicted roadside nitrogen dioxide (NO₂) exceedances beyond 2020. Once agreed by Government, these exceedances will constitute the problem that the options for reducing NO₂ contained in the Greater Manchester Clean Air Plan must address.

The report also summarises the range of Clean Air Plan measures that are under consideration in accordance with Government guidance; and the clear requests for policy and funding support that have been made of Government in advance of determining the draft Plan for Greater Manchester.

RECOMMENDATIONS

GMCA is requested to:

- (i) Note the outcomes of the local NO₂ modelling, particularly that it predicts exceedances in all ten Greater Manchester local authority areas beyond 2020;
- (ii) Request that TfGM continues to undertake further analysis of measures for reducing NO₂ across Greater Manchester to legal Limit Values in the “shortest possible time”, as part of preparing the OBC for submission to Government; and
- (iii) Request that the Greater Manchester Mayor and Lead Executive Member take Greater Manchester’s ‘asks’ forward with Government, particularly noting the need for Government to issue clear instruction to Highways England to implement measures which deliver compliance on the Strategic Road Network.

CONTACT OFFICERS:

Simon Warburton

0161 244 1427

Simon.Warburton@tfgm.com

Comments and/or recommendation from the relevant Overview & Scrutiny Committee

Risk Management – N/A

Legal Considerations – see paragraphs 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4

Financial Consequences – Revenue – N/A

Financial Consequences – Capital – N/A

BACKGROUND PAPERS:

16 August 2018 – GM Clean Air Plan Report to HPEOS Committee

‘UK plan for tackling roadside nitrogen dioxide concentrations’, Defra and DfT, 2017

TRACKING/PROCESS		
Does this report relate to a major strategic decision, as set out in the GMCA Constitution		No
EXEMPTION FROM CALL IN		
Are there any aspects in this report which means it should be considered to be exempt from call in by the AGMA Scrutiny Pool on the grounds of urgency?		No
TfGMC	Overview & Scrutiny Committee	
14 September 2018	16 August 2018	

1. SUMMARY

- 1.1 Whilst air quality has been generally improving over time, certain pollutants remain a serious concern in many urban areas – particularly oxides of nitrogen (NO_x), principally nitrogen dioxide (NO₂), and particulate matter (PM).
- 1.2 Since 2010 the UK has been in breach of the legal Limit Values regarding levels of NO₂ in major urban areas.
- 1.3 Government Air Quality Plans have delegated responsibility for meeting legal Limit Values to local authorities where national Pollution Climate Mapping (PCM) modelling predicted concentrations of NO₂ on stretches of road would exceed the Limit Values beyond certain timeframes. Eight Greater Manchester local authorities have been directed to undertake feasibility studies to identify measures for reducing NO₂ concentrations within the “shortest possible time”. These studies must produce a series of business cases for assessing and implementing the relevant measures in a Clean Air Plan.
- 1.4 The Government has allocated £255 million for Implementation Funding and £220 million to a Clean Air Fund to facilitate implementation.
- 1.5 As part of their feasibility studies, local authorities must gather local evidence and conduct local modelling to confirm their NO₂ problem and model predicted concentrations of NO₂ beyond 2020 based on a “do minimum” scenario. This scenario is based on historical patterns of vehicle turnover, already planned junction improvements, road layout changes etc.
- 1.6 This report details the outcomes of the local modelling that has been conducted as part of the Greater Manchester feasibility study. This has revealed a wider NO₂ problem than that initially identified by Government. It predicts a greater spatial distribution of exceedances and higher concentrations of NO₂ than those initially identified by Government. Sections of road with concentrations of NO₂ over 40 µg/m³ are located in all 10 Greater Manchester local authorities, in a similar distribution to the air quality problems identified in the established Air Quality Management Area.
- 1.7 Greater Manchester is completing its feasibility study according to Government guidelines. Government guidance sets out charging Clean Air Zones (CAZ) as the measure most likely to achieve legal Limit Values for NO₂ in towns and cities in the shortest possible time. A charging Clean Air Zone places a penalty on the most polluting vehicles if they enter a designated area. Government guidance specifies that local authorities must consider Clean Air Zones as their benchmark measure in the feasibility study process as well as any alternative measures that are at least as effective at reducing NO₂ and deliver compliance as quickly. Further detail of Government’s definition of Clean Air Zones is provided in Section 9.
- 1.8 Focus groups and an on-street survey have recently been undertaken to understand public awareness of air pollution, its sources, and possible remedies. This research

has revealed some confusion about Government-defined Clean Air Zones as compared to Congestion Charging. Section 9 details the differing objectives of the two types of scheme.

- 1.9 At this stage, no decisions have been taken over the options for reducing NO₂ in Greater Manchester. It is anticipated that a report about the measures will be brought forward to the GMCA in December 2018 or January 2019.

2. INTRODUCTION: AIR QUALITY IN GREATER MANCHESTER

- 2.1 Poor air quality is one of the largest public health issues facing the UK. Whilst air quality has been generally improving over time, particular pollutants that are not generally visible to the naked eye, remain a serious concern in many urban areas. These are oxides of nitrogen (NO_x), principally nitrogen dioxide (NO₂), and particulate matter (PM). NO₂ is formed from burning fossil fuels and contributes to the formation of photochemical smog. Particulates are formed from tyre friction, burning fuels that create smoke, construction, industry and other processes. Although non-transport sources of NO_x are significant, road transport is responsible for some 80% of NO₂ concentrations at roadside, of which diesel vehicles are the largest source.

- 2.2 Long-term exposure to elevated levels of particulate matter (PM_{2.5}, PM₁₀) and NO₂ may contribute to the development of cardiovascular or respiratory disease, and may reduce life expectancy¹. The youngest, the oldest, those living in areas of deprivation, and those with existing respiratory or cardiovascular disease are most likely to develop symptoms due to exposure to air pollution^{2,3}. One of the issues highlighted recently is that people walking or cycling are exposed to lower levels of air pollution compared to drivers and passengers inside vehicles travelling along the same urban route. Cars take in emissions from surrounding vehicles and recirculate pollutants within the confined 'cabin' space, exposing occupants to higher levels of air pollution⁴.

- 2.3 Current assessments by Public Health England estimate the health and social care costs across the England due to population exposure to air pollution will be £5.3 billion by 2035 for diseases where there is a strong association with air pollution, or £18.6 billion for all diseases with evidence of an association with air pollution⁵.

¹ Air Quality – A Briefing for Directors of Public Health (2017), <https://www.local.gov.uk/air-quality-briefing-directors-public-health>

² Air Quality – A Briefing for Directors of Public Health (2017), <https://www.local.gov.uk/air-quality-briefing-directors-public-health>

³ RCP and RCPCH London, Every breath we take lifelong impact of air pollution (2016), <https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution>

⁴ F. de Leeuw et al., Assessment of personal exposure to particulate air pollution during commuting in European cities—Recommendations and policy implications, Science of the Total Environment. 2014; 785-797.

⁵ <https://www.gov.uk/government/news/new-tool-calculates-nhs-and-social-care-costs-of-air-pollution>

- 2.4 Improving air quality has been one of the key ambitions for Greater Manchester for some time. The Greater Manchester Strategy (Oct 2017) states Greater Manchester should be ‘a place at the forefront of action on climate change with clean air and a flourishing natural environment’ including by ‘reducing congestion and improving air quality’. Action is already underway under the Greater Manchester Low Emissions Strategy and Air Quality Action Plan, which introduced measures to reduce air pollution as a contributor to ill-health; increase behaviours that lower emissions by 2025; and support the Government to meet EU thresholds for key pollutants at the earliest date.
- 2.5 Recently, Greater Manchester also signed up to become a World Health Organisation (WHO) ‘BreatheLife’ city, with the associated aim of achieving WHO air quality targets by 2030. Through the C40 Fossil Fuel Free Streets Declaration in June 2018, Greater Manchester also committed to transitioning to a zero-emission bus fleet by 2025.
- 2.6 Greater Manchester has also set targets for CO₂ emission reduction that exceed national ambitions – a reduction of 48% by 2020 (based upon 1990 levels). Greater Manchester road transport accounts for 31% of carbon dioxide emissions in the city-region. Greater Manchester’s local authorities have also committed to eliminating fossil fuels by 2050 in a 100% clean energy pledge.
- 2.7 However, whilst these targets, strategies and action plans aim to improve air quality and pollution in Greater Manchester in the round, the specific breaches of the statutory Limit Values for NO₂ has prompted a series of court rulings and national Air Quality Plans that have implications for local authorities.
- 2.8 Since 2017 Greater Manchester has been acting as required by the direction from Government to conduct a feasibility study to assess measures for reducing NO₂ concentrations in areas where legal limits are expected to be exceeded beyond 2020. This will culminate in a series of business cases for introducing the measures identified through a Clean Air Plan.

3. POLICY BACKGROUND

- 3.1 Because of their harm to human health, regulations set legal Limit Values for concentrations of certain pollutants in ambient air. The European Ambient Air Quality Directive (2008/50/EC) incorporates WHO air quality standards into European Law, which was implemented into UK law by the 2010 Air Quality Standards Regulations (SI. 2010 No. 1001). The 2010 regulations set legally binding limits for concentrations of major air pollutants that affect human health, including NO₂ and particulates. Regulation 26 of the 2010 Regulations requires the Secretary of State to draw up and implement a national air quality plan so as to achieve the relevant limit or target value within the “shortest possible time”. The EU has recently

re-stated its aim to achieve full compliance with existing air quality standards ‘by 2020 at the latest’⁶.

3.2 Since 2010 the UK has been in breach of legal Limit Values for NO₂ concentrations in major urban areas. The Greater Manchester Urban Area Zone is one of 37 monitoring zones across the UK where the Department for the Environment, Food and Rural Affairs (Defra) modelling of annual mean NO₂ concentrations predicts levels that exceed statutory Limit Values. GM meets the EU Limit Values for all other pollutants.

3.3 The EC Directive requires any breach to be addressed by an Air Quality Plan that will reduce concentrations to legal Limit Values in the “shortest possible time”.

4. UK AIR QUALITY PLANS

4.1 Since 2010 the UK Government has produced three successive Air Quality Plans to reduce NO₂ by requiring local authorities to reduce emissions from road transport⁷.

4.2 Environmental campaigning law firm ClientEarth has successfully challenged these Air Quality Plans in the UK High and Supreme Courts for failing to include the actions necessary to achieve NO₂ Limit Values “in the shortest possible time”. The Courts have clarified that any steps taken must not just be possible but likely to meet the required values.

4.3 Each successful legal challenge has increased the number of local authorities directed to take action, with over 60 local authorities now under a direction:

- 2015: Birmingham Derby, Leeds, Nottingham and Southampton.
- 2017: 23 local authorities – including Bolton, Bury, Manchester, Salford, Stockport, Tameside and Trafford.
- 2018: 33 further local authorities, including Oldham.

4.4 Government has written to these local authorities directing them to produce a feasibility study as set out in the Environmental Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017. It should be noted that this directive relates only to the roads that local authorities are responsible for, and does not direct local authorities to assess or act to reduce NO₂ concentrations on the Strategic Road Network or motorways managed by Highways England.

⁶ <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52013DC0918>

⁷ Each plan has been subject to legal challenge in both European and national courts, and following several warnings the UK Government was referred to the European Court of Justice (CJEU) in May 2018, for repeatedly failing to take the necessary action to address NO₂ levels. The CJEU can fine Member States that breach legal levels of certain pollutants. The UK High Court and Supreme court have also separately ruled that the Government’s actions to address air quality are illegal in that they did not contain the scale or urgency of action required to bring NO₂ concentrations below legal levels “within the shortest possible time”.

- 4.5 Defra and the Department for Transport (DfT) have defined the feasibility study process local authorities are following in the 'Clean Air Zone Framework' (Defra, 2017) and the 'UK plan for tackling roadside nitrogen dioxide exceedances' (Defra and DfT, 2017) – referred to herein as the National Plan. Government also set up the Joint Air Quality Unit (JAQU) to deliver the National Plan by closely guiding local authorities through the feasibility study process.
- 4.6 The study must produce a series of business cases for assessing and implementing the relevant measures. The Government has allocated £255 million Implementation Funding and £220 million for a Clean Air Fund. Local authorities will be allocated Implementation Funding based on their Final Business Case. Local authorities will bid to the Clean Air Fund for support to help local people, businesses and other groups to switch to cleaner vehicles or make alternative travel choices.

5. GREATER MANCHESTER FEASIBILITY STUDY AND CLEAN AIR PLAN

- 5.1 Transport for Greater Manchester (TfGM) has been coordinating a GM feasibility study on behalf of the GMCA and the ten Greater Manchester local authorities. TfGM has been working closely with all the local authorities, who remain legally responsible for reducing NO₂ to legal Limit Values.
- 5.2 The purpose of taking a Greater Manchester-wide approach is to avoid introducing measures in one part of the conurbation that simply displace pollution to other locations, and to ensure that (as far as possible) the eventual Clean Air Plan complements other Greater Manchester strategies including the existing Air Quality Action Plan and Low Emission Strategy.
- 5.3 A Greater Manchester Clean Air Plan Senior Leadership Steering Group (Steering Group) is responsible for guiding the feasibility study, briefing senior officers and elected members in their respective organisations and securing local approvals. Members include Directors or Assistant Directors from each local authority and senior representatives from Highways England, Public Health England, AGMA, Local Partnerships and TfGM.
- 5.4 One step in the feasibility study is called 'Initial Evidence and 'Target Determination', in which local modelling is carried out to validate the NO₂ exceedances initially identified in the national modelling.

6. INITIAL EVIDENCE AND TARGET DETERMINATION

- 6.1 The National Plan identified eleven areas of road, across seven local authorities within Greater Manchester, where the national Pollution Climate Model predicts NO₂ concentrations are likely to exceed the statutory NO₂ annual mean EU Limit Value beyond 2020. Oldham were added in a later supplement to the National Plan (March 2018).

- 6.2 As the predictions in the national model are based on national scale assumptions and datasets, they must be verified against local evidence before any detailed assessment of options for reducing NO₂. Subsequently, during their feasibility studies, local authorities must submit 'Initial Evidence' to define and confirm the local air quality problem and model concentrations of NO₂ in 2021 based on a "do minimum" scenario. This scenario is based on historical patterns in vehicle turnover and already planned junction improvements, changes to road layout etc. The Greater Manchester authorities submitted their 'Initial Evidence' to Government in June 2018. A list of the additional local data used is included in Appendix 1.
- 6.3 It should be noted that the local modelling includes all local roads within GM, whereas PCM modelling that underpins the National Plan includes only major urban roads.

7. RESULTS OF LOCAL MODELLING

- 7.1 Whilst the local model is generally in agreement with the Pollution Climate Model exceedances, it reveals a bigger problem than that initially identified by Government. It predicts a greater spatial distribution of NO₂ exceedances across roads in Greater Manchester and higher concentrations of NO₂ in specific locations.
- 7.2 Local modelling identified 152 stretches of road (road links) where concentrations of NO₂ are forecast to exceed the legal Limit Value (40 µg/m³) beyond 2020. 112 of these road links are on the national PCM model, which have the highest car use and heavy freight flows. 40 of these are shorter stretches of local roads, around town centres across Greater Manchester. These are routes that are frequently used by buses and vans, which are not included in the national model.
- 7.3 These road links are distributed across all 10 Greater Manchester local authorities, in a similar distribution to the air quality problems identified in the established Air Quality Management Area. This means stretches of road where concentrations of NO₂ are predicted to exceed legal Limit Values beyond 2020 are found in all 10 Greater Manchester local authorities.
- 7.4 Local modelling also predicts stronger concentrations of NO₂ in locations across Greater Manchester. This means the concentration of NO₂ in the air at roadside is higher (worse) than originally predicted by Government.
- 7.5 The reasons for this are the vehicles using Greater Manchester's roads are typically older than the national average (especially buses and taxis); that local traffic data showed that in some areas vehicles are moving more slowly than the national modelling anticipated; and because local modelling also showed higher background concentrations of NO₂.
- 7.6 Background concentrations of NO₂ come from sources including domestic fuel burning; industry; and non-road mobile machinery. However, as transport is the

primary source of NO₂ at roadside, this is considered the primary means of dealing with exceedances and is the target of the National Plan.

- 7.7 In addition, higher concentrations of NO₂ were identified in the regional centres (particularly Manchester city centre) due to the volume of demand on these roads, and also in part due to something referred to as the 'canyon effect'. This term refers to the reduced air flow and circulation caused by tall buildings or in densely built up areas that acts to reduce the diffusion and dissipation of air pollutants that occurs in more open or low-rise locations.
- 7.8 Appendix 2 provides a summary table of the road links across Greater Manchester forecast to be in exceedance beyond 2020 in the Initial Evidence (by road type).
- 7.9 Appendix 3 contains a high level map of the exceedance points. This map also includes identified road links where NO₂ levels were just below the legal Limit Value, and therefore are considered at risk.
- 7.10 It should be noted that these maps do not include the exceedances on the Strategic Road Network and motorways that are managed by Highways England. Highways England have not been directed to act to reduce NO₂ on these roads under the same directive as local authorities. Highways England is currently assessing sections of the road network around GM to explore potential measures.

8. CONFIRMING TARGET AREAS FOR ACTION

- 8.1 After receiving the 'Initial Evidence' from Greater Manchester, JAQU undertook a process called 'Target Determination', which involves comparing the outputs of the local and national modelling, verifying the local modelling process and then agreeing the forecast exceedances. JAQU also ensure consistent approaches to local modelling are being used by different local authorities.
- 8.2 The outcome of this process is an agreement of the NO₂ exceedances that Greater Manchester must resolve when determining possible solutions. Once the Greater Manchester modelling is agreed by Government, illegal exceedances in all ten GM local authority areas need to be addressed.
- 8.3 The 'Target Determination' process is ongoing and Greater Manchester is responding to final requests for clarification from JAQU at this stage. JAQU have confirmed they anticipate no material changes, and so Greater Manchester can proceed with confidence with the remaining elements of the feasibility study.

9. POSSIBLE OPTIONS FOR REDUCING NO₂ EXCEEDANCES

- 9.1 The first output of the Greater Manchester feasibility study was the Strategic Outline Case (SOC) that was approved by the ten GM local authorities and submitted to Government in March 2018. In this document a long-list of 96 options was presented

and sifted to a shortlist of 17 based on Government's Primary Success Criteria (reduction of NO₂ concentrations in the "shortest possible time").

- 9.2 Government guidance sets out charging Clean Air Zones (CAZ) as the measure most likely to achieve legal Limit Values for NO₂ in towns and cities in the shortest possible time. A charging Clean Air Zone places a penalty on the most polluting vehicles if they enter a designated area. Government guidance specifies that local authorities must consider Clean Air Zones as their benchmark measure in the feasibility study process as well as any alternative measures that are at least as effective at reducing NO₂ and deliver compliance as quickly.
- 9.3 Government specifies four classes of CAZ that apply penalties to different types of vehicle that are classified as non-compliant because they fall below particular euro emission standards. Cleaner vehicles are unaffected.
- Class A: Buses, coaches, taxis and private hire vehicles.
 - Class B: Buses, coaches, heavy goods vehicles (HGVs) taxis and private hire vehicles.
 - Class C: Buses, coaches, HGVs, large vans, minibuses, small vans/ light commercials, taxis and private hire vehicles.
 - Class D: Buses, coaches, HGVs, large vans, minibuses, small vans/ light commercials, taxis and private hire, cars, motorcycles/mopeds.
- 9.4 The associated emissions standards are as follows:
- Euro 3 for motorcycles, mopeds, motorised tricycles and quadricycles.
 - Euro 4 for petrol cars, vans, minibuses and other specialist vehicles.
 - Euro 6 for diesel cars, vans and minibuses and other specialist vehicles.
 - Euro VI for lorries, buses and coaches and other specialist heavy vehicles.
- 9.5 A vehicle's Euro emission standard, is shown in the vehicle registration document – also known as a V5C.
- 9.6 As part of the feasibility study work, focus groups have been undertaken to understand public awareness of air pollution, its sources and possible remedies. This research has revealed a mixed understanding of air pollution – many are aware that air pollution exists but are unaware of the scale of the issue or its impacts on health, and also what people can do to reduce emissions and their exposure. The research also revealed that there is some confusion between penalties related to air pollution and congestion charging.
- 9.7 Clean Air Zones differ from Congestion Charging systems because of their very different objectives and time-spans. The objective of any penalty in a CAZ is for all vehicles which drive in a Clean Air Zone to have engines which comply with emissions standards set out at 9.4 above. A CAZ does not seek to reduce the number of vehicles on roads. This also means as vehicles are upgraded the number of penalties levied

reduces are therefore relatively short-term and only apply to non-compliant vehicles. Under a Congestion Charge, the requirement to pay applies to all vehicles, is enduring, and creates a long-term revenue stream. CAZ typically make a loss, particularly in the later years the zones are in place.

- 9.8 These differences are summarised in Appendix 4.
- 9.9 In recent on-street polling conducted to assess how Greater Manchester residents currently think about air pollution as an issue, 68% of the 400 respondents felt that personal action could have some impact in reducing air pollution, and 58% were already taking some sort of action to reduce air pollution. However, this survey and a series of focus groups undertaken revealed there was a varied level of understanding about the impacts of air pollution on health and different groups of people, and a lack of understanding about the seriousness of the air quality problem in Greater Manchester. This suggests public awareness raising about these issues should be a priority.
- 9.10 The shortlist of measures that was agreed at the time for inclusion in the SOC in March is displayed in Table 1, which included variations of Government’s benchmark measure, as well as measures that could be used as an alternative or in combination.

Table 1. Shortlisted Measures

Shortlisted measure	Details
Retrofit/upgrade public transport fleet	Retrofit or upgrade vehicles to a higher Euro standard.
Retrofit/upgrade local authority fleets	Retrofit or upgrade to a higher Euro standard (procurement).
Increase public transport capacity	Identify specific routes where most impact will be made, with a particular focus on the role that an attractive bus system would need to play in achieving significant additional modal shift in the near term.
Switch Bus/HGV/LGV/GM fleet to GtL	Using cleaner alternative fuels, e.g. Gas-to-Liquid (GtL).
Electric vehicle (EV) incentivisation	Increase EV uptake through expanding the charging network or financial incentives.
Differential parking charges	E.g. different charges for times of day, vehicle type, car-sharers and could include a workplace parking levy.
Congestion Deal – increase capacity	Review existing junction improvement plans – assess impact and identify opportunities to accelerate.
Congestion Deal – encouraging alternatives	Encouraging alternative travel choices through road space reallocation.
Congestion Deal – network management	Changing traffic signal timing to optimise flows, reducing congestion.

Shortlisted measure	Details
Private hire and taxi alternative fuels	Incentivise change to EV/Ultra-Low-Emission vehicles, increase EV infrastructure for taxis, retrofitting and increasing LPG refuelling infrastructure for taxis.
Communications campaigns	Increase awareness of health and cost benefits for public and of different modes of transport or around particular communities/schools.
Sustainable travel engagement	Work with employers and individuals to encourage sustainable travel choices.
Active travel programme – infrastructure	Expand and improve cycling and walking infrastructure.
Clean Air Zones – Class B, C or D	Different classifications/time restriction and geographical areas to be modelled for their impact on NO ₂ and timescale of any impact.

9.11 The SOC recognised that as locations of exceedances identified by Government covered areas across Greater Manchester, no single measure was likely to deliver legal compliance on its own.

9.12 Implementation costs were not considered in this process (as per Government guidance). However, the SOC outlined some of the health and socio-economic factors that need to be considered in developing the Clean Air Plan. This reflects the significant impact that poor air quality has on people’s lives and local economic growth aspirations.

10. ASSESSING THE OPTIONS FOR GREATER MANCHESTER

10.1 At this stage, no decisions have been taken over the precise mix of measures that will be included in the OBC. However, over the summer a process of refining measures and developing a range of options that combine the measures in different ways has been undertaken to understand the type and scale of intervention needed to reduce NO₂ to within legal Limit Values in the “shortest possible time” across Greater Manchester.

10.2 These different options are being assessed in terms of their air quality impact (and timeframe of this impact), technical feasibility, cost-benefit and their socio-economic impact. This assessment is currently ongoing and its outcomes will be presented in the Outline Business Case document.

10.3 It is anticipated that a report about the OBC will be brought forward in January 2019 to the Combined Authority and all ten councils.

10.4 In the locations with the highest level of exceedances, in order to reduce concentrations to legal limits, any potential measure would need to reduce road traffic emissions comparably to a reduction in the flow of traffic in the order of 10-30% (although some locations are more complex).

11. GREATER MANCHESTER'S ASKS OF GOVERNMENT

- 11.1 In support of and as a precursor of any future Clean Air Plan, the Mayor has written on behalf of GM authorities to the Secretary of State for the Environment highlighting specific actions needed to support Greater Manchester. These include:
- Clear arrangements and funding to develop workable, local vehicle scrappage / upgrade measures;
 - Short term effective interventions in vehicle and technology manufacturing and distribution, led by national Government with local authorities;
 - Replacement of non-compliant buses; and
 - A clear instruction to Highways England to implement measures which deliver compliance with legal limits for NO₂ on the strategic road network, for which they are responsible, in the shortest possible time.
- 11.2 The Greater Manchester Mayor will be meeting with the Secretary of State for Environment, Food and Rural Affairs to discuss these requirements in the near future.
- 11.3 What is also clear is that an effective, efficient and reliable public transport network is fundamental for providing people and businesses with reliable alternatives to car travel and a cleaner and more sustainable transport system. A report on delivering the next phase of the 2040 Strategy (the 2040 Delivery Plan 2019-2024) will be brought to the GMCA that details transport projects that are already funded along with a series of other interventions that will be collectively prioritised by the GMCA and the districts. The Delivery Plan is intended to complement the Greater Manchester Spatial Framework, the emerging Clean Air agenda and the Low Emissions Strategy.

12. RECOMMENDATIONS

- 12.1 Recommendations are set out at the front of this report.

Councillor Alex Ganotis

GMCA Portfolio Lead for Green City Region

Appendix 1: Local Data used in Initial Evidence submitted by Greater Manchester

Based on Government guidance the following local evidence was used to understand likely NO₂ concentrations in Greater Manchester beyond 2020:

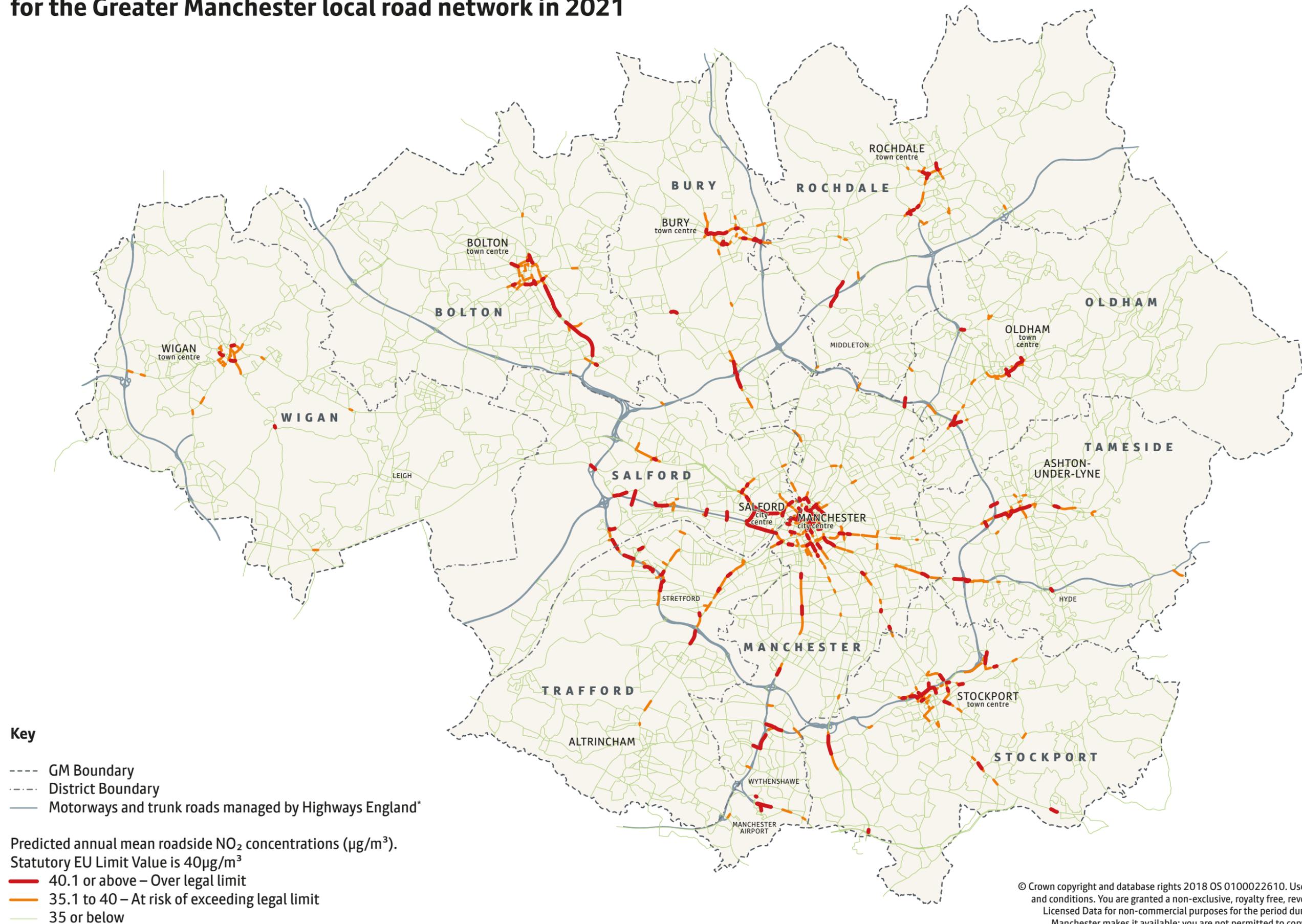
- Detailed Base Year (2016) and Future Year (2021) transport model (actual and future demand on the road network)
- Local vehicle fleet profiles (e.g. ages and types of vehicle) using Automatic Number Plate Recognition data
- Local background concentrations of NO₂
- More detailed road network & junction data (e.g. alignment and width)
- Representation of canyons (e.g. tall buildings)
- Local air quality monitoring data (from across GM)
- Confirmed future changes to the road network, regional traffic growth and changes to the traffic fleet.

Appendix 2: Summary of numbers of areas across GM forecast to exceed the EU Limit Value beyond 2020

Local Authority	National (PCM) Model Exceedances Links	Local Model Exceedances on PCM Links	Additional Local Model Exceedances on Minor (non-PCM) Links*
Bolton	1	12	2
Bury	1	8	7
Manchester	4	35	16
Oldham	0	4	2
Rochdale	0	7	0
Salford	1	15	3
Stockport	2	13	6
Tameside	1	11	2
Trafford	1	4	1
Wigan	0	3	1
Total	11	112	40

*These are road links that are not included in the national PCM model but have been modelled locally.

Predicted annual mean nitrogen dioxide (NO₂) concentrations for the Greater Manchester local road network in 2021



Key

- GM Boundary
- District Boundary
- Motorways and trunk roads managed by Highways England*

Predicted annual mean roadside NO₂ concentrations (µg/m³).
 Statutory EU Limit Value is 40µg/m³

- 40.1 or above – Over legal limit
- 35.1 to 40 – At risk of exceeding legal limit
- 35 or below

* Concentrations not included as out of scope for the GM Clean Air Plan

© Crown copyright and database rights 2018 OS 0100022610. Use of this data is subject to terms and conditions. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which Transport for Greater Manchester makes it available; you are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form; and third party rights to enforce the terms of this licence shall be reserved to Ordnance Survey.

Appendix 4: Differences between Congestion Charging and Clean Air and Low Emission Zones

