

GM Air Quality Administration Committee

Date: 1 October 2024

Subject: GM Clean Air Plan – September 2024 Update

Report of: Cllr Eamonn O'Brien – GM Clean Air Lead

Purpose of Report

This report provides an update on the Case for a new Greater Manchester Clean Air Plan and confirms that an updated appraisal of GM's proposed Investment-led Plan has been undertaken against a benchmark charging Clean Air Zone (CAZ) in the centre of Manchester and Salford.

Recommendations:

The Air Quality Administration Committee is requested to:

1. Note the factors which have resulted in material updates to baseline modelling scenarios and the need to re-submit an appraisal of GM Investment-led Clean Air Plan.
2. Note the update to the modelling does not alter the conclusion of GM's December 2023 Submission that GM's Investment-led Plan performs better than the CAZ Benchmark.
3. Note that the revised Investment-led Plan, given the delay to the electrification of Queens Road depot and the removal of the temporary speed limit on the M602, will deliver compliance in the shortest possible time and by 2026 at the latest.
4. Note the update to GM's proposed bus measures that are grounded in the ability of GM to control the emissions standards of vehicles operating on key routes having introduced a bus franchising scheme.
5. Note that taxi measures remain unchanged.
6. Note the progress to put an emission standard in place for licensed taxis.
7. Note the progress to determine highway measures to ensure compliance at Regent Road and Quay Street.

BOLTON
BURY

MANCHESTER
OLDHAM

ROCHDALE
SALFORD

STOCKPORT
TAMESIDE

TRAFFORD
WIGAN

8. Note that from an equality impacts perspective, the Investment-led Plan would deliver an air quality improvement that benefits individuals with protected characteristics. An air quality improvement is likely to be faster for the Investment-led Plan than a CAZ Benchmark due to the former achieving compliance earlier.
9. Request that the government gives urgent consideration to agreement to the removal of the 1309 signs installed for a GM-wide category C charging Clean Air Zone across GM and its boundary Authorities, as the appraisal shows that only the Investment-led Plan meets the legal requirement to deliver compliance in the shortest possible time and by 2026 at the latest and therefore the signs are no longer required.
10. Note the Investment-led Plan would require an estimated additional £15.2 million of funding versus £61.9 million for a CAZ Benchmark when considering whole life costs.
11. Note that Local Partnerships have been asked by JAQU to review the Investment-led Plan aspects of the GM Appraisal Report (and relevant annexes), focusing on the commercial, financial and management elements.
12. Agree a delegation is made to the Group Chief Executive, GMCA, GMFRS and TfGM, in consultation with the GM Clean Air Lead to approve the final submission of material to the Government's Joint Air Quality Unit and deal with any supplementary requests from the Joint Air Quality Unit in support of the appraisal.
13. Note the 2023 GM Clean Air Plan monitoring data indicates that nitrogen dioxide air pollution has seen an overall reduction in nitrogen dioxide exceedances compared to 2022, and a significant improvement to 2019 levels.

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Equalities Impact, Carbon and Sustainability Assessment:

The GM Clean Air Plan is a place-based solution to tackle roadside NO₂ which will have a positive impact on carbon.

Risk Management

Risks as set out in sections 5.8 and 6.6 of Appendix Two – Appraisal Report.

Legal Considerations

On 8th February 2022 *The Environment Act 1995 (Greater Manchester) Air Quality Direction 2022* (the Direction) was issued. The Direction requires that the GM local authorities:

- review the measures specified in the existing Plan; and
- determine whether to propose any changes to the detailed design of those measures, or any additional measures.

The GM authorities must ensure that the Plan with any proposed changes will secure that:

- compliance with the legal limit value for NO₂ is achieved in the shortest possible time and by no later than 2026; and
- exposure to levels above the legal limit for NO₂ is reduced as quickly as possible.

This Direction revoked the Direction dated March 2020 which required the ten Greater Manchester Local Authorities to implement a Category C Clean Air Zone to achieve compliance with the legal limit value for NO₂ in the shortest possible time and by 2024 at the latest.

Financial Consequences – Revenue

Financial consequences set out in section 8 of this report and sections 5.6 and 6.4 of Appendix Two – Appraisal Report, with all development and delivery costs to be covered by central government.

Financial Consequences – Capital

Financial consequences set out in section 8 of this report and sections 5.6 and 6.4 of Appendix Two – Appraisal Report, with all development and delivery costs to be covered by central government.

Number of attachments to the report: Three

Comments/recommendations from Overview & Scrutiny Committee

Not applicable.

Background Papers

- 20 December 2023, Report to AQAC: GM Clean Air Plan – December 2023 Update
- 20 December 2023: Report to AQAC: GM Clean Air Plan – Expenditure Update
- 13 July 2023, Report to AQAC: GM Clean Air Plan – July 2023 Update
- 27 February 2023, Report to AQAC: GM Clean Air Plan – February 2023 Update
- 26 October 2022, Report to AQAC: GM Clean Air Plan – Expenditure Update
- 26 October 2022, Report to AQAC: GM Clean Air Plan – October 2022 Update
- 17 August 2022, Report to AQAC: GM Clean Air Plan – August 2022 Update
- 1 July 2022, Report to AQAC: GM Clean Air Plan – July 22 Update
- 23 March 2022, Report to AQAC: GM Clean Air Plan – March 22 Update
- 28 February 2022, Report to AQAC: GM Clean Air Plan – February 22 Update
- 2 February 2022, report to CACC: GM Clean Air Plan – update to the temporary exemption qualification date for GM-licensed hackney carriages and private hire vehicles
- 20 January 2022, report to AQAC: GM Clean Air Plan – A628/A57, Tameside – Trunk Road Charging Scheme update
- 20 January 2022, report to AQAC: GM Clean Air Plan – Financial Support Scheme Jan 22 Update
- 20 January 2022, report to AQAC: GM Clean Air Plan – Clean Air Zone Discount & Exemptions Applications
- 18 November 2021, report to AQAC: GM Clean Air Plan – GM Clean Air Funds assessment mechanism
- 18 November 2021, report to CACC: GM Clean Air Plan – GM Clean Air Plan Policy updates
- 13 October 2021, report to AQAC: GM Clean Air Plan – Operational Agreement for the Central Clean Air Service
- 13 October 2021, report to CACC: GM Clean Air Plan – Showmen’s Vehicle Exemption
- 13 October 2021, report to CACC: GM Clean Air Plan – Clean Air Zone daily charge refund policy
- 13 October 2021, report to CACC: GM Clean Air Plan – A628/A57, Tameside – Trunk Road Charging Scheme
- 21 September 2021, report to AQAC: GM Clean Air Plan – Clean Air Zone: Camera and Sign Installation
- 21 September 2021, report to AQAC: GM Clean Air Plan – Bus Replacement Funds
- 25 June 2021, report to GMCA: GM Clean Air Final Plan
- 31 January 2021, report to GMCA: GM Clean Air Plan: Consultation
- 31 July 2020, report to GMCA: Clean Air Plan Update

- 29 May 2020, report to GMCA: Clean Air Plan Update
- 31 January 2020, report to GMCA: Clean Air Plan Update
- 26 July 2019, report to GMCA: Clean Air Plan Update
- 1 March 2019, report to GMCA: Greater Manchester's Clean Air Plan – Tackling Nitrogen Dioxide Exceedances at the Roadside - Outline Business Case
- 11 January 2019, report to GMCA/AGMA: Clean Air Update
- 14 December 2018, report to GMCA: Clean Air Update
- 30 November 2018, report to GMCA: Clean Air Plan Update
- 15 November 2018, report to HPEOS Committee: Clean Air Update
- 26 October 2018, report to GMCA: GM Clean Air Plan Update on Local Air Quality Monitoring
- 16 August 2018, report to HPEOS Committee: GM Clean Air Plan Update
- UK plan for tackling roadside nitrogen dioxide concentrations, Defra and DfT, July 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 exempt from call in by the relevant Scrutiny Committee on the grounds of urgency? No

GM Transport Committee – Not applicable

Overview and Scrutiny Committee – Not applicable

GM Clean Air Scrutiny Committee – To be considered at meeting on 26 September 2024, Scrutiny committee comments will be provided by a verbal update.

1 Background

- 1.1 The government has instructed many local authorities across the UK to take quick action to reduce harmful Nitrogen Dioxide (NO₂) levels following the Secretary of State (SoS) issuing a Direction under the Environment Act 1995. In Greater Manchester, the 10 local authorities, the Greater Manchester Combined Authority (GMCA) and Transport for Greater Manchester (TfGM) are working together to develop a Clean Air Plan to tackle NO₂ exceedances at the roadside, herein known as Greater Manchester Clean Air Plan (GM CAP).
- 1.2 The development of the GM CAP is funded by government and is overseen by Joint Air Quality Unit (JAQU), the joint DEFRA and DfT unit established to deliver national plans to improve air quality and meet legal limits. The costs related to the business case, implementation and operation of the GM CAP are either directly funded or underwritten by government acting through JAQU and any net deficit over the life of the GM CAP will be covered by the New Burdens Doctrine, subject to a reasonableness test¹.
- 1.3 The GM CAP is a package of measures to deliver NO₂ reductions to within legal limits within the shortest possible time and by 2026 at the latest.
- 1.4 Throughout the development of the GM CAP the ten GM local Authorities have made clear the expectation that the UK government would support the plans through:
 - 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;
 - Replacement of non-compliant buses; and
 - A clear instruction to Highways England² 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 time³.
- 1.5 The GMCA Clean Air Update report of 29 May 2020² detailed that in March 2020 the government provided initial funding of £41m for clean vehicle funds to award grants or loans to eligible businesses: £15.4m for bus retrofit, £10.7m for Private

¹ The new burdens doctrine is part of a suite of measures to ensure Council Tax payers do not face excessive increases. [New burdens doctrine: guidance for government departments - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/new-burdens-doctrine-guidance-for-government-departments)

² On 19 August 2021 it was announced that Highways England changed its name to 'National Highways' reflecting the new focus the company has on delivering the government's £27bn strategic roads investment programme, while also continuing to set highways standards for the whole UK.

³ GM Authorities are directed to take action on the local road network. Those roads managed by National Highways, such as motorways and trunk roads are excluded from the Clean Air Plan.

Hire Vehicles, £8m for HGVs, £4.6m for coaches and £2.1m for minibuses. These figures include Joint Air Quality Unit (JAQU) estimated delivery costs at 5%.

- 1.6 The GMCA – Clean Air Final Plan report detailed that GM had been awarded £14.11m for Hackney Carriages and £73.5m for Light Goods Vehicles. The Hackney Carriage award comprises £10.61m to support grants and loans to upgrade vehicles. These figures include JAQU estimated delivery costs at 5%.
- 1.7 The GMCA – Clean Air Final Plan report on 25 June 2021⁴ endorsed the GM Final Clean Air Plan and policy following a review of all of the information gathered through the GM CAP consultation and wider data, evidence and modelling work. This included the GM Clean Air Plan Policy, that outlined the boundary, discounts, exemptions, daily charges of the formerly proposed Clean Air Zone (CAZ) as well as the financial support packages offered towards upgrading to a compliant vehicle, including the eligibility criteria to be applied. The aim of the funding was to support an upgrade to a compliant vehicle and to mitigate the negative socio-economic effects of the former GM CAZ.
- 1.8 The 25 June 2021 GMCA report set out that the Air Quality Administration Committee has the authority to establish and distribute the funds set out in the agreed GM Clean Air Plan policy.
- 1.9 On 21 September 2021 the Air Quality Administration Committee approved the establishment and distribution of the agreed bus replacement funds.
- 1.10 On 13 October 2021 the Air Quality Administration Committee agreed the distribution of Clean Air funds set out in the agreed GM Clean Air Plan policy as follows:
 - From 30 November 2021 applications for funding would open for HGVs.
 - Opened the funds to applications from LGV, Hackney, PHV and Minibus owners who were detrimentally impacted by the decision to defer the wider opening of the Financial Support Scheme.
- 1.11 On 18 November 2021 the Air Quality Administration Committee agreed the assessment mechanism to allow for Clean Air Funds to be adapted, if necessary (including a process for considering whether additional funding is required), if the impacts of the Clean Air Zone prove to be more severe than forecast once opened.

⁴ Also considered by the GM authorities through their own constitutional decision-making arrangements.

- 1.12 On 20 January 2022 the Air Quality Administration Committee considered the findings of an initial review of conditions within the supply chain of Light Good Vehicles which is impacting the availability of compliant vehicles. The Committee agreed that a request should be made to the Secretary of State (SoS) for Environment, Food and Rural Affairs to agree to pause the opening of the next phase of Clean Air Funds to enable an urgent and fundamental joint policy review with government to identify how a revised policy can be agreed to deal with the supply issues and local businesses' ability to comply with the GM CAP.
- 1.13 On 28 February 2022 the Air Quality Administration Committee noted the submission of a report "*Issues Leading to Delayed Compliance Based on the Approved GM CAP Assumptions*", attached as Appendix 3. The report concluded that on balance, the latest emerging evidence suggested that with the approved summer 2021 Clean Air Plan in place it was no longer more likely than not that compliance would be achieved in 2024. The government subsequently issued a new Direction which stated that proposals for a revised plan were required to be submitted to the SoS by 1st of July, requiring the revised plan to achieve compliance with the legal limit value for NO₂ in the shortest possible time and by no later than 2026. The committee also noted the interim arrangements for delivery arrangements for the Clean Air Zone in the meantime, including signage, funding and discount/exemption applications.
- 1.14 On 23 March 2022 the Air Quality Administration Committee noted the scope of the review of the Clean Air Plan and the participatory policy development approach, as well as delivery arrangements, including signage and funding.
- 1.15 On 1 July 2022 the Air Quality Administration Committee noted the 'Case for a new Greater Manchester Clean Air Plan' document and associated appendices would be submitted to the Secretary of State on the 1 July as a draft document subject to any comments of Greater Manchester local authorities.
- 1.16 On 17 August 2022 the Air Quality Administration Committee agreed to submit the 'Case for a new Greater Manchester Clean Air Plan' to the Secretary of State as a final Case for a new Greater Manchester Clean Air Plan and Approved the Case for a New Plan - Air Quality Modelling Report for submission to the government's Joint Air Quality Unit.
- 1.17 On 26 October 2022 the Air Quality Administration Committee noted the non-compliant vehicles that have been upgraded through Clean Air Funds; the targeted engagement being undertaken with key stakeholders to inform the policy development process, that Greater Manchester Police have advised that the disclosure requests from the Clean Air Zone ANPR cameras have been very useful in detecting crime and the update on the funding received from government, the expenditure made and the funding requirements that have emerged as the new Greater Manchester Clean Air Plan is developed.

- 1.18 On 27 February 2023, the Air Quality Administration Committee agreed to submit the report 'Greater Manchester's approach to address persistent exceedances of nitrogen dioxide identified on the A58 Bolton Road, Bury' to the Secretary of State; noted the parameters of a Central Manchester CAZ Benchmark scenario, the Clean Air funding distribution to end January 2023 by Local Authority, the headlines from targeted engagement and research that was undertaken as part of the Participatory Policy Development activity and the update to deliver EV charge points funded by the GM CAP.
- 1.19 On 13 July 2023, the Air Quality Administration Committee noted the developments in relation to the government's National Bus Retrofit Programme and that government had commenced a six-month focused research programme to quickly investigate the causes of poor bus retrofit performance and scope how performance can be improved. The committee agreed to write to the Secretary of State setting out the Authorities' desire to align the reporting of GM's programme of work with the government's given their interdependency to deal with this unprecedented issue and the implications for the GM CAP. They also heard that GM CAP monitoring data indicated that air pollution had increased compared with 2021 but was below levels recorded pre-pandemic in 2019. Analysis of the factors influencing pollution emissions and air quality indicated that the concentrations had been affected by performance of the bus Retrofit Programme.
- 1.20 On 20 December 2023, the Air Quality Administration Committee agreed a delegation for the Chief Executive, GMCA and TfGM to submit the Case for a new Greater Manchester Clean Air Plan to the Secretary of State and confirming that an appraisal of GM's proposed Investment-led Plan had been undertaken against a benchmark charging CAZ in the centre of Manchester and Salford. GM's evidence showed that the investment-led, non-charging plan could achieve compliance in 2025. The committee further requested that government give urgent consideration to agreement to the removal of the 1309 signs installed for a GM-wide category C charging Clean Air Zone across GM and its boundary Authorities, as the appraisal showed that only the Investment-led Plan met the legal requirement to deliver compliance in the shortest possible time and by 2026 at the latest and therefore the signs were no longer required.

2 Overview

2.1 The primary focus of the 'Case for a new Greater Manchester Clean Air Plan' is to identify a plan to achieve compliance with the legal limit value for NO₂ in a way that considers the current cost of living crisis and associated economic challenge faced by businesses and residents. This would be achieved through an investment-led approach combined with all the wider measures that GM is implementing and aims to reduce NO₂ emissions to within legal limits, in the shortest possible time and at the latest by 2026. Unlike the previous charging-led scheme defined by government guidance, the investment-led scheme seeks to factor in the cost-of-living crisis, actively considers the impacts of the pandemic and wider global economic instability on supply chains, can be delivered more quickly, and crucially considers the significant beneficial effects that the delivery of electric buses can have along key routes. In particular:

- The **cost-of-living crisis** means that businesses are less able to afford to invest in vehicle upgrades, whilst households are less able to absorb any costs that may be passed on to them.
- This is exacerbated by **rising vehicle prices** and – for some vehicle types – lower residual values of non-compliant vehicles. There is evidence that illustrates the demand for new and compliant second-hand vehicles is exceeding supply, leading to longer wait times and rising prices.
- A charging Clean Air Zone could therefore cause **unacceptable financial hardship** and contribute to business failures.
- In addition, **new opportunities have arisen** – via the approval of bus franchising and new funding for electric buses – this means that GM has the opportunity to tackle emissions in a different way.
- The exceedances become more localised in 2025 and 2026, therefore **action can be targeted** at those locations suffering the worst air quality.
- It is clear that the GM-wide Clean Air Zone category C as approved in summer 2021 could lead to hardship in GM and that implementing a materially revised charging CAZ, for example with a different boundary, vehicles in scope or discounts and exemptions, would take time to design and consult upon and then implement.

2.2 The core objectives of the New GM CAP are:

- To reduce NO₂ concentrations to below the legal limits in the shortest possible time and by 2026 at the latest;
- To achieve compliance in a way that is fair to businesses and residents, and does not damage business or cause financial hardship to people in GM; and

- To ensure the reduction of harmful emissions is at the centre of GM's wider objective for delivering the Bee Network's⁵ core objectives.

2.3 The 'Case for a new Greater Manchester Clean Air Plan' therefore proposed using the £123 million of Clean Air funding that the government has awarded to Greater Manchester to deliver an investment led approach to invest in vehicle upgrades, rather than imposing daily charges and in particular through the delivery of zero emission buses in the Bee Network (a London-style integrated transport network). The new plan would ensure that the reduction of harmful emissions is at the centre of GM's wider objectives.

3 National Bus Retrofit Programme Update

- 3.1 In April 2023 the government advised that it was to pause any new spending on bus retrofit as they had evidence that bus retrofit solutions that have been fitted have poor and highly variable performance in real world conditions. Government commenced a research programme to investigate the causes of this poor performance and scope how performance can be improved.
- 3.2 The findings of that investigation were published on 12 September in 'The effectiveness of retrofitting selective catalytic reduction technology on to buses' report⁶.
- 3.3 This report confirms the early findings that bus retrofit performance is highly variable and is not overall delivering the anticipated emissions improvements, but there are opportunities to improve performance via better maintenance.
- 3.4 Government have confirmed that the earlier pause to further central Government funding for bus retrofit will become permanent and closure of clean vehicle retrofit accreditation scheme to new technology. For those with active charging clean air zones, advice has been issued regarding provision of valid telematics data to remain on the accreditation list that allows free entry into Clean Air Zones.
- 3.5 The release of the report does not affect the Greater Manchester Clean Air Plan submission outlined in this report, as the modelling baseline has been revised in line with the JAQU guidance issued in May 2023⁷, which was to assume no air quality benefit from a retrofitted bus.

⁵ The Bee Network is a vision for GM to deliver an integrated London-style transport system. The transport system will see buses, trams, rail as well as cycling and walking being joined together to revolutionise travel across the city-region.

⁶ [The effectiveness of retrofitting selective catalytic reduction technology on to buses - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/1184442/the-effectiveness-of-retrofitting-selective-catalytic-reduction-technology-on-to-buses-report.pdf)

⁷ JAQU, Bus Retrofit Update - Technical Guidance for Local Authorities, May 2023

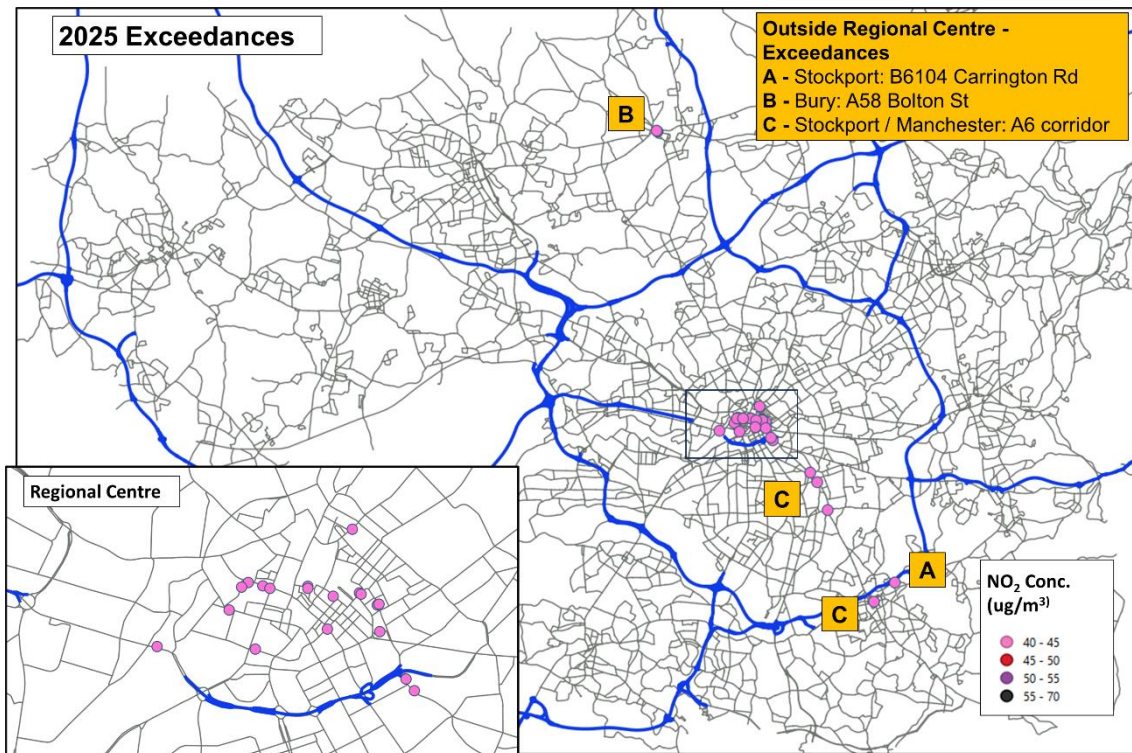
4 Key Developments Since December 2023 Submission

- 4.1 Having submitted the Case for a New Clean Air Plan in December 2023, GM has been in dialogue with the Joint Air Quality Unit (JAQU) to explain the need to update the submission. The update is in response to some issues that have emerged since the December 2023 submission.
- 4.2 Firstly, it was assumed in December 2023 that the new Stockport depot would operate Zero Emission Buses from Autumn 2025 as part of the Zero Emission Bus Regional Areas (ZEBRA) 1 project, and we noted a risk of non-compliance if the project was delayed.
- 4.3 Construction of the new Stockport all-electric bus depot has been delayed, but GMCA/TfGM are committed to having an all-electric bus depot / fleet in Stockport. Stockport and TfGM officers continue to work closely to deliver the new Zero Emission Bus fleet / depot in Stockport.
- 4.4 Also, when preparing for the sensitivity testing of the modelling results, TfGM found an issue in emissions modelling which has now been corrected. A formula in the modelling tool had not been updated to reflect the government's changed guidance on the performance of its bus retrofit programme. This means that the model outputs underestimated the amount of primary nitrogen dioxide and therefore the predicted NO₂ concentrations that we reported in the December 2023 submission.
- 4.5 TfGM has reviewed the modelling processes, to consider any weaknesses in the process, to strengthen the Quality Assurance process for these steps and to identify the checking/reviewing process. TfGM's Audit & Assurance Team have also audited the quality assurance process in place for producing the Clean Air Plan modelling outputs. Further details are provided in Appendix One.
- 4.6 The baseline position for modelling has been updated to ensure that it is consistent with the latest operational bus deployment patterns, service requirements and objectives of the bus franchising scheme. A strategy has been developed to place the 170 ZEBRA vehicles, planned for the Stockport all-electric bus depot, at other Bus Franchising depots to allow TfGM and GM to use the ZEBRA fleet as soon as possible, along with including new OEM Euro VI vehicles ordered to meet Tranche 3 operational needs, that were not assumed in the December 2023 submission.
- 4.7 This showed that to reach compliance in 2025, GM needed to change the operational fleet deployment to make sure OEM Euro VI or Zero Emission Buses are used in the areas where the modelled limits are exceeded. TfGM reran the modelling for the Investment-led Plan which showed that compliance could be achieved in 2025. Subsequent developments have demonstrated that compliance is now not likely to be delivered until 2026, and these issues are summarised in section 8.

4.8 This report sets out below the revised Do Minimum air quality position and summarises the updates made to the appraisal of the Investment-led Plan and the CAZ Benchmark in their ability to deliver compliance with the legal limit value in the shortest possible time.

5 The Do Minimum Position

- 5.1 The GM CAP is underpinned by an evidence base derived from data collection, research, analysis and modelling. Throughout the technical development process from 2017 to date, GM has used best practice methodology and assumptions and worked closely with Government, including, for example, by delivering updates to incorporate the impacts of Covid-19 to the GM CAP in accordance with national guidance.
- 5.2 The GM modelling approach has been developed and agreed with JAQU. The purpose of the modelling process is to quantify the impact of traffic by vehicle type on emissions and consequently on concentrations of NO₂ at the roadside in GM.
- 5.3 The Do Minimum air quality assessment determines the revised air quality position forecast in 2025 and 2026 following changes to the Do Minimum in line with relevant guidance and assumptions agreed with Government.
- 5.4 The Do Minimum modelling baseline has been updated. The following changes have been made to the Do Minimum modelling since December 2023 – further detail of these changes are set out in section 3 of Appendix One:
- Changes to fleet electrification;
 - Changes to bus retrofit assumptions and programme;
 - Changes to ZEBRA scheme (Stockport);
 - Changes to bus service patterns;
 - Updates to CCTS schemes; and
 - Correction to modelling emission values.
- 5.5 There are 26 NO₂ exceedance sites modelled to remain without action in the updated Do Minimum in 2025. Spatially there is a grouping of exceedances in the regional centre. Outside the regional centre, 2 exceedance points are located at the A58 Bolton Road, Bury, four are located along the 192 bus corridor on the A6 between Stockport and the Regional Centre, with 1 site at the B6104 Carrington Rd, Stockport on the 325 route.
- 5.6 The figure below shows the spatial distribution of the 26 NO₂ exceedance sites modelled to remain without action in the updated Do Minimum in 2025.



- 5.7 The revised Do Minimum baseline position shows that the 26 exceedance sites predicted in 2025 without action reduces to 17 in 2026. The spatial distribution of these exceedance sites is consistent with earlier iterations of the modelling with a high concentration of sites within the Regional Centre as well as 192 bus corridor on the A6 between Stockport and the Regional Centre, with 1 site at the B6104 Carrington Rd, Stockport on the 325 route, due to the Stockport depot delay.

6 The Investment-led Plan

- 6.1 The Investment-led Plan was developed to target action at the 26 exceedance sites predicted in 2025.
- 6.2 In the light of the issues that have emerged since December 2023, targeted investment in zero-emission buses and taxis remains the most effective means to achieve compliance under an investment-led scenario. This will be supplemented by local highway-based measures at known persistent exceedance locations at Regent Road and around Quay Street.
- 6.3 **Bus investment** still represents the most important mechanism for reducing exceedances under the Investment-led Plan and is grounded in the ability of TfGM to operate a bus franchising scheme. TfGM is responsible for operating bus franchising on behalf of the GMCA and has the authority to manage franchise agreements in respect of local services, including the specification of fleet requirements and deployment.

- 6.4 The delivery of bus franchising is underway with the first phase (Tranche one) live as of September 2023 and the second phase (Tranche two) live as of March 2024. The implementation of bus funding across the region is being delivered in three tranches:
- Tranche one (24th September 2023) – covering Bolton, Wigan and parts of Salford and Bury.
 - Tranche two (24th March 2024) – covering Oldham, Rochdale and parts of Bury, Salford and north Manchester.
 - Tranche three (5th January 2025) – covering Stockport, Tameside, Trafford and the remaining parts of Manchester and Salford.
- 6.5 Based on the level of exceedance at each GM site in 2025 and the frequency of bus services that pass the exceedance sites, the proportion of Original Equipment Manufacturer (OEM) Euro VIs and ZEBs required to achieve compliance was recalculated. Deployment of sufficient existing OEM Euro VI and ZEBs at the 26 exceedance locations predicted in 2025 would result in 3 remaining exceedance sites in 2025: A57 Regent Road (Salford), A34 Quay Street and Great Bridgewater Street (Manchester).
- 6.6 Planned and operational changes from franchise operators were reviewed and incorporated, along with deployment patterns, service requirements and TfGM's depot electrification programme. Based on the vehicle requirement to operate services past exceedance sites, a further 40 buses operating from Bolton depot would have to be upgraded to ZEBs, along with the depot electric charging infrastructure. 73 ZEBs are required to operate from Queens Road depot. Funding is not required for the ZEBs at Queens Road as they will be provided by the committed franchising funding from CRSTS, however funding is required for the depot electric charging infrastructure. These upgrades are in addition to the ZEBs which have been committed as part of the bus franchising scheme.
- 6.7 From a deliverability perspective, the ability to operate the ZEBs is dependent on there being adequate supporting electric vehicle charging infrastructure at depots to operate these services. GM has undertaken analysis to determine this requirement which is summarised below.
- 6.8 To meet the ZEB service requirements at exceedance sites, depot upgrades are required to support the higher provision of electric vehicles across 3 sites. They are: Bolton, Queens Road, and Manchester Piccadilly. The scale of upgrade varies by depot based on the current provision of electric charging infrastructure to support the existing franchised operation.
- 6.9 It has been determined that there are a number of exceedance sites located in the Regional Centre and along the A6 corridor to Stockport, as well as B6104 Carrington Road (Stockport) which can achieve compliance through 77 buses upgraded to OEM Euro VI.

- 6.10 In summary, the Investment-led Plan involves bus investment of £51.1 million, comprising:
- £23.76 million to purchase 40 ZEBs; and
 - £17.84 million for the electrification required on Piccadilly Approach, and at Bolton and Queens Road depots.
 - £8.4 million for the franchising costs for 77 OEM Euro VI buses; and
 - £1.13 million for the operational costs for moving services out of Bolton.
- 6.11 **Taxi measures** represent an important mechanism for reducing exceedances under the Investment-led Plan and are grounded in the ability of the GM authorities to reduce emissions through licensing conditions.
- 6.12 **There is no change to the Taxi measures set out in the December 2023 submission.**
- 6.13 The appraisal of the Investment-led Plan has been developed on the basis that an emissions standard, requiring licensed hackneys and PHVs to be a minimum of Euro 6 (diesel) or Euro 4 (petrol) by 31st December 2025, will have been adopted by all GM Authorities. A transitional start date for the implementation of emission standards by the 1st January 2025 is assumed and, recognising that taxi licensing renewals occur annually across the calendar year, it is assumed that the end transition date for the implementation of emission standards across the 10 local authorities will be the 31st December 2025.
- 6.14 By 2026, it is therefore assumed that 100% of the GM taxi fleet⁸ will be compliant with the emission standards. It is intended that the Clean Taxi Fund will support this by opening before 2025 enabling earlier upgrades, and helping to mitigate against the risk of taxis re-licensing with another authority that does not have the same emission standard.
- 6.15 A Clean Taxi Fund (CTF) of £30.5m is proposed to offer funding to support upgrades of taxis to cleaner vehicles through two routes. These are:
- Core Taxi Fund of £22.5m – based on the 2021 GM CAP Policy, the funding is eligible to non-compliant, GM-licensed hackneys and PHVs. The financial support has been uplifted with inflation, with an associated air quality benefit derived from minimum emission standards across the 10 GM Authorities.

⁸ There are currently approximately 13,750 GM Licensed taxis (hackneys/PHVs) based in GM. For non-compliant Hackneys, 96% are Wheelchair Accessible Vehicles (WAV) compared to 6% WAVs for PHVs; and in addition to the GM licensed fleet, there are approximately 41% out-of-area PHVs licensed to an authority outside of GM, though with a resident address in GM. The majority are licensed to Wolverhampton.

- Electric Hackney Upgrade Fund of £7.9m – based on the Bradford scheme⁹ and feedback received during GM’s Participatory Policy Development¹⁰, the funding is available to compliant Internal Combustion Engine (ICE) hackneys and seeks to support upgrades to the cleanest vehicle type whilst taking into account feedback from the Participatory Policy Development approach (PPD), conducted between August and November 2022¹¹.
- 6.16 The taxi measures set out above are required to achieve compliance at the A57 Regent Road in 2025, because the bus and traffic management measures are not sufficient. Taxi upgrades also provide additional resilience to the GM CAP at the last points of modelled exceedance, on roads where poor air quality could occur and future additional refinements to buses services and fleet are not an option in the performance management phase. The opening of the taxi funds in 2024 would also enable early upgrade of taxi fleet, reducing exposure as quickly as possible.
- 6.17 The proposed funding levels and eligibility criteria for hackneys and PHVs are outlined in section 5.3 of Appendix Two. Note: The date of eligibility to access the proposed fund aligns to the date of this report – 1 October 2024.
- 6.18 The latest position on the adoption of an emission standard is: Eight of the ten GM Authorities have already taken the necessary steps to adopt the aligned taxi emission standards with governance routes agreed for the two remaining authorities (Bolton and Rochdale).
- 6.19 **Targeted Local Traffic Management Measures** – a series of targeted local traffic management measures are proposed to reduce NO₂ exceedance concentrations at Regent Road (Salford) and Quay Street (Manchester) sites. These locations were identified during GM’s prior work to develop the investment-led measures, based on the modelling undertaken, which forecast that there would be two remaining exceedance sites at Regent Road and Quay Street.
- 6.20 Whilst the modelling baseline has been updated, including the application of the JAQU standard guidance to assume no air quality benefit from a retrofitted bus, the local measures at Regent Road and Quay Street were modelled to be effective and necessary for reducing NO₂ concentrations at these locations and therefore considered appropriate to include as part of the Investment-led Plan.
- 6.21 The £5m package of targeted local measures can be summarised into two schemes:

⁹ Bradford Council, who operate a Category C charging Clean Air Zone, have launched an additional fund to support Bradford-licensed Hackneys to upgrade to fully electric. The fund is open to owners of Bradford which are already classed as compliant with minimum emissions standards.

¹⁰ [Participatory Policy Development - Summary of Stakeholder Engagement Report](#) Page 14, point 8

¹¹ GM leaders committed to a participatory approach to the development of the new Plan to ensure that GM’s proposals are well-grounded in evidence in terms of the circumstances of affected groups and possible impacts of the Plan on them, and therefore the deliverability and effectiveness of that Plan – outputs reported to AQAC February 2023.

6.22 Regent Road – A57

- Signal optimisation at A57 Regent Road and adjacent parallel routes - Signal timing adjustment to A57 Regent Road green times applied at the junctions of A57 Regent Road / Oldfield Road and M602 J3 West arm approach to the junction. Supplementary adjustments are to be applied to parallel routes, namely: Oldfield Road / Middlewood Street, Ordsall Lane / Middlewood Street / Hampson Street and Hampson Street / Trinity Way. These adjustments will improve the flow of traffic to reduce the level of congestion and therefore improve emissions.
- Speed reductions on A57 Regent Road with supporting enforcement measures - Implementation of a speed reduction from 40mph to 30mph on A57 Regent Road between Oldfield Road and M602 - By implementing these speed reductions, traffic flow will become steadier as a result of reducing unnecessary accelerations and decelerations, leading to a reduction of emissions.
- Yellow box enforcement along the A57 Regent Road corridor - Implementation of enforcement measures for incursions into existing yellow box junctions along the A57 Regent Road corridor are planned as a supporting measure to achieve compliance in 2025.

6.23 St John's Area, Manchester

- Implementing measures to reduce through traffic on Gartside Street, Lower Byrom Street, Great John Street and Atherton Street will reduce through and turning traffic on Quay Street.

6.24 Further information on GM's Investment-led Plan local traffic measures at the exceedance site located at A57 Regent Road, can be found in section 5.4 of the Appraisal report in Appendix Two.

6.25 Following the December 2023 submission, GM has worked closely with Manchester City Council, taking into account wider highway improvement works associated with the City Centre Transport Strategy¹², to identify a locally-deliverable scheme which would replicate the modelled test in emissions terms and achieve forecast compliance. A scheme has been identified which complements the objectives of the wider City Centre Transport Strategy (CCTS) and local plans for the regional centre¹³, subject to consultation.

¹²

https://assets.ctfassets.net/nv7y93idf4jq/6HANAC6XKWnyvZ508tbVfq/f661cc31bad890a4f388de49e79c1826/CCTS_Full_Document_Final_170321.pdf

¹³ The primary aim of the CCTS is for 90% of all trips to the Regional Centre in the morning peak to be made on foot, by cycle or on public transport before 2040. The strategy sets out proposals to further improve the Regional Centre's public transport and active travel networks and reduce car-based trips over the longer term.

- 6.26 The scheme includes traffic management measures in the St John's area of Manchester City Centre, reducing movements for general traffic whilst supporting movement for bus and local residents. Further information can be found in section 5.4 of the Appraisal report at Appendix Two.
- 6.27 The modelled air quality impact of the package of measures including bus, taxi and targeted local traffic management measures outlined above shows that the Investment-led Plan would achieve compliance at these locations and therefore reduce the number of exceedances from 26 in 2025 to 0.

7 CAZ Benchmark

- 7.1 The government has asked GM to: *“Provide modelling results for a benchmark CAZ to address the persistent exceedances identified in central Manchester and Salford, in order for these to be compared against your proposals and set out how the measures you have proposed will be modelled and evidenced overall”*.
- 7.2 Government have asked for this as they want to understand how Greater Manchester's case for an investment-led, non-charging Clean Air Plan, performs (in terms of delivering compliance) against the 'benchmark' of a charging Clean Air Zone as required by JAQU guidance.

7.3 The parameters of the CAZ Benchmark have been developed in conjunction with JAQU and modelled as:

Spatial coverage of a CAZ Benchmark (boundary over which charges apply)	Area within the Inner Relief Route - the Inner Relief Route (IRR) forms a natural boundary to the central area, and aligns with the City Centre Transport Strategy. Modelling a CAZ Benchmark within the IRR would minimise wider traffic reassignment impacts by non-compliant vehicles, and would primarily model those journeys with an origin or destination within the Regional Centre
Type of CAZ Benchmark i.e. which vehicle types may be subject to charging	Category C – Bus/Coach/Taxi/PHV/HGV/Minibus/Van
Level of charge to be applied by vehicle type	Charges as set out within the original plan
First year from which a CAZ Benchmark would be modelled for operation and whether that is consistent across all vehicle types	2025 / 2026
Level and nature of any funding support for users / vehicles	Grant values as set out within the original plan inflated by 25.6% (as set out in Appendix Three)
Exemptions from charges	Exemptions as set out within the original plan

7.4 In terms of air quality impact, the modelled results shown that the anticipated number of exceedance sites above the legal limit values in 2025 are modelled to reduce from 26 to 21 sites under a CAZ Benchmark.

7.5 The number of exceedance sites above the legal limit values in 2026 are modelled to reduce further to 16 sites meaning compliance with the Direction is not achieved in the assessment years under the CAZ Benchmark.

8 Developments following Summer 2024 modelling

8.1 In the process of preparing an updated Appraisal Report and supporting material reflecting the position set out above, two additional issues have arisen.

8.2 A risk identified in the December 2023 submission “Delays to bus depot electrification” has materialised and there is now a delivery delay to the electrification of Queens Road depot, which was due to take place by January 2025, and which was the assumed delivery date in the modelling of the Investment-led Plan.

- 8.3 This poses a significant challenge to achieving compliance in 2025, as 73 ZEBs are to be operated out of Queens Road depot. The issue affects 12 bus services, which run through 17 forecast 'Do Minimum' exceedance sites in 2025.
- 8.4 Queens Road depot is a Grade 2 listed building serving as an operational bus facility. Major works are required to install the charging infrastructure, as well as make necessary repairs to the structure and maintain historical features. Since it became apparent that this risk was likely to materialise, TfGM have been exploring alternative solutions to Queens Road depot electrification to enable the GM Authorities to deliver compliance in 2025. GM has now completed a high-level review of alternative options to deliver the required air quality improvements at the exceedance sites where the 73 ZEBs were planned to operate in the absence of Queens Road depot.
- 8.5 The high-level review identified that none of these options are likely to deliver compliance in 2025 due to deliverability issues, or insufficient air quality benefits and therefore compliance is now no longer likely to be delivered until 2026. The approach that is most likely to achieve compliance as soon as possible is to continue with the electrification of the Queens Road depot as quickly as possible.
- 8.6 In addition, in July 2024 National Highways also advised TfGM that the temporary speed limit on the M602 junctions 1 to 3 Eccles is to be removed. They have been trialling 60mph speed limits on short sections of the strategic road / motorway network, to assess whether reducing the speed limit reduces NO₂ levels, this included M602 junctions 1 to 3 Eccles.
- 8.7 National Highways have been monitoring this area and they have notified Greater Manchester that the speed limit trial is now complete, after advising that their monitoring data showed that air quality at these locations has improved and is now compliant.
- 8.8 The M602 temporary speed limit is assumed to be in place in the Investment-led Plan modelling assumptions.
- 8.9 In agreement with JAQU both scenarios have been tested through the current modelling to understand the implications to the Investment-led Plan.
- 8.10 The implications of these two issues are addressed in the Supplementary Appraisal Report, attached as Appendix Four. In summary:
- revised modelling demonstrates that the Investment-led Plan, even with the delay to the electrification of Queens Road depot and the removal of the M602 temporary speed limit, achieves compliance in 2026; and
 - a revised comparative appraisal of the Investment-led Plan (taking into account the matters outlined above) and the CAZ Benchmark, against a revised forecast year of compliance of 2026, demonstrates that only the Investment-led Plan meets the Determining Success Factor of achieving compliance in the shortest possible time.

9 Cost

9.1 The section below outlines the funding awarded by the government to date; expenditure to date funded by the grants; future committed costs until a decision is made and a forecast for the Investment-led Plan, on the basis it is approved, as well as the CAZ Benchmark.

Upgrade of non-compliant vehicles

9.2 Clean Air Funding was awarded by the Government to help owners upgrade non-compliant vehicles (Buses, Coaches, HGVs, LGVs and Taxis) and mitigate against the negative socio-economic impact of a GM Wide Category C charging Clean Air Zone.

9.3 The GM Clean Air Plan Policy, agreed in Summer 2021, set the funding amounts per vehicles and eligibility criteria. The various vehicle types approved for funding opened as follows:

- May 2020 for bus retrofit applications (as a continuation of the government's Clean Bus Technology Fund);
- September 2021 for bus replacement applications; and
- November 2021 for HGV upgrade applications.

9.4 As set out in the table below, the value of funding spent and committed to the end of July 2024 is £19.1 million. GM's Investment-led Plan focuses on investment in buses, taxis and local traffic management measures to deliver compliance with legal limits and therefore non-committed funds would be redistributed under an investment-led scenario.

9.5 As agreed in December 2023, the HGVs fund is closed to new applicants and those who have existing funding awards, but not yet claimed, have been given to 1st January 2025 to spend the committed monies.

9.6 On this basis, as at the end of July 2024, £20.2 million will still be allocated for taxis (PHV and hackney) and the remaining uncommitted funds of £83.8 million reallocated as part of the Investment-led Plan.

Purpose	Value of Grant (net of Admin costs) £m	Value Committed¹⁴ £m	Vehicles Upgraded	Recommendation
Heavy Goods Vehicles	7.6	2.6	227	Close to new applications
Private Hire Vehicles	10.2	0.02	7	retain allocation
Coaches	4.4	-	0	reallocate
Minibus	2.0	0.01	1	reallocate
Light Goods Vehicles	70.0	0.1	14	reallocate
Hackney	10.1	0.1	20	retain allocation
Bus Retrofit	15.4	15.1	959	reallocate
Bus Replacement	3.2	1.2	69	reallocate
Total	123.1	19.1	1,297	

Overall Funding Position

- 9.7 The costs related to the business case, implementation and operation of the GM CAP are either directly funded or underwritten by the government acting through JAQU and any net deficit over the life of the GM CAP will be covered by the New Burdens Doctrine, subject to a reasonableness test¹⁵.
- 9.8 GM has been awarded a total of £204.4 million (excluding electric vehicle charging infrastructure) in respect of the GM CAP. Government grants have been awarded to fund the following areas:

Grant	£m
Clean Air Plan Development Phase	33.3
Clean Air Zone & Funds Implementation	31.4
Clean Air Zone & Funds Operation	16.6
Vehicle Funds (including Bus)	123.1
Total	204.4

- 9.9 Expenditure to July 2024 (including committed grant awards) against the £204.4 million awarded by Government is summarised in the table below:

¹⁴ Value Committed is the value of the total number of applicants who have applied and have been awarded a grant. At the end of November 2023, 162 Applicants have been awarded funding but are yet to upgrade.

¹⁵ The new burdens doctrine is part of a suite of measures to ensure Council Tax payers do not face excessive increases. [New burdens doctrine: guidance for government departments - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/guidance/new-burdens-doctrine)

Area of Expenditure	Spend/Committed to July 2024 £m
Clean Air Plan Development Phase	33.9
Clean Air Zone & Funds Implementation	24.8
Clean Air Zone & Funds Operation	18.1
Vehicle Funds (including Bus)	19.1
Grand Total	95.9
Grant Remaining	108.5

- 9.10 GM proposes that the grant value remaining should be repurposed to contribute to the future funding required for the Investment-led Plan.
- 9.11 The GM Authorities have calculated the whole life costs for the Investment-led Plan and the CAZ Benchmark. The figures have been developed using high level assumptions and based on previous costs.
- 9.12 There is a degree of financial risk in the Investment-led Plan as discussion with key suppliers about the termination and re-design of the Investment-led Plan have not taken place.
- 9.13 Once the Greater Manchester Authorities are given a clear steer from government and a direction under the Environment Act 1995, conversations can take place with suppliers, contingency costs can be reviewed and a final view on the deliverability of the scheme within the funding envelope can be taken.
- 9.14 The following table outlines the whole life costs for the Investment-led Plan compared to the CAZ Benchmark. The Investment-led Plan would require an additional £15.2 million of funding compared to an additional £61.9 million for a CAZ Benchmark.

	CAZ Benchmark	Investment-led-Plan
Early Termination of CAZ Services	N/A	(£1.8m)
Vehicle Upgrade Funding and Administration	(£107.2m)	(£73.0m)
Development and Implementation	(£13.1m)	(£11.5m)
Net Surplus / (Deficit) from Operation and Decommissioning	(£50.1m)	(£37.4m)
Whole Life Total Cost	(£170.4m)	(£123.7m)
Available Funding	£108.5m	
Additional Government Funding (or Mitigation) Required	£61.9m	£15.2m

- 9.15 A summary breakdown of the Investment-led Plan costs is set out in the following table. Further information on these costs can be found in the Appraisal Report in Appendix Two (Investment Led Plan section 5.6 and CAZ Benchmark section 6.4.)

Bus Investment	£51.1m
Taxi Investment (Clean Taxi Fund)	£30.5m
Local measures	£5.0m
Development, Administration, Risk & Contingency	£37.1m
Investment Led Plan Total	£123.7m

10 Equalities

- 10.1 A high-level assessment has been conducted on both the Investment-led Plan and the CAZ Benchmark scenarios to understand the likely impacts. On individuals with protected characteristics impacts can be consolidated into three key themes. They are:
- Air quality – certain protected characteristics groups are likely to benefit disproportionately from improvements to air quality (age, disability, ethnicity, faith, pregnancy/maternity).
 - Affordability – disproportionate impacts identified for those in certain age groups, sex, ethnicity, religion/faith & low-income groups.
 - Wider impacts – disproportionate impact identified for individuals with disabilities, young and older people and individuals from ethnic minority background. E.g. potential impact of the CAZ on using public transport or taxi services.
- 10.2 From an equality perspective, the Investment-led Plan would deliver an air quality improvement that benefits individuals with protected characteristics. An air quality improvement is likely to be faster for the Investment-led Plan than the CAZ Benchmark due to the former achieving compliance earlier and being able to implement the Plan earlier.
- 10.3 Under the Investment-led Plan, the adverse financial impact on protected characteristic groups is to a lesser extent than the CAZ Benchmark.
- 10.4 The Investment-led Plan reduces the risk to health, jobs, livelihoods and businesses compared to a CAZ Benchmark.
- 10.5 Whilst the delay to the electrification of the Queens Road depot would result in the Investment-led Plan delivering air quality improvements later than original planned, it remains ahead of a CAZ Benchmark and does not change the equality impacts assessment as set out above.

11 Summary

- 11.1 The Investment-led Plan is the only option tested which meets the legal requirement placed on the 10 GM Authorities to deliver compliance in the shortest possible time and by 2026 at the latest.

11.2 It is a better strategic fit in terms of air quality and climate change (delivering greater air quality benefits), transport (providing additional cleaner buses that will continue to give benefits after compliance is achieved), growth and economy (by not imposing charges on users it removes the risk of restricting growth or damaging businesses). It is better VfM than the CAZ Benchmark, delivering better air quality benefits at a lower cost, and its distributional health benefits, affordability for users and quality of life impacts are preferable to the CAZ Benchmark. Finally, the Investment-led Plan is considered more affordable and therefore more deliverable than the CAZ Benchmark.

12 Delivery Confidence

12.1 The Government's Joint Air Quality Unit have commissioned Local Partnerships to review the commercial, financial and management elements of GM's Appraisal Report (and relevant annexes), focusing on how they have been developed and would be taken forward, including:

- the approach to delivery;
- the timeline/programme for delivery;
- governance arrangements;
- financial assumptions/estimates; and
- risks to delivery and mitigations.

12.2 Local Partnerships have been asked by JAQU to identify any areas of risk and to make any observations or recommendations on aspects that may need further attention or mitigation.

12.3 It is for Government to decide on the measures included in Greater Manchester's new Clean Air Plan, the outputs of this review will feed into the government's considerations.

13 Nitrogen Dioxide (NO₂) Monitoring Results 2023

13.1 Greater Manchester publishes its Air Quality data annually in June each year via the Air Quality Annual Status Report, submitted to DEFRA.

13.2 Since 2018, the Greater Manchester Clean Air Plan has been using diffusion tube monitoring equipment to measure roadside levels of NO₂.

13.3 Additional monitoring sites have gradually been added to the diffusion tube network used in the development of the Clean Air Plan, helping to provide a clearer picture of NO₂ levels in Greater Manchester.

13.4 In 2023, 248 roadside monitoring locations showed that there were 64 sites of exceedance, a further 78 locations were at risk of exceedance, and this was consistent with the air quality modelling that was used to inform the location of monitoring. The GM CAP monitoring data indicates that air pollution has generally decreased compared with 2022. Analysis of the factors influencing pollution emissions and air quality indicate that the concentrations have been affected by:

- An increase in car traffic compared with 2022, but also a cleaner vehicle fleet as a result of natural churn as older cars are replaced by newer cleaner models.
- The launch of locally controlled Bee Network bus services, and introduction of new electric buses.
- The operations of retrofit Euro V buses, which are known to exhibit variable emissions performance under real-world conditions.

13.5 Full results can be found in Appendix Five.

14 Recommendations

14.1 The recommendations are set out at the front of the report.

15 Appendix One – Air Quality Modelling Assurance Report

15.1 Attached as a supplementary paper.

16 Appendix Two – Appraisal Report









16.1 Attached as a supplementary paper.

17 Appendix Three – Taxi Measures

17.1 The funding offers are split into funding for upgrade to wheelchair accessible vehicles and funding for upgrade to non-wheelchair accessible vehicles.

17.2 The Investment-led Plan proposes taxi funding being issued directly to applicants, subject to meeting the relevant criteria and production of relevant evidence. This reflects feedback received during the PPD process that there were a limited number of dealerships to upgrade with and that funding should be paid directly to the applicant. Previously, financial support was issued directly to suppliers of vehicle upgrade options, meaning all vehicle upgrades had to go via an approved dealership. The proposed approach offers greater flexibility to the taxi trade in terms of upgrade options and requires less resource to operate the CTF.

17.3 Funding amounts take into account inflationary increases in the economy since the finalisation of the previous CAP policy in 2021 to the anticipated opening of the Investment-led Plan funds in 2024. The inflationary uplift has been calculated based on its cumulative total of inflation based on Q4 values from the Bank of England's Monetary Policy Committee Report, published in November 2023¹⁶, The uplift provides an equitable increase for both hackneys and PHV owners and operators and responds to the increases in the cost of new and second hand vehicles since the development of the Previous GM CAP.

Vehicle type (upgrade to)		Offer available (per vehicle)	Change from previous policy funding amount (2021)
Purpose-built Wheelchair Accessible Vehicle	Zero Emission Capable (ZEC)	Up to £12,560 towards the running costs of the replacement vehicle (or vehicle finance).	 Increase of £2,560
	Second-hand ZEC	Up to £12,560 towards the cost of the replacement vehicle.	 Increase of £2,560
	Compliant Vehicle (Euro 4 petrol or Euro 6 diesel or better)	Up to £6,280 towards the cost of the replacement vehicle.	 Increase of £1,280
	Compliant Vehicle (Retrofit)	No retrofit option to be offered given Government's evidence on efficacy of retrofit technology.	 Removed
Non-Wheelchair Accessible Vehicle	ZEC	Up to £7,530 towards the running costs of the replacement vehicle (or vehicle finance).	 Increase of £1,530
	Second-hand ZEC	Up to £7,530 towards the cost of the replacement vehicle (vehicle finance).	 Increase of £1,530
	Compliant Vehicle 6+ seater (Euro 4 petrol or Euro 6 diesel or better)	Up to £6,280 towards the cost of the replacement vehicle (grant or vehicle finance).	 Increase of £1,280
	Compliant Vehicle (Euro 4 petrol or Euro 6 diesel or better)	Up to £3,770 towards the cost of the replacement vehicle (grant or vehicle finance).	 Increase of £770

¹⁶ <https://www.bankofengland.co.uk/monetary-policy-report/2023/november-2023?ref=pmp-magazine.com>

Vehicle type (upgrade to)		Offer available (per vehicle)	Change from previous policy funding amount (2021)
	Compliant Vehicle (Retrofit)	No retrofit option to be offered given Governments evidence on efficacy of retrofit technology.	✗ Removed

18 Appendix Four – Supplementary Appraisal Report

18.1 Attached as a supplementary paper.

19 Appendix Five – Nitrogen Dioxide (NO₂) Monitoring Results 2023

19.1 Why does Greater Manchester monitor Nitrogen Dioxide?

19.2 Greater Manchester undertakes NO₂ monitoring to determine compliance with NO₂ legal limit values in accordance with GM CAP and government Direction and the 10 districts also monitor NO₂ in accordance with the requirements of the Environment Act 1995 and associated statutory guidance, also called Local Air Quality Management or 'LAQM'. The two monitoring regimes have different siting criteria to assess exposure in different types of locations.

19.3 What are the legal limit values for Nitrogen Dioxide?

19.4 The GM CAP monitoring assesses exposure as defined by the Air Quality Standards Regulations (England) 2010 Limit Values, with roadside being typically worst-case and hence the focus for monitoring. The LAQM monitoring is concerned with exposure at locations of relevant public exposure¹⁷ where the Air Quality Objectives apply, which can include the roadside but only in exceptional circumstances. LAQM monitoring also includes measurements at background¹⁸ and industrial locations and is not limited to road traffic sources.

¹⁷ All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc. Kerbside locations are on the whole excluded, unless members of the public are likely to be exposed for longer than the time used to determine the legal limit for the pollutant concerned. Box 1.1 for TG16 give more detail [LAQM-TG16-April-21-v1.pdf \(defra.gov.uk\)](#)

¹⁸ Background sites are used to provide useful information such as long-term trends, general population exposure and an indication of reduction in pollution away from roadside sources, as opposed to measuring exceedances.

- 19.5 Additionally, the two regimes have different values by which they determine an exceedance. LAQM determines that the legal limit of $40\mu\text{g}/\text{m}^3$ has been exceeded by any result over $39.9\mu\text{g}/\text{m}^3$ ¹⁹, whereas for the GM CAP, JAQU determine anything over $40.4\mu\text{g}/\text{m}^3$ to be an exceedance²⁰. These differences in definition should be taken into consideration when comparing the results from individual monitoring locations. There are two legal limits in relation to NO_2 :
- A short-term hourly limit of $200\mu\text{g}/\text{m}^3$ (not to be exceeded more than 18 times a calendar year).
 - The long-term annual average limit of $40\mu\text{g}/\text{m}^3$.
- 19.6 To determine compliance with the NO_2 1-hour mean Air Quality Limit Values, research undertaken on behalf of Defra and outlined in Technical Guidance Note LAQM.TG (16) (Defra, 2021) identified that road traffic emission related exceedances are unlikely to occur where the annual mean concentration is below $60\mu\text{g}/\text{m}^3$.
- 19.7 For the purpose of the GM CAP, the government has directed GM (and other areas) under the Environment Act 1995 to address NO_2 exceedances at the roadside in the shortest possible time. In GM this direction specifically focuses on the long-term annual average legal limit ($40\mu\text{g}/\text{m}^3$).
- 19.8 **How do we monitor Nitrogen Dioxide?**
- 19.9 The GM local authorities carry out air quality monitoring for NO_2 using a combination of:
- Continuous automatic monitoring sites: There are currently 24 continuous air quality monitoring stations, 14 of which are located at the roadside.
 - Diffusion tubes: 356 sites are set up for local air quality management (LAQM) purposes. In addition, approximately 248 sites are set up for GM Clean Air Plan monitoring and evaluation purposes.:

¹⁹ An exceedance defines a period of time during which the concentration of a pollutant is greater than, or equal to, the appropriate air quality criteria. For Air Quality Standards, an exceedance is a concentration greater than the Standard value. For Air Pollution Bandings, an exceedance is a concentration greater than, or equal to, the upper band threshold. <https://uk-air.defra.gov.uk/air-pollution/glossary#E>

²⁰ The IPR guidance underpinning the Air Quality Standards Regulations 2010 stipulates that compliance should be assessed using data of 'the same numeric accuracy' as the limit value, therefore a value of $40.4\mu\text{g}/\text{m}^3$ is rounded down to $40\mu\text{g}/\text{m}^3$ and is not exceeding. https://ec.europa.eu/environment/air/quality/legislation/pdf/IPR_guidance1.pdf

19.10 Monitoring for NO₂ for GM Clean Air Plan purposes uses diffusion tubes at sites where “target determination”²¹ modelling predicted illegally high levels of NO₂ for 2021. Three new continuous automatic air quality monitoring stations were in 2022.

19.11 What are the results for Nitrogen Dioxide in 2023?

19.12 Table 1 below summarises NO₂ concentrations and exceedances of the annual mean objective (AMO) across sites set up for local air quality management (LAQM) purposes (automatic and non-automatic) across GM in 2023.

19.13 Maps showing the location of the LAQM monitoring sites are provided on the CleanAirGM Data Hub.

Table 1 Summary of LAQM NO₂ monitoring in GM in 2023

Authority	Automatic sites (with valid data capture 2023) ²²	Non-automatic sites	Concentration range (all sites) (µg/m ³)	Exceedances of NO ₂ Annual Mean (non-automatic sites)		Increase / Decrease of Exceedances on Year
				In AQMA	Outside AQMA	
Bolton MBC	1	47	40.4 - 8.9	1	-	+1
Bury MBC	3	20	38.7 - 18.8	-	-	-1
Manchester CC	3	40	49.6 - 14.2	2	-	-2
Oldham MBC	1	27	45.0 - 15.8	2	-	-1
Rochdale MBC	1	28	32.6 - 11.6	-	-	0
Salford CC	3	48	43.2 - 10.8	1	1	-2
Stockport MBC	2	30	34.3 - 5.7	-	-	0
Tameside MBC	2	53	45.2 – 9.6	3	-	0
Trafford MBC	3	15	29.8 - 11.3	-	-	0
Wigan MBC	2	48	43.8 - 13.9	1	1	+1
Total	24	356	49.6 – 5.7	10	2	-4

²¹ The government’s Joint Air Quality Unit undertook a process called ‘target determination’, which involves comparing the outputs of the local and national modelling, verifying the local modelling methodology and then agreeing the forecast concentration assessment to be compared to the limit value for each exceedance. The outcome of this is an agreement of the NO₂ problem Greater Manchester must resolve (“target determination”) and the basis for the Greater Manchester Clean Air Plan.

²² >25% (3 months or more) data capture.

19.14 Table 2 shows the number of diffusion tube monitoring sites.

Table 2 Number of GM CAP Monitoring Sites

Authority	Number of monitoring Sites					
	2018	2019	2020	2021	2022	2023
Bolton	5	14	14	14	32	19
Bury	5	16	16	16	36	19
Manchester	20	91	91	91	160	109
Oldham	0	9	9	9	19	13
Rochdale	0	12	12	12	15	6
Salford	5	27	27	27	60	32
Stockport	10	19	19	19	47	24
Tameside	5	14	14	14	32	19
Trafford	5	14	14	14	18	4
Wigan	0	6	6	6	13	3
Total	55	222	222	222	432	248

19.15 Table 3 below summarises NO₂ concentrations and exceedances of the annual mean across sites set up for GM CAP purposes between 2018 and 2023. Maps showing the location of the GM CAP monitoring sites are provided on the CleanAirGM Data Hub.

Table 3 Number of GM CAP Exceedances

Authority	Number of Exceedances (>40.4µg/m ³)					
	2018	2019	2020	2021	2022	2023
Bolton	1	4	1	2	4	2
Bury	2	10	0	2	6	3
Manchester	14	65	8	25	49	39
Oldham	0	5	0	1	5	1
Rochdale	0	4	1	1	1	0
Salford	1	16	0	7	13	4
Stockport	6	15	2	3	8	7
Tameside	4	6	4	4	8	7
Trafford	1	3	0	0	0	0
Wigan	0	1	0	0	1	1
Total	29	129	16	45	95	64