

Appendix One

This appendix summarises the purpose and contents of the additional supplementary technical Evidence Notes that are required to be formally submitted to JAQU to accompany the OBC and in response to the Minister's feedback.

Pursuant to the Ministerial Direction, and in discussions with the government's Joint Air Quality Unit (JAQU) GM has updated analysis that addresses issues raised around the behavioural assumptions used and provided assurance that the proposed Clean Air Zone will deliver compliance in the shortest possible time, and that compliance cannot be achieved earlier than 2024, such analysis includes:

- exploring whether measures targeted at the last remaining exceedance locations following implementation of a CAZ in 2021 would achieve compliance quicker;
- updating the behavioural assumptions used to model the impact of a CAZ, following the Technical Independent Review Panel's suggestions;
- providing further sensitivity testing on vehicle upgrade assumptions; and
- demonstrating that a Greater Manchester CAZ D cannot bring forward compliance, including outlining the delivery challenges discussed for a GM wide CAZ D.

In response 29 Evidence Notes, have been produced, namely:

1. GM CAP Data, Evidence and Modelling: post-OBC approach
2. GM CAP: Next steps for data collection and the development of analytical tools
3. GM CAP: Analysis of the freight market
4. GM CAP: Analysis of the coach market. **
5. GM CAP: ANPR Surveys: Summary of Initial Findings
6. GM CAP: Behavioural response assumptions and available data sources*
7. GM CAP: LGV and HGV Operational Cost Models*
8. GM CAP: HGV Behavioural Responses Note*
9. GM CAP: LGV Behavioural Responses Note*
10. GM CAP: Taxi Behavioural Responses Note*
11. GM CAP: Analysis of Bus Upgrade Options to Deliver Air Quality Compliance**
12. GM CAP: Evidence of the impact of 2021 implementation of a CAZ C (without exemptions)
13. GM CAP Study: Traffic Impact on Neighbouring Authorities
14. GM CAP: Local exceedances: Update*
15. GM CAP: Implications of the EFT update for GM
16. GM CAP: Sensitivity testing of a CAZ C in 2023 with revised behavioural response assumptions.*
17. GM CAP: Evidence supporting the decision not to progress with a GM-wide CAZ D.*
18. GM CAP: Minibus Vehicle Research

19. GM CAP: Taxi and Private Hire Vehicle Fleet Research
20. GM CAP: Greater Manchester Specialised Goods Surveys: Results Summary
21. GM CAP: Sensitivity test: Full Electric Bus Fleet
22. GM CAP: Addendum to Note 3: GM Comparative Statistics
23. GM CAP: Summary update of ongoing work on local exceedances*
24. GM CAP: Updates to the Modelling Tools post-OBC Submission for the Do Minimum scenario
25. GM CAP: Modelling the impacts of Sustainable Journeys Measures*
26. GM CAP: Analysis of Funds*
27. GM CAP: Demand Sifting Tool Operating Manual*
28. GM CAP: Taxi and Private Hire Vehicle Operational Cost Model*
29. GM CAP: Option for Consultation Modelling Summary*

In the interests of the ongoing working relationship between the 10 GM authorities and JAQU in developing the GM CAP, all of the above reports have been issued to JAQU in draft form, and are now subject to approval. It is proposed that for the City Council, approval of these documents will be through the delegation agreed in the March 2019 report, to the Chief Executive, in consultation with the Executive Member for the Environment, Planning and Transport.

The evidence base that will underpin the Full Business Case (FBC) is still being developed. Evidence was supplied to JAQU where it was possible to do so, with the recognition that the Notes represented a work-in-progress and that more work is required to properly understand the implications of the analysis from a policy, delivery, legal and analytical assurance perspective.

Contents of the supplementary Evidence Notes:

- 'Note 1: GM CAP Data, Evidence and Modelling: post-OBC approach' sets out the process being undertaken to deliver the Data, Evidence and Modelling requirements in support of the FBC. It also describes the evidence to be supplied to JAQU and how this responds to the feedback received from JAQU and the Technical and Delivery Independent Review Panels (the T-IRP and D-IRP).
- 'Note 2: GM CAP: Next steps for data collection and the development of analytical tools' provides information about further data collection and the development of tools planned as next steps, namely behavioural research of van drivers and other groups; the development of further Operational Cost Models for other vehicle types; on-street specialized goods vehicle surveys; and the analysis of evidence emerging from the Conversation and other bodies.
- 'Note 3: Analysis of the freight market' describes the number of Heavy and Light Goods Vehicles operating in GM, the compliance status of those vehicles, and the business and usage patterns of those vehicles.
- 'Note 4: Analysis of the coach market' describes the number of coaches operating in GM, the compliance status of those vehicles, and the business and usage patterns of those vehicles. This evidence, and that contained in Note 3, is being used to inform scheme design and to support the development of analytical tools and modelling assumptions.

- 'Note 5: GM CAP ANPR Surveys: Summary of Initial Findings' sets out the results of an ANPR survey conducted in January 2019 at 42 sites across GM. The survey was designed to provide a representative profile of the vehicle fleet operating in Greater Manchester in terms of vehicle type (including fuel used) and age profile, in order to update the previous data used in the OBC with a more comprehensive and robust dataset. The results show that there are not major differences between observed levels of compliance in the overall GM fleet between the 2016 and 2019 surveys. This data set is now being used widely as part of the ongoing work to refine the proposals as part of the FBC development for the CAP.
- 'Note 6: GM CAP: Behavioural response assumptions and available data sources' sets out evidence gathered from a number of sources offering an insight into the vehicle markets in question and how they might respond to the range of measures proposed in the GM CAP. These include Stated Preference surveys that have been carried out by other CAP authorities (Sheffield and Bradford) and shared with GM.
- 'Note 7: LGV and HGV Operational Cost Models' describes a new analytical tool that has been developed in support of the GM CAP allowing the assessment of behavioural responses to a CAZ based on operational costs by vehicle type for HGVs and LGVs. It is proposed that this tool replaces the methodology for assessing behavioural responses as applied in the OBC.
- 'Note 8: GM CAP: HGV Behavioural Responses' sets out what behavioural response assumptions were applied at OBC for HGVs, the revised behavioural assumptions proposed for future analysis based on the HGV Operational Cost Model, and proposed next steps for analysis.
- 'Note 9: GM CAP: LGV Behavioural Responses' sets out what behavioural response assumptions were applied at OBC for LGVs, the revised behavioural assumptions proposed for future analysis based on the LGV Operational Cost Model, and proposed next steps for analysis.
- 'Note 10: GM CAP: Taxi Behavioural Responses' sets out what behavioural response assumptions were applied at OBC for Hackney Cabs and Private Hire Vehicles (PHVs), and consider a possible approach to updating these assumptions based on evidence derived from stated preference surveys carried out in Sheffield. It sets out proposed next steps for analysis, including the development of an Operational Cost Model for Taxis (Hackney Cabs and PHVs).
- 'Note 11: Analysis of Bus Upgrade Options to Deliver Air Quality Compliance' was produced in response to a request from JAQU for analysis scaling the proportion of bus compliance required to deliver compliance. Practically, this approach is very difficult to test in a way that would represent a real-world operational scenario that could be delivered as part of the CAP. Note 11 therefore presents two approaches to understand the influence of buses on compliance with the Air Quality Directive:
 - how many of the GM bus service routes pass the predicted exceedance locations and the number of buses this represents compared with the GM bus operator vehicle fleet.
 - how many of the modelled exceedances would remain if the preferred

option (Option 8) excluded bus improvements at all (i.e. a CAZ that did not include buses as a type of vehicle to be charged).

- 'Note 12: Evidence of the impact of 2021 implementation of a CAZ C (without exemptions)' describes analysis carried out by GM to assess the risks of implementing a CAZ C in 2021 without also implementing a two-year sunset period as was proposed in the OBC. The Note sets out analysis of vulnerability by sector, based on the proportion of the fleet that would be non-compliant in 2021 compared to 2023; analysis exploring the risk of market distortion and the potential impact on small businesses; and analysis of the likely availability (or lack of availability) of second-hand compliant vehicles.
- 'Note 13: GM CAP Study: Traffic Impact on Neighbouring Authorities' presents the results of highway modelling carried out to assess the likelihood and potential scale of traffic re-routeing to avoid a CAZ.
- 'Note 14: GM CAP Local exceedances Update' sets out GM's approach to identifying and assessing sites where further measures may be required in order to achieve compliance in the shortest possible time. The Note presents the results of analysis carried out to assess real-world traffic conditions and to compare these to model outputs, and analysis of NOx source apportionment and any local conditions affecting concentrations, such as canyons, including checking how accurate the representation of such conditions is in the model itself. It also sets out an update on work carried out to identify possible local solutions.
- 'Note 15: Implications of the EFT update for GM' considers the implications of Emission Factor Toolkit (EFT) version 9.1a, released by JAQU at the end of May 2019. GM's methodology for calculating traffic emissions applies emissions factors has been derived from DEFRA's Emission Factor Toolkit (EFT) version 8.0, which was originally released in November 2017. Version 9.1a of the EFT contains fleet figures which have resulted from a recent Department for Transport (DfT) project to develop new passenger car fleet projections in light of emerging evidence regarding changes in consumer purchasing behaviour which show a shift away from diesel cars and towards petrol cars, alongside a slowing in overall new car sales.
- 'Note 16: GM CAP: Sensitivity testing of a CAZ C in 2023 with revised behavioural response' presents the results of a sensitivity test of the impacts of a CAZ C (without any supporting measures) in 2023, applying revised behavioural responses for HGV, LGV, PHV and Hackney Cab. The bus upgrade was assumed as 100% for the purposes of this test. This test was conducted at the request of JAQU.
- 'Note 17: Evidence supporting the decision not to progress with a GM-wide CAZ D' sets out the options appraisal process applied at OBC and presents further evidence explaining why it is not considered that a GM-wide CAZ D cannot bring forward compliance.
- 'Note 18: Minibus vehicle research' describes the number of minibuses operating in GM, the compliance status of those vehicles, and the business and usage patterns of those vehicles.
- 'Note 19: Taxi and Private Hire vehicle fleet research' describes the number of taxis and PHVs licensed and operating in GM and the

compliance status of those vehicles. This evidence, and that contained in Note 18, is being used to inform scheme design and to support the development of analytical tools and modelling assumptions.

- 'Note 20: Greater Manchester Specialised Goods Surveys: Results Summary' sets out the results of on-street surveys carried out at three sites identified in the local exceedances study where freight was a significant contributor of emissions. The surveys provide estimates of vehicle volumes by size, compliance status and industry.
- 'Note 21: Sensitivity test: Full Electric Bus Fleet' describes the results of a sensitivity test carried out to understand the impact on compliance of a fully electric bus network across GM. This was carried out as a theoretical test at the request of JAQU.
- 'Note 22: Addendum to Note 3: GM Comparative Statistics' presents the results of analysis carried out at the request of JAQU to test the reasonableness of GM's assumption that the region was typical of the UK in terms of economic and business activity. It acts as an Addendum to Note 3.
- 'Note 23: Summary update of ongoing work on local exceedances' provides an updated position on the local exceedances project, acting as a follow-up paper to Note 14 which was supplied to JAQU in draft three weeks earlier.
- 'Note 24: GM CAP: Updates to the Modelling Tools post-OBC Submission for the Do Minimum scenario' describes a series of improvements that have been made to the underlying assumptions in the Do Minimum modelling scenario, in particular reflecting the release of EFT v9.1a and newly available data on bus services and fleets.
- 'Note 25: GM CAP: Modelling the impacts of Sustainable Journeys Measures' sets out the methodology that has been developed to test the impacts of a package of sustainable journeys interventions, and the results of those tests.
- 'Note 26: GM CAP: Analysis of Funds' sets out how the available tools have been used to assess the impact of different funding offers in terms of likely uptake and impact on behavioural responses. This analysis has fed into the assessment of the funding offers, alongside other evidence.
- 'Note 27: GM CAP: Demand Sifting Tool Operating Manual' describes the Demand Sifting Tool and acts as a manual for use, setting out the underlying assumptions and methodology within the Tool. This Note has been developed to meet the TIRP request for further detail on the operation of the Tools.
- 'Note 28: GM CAP: Taxi and Private Hire Vehicle Operational Cost Model' describes a new analytical tool that has been developed in support of the GM CAP allowing the assessment of behavioural responses to a CAZ based on operational costs by vehicle type for Hackney Cabs and Private Hire Vehicles. It is proposed that this tool replaces the methodology for assessing behavioural responses as applied in the OBC.
- 'Note 29: GM CAP: Option for Consultation Modelling Summary' presents the results of a series of tests of the updated Do Minimum scenario and of the full package of measures proposed for consultation for the GM CAP. Tests have been carried out for 2021, 2023 and 2025

and analysis has been carried out to estimate the forecast year of compliance, shown to be 2024 with the proposed package as per the Ministerial Direction. As such, this Note supersedes Note 16, which acted as an early test of a simplified CAZ-only scenario using an interim version of the updated tools.

The reports, save for those marked with an asterisk, will be published once they have been approved. Upon publication, copies of these reports will be available at: www.CleanAirGM.com.

Those reports marked with a single asterisk (*) are unfinished documents and will remain unpublished until the beginning of the consultation.

As such, it is considered that the reports referred to above fall within the exception under regulation 12(4)(d) EIR and that, in all the circumstances of the case, the public interest in maintaining the exception outweighs the public interest in disclosing the information. Subject to the comments above in relation to report number 11, all the reports referred to above will be made public shortly and in any event prior to statutory consultation so there will be an appropriate opportunity for public scrutiny of them. It is not considered that the public interest would be served by disclosing at this stage drafts which are incomplete.

In addition, reports number 4 and 11, marked with a double asterisk (**) contains commercial or industrial information in respect of which confidentiality is provided by law to protect a legitimate economic interest, and disclosure would adversely affect that confidentiality. As such, it is considered these reports fall within the exception under regulation 12(5)(e) EIR and that, in all the circumstances of the case, the public interest in maintaining the exception outweighs the public interest in disclosing the information.