Greater Manchester's Clean Air Plan to tackle Nitrogen Dioxide Exceedances at the Roadside

Note 14: Local Exceedances: Identification and review of measures to achieve compliance

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Authorised by: **Date:**	Ian Palmer 12th July 2019		

COVID-19 Pandemic Statement

This work has not considered the impact of the COVID-19 pandemic. Whilst we are continuing, where possible, to develop the Greater Manchester Clean Air Plan, the pandemic has already had an impact on our ability to keep to the timescales previously indicated and there may be further impacts on timescales as the impact of the pandemic becomes clearer.

We are also mindful of the significant changes that could result from these exceptional times. We know that the transport sector has already been impacted by the pandemic, and government policies to stem its spread. The sector's ability to recover from revenue loss, whilst also being expected to respond to pre-pandemic clean air policy priorities by upgrading to a cleaner fleet, will clearly require further thought and consideration.

The groups most affected by our Clean Air Plan may require different levels of financial assistance than we had anticipated at the time of writing our previous submission to Government.

More broadly, we anticipate that there may be wider traffic and economic impacts that could significantly change the assumptions that sit behind our plans. We have begun to consider the impacts, and have committed to updating the government as the picture becomes clearer over time.

We remain committed to cleaning up Greater Manchester's air. However, given the extraordinary circumstances that will remain for some time, this piece of work remains unfinished until the impact of the COVID-19 pandemic has been fully considered by the Greater Manchester Authorities.

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1 Introduction

1.1 Greater Manchester (GM) has identified 12 sites that are the last remaining exceedance locations in 2023/4 to explore whether local measures could mean that:

- compliance can be brought forward;
- early exposure-reduction benefits can be realised in the city centre in 2021; or
- compliance can be achieved with Option 7 (GM-wide CAZ B) as quickly as with Option 8.

1.2 This note has been prepared to provide an update to the proposed methodology relating to how the 12 identified local exceedances (exceedances project), which are currently forecast to remain in exceedance following CAZ implementation in 2021, will be actively addressed with targeted non-infrastructure measures, though will also consider infrastructure improvements at key locations

2 Overview

2.1 12 highway links have been identified, that will be the last to achieve NO2 emission reduction compliance within the EU Limit Values. These require targeted and relevant measures to comply in the shortest possible time. Measures will be identified, outlined and appraised in a qualitative process to demonstrate solutions that are relevant to both the Clean Air Plan (CAP) objectives and the specific policy aims of bespoke funding or policy solutions for each link.

2.2 The local nuances of the twelve links in terms of fleet and behavioural aspects of each site, would create challenges for representing in detail within the regional model (GM SATURN), which is used throughout the GM-CAP process. An area and corridor-based approach will be considered when identifying solutions that are of relevance to the links concerned, but which would also be most suitably to the wider locality, and thus be deliverable for the GM-CAP.

2.3 Solutions could include user-focused incentivisation and public transport measures, fleet focused options related to ultra-low carbon high-torque vehicles or harnessing smarter solutions such as GPS-linked geo-fencing. This might include a mix of relevant measures as well as hard infrastructure intervention at key locations.

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3 Background

3.1 Several districts within Greater Manchester (GM) have been asked by the government to produce a Clean Air Plan (CAP) to set out how they will target and mitigate areas of poor air quality within their boundaries. GM has decided to coordinate a Combined Authority response to this request, which is being managed on behalf of the 10 districts by Transport for Greater Manchester (TfGM).

3.2 The primary aim of the GM-CAP is to enable GM to reduce NO_2 concentrations to below the EU Limit Value in the shortest possible time.

3.3 Key measures within the package include:

- A Clean Air Zone (CAZ) comprising charges for the most polluting commercial vehicles;
- Clean Vehicle Funds to help certain businesses and commercial vehicle operators to purchase compliant vehicles;
- A Loan Finance scheme, which would provide affordable loans to assist with compliant vehicle purchases;
- Investment in infrastructure, such as electric vehicle charging points; and
- Various additional schemes such as behaviour change, Local Authority Fleet upgrades and a review of parking policy.

3.4 The scale of the challenge in GM meant that it was not possible to examine every exceedance point in detail. The 12 sites that have been identified as part of this study are those that would remain in exceedance in 2023 with Option 7[1], a GM-wide CAZ B plus the package of measures detailed above. Note that this is not the preferred Option, but is being used as a way of identifying those sites most likely to determine the year of compliance, and with the most 'persistent' exceedances on the GM network. It is in these locations that further local measures could be most effective in terms of achieving compliance in the shortest possible time.

3.5 <u>Identification of the 12 Sites</u>

3.5.1 A total of 12 exceedance sites have been identified in a previous air quality analysis under Option 7 2023 based on the Outline Business Case (OBC) modelling results (v11.2), as outlined in **Table 3-1** and geographically mapped in relation to the SATURN Model network, shown in **Figure 3-1**. The future Do Something Option 8 (preferred option forecasting) year 2023 was used in the course of identifying the 12 sites. Note that the twelfth site, on the A57 Manchester Road in Tameside, was excluded from further analysis as an initial assessment showed that this fell within Highways England's network rather than the GM network and is therefore out of scope for the GM CAP. The remaining 11 sites have been progressed to the full study.

[1] Option 7 = GM-wide CAZ B

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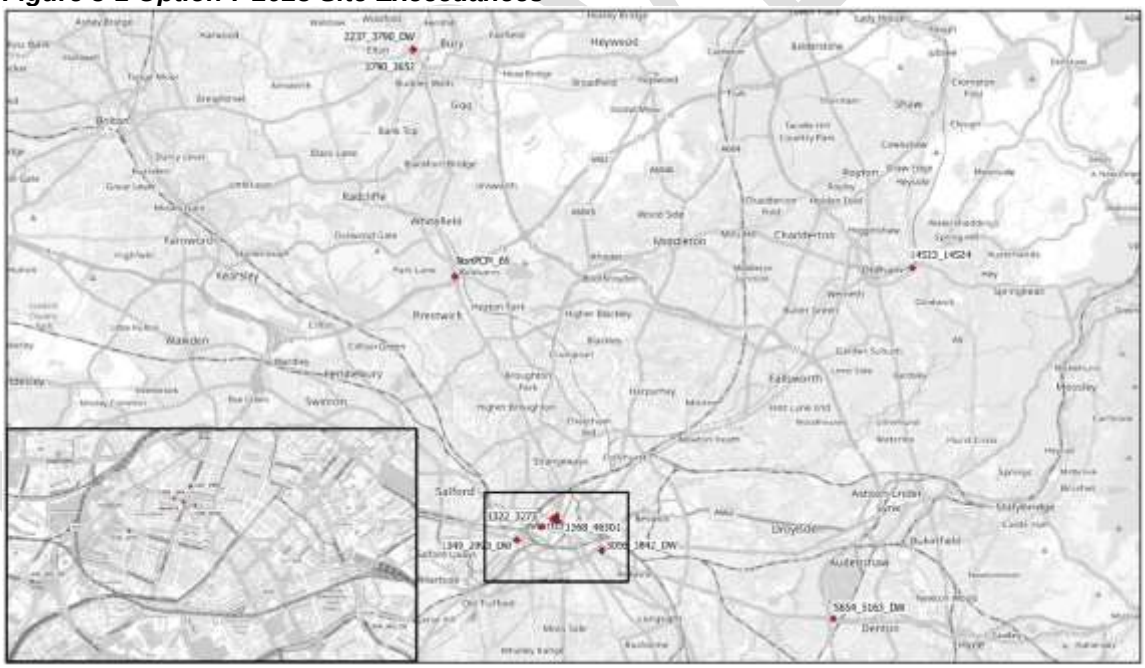
Table 3-1 Option 7 2023 Site Exceedances

Site ID	Authority	Road Name
1267_1985	Manchester	A56 Deansgate
1268_1269	Manchester	Bridge Street
1268-46301	Manchester	Bridge Street
NonPCM_207*	Manchester	John Dalton Street
1322_3273	Manchester	A34 Quay Street
3056_3842_DW	Manchester	A6 Stockport Road
1349_2993_DW	Salford	A57 Regent Road
14523_14524	Oldham	A62 Huddersfield Road
2237_3790_DW	Bury	A58 Bolton Street
3790_3652	Bury	A58 Bolton Street
NonPCM_69*	Bury	A56 Bury New Road
~~5654_5163_DW~~	~~Tameside~~	~~A57 Manchester Road~~

Source: Local Exceedances Sites - Select Link Analysis Technical Note, June 2019. Note the Tameside site was excluded as this falls within Highways England's network.

Figure 3-1 Option 7 2023 Site Exceedances



Source: Local Exceedances Sites - Select Link Analysis Technical Note, June 2019

4 Problem Identification

4.1 The 'Local Exceedance Measures Analysis', attached as **Appendix A**, details the sites, providing outputs from the traffic and air quality modelling to illustrate the following factors that can be used to identify issues at each site, and help inform the development of potential measures to address the exceedances:

- The NO2 exceedance gap over the 40 ug/m3 threshold with Option 7 in year 2023;

- Fleet disaggregation going through the links and the number of bus services; and
- Physical constraints such as street canyons.

4.2 The exceedances project will identify:

- Observed patterns across the exceedance locations with regards to being: city centre; district centre; on regional or local commute routes;
- Commonalities across the exceedance such as multiple exceedances that are on the same bus routes, high contributing fleet type, high proportion of shared destination zones;
- Area-wide interventions that have been enabled with funding since CAP Outline Business Case (OBC) submission; and
- Information about new sustainable travel initiatives and policies at district level that were not available at OBC submission, but which could be significant to the local exceedances.

4.3 A summary of the 12 exceedance locations and their characteristics is shown in **Table 4-1** below. The 12 sites identified include a mix of locations. Five sites are located within the city centre, of which four sites form a cluster around Deansgate and Bridge Street. A further two sites are located on radial routes approaching the city centre. In addition, a small number of sites are located near the district centres of Bury and Oldham.

Table 4-1 12 exceedance locations and their characteristics

Cluster	Location Ref.	Authority	Road	Comments
1	1267_1985	Manchester	A56 Deansgate	4 sites located in close proximity. Restrictions from Canyons / building frontage. Emissions from buses make up the highest proportion – this should be the focus of the solution.
	1268_1269	Manchester	Bridge Street west	
	1268_463 01	Manchester	Bridge Street east	
	NonPCM_207	Manchester	Bridge Street west	
2	1322_3273	Manchester	A34 Quay Street	Very limited bus impact. Mainly car and van impacts.
3	3056_3842_DW	Manchester	A6 Stockport Road	Large bus flows, broad fleet mix, bus maybe underrepresented in the model. Taxi / hackneys may be underrepresented in the model based on site observations.

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Cluster	Location Ref.	Authority	Road	Comments
4	1349_2993_DW	Salford	A57 Regent Road	Mainly car and van impacts. Roadworks may have impacted on results. Pedestrian crossing could impact both carriageways.
5	14523_14524	Oldham	A62	Mainly car and van, hardly any bus impacts. Vehicle speeds could be the issue – already a 30mph zone. Traffic accelerating between Prince Street and A669 junctions may be a factor. Adjacent queueing on Prince Street in the peaks could also be a contributing factor.
6	2237_3790_DW 3790_3652	Bury	A58 Bolton Street	High mixed fleet flows. Highway confluence. Low peak speeds. An area based behavioural change is the issue.
7	NonPCM_69	Bury	A56 Bury New Road	Peak congestion on the M60 at Jn.17 could be contributing to the exceedance [passively]. Bus impact is minor.
~~8~~	~~5654_6163_DW~~	~~Tameside~~	~~A57 Manchester Road~~	~~Next to the SRN, A57 HE operated - not part of GM CAP. All vehicles contributing.~~

Note: *The Tameside site has been excluded as this falls within Highways England's network*

5 Existing Actions to Improve Air Quality

5.1 The existing actions in the OBC version of the CAP will be summarised, though comprised of:

- complementary local plans;
- strategies for sustainable travel; and
- land-use development factors.

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5.2 The 12 exceedance sites concern Manchester city centre and locations on the edge of district centres. The local plans and strategies in this regard will both inform the contributing factors causing the exceedance and support the appraisal process of suitable measures. In particular, the emerging City Centre Transport Strategy will contain relevant proposals in terms of promoting public transport, walking and cycling in the city centre. Local development plans are also being taken into account, as there is considerable re-development planned around some of the sites.

5.3 The future measures proposed for the GM-CAP are significant to the delivery of the primary objective to achieve NO2 compliant levels in the shortest possible time. Other measures that are concurrent to the GM air quality and low carbon strategy will be informed by engagement with local authority stakeholders who will have up to date knowledge concerning significant local sites and operators.

6 Objectives and Critical Success Factors

6.1 In developing solutions for the local exceedances, the plan will be consistent with the GM CAP objectives and Critical Success Factors (CSFs). The plan will need to:

- Ensure that compliance is achieved as soon as possible;
- Choose a route to compliance which reduces human exposure as quickly as possible; and
- Ensure that compliance with the EU Limit Value is not just possible but likely.

6.2 The Primary Success Factors are:

- Deliverability; and
- Potential for air quality improvement.

6.3 Secondary Success Factors are:

- Value for money;
- Distributional impact;
- Strategic and wider air quality fit;
- Supply-side capacity and capability;
- Affordability; and
- Achievability.

6.4 A qualitative appraisal method is being used, and follows a ‘red, amber, green’ (RAG) rating to succinctly show the synthesis between the measures proposed, specific CAP objectives and the objectives of funding/policy additionalities such as Section 106 or OLEV funding among other sources.

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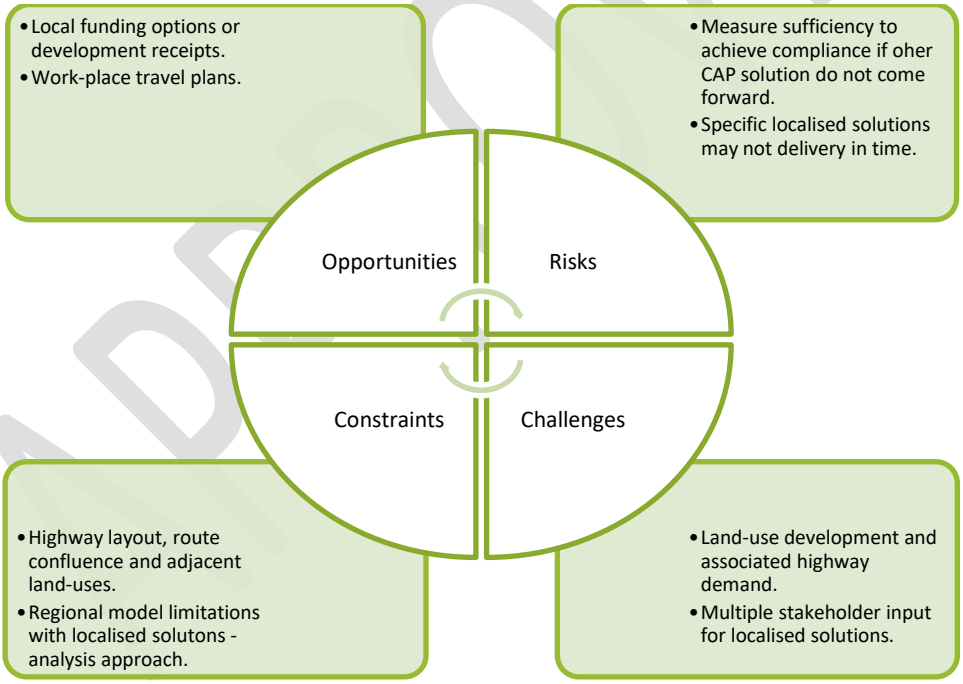
7 Opportunities, Risks, Constraints and Challenges

7.1 The exceedance project will identify and detail the pertinent opportunities specific to the singular exceedances or a cluster of locations such as cluster 1 in Table 3-1. Opportunities, risk and challenges are important because since the GM CAP OBC was submitted there may be new localised considerations, such as a land-use development that was not public knowledge at the time and has since progressed to be a pipeline development with local spatial implications. Furthermore, new national or local funding avenues may have materialised that should be captured including synergies in the objectives, solutions and outcomes.

7.2 The longlist for the exceedance locations will provide an initial set of options to evaluate. The time-intensive nature of the project will necessitate further refinement of the options to allow more comprehensive analysis of fewer options. Synthesising the measures, delivery options and relevant objectives against the opportunities, risk and challenges can provide a strong narrative of deliverability throughout from problem identification to the assessed option recommendations.

Figure 7-1 Example opportunities, risk, constraints and challenges



8 Developing a Long List of Options

8.1 Site visits have been carried out at each exceedance location, and the findings from the site visits and analysis have been shared and discussed with districts and TfGM. This has resulted in the development of a long list of options.

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8.2 The project delivery team will be considering this long-list of options at a workshop in July 2019, informed by a breadth of transportation, highway design, environmental and planning expertise. The evidence base behind the options has been informed by the analysis of the conditions at each of the exceedance sites . The long list of options has been informed by discussion with the GM CAP Delivery Groups and local authority stakeholders. This is important to inform both deliverability and related opportunities regarding the options, and local developments that have emerged since the CAP OBC was submitted. An initial list of potential measures that will inform the long list of options is attached in Appendix B.

8.3 The measures will be categorised in a similar over-arching format to the GM CAP measures within the Option 7 and Option 8 packages, which will be important for both continuity and to identify localised enhancement opportunities that are a consistent fit with the CAP. The GM CAP categories are:

- Behaviour change and localised parking policies;
- Public transport and bus fleet specifications;
- Taxis and localised policies;
- Non-charge-based CAZ awareness specific to the localities; and
- Cycling and walking.

8.4 Further to the CAP categorisation the local exceedance locations will be further identified as the following:

- Corridor based or area specific;
- Relevant to local spatial policies;
- Local infrastructure changes; or
- Smart solutions.

8.5 The exceedance locations will be specifically targeted for which a corridor, local policy or smart solution may be appropriate for the specific exceedance locality.

8.6 A draft matrix of potential interventions has been developed to consider each exceedance location against potential solutions (

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8.9 Table 8-1) which will be populated at the proposed Local Exceedances workshop in July.

Table 8-1 Option Consideration Matrix

		Issues to Consider			Potential Solutions								
					Infrastructure changes					Other Solutions			
		Other initiatives to consider in the locality	Current / planned developments to check	CAZ	Traffic Signal optimisation	Speed limit	Change road / parking alignment	Cycling infrastructure	Bus infra / route	Clean busses	Vans	Clean Taxis / cars	Sustainable Solutions
[*District concerned*]													
[*Exceedance reference number*]	Potential issues / solutions												
	Timeframe												
	Effectiveness												
	Actions												

9 Assessment Methodology

9.1 The proposed assessment methodology maintains a consistent approach to the GM CAP OBC option assessment process. A three-stage process will be used which is shown in **Figure 8-1**. The green and blue header shading is used to differentiate the broad GM CAP process and the added depth of consideration for the exceedance locations with regard to the fit with local policies and funding.

Figure 8-1 Three-stage assessment process

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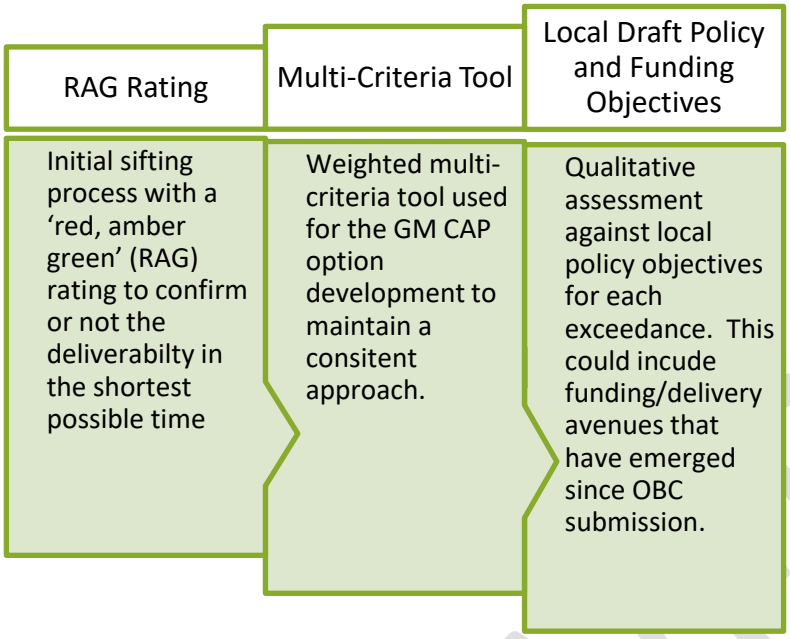
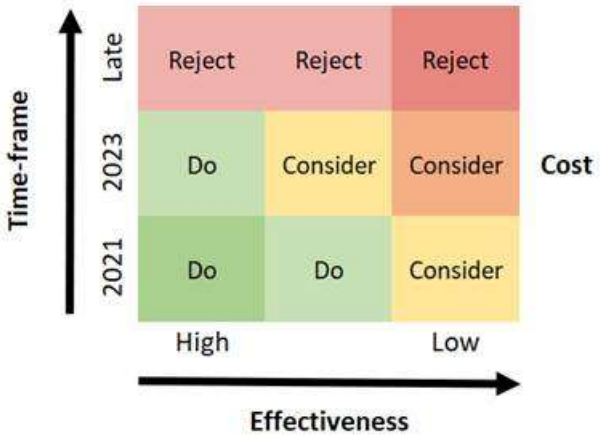


9.2 First, the option considerations will be assessed with a RAG rating to qualitatively associate the potential measures against the CAP objectives with a supporting narrative also indicating the potential synergies with the local bespoke funding aims or local policies (**Figure 8-2**). This exercise should aim to demonstrate the enhanced activities to support compliance at the exceedance locations by distinguishing between CAP objectives and local policy or funding objectives.

Figure 8-2 Assessment RAG Rating



9.3 Second, a multi-criteria tool that has weighted the critical success factors with a grading system will then be used to score the measures in a consistent manner with the GM CAP. The process will be amended to eliminate the regional GM-wide weighting and focus the appraisal on the localised context of the exceedances (Appendix C). The critical success factors that included a GM-wide weighting, and which will be amended, are;

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- 1.2 Potential for Air Quality Improvement; and
- 1.7 Affordability.

9.4 Third, a qualitative assessment against local policy objectives and funding opportunities for each exceedance will be used to identify the local source of funding, buy-in and key considerations for deliverability. This could include the emergent EV Recharging Strategy for the City Centre, local development receipts from Section 106 or other funding avenues.

10 Shortlist of Measures

10.1 The outcome of the option sifting process will be a shortlist of deliverable measures that meet the CAP Critical Success Factors and that are deliverable because of the complimentary linkages with local policies and funding that in particular may have emerged since the CAP OBC was submitted.

10.2 An Investment Logic Map will be produced for each exceedance location to show the linkage between the outputs, outcomes and impacts. The extent of impacts will vary between the options and inform a qualitative process to identify the level of benefit for each site. This is important because the level of benefit will include the compliance against the EU Limit Values but may also have localised benefits for vulnerable members of the community in human health terms, and support local district policies to enhance prosperity broadly, the latter of which could include sustainable employment growth.

10.3 Analysis will be undertaken to assess the potential impact of the shortlisted proposals on compliance at the exceedance locations.

10.4 Note that any highly localised solutions will be difficult to represent in GM's strategic models and therefore that a bespoke off-model analytical approach may be required to assess the possible impact of such measures. If measures are progressed to full development, local junction modelling may be undertaken (where appropriate and a model is available – there is a VISSIM model available for the city centre) but this is not likely to be completed prior to FBC submission.

11 Summary

11.1 This note has outlined the proposed method to identify solutions for the 12 local exceedance sites and the option identification and appraisal process that will be used. The process outlined will identify bespoke solutions that are consistent with the GM CAP and be congruent with emergent local policies and funding to ensure an enhanced process of link compliance is achieved in the shortest possible time.

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Appendix A. Local Exceedance Measures Analysis

(See accompanying document)

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Appendix B. Preliminary Long List of Options

Location	Traffic signal optimisation	Speed limit	Alignment / route	Cycling solutions	Bus solutions	Taxi Solutions	HGV's	Sustainable Journeys / EV
Manchester – Bridge St / Deansgate	Corridor signal optimisation – several junctions		a) Corridor optimisation - Parking bays / loading bays / widen c/way b) Long-term "Streets for all" solutions	a) Potential cycleways on Deansgate (not Bridge St due to buses) b) £2M cargo bikes fund	a) Enhanced bus fleet / exceedance 'geofencing' b) Bus priority / reposition bus stops c) Proposed bus gate on New Bailey St d) Possible target of electric buses fleet to this location	Enhanced Taxis / restricted route	Potential to restrict HGV delivery times	a) EV for Taxis b) £2M cargo bikes fund
Manchester - Quay St	Corridor signal optimisation - Gartside Rd and Deansgate Junctions	Potential to review speed limit	LGV's backing up at right turns to Byron St / Lower Byron St – restrict or improve RH turn?	a) Potential advisory cycle lanes b) £2M cargo bike fund			Potential to restrict HGV delivery times	£2M cargo bikes fund
Manchester – Stockport Rd			Taxis backing up at RH turn to Grosvenor St – restrict RH turn?	a) Potential to extend cycle lanes b) £2m cargo bike fund	Potential to extend bus lanes	Enhanced Taxis / restricted route	Potential to restrict HGV delivery times	a) EV for Taxis b) £2M cargo bikes fund
Salford – Regent Rd	a) Timing & Priority b) Potential HGV Detection solution to junction currently being changed by Growth Deal project?	Speed limit amendment could be considered	a)Keep traffic on A6 b) make right turn exit from Sainsbury			Enhanced Taxis / restricted route	Potential to restrict HGV delivery times	a) Influence Sainsbury etc b) Potential EV at Sainsbury? c) Highways England car sharing scheme?
Oldham – Huddersfield Rd	Signalling to Junction to town centre could potentially be improved – impact of Lidl and Travel lodge	Amend speed limit change location	Junction layout could potentially be improved - impact of Lidl and Travel lodge	Carriageway has capacity for cycle lanes	Carriageway has capacity for bus lanes			a) Targeted car sharing b) Discounted Public Transport c) Influence Royal Mail etc d) Potential EV points in industrial estate or Lidl?
Bury – Bolton St	Complicated junction arrangement – signal timing improvements/ combine Toucan facilities?		a) Potential Bridge trading estate road amendment b) Complicated junction with U turns – potential to improve		Clean buses could be biggest improvement (including electric buses)			a) Targeted car sharing / discounted Public Transport b) Potential EV points in industrial estate?
Bury – Bury New Rd	Signal phasing at roundabout		Lane amendments to / on roundabout		Move bus stop / possibly amend bus lane			

Appendix C. Weighted Multi-Criteria Tool

Specific Grading of Measures

1.1 Delivery Timescales (Primary CSF)
1 = Delivery by 2024 or later
2 = Delivery by 2023
3 = Delivery by 2022
4 = Delivery by 2021
5 = Delivery by 2020

1.4 Distributional Impacts (Health) (Secondary CSF)
1 = Health Disbenefit
2 = Neutral to Health
3 = Slight Health benefit
4 = Significant Health benefit
5 = Substantial Health benefit

1.7 Affordability (Secondary CSF)
1 = Tens of millions £ **(NA)**
2 = Millions £ **(NA)**
3 = Hundreds of thousands £
4 = Tens of thousands £
5 = Thousands £

1.2 Potential for Air Quality Improvement (Primary CSF)
1 = Limited vehicles / minimal improvement
2 = Key vehicles / low improvement
3 = Key vehicles & some others / improvement
4 = Most vehicle types / significant improvement
5 = All vehicle types / substainial improvement

1.5 Strategic and Wider Air Quality Fit (Secondary CSF)
1 = Conflicting with existing policy
2 = Neutral to existing policy
3 = Moderate fit with existing policy
4 = Significant fit with existing policy
5 = Perfect fit with existing policy

1.8 Achievability (Secondary CSF)
1 = Impossible to secure staff resources
2 = Unlikely to secure staff resources
3 = Staff resources could be made available with large change
4 = Staff resources could be made available with minor change
5 = All staff resources currently available

1.3 Value for Money (Secondary CSF)
1 = Very poor
2 = Poor
3 = Neutral
4 = Good
5 = Very Good

1.6 Supply Side Capacity and Capability (Secondary CSF)
1 = Impossible to secure material/resources
2 = Unlikely to secure material/resources
3 = Material/resources could be made available with large change
4 = Material/resources could be made available with minor change
5 = All material/resources currently available