

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

Note 18: Minibus Vehicle Research



Salford City Council



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Authorised by: Date:	Ian Palmer 5 th August 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.

1 Introduction

- 1.1 The ten local authorities of Greater Manchester (GM) have been instructed 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).
- 1.2 Currently, the CAP includes plans for a Clean Air Zone (CAZ) which would apply a charge (Table 1) to commercial vehicles (buses, minibuses, coaches, Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), taxis and private hire vehicles (PHVs)). To help mitigate the adverse effects of this charge, the CAP will include a number of 'Clean Vehicle Funds' and a Loan Finance Scheme. These will provide grants and affordable loans (respectively) to eligible businesses affected by the charge.
- 1.3 To determine the scope and definition of these funds, and the eligibility criteria, a wide range of policy development processes are being undertaken. Working Groups have been established to ensure the proposals that emerge can be stress-tested with those they will apply to. This research is designed to contribute to this body of evidence.
- 1.4 This technical note provides an overview of the market for the minibus vehicle category and an impact assessment of the proposed CAZ charge. It provides information on market characteristics including vehicle types, a breakdown of owners and operators, information on the second-hand and new vehicle sales markets and details of opportunities to purchase compliant vehicles or retrofit to achieve compliance. The research also identified key impacts and risks for different types of owner and operator, which will contribute to an understanding of the specific role the Clean Vehicle Funds can play in supporting these commercial sectors when the CAZ comes into force.
- 1.5 This information will primarily be used to assist the Coach and Minibus Working Group, Governance and Policy Workstream (WS11) and other relevant Working Groups in developing suitable policy proposals for the Funds (Freight; Taxi and LGV¹) and Loan Finance. Depending on the type and quality of information available, it may also feed into the Data, Evidence and Modelling (DEM) Workstream (WS1) in which a lack of commercial vehicle evidence has already been identified as a project risk.

¹The Bus Fund will be limited to operators running commercial bus route services in GM. These vehicles are not included in the scope of this research.

1.6 The objectives of this research are defined below:

Research Objectives

1. Define general market characteristics for the vehicle types in a GM context where available information allows.
2. Segment these markets by setting out the owner/user breakdown of each of these markets. Illustrate these users by providing in-depth profiles of some of the users in these markets. These case studies, or 'personas', will assist the WS11 and WS1 workstreams in developing and testing suitable policies for these sectors.

2 Study Background

2.1 Air Quality

- 2.1.1 Poor air quality is one of the largest environmental risks to the public's health. It is recognised that long-term exposure to elevated levels of Nitrogen Dioxide (NO₂) and microscopic particles of matter suspended in the air we breathe contributes to the development of cardiovascular or respiratory disease and reduce life expectancy. In particular, the youngest, oldest, those living in areas of deprivation and those with existing respiratory or cardiovascular disease are most likely to develop symptoms due to exposure to air pollution.
- 2.1.2 Whilst air quality has been generally improving over time across the United Kingdom, particular pollutants remain a serious concern in many urban areas. Since 2010, the UK has been found in breach of the legal limits of levels of NO₂ in major urban areas and in 2015 it was found that compliance with the legal limits of levels of NO₂ had still not been achieved. In response, the UK Government was held to be in breach of its legal obligations and was required to take action by the UK Supreme Court.
- 2.1.3 In the case of Greater Manchester, the city region has been highlighted as an area of concern with an urgent need to address air quality issues. Eight of the ten GM local authorities were identified by the Government as having roads which are expected to continue to exceed the maximum legal limits of NO₂ in 2021. Subsequently, each have been directed by Government to conduct studies to identify measures for reducing NO₂ concentrations to compliant levels in the 'shortest possible time'.
- 2.1.4 In response, the ten authorities of Greater Manchester, supported by Transport for Greater Manchester (TfGM), have collectively developed a draft package of measures that complies with the Government guidance for tackling NO₂ pollutants. An Outline Business Case (OBC) for these proposals was submitted to Government in early 2019².

² Greater Manchester's Outline Business Case to tackle Nitrogen Dioxide Exceedances at the Roadside

2.2 Greater Manchester's Clean Air Plan

2.2.1 The primary aim of the GM CAP is to enable Greater Manchester to reduce NO₂ concentrations to below the EU Limit Value in the shortest possible time. As outlined in the Outline Business Case (OBC), an initial package of measures that would allow the city region to meet compliance in the shortest possible time, at the lowest cost, with the least risk and with the least negative impacts, has been put forward. Key measures within the package include:

- A Clean Air Zone (CAZ) comprising charges for the most polluting commercial vehicles;
- Clean Vehicle Funds to help 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
- Supplementary schemes such as behaviour change campaigns, Local Authority (LA) Fleet upgrades and targeted parking policy.

2.2.2 A key feature of the proposal is the CAZ charge, which targets the most polluting commercial vehicles by imposing a charge on the most polluting HGVs, LGVs, buses, coaches, minibuses and taxis and PHVs from the summer of 2021.

2.2.3 It is anticipated the charge will provide a financial incentive to the owners of commercial vehicles to invest in cleaner vehicles. At the OBC stage it was proposed that the CAZ charge would be £7.50 per day for taxis, PHVs and LGVs and £100 per day for HGVs, buses and coaches, as reflected in Table 2-1. The owners of vehicles that are subject to the charge who do not pay would be issued with a Penalty Charge Notice (PCN) and would be required to pay both that and the original charge.

Table 2-1: GM Clean Air Zone Charges

Vehicle Group	CAP Charge (per day)
Buses, Coaches and HGVs	£100 (from 2021)
Taxis and Private Hire Vehicles	£7.50 (from 2021)
Vans and Minibuses	£7.50 (from 2023)

2.2.4 Although the charges and dates outlined in the table above are those submitted as part of the OBC, recent developments within the wider CAP project has led to a proposed change in date the CAZ will come into effect. Of relevance to this study, in July 2019 a Ministerial letter providing feedback on the proposals and a Ministerial direction were received. As part of this, Government has requested that the £7.50 charge for vans and minibuses be brought into effect in 2021 in line with other vehicle types. While this development has not been formally agreed at the time of writing this report, for the purpose of this study the new working assumption is that the charge will come into effect from 2021 rather than 2023.

2.2.5 Additionally, while the charges outlined above are again from the OBC submission these are not formally agreed at this stage. Therefore, there is a possibility these charges could change going forward. For the purpose of this study, the working assumption applied is the charges stated above.

2.3 The Need for the Study

2.3.1 The proposals to introduce a Clean Air Zone would affect minibuses, with noncompliant vehicle users required to pay the charge, upgrade their vehicle or change their behaviour. Currently, minibuses are not included in Greater Manchester's traffic model and there is no suitable source of data on the volume of minibus traffic on the local road network. There is also limited detailed information with regards to market size and user categorisations and behaviours.

2.3.2 To ensure GM understands more clearly the impact of a CAZ on the minibuses market, including owners, operators and users (i.e. passengers), this study intends to improve the knowledge of the market. This will enable a better assessment of the extent to which any potential support may be appropriate to mitigate negative impacts.

2.3.3 Leading this study is the Coach and Minibus Working Group (CMWG). The group comprises TfGM staff and consultants, such as Arup and AECOM, and reports to the GM Clean Air Steering Group. The CMWG members are responsible for ensuring that the impact of the proposals across the industry are fully understood. This involves designing the detail of the measures proposed to support the minibus market and industry and assessing the use of external funding to help renew and upgrade fleets and reduce harmful emissions. It is also envisioned that data collected on the minibus market may address the existing data gap on the sector to better inform future studies.

2.4 Document Structure

2.4.1 This report comprises the following structure:

- **The Sector:** Gives an overview of the GM minibus market, informed by existing research and data;
- **Owners and Operators:** Quantifies and profiles the owners, operators and users of the market; and
- **Findings and Recommendations:** Summarises the initial findings from this note and puts forward recommendations.

3 **The Sector**

3.1 This section provides an overview of the minibus market in relation to GM. This includes quantifying the market, a breakdown of compliance and an overview of low emissions, retrofitting and purchasing market.

3.2 Minibus Definition

3.2.1 A minibus is legally defined as “a vehicle with between 9 and 16 passenger seats”³. This does not include the driver’s seat and does not permit room for standing.

3.2.2 With reference to DfT Vehicle Classifications, a minibus is considered to fall within vehicle category M, which is ‘Motor vehicles with at least four wheels designed and constructed for the carriage of passengers.’⁴ As **Table 3-1** shows, classification M vehicles are divided into three sub categories, with minibuses found under classification M2 as they comprise more than eight seats and do not exceed 5 tonnes.

Table 3-1: Categorisation of vehicles with at least four wheels and used for the carriage of passengers

Classification	Description
M1	Vehicles designed and constructed for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat.
M2	Vehicles designed and constructed for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5 tonnes.
M3	Vehicles designed and constructed for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass exceeding 5 tonnes.

³ <https://www.gov.uk/driving-a-minibus>

⁴ Vehicle Certification Agency, <https://www.vehicle-certification-agency.gov.uk/vehicletype/definition-of-vehicle-categories.asp>

3.3 Minibus Definition

- 3.3.1 A challenge for this study has been the lack of readily available data on the minibus market. Where data has been available there have also been challenges surrounding the types of vehicles included within datasets and the possibility of double counting between various owner and operator types. Therefore, this study has used data that is readily available to make the most informative assumptions where possible. For the purpose of modelling as part of the wider CAP project, minibuses have not been modelled and therefore will not affect predictions for NO₂ compliance but are still considered important as we consider mitigation and exemptions.
- 3.3.2 The primary source of data used for this study is DVLA data obtained by TfGM from DfT, for 2016 Q2⁵. While the data is from 2016, projections for 2019 and 2023 have been applied to provide estimations of the minibus market for the respective years. The estimations for 2019 have been sense checked with DfT data for March 2019⁶.
- 3.3.3 Furthermore, information on the minibus market has also been analysed from the Minibus Market Analysis report, prepared by the Transport and Travel Research Limited (TTR) for the Low Carbon Vehicle Partnership (LowCVP). The report was published in 2014 and is based on DVLA data from 2012, which was sense checked with The Society of Motor Manufacturers and Traders (SMMT) data.⁷

3.4 Market Overview

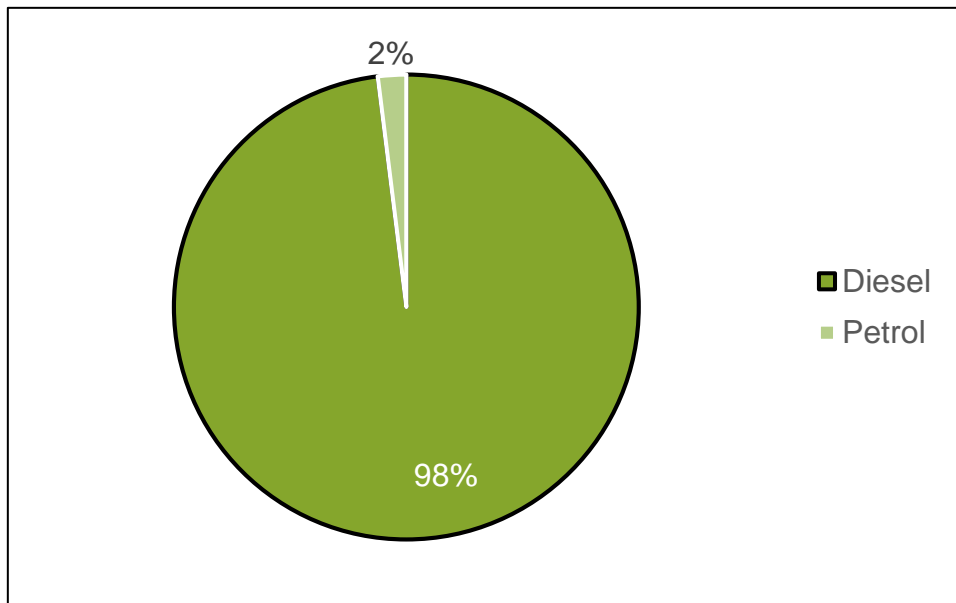
- 3.4.1 Informed by projections of the DVLA data from Q2 2016 it is estimated there are 2,693 minibuses licensed in GM (**Figure 3-1**). Of the total, 2,640 are diesel (98%) and 53 (2%) are petrol. There are no known hybrid or electric minibuses in GM based from the data provided. Sense checking these results against the DfT 2019 figures, there are 2,635 minibuses registered in GM in the 2019 data suggesting a strong alignment between the datasets and therefore providing confidence in the estimated totals. Given the confidence that the two datasets align, the remaining analysis within this report will be based on the 2016 dataset. This is because, although slightly older, this dataset has been used and analysed for other aspects across the CAP project and therefore ensures consistency of results.

⁵ DfT (2018) *Analysis of DVLA registered vehicle database records* (version Q2 2016) by DfT

⁶ DfT (2019) Buses and Coaches, Tables VEH06 – **please note these data were received directly from DfT.**

⁷ *Minibus Market Analysis*; Transport and Travel Research. (2014)

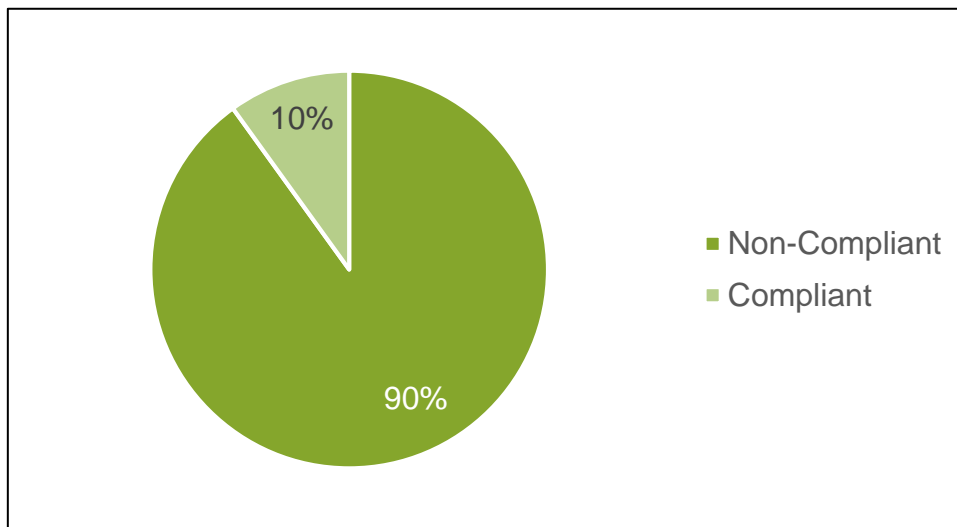
Figure 3-1: GM Total Minibuses by Fuel Type⁸



- 3.4.2 In terms of compliance, in relation to the CAZ, Euro 6 or later (2016) Euro Emission Standards for diesel minibuses vehicles will be considered compliant and will therefore avoid the CAZ charge. Those registered before 2016 and therefore pre-Euro 6 Emission Standards will be considered as non-compliant and will be liable to the CAZ charge.
- 3.4.3 The data shows there is a high rate of non-compliance (Figure 2). In total, 2,425 (90%) minibuses are non-compliant and only 268 are compliant (10%) within GM.
- 3.4.4 **Figure 3-2** GM Total Compliant and Non-Compliant Minibuses

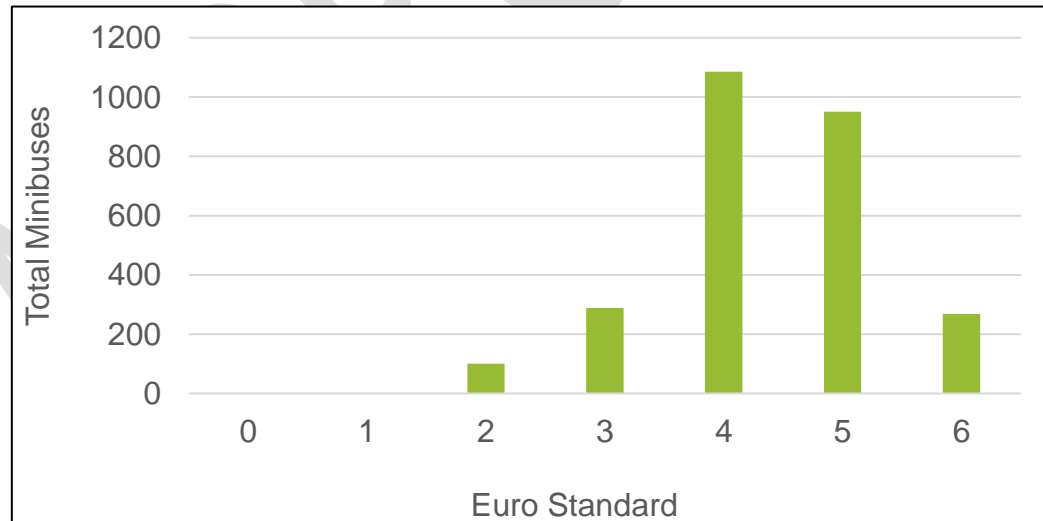
⁸ DfT (2018) Analysis of DVLA registered vehicle database records (version Q2 2016) by DfT

Figure 3-2: GM Total Compliant and Non-Compliant Minibuses⁹



3.4.5 By Euro Standard (**Figure 3-3**), from the 2016 projections a total of 1,086 (40%) minibuses were identified as Euro 4 and 950 (35%) minibuses as Euro 5, making up the greatest proportion of Euro Standard types. The next largest Standard was Euro 3 with 288 (11%) vehicles, followed by Euro 6 with 268 (10%) and Euro 2 with 101 (4%). No Euro 1 or pre-Euro 1 vehicles were identified within the database.

Figure 3-3: GM Total Minibuses by Euro Standard

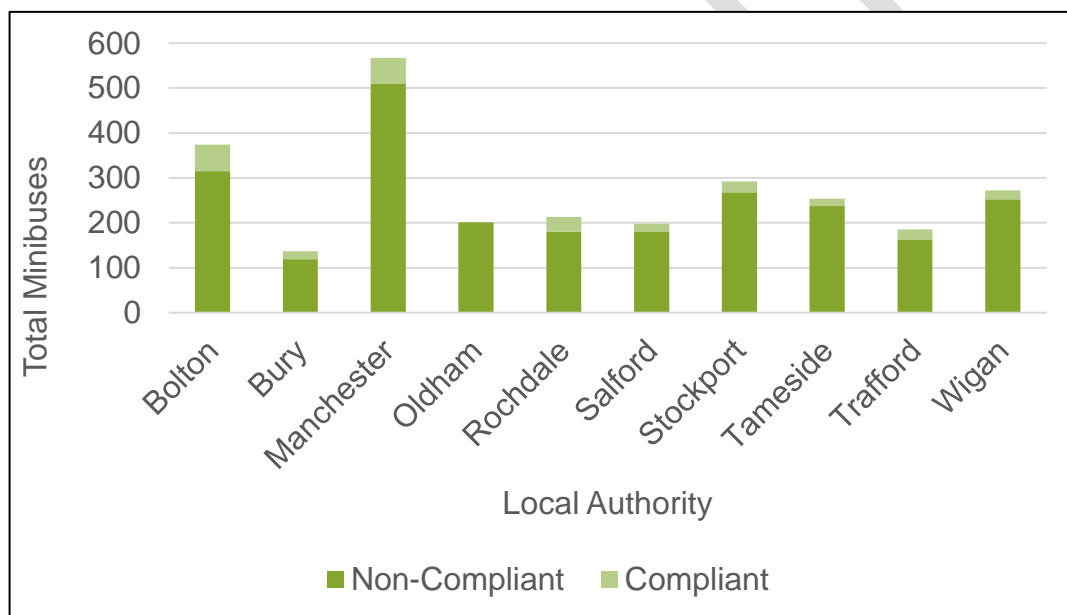


3.4.6 Breaking down the minibuses market by local authority (LA), Figure 4, the average number of minibuses across all ten authorities recorded is 269. Manchester has the highest proportion of vehicles in GM with 567 (21%), followed by Bolton with 364 (14%) and Stockport with 292 (11%). Bury was found to have the least number of minibuses, with 137 (5%) in total.

⁹ DfT (2018) Analysis of DVLA registered vehicle database records (version Q2 2016) by DfT

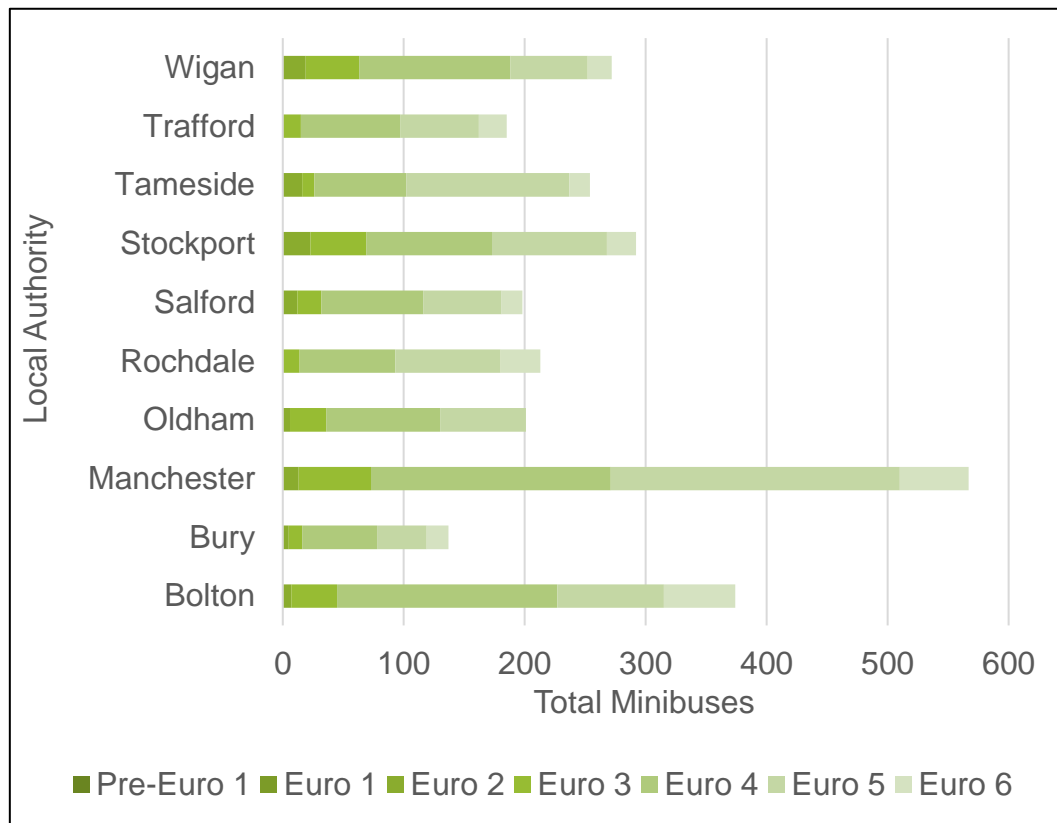
- 3.4.7 In terms of compliance by LA (**Figure 3-4**), at least 85% of minibuses within each LA are non-compliant. By percentage of total fleets, Oldham is the least compliant as all 201 minibuses are not compliant. In terms of largest total number of non-compliant vehicles, Manchester has the highest amount with 510 vehicles (19% of all minibuses in GM) followed by Bolton with 315 (12%).
- 3.4.8 Despite having the largest number of non-complaint vehicles by LA, Manchester and Bolton also have the largest total number of compliant vehicles within GM. Bolton has a total of 59 compliant vehicles and Manchester has 57.

Figure 3-4: Total Compliant and Non-Compliant Minibuses by LA



- 3.4.9 Breaking down the number of minibuses within each LA by Euro Standard (**Figure 3-5**), as previously stated, there are no Pre-Euro 1 or Euro 2 minibuses in GM identified within the DVLA dataset. Of the 288 Euro 2 minibuses, Stockport has the most with 23 (23%). Manchester was identified as having the largest number of all other non-compliant Euro Standards (Euro 3, 4 and 5).
- 3.4.10 Considering the average of each Euro Standard by LA, the averages include 10 Euro 2 and 29 Euro 3. The highest averages were 109 Euro 4 and 95 Euro 5 by LA. The average for Euro 6 is 27.

Figure 3-5: Minibus Euro Standards in GM by LA



3.5 Minibus Vehicle Types

Manufactures and Models

- 3.5.1 According to the Minibus Market Study by TTR¹⁰, the majority of minibuses are not purpose built but instead are either OEM (Original Equipment Manufacturer) or aftermarket conversions of various van models. Descriptions of these construction styles are outlined in **Table 3-2**. As a result of the methods discussed this creates a significant overlap between the van and minibus markets, with most major manufacturers occupying a large share of both.

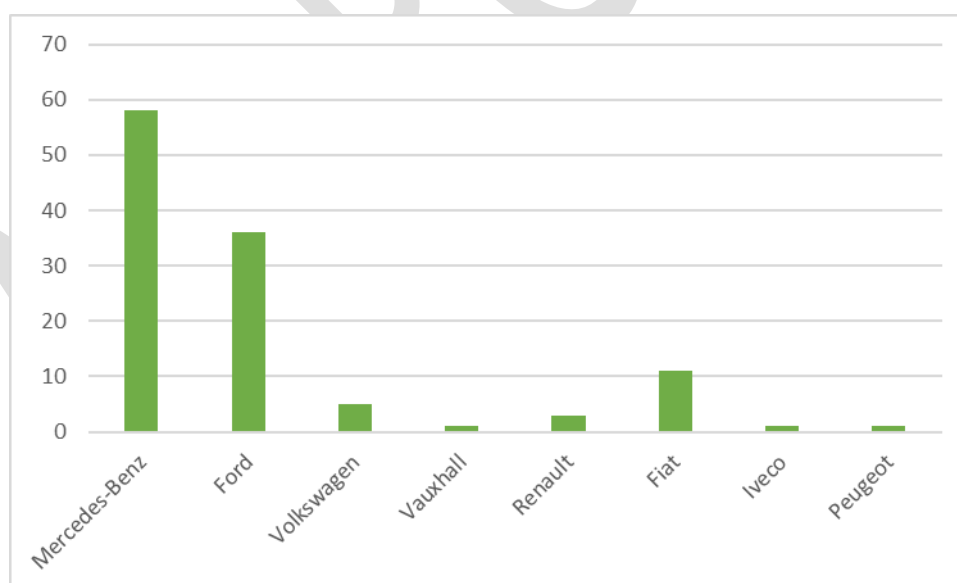
¹⁰ *Minibus Market Analysis*; Transport and Travel Research. (2014)

Table 3-2: The Main Body Types of the Minibus Market in the UK¹¹

Minibus Type	Description
Purpose Built	A vehicle that is built with minibus specification by a manufacturer
OEM	OEM is a method where a company produces parts or equipment for a vehicle which is then sold or marketed by another manufacturer. In the case of minibuses, this usually comprises vehicles that retain their original van engine, chassis and keep the majority of the van bodywork.
Aftermarket Conversion	A van or similar vehicle that is converted from its existing form to have the specification of a minibus. This often involves using aftermarket parts that are not from the original manufacturer of the vehicle.

3.5.2 Informed by data provided by TfGM¹², **Table 3-6** demonstrates the current breakdown of fleet composition by manufacturer across GM, which totals 116 vehicles. Due to data limitations, it was not possible to identify the manufacturer of all minibus vehicles identified within GM.

Figure 3-6: GM Local Authority Fleets by Manufacturer¹³



¹¹ *Minibus Market Analysis*; Transport and Travel Research. (2014), p5

¹² *Minibus Fleet Summary*; Transport for Greater Manchester. (2019)

¹³ *Minibus Fleet Summary*; Transport for Greater Manchester. (2019)

- 3.5.3 The dominance of Mercedes-Benz and Ford is primarily informed by a single van model from each manufacturer: the Mercedes Sprinter and the Ford Transit, which have both seen significant longevity in the market as both OEM and aftermarket conversions. From the 2014 report by TTR¹⁴, it was estimated that two thirds of all newly registered minibuses in 2012 were Ford Transit models and 11% were Mercedes Sprinter models.
- 3.5.4 It should also be noted that some manufacturers are owned by the same parent company, such as Fiat and Iveco who are owned by CNH Industrial. This can result in vehicles offered by 'different' manufacturers having the same or similar specifications (such as engine or chassis types) and the only difference being body work and branding.

Low Emission and Electric Minibus Vehicles

- 3.5.5 According to various articles from industry sources, there are a number of electric minibuses (termed e-minibuses for the purpose of this study) that are currently on or coming to the market. However, mass market options remain limited.
- 3.5.6 As with existing minibus models there are two forms of e-vehicles that currently do, or could, function as minibuses; outright e-minibuses and electric vans that can be modified or converted. In terms of purpose built e-minibuses, **Table 3-3** displays a sample of purpose built e-minibus vehicles that are either currently on the market or being developed and are expected to be released in the near term¹⁵.

Table 3-3: Examples of known e-minibuses vehicles currently available or being developed

Model	Manufacturer	Range (Miles)	Charge Time (hours)	Size (metres)	Seating	Cost (estimated)	Release Date
Orion E	Mellor Coachcraft	100	4.25	7.5 by 2.2	16	Not stated	2017
V80	LDV	120	2	-	15	£60,000	-
Daily Electric	Iveco	120	2	-	16	£60,000	2019

¹⁴ *Minibus Market Analysis*; Transport and Travel Research. (2014)

¹⁵ <https://www.adrianflux.co.uk/blog/2019/03/zero-emission-electric-minibus.html> (March 2019)

Figure 3-7: The Daily Electric Minibus by Iveco



- 3.5.7 The review of e-minibus models suggests manufacturers are focusing their attention towards producing larger vehicle types (towards 16 seats) that are likely to be targeted at operators such as local authorities or stage carrying services (e.g. coach operators). For these larger models, vehicles are estimated to have a starting price of around £60,000. However, these prices are based on single battery, with double or triple costing more; for example, the Daily Electric model by Iveco is £60,000 for a single battery but will cost £80,000 for double and £100,000 for triple batteries.
- 3.5.8 In terms of smaller e-minibuses (8 – 12 seats), following a desktop research of the market no smaller vehicle model was considered readily available or to be released in the short-term. There are a number of major vehicle manufacturers, such as Tesla, Renault and Nissan, which previously expressed an interest in developing models. The progress on these concepts, however, is currently unknown. Therefore, it is considered smaller e-minibus models are highly unlikely to be available before the proposed CAZ opening date of 2021.

3.5.9 From an aftermarket conversion perspective, a number of leading manufactures are developing electric vans which are considered by industry sources to have the potential for conversion opportunities. While it is unclear whether it will be technologically practical or commercially viable to modify electric vans, it is quite possible this may be a potential low emission option for the minibus market in the near future. **Table 3-4** shows examples of e-vans that are currently available on the market or are currently being developed and are considered to have the potential to be converted into an e-minibus¹⁶.

Table 3-4: Examples of e-vans that could be converted to a minibus product being developed

Model	Manufacturer	Potential Release Year
e-Vito	Mercedes-Benz	2022
eSprinter	Mercedes-Benz	2022
Kangoo ZE	Renault	Not stated
Master ZE	Renault	Not stated

3.5.10 Additionally, the anticipated costs of e-minibuses pose another challenge to owners and operators. Based on the findings above, it is estimated that e-minibuses may cost in the region of £60,000 which when compared with £20,000 for a second-hand compliant minibus, could make e-vehicles unappealing or unaffordable.

3.5.11 In summary, while there are positive signs of development in the e-minibus market but without the appropriate infrastructure and attractive incentives, such as policy/funding mechanisms, it is considered they are unlikely to be a primary choice for owners and operators in response to the proposed CAZ charge.

3.6 Purchasing, Leasing and Retrofitting

3.6.1 This section provides an understanding of the new and second-hand minibus markets in their current state, as well as a review of retrofitting solutions. Costs for new vehicles are often not available directly from the manufacturer, so a number of vehicle trading sites¹⁷ have been analysed to gain an understanding of scale of costs.

3.6.2 Considering the prevalence of the Mercedes Sprinter and Ford Transit models seen in the previous section, the research has been focused on these two vehicle types. These two models are broadly representative of the upper and lower bands of the cost spectrum respectively, so this assessment is able to provide an overview of the core range of costs for both new and second hand vehicles.

¹⁶ <https://www.adrianflux.co.uk/blog/2019/03/zero-emission-electric-minibus.html> (March 2019)

¹⁷ Websites analysed include *Bristol Street*, *David Fishwick*, *Evans Halshaw*.

New Minibuses

- 3.6.3 The primary factors in the cost of a new minibus are the number of seats and the accessibility features.
- 3.6.4 The base purchase cost of the most common vehicle identified, the Ford Transit model minibus, ranges from just under £34,000 to £44,000 excluding VAT, with the number of seats varying from 11 – 17¹⁸. The average cost for this model was identified as £38,967 excluding VAT.

Table 3-5: Ford Transit Minibus Vehicle Cost Range

Price Range	Value
Lower	£33,825
Higher	£44,110
Average	£38,967

- 3.6.5 The cost of the vehicle can be increased by the addition of wheelchair access facilities, which are a necessity for many minibus services and can add an additional cost of £6,000 - £8,000.
- 3.6.6 A full breakdown of the cost for a new minibus offered by Ford directly through their official website is demonstrated in **Figure 3-8** below.

¹⁸ https://www.ford.co.uk/content/dam/guxeu/uk/documents/price-list/commercial-vehicles/PL-Transit_Minibus_2019.pdf

Figure 3-8: Full Overview of Ford Transit Minibus Prices¹⁹

	Bodystyle	GVM	Wheelbase Roof line	Engine	SRW (Single Rear Wheel) DRW (Dual Rear Wheel)	Fuel	Transmission	VED	CO ₂ Emissions g/km ^a Without optional Start/Stop	CO ₂ Emissions g/km ^a With optional Start/Stop	Basic Recommended Retail Price (Excl VAT) £
LEADER											
	10/12 Seat Bus	350	L2 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			33,825.00
	10/12 Seat Bus	350	L2 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			34,845.00
	14/15 Seat Bus	410	L3 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			34,625.00
	14/15 Seat Bus	410	L3 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			35,645.00
	14/15 Seat Bus	410	L3 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			35,775.00
	14/15 Seat Bus	410	L1 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			36,795.00
	17/18 Seat Bus	460	L4 H3	2.0L Ford EcoBlue T00PS RWD	DRW	Diesel	6 Speed Manual	TC34			39,525.00
	17/18 Seat Bus	460	L4 H3	2.0L Ford EcoBlue T00PS RWD	DRW	Diesel	6 Speed Manual	TC34			40,545.00
TREND											
	10/12 Seat Bus	350	L2 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			35,300.00
	10/12 Seat Bus	350	L2 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			36,410.00
	14/15 Seat Bus	410	L3 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			36,900.00
	14/15 Seat Bus	410	L3 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			37,210.00
	14/15 Seat Bus	410	L3 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			37,435.00
	14/15 Seat Bus	410	L1 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			38,455.00
	17/18 Seat Bus	460	L4 H3	2.0L Ford EcoBlue T00PS RWD	DRW	Diesel	6 Speed Manual	TC34			41,290.00
	17/18 Seat Bus	460	L4 H3	2.0L Ford EcoBlue T00PS RWD	DRW	Diesel	6 Speed Manual	TC34			42,310.00
LIMITED											
	10/12 Seat Bus	350	L2 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			38,610.00
	14/15 Seat Bus	410	L3 H2	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			39,410.00
	14/15 Seat Bus	410	L3 H3	2.0L Ford EcoBlue T00PS RWD	SRW	Diesel	6 Speed Manual	TC34			40,655.00
	17/18 Seat Bus	460	L4 H3	2.0L Ford EcoBlue T00PS RWD	DRW	Diesel	6 Speed Manual	TC34			44,110.00

Second Hand Compliant

- 3.6.7 Since almost all minibuses are diesel fuelled, the CAP compliance standards require a Euro 6 engine. As such, the majority of second hand compliant vehicles are in fairly comparable condition, and the price is still primarily driven by the number of seats.
- 3.6.8 **Table 3-6** shows the average costs for compliant second-hand vehicles with a range of capacities, taken from vehicles available on Autotrader²⁰. Only a small number of Mercedes Sprinter vehicles were available on the market, leading to the lack of data for the 13-15 seat categories. This may simply be a reflection of the relative popularity of the vehicles, as described by the 2012 minibus registrations in which Ford Transits were around six times more commonly registered than Mercedes Sprinters nationally (2,593 Transits compared to 431 Sprinters).²¹

¹⁹ https://www.ford.co.uk/content/dam/guxeu/uk/documents/price-list/commercial-vehicles/PL-Transit_Minibus_2019.pdf

²⁰ <https://www.autotrader.co.uk/vans/used-vans/body-type/minibus>

²¹ *Minibus Market Analysis*; Transport and Travel Research. (2014)

Table 3-6: Second Hand Compliant Average Vehicle Cost

Model	9 – 12 Seats Price Range	13 – 15 Seats Price Range
Ford Transit	£11,990	£19,871
Mercedes-Benz Sprinter	£29,498	-
Average	£20,744	-

Second Hand Non-Compliant

- 3.6.9 In contrast to compliant vehicles, the range of available second hand noncompliant vehicles vary significantly in terms of mileage, age and condition. The mileage of available vehicles varied from 30,000 to over 400,000 miles, with some vehicles on the market up to 20 years old. As such, the price is determined by a combination of these factors, rather than primarily by the number of seats.
- 3.6.10 The prices shown in **Table 3-7** are average costs taken from a range of second-hand vehicles available on Autotrader²². As noted previously, the pool of available vehicles to sample from was significantly larger for Ford Transit models than for Mercedes Sprinters.

Table 3-7: Second Hand Non-Compliant Average Vehicle Cost

Model	9 – 12 Seats Price Range	13 – 15 Seats Price Range
Ford Transit	£11,990	£19,871
Mercedes-Benz Sprinter	£29,498	-
Average	£20,744	-

- 3.6.11 These values should be taken as broad guidelines only, as the range of factors contributing to the vehicle cost permits only high-level estimation without a much more in depth analysis being performed.

²² <https://www.autotrader.co.uk/vans/used-vans/body-type/minibus>

3.6.12 It is anticipated that the CAZ potentially may disrupt the second-hand market for non-compliant minibus vehicles. For example, it is possible there may be an increase in owners or operators looking to sell non-compliant vehicles while the demand for non-compliant vehicles could also significantly decrease. This could therefore over saturate the market as well as significantly decreasing the value of non-compliant coaches, leaving owners and operators at risk of losing value on their assets. This could also increase the demand for scrappage, which could bring further market changes such as a reduction in the price paid for scrappage.

Leasing

3.6.13 Across the minibus market there are two common forms of leasing; the leasing of a vehicle through a commercial rental/leasing company and the leasing of a minibus vehicle from one owner/operator to another (e.g. LA leases a vehicle to a school). Due to data limitation, it is not possible to reasonably identify the proportion of leases across the GM market.

3.6.14 Minibuses that are owned by rental/leasing companies and that are leased commercially are considered a market segment in their own right, and this is discussed further within the owner/operator section of the technical note. In this instance, a company that own a minibus offer their vehicle as a service to a paying customer, whether it be an individual or business, but does not pass the rights of ownership of the asset to the temporary operator. The length and cost of a contract can vary on the needs of a customer, with short, medium and long term leases available. For businesses leases are typically longer, with some contracts between 46 to 52 months. In other cases, short term leases vary from a number of months to a couple of days.

3.6.15 Considering the impact of the CAZ on the leasing market, there are two potential outcomes that are notable. Firstly, for non-compliant vehicles in leasing markets the CAZ charge could potentially raise the operating cost of a company, with potential cost increases being passed on to the relevant customer. The scale of this impact at this stage however is unknown.

3.6.16 Furthermore, with a high proportion of the minibus market estimated as non-compliant the longer term leasing contracts of a minibus may act as a potential solution to support businesses upgrade. For those that may be struggling to upgrade for the CAZ could seek to lease a minibus from a company to continue operating and avoid the charge while they consider ways to reach compliance with their own vehicles.

3.6.17 Another common form of leasing is between owners of a vehicle such as LAs and secondary operators such as community and charity groups and educational establishments. This can be in the form of a lease for a minibus at a subsidised rate to support the needs of a certain group that may otherwise be impeded by a lack of access to a suitable means of transport. Similarly, LAs can also offer support with a minibus by operating special tender services for schools on behalf of operators.

3.6.18 In response to the introduction of the CAZ, a possible outcome is the shared impact between the owner leasing the vehicle and the leasing operator. As many operators who lease from the likes of LA benefit from subsidies to run the vehicle, if the CAZ impacts the decisions of the owners (i.e. need to upgrade and therefore increase the cost) this could put the functions of the leasing operator at risk. However, this impact may be mitigated if appropriate exemptions are made.

Retrofitting

3.6.19 Only retrofitting solutions approved by the government through the Clean Vehicle Retrofit Accreditation Scheme (CVRAS) will allow vehicles to be considered compliant as part of the CAZ. However, from a review of available solutions for minibuses it appears that retrofitting is currently limited as a sensible solution.

3.6.20 According to a list of recognised retrofitting providers by the Energy Saving Trust²³ (EST), there are no CVRAS available schemes available for vans/minibuses on the register. Furthermore, the EST suggest that the cost to replace a van and minibus is lower when compared to other commercial vehicle types, unless it is a highly specialised conversion. This, combined with the fact that retrofit solutions can be relatively high in cost and difficult to fit, means that it is often cheaper to replace than to retrofit vans. At the time of writing this report, however, research into potential retrofitting solutions has been requested by TfGM and is due to start in due course. If an approved solution is identified, this could open up opportunities for both van and minibuses vehicles, although it is unknown at this stage whether the technology would be market ready by the CAZ introduction date of 2021.

3.6.21 The EST does, however, identify that there may be some opportunity in the future for electrification or re-power solutions for highly specialised conversions with high replacement costs, but these are not available currently through CVRAS.

3.6.22 The findings suggest that at present retrofitting is not a common practice across the industry and until further developments occur in this area, retrofitting as a solution to meet compliance of the CAZ may not prove a highly likely solution.

Exemptions

3.6.23 As noted within the OBC, imposing a penalty charge on non-compliant vehicles is an effective way of encouraging drivers to upgrade their vehicles. However, there is a risk that for many owners, operators and users the CAZ charge may impose costs that cannot be absorbed, with a risk of consequent damage on the local economy and people's livelihood.

²³ <https://www.energysavingtrust.org.uk/transport/freight-and-retrofit/clean-vehicle-retrofit-accreditation-scheme-cvras>

- 3.6.24 As such, the OBC identifies that a potential measure to protect the most vulnerable is to offer temporary or permanent discounts and exemptions from the scheme. While it is acknowledged such measures may reduce unintended consequences from the charge, there is a risk this approach could reduce the overall effectiveness of the scheme in terms of reducing emissions. It is therefore important that the relative merits must be considered from both perspectives when considering discounts and exemptions.
- 3.6.25 Using the Ultra-Low Emissions Zone (ULEZ)²⁴ in London as an example, from 25th October 2021 to 29th October 2023 minibuses operated under a section 19 or section 22 permit by not-for-profit organisations will be eligible for a grace period exempting them from the ULEZ daily charge. For a vehicle to be eligible for the ULEZ grace period they must be:
- A minibus built or adapted to carry 8-16 passengers;
 - Owned or leased by a not-for-profit organisation and operated using a valid section 19 or section 22 permit issued by an approved licensing body; and
 - Owned (or leased) before 8 June 2018.
- 3.6.26 It is expected that the grace period for the ULEZ will expire from 30th October 2023 and all minibuses from this date onwards would need to meet emissions standards or pay the daily charge.
- 3.6.27 It is likely that a similar approach to the ULEZ may be considered for minibuses within GM to mitigate the impacts on the most vulnerable from the CAZ, notably community transport groups, charities and schools. However, for the purpose of this study exemptions will not be considered during the assessment. This is to ensure the report examines the impact and risk on all users considering a worst case scenario, therefore highlighting the owners, operators and users that may be most vulnerable to the full implementation of the CAZ. It is expected that the findings from this report may support the development of appropriate discounts and exemptions that may be outlined within the Full Business Case submission.

4 Owner and Operators

- 4.1 This section provides an overview of the various market segments of the coach sector, and the typical operators that serve within them.

²⁴ <https://tfl.gov.uk/modes/driving/ultra-low-emission-zone/discounts-and-exemptions>

4.2 Market Segments

- 4.2.1 According to the Public Passenger Vehicles Act 1981, an operator is considered the driver that drives the vehicle. For example, if the minibus is being driven on authorised school business, the operator is the governing body or LA, or proprietor. If the minibus is being driven on a school trip by a member of staff or volunteer, the operator would typically be the school. If the minibus is used to transport children to and from school at the beginning and end of the day, the operator might be the LA. For hired minibuses with drivers, the operator is the company.²⁵
- 4.2.2 According to research conducted TTR²⁶, the minibus market comprises eight typical types of owner and operators, which are depicted in **Table 4-1**. Also informed by the report are the estimated proportions that each owner and operating group make up of the overall all market.
- 4.2.3 Although Taxi and PHV minibuses are considered a market segment by the TTR study, for the purpose of this study further analysis of this operator type will not be considered as it is considered these operator types fall within the Clean Taxi Working Group.

Table 4-1: Minibus Owner / Operator Market Segments²⁷

Market Segment	Definition	Market Proportion
Local Authorities	Public sector owned and operated vehicles.	13%
Community Transport	Vehicles that are operated for community groups and charities. In this group there can be cross over between charities and local authorities as operators.	9%
Local bus operators	A local bus operator that offers minibus services in parallel to bus services.	2%
Coach operators	Coach operators that offer minibus services in parallel to coach services (both commercial and private).	2%
Taxi and Private Hire Vehicles	Minibus vehicles that are operated as taxis or private hire vehicles. For the purpose of this study this operator group will not be analysed from this point onwards.	10%

²⁵ <https://app.croneri.co.uk/topics/minibuses-procurement-and-maintenance/indepth>

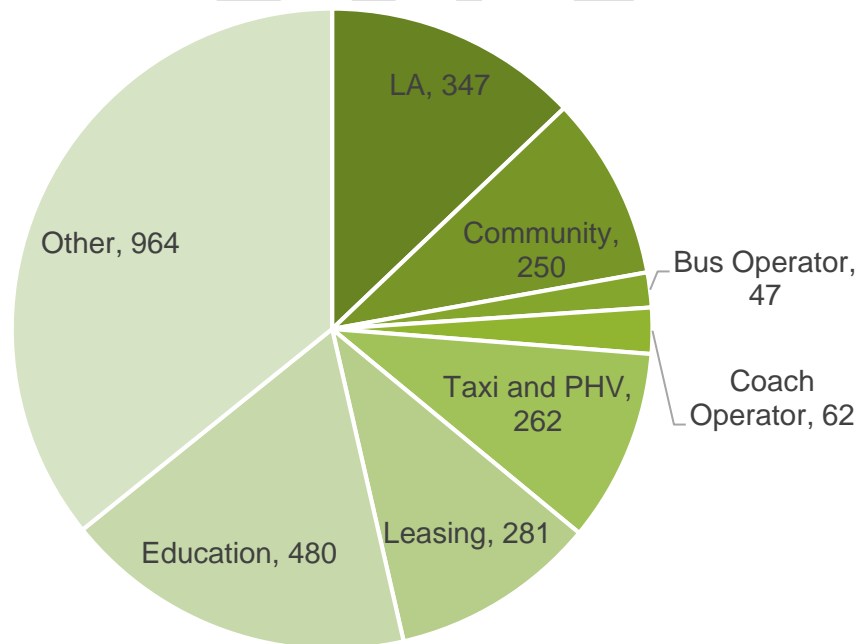
²⁶ *Minibus Market Analysis*; Transport and Travel Research. (2014)

²⁷ *Minibus Market Analysis*; Transport and Travel Research. (2014), p8 based on national values

Leasing/Rental companies	Rental companies that offer a range of vehicles for leasing, which includes a range of minibuses	10%
Education establishments	Institute that owns and operators their own minibus fleet, such as schools, specialist schools, colleges and universities.	18%
Other	Minibuses that are owned by individuals, such as sole traders or individuals for private use.	36%

4.2.4 Informed by the proportion estimated by TTR, the market proportion of each operator group has been applied to the market total of 2,693 minibuses identified previously in the report to estimate the number of vehicles within in group in GM. These are shown in **Figure 4-1**.

Figure 4-1: GM Minibus Market by Owner / Operator User Type²⁸



4.3 Operator Personas

4.3.1 This section provides personas of the owner and operator groups within GM as outlined in **Error! Reference source not found.**, informed by the data and assumptions from the TTR report²⁹. The purpose of the persona is to outline the characteristics of the operator to better inform the risk and impact analysis. Where possible, a case study for each is provided to add further insight into the profile. As noted, Taxi and PHV will not be analysed.

²⁸ DfT (2018) *Analysis of DVLA registered vehicle database records* (version Q2 2016) by DfT, with assumptions on market share applied from *Minibus Market Analysis*; Transport and Travel Research. (2014)

²⁹ *Minibus Market Analysis*; Transport and Travel Research. (2014)

Local Authorities

- Market segment is estimated to make up 347 minibus vehicles in GM (13%);
- Previous studies sampling the average percent of minibuses of LA fleets are estimated as 9.8%;
- LAs typically own their own minibus vehicles, although there are some cases where they are leased;
- There is often some crossover between LA, community transport and school markets, as LA often lease or operator on behalf of these user groups;
- LA minibuses can provide a variety of services for those with disabilities or who are otherwise unable to use other public transport modes, and therefore require accessibility features on vehicles; and
- These services can either be provided for free or a subsidised charge may apply to the user.

Community Transport

- Market segment is estimated to make up 250 minibus vehicles in GM (9%);
- Previous research has considered it difficult to gather sufficient data to be able to accurately determine the percentage of minibuses within community transport fleets;
- There is often some crossover when counting minibuses between LA owned minibuses and Community Transport operators, as LA vehicles are leased for community and social welfare purposes. Due to data limitations it is difficult to identify the extent of double counting;
- Community services are typically provided for free or a subsidised charge may apply to the user; and
- These services will also generally operate local trips within GM. From speaking to representatives from the industry, there may be some cases when a community ran service may briefly pass into GM from outside the boundary.

Case Study: Ring and Ride³⁰

- Low cost transport service across GM for those with disabilities or difficulty walking
- The Ring & Ride service is operated by Greater Manchester Accessible Transport Ltd (GMATL) and is mainly funded by TfGM via a grant from the Greater Manchester Combined Authority (GMCA) Transport Levy, and fares incomes.
- For those that qualify, they are able to book a Ring and Ride minibus which would take the user door to door with an accompanying adult, for journeys up to 6 miles within GM.
- The services have minibuses that are suitable for wheelchairs.
- Prices for the service range between £1.10 and £3.10.



Local Bus Operators

- Market segment is estimated to make up the smallest number of minibus vehicles in GM, with 47 (2%); and
- As with other market segments, identifying the true number of minibuses as a percentage of the overall fleet was difficult. However, it is estimated that minibuses would make up a minor proportion of their fleet.

Coach Operators

- Market segment is estimated to make up the second smallest number of minibus vehicles in GM, with 62 (2%);

³⁰ <https://tfgm.com/public-transport/ring-and-ride-minibuses>

- It is considered there is a variation between the use of minibuses between operators; for instances, some operators use minibuses as commercial services while others only use minibuses to shuttle drivers around rather than a publicly available service;
- For commercial minibus services, the fleet age was seen as typically younger while those used to shuttle drivers around were much older;
- Although data may often influence what is considered a minibus within an operator's fleet, it was typically found that operators only had a small minibus fleet; and
- Based on desktop research, the cost of a minibus private hire varies depending on the number of passengers travelling, the origin and destination and time of travel. For minibus journey from Manchester City Centre to Manchester Airport for 12 people at 9am on a weekend quotes ranged from £100 to £150.

- Coach operator registered in Trafford, Greater Manchester
- The company offer a range of travel hire services, including education services and airport transfers, as well as social occasion hire, such as weddings
- The company are estimated to have approximately 20 coaches (including midis) and 4 minibuses in their fleet



Rental / Leasing Companies

- According to estimates, there are approximately 281 (10% of all GM) minibuses within the rental / leasing market;
- TTR report estimated that minibuses make up approximately between 4% to 5% of a leasing or rental companies' fleet;

- The report also identified that the average length of a contract for this sector is 46 months and an average mileage of 80,000;
- In terms of main customers or users, 70% of minibuses are likely to be leased to education establishments, approximately 10% to commercial organisations for staff transport, less than 3% to Local Authorities, and approximately 2% to care homes; and
- In terms of vehicle specifications, minibuses are not typically purpose built and at the end of a contract vehicles are generally sold at auction or to a network of retailers who specialise in this market. Second life purchasers can include clubs and societies, care homes or community transport organisations.

Education Establishments

- It is estimated there are approximately 480 (18% of the GM total) minibus vehicles in this market segment, making it the second largest market;
- Schools make up about half of the leased UK minibus fleet which are used for education establishments. The other half comprises a range of establishments, such as Universities, colleges, and specialist schools; and
- It should be noted that while some educational establishments may own vehicles, the majority of vehicles operated by education establishments are believed to be leased.

Other

- It is estimated there are approximately 964 (18% of the GM total) minibus vehicles in this market segment, making it the largest owner/operator group in GM;
- However, as experienced with other studies, data limitations make it difficult to clearly determine the ownership of minibus vehicles in this group, in particular whether a vehicle is part of a fleet or owned by an individual;
- It is anticipated that the majority of these vehicles are likely to be owned by individuals, small businesses or large businesses and form fleets of only a few minibuses; and
- The TTR report suggests that these fleets are likely to be small in size.

5 Conclusions

- From the available data, the findings suggest that the CAZ is likely to have a widespread impact on the GM minibus market. This is because out of 2,693 minibuses registered in GM 2,640 (90%) are non-complaint.
- In terms of solutions to support operators reach compliance, there are no known CVRS approved retrofitting schemes available for minibuses, which makes it an unrealistic option to reach compliance in response to the CAZ at this stage.

- Additionally, while there are positive developments in electric minibuses, they are currently limited in availability. This, combined with the lack of readily available infrastructure and the comparatively high cost for vehicles, suggests that e-minibuses do not seem a likely solution in response to the CAZ.
- This means replacement is likely to be the most practical solution for the majority of the market. Currently, new vehicles cost in the region of £40,000 while second hand compliant vehicles cost around £20,000. For non-compliant vehicles the cost is around £5,000. However, it should be noted that once the CAZ charge is applied there is a high possibility this could disrupt the second hand market, resulting in an increase in demand for compliant vehicles and reducing the demand / increase supply of non-compliant vehicles. This may lead to increased costs and a loss of value for current assets.

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