

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

Appendix 2 – GM CAP EQIA following Consultation – Evidence report



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1 Introduction

1.1 Why GM is producing a Clean Air Plan

- 1.2 Poor air quality is the largest environmental risk to the public's health. Taking action to improve air quality is crucial to improve population health.
- 1.3 Whilst air quality has been generally improving over time, particular pollutants remain a serious concern in many urban areas. These include oxides of nitrogen (NO_x) and in particular nitrogen dioxide (NO₂), and particulate matter (PM).
- 1.4 In Greater Manchester, road transport is responsible for approximately 80% of NO₂ concentrations at roadside, of which diesel vehicles are the largest source.
- 1.5 Long-term exposure to elevated levels of particulate matter (PM_{2.5}, PM₁₀) and NO₂ may contribute to the development of cardiovascular or respiratory disease and may reduce life expectancy. The youngest, the oldest, those living in areas of deprivation, and those with existing respiratory or cardiovascular disease are most likely to develop symptoms due to exposure to air pollution.
- 1.6 Public Health England estimate the health and social care costs across England due to exposure to air pollution will be £5.3 billion by 2035 for diseases where there is a strong association with air pollution, or £18.6 billion for all diseases with evidence of an association with air pollution.
- 1.7 The Secretary of State for Defra has instructed many local authorities across the UK, including authorities in Greater Manchester, to take quick action to reduce harmful Nitrogen Dioxide (NO₂) levels, issuing a direction under the Environment Act 1995 to undertake feasibility studies to identify measures for reducing NO₂ concentrations to within legal limit values in the "shortest possible time". In Greater Manchester GM have worked together to develop a Clean Air Plan to tackle NO₂ Exceedances at the Roadside, referred to as GM CAP.
- 1.8 The core goal of the GM CAP is to address the legal requirement to achieve compliance with the legal Limit Value (40 µg/m³) for NO₂ identified through the target determination process in Greater Manchester in the "shortest possible time" in line with Government guidance.

- 1.9 This is a GM Equality Impact Evidence report which looks at the potential for the GM CAP to result in disproportionate or differential equality effects because of the proposed policies. It provides a full Equality Impact Assessment (EqIA) in line with the public sector equality duty in section 149 of the Equality Act, 2010, and the evidence and findings of this report have been fed into a summary EqIA in TfGM format.
- 1.10 This assessment builds on the EqIAs that have been published at the Outline Business Case stage in March 2019 and the EqIA developed to support the consultation in late 2020. It considers impacts related to the CAZ and how implementation of mitigation measures through the wider CAP measures addresses any identified equality impacts. This EqIA is an update following changes to the GM CAP policy made in consideration of feedback received during the consultation.
- 1.11 This assessment is informed by two further documents: an updated Distributional Impact Analysis (DIA) for the Interim Full Business Case (FBC) and a GM CAP Health Impact Evidence Report that summarises current, relevant health research and literature around exposure to NO₂ pollution.
- 1.12 The main assessment is made at the scale of Greater Manchester. Following earlier drafts of the GM EqIA at OBC and ahead of consultation, each of the ten Greater Manchester authorities has also carried out their own assessment, utilising more granular data, specific to each individual local authority. Whilst this GM wide report does set out the community baseline, broken down by local authority, it is recognised that these data are from central sources and local authorities hold data and insight that may be more recent and/or specific to their own communities. Each of the local authority assessments are appended to this document and significant findings and variances are summarised within this document.
- 1.13 An EqIA is a process that can be used to inform the development of policies in order to facilitate maximum positive outcomes and to avoid or minimise adverse impacts on protected characteristic groups. The aim of the assessment is therefore to bring consideration of equality into the heart of policy development, contributing to better equality outcomes, promoting greater equality of opportunity and assisting in improving quality of life for residents and communities.
- 1.14 Under Section 149 of the Equality Act (2010), public bodies are subject to the Public Sector Equality Duty, which requires that, in the exercise of their functions, they have due regard to the need to:

- a) Eliminate discrimination, harassment, victimisation, and any other conduct that is prohibited by or under the Act;
- b) Advance equality of opportunity between persons who share a protected characteristic and persons who do not share it; and
- c) Foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

1.15 Therefore, the aim of the EqIA is to identify whether people with protected characteristics could be affected by the GM CAP disproportionately or differentially:

- Disproportionate effects arise when an impact has a proportionately greater effect on people with protected characteristics than the rest of the population.
- Differential effects arise where people with protected characteristics could be affected differently from the rest of the population, due to a particular need or sensitivity.

1.16 The Equality Act identifies the following as “protected characteristics” which should be considered in an EqIA:

- age;
- disability;
- gender reassignment;
- marriage and civil partnership;
- pregnancy and maternity;
- race;
- religion or belief;
- sex; and
- sexual orientation.

1.17 These protected characteristics can be broken down into further groups which may assist in identifying where effects may occur (see Table 1). Consideration is given to all of these subgroups when assessing potential impacts on each of the protected characteristics.

Table 1 Protected characteristic groups considered in the EqIA

Protected characteristic	Further subcategories within protected characteristic groups for consideration within the assessment
Age	Children and young people (under 19)
	Older people (aged 60+)
Disability	People with physical impairments (Includes mobility, co-ordination, lifting and carrying, manual dexterity, wheelchair user)
	People with communication or sensory impairments (Includes blind/partially sighted, deaf/hard or hearing, difficulty speaking)
	People with a learning disability or cognitive impairment (Includes conditions which affect ability to learn, understand, read, remember, and concentrate e.g. Downs Syndrome, autism, ADA)
	People with mental health problems (Includes depression, schizophrenia)
	People with long standing illness/health condition (Includes cancer, HIV, MS, diabetes, heart disease, epilepsy, continence)
	Other disability/impairment not covered by any of the above
Gender reassignment	Transgender
Marriage and civil partnership	No further sub-categories
Pregnancy and maternity	No Further sub-categories
Race	Asian or Asian British Backgrounds (This includes Pakistani, Indians and Bangladeshi, Chinese or any other Asian background)
	Black or Black British Backgrounds (This includes Caribbean, African or any other black background)
	Mixed /Multiple Ethnic Groups (This includes White and Black Caribbean, White and Black African, White and Asian or any other mixed background)
	White British Background (This includes English, Scottish & Welsh, Irish and Gypsy or Irish Travellers)
	Non-British White Backgrounds (This includes Irish, Polish, Spanish, Romanians and other White backgrounds)
	Arabs
	Any other background not covered by any of the above
Religion or belief	Buddhists
	Christians

Protected characteristic	Further subcategories within protected characteristic groups for consideration within the assessment
	Hindus
	Jews
	Muslims
	Sikhs
	Others
Sex	Men
	Women
Sexual orientation	Gay men
	Lesbians
	Bisexual

1.18 This EqIA applies to the Greater Manchester city region. The assessment considers the baseline conditions of the ten districts that make up the GM area:

- Bolton
- Bury
- Manchester
- Oldham
- Rochdale
- Salford
- Stockport
- Tameside
- Trafford
- Wigan

1.19 These local authority areas are represented below:

Figure 1 GM Local Authorities



- 1.20 The separate EqlAs for each GM local authority are included in Appendix E - N.
- 1.21 This report covers outputs associated with implementation of the GM CAP measures. The assessment undertaken represents a snapshot of the information available at the time of writing; however, this EqlA is a live document and should be read accordingly. It is recommended that an update is made following any future changes to any of the measures.
- 1.22 The COVID-19 pandemic has unquestionably highlighted areas of inequality within our society, with those who are already the most vulnerable to health and economic shocks having been most affected. The added economic strain caused by the pandemic on those who are already economically disadvantaged or more vulnerable means that further economic pressures are likely to be experienced more acutely by these individuals, communities and businesses.
- 1.23 The COVID-19 pandemic has impacted on the timescales for implementing the CAZ, resulting in the implementation of the CAZ being delayed from 2021 to 2022.
- 1.24 Market analysis has been undertaken on the impact of the COVID-19 pandemic on businesses and individuals affected by the CAZ, and the statutory consultation in late 2020 (see section 2.6) explored the issue further. A report summarising the impact of COVID-19 on the GM CAP has been developed¹. The findings have been considered, the CAP measures refined and fed into the current GM CAP Policy which is the basis of this EqlA.

¹ <https://cleanairgm.com/technical-documents/>

- 1.25 In assessing the equality impacts of the GM CAP, the impacts of COVID-19 are acknowledged as likely to make some protected characteristic groups more vulnerable to the potential unintended consequences of the CAZ. The GM Independent Inequalities Commission report², published in March 2021, highlights the disproportionate impact of COVID-19 on communities with protected characteristics including “Workers from ‘Other White’ ethnic groups were more likely to have lost take-home pay than White British or people of Indian heritage; people from Pakistani, Bangladeshi, Chinese or Other Asian ethnicities were more likely than White British people to worry about their future financial situation³”.
- 1.26 The approach that has been followed includes:
- **Establishment of baseline** – social and demographic data relevant to GM is identified in order to determine the proportion of people within GM who share protected characteristics.
 - **Identification of equality impact indicators** – establishment of which indicators would be helpful for analysing the equality impacts from the CAP;
 - **Assessment of impact** – based around the equality impact indicators, potential equality impacts resulting from the GM CAZ are identified. Determination of whether these would have a disproportionate or differential impact on protected characteristic groups is based on a review of the evidence.
 - **Review of CAP mitigation measures** – the additional mitigating measures that make up the GM CAP are then assessed against the chosen equality impact indicators to identify the potential change in impact that they bring to the programme.
- 1.27 The professional judgements made in this assessment are based on the information available at the time of undertaking. People are, of course, more than the sum of their characteristics and it is acknowledged that there is significant diversity within, as well as between, the protected characteristics considered in this EqIA. Individuals may also have multiple protected characteristics which may interact to change the services and places that they need and want to access.

² https://www.greatermanchester-ca.gov.uk/media/4337/gmca_independent-inequalities-commission_v15.pdf

³ National data, sourced from Office for National Statistics Why have Black and South Asian people been hit hardest by COVID-19? (December 2020).

- 1.28 Nevertheless, there are ways in which broad groups of people with protected characteristics could potentially be systematically disadvantaged and this process attempts to ensure that as far as possible that the GM CAP does not do so.

2 Greater Manchester Clean Air Plan

2.1 The objectives of the GM CAP

- 2.2 The core goal of the GM CAP is to address the legal requirement to achieve compliance with the legal Limit Value (40 µg/m³) for NO₂ identified through the target determination process in Greater Manchester in the “shortest possible time” in line with Government guidance.

2.3 Legal requirement

- 2.3.1 The Secretary of State for Defra has instructed many local authorities across the UK, including authorities in Greater Manchester, to take quick action to reduce harmful Nitrogen Dioxide (NO₂) levels, issuing a direction under the Environment Act 1995 to undertake feasibility studies to identify measures for reducing NO₂ concentrations to within legal limit values in the “shortest possible time”. In Greater Manchester GM have worked together to develop a Clean Air Plan to tackle NO₂ Exceedances at the Roadside, referred to as GM CAP.

2.4 Public health

- 2.4.1 Poor air quality is the largest environmental risk to the public’s health. Taking action to improve air quality is crucial to improve population health.
- 2.4.2 Long-term exposure to elevated levels of particulate matter (PM_{2.5}, PM₁₀) and NO₂ may contribute to the development of cardiovascular or respiratory disease and may reduce life expectancy⁴. The youngest, the oldest, those living in areas of deprivation, and those with existing respiratory or cardiovascular disease are most likely to develop symptoms due to exposure to air pollution^{5,6}.
- 2.4.3 Public Health England estimate the health and social care costs across England due to exposure to air pollution will be £5.3 billion by 2035 for diseases where there is a strong association with air

⁴ Air Quality – A Briefing for Directors of Public Health (2017), <https://www.local.gov.uk/air-quality-briefing-directors-public-health>

⁵ Air Quality – A Briefing for Directors of Public Health (2017), <https://www.local.gov.uk/air-quality-briefing-directors-public-health>

⁶ RCP and RCPCH London, Every breath we take lifelong impact of air pollution (2016), <https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution>

pollution, or £18.6 billion for all diseases with evidence of an association with air pollution ⁷.

2.5 Funding

- 2.5.1 The Government has set up an Implementation Fund to support Local Authorities to prepare their Clean Air Plans (CAPs) and deliver targeted action to improve air quality by tackling roadside NO₂ levels to achieve compliance with legal limit values. Local Authorities have been encouraged to consider a wide range of innovative options so that they can deliver reduced emissions in a way that best suits their communities and local businesses. The overall spending objective of the CAP measures that are funded via the Implementation Fund is to deliver a scheme that leads to compliance with NO₂ limit values in the shortest possible time.
- 2.5.2 The Government has also made funding available for Local Authorities through a Clean Air Fund (CAF). The aim of the CAF is to minimise the impact of local Clean Air Plans on individuals and businesses, enabling Local Authorities to implement Clean Air Plans that impact negatively on fewer people, by supporting those who are subject to the charge to switch to compliant modes of transport. The CAF guidance states that applications should form part of the business case and that if successful, funds will be awarded at the same time as plans are approved by the Government. The overall spending objective of the CAP measures that are funded via the CAF is to support individuals and businesses negatively affected by a local plan for tackling nitrogen dioxide emissions at the roadside.

2.6 Main measures within the GM CAP

- 2.6.1 The GM CAP proposes a charging Class C CAZ⁸, with additional measures to tackle nitrogen dioxide exceedances (see Figure 3 below). Additional measures include funds and finance to support the retrofit and/or replacement of buses, taxis and commercial vehicles which do not meet the emissions standards required by the CAZ. The proposals do not impact on the use of private cars.

⁷ <https://www.gov.uk/Government/news/new-tool-calculates-nhs-and-social-care-costs-of-air-pollution>

⁸ The Clean Air Zone Framework (May 2017), Dept of Transport and DEFRA classifies Clean Air Zones as being either Class A, Class B or Class C. Class C includes buses, coaches, taxis, PHVs, HGVs and light goods vehicles (LGVs).

- 2.6.2 Six mitigating measures were proposed as part of the preferred option at OBC, in order to reduce the unintended adverse impacts of the CAZ C charging zone. These were developed further and included in the GM CAP Policy for Consultation. Alongside a charging CAZ category C, the package proposed support to help owners or registered keepers of non-compliant buses, coaches, HGVs, LGVs, taxis and minibuses with the cost of upgrading or retrofitting their vehicles, as well as a Try Before You Buy scheme for Zero Emission Capable (ZEC) hackney carriages and a network of 40 taxi-only rapid electric vehicle charging points.
- 2.6.3 Following review of the consultation responses, the GM CAP Policy has been updated and the impact of the revised measures is assessed in section 3.3 of this report.

2.7 Clean Air Zone

- 2.7.1 This CAZ policy sets out the basic principles of the charging zone. It considers the boundary of the CAZ, categories of vehicles subject to charges, emissions standards required of compliant vehicles, the charge levels, charging and enforcement, and the discounts and exemptions from the CAZ charge. It outlines that Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), buses, coaches, minibuses and taxi & Private Hire Vehicles (PHVs) are subject to pay a daily charge to enter, exit, or move within the zone unless they meet the government specified Clean Air Zone framework⁹.
- 2.7.2 Under the proposals, there will be several permanent local exemptions, including emergency service vehicles, community minibuses, disabled passenger vehicles and driving within the zone as result of a road diversion. There are also national exemptions as set out in the Government's Clean Air Zone Framework, and a number of temporary local exemptions and discounts.

2.8 Funding to upgrade to compliant vehicles

- 2.8.1 A package of funding support is proposed to help owners or registered keepers of non-compliant vehicles with the cost of upgrading their vehicles so that they are compliant with the emissions standards required by a GM CAZ, and so as not to be subject to the charge. The different funding proposals are set out below. All the funds are subject to specific eligibility criteria that must be met by the applicant.

⁹ Clean air zone framework. Principles for setting up clean air zones in England. May 2017. Department for Transport, Department for Food and Rural Affairs.

2.9 Clean Bus Fund

2.9.1 This measure will provide financial support in the form of a grant for the retrofit or replacement of vehicles operating registered local bus services in Greater Manchester. The Clean Bus Fund will also consider coaches and minibuses operating registered bus services within GM, though this fund is not proposed for minibuses used as private hire vehicles or commercial coaches. (See separate measures outlined below for these vehicle types).

2.10 Clean Commercial Vehicle Fund

2.10.1 This measure proposes to provide financial support in the form of grants to support the replacement or retrofit of non-compliant light and heavy goods vehicles, coaches, buses and minibuses, not used on a GM registered bus service, to upgrade to a vehicle compliant with the emissions standards of the CAZ. The fund is subject to eligibility criteria that must be met by the applicant and is targeted to support smaller businesses, including microbusinesses and sole traders, and the voluntary, community and social enterprise sector registered within Greater Manchester.

2.11 Clean Taxi Fund

2.11.1 This measure proposes to provide financial support in the form of a grant for the replacement or retrofit of Greater Manchester licensed taxi & PHV to upgrade to a vehicle compliant with the emission standards of the CAZ. This aims to mitigate the adverse impacts of the GM CAP on drivers and/or operators of Greater Manchester licensed taxi & PHV's.

2.12 Vehicle finance

2.12.1 In response to feedback in the Clean Air Conversation in 2019 and the consultation in 2020, GM has developed a Vehicle Finance measure designed to provide access to affordable finance to eligible applicants and address some of the potential reasons that finance might be refused to them, including affordability of repayments or a thin credit file that impacts their credit score.

2.12.2 Those for whom the CAZ charge is applicable may apply for Vehicle Finance, subject to the criteria set out within the policy; lending will be subject to status.

2.13 Taxi Electric Vehicle Infrastructure

2.13.1 A network of 40 taxi-only rapid electric vehicle charging points is proposed, tailored to locations that support Zero Emission Capable (ZEC) taxis to operate across GM. The aim of this measure is to help reduce the barriers to transition to electric hackney vehicles.

2.14 CAZ implementation phasing

2.14.1 The anticipated implementation date of the charging CAZ is 31st May 2022¹⁰ when the charges will apply to non-compliant buses, HGVs, and Hackney Carriages and private hire vehicles licensed outside of Greater Manchester. Non-compliant LGVs, minibuses and coaches, and GM-licensed Hackney Carriages and private hire vehicles would be subject to the charges from 1 June 2023 when a temporary exemption expires. The funds and vehicle finance measures will be available in 2021, in advance of the CAZ becoming operational, to enable businesses and individuals impacted by the charges to prepare in advance.

2.15 Who is affected by the GM CAP?

2.15.1 The main objective of the GM CAP is to achieve compliance with the legal limit values for NO₂ concentrations in the shortest possible time, in line with legislation and government guidance. Therefore, as a result of improved air quality, everyone who lives, works and travels within (and through) Greater Manchester will benefit from implementation of the GM CAP. Those who own non-compliant vehicles and/or travel within (and through) Greater Manchester are also likely to be affected by the implementation of the GM CAP for reasons of accessibility and affordability. These effects are considered in more detail within this report.

2.16 Consultation

2.16.1 A programme of research, analysis, public and stakeholder engagement has taken place since the OBC. This has provided more information to identify the potential impact of the proposals on those affected by the CAZ including low income workers; key business sectors such as retail and leisure, transport and distribution; and on small local businesses.

¹⁰ subject to joint GM and JAQU agreement on overall 'readiness', including that the Central Charging Portal and national Vehicle Checker is GM ready.

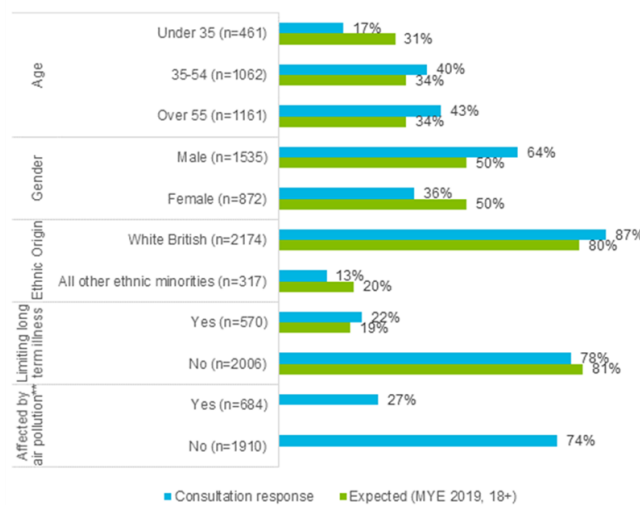
2.16.2 Initially, a public ‘conversation’ on the outline proposals ran from 13 May 2019 to 30 June 2019, seeking wide-ranging feedback from the general public, businesses and stakeholders on the options for achieving compliant NO₂ levels in Greater Manchester. Around 3,300 responses were received over the seven-week period, including responses from umbrella groups representing more than 50,000 members. Around 70% of the responses were residents of Greater Manchester and 16% were businesses in Greater Manchester. These results, along with outputs from wider stakeholder engagement with a range of groups, were used to inform the development of more detailed proposals.

2.16.3 As required by the Transport Act 2000, a statutory consultation on these detailed proposals, including the proposed charging CAZ, was undertaken between 8 October and 3 December 2020¹¹. A total of 4,768 responses were received to the consultation from across and outside of GM. Members of the public made up 3,858 of the responses: the profile of respondees is illustrated in Figure 3 below.

2.16.4 441 responses were also received from businesses, with a further 343 from taxi or PHV drivers or operators and 124 from representatives. Additional in-depth interviews, including with taxis and PHV drivers and focus groups were carried out.

2.16.5 The feedback from the consultation has been considered and has informed changes to the CAP measures that are reflected in GM CAP Policy being assessed in this EqIA. More detail can be found in the GM Authorities Response to the Consultation report¹².

Figure 3: demographic profile for members of the public responding to consultation (%)



¹¹ <https://cleanairgm.com/technical-documents/>

¹² <https://cleanairgm.com/technical-documents/>

3 EqIA screening

3.1 Screening of impacts

3.1.1 Equality effects of the GM CAP were initially screened at the development of the OBC, in order to highlight which protected characteristic groups would likely be affected by the GM CAP, and how they would be affected. The results of the screening are presented in Table 2 below and are based on the initial EqIA that was published with the OBC in March 2019.

Table 2 Summary of initial equalities screening at Outline Business Case (March 2019)

Protected characteristic	Likely to be disproportionately affected	Likely to be differentially affected	Comment <u>at OBC stage</u>
Age	✓	✓	The most vulnerable are more likely to be affected by changes to air quality including the young and elderly. Young and older people are more likely to be reliant on public transport (including taxis, PHVs and community transport) and therefore any changes in availability, cost and frequency of services would affect them.
Disability (includes all forms of physical and mental disability)	✓	✓	Disabled people are more likely to be reliant on public transport (including taxis, PHVs and community transport) and therefore any changes in availability, cost and frequency of services would affect them
Gender reassignment	X	x	At OBC, it was felt that there was no evidence to suggest that there would be any inequalities effects
Marriage and civil partnership	X	x	There is no evidence to suggest that there would be any equalities effects
Pregnancy and maternity	X	✓	Extremely low-dose exposures to pollutants during windows of vulnerability in utero and in early infancy may result in health effects throughout their lifespan ¹³ .
Race	✓	x	People of minority ethnic background are more likely to live in areas with existing poor air quality. They are disproportionately more likely to experience benefits from improved air quality.

¹³ Landrigan, P.J., et al (2018), The Lancet Commission on pollution and health. The Lancet 391:462-512

Protected characteristic	Likely to be disproportionately affected	Likely to be differentially affected	Comment <u>at OBC stage</u>
Religion or belief	X	x	At OBC, it was felt that there was no evidence to suggest that there would be any equalities effects.
Sex	X	x	At OBC, it was felt that there was no evidence to suggest that there would be any equalities effects.
Sexual orientation	X	x	At OBC, it was felt that there was no evidence to suggest that there would be any equalities effects.

3.1.2 Since the OBC, based on further analysis of the market, the results of the statutory consultation and engagement with the ten GM local authorities, a number of further characteristics have been scoped-in to the assessment:

- Sex was scoped in prior to the consultation due to emerging evidence that men and women may be differentially or disproportionately impacted by the CAZ
- Gender re-assignment and sexual orientation are now scoped in due to use and reliance of taxis and PHVs by this community for safe travel, particularly for accessing the night-time economy within Manchester city centre.
- Religion is also scoped in post-consultation due to emerging evidence of the high % of PHV and taxi drivers that are from minority faiths, in particular those who are Muslim and the impact on other faith communities with a high proportion of small businesses, such as the Jewish community in Salford.

Table 3: Additional protected characteristics scoped-in post consultation

Protected characteristic	Likely to be disproportionately affected	Likely to be differentially affected	Why this characteristic has now been scoped-in
Sex	✓	x	Sex was scoped in prior to consultation in relation to differences in use of transport and access to services and in driving occupations across the genders.
Religion or belief	✓	x	Religion has been scoped in post-consultation. There is evidence to suggest that a significant proportion of taxi and PHV drivers in the GM area are from minority faiths, particularly Islam and there are businesses within certain religious communities in specific GM local authorities that could be impacted, such as the Jewish community in Salford.
Gender reassignment	✓	x	Gender re-assignment has been scoped in post-consultation. There is anecdotal evidence to suggest that transgender individuals are more likely to access taxi and PHV services in order to safely access services and in particular, the night-time economy in the city. This group could therefore be disproportionately impacted by changes in service or cost as a result of the CAZ.
Sexual Orientation	✓	x	Sexual orientation has been scoped in post-consultation. There is anecdotal evidence to suggest that LGBTQ groups are more likely to access taxi and PHV services in order to access the night-time economy, particularly in the city centre. This group could therefore be disproportionately impacted by changes in service or cost as a result of the CAZ.

3.2 Other characteristics considered by GM Local Authorities

3.2.1 Socio economic status is not a protected characteristic under the Equality Act. However, it is recognised that people who have low economic status are likely to be more vulnerable to air quality and to any economic shocks and therefore likely to be disproportionately affected by the CAZ. Where required to do so by local policy, some of the GM local authorities have considered socio-economic status within their assessments (see Appendices E - N) but it has not been included as a consideration within this core document, i.e. the GM-wide approach in order to align with the protected characteristics in the Equality Act.

- 3.2.2 Some of the ten local authorities also include additional characteristics within their agreed approach to EqIA, specific to their local policy but not included within the Equality Act. Where this is the case, an assessment is provided by the local authority in Appendices E - N and summarised in Table 4 below.

Table 4: Additional characteristics considered by GM Local Authorities

GM Local Authority	Additional characteristics considered within its Equality Policy
Bolton	Socio-economic groups
Bury	Veterans and Carers
Manchester	Deprivation / Low income
Oldham	Low income
Rochdale	Military Veterans, carers
Salford	Veterans, carers, homelessness and socio-economic groups
Stockport	Socio-economic groups
Tameside	Carers, military veterans, breast-feeding (specifically identified but included within maternity)
Trafford	None
Wigan	Carers, Veterans, Socio-economic groups

3.3 Development of mitigation for CAZ impacts

- 3.3.1 Since the OBC, informed by the feedback given during the Conversation and the consultation processes, the mitigation measures which sit alongside the CAZ to support transition to compliant vehicles have been refined to respond to a range of market, economic and equality issues. (See Section 4.1). These refinements are set out in Table 5, along with identification of which protected characteristic they mitigate effects for.
- 3.3.2 Detailed discussion of how these mitigation measures address identified potential equality impacts of the CAZ is set out in Section 6: Assessment of equality impacts.

Table 5: CAP mitigation measures identified and protected characteristic groups they apply to

Mitigation measure	Details of mitigation in particular relation to Equality considerations	Changes post consultation relevant to EqIA	Age	Disability	Pregnancy and maternity	Race	Religion	Sex	Gender Reassignment	
Charge exemptions	<p>a) Permanent exemptions are proposed that ensure continued access to transport options for those that need it.</p> <p>b) The following exemptions are ones that will impact on protected characteristics:</p> <ul style="list-style-type: none"> • <u>Community Minibuses</u> – Those operating under a permit under section 19 or section 22 of the Transport Act (1985), issued by a body designated by the Secretary of State • <u>Disabled passenger vehicles as classified by the DVLA tax class</u> – vehicles (apart from ambulances) used by organisations providing transport for disabled people. • <u>Disabled Tax Class vehicles</u> - Vehicles used by, or for the purposes of a disabled person which are exempt from vehicle tax, as defined by the vehicle's DVLA Tax Class. • <u>LGVs and minibuses adapted for a disabled user</u> – with a substantial and permanent adaptation and not used for hire or reward 	<ul style="list-style-type: none"> • Addition to exemption of LGVs and Minibuses that are specifically adapted as Disabled User Vehicles 		x						
	<p>c) Temporary exemptions to 31st May 2023 are proposed for some vehicles. The following ones will impact on protected characteristics:</p> <ul style="list-style-type: none"> • GM licensed Hackney Carriages & PHVs • Coaches and buses not used on a registered bus service within GM. • LGVs licensed in GM • Minibuses (excluding Community Minibuses, which benefit from a permanent exemption). <ul style="list-style-type: none"> • Temporary exemptions to July 2022 for buses operating on school bus contracts that expire that month. 	<ul style="list-style-type: none"> • Addition of temporary exemption of Taxi and PHVs to recover from the financial effects of COVID-19. • Clarification of temporary exemption period to be 12 months after commencement of the CAZ. • Short term exemption of school buses where the contract is due to expire in July 2022 to 	x	x	x	x	x	x	x	

Mitigation measure	Details of mitigation in particular relation to Equality considerations	Changes post consultation relevant to EqIA	Age	Disability	Pregnancy and maternity	Race	Religion	Sex	Gender Reassignment
		ensure continuity of service.							
Clean bus fund	<p>The Clean Bus Fund aims to mitigate against potential financial impacts on bus service providers, that could result in a reduction in or increase in the cost of bus services caused by the charging. This should help maintain the supply and affordability of these services.</p> <ul style="list-style-type: none"> • Open to all registered operators with registered bus services operating in GM • It will be available ahead of the CAZ to ensure that service providers can avoid charges and can plan for impact to their business. • Level of funding requested has increased since OBC – indicating greater emphasis on mitigating this impact. • A grant of up to £16,000 is available to retrofit or replace a non-compliant vehicle 	No change	x	x		x	x		
Clean Commercial Vehicle Fund	<p>The Clean Commercial Vehicle Fund proposes to offer businesses financial support in the form of a lump sum grant OR access to affordable finance to replace or retrofit non-compliant vehicles, reducing the impact of possible charges on their service provision. Eligible businesses include:</p> <ul style="list-style-type: none"> • An entity registered with the Charity Commission (including being an active charity and those excepted from registration) • A social enterprise <p>This financial support includes support to retrofit or replace coaches and minibuses (not on a registered bus service) which should help to maintain the supply and affordability of community transport.</p> <ul style="list-style-type: none"> • Funding is targeted to support eligible small and micro businesses, sole traders, self-employed, charities, social enterprises and individuals in GM. <p>Following consultation, the funding level has been increased.</p>	<ul style="list-style-type: none"> • Increases in funds for replacement of some vehicles to reflect the market, funding gap between residual value of existing vehicle and a replacement cost and economic impacts of the COVID-19 pandemic on the market. • Inclusion of retrofit grants, in addition to replacement grants for LGVs and minibus to reflect changing availability of these options. 	x	x			x		

Mitigation measure	Details of mitigation in particular relation to Equality considerations	Changes post consultation relevant to EqIA	Age	Disability	Pregnancy and maternity	Race	Religion	Sex	Gender Reassignment
Clean Taxi Fund	<ul style="list-style-type: none"> The Clean Taxi Fund will provide funding towards the retrofit of vehicles to meet the GM CAZ emission standards, towards the replacement of non-compliant vehicles with compliant vehicles or towards running costs when the compliant vehicle acquired with GM CAP funds has also been eligible for a Government plug-in grant 	<ul style="list-style-type: none"> Inclusion of non-WAV Hackney Carriages in funding eligibility Increase in maximum grant fund levels for most Hackney Carriages and PHV vehicle types. 	x	x		x	x	x	x
Taxi Specific Electric Vehicle Infrastructure	<ul style="list-style-type: none"> The provision of 40 rapid electric vehicle charging points across GM, to be used specifically by taxis and PHVs. 	No Change	x	x		x	x	x	

3.3.3 The proposed final GM Clean Air Plan does not include a Hardship Fund, as proposed at consultation. Although feedback from the consultation and the impact of COVID-19 research found that further support was required for GM businesses, Government Ministers did not agree that a Hardship Fund would be the best way to mitigate the impact of uncertainty due to the pandemic. Ministers cited other COVID-response government schemes (not specific to Clean Air plans) being available to address wider business impacts.

3.3.4 However, Government have confirmed that they wish to ensure that Clean Air Funds can be adapted if necessary; and, that they will continue to work with GM to understand the situation, including the funding position, if the impacts prove to be more severe than forecast.

3.3.5 It remains important to monitor the impact of the CAZ on individuals and businesses that are economically vulnerable and their ability to access the available package of Clean Funds and Vehicle Finance.

3.3.6 The proposed final GM Clean Air Plan does not include an option to apply for a discounted charge equivalent to 5/7 of the weekly total for GM-licensed PHVs that are also used as a private car, as proposed at consultation. From an equality perspective, in isolation the removal of the discount would impact PHV drivers, a high proportion of whom are male and from minority ethnic groups¹⁴. However, rather than offering a discount, GM is proposing a temporary exemption to the daily charges of the CAZ until 31 May 2023 for all GM-licensed Private Hire Vehicles and Hackney Carriages and further options for replacement and retrofit are more suitable revisions to the scheme to meet the air quality objectives.

4 Selection of equality impact indicators for this assessment

4.1 Context

4.1.1 The role of the EqIA is to identify where changes associated with the proposed measures may result in disproportionate or differential impacts, particularly in relation to groups within the community that have protected characteristics. The Distributional Impact Analysis (DIA)¹⁵ that was prepared for the GM CAP OBC and is being refreshed for the Full Business Case (FBC) considers distributional impacts of three variables; accessibility, air quality and affordability. In order to align with the DIA, the EqIA also uses these indicators.

4.1.2 Table 6 provides a summary of why each of the EqIA impact indicators has been selected for use in the assessment. Sections 4.2 - 4.4 provide the evidence base for this selection.

Table 6: EqIA indicators used in the assessment

EqIA impact indicators	Includes	Justification for inclusion within EqIA
Air quality	Changes in air quality	Air quality is a key determinant of health and wellbeing, particularly for residents with existing health and respiratory conditions. Certain groups of people are more susceptible to changes in air quality (children, elderly, pregnant women and those with a disability or long-term limiting illness) who therefore may benefit differentially from improvements in air quality brought about by the GM CAP.

¹⁴ Both licensed PHVs and Hackney Carriages can only be driven by a licensed driver – a vehicle used for taxi services is always a licensed taxi. Therefore, at all times it is a licensed vehicle, rather than a private car. After consideration of the feedback from consultation, GM considered that offering PHVs a discount did not provide parity with other commercial vehicles which are sometimes also used for private travel.

¹⁵ Great Manchester's Outline Business Case to tackle Nitrogen Dioxide Exceedances at the roadside – Analysis of distributional impacts, Aecom, February 2019.

EqIA impact indicators	Includes	Justification for inclusion within EqIA
		This reflects the DIA which identifies three groups who would potentially disproportionately benefit from improved air quality: 1) low income households, 2) children, and 3) the elderly.
Accessibility	Access provided by use of buses, coaches, minibuses, taxis and private hire vehicles.	Accessibility plays a key role in both individual and community opportunities, including accessing services, employment, and social interaction. Access to services and, in particular, access to work and employment, plays a key role in reducing socio-economic inequalities and improving economic security and opportunity. The measures will have potential impacts on the volume and/or cost of services offered by public and private buses, coaches, minibuses, taxis and private hire vehicles which could result in changes to accessibility.
Affordability	Personal affordability- Cost of transport	Affordability relates to the costs incurred by people as they travel to and from places of work, study and social activities. The GM CAP may result in changes (increases) to costs of public transport and private hire transport as vehicle operators may pass costs of compliance onto passengers or take advantage of reduction in supply within the market.
	Business affordability – costs of complying with CAP for small businesses/individuals	Vehicle operators/businesses will incur costs as they choose to either pay the clean air charges, upgrade their vehicles to compliant vehicles or cease operations. Consideration of whether some operators have a higher proportion of owners/staff with protected characteristics is needed.

4.2 Air quality indicator

4.2.1 The primary objective of the GM CAP is to achieve compliance with legal NO₂ limit values in the shortest possible time. In line with Government guidance, this is the Determining Success Factor by which the programme is appraised. Therefore, air quality is an important and very relevant equality impact indicator for this programme.

4.2.2 A fuller review of why air quality has been chosen as an equality indicator is available in Appendix B. A literature and research review of the impacts of air quality on health, the GM CAP Health Impact Evidence Review was undertaken in 2020, and an updated Distributional Impact Analysis was produced to support the Interim FBC. The key findings of these reports have been fed into this assessment.

- 4.2.3 Poor air quality is one of the largest environmental risks to public health, contributing to the equivalent of 1,200 deaths a year in GM¹⁶. Long-term exposure to elevated levels of NO₂ and microscopic particles of matter (PMs), suspended in the air, may contribute to the development of cardiovascular or respiratory diseases and reduce life expectancy.
- 4.2.4 Conditions caused or exacerbated by air pollution significantly reduce quality of life. Short-term exposure to concentrations of NO₂ higher than 200 µg/m³ can cause inflammation of the airways¹⁷. NO₂ can also increase susceptibility to respiratory infections and to allergens. People affected by air pollution can become less able to work and require more medical care, increasing social costs and burdening the NHS. In total, it is estimated that the health and social care costs of air pollution in England could reach £5.3 billion by 2035 unless direct action is taken¹⁸.
- 4.2.5 Dajnak et al (2018) conducted a Health and Economic Impact Assessment associated with current and future pollution levels in GM. They found that:
- If the concentration of NO₂ remains at predicted concentrations, between 2011 and 2030, the total number of life years lost will be 561,169 in GM.
 - This will have an economic impact of £343,719,554 (based on 2014 prices).
- 4.2.6 In addition, Evangelopoulous et al (2019) produced quantitative statements from their research, giving the effect of a given exposure to NO₂ on a range of diseases in the City of Manchester. It is important to note that this was based on Manchester, not Greater Manchester:
- The risk of emergency hospitalisations for stroke is 2.8% higher on high air pollution (between 4401 and 1064 µg m⁻³ as defined by the Daily Air Quality Index⁹) days than on lower air pollution days (short-term)
 - Lowering air pollution by 33.5% on high air pollution days could save 14 hospital admissions for stroke each year (short-term)
 - A child is 4.4% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term)

¹⁶ Public Health England – Air Quality in Greater Manchester – from a Public Health Perspective (September 2018)

¹⁷ DEFRA, Air Pollution in the UK, 2017

¹⁸ DEFRA – Clean Air Strategy 2018 (2018)

- Adults are 1.5% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term)
- Cutting air pollution in by one fifth would increase children's lung capacity by around 2.6% (long-term)
- Cutting air pollution by one fifth would decrease the risk of babies being born underweight by around 0.1% (long-term).

4.2.7 Taking the above points into consideration, it is important to achieve regional compliance as quickly as possible, while also working to reduce localised incidences of human exposure to NO₂ in order to positively impact public health in both the short- and long-term.

4.2.8 Public Health England's guidance 'Health matters: air pollution'¹⁹ outlines that whilst air pollution can affect everyone, some people are more affected because they live in a polluted area, are exposed to higher levels of air pollution in their day-to-day lives or are more susceptible to health problems caused by air pollution. Groups that are reported as being more vulnerable to these affects are older people, children (particularly young children), pregnant women, people living with long-term health conditions or disability and those who are living in high pollution areas and low-income communities. In the same way that these groups of people are more sensitive to high levels of air pollution, they are also likely to benefit more from any improvements in air quality.

4.2.9 The GM CAP aims to improve air quality across GM and therefore all people living within GM are likely to experience the health benefits associated with improved air quality. This indicator is included in the EqIA in order to identify which protected characteristic groups are most likely to benefit.

4.3 Accessibility indicator

4.3.1 Accessibility influences how people live, including how they access services, economic opportunity (i.e. places of work) and how they are able to socialise. The ease with which people have access can have a direct impact on health and wellbeing, socio-economic opportunity and quality of life²⁰.

4.3.2 Accessibility is determined by a number of factors including:

¹⁹ Public Health England, Public Health Outcomes, <http://www.phoutcomes.info/>

²⁰ NHS, Healthy Urban Development Unit (2013), HUDU Planning for Health - Rapid Health Impact Assessment Tool, <http://www.healthyrbandevelopment.nhs.uk/wp-content/uploads/2013/12/HUDU-Rapid-HIA-Tool-Jan-2013-Final.pdf>

- availability of public transport (predominantly buses, but also others such as coaches and minibuses);
- availability of private hire vehicles (including taxis, coaches, minibuses)
- frequency and efficiency of services; and
- affordability.

4.3.3 Research undertaken by University College London (UCL) on the link between transport and deprivation defines transport-related exclusion as:

“A process by which people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due to whole or in part to insufficient mobility in a society and an environment built around the assumption of high mobility”²¹

4.3.4 The impacts of poor transport access can be more significant for people with protected characteristics, including older people, residents with a health condition or long-term disability, low-income households and young people. Public transport can play a key role in providing an affordable transport option. This is particularly important for low-income households, providing access to social infrastructure and economic opportunities. The same UCL research shows that more bus trips are made by the lowest income groups, who are less likely to own a car.

4.3.5 Access to reliable and regular bus, minibus, coach and taxi services is particularly important in some communities across Greater Manchester, particularly where tram and trains do not service the local area and in the more rural neighbourhoods on the edge of the city region. Any change in services in these communities would have a greater impact on access for protected characteristics.

4.3.6 Car ownership amongst particular equalities groups tends to be low. For example, young people under 19, older people, disabled people, ethnic minorities, and those who live in economically deprived areas²². This makes these groups disproportionately reliant upon public transport networks, Hackney Carriages and private hire vehicles which, in their absence or where services are reduced, could lead to isolation and restricted access to social and economic activities that enhance life chances.

²¹ Titheridge et al (2014) Transport and Poverty – A Review of Evidence, University College London

²² NatCen (2019). Transport and inequality: an evidence review for the Department of Transport

4.3.7 Private vehicle use can play a particularly important role for certain equalities groups (including older people, mothers with children or pregnant women, and residents with a form of disability), as it can provide a more direct and convenient alternative to public transport. Where car ownership is lower, for example for people with disabilities, reliance on accessible Hackney Carriages and PHVs is high.

4.4 Affordability indicator

4.4.1 Affordability is considered from two distinct perspectives:

Personal affordability

4.4.2 Personal affordability is the cost of travel for people to a place of work or education, or to participate in a social or leisure activity. The cost of travel is the fare or service charge that an individual pays to either public transport service providers or to private hire vehicles to take them where they need and want to go. People who have lower incomes or irregular incomes are more sensitive to increases in travel costs and are therefore more likely to be adversely affected by any price increases that may result from the GM CAP. The EqIA considers how people with protected characteristics may be disproportionately or differentially affected by affordability issues.

Business affordability (transport and haulage sector)

4.4.3 Vehicle operators/businesses will incur direct business costs as they choose to either pay the clean air zone charges, upgrade their vehicles to compliant vehicles or decide to cease operations.

4.4.4 An impact of the CAZ on transport and haulage businesses that are defined as micro, small and medium enterprises (MSMEs) is more likely since smaller businesses are less adaptable to increases in overhead costs that would result from either upgrading vehicles to compliant vehicles or through paying clean air zone charges. As examples:

- 69% of coach operators are small businesses²³, often providing services to older and younger people;
- Up to 36% of minibus service providers are likely to be private individuals, and businesses which may have a small number of minibuses to support their business activities²⁴.

²³ GM CAP Policy

²⁴ The Hatch Regeneris report found limited data related to this group of minibus service providers

- 4.4.5 Analysis of the impact of COVID-19 since early 2020 on businesses across GM indicates a significant economic impact on many businesses in relation to reduced income and use of any cash reserves to maintain the business and / or livelihoods during the pandemic. In general, according to the Government's Business Impacts of Coronavirus Survey, by the end of 2020, 83.3% of businesses in the North-West has received a Government grant and 23.1% a government-backed loan or finance agreement.
- 4.4.6 In particular, taxi, PHV and coach businesses have been significantly hit:
- In September 2020, the frequency of taxi movements in GM was 39% lower overall than the same month a year before, with a 63% change for Hackney Carriages, indicating the impact on demand for business in the sector.
 - 100 coach operators were estimated to have gone into administration as a result of the COVID-19 lockdown, including GM's largest operator Shearings. Some operators benefitted from the Home to School funding scheme, but this was only estimated to have supported 15-20% of the operators in GM.
- 4.4.7 A significant proportion of the qualitative responses in the GM CAP consultation responses from Taxi and coach operators indicate that COVID-19 leaves these businesses less resilient and more vulnerable to the impact of the CAZ in terms of business affordability moving forward, to either upgrade non-compliant vehicles or pay the CAZ charge. This has been reflected in the GM CAP Impacts of COVID-19 and the Economic Impacts of CAP reports being published to support GM's response to the consultation.
- 4.4.8 From the perspective of the EqIA, it is necessary to understand whether these SMEs have people employed with protected characteristics, or indeed the business owner has protected characteristics. It is also worth noting that some very small businesses may also use their PHV for personal use and would therefore be affected not only when they are working, but also during personal usage.
- 4.4.9 The Hatch Regeneris socio-economic impact research²⁵ identifies the following facts related to the transport and haulage business sector that informs this EqIA:

²⁵ CAZ Commercial Vehicle Socio-Economic Impacts Research, 2019. Hatch Regeneris

- Gender: Bus and coach drivers are more likely to be male than female (94% male);
- Gender: 96% of taxi drivers are male;
- Age: The average age of a taxi driver is 48;
- Ethnicity: Over 50% of all taxi drivers (England wide) are from non-white British ethnic background.

4.4.10 In addition, other sources re-affirm the gender and age statistics in the transport sector:

- Gender: www.womenintransport.com state that only 8% of drivers in the industry are women
- Age: The Road Haulage Association states that the average age of drivers is 57 years old.

5 Baseline

5.1 Context

5.1.1 In order to understand whether there are likely to be any equality impacts, it is necessary to understand the demographic profile of the GM area. Appendix A sets out a detailed baseline related to all protected characteristics within the population of GM. This section provides a brief summary of protected characteristic data that has been screened into the assessment (Section 3).

5.2 Population and gender

5.2.1 The population across GM stood at 2,835,700 in 2019 which represents a 7.4% increase since 2009²⁶. This is predicted to increase by a further 8% over the next 20 years. The population of the districts within GM is split more or less evenly between male and females, with slightly more females in all districts, except for Manchester and Salford where it is the opposite.

²⁶ ONS (2019) Population Estimates for England and Wales Mid-2019. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

5.2.2 Female life expectancy is consistently above male life expectancy²⁷. The authorities with the highest life expectancy at birth are Trafford (83.9 years for females; 80.1 for males) and Stockport (83.3 years for females; 80.1 for males), which are above the national, regional and sub-regional averages. The local authority with the lowest life expectancy is Manchester (79.8 years for females; 76.1 years for males).

5.3 Age

5.3.1 Across GM, the split between the sexes is reflective of the statistic across the whole of England and the North West²⁸.

5.3.2 In comparison with the average for England, GM has a similar proportion of the population aged 16-64 with approximately 63% of the population being within this working age group.²⁹

5.4 Disability and health

5.4.1 There are considerable health inequalities across GM which means that some areas experience much higher levels of illness and health related disability than others. In 2019 the Index of Multiple Deprivation (IMD) ranked Manchester as being the 2nd most deprived local authority in England (out of 151) in relation to health and disability. There will also be variations in health and disability within Local Authority areas and any significant differences are drawn out in the local authority assessments in Appendices E - N.

5.4.2 In addition to the IMD, the 2011 census collected self-reported data on the percentage of people whose day to day activities are limited as a result of disability. This identified that 9.7% of the resident population within GM are limited a lot by a disability. This is above the England average of 8.3% but a little less than the average across the North West (10.3%). This data is available by age group which can be used to identify the age groups most affected by health conditions and disability; within GM (and within each district) the age bracket 45-69 has the largest number of residents with a disability or long-term health condition (4.09% of total resident population). However, as there are fewer residents in the 85+ age bracket, the percentage who live with disability in this age group is proportionately higher. The national distribution across the age brackets is similar although the proportion of residents within GM is slightly higher in all ages, except for 85+.

²⁷ ONS (2018) Life expectancy at birth and at age 65 by Local Areas, UK, 2015-2017. Available at <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/lifeexpectancyatbirthandage65bylocalareasuk>

²⁸ ONS Area profiles, 2018. Available at: <https://www.nomisweb.co.uk/home/profiles.asp>

²⁹ ONS (2019) Population Estimates for England and Wales Mid-2019. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforenglandandwalesscotlandandnorthernireland>

5.4.3 Statistics of the number of valid Blue Badges held by individuals within GM identifies Wigan as having the highest proportion (6.1%) whilst Manchester has the lowest proportion (2.9%).

5.5 Pregnancy and maternity

5.5.1 Data available from ONS provides details of live births for 2019³⁰. This therefore does not capture the total number of pregnancies which may not end in a live birth (either as a result of termination or miscarriage). Across GM in 2019, it was estimated that 2.28% of the female population had a live birth. This is slightly higher than the England average of 2.21% however there is variation across GM with Manchester having the highest percentage (5.15%) and Bury having the lowest (1.58%).

5.6 Ethnicity/race

5.6.1 ONS Census data³¹ show that there is significant variation in ethnic groups across GM's districts. The majority of the GM population is white, although compared to England and Wales as a whole this percentage is slightly lower. The proportion of people classified as Asian in GM is higher than the national average, whilst there are fewer people classified as Black than in England and Wales as a whole. Across the LA areas there is significant variation in the proportion of variation with Wigan being the least diverse authority area and Oldham being the most diverse.

5.7 Religion

5.7.1 ONS Census data³² show that there is significant variation in religion and beliefs across GM's districts. The majority of the GM population is Christian, with a slightly higher proportion than England and Wales as a whole. The proportion of Muslim and Jewish people in GM is considerably higher than the national average whilst there are fewer people in GM reporting no belief than the national average.

5.7.2 In particular, Oldham, Manchester, Rochdale and Bolton have a greater % of Muslim population than the GM average of 8.9%, ranging from 11.7 – 18.7%. Bury, Salford and Trafford have higher Jewish populations than the GM and national averages.

³⁰ ONS (2019) www.nomisweb.co.uk/query 2019 data for live births

³¹ ONS (2011) Census data by local authority: ethnic groups UK. Available at: <http://infuse2011.mimas.ac.uk/>

³² ONS (2011) Census data by local authority: religion or belief. Available at: <http://infuse2011.mimas.ac.uk/>

5.8 Gender reassignment

- 5.8.1 There are multiple definitions of transgender. For the purposes of this report, following the approach taken by the Office for National Statistics, the common umbrella term ‘trans’ is used to refer to people whose lived identities conflict with societal gender norms. This encompasses a range of identities from those who cross-dress to those people who identify their own gender differently to that assigned to them at birth. It also includes individuals who identify as androgynous, non-gendered or non-binary. Importantly, it is not limited to people who have undergone gender reassignment surgery.
- 5.8.2 No data sets are available to allow the identification of the proportion of trans people in the population for the purposes of this EqIA. Publicly collected data on trans people is “virtually non-existent”³³. One source, collected by the Gender Identity Research and Education Society (GIREs) for the Home Office in 2009, identified between 300,000 and 500,000 people in the UK with some degree of gender variance. This represents some 0.4% to 0.8% of the UK population. There is no evidence on the spatial distribution of trans people around the UK but applying those figures to known population figures across GM suggests there could be somewhere in the region of 11,250 to 22,500 people with some degree of gender variance (out of a total population of 2,812,600). These figures should be regarded as illustrative.

5.9 Sexual orientation

- 5.9.1 Information on sexual orientation is available through the Office of National Statistics. Statistics related to sexual orientation have not been collected for very long and are therefore experimental statistics which means that they are being developed and currently in the testing phase. The North West of England has a lower proportion of LGB residents (1.29%) compared to London (2.6%) and the south West (2.4%).
- 5.9.2 Manchester City Centre is home to the “Gay Village”, playing a significant community role for Greater Manchester’s LGBTQ community.

³³ Equalities & Human Rights Commission, ‘Trans Inequalities Reviewed’. Available at: <https://www.equalityhumanrights.com/en/trans-inequalities-reviewed/introduction-review>

6 Assessment of equality impacts

6.1 Context

6.1.1 Following initial screening, a detailed assessment has been carried out to include discussion of the evidence base to support the conclusions being made.

6.1.2 The defined equality impact indicators have been considered against the following criteria:

- Receptor group – identification of which protected characteristic group/s are likely to be affected and why;
- Positive/ negative – identification of whether the change is likely to have beneficial or adverse impacts on protected characteristics groups; and
- Extent of population exposure – the consideration of the number of people, equalities groups or catchment areas likely to be impacted by the change.

6.1.3 An initial assessment is made on equality impacts related to the implementation of the CAZ. Where the CAP includes measures to mitigate these identified impacts a view is made on whether they would be successful at avoiding or reducing the magnitude of any equalities impacts, or whether there would be any indirect impacts from the mitigation measures themselves.

6.1.4 Through demographic profiling, the equalities assessment identifies whether the impact is proportionate. The assessment of proportionality is based on an assessment of whether a given impact is likely to be felt more, less or differently by protected characteristic groups than by members of the general population in the same area. It includes whether an impact is differential, and therefore is likely to have a different impact on protected characteristic groups due to specific needs, greater sensitivity, or the reduced ability to accommodate change. It also considers whether there are impacts which are likely to be experienced in the same way by all, but which occur in areas with disproportionate numbers of people sharing one or more protected characteristics.

6.1.5 A summary table has been provided for each equality indicator in sections 6.1-6.3 below. Colour coding has been used to illustrate the assessed level of impact both before and after mitigation measures. The following key has been used:

- Green – Positive benefit

- Amber – Low adverse impact
- Red – High or medium adverse impact

6.2 Air quality – potential impacts

CAZ impacts

- 6.2.1 Groups that are more vulnerable to poor air quality include older people, children (particularly young children), pregnant women and people living with long-term health conditions or disability. Any improvements in air quality are therefore likely to differentially benefit these groups (see section 4.1).
- 6.2.2 Areas of existing high pollution often correlate with low income communities and therefore any improvements in air quality would benefit these communities disproportionately. Economically disadvantaged groups are more likely to include young people, unemployed, long term sick and people from ethnic minority backgrounds. This correlates with the OBC DIA which shows that those living within areas of highest deprivation, would experience the highest reductions in emissions as a result of the CAP.

Mitigation measures

- 6.2.3 The impacts from reduced emissions are already beneficial. However, the mitigation measures aim to increase the rate and scale of upgrade to compliant vehicles by reducing the barriers for owners and operators of buses, coaches, minibuses, taxis, PHVs, HGVs and light goods vehicles (LGVs). Air quality modelling undertaken for GM indicate that this will lead to beneficial air quality impacts coming forward sooner than they may otherwise.

Effect of changes to measures post-consultation on air quality

- 6.2.4 In developing a response to the statutory consultation feedback, the mitigation measures within the GM CAP have been reviewed and any changes reflected in the GM CAP Policy.
- 6.2.5 A key criterion throughout the consultation review process, was whether a potential change to the policy, made in response to the consultation would impact on achievement of compliance with the legal NO₂ levels “in the shortest possible time”. This was key to ensure that policy changes neither compromised compliance with the government direction nor the resulting health benefits.

6.2.6 Air quality modelling has been undertaken to test the assumptions associated with the current GM CAP Policy and the delay of implementation of the CAZ to 2022 due to the COVID-19 pandemic, and to confirm compliance with the government direction.

Summary of air quality impacts

6.2.7 Table 7 identifies which protected characteristic groups are likely to experience disproportionate and/or differential health benefits from improved air quality and what extent of the population the impact applies to. As cleaner air will benefit all people within GM, the extent of the population with protected characteristics is considered as high for both pre and post mitigation.

Impact	Direct/ Indirect	Beneficial/ Adverse	Extent of population exposure		Age (young people)	Age (older people)	Disability	Pregnancy and	Race	Religion /belief	Sex	Gender Re-assignment	Sexual Orientation
			Pre-mitigation Measures	Post mitigation measures									
Improvements in air quality	Direct	Beneficial	High	High	x	x / ●	x / ●	●	●				

Table 7 Air quality differential (x) or disproportionate (●) impacts

6.3 Accessibility – potential impacts

CAZ impacts

6.3.1 The CAZ sets out the potential charges for non-compliant buses, coaches, minibuses (except community minibuses which are exempt) and taxi & PHVs. As such, there is a risk that charges for non-compliant vehicles used in these modes of public transport might result in a reduction in the number or frequency of services, or in fare increases as costs are passed on to customers.

- 6.3.2 For bus users, both a reduction in service and fare increases are likely to have a disproportionate effect on people who rely on public transport as their main or only form of transport to access work, education or social activities. In particular, concessionary card holders who make up an average of 34% of all local bus journeys in the UK³⁴ could be particularly affected. Concessionary schemes in GM³⁵ include free travel for older people (of state retirement age), a Women's Concessionary Travel Scheme, passes for young people including the igo card for 11 to 16 years olds and Free Schools Pass, Scholar's Pass for 16-18 years and free or low cost travel pass for disabled people. Other groups that are likely to be disproportionately affected include people of ethnic minority background and women who are more likely to rely on public transport.
- 6.3.3 There are estimated to be just over 2000 minibuses operating in GM³⁶ and community minibuses are permanently exempt from the GM CAZ charge which helps to mitigate some of the risk to services that minibuses offer to protected characteristic groups in GM. Changes to the availability of private minibuses is likely to affect young people who use these services in school or for sporting activities. According to Technical Note 18 submitted to JAQU - GM CAP Minibus Vehicle Research, in GM³⁷, 10% of the minibus market are leasing/rental companies, which are estimated to lease 70% of their vehicles to educational facilities. For non-compliant vehicles in the leasing market, the CAZ charge could potentially raise the operating cost, with these increases being passed on to the customer. Oldham has the least compliant minibus operators, with all 201 vehicles being non-compliant, yet Oldham also has the highest 0-16 population out of all local authorities (22.6%).
- 6.3.4 It is possible that communities of older people and those with ill health or disabilities, who rely on minibuses supplied particularly by the charity sector to transport them to social, health and workplaces would also be disproportionately affected.

³⁴ Department for Transport (2019) Annual bus Statistics: England 2017/2018

³⁵ <https://tfgm.com/tickets-and-passes/apply-for-a-new-pass>

³⁶ https://assets.ctfassets.net/tlpgbv1k6h2/3fR4HEB016Z572eIRIs8wx/ddfa01e92fb972d2d5297e04c78f046a/37_-_GM_CAP_Vehicle_population_estimates.pdf

³⁷ AECOM (2019) Impact Assessment Technical Note 18 – GM CAP Minibus Vehicle Research

6.3.5 For taxi and PHVs use, a reduction in the availability of taxis and PHVs would likely have a disproportionate impact on elderly populations and disabled people who are more reliant on these services than most of the population. In a consultation activity with taxi and PHV drivers and operators in 2019³⁸, they were concerned that surpluses from increased fare charges being invested in public transport would lead to a modal shift from taxis and PHVs to public transport, consequently reducing demand for the trade. Drivers felt this impact would particularly affect wheelchair users, who are often price sensitive to increases in fares and reliant on the accessibility of taxis and PHVs. Qualitative feedback during the GM CAP consultation in 2020 indicated a strong view from businesses, including Hackney carriage and PHV operators and sole traders that COVID-19 had resulted in decreased business resilience and increased uncertainty and that any additional impact on operating costs could result in businesses ceasing to operate.

Mitigation measures for accessibility impacts

- 6.3.6 The Clean Bus, Clean Taxi and Clean Commercial Vehicle Funds should also help to mitigate potential reductions in service provision by providing registered keepers of non-compliant vehicles with options for reducing the financial impact of retrofitting or replacing their vehicle. This should reduce the likelihood of service providers being unable to afford to keep the business or a particular service running. There is a chance that smaller operators and/or individual owners of non-compliant vehicles could still find it economically unviable to continue to provide a service, therefore whilst mitigation against service reduction is in place, services may be reduced/lost, particularly within the charity sector and in relation to taxis – both hit hard by the COVID-19 pandemic.
- 6.3.7 In terms of bus services, air quality modelling post-consultation assumes a high degree of take-up of Clean Bus Funding and subsequent compliance of buses on GM-registered bus services, indicating a low level of concern in terms service reduction on these routes.
- 6.3.8 Other mitigations put in place and refined post-consultation should further reduce the risk of service loss:

³⁸ SYSTRA (2019) Deliberative Research with Taxi and PHV Drivers/Operators

- A temporary exemption of PHVs, hackney carriages, minibuses and coaches (not on a registered bus route) to the CAZ charge until 31st May 2023 is proposed, post-consultation. This aims to provide time for businesses and individual owners to recover from the economic impacts of COVID-19 and should help to mitigate the service loss risk.
- The prioritisation of the Clean Taxi and Clean Commercial Vehicle Funds to micro and small businesses, sole traders, social enterprises and charities should ensure that those most vulnerable received support, further mitigating the risk.
- The availability of the Vehicle Finance options in 2021, ahead of the GM CAZ charging zone going live, so that businesses have time to upgrade in time to avoid the charge.
- Increases in the maximum amount of funds per vehicle for most (but not all) eligible vehicles to offer greater support for businesses and individuals to upgrade their non-compliant vehicles and avoid the charge.

6.3.9 In addition to the above measures that should reduce adverse impacts on accessibility, the following changes have also been put in place as a result of the feedback from the consultation:

- LGVs / minibuses adapted for use by or for a disabled user, and not used for hire or reward are to be permanently exempt from the CAZ charge - ensuring that disabled people and their families and carers are not negatively impacted by the charge.
- An increase in the maximum amount of Vehicle Finance available per vehicle has been made to reflect the market, the funding gap between residual value of existing vehicle and a replacement cost and economic impacts of COVID-19 on the market.

6.4 Summary of impacts related to accessibility

6.4.1 Table 8 identifies which protected characteristic groups are likely to experience disproportionate and/or differential impacts in relation to accessibility and what extent of the population the impact applies to before and after mitigation measures.

Table 8 Accessibility differential (x) or disproportionate (•) impacts

Impact	Direct/ Indirect	Beneficial/ Adverse	Extent of population exposure to impact before mitigation	Extent of population exposure to impact post mitigation	Age (young people)	Age (older people)	Disability	Pregnancy and maternity	Race	Religion / belief	Sex	Gender Reassignment	Sexual Orientation
Reduction in bus services	Direct	Adverse	Medium	Low	•	•	•		•		•		
Reductions in taxi/PHV services	Direct	Adverse	Medium	Low		•	•					x	x
Reduction in availability of minibuses and community transport	Direct	Adverse	Low	Low	•	•	•						

6.5 Affordability – potential CAZ impacts

Business affordability

6.5.1 The CAZ could result in increased operational costs as businesses either choose to upgrade their vehicles to compliant ones or, as a least favoured option, to pay the charge. This is especially the case for smaller businesses.

- As seen in the AECOM Impact Assessment Technical Note 4 – GM CAP Coach Market Analysis³⁹, 71 coach operators (69%) in GM have between 1 and 5 coaches. For small coach operators with a fleet size between 1-10 coaches, average non-compliance was 91%, and all operators with just one vehicle were non-compliant. According to the same analysis, 85% of minibuses in GM were non-compliant.

³⁹ <https://cleanairgm.com/technical-documents> (Note that this document is commercially sensitive and not for publication)

- According to evidence gathered from the AECOM Impact Assessment Note 3 - GM CAP Freight Market Analysis there has been a 59% growth in the Light Commercial Vehicle (LCV) sector since 2000, driven by increase in the number of self-employed tradesmen and the rapid rise in online-shopping. The van sector is more reliant on second and third hand vans, that are in turn more likely to be impacted by the CAZ.
- Technical note 19⁴⁰ summarised that in GM “taxi market is seen to have a high level of noncompliance in line with the proposed CAZ charge. As a result, the majority of drivers within GM are seen to have some level of vulnerability to the proposed charge.”

6.5.2 This leaves small businesses (including microbusinesses and sole traders) vulnerable in terms of business affordability to the CAZ charges.

6.5.3 Data is not available to identify whether these affected business owners and workers have protected characteristics. However, it is known that 96% of taxi drivers are male, their average age is 48 years old and across England 50% are from minority ethnic backgrounds. There is no reason to suppose that the demographics of taxi drivers in GM are significantly different from this and indeed, this data was reflected in the responses to the GM CAP consultation in 2020. Therefore, any change to business affordability is likely to be disproportionately adverse for men, minority ethnic groups and some religious groups.

6.5.4 In GM, the majority of taxi and PHV drivers are self-employed (81%) and own or rent the vehicles they use; therefore, business affordability has a direct effect on their personal financial position. These drivers may also use the taxi vehicle for personal transportation as well as business use, but under licensing law the vehicle can only be driven by the licensed driver⁴¹. In these instances, individuals would be adversely affected from both a personal and a business perspective and therefore be disproportionately affected.

⁴⁰ Technical Note 19 – GM CAP Taxi and PHV Fleet Research
https://assets.ctfassets.net/tlpgbvy1k6h2/6ufoIhNI2PUaNtgsHZUJpq/b8658d8849db7fb54bd2ea5f21733b1b/19_-_GM_CAP_Taxi_and_Private_Hire_Vehicle_Fleet_Research.pdf

⁴¹ AECOM (2019) Impact Assessment Technical Note 19 – GM CAP Taxi and PHV Fleet Research

- 6.5.5 Concern was raised in consultation undertaken in GM with Taxi and PHV drivers on the impact the CAZ would have on the value of their non-compliant vehicles if they were to upgrade. This was also raised as an issue in the Note 4 – GM CAP Coach Market Analysis and the Note 3 – GM CAP Freight Market Analysis⁴², with Note 3 showing that the cost increase experienced by SMEs running second life freight vehicles would be around 50-70% higher than that of larger businesses running first life vehicles in many cases.
- 6.5.6 Where business owners are older, they may struggle to upgrade their vehicle due to difficulties getting credit or because they do not have enough working years ahead of them to justify or repay the investment. The taxi driver population may be a good example of this, and a taxi census undertaken in July 2020 highlighted that 58% of drivers were aged 45 years and over, with 25% were 55 years and over.

Personal affordability

- 6.5.7 Personal affordability is the cost of travel for people to a place of work or education, or to participate in a social or leisure activity. The DIA considers personal affordability in relation to fuel consumption, non-fuel operating costs (tyres, oil, etc), clean air charges and time benefits. However, it does not include consideration of the effects of any price increases in public transport, taxi and PHVs. With the introduction of the CAZ, there is a possibility that compliance costs would be passed onto passengers: this was re-iterated by the GM consultation with taxi and PHV drivers in 2019. In this instance, people who use public transport, taxis or private hire vehicles frequently are most likely to be adversely affected by price increases.
- 6.5.8 Older people and disabled people are more likely to be dependent on this type of transport because they are not able to drive themselves. Alternatively, they may be reliant on taxi and PHV services as they are either physically not able to access public transport or feel vulnerable doing so, and therefore chose to pay for taxis/PHVs. Other groups that may be adversely affected by price increases include school/educational groups and community groups that use PHVs for accessing educational, sporting or social events.

⁴² AECOM (2019) Impact Assessment Technical Note 3 – GM CAP Freight Market Analysis

6.6 Mitigation measures for affordability impacts

Business affordability mitigation

- 6.6.1 The suite of CAP funding and finance measures described in 6.3.2 above will also mitigate the extent of adverse impacts the CAZ will place on business owners – both individuals and operators of small and large fleets. However, there will still, inevitably be a cost involved, which would most likely be felt disproportionately by individuals and small businesses with only few vehicles (and which make up a large portion of the company assets).
- 6.6.2 The mitigation measures may not be effective for older business owners for whom (as mentioned above) the offered finance options would not be considered an appropriate investment given the short time remaining until retirement and the reduced pay-back time.

Personal affordability mitigation

- 6.6.3 The funding measures aimed at mitigating impacts on businesses will also indirectly mitigate the adverse impacts on personal affordability. This is because the likelihood of fare increases is reduced as businesses are more likely to be able to finance the upgrade to compliant vehicles without needing to pass additional costs onto customers or ending business.

6.7 Summary of impacts related to affordability

- 6.7.1 Table 9 identifies which protected characteristic groups are likely to experience disproportionate and/or differential impacts in relation to affordability and what extent of the population the impact applies to before and after mitigation measures.

Table 9 Affordability differential (x) and disproportionate (●) impacts

Impact	Direct/ Indirect	Beneficial / Adverse	Extent of population exposure to impact before mitigation	Extent of population exposure to impact after mitigation	Age (young people)	Age (older people)	Disability	Pregnancy and maternity	Race	Religion / belief	Sex	Gender Reassignment	Sexual Orientation
Increased cost of travel to places of work, education, worship	Direct	Adverse	Medium	Low	●	●	●					x	x

Impact	Direct/ Indirect	Beneficial / Adverse	Extent of population exposure to impact before mitigation	Extent of population exposure to impact after mitigation	Age (young people)	Age (older people)	Disability	Pregnancy and maternity	Race	Religion / belief	Sex	Gender Reassignment	Sexual Orientation
social/leisure activities													
Increased business costs	Direct	Adverse	High	Medium		x			●	●	●		

7 Summary of effects

7.1.1 On completion of the assessment, a summary table identifying where differential or disproportionate effects have been identified for each of the protected characteristics has been completed. Table 10 below provides a visual summary of the assessment outcomes, which demonstrates that the majority of adverse equality effects before CAP measures relate to accessibility and affordability.

7.1.2 Table 10: Summary of potential Equality Impacts from each of the GM CAP policies

Key: - adverse impact, + positive impact, extent of population exposure to impact

Protected characteristic	Assessment topic	Impact (+/-)	Magnitude of CAZ impact [#]	Magnitude of impact <u>post</u> mitigation [#]	Differential/ Disproportionate	Reason for impact
Age	Air quality	+	High	High	Differential	Younger and older people are more sensitive to changes in air quality and will benefit more quickly from improvements in air quality.
	Accessibility	-	Low/Medium	Low	Disproportionate	Younger and older people are more reliant on public transport, taxi and PHVs. They are also more likely to use minibuses and community transport. Any changes in provision would have a disproportionate impact on this group.
	Affordability	-	Medium	Low	Disproportionate	Younger and older people are more reliant on public transport, so any ticket prices increases would be disproportionately experienced by these groups.
Disability ⁴³	Air quality	+	High	High	Differential	People with disabilities (particularly if these relate to respiratory problems) are likely to be more sensitive to changes in air quality and will benefit more quickly from improvements in air quality.
	Accessibility	-	Low/Medium	Low	Disproportionate	Disabled people are more reliant on public transport, taxi and PHVs because they are more likely to not drive. They are also more likely to use community transport and be reliant on parking

⁴³ Disability covers a wide range of physical and mental impairment. Where the impact would differ dependent on disability this is flagged in the narrative.

Protected characteristic	Assessment topic	Impact (+/-)	Magnitude of CAZ impact [#]	Magnitude of impact <u>post</u> mitigation [#]	Differential/ Disproportionate	Reason for impact
						provision. Any changes in provision would have a disproportionate impact on this group
	Affordability	-	Medium	Low	Disproportionate	Disabled people are more reliant on public transport, taxis and PHVs. Increased cost of travel to places of work, education, social/leisure activities if costs related to non-compliance/upgrading to a compliant vehicle are passed onto passengers.
Pregnancy and maternity	Air quality	+	High	High	Differential	Extremely low-dose exposures to pollutants during windows of vulnerability in utero and in early infancy may result in health effects throughout their lifespan ¹³ .
	Accessibility	No equality impact				
	Affordability	No equality impact				
Race ⁴⁴	Air quality	+	High	High	Disproportionate	People from ethnic minority backgrounds are more likely to live in areas of GM where air quality is currently poorest. They will therefore disproportionately benefit from improvements in air quality.

⁴⁴ Race covers all races identified within the ONS dataset. Where the impact would differ for different races, this is identified in the narrative.

Protected characteristic	Assessment topic	Impact (+/-)	Magnitude of CAZ impact [#]	Magnitude of impact <u>post</u> mitigation [#]	Differential/ Disproportionate	Reason for impact
	Accessibility	-	Medium	Low	Disproportionate	People from ethnic minority backgrounds are more reliant on public transport therefore changes in service would affect them disproportionately.
	Affordability	-	High	Low	Disproportionate	People from ethnic minority backgrounds are more reliant on public transport therefore increased costs would affect them disproportionately. A high proportion of taxi drivers are from ethnic minority backgrounds. Any increases in business costs are therefore likely to be experienced disproportionately by this group.
Religion / Belief ⁴⁵	Air quality	+	High	High	Disproportionate	People from ethnic minority backgrounds are more likely to live in areas of GM where air quality is currently poorest. They will therefore disproportionately benefit from improvements in air quality.
	Accessibility	No equality impact				
	Affordability	-	Medium	Low	Disproportionate	A high proportion of taxi drivers are from Muslim backgrounds in particular. Any increases in business costs are therefore likely to be experienced disproportionately by this group.

⁴⁵ Religion / belief covers all religions identified in the ONS data. Where an impact would differ for different religious groups, this has been drawn out in the narrative.

Protected characteristic	Assessment topic	Impact (+/-)	Magnitude of CAZ impact [#]	Magnitude of impact <u>post</u> mitigation [#]	Differential/ Disproportionate	Reason for impact
Sex	Air quality	No equality impact				
	Accessibility	No equality impact				
	Affordability	-	High / Medium	Medium	Disproportionate	Taxi drivers, PHV drivers and bus drivers are over 90% more likely to be male than female. Any business costs are therefore likely to be disproportionately experienced by men.
Gender Reassignment	Air quality	No equality impact				
	Accessibility	-	Medium	Low	Disproportionate	There is anecdotal evidence to suggest that transgender individuals are more likely to access taxi and PHV services in order to access the night-time economy, particularly in the city centre.
	Affordability	No equality impact				
Sexual Orientation	Air quality	No equality impact				
	Accessibility	-	Medium	Low	Disproportionate	There is anecdotal evidence to suggest that the LGBTQ community is more likely to access taxi and PHV services in order

Protected characteristic	Assessment topic	Impact (+/-)	Magnitude of CAZ impact [#]	Magnitude of impact <u>post</u> mitigation [#]	Differential/ Disproportionate	Reason for impact
						to access services safely, particularly after dark and to access the night-time economy in the city centre.
	Affordability	No equality impact				

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7.1.3 Following implementation of CAP measures, the magnitude of adverse impacts is expected to reduce, as illustrated in the summary Table 10.

Table 10: Residual potential negative impacts by characteristic

Degree of adverse impact with implementation of mitigating measures	Affordability	Accessibility
Medium adverse impact	Sex (male drivers)	-
Low adverse impact	Race Religion Disability Age (young and older people)	Race Disability Age (young and older people) Gender Reassignment Sexual Orientation

7.1.4 The next steps to continue to focus on and monitor these adverse impacts are highlighted in section 9.

8 Summary of Local Authority Assessments

8.1 Context

- 8.1.1 Each of the 10 GM Local Authorities has completed an assessment of equality impacts for their district. These are included in Appendix E – N (in alphabetical order) with each LA utilising the same proforma. This approach aimed to identify any differences between the LA areas and the details provided at a GM level, highlighting any particular outliers in terms of number of people with protected characteristics, or wards/areas with LAs which have particularly high numbers of people with protected characteristics. Overall, the assessments of the individual local authorities in respect of protected characteristics are in alignment with the GM-wide assessment.
- 8.1.2 Socioeconomic status is not included as a protected characteristic in the Equality Act, 2010 and has not been considered within the GM EqIA in order to keep it aligned with current TfGM policy and the Equality Act. However, people who have low socioeconomic status or live within areas of deprivation are often more likely to be sensitive to changes in the physical and financial environment around them. As a result, many LAs include consideration of socioeconomic status within their EqIA processes and this is reflected in the assessments that have been carried out. In addition, some LAs include other characteristics within their list of protected characteristics such as carers and military veterans (See Section 3.2 for full details).
- 8.1.3 Any noteworthy differences between the LA baseline data and the EqIA outcomes and those in the GM assessment are drawn out in section 8.1 – 8.10 below. These highlights should be considered alongside the corresponding local authority appendices. **Where outcomes for a protected characteristic are not mentioned under each LA, outcomes were the same as per the GM assessment.**

8.2 Bolton

- 8.2.1 Bolton's report highlights the new and emerging communities that have settled in the borough through economic migration or through Britain's asylum and refugee arrangements. In addition, the higher proportion generally of minority ethnic groups, particularly Asian is identified. No other differences were identified between Bolton and GM baseline data in relation to protected characteristics.
- 8.2.2 With regards to EqIA outcomes, differences to the GM EqIA are highlighted below:

	Assessment topic	Impact (+/-)	GM impact magnitude	Bolton impact magnitude	Impact type*	LA Justification
Disability	Accessibility	-	Low	Medium	●	Bolton has a slightly higher proportion of disabled people than GM
	Affordability	-	Low	Medium	●	Bolton has a slightly higher proportion of disabled people than GM
Race	Accessibility	-	Low	Medium	●	Higher proportion of minority ethnic groups, particularly Asian
	Affordability	-	Low	Medium	●	Higher proportion of minority ethnic groups, particularly Asian
Religion/ Belief	Accessibility	-	No equality impact	Medium	●	Bolton has a higher proportion of minority ethnic groups, in particular Asian communities who are more likely to live in households without access to a car. Any changes in service availability would therefore affect this group.
	Affordability	-	Low	Medium	●	Bolton has a very diverse community with a significant number of the population being Muslim and Hindu. More people are therefore likely to be affected by changes in affordability.
Socio-economic	Air quality	+	Not assessed for GM	High	●	Many of Bolton's Air Quality Management Areas are located in the borough's more deprived areas. ⁴⁶ Therefore any improvements in air quality will affect more people with this characteristic.
	Accessibility	-	Not assessed for GM	Medium	●	People in households with lower incomes are more likely to be reliant on public transport. Any changes in service availability would therefore affect this group.
	Affordability	-	Not assessed for GM	Medium	●	People in households with lower incomes are more likely to be reliant on public transport. Any changes in fare costs would therefore affect this group.

⁴⁶ GMCA (2021). *Mapping GM*. Available at: [GM Open Data Infrastructure Map | MappingGM](#). (Accessed 15th April 2021).

*differential (x) or disproportionate (•)

8.3 Bury

8.3.1 One specific difference was identified between Bury and GM for baseline data related to protected characteristics. This relates to religion where a higher than GM average of people with a Jewish faith live in Bury.

8.3.2 With regards to EqIA outcomes, differences to the GM EqIA are highlighted below:

	Assessment topic	Impact (+/-)	GM impact magnitude	Bury impact magnitude	Impact type*	LA Justification
Socio-economic	Air quality	+	Not assessed for GM	High	•	There are areas of higher levels of deprivation within the borough than others. These areas are therefore likely to benefit more.
	Accessibility	-	Not assessed for GM	Low	•	Socio-economically vulnerable people are more reliant on public transport. Any reduction in services would therefore disproportionately affect accessibility for this group of people, particularly in Bury East where there are high levels of deprivation.
	Affordability	-	Not assessed for GM	Medium	•	Socio-economically vulnerable people are more reliant on public transport. Increase in fare cost would therefore disproportionately affect affordability for this group of people, particularly in Bury East where there are high levels of deprivation.

*differential (x) or disproportionate (•)

8.4 Manchester

- 8.4.1 No differences are identified between the assessment outcomes of the GM and Manchester EqlAs. However, Manchester City Council EqlA does identify a need to consider digital access (to information and funding options) in recognition that digital access is sometime limited for young people living in poverty and older people.

8.5 Oldham

	Assessment topic	Impact (+/-)	GM impact magnitude	Oldham impact magnitude	Impact type*	LA Justification
Race	Affordability	-	Low	Medium	●	Oldham has a larger percentage of minority ethnic residents than the Greater Manchester average due to their large Bangladeshi and Pakistani communities, a high number of which work in the taxi trade, therefore anything that effects affordability in this sector may have a higher disproportionate effect in Oldham than in Greater Manchester.
Religion	Affordability	-	Low	Medium	●	Oldham has a larger percentage of Muslims than the Greater Manchester average due to its large Bangladeshi and Pakistani communities, a high number of which work in the taxi trade, therefore anything that effects affordability in this sector may have a higher disproportionate effect in Oldham than in Greater Manchester.

*differential (x) or disproportionate (●)

8.6 Rochdale

	Assessment topic	Impact (+/-)	GM impact magnitude	Rochdale impact magnitude	Impact type*	LA Justification
Disability	Accessibility	-	Low/medium	High	●	<p>Rochdale has significantly higher ratios of deprived residents, blue badge holders, disability benefit claimants, and people self-reporting that they have a disability than the GM average.</p> <p>Relative to the GM boroughs, Rochdale is:</p> <ul style="list-style-type: none"> - 4th lowest for overall deprivation - Highest for disability benefit claimants - Joint second highest for blue badge holders <p>Therefore, the accessibility of public transport, PHV or Hackney vehicles will be significantly higher in Rochdale compared to GM.</p>
	Affordability	-	Medium	High	●	<p>Rochdale has higher ratios of deprived residents, blue badge holders, disability benefit claimants, and people self-reporting that they have a disability than the GM average.</p> <p>Relative to the GM boroughs, Rochdale is:</p> <ul style="list-style-type: none"> - 4th lowest for overall deprivation - Highest for disability benefit claimants - Joint second highest for blue badge holders <p>Therefore, the proportion of people that may be adversely affected by changes to the affordability of public transport, PHV or Hackney vehicles will be higher in Rochdale compared to GM.</p>
Carers	Accessibility / Affordability	-	Not assessed for GM	Low/Medium	●	<p>Due to the generally older age profile and poorer health of carers, it is likely that they will be affected by the GM Clean Air Plan in a similar way to people with disabilities – being more reliant on community transport, public transport, taxi and PHVs because they are more likely to not drive. Changes in provision could have an adverse impact on this group in terms of affordability and accessibility to services, work and social activities.</p>

	Assessment topic	Impact (+/-)	GM impact magnitude	Rochdale impact magnitude	Impact type*	LA Justification
Socio-economic status	Accessibility / Affordability	-	Not assessed for GM	Medium / High	●	<p>People living in deprivation, on low incomes and in receipt of benefits are more likely to be disproportionately impacted by the implementation of the GM Clean Air Zone:</p> <ul style="list-style-type: none"> - due to the potential for increased costs for bus transport being passed onto customers via rises in passenger fares (as they are more likely to be reliant on public transport) - due to an increase in business costs (particularly for PHV and Hackney drivers, and SME's / sole traders operating LGVs) due to the implementation of charges

*differential (x) or disproportionate (●)

8.7 Salford

8.7.1 No differences are identified between the assessment outcomes of the GM and Salford EqIAs. However, the Salford EqIA does note that Salford's ethnic minority groups differ from those in GM, with a higher Yemeni Arab population and smaller groups of Pakistani and Bangladeshi heritage / British Pakistani and British Bangladeshi. However, the taxi workforce includes a high proportion of Pakistani and Bangladeshi and Yemeni individuals, principally men.

8.7.2 Salford has a higher than national average of Jewish people and also Gypsies and Irish Travellers who disproportionately depend on microbusinesses with a vehicle. Members of the traveller community in particular are often digitally excluded and may not engage with the support to access the funds without specific outreach.

8.8 Stockport

8.8.1 No differences were identified between Stockport and GM for baseline data in relation to protected characteristics. Stockport Council does consider socio-economic status within its EqIA process, and the potential impact of GM CAP on Stockport's more socio-economically deprived communities is described in the Stockport's appendix.

8.8.2 No other differences were identified in EqIA outcomes.

8.9 Tameside

	Assessment topic	Impact (+/-)	GM impact magnitude	Tameside impact magnitude	Impact type*	LA Justification
Carers	Accessibility	-	Not assessed for GM	Low	●	Impact on carers is closely aligned to the impact on people with disabilities. Carers are more likely to rely on public transport in their role as a Carer. Impact in line with GM assessment for disabled residents.
	Affordability	-	Not assessed for GM	Low	●	Impact on carers is closely aligned to the impact on people with disabilities. Impact in line with GM assessment for disabled residents.

*differential (x) or disproportionate (●)

8.10 Trafford

8.10.1 No specific differences were identified between Trafford and GM for baseline data related to protected characteristics. With regards to EqIA outcomes, differences to the GM EqIA are highlighted below:

	Assessment topic	Impact (+/-)	GM impact magnitude	Trafford impact magnitude	Impact type*	LA Justification
Gender reassignment	Accessibility	-	Medium	Low	●	Trafford do not have data to assign magnitude of impact

*differential (x) or disproportionate (●)

8.11 Wigan

	Assessment topic	Impact (+/-)	GM impact magnitude	Wigan impact magnitude	Impact type*	LA Justification
Carers	Air quality	No equality impact				
	Accessibility	-	Not assessed for GM	Low	●	Carers are more likely to be accompanying a disabled person and rely on taxis or PHVs. Any decrease in volume of service due to the increased costs of the CAZ would disproportionately affect this group.
	Affordability	-	Not assessed for GM	Low	●	Carers may be more likely to be in lower income roles or be receiving benefits, due to their caring commitments, and therefore may be more reliant on taxis and public transport so they may be disproportionately affected by any increases in the cost of taxis/PHVs and public transport.
Armed forces	Air quality	+	Not assessed for GM	Medium	●	The highest percentages of veterans are over 65 years of age and are male. A quarter of all aged over 75 are classed as veterans. This percentage of the population may be more likely to have a disability or experience ill health, therefore any benefits to air quality will positively impact this group.
	Accessibility	-	Not assessed for GM	Low	●	According to conclusions drawn from the 2011 census, over half of all veterans in Wigan Borough are over 65 and are entitled to free public transport. Any impacts in services would disproportionately affect this group.
	Affordability	-	Not assessed for GM	Low	●	Due to the characteristics of this group, veterans are more likely to be elderly or experience disability and utilise PHVs/Taxis as a means of transport. Any increase in cost due to the cost of compliance with the CAZ being passed on, would disproportionately negatively impact veterans

Socio-economic	Air quality	+	Not assessed for GM	High	●	Those persons who are from lower socioeconomic backgrounds are more likely to live in areas with poor air quality and are therefore disproportionately affected by poor air quality. Any perceived improvements in air quality will result in improved health outcomes and will have beneficial differential impact on this group.
	Accessibility	-	Not assessed for GM	Low	●	Persons from a lower socioeconomic background are more likely to rely on public transport and taxis/PHVs. Any decrease in service would be likely to adversely impact this group.
	Affordability	-	Not assessed for GM	Medium	●	Any price rises from public transport or PHV/Taxi compliance that increase fares will differentially impact those persons from lower socioeconomic backgrounds.

*differential (x) or disproportionate (●)

9 Next steps

9.1.1 The following actions have been put in place to ensure that equality impacts continue to be considered and monitored during the 'prepare to operate' and operational stages of the GM CAP.

9.2 Actions to further mitigate residual negative equality impacts

9.2.1 There is already a significant package of measures within the GM CAP Policy to mitigate the potential unintended impacts of the charging CAZ, strengthened in response to the consultation feedback. Ensuring an understanding of and accessibility to these measures by those with protected characteristics is key to take up and to mitigating equality impacts.

Access to funds and vehicle finance

9.2.2 The funds and vehicle finance packages play a crucial role in mitigating the affordability and accessibility impacts highlighted in this assessment. The Vehicle Finance and Funds projects continue to develop their approach to the accessibility of the offer. It is important that the following continue to be considered during the Prepare to Operate phase:

- **Digital exclusion:** Digital channels are to be the principle routes to access information and applications to the Funds and Vehicle Finance packages. The EqIA has highlighted that some protected characteristic groups impacted by the CAZ, such as minority ethnic and faith groups are more likely to live in more deprived neighbourhoods and the assessment also highlighted that older drivers could be impacted disproportionately. In both cases, digital exclusion due to lack of suitable devices or connectivity could be a barrier to accessing the funds, with alternative routes or more support made available to support those that need it.
- **Language and communication barriers:** Some of the impacted groups, such as minority ethnic and faith groups and also those with some disabilities may require additional support to access the information and application processes successfully. This support could take the form of translation of materials and / or more accessible formats of documents. The Vehicle Finance and Funds project teams are already considering these requirements. A review of the final design against the EqIA will be important.
- **Channels of communication:** Some of the protected characteristic groups impacted by the CAZ, particularly ethnic minority and faith groups may be more likely to trust local and informal, peer-to-peer channels of communication. It is important that these local networks are utilised as much as possible to encourage consideration and take-up of the available, mitigating measures.

Monitoring of potential equality impacts at GM level

- 9.2.3 There is a Monitoring and Evaluation Plan which will form an annex to the FBC for the GM CAP. Responsibility for monitoring the impacts on protected characteristic groups highlighted in this assessment, will sit within the Monitoring and Evaluation (M & E) Plan. An initial review of the Logic Map within the M & E Plan has been undertaken to assess how the outcome monitoring in the plan will help to monitor the air quality, accessibility and affordability indicators in this assessment. This is an ongoing piece of work that will develop further during the Prepare to Operate phase but further monitoring systems, such as specific focus groups may need to be built into the plan to enable the monitoring of outcomes at protected characteristics group level.

- 9.2.4 Given the removal of the Hardship Fund from the package of measures and the inclusion of socio-economic deprivation / low income as a characteristic within most of the ten local authority equality assessments, it will be particularly important to monitor the impact of the CAZ on economically vulnerable individuals and businesses.
- 9.2.5 The following actions have been discussed with the GM CAP EqIA Local Authority working group to inform the monitoring of impacts on protected characteristics during the operational phase. They are subject to agreement with the CAP programme and local authorities.
- **Local authority group to input into the Monitoring and Evaluation Plan:** In order to share any insights from the M & E Plan in terms of impacts on protected characteristics, and in order for local authorities to be able to feed in local intelligence or issues into the process, it is recommended that the Local Authority EqIA Working Group is continued, meeting at least every six months with the M&E team.
 - **Review of the EqIA in one year:** There are two main drivers to support the need for a review of this assessment in one year:
 - a) It has been highlighted that certain protected characteristics are more vulnerable and less resilient to the negative economic impacts of the CAZ as a result of the COVID-19 pandemic. A review of the EqIA should be undertaken when the scale and speed of recovery during 2021 can be taken into consideration.
 - b) The census data used to inform this EqIA and the ten LA appendices is from 2011, with data from the 2021 census due for release in 2022. A review of changes in the demographic data by local authority is recommended to ensure that any notable changes in protected characteristics are considered.
- 9.2.6 The ten local authority appendices provide further detail on any specific monitoring and review processes that will be put in place to monitor the equality impacts of the GM CAP at a local level.

Appendix A: Greater Manchester Community Baseline

1 Baseline data

1.1 Introduction

- 1.1.1 The baseline presented covers the Greater Manchester area which includes ten Metropolitan Districts. Data presented considers a range of social and economic aspects that can be used to make assumptions about the prevalence of protected characteristic groups throughout the study area who may be affected by the GM CAP. Current and, where possible, predicted future baseline is presented.
- 1.1.2 Baseline data has been collated across a range of sources to provide an overview of the characteristics of the equality groups. These include:
- ONS, 2011 Census
 - ONS, 2018 population projections
 - Working and Pensions Longitudinal Study, 2016
 - Policy review of local strategies
 - Department for Transport, 2016
 - These sources have been supplemented by 'grey' literature and desk-based research, to reflect equalities indicators that are not recorded in national data collection.
- 1.1.3 Specifically, the following is covered:
- Population and demographics
 - Housing
 - Economy
 - Employment
 - Health
 - Social infrastructure
 - Deprivation

1.2 Current population and trends

- 1.2.1 The population of GM increased by 11.2% (284,300) between 2003 and 2018; by comparison the North West's population increased by 7.3% and the population of England increased by 12.3%. Table 2 shows the population changes for GM and each district between 2003 and 2018; Manchester is the largest district and has experienced the highest level of population increase (26.6%).

Table 2: Population Change 2003 – 2018 (Source: ONS 2018 Population Estimates⁴⁷)

	Population		Population Change	
	2003	2018	Number	Percentage
England	49,863,300	55,977,200	6,113,900	12.3%
North West	6,798,900	7,292,100	493,200	7.3%
Greater Manchester	2,528,300	2,812,600	284,300	11.2%
Bolton	262,700	284,400	21,700	8.3%
Bury	181,500	190,100	8,600	4.7%
Manchester	432,400	547,600	115,200	26.6%
Oldham	217,300	235,600	18,300	8.4%
Rochdale	206,300	220,000	13,700	6.6%
Salford	217,300	254,400	37,100	17.1%
Stockport	283,500	291,800	8,300	2.9%
Tameside	213,200	225,200	12,000	5.6%
Trafford	211,300	236,400	25,100	11.9%
Wigan	302,400	326,100	23,700	7.8%

1.1.4 Population forecasts from 2018 to 2038 (20 years) are shown in **Table 3**. It is estimated that the population for England will increase to over 61 million by 2038 from just below 56 million in 2018⁴⁸. The population of the North West is due to rise to 7.6 million from 7.3 million in 2018. The population of GM is forecast to increase by approximately 226,000 to over 3 million over this period. The district with the highest population change is Manchester (13.9%) followed by Salford (13.3%) and Trafford (10.6%). The local authority with the lowest population change is Wigan (2.4%) which is below the national and regional average.

Table 3: Population Forecasts 2018 – 2038 (Source: ONS Subnational Population Projections, 2016-based projections⁴⁸)

	Population		Population Change	
	2018	2038	Number	Percentage
England	55,977,200	61,326,378	5,349,178	9.6
North West	7,292,100	7,653,197	361,097	5.0

⁴⁷ Nomis (2019). Population estimates – local authority based by five-year age band. Available at: <https://www.nomisweb.co.uk/reports/lmp/qor/2013265922/report.aspx>

⁴⁸ ONS (2019) Subnational Population Projections, 2016-based projections. Available at: <https://www.nomisweb.co.uk/query/construct/submit.asp?menuopt=201&subcomp=>

	Population		Population Change	
	2018	2038	Number	Percentage
Greater Manchester	2,812,600	3,038,511	225,911	8.0
Bolton	284,400	299,808	15,408	5.4
Bury	190,100	198,575	8,475	4.5
Manchester	547,600	623,806	76,206	13.9
Oldham	235,600	252,905	17,305	7.3
Rochdale	220,000	228,980	8,980	4.1
Salford	254,400	288,221	33,821	13.3
Stockport	291,800	316,306	24,506	8.4
Tameside	225,200	234,678	9,478	4.2
Trafford	236,400	261,386	24,986	10.6
Wigan	326,100	333,846	7,746	2.4

1.3 Sex

1.3.1 The population of the districts within GM is split more or less evenly between male and females, with slightly more females in all districts, except for Manchester and Salford (see Table 4). Across GM, the split between the sexes is reflective of the statistic across the whole of England and the North West.

Table 4 Resident population distribution between male and female, 2018⁴⁹

	Population (%)	
	Male	Female
England	49.43	50.57
North West	49.35	50.65
Greater Manchester	49.68	50.32
Bolton	49.61	50.39
Bury	49.03	50.97
Manchester	50.68	49.34
Oldham	49.28	50.72
Rochdale	49.36	50.64
Salford	50.47	49.53
Stockport	49.01	50.99

⁴⁹ ONS Area profiles, 2018. Available at: <https://www.nomisweb.co.uk/home/profiles.asp>

	Population (%)	
	Male	Female
Tameside	49.16	50.84
Trafford	48.90	51.10
Wigan	49.86	50.14

1.4 Households

1.4.1 Table 5 shows the numbers of households across GM, with a series of larger scale geographic comparator areas also shown. There has been an increase in households from 2004 to 2014⁵⁰ across GM of 6.4% compared to 9% nationally.

1.4.2 Manchester experienced the highest level of household growth (11.7%) compared to other GM local authority areas, followed by Salford (10.3%) and Wigan (7%). Stockport and Oldham experienced the lowest amount of household growth (2.2%) in comparison with other local authority areas.

Table 5: Change in quantity of households across a number of comparator areas (Source: ONS 2014 Live tables on household projections 2014⁵⁰)

	Households		Household Change	
	2004	2014	Number	Percentage
England	20,876,084	22,746,487	1,870,403	9.0
Greater Manchester	1,069,667	1,138,000	68,333	6.4
Bolton	110,311	117,000	6,689	6.1
Bury	75,367	79,000	3,633	4.8
Manchester	186,272	208,000	21,728	11.7
Oldham	88,021	90,000	1,979	2.2
Rochdale	84,547	88,000	3,453	4.1
Salford	95,173	105,000	9,827	10.3
Stockport	120,336	123,000	2,664	2.2
Tameside	90,864	96,000	5,136	5.7
Trafford	90,743	95,000	4,257	4.7
Wigan	128,033	137,000	8,967	7.0

⁵⁰ DCLG (2016) Live tables on household projections 2014. Available at: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections>

1.4.3 Twenty year projections for household change show an increase in households at each level⁵⁰ in Table 6; the district with the highest increase in households from 2014 to 2034 is Salford (27.5%). Manchester also has a high percentage increase in households (26.6%), as does Trafford (23.8%). The district with the lowest percentage of household change is Rochdale (11.5%). There is predicted to be an increase of 207,311 households by 2034 which equates to 10,365 households per annum.

Table 6: Household Forecast 2014 – 2034 (Source: ONS Live tables on household projections 2014⁵⁰)

	Households		Household Change	
	2014	2034	Number	Percentage
England	22,746,487	27,088,386	4,341,899	19.1
Greater Manchester	1,138,000	1,345,311	207,311	18.2
Bolton	117,000	132,418	15,418	13.2
Bury	79,000	89,744	10,744	13.6
Manchester	208,000	263,324	55,324	26.6
Oldham	90,000	104,648	14,648	16.3
Rochdale	88,000	98,115	10,115	11.5
Salford	105,000	133,851	28,851	27.5
Stockport	123,000	141,668	18,668	15.2
Tameside	96,000	107,930	11,930	12.4
Trafford	95,000	117,567	22,567	23.8
Wigan	137,000	156,046	19,046	13.9

1.5 Demographics

Age

1.5.1 Figure 1 shows the relative proportions of different age groups in 2018, from a national to a local level. In comparison with the average for England, GM has a similar proportion of the population aged 16-64 with approximately 63% of the population accounting within this age group⁵¹.

⁵¹ ONS (2018) Population Estimates for England and Wales Mid-2018. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

1.5.2 In comparison to other local authorities in the conurbation, Manchester has the highest percentage of residents aged 16-64 (70.4%) and a lower percentage of the population aged 65 and over (9.3%). Conversely, Stockport has the highest percentage of residents aged 65 and over (19.9%) and the lowest proportion of residents aged 16-64 (60.6%).

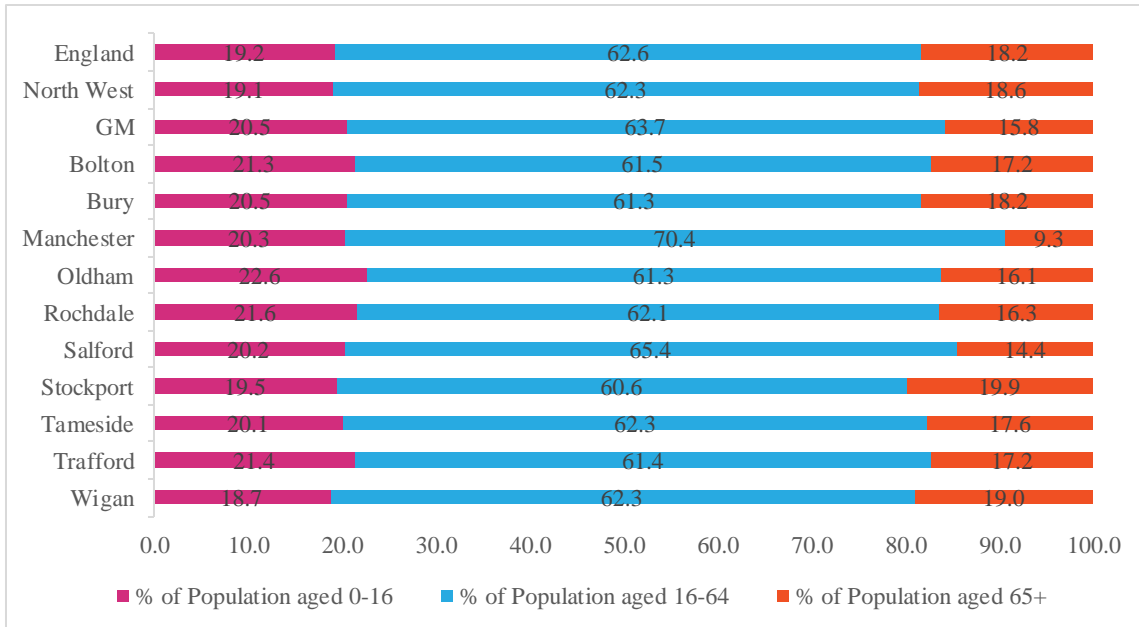
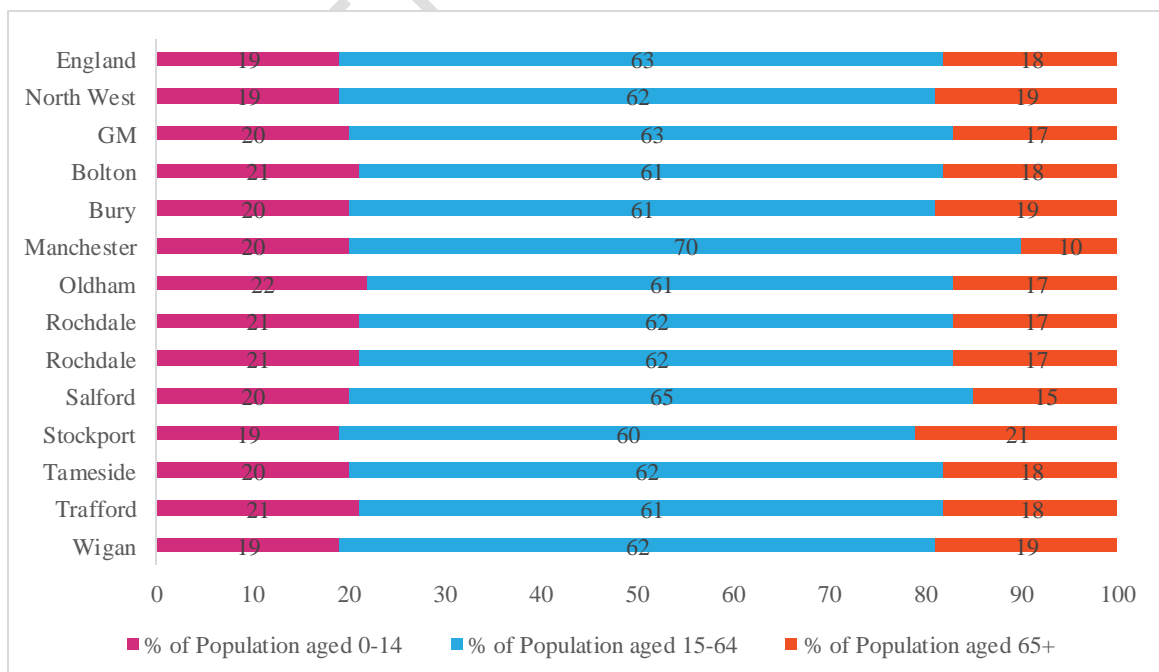


Figure 1: A snap-shot of age demographics across GM (Source: ONS 2018 Population Estimates for England and Wales Mid-2018⁵¹)

1.5.3

1.5.4 Figure 2 shows the demographic projections to 2041. In terms of future



trends, the age categories appear to be very similar to existing projections with no marked change in age percentages.

Figure 2: Demographic Projections 2041 (Source: ONS 2016 Subnational Population Projections, 2016-based projections⁵¹)

1.5.5 Table 7 sets out the life expectancy within each district between 2015-17, demonstrating that female life expectancy is consistently above male life expectancy.

1.5.6 The authorities with the highest life expectancy at birth are Trafford (83.7 years for females; 79.8 for males) and Stockport (83.3 years for females; 79.8 for males), which are above the national, regional and sub-regional averages. The local authorities with the lowest life expectancy are Manchester (79.5 years for females; 75.7 years for males) and Rochdale (80.6 years for females; 77.2 for males)

Table 7: Male and Female life expectancy at birth and at age 65 (2015-17) ⁵²

	Life expectancy at birth 2015-17		Life expectancy at age 65	
	Males	Females	Males	Females
England	79.6	82.9	18.6	21.1
North West	78.2	81.8	18	20.2
Greater Manchester	77.8	81.3	17.6	19.8
Bolton	77.8	81.6	17.9	20.0
Bury	78.5	81.2	17.8	19.7
Manchester	75.7	79.5	16.1	18.7
Oldham	77.2	80.9	17.2	19.6
Rochdale	77.2	80.6	17.5	19.7
Salford	76.8	81.0	17.3	19.3
Stockport	79.8	83.3	19.1	21.2
Tameside	77.5	80.8	17.0	19.3
Trafford	79.8	83.7	18.7	21.5
Wigan	77.8	80.9	17.6	19.4

⁵² ONS (2018) Life expectancy at birth and at age 65 by Local Areas, UK, 2015-2017. Available at <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/lifeexpectancyatbirthandage65bylocalareasuk>

1.6 Disability

1.6.1 Table 8 shows the IMD 2019 ranks for health and disability. The lower the number (out of 151 upper-tier local authorities in England), the more deprived the area. The health and disability domain measures premature death and impairment of quality of life by poor health. Indicators that are used to calculate this domain include:

- years of potential life lost;
- comparative illness and disability ratio; and,
- measures of acute morbidity and proportion of adults under 60 suffering from mood and anxiety disorders.

1.6.2 Manchester has a rank of four which indicates it is amongst the most deprived areas in relation to health and disability compared to other local authorities in England. Trafford is the least deprived in GM with a rank of 88 although this is still relatively deprived in comparison to other local authorities in England.

Table 8: IMD 2019 Health deprivation and disability domain (rank of average rank)

⁵³.

Local Authority	Rank
Trafford	88
Bury	57
Stockport	55
Bolton	36
Wigan	33
Oldham	31
Rochdale	14
Tameside	12
Salford	9
Manchester	4

1.6.3 The 2011 census collected self-reported data on the percentage of people whose day to day activities are limited as a result of disability. Table 9 shows that 9.8% of the resident population with GM are limited a lot by a disability. This is above the England average of 8.3% but a little less than the average across the North West (10.3%).

⁵³ English indices of deprivation 2019, File 11: Upper-tier local authority summaries. Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Table 9 Long-term health problem or disability as a percentage of the resident population (Census, 2011).

	Day-to-day activities limited a lot (%)	Day-to-day activities limited a little (%)
England	8.3	9.3
North West	10.3	10
GM	9.8	9.7
Bolton	10	9.8
Bury	9	9.8
Manchester	9.4	8.3
Oldham	10	9.7
Rochdale	10.7	10.3
Salford	11	9.7
Stockport	8.6	9.8
Tameside	10.6	10.3
Trafford	8	9
Wigan	11	10.5

- 1.6.4 This data is available by age group which can be used to identify the age groups most affected by health conditions and disability; Table 10 sets out this distribution. Within GM (and within each district) the age bracket 45-69 experience the greatest proportion of residents with a disability or long-term health condition (4.09% of total resident population). The national distribution across the age brackets is similar although the proportion of residents with GM is slightly higher in all ages, except for 85+.

Table 10 Long-term health problem or disability for persons whose day to day activities are limited a lot, by age bracket, as a percentage of the resident population (Census, 2011)

	Age bracket					
	0-14	15-24	25-44	45-69	70-84	85+
England	0.2	0.28	1.07	3.37	2.64	1.34
GM	0.31	0.31	1.33	4.09	2.68	1.13
Bolton	0.31	0.32	1.33	4.15	2.77	1.16
Bury	0.29	0.29	1.14	3.63	2.55	1.14
Manchester	0.35	0.36	1.67	4.11	2.12	0.79
Oldham	0.41	0.30	1.37	4.15	2.63	1.15
Rochdale	0.33	0.34	1.56	4.64	2.77	1.05
Salford	0.33	0.34	1.55	4.63	2.93	1.20

	Age bracket					
Stockport	0.28	0.28	0.99	3.16	2.60	1.33
Tameside	0.28	0.32	1.45	4.56	2.85	1.16
Trafford	0.25	0.23	0.92	3.07	2.34	1.22
Wigan	0.25	0.28	1.33	4.79	3.22	1.09

1.7 Benefit claimants

1.7.1 Disability living allowance (DLA) was money that is paid to people who have extra care needs or mobility needs as a result of a disability. This has now been replaced by Personal Independence Payment (PIP) but statistics up to 2018 relate to DLA.

1.7.2 These data are set out in **Table 11** which shows that the proportion of claimants across GM (3.12%) is higher than the England average (2.55%) but slightly below the North West average (3.28%). Of all the districts, Rochdale had the highest proportion of claimants (3.66%) whilst Trafford had the lowest (2.33%).

Table 11 Disability Living Allowance (DLA) claimants (ONS, 2018) ⁵⁴

	Total claimants	% of population within district
England	1,425,330	2.55
North West	239,090	3.28
Greater Manchester	2,770	3.12
Bolton	8,450	2.97
Bury	5,510	2.90
Manchester	15,910	2.91
Oldham	8,000	3.40
Rochdale	8,050	3.66
Salford	9,140	3.59
Stockport	8,410	2.88
Tameside	7,960	3.53
Trafford	5,510	2.33
Wigan	10,910	3.35

⁵⁴ ONS, 2018. Benefit Claimants – disability living allowance. Available at: <https://www.nomisweb.co.uk/query/construct/submit.asp?menuopt=201&subcomp=>

1.8 Blue badge holders

- 1.8.1 Statistics are available on the number of Blue Badge holders, which can be used to indicate the number of disabled residents at a local authority level. The number of valid Blue Badges held by individuals within GM is set out in Table 12. Wigan has the highest proportion (2.1%) whilst Manchester has the lowest proportion (1%).

Table 12 Blue Badge Holder (2017/2018), Department for Transport⁵⁵

	Number of Blue Badges	% of population within district
Bolton	5,142	1.8
Bury	3,713	1.6
Manchester	5,700	1.0
Oldham	3,449	1.5
Rochdale	4,033	1.8
Salford	4,189	1.7
Stockport	4,893	1.7
Tameside	3,457	1.5
Trafford	3,707	1.6
Wigan	6,963	2.1

1.9 Gender reassignment

- 1.9.1 There are multiple definitions of transgender. For the purposes of this report, following the approach taken by the Office for National Statistics, the common umbrella term 'trans' is used to refer to people whose lived identities conflict with societal gender norms. This encompasses a range of identifies ranging from those who cross-dress to those people who identify their own gender differently to that assigned to them at birth. It also includes individuals who identify as androgynous, non-gendered or non-binary. Importantly, it is not limited to people who have undergone gender reassignment surgery.

⁵⁵ Department for Transport, 2018. Blue badge scheme statistics:2018. Available at: <https://www.gov.uk/government/statistics/blue-badge-scheme-statistics-2018>

1.9.2 No data sets are available to allow the identification of the proportion of trans people in the population for the purposes of this EqIA. No major Government or administrative surveys have collected data that includes a question where trans, people can choose to identify themselves. Publicly collected data on trans people is “virtually non-existent”⁵⁶. One source, collected by the Gender Identity Research and Education Society (GIREs) for the Home Office in 2009, identified between 300,000 and 500,000 people in the UK with some degree of gender variance. This represents some 0.4% to 0.8% of the UK population.

1.9.3 There is no evidence on the spatial distribution of trans people around the UK but applying those figures to known population figures across GM suggests there could be somewhere in the region of 11,250 to 22,500 people with some degree of gender variance (out of a total population of 2,812,600). These figures should be regarded as illustrative.

1.10 Marriage and civil partnership

1.10.1 Across GM, for ages 16 and over, a person is more likely to be married (42.6%) than single (defined as having never married or never registered a same-sex civil partnership) (38.4%). However, statistics available do not show what proportion of the resident population who are defined as single are actually in a relationship. Table 13 sets out the marital and civil partnership status of the population across GM and within each of the districts.

Table 13 Marital and civil partnership status, 2011⁵⁷ (% of residents)

	Single (never married or never registered a same-sex civil partnership)	Married	In a registered same-sex civil partnership	Separated (but still legally married or still legally in a same-sex civil partnership)	Divorced or formerly in a same-sex civil partnership which is now legally dissolved	Widowed or surviving partner from a same-sex civil partnership
England	34.6	46.6	0.2	2.7	9.0	6.9
GM	38.4	42.6	0.2	2.9	9.0	6.9
Bolton	33.6	46.5	0.2	2.8	9.6	7.3
Bury	32.9	47.4	0.2	2.9	9.5	7.1
Manchester	54.9	29.4	0.3	3.2	7.1	5.1
Oldham	33.1	46.6	0.1	3.3	9.1	7.8

⁵⁶ Equalities & Human Rights Commission, ‘Trans Inequalities Reviewed’. Available at: <https://www.equalityhumanrights.com/en/trans-inequalities-reviewed/introduction-review>

⁵⁷ ONS Census 2011, KS103EW- Marital and Civil Partnership Status, 2011. Available at: <https://www.nomisweb.co.uk/query/construct/submit.asp?menuopt=201&subcomp=>

Rochdale	35.1	44.2	0.2	3.4	9.7	7.3
Salford	43.4	37.0	0.3	3.1	9.1	7.0
Stockport	32.2	48.3	0.2	2.5	9.2	7.7
Tameside	35.3	43.5	0.2	3.0	10.4	7.6
Trafford	33.2	48.6	0.2	2.4	8.5	7.1
Wigan	32.9	47.4	0.2	2.5	9.9	7.2

1.11 Pregnancy and maternity

1.11.1 Data available from ONS provides details of live births for 2018. This therefore does not capture the total number of pregnancies which may not end in a live birth (either as a result of termination or miscarriage). Whilst not all births will be single, an assumption has been made that they are, in order to obtain a percentage of females within the population who were pregnant during 2018.

Table 14 Live births across Greater Manchester (ONS, 2018) ⁵⁸

	Number of live births	% of female population within defined area
England	625,651	2.21
North West	81,195	2.20
GM	34,776	2.46
Bolton	3,607	2.51
Bury	2,219	2.29
Manchester	7,237	2.68
Oldham	3,187	2.67
Rochdale	2,832	2.54
Salford	3,553	2.82
Stockport	3,302	2.22
Tameside	2,784	2.43
Trafford	2,641	2.19
Wigan	3,414	2.09

⁵⁸ ONS (2018) Live births in England and Wales down to local authority local area. Available at: <https://www.nomisweb.co.uk/query>

1.12 Ethnicity/Race

1.12.1 ONS Census data⁵⁹ show that there is significant variation in ethnic groups across GM's districts (see Table 15). The majority of the GM population is white, although compared to England and Wales as a whole this percentage is slightly lower. The proportion of people classified as Asian in GM is higher than the national average, whilst there are fewer people classified as Black than in England and Wales as a whole.

Table 15: Ethnic groups across GM (Source: ONS 2011⁵⁹)

	England and Wales	Greater Manchester	Bolton	Bury	Manchester	Oldham	Rochdale	Salford	Stockport	Tameside	Trafford	Wigan
White	85.9%	83.7%	81.8%	89.1%	66.5%	77.5%	81.6%	90.1%	92.1%	90.9%	85.5%	97.2%
Gypsy/ Traveller	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Mixed / Multiple Ethnic Groups	2.2%	2.3%	1.8%	1.8%	4.6%	1.8%	1.7%	2.0%	1.8%	1.4%	2.7%	0.9%
Asian / Asian British\ Indian	2.5%	2.0%	7.8%	0.7%	2.3%	0.7%	0.5%	1.1%	1.0%	1.7%	2.8%	0.3%
Asian / Asian British\ Pakistani	2.0%	4.8%	4.3%	4.9%	8.5%	10.1%	10.5%	0.8%	2.4%	2.2%	3.1%	0.2%
Asian British\ Bangladeshi	0.8%	1.3%	0.2%	0.2%	1.3%	7.3%	2.1%	0.3%	0.2%	2.0%	0.2%	0.0%
Asian / Asian British\ Chinese	0.7%	1.0%	0.5%	0.6%	2.7%	0.3%	0.4%	1.1%	0.6%	0.4%	1.0%	0.3%
Asian / Asian British\ Other Asian	1.5%	1.1%	1.1%	0.9%	2.3%	0.8%	1.4%	0.8%	0.7%	0.3%	0.9%	0.3%
Black / African / Caribbean / Black British	3.3%	2.8%	1.7%	1.0%	8.6%	1.2%	1.3%	2.8%	0.7%	0.8%	2.9%	0.5%
Other ethnic group	1.0%	1.0%	0.7%	0.7%	3.1%	0.2%	0.4%	1.1%	0.6%	0.2%	1.0%	0.2%

⁵⁹ ONS (2011) Census data by local authority: ethnic groups UK. Available at: <http://infuse2011.mimas.ac.uk/>

1.13 Religious belief

1.13.1 ONS Census data⁶⁰ show that there is significant variation in religion and beliefs across GM's districts (see Table 16). The majority of the GM population is Christian, with a slightly higher proportion than England and Wales as a whole. The proportion of Muslim and Jewish People in GM is considerably higher than the national average whilst there are fewer people in GM reporting no belief than the national average.

Table 16: religion or belief across GM (Source: ONS 2011⁶⁰)

	England and Wales	Greater Manchester	Bolton	Bury	Manchester	Oldham	Rochdale	Salford	Stockport	Tameside	Trafford	Wigan
Christian	59.3%	61.8%	62.7%	62.7%	48.7%	59.7%	60.6%	64.2%	63.2%	64.0%	63.4%	77.8%
Buddhist	0.4%	0.4%	0.2%	0.2%	0.8%	0.2%	0.2%	0.4%	0.3%	0.2%	0.3%	0.2%
Hindu	1.5%	0.9%	2.2%	0.4%	1.1%	0.5%	0.3%	0.6%	0.6%	1.5%	1.0%	0.2%
Jewish	0.5%	0.9%	0.1%	5.6%	0.5%	0.0%	0.1%	3.3%	0.5%	0.0%	1.1%	0.0%
Muslim	4.8%	8.7%	11.7%	6.1%	15.8%	17.7%	13.9%	2.6%	3.3%	4.4%	5.7%	0.7%
Sikh	0.8%	0.2%	0.0%	0.2%	0.5%	0.0%	0.0%	0.1%	0.1%	0.0%	0.7%	0.0%
Other religion	0.4%	0.3%	0.3%	0.2%	0.4%	0.2%	0.2%	0.3%	0.3%	0.3%	0.2%	0.2%
No religion	25.1%	20.8%	17.2%	18.6%	25.3%	16.1%	18.9%	22.3%	25.1%	23.6%	21.2%	15.3%
Not stated	7.2%	6.1%	5.7%	6.0%	6.9%	5.6%	5.8%	6.2%	6.5%	5.9%	6.3%	5.5%

1.14 Sexual orientation

1.14.1 Information on sexual orientation is available through the Office of National Statistics. Statistics related to sexual orientation have not been collected for very long and are therefore experimental statistics which means that they are being developed and currently in the testing phase.

1.14.2 Figure 3 shows the proportion of gay, lesbian and bisexual residents, across different spatial scales. The North West of England has a lower proportion of LGB residents (1.29%) compared to London (2.6%) and the south West (2.4%).

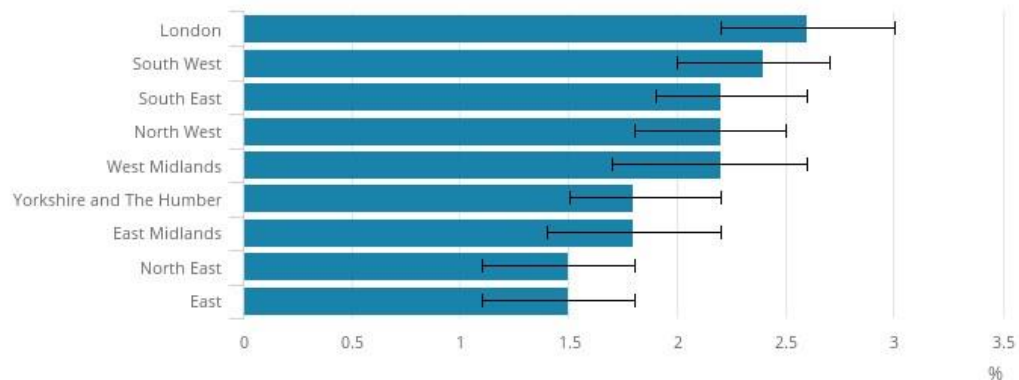
1.14.3 The ONS survey identified that in 2017 a higher proportion of men (1.7%) than women (0.9%) identify as gay or lesbian, whilst a higher proportion of women (0.9%) identify as bisexual than men (0.6%).

⁶⁰ ONS (2011) Census data by local authority: religion or belief. Available at: <http://infuse2011.mimas.ac.uk/>

1.14.4 Younger people are more likely to identify as lesbian, gay or bisexual than any other age group with 4.2% of 16-24 year olds identifying as LGB in 2017 in the UK.

1.14.5 Both these data (by age and gender) are not available at a more local scale, but it is assumed that this is likely to be reflected in all areas.

Figure 3 English Regions by lesbian, gay or bisexual population, 2017 (Source: Office for National Statistics – Annual Population Survey)



1.15 Indices of Multiple Deprivation

1.15.1 The most recent ONS data⁶¹ on local authority income deprivation was published in September 2019 and 317 local authorities were surveyed. Greater Manchester has been ranked against the 38 Local Enterprise Partnerships in England.

1.15.2 The index of multiple deprivation is made up of 7 sub-domains, each given a weighting depending on how much they contribute to deprivation. The factors and weightings are listed below:

⁶¹ ONS (2019) English indices of deprivation 2019 - local authority district summaries. Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

- Income Deprivation (22.5%)
- Employment Deprivation (22.5%)
- Education, Skills and Training Deprivation (13.5%)
- Health Deprivation and Disability (13.5%)
- Crime (9.3%)
- Barriers to Housing and Services (9.3%)
- Living Environment
- Deprivation (9.3%)

1.15.3 Local authority's ranks are calculated by averaging all the LSOA ranks in an authority after they have been population weighted. A rank of 1 indicates the most deprived authority. Using ranks of average ranks means that a highly polarised larger area would not tend to score highly, because extremely deprived and less deprived LSOAs will 'average out'. Conversely, a larger area that is more uniformly deprived will tend to score highly on the measure.

1.15.4 The rank of proportion of LSOAs in the most deprived 10% score is the proportion of the authority's LSOAs that fall in the most deprived 10% of LSOAs nationally. Contrast to the average rank and average score measures, this measure focuses only on the most deprived LSOAs. The rank of extent describes the proportion of the population in the most deprived 30% of all LSOAs. Like the previous measure, this measure accounts for a larger percentage of deprived areas. The rank of income scale is a measure that ranks an authority by the absolute number of people living in income deprivation in that authority.

1.15.5 Manchester ranks as one of the most deprived authorities in England, with the 2nd highest average rank and proportion of people living in the top 30% of deprived areas nationally. Manchester ranks comparatively higher than any other authority in Greater Manchester, with Oldham reaching the second highest rank of 16th for LSOAs in the most deprived 10%.

1.15.6 In contrast, Trafford and Stockport are far lower down the rankings, hovering around mid-table for local authorities nationally. Greater Manchester is in the top 4 most deprived LEPs for all measures analysed.

Table 17 English local authority IMD scores Source: (ONS, 2019)

	Rank of average rank	Rank of average score	Rank of proportion of LSOAs in most deprived 10% nationally	Rank of extent
Greater Manchester LEP rank	3	4	4	4
Bolton	47	34	31	26
Bury	110	95	82	85
Manchester	2	6	5	2
Oldham	29	19	16	18
Rochdale	17	15	20	19
Salford	20	18	19	21
Stockport	154	130	90	117
Tameside	23	28	40	28
Trafford	209	191	125	150
Wigan	97	75	53	54

1.16 Income deprivation

1.16.1 Within Greater Manchester, Manchester exhibits the highest levels of deprivation according to its national rank, ranking in the top 10 nationally for Rank of Average Score, Proportion of LSOA's in the most deprived 10% and Income Scale. Rochdale ranks 2nd highest in Greater Manchester suggesting that Oldham experiences other forms of deprivation more prominently than income deprivation. Trafford experiences the least income deprivation.

1.16.2 On average, Greater Manchester has ranked only marginally better in income deprivation when compared to other LEPs, however it still remains in the top 5 for all measures analysed, with the second highest number of people living in income depravity.

Table 18: English local authority income deprivation Source: (ONS, 2019)

	Income - Rank of average rank	Income – Rank of Average Score	Income – Rank of proportion of LSOAs in most deprived 10% nationally	Rank of Income Scale (ranked by the number of people who are income deprived)
Greater Manchester LEP rank	4	4	5	2
Bolton	44	29	20	24
Bury	97	83	82	87
Manchester	12	8	6	2
Oldham	33	21	23	39
Rochdale	22	15	13	44
Salford	32	24	25	37
Stockport	155	135	95	62
Tameside	34	37	47	52
Trafford	191	166	107	98
Wigan	98	77	62	36

Appendix B: Health research data on Air Quality

- 1.1 Outdoor air pollution is defined as a mixture of gases and particles that have been emitted into the atmosphere by man-made processes⁶² and has an adverse effect on human health. The World Health Organisation (WHO) recognises outdoor air pollution as a major environmental health problem for all countries including high-income countries⁶³.
- 1.2 The primary air pollutants are particulate matter (PM), nitrogen dioxide (NO₂) and Sulphur Dioxide (SO₂). PM^{2.5} has the strongest epidemiological link to health outcomes⁶⁴ and it is estimated that by 2035, the health and social care costs of air pollution could reach up to £5.3 billion⁶⁵. This includes diseases that have a strong association with air pollution such as child asthma, coronary heart disease, lung cancer and stroke.
- 1.3 The WHO estimates that in 2016 some 58% of outdoor air pollution-related premature deaths were due to ischaemic heart disease and strokes, while 18% of deaths were due to chronic obstructive pulmonary disease and acute lower respiratory infections respectively, and 6% of deaths were due to lung cancer. In total, the WHO note that 4.2 million premature deaths per annum occur world-wide due to outdoor air pollution.
- 1.4 In the UK, the overall population burden of air pollution is estimated to be equivalent to nearly 23,500 deaths per year⁶⁶. Evidence from the WHO, cited in a briefing to Directors of Public Health, identified that there is no “*evidence of a safe level of exposure to PM or a threshold below which no adverse effects occur*”⁶⁷. Equally, NO₂ was associated with “*adverse health effects at concentrations that were at or below the current EU limit values*”.
- 1.5 An evidence and policy review by the UK Health Alliance on Climate Change (2018) notes that transport is a major cause of air pollution. In 2016, emissions from road transport accounted for 12% of PM₁₀ and PM_{2.5} in the UK and were the third largest source after industrial processes. Furthermore, road transport is responsible for 80% of NO₂ levels near roadsides.

⁶² Air Quality England. <http://www.airqualityengland.co.uk/air-pollution>

⁶³ WHO Topic Sheet. (2018) Ambient (outdoor) air quality and health. [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

⁶⁴ Public Health England, Public Health Outcomes, <http://www.phoutcomes.info/>

⁶⁵ UK Health Alliance on Climate Change, (2018). Moving Beyond the Air Quality Crisis. Realising the health benefits of acting on air pollution. http://www.ukhealthalliance.org/wp-content/uploads/2018/10/Moving-beyond-the-Air-Quality-Crisis-4WEB-29_10-2018-final-1.pdf

⁶⁶ DEFRA and Public Health England (2017) Air Quality. A briefing for Directors of Public Health. <https://laqm.defra.gov.uk/assets/63091/defraairqualityguide9web.pdf>

⁶⁷ Review of evidence on Health Aspects of Air Pollution – REVIHAAP: final Technical Report, World Health Organization Office for Europe, 2013 <http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/review-of-evidence-on-health-aspects-of-air-pollution-revihaap-project-final-technical-report>

- 1.6 A systematic review undertaken in 2016 by Wang et al observing air pollution control strategies in Europe, noted that a large proportion of the urban population, particularly those living close of heavily trafficked roads or industries were exposed to air pollutants, with concentrations that exceed the European air quality standards for outdoor air quality⁶⁸. Additionally, the review showed mixed but suggestive evidence of the effectiveness of air quality control strategies to improve health outcomes either directly or as a co-benefit (such as reduction in green-house gases).
- 1.7 There is a wealth of evidence showing the association of NO₂ and PM on poor health outcomes. Epidemiological studies have shown that long-term exposure to air pollution (over years or a lifetime) reduces life expectancy, due to cardiovascular and respiratory diseases and lung cancer. Short-term exposure (over hours or days) to increased levels of air pollution can also have a range of health effects, including effects on lung function, asthma, as well as increases in respiratory and cardiovascular hospital admissions, and mortality⁶⁹. Additionally, outdoor air pollution can influence productivity and contribute to social costs such as increasing days off work and school due to restricted health⁷⁰.
- 1.8 Public Health England's guidance 'Health matters: air pollution' outlines that whilst air pollution can affect everyone, some people are more affected because they live in a polluted area, are exposed to higher levels of air pollution in their day-to-day lives or are more susceptible to health problems caused by air pollution. Groups that are reported as being more vulnerable to these affects are older people, children (particularly young children), pregnant women, people living with long-term health conditions or disability and those who are living in high pollution areas and low-income communities. In the same way that these groups of people are more sensitive to high levels of air pollution, they are also likely to benefit more from any improvements in air quality.

⁶⁸ Wang et al (2016) Air Quality Strategies on Public Health and Health Equity in Europe – A systematic Review. International Journal of Environmental Research and Public Health

⁶⁹ Public Health England 2018. Guidance: Health Matters: air pollution. <https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution>

⁷⁰ IOM Working for a Healthier Future. Scotland's Environment (2015) Air Quality, Health, Wellbeing and Behaviour, <https://www.environment.gov.scot/media/1133/iom-seweb-aq-health-behaviour-review.pdf>

Appendix C: Data review of Research and Technical Notes

1 Introduction

- 1.1 This appendix results from a review of six Technical Notes or Research documents generated during the development of the GM CAP measures. The documents have been reviewed for data relevant to impacts on people with protected characteristics, in order to inform the GM CAP Equality Impact Assessment.
- 1.2 The relevant findings and facts are summarised below, under the name of each report. Key findings are referenced within the EqIA itself.

2 AECOM Impact Assessment Technical Note 3 - GM CAP Freight Market Analysis

- 2.1 Relevant evidence gathered from Note 3 - GM CAP Freight Market Analysis includes:
 - 2.1.1 There has been a 59% growth in the Light Commercial Vehicle (LCV) sector since 2000, mainly in the 2.6 to 3.5 tonne market. This demand for larger vans is driven by increase in the number of self-employed tradesmen and the rapid rise in online-shopping.
 - 2.1.2 Second and third life vans play a key role in the UK economy, where they are typically operated by SMEs and sole traders.
 - 2.1.3 Sectors with an active second-hand van market are more directly impacted by the CAZ charge (i.e. construction - 70% second hand, manufacturing - 65% second hand).
 - 2.1.4 The evidence in the note shows that the cost increase experienced by SMEs running second life vehicles would be around 50-70% higher than that of larger businesses running first life vehicles in many cases.

3 AECOM Impact Assessment Technical Note 4 - GM CAP Coach Market Analysis

- 3.1 Relevant evidence gathered from Note 4 - GM CAP Coach Market Analysis includes:
 - 3.1.1 It is anticipated that the CAZ potentially may disrupt the second-hand market for non-compliant vehicles. For example, it is possible there may be an increase in 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 decrease the value of non-compliant coaches, leaving operators at risk of losing value on their assets.

- 3.1.2 In terms of fleet size per operator, 71 operators (69%) have between 1 to 5 coaches, which represents the majority. Breaking down the 1 to 5 fleet size range, the majority of total GM operators have just one coach in their fleet, with a total of 31 (30%). The next most common fleet size by a significant size across GM is two coaches, with a total of 22 (21%). These smallest operators are most likely to run special regular services or occasional services
- 3.1.3 For operators with a fleet size between 1-10 coaches, the average non-compliance was 91%. All 71 operators with one vehicle all were non-compliant. Similarly, for operators with 2 vehicles all but one operator had completely non-compliant fleets.

4 AECOM Impact Assessment Technical Note 12 - GM CAP Evidence of the Impact of 2021 CAZ C

- 4.1 Relevant evidence gathered from Note 12 - GM CAP Evidence of the Impact of 2021 CAZ C includes:
- 4.1.1 Early introduction of the CAZ would increase the impact on sectors classified as 'highly vulnerable', such as construction, agriculture, forestry & fishing, from a 51% non-compliant ratio to 65%.

5 AECOM Impact Assessment Technical Note 18 - GM CAP Minibus Vehicle Research

- 5.1 Relevant evidence gathered from Note 18 - GM CAP Minibus Vehicle Research includes:
- 5.1.1 10% of the market proportion of minibuses in GM are leasing/rental companies. In terms of main customers or users, 70% of minibuses are likely to be leased to education establishments, and approximately 2% to care homes.
- 5.1.2 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.
- 5.1.3 In terms of compliance by LA, 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.

6 AECOM Impact Assessment Technical Note 19 – Taxi and PHV Fleet Research

- 6.1 Relevant evidence gathered from Note 19 - GM CAP Taxi and PHV Fleet Research includes:

- 6.1.1 Bolton's fleet has an older age profile with the most common year of registration being 2007 with 150 vehicles, this represents 9% of Bolton's PHVs. 1,293 out of 1,531 are vehicles that were manufactured before the Euro 6 engine standard was introduced in 2015, this means that 84% of Bolton's fleet may not comply with EU standards. Also, 1200 (78%) of Bolton's fleet would not comply with the proposed Minimum Licensing Standards if introduced in 2019.
- 6.1.2 Rochdale has the third largest PHV fleet in GM with a total of 1,329 registered vehicles. The most common age of vehicle in the fleet is 2007 with 157, 12% of the Rochdale fleet. Although, 2008, 2009 and 2010 all have similar numbers with 149, 147 and 136 respectively. Similar to Bolton the vast majority of its fleet may not comply with Euro 6 standards 1176 were manufactured before 2015, this represents 88% of the Rochdale fleet.
- 6.1.3 Bolton, Trafford and Bury are the three worse performing LAs with the highest proportion of non-compliant taxis. 95 out of 99 (96%) of Bolton's fleet are non-compliant, 135 out of 139 (97%) of Trafford's fleet are non-compliant, and 56 out of 58 (97%) of Bury's taxis are also non-compliant.
- 6.1.4 The majority of taxi and PHV drivers are self-employed (81%) and own or rent the vehicles they use.
- 6.1.5 Local authorities do not have the jurisdiction to regulate PHV fares but may authorise the fares used by licensees.

7 SYSTRA Greater Manchester Clean Air Plan: Consultation Activity - Deliberative Research with Taxi and PHV Drivers/Operators

- 7.1 Relevant evidence gathered from SYSTRA Greater Manchester Clean Air Plan: Consultation Activity - Deliberative Research with Taxi and PHV Drivers/Operators includes:
- 7.1.1 Drivers and operators felt that a CAZ charge may have detrimental impacts on their profession and therefore their customers. This concern arose from an anticipation that taxi fares would increase to cover the charge, and that surplus from the charge would not be reinvested in the taxi and PHV market but would be invested in public transport. Alongside an increase in taxi and PHV fares, there would therefore be improvements in public transport, resulting in modal shift from taxis and PHVs to public transport, consequently reducing demand for the trade. Drivers felt this impact would particularly affect wheelchair users, who are often reliant on low fares and the accessibility of taxis and PHVs.

Appendix D: Executive Summary from GM CAP Health Impacts Evidence Report - 2020

1 Air pollution and public health

- 1.1 Air pollution has been identified as the largest environmental risk to public health in the United Kingdom (UK)⁷¹. There are five ambient air pollutants thought to be most damaging to public health, of which NO₂ has been found to pose the most significant risk⁷². Defra (2017) estimate that 80% of NO₂ emissions at the roadside are due to transport, particularly diesel light duty vehicles⁷³.
- 1.2 Since 2010 the UK has been in breach of the Limit Value for annual mean concentrations of NO₂, as set by the European Union Ambient Air Quality Directive (2008/50/EC), which was transposed into English law by the Air Quality Standards Regulations 2010. Greater Manchester (GM) modelling identified that all ten local authorities has exceedances above the legal limits of NO₂ and predicts that there are 203 points along 160 stretches of road across Greater Manchester where concentrations of NO₂ are forecast to be above required levels in 2021.

2 The Greater Manchester Clean Air Plan

- 2.1 The UK Government's Air Quality Plan (2017) requires Local Authorities with persistent exceedances to consider the best option to meet statutory NO₂ limit values in the shortest possible time. In 2019, GM Local Authorities came together to submit an Outline Business Case (OBC) for the Greater Manchester Clean Air Plan (GM CAP) to the Government's Joint Air Quality Unit.
- 2.2 The GM CAP OBC outlined a range of measures to deliver regional compliance with the Air Quality Standards Regulations 2010 for NO₂ emissions. The primary objective of the GM CAP is to reduce ambient NO₂ concentrations in GM to below the legal Limit Value in the shortest time possible. The GM CAP also has a secondary objective to reduce the health impacts of air pollution in GM.

3 Review of evidence sources used up until the end of 2019

- 3.1 Prior to this GM CAP Health Impact Evidence report, evidence linking air quality (and NO₂ specifically) with public health impacts had been presented in the following documents produced to support the GM CAP:
- GM CAP OBC
 - Distributional Impact Assessment

⁷¹ Public Health England (2019) 'Review of interventions to improve outdoor air quality and public health'

⁷² DEFRA (2017) 'Air Pollution in the UK 2017'

⁷³ DEFRA (2017) 'Air Pollution in the UK 2017'

- GM EqIA
- CleanAir GM website

3.2 A review of these documents has been undertaken and although they did set out a clear link between poor air quality and poor public health, the following gaps were noted:

- 3.2.1 The documents fail to clearly distinguish the differing impacts of individual pollutants (e.g. NO₂ or PM) on public health. As the focus of the GM CAP is on NO₂ reductions, this is particularly important.
- 3.2.2 Most of the sources lacked evidence with any geographical granularity. Apart from the assessment of air quality impacts within the Distributional Impact Assessment, most of the evidence presented is at a Global or National scale not directly related to Greater Manchester.
- 3.2.3 The documents do not quantify the link between poor air quality and incidences (number) of specific illnesses in GM.

3.3 To help bridge the evidence gap, an impartial review was conducted to assess if additional health evidence existed.

4 Review of public health evidence

4.1 A rapid review of public health evidence with clear search parameters was conducted. Some evidence was found to help address the gaps highlighted above, namely:

The impact of ambient NO₂ on public health

- 4.1.1 Epidemiological studies continue to show associations of ambient NO₂ with adverse effects on public health⁷⁴.
- 4.1.2 In the short-term, NO₂, particularly at high concentrations is a respiratory irritant that can cause inflammation of the airways, coughing, the production of mucus, shortness of breath and heightened risk of heart problems. Long-term concentrations of NO₂ are associated with reduced lung development, respiratory infections in childhood and effects on lung function into adulthood⁷⁵, increased asthma prevalence and incidence, adverse birth outcomes⁷⁶, lung cancer and kidney disease, chronic and acute respiratory and cardiovascular diseases, and mortality⁷⁷⁷⁸.

⁷⁴ Public Health England (2019) 'Review of interventions to improve outdoor air quality and public health'

⁷⁵ Atkinson et al (2018) 'Long term concentrations of nitrogen dioxide and mortality: A meta-analysis of cohort studies'

⁷⁶ COMEAP (2018) 'Associations of long-term average concentrations of nitrogen dioxide with mortality'

⁷⁷ Ramacher and Karl (2020) 'Integrating modes of transport in dynamic modelling approach to evaluate population exposure to ambient NO₂ and PM pollution in urban areas'

⁷⁸ Latza et al (2009) 'Effects of nitrogen dioxide on human health: systematic review of experimental and epidemiological studies conducted between 2002 and 2006'

- 4.1.3 Although the health evidence linking concentrations of NO₂ to public health impacts is continually developing, the link is still not understood as clearly by the scientific community as the relationship between PM and public health.
- 4.1.4 There has been considerable scientific debate as to whether NO₂ is itself causal or instead a marker for other traffic-related pollutants. In 2018, the Committee on the Medical Effects of Air Pollutants (COMEAP) concluded that evidence associating NO₂ with health effects has strengthened substantially in recent years. COMEAP state that, on the balance of probability, NO₂ is responsible for some of the health impact found to be associated with it in epidemiological studies.
- 4.1.5 As a result, the health evidence suggests that providing the GM CAP successfully reduces concentrations of NO₂ in GM to be regionally compliant, GM should experience improved public health outcomes. It is likely that if the GM CAP assesses only the public health impacts of a reduction in concentrations of NO₂, they will underestimate the total health impact of the GM CAP.

NO₂ and the impact on public health in Greater Manchester

- 4.1.6 Dajnak et al (2018) conducted a Health and Economic Impact Assessment associated with current and future pollution levels in GM. They found that:
- If the concentration of NO₂ remains at predicted concentrations, between 2011 and 2030, the total number of life years lost will be 561,169 in GM.
 - This will have an economic impact of £343,719,554 (based on 2014 prices).
- 4.1.7 Dajnak et al (2018) assessed the economic impact of the total number of life years lost as a result of current and future NO₂ concentrations. However, in their assessment, Dajnak et al (2018) did not include NO₂ in the additional modelling they carried out to understand burden effects on annual mortality (number of deaths) rates in GM. NO₂ was excluded from this assessment due to concerns of overlap with the results of the PM analysis. This supports the concerns raised by the academic community questioning whether NO₂ is causal or a marker for other traffic-related pollutants.

Quantifying the link between NO₂ and incidences of illness at a local level

- 4.1.8 Evangelopoulous et al (2019) produced quantitative statements giving the effect of a given exposure to NO₂ on a range of diseases in the City of Manchester. It is important to note that this was based on Manchester, not Greater Manchester:

- The risk of emergency hospitalisations for stroke is 2.8% higher on high air pollution (between 4401 and 1064 μgm^{-3} as defined by the Daily Air Quality Index⁷⁹) days than on lower air pollution days (short-term)
- Lowering air pollution by 33.5% on high air pollution days could save 14 hospital admissions for stroke each year (short-term)
- Your child is 4.4% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term)
- Adults are 1.5% more likely to be hospitalised for asthma on days with high NO₂ pollution compared to days with lower air pollution (short-term)
- Cutting air pollution in by one fifth would increase children's lung capacity by around 2.6% (long-term)
- Cutting air pollution by one fifth would decrease the risk of babies being born underweight by around 0.1% (long-term).

4.1.9 Evangelopoulous et al (2019) included evidence for 9 other UK cities. The evidence produced for Manchester is valuable but limited, because the City of Manchester is only one of the Local Authorities in GM. The review of health evidence was unable to find quantified evidence of the impact of NO₂ on health outcomes at a GM scale. That being said, there is no evidence that suggests that the health impacts would be different across GM than elsewhere.

⁷⁹ <https://www.metoffice.gov.uk/weather/guides/air-quality>