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**Report of:** Executive Director of Place

**Report to:** Cabinet

**Date of Decision:** 21<sup>st</sup> November 2018

**Subject:** **Air that is safe to breathe for all:  
Sheffield's Clean Air Zone proposal**

Is this a Key Decision? If Yes, reason Key Decision:-	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
- Expenditure and/or savings over £500,000	<input type="checkbox"/>	
- Affects 2 or more Wards	<input checked="" type="checkbox"/>	
Which Cabinet Member Portfolio does this relate to? <i>Transport and Development</i>		
Which Scrutiny and Policy Development Committee does this relate to? <i>Economic and Environmental Wellbeing</i>		
Has an Equality Impact Assessment (EIA) been undertaken?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If YES, what EIA reference number has it been given? 392		
Does the report contain confidential or exempt information?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If YES, give details as to whether the exemption applies to the full report / part of the report and/or appendices and complete below:-		

### **Purpose of Report:**

This paper sets out Sheffield City Council's ambition to make the city's air safe to breathe for all. As agreed in the city's Clean Air Strategy<sup>1</sup>, Sheffield City Council is committed to improving air quality across Sheffield as quickly as possible.

In common with other cities, air pollution is a major public health challenge that is damaging the health and life chances of people in Sheffield, contributing to the deaths of around 500 people a year in the city. Multiple places across our road network are in breach of legal limits for air quality with road vehicles (and particularly diesel vehicles), exposing communities to invisible but harmful concentrations of Nitrogen Dioxide (NO<sub>2</sub>).

Government have placed Sheffield and Rotherham under a legal duty to improve the city's air quality by reducing NO<sub>2</sub> emissions below the legal limits in the shortest possible time. Building on a Feasibility Study which has assessed the scale of Sheffield/Rotherham's NO<sub>2</sub>, we are required to submit to Government a proposal (Outline Business Case) with Rotherham MBC for how we are going to quickly reduce emissions in our area, focusing on the key locations which are in breach of legal limits and tackling the main sources of NO<sub>2</sub> pollution.

### **The paper sets out Sheffield's proposed preferred option for submission to Government:**

- Based on the findings of the Sheffield/Rotherham feasibility study, **our preferred option is for a 'Category C' Clean Air Zone (CAZ C) charging zone within (but including) the inner ringroad of the city centre.**
- This means that all *non-compliant* buses, taxis, Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs) will be charged a daily clean air zone fee for driving into the city centre. The definition of '*non-compliant*' broadly refers to diesel vehicles that are older than Euro 6 (around 2016) or petrol vehicles that are older than Euro 4 (around 2006) except for taxis where we are seeking a higher standard of low emission vehicle.
- Our preferred option of a CAZ C charging zone will also need **additional measures (therefore referred to as 'CAZ C+') in order to achieve legal compliance by 2021.** These additional measures are proposed in more detail in the report but in short, include a combination of targeted support packages to upgrade or replace the most polluting vehicles on the city's roads for which we will seek Government funding.
- The intention of proposing a charging CAZ C+ model in Sheffield is not to penalise companies or drivers; the intention is to encourage and support the removal of the most polluting vehicles from the city's roads in order to make our air cleaner and safer to breathe. Alongside targeted, Government-funded support packages which

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<sup>1</sup> Sheffield City Council (2017) *Sheffield's Clean Air Strategy*, <https://democracy.sheffield.gov.uk/documents/s29124/Clean%20Air%20Strategy%20Dec%20Cabinet%202.pdf>

will enable certain drivers to upgrade and replace non-compliant vehicles, the charging CAZ C+ proposal is intended to deliver the air quality improvements we need in the shortest possible time to safeguard the health and wellbeing of our citizens.

- Our judgment, based upon the evidence from the Feasibility Study is that introducing a CAZ D (which would include charging private cars) is not required and such an approach would have a significant and disproportionate impact on the city's residents, particularly lower income families.
- However, Government will assess our preferred CAZ C+ option against their requirements. If Government decides that a CAZ D is required, Cabinet will be provided with a further paper outlining the implications of such a move for the city and the additional resource and mitigations that we would seek from Government.
- We intend to seek significant Government investment to introduce a range of support packages to improve and replace the vehicles on the city's roads that will be exposed to charging. This will include retrofitting older vehicles such as buses with clean engines and funding to support drivers to invest in new low emission and electric vehicles.
- The CAZ proposal is significant and forms part of Sheffield's ambitions to deliver clean air for everyone in the city and support the development of safe, reliable, and clean transport options in the city.
- We will launch a comprehensive statutory consultation in early 2019, seeking views on our CAZ proposals of people that live in Sheffield, work in Sheffield or visit the city and we will create significant opportunities to discuss the proposals and solutions with those most affected, including taxi drivers, LGV owners, businesses and bus companies.

## **Recommendations:**

That Cabinet:

1. Endorse Sheffield City Council's commitment to cleaning up harmful air in the city to improve the health and life chances of communities across the city
2. Recognises that Sheffield and Rotherham's air quality challenge is intrinsically connected and therefore approves the development of a joint air quality plan and package of interventions with Rotherham Metropolitan Borough Council (RMBC) to protect and improve the health and wellbeing of people living, working and visiting our areas.
3. Supports and endorses the evidence and analysis of our air quality challenge that has been developed by Sheffield City Council and Rotherham MBC (working with Defra and DfT) to fully understand the most significant sources of Nitrogen Dioxide (NO<sub>2</sub>) in Sheffield/Rotherham and identify the most challenging locations which breach legal limits for NO<sub>2</sub> pollution.
4. Approves, in principle, the creation of a charging Category C Clean Air Zone in Sheffield with additional measures (referred to as 'CAZ C+') to, as a minimum, bring Sheffield's air quality within the legal limit for NO<sub>2</sub> concentrations in the shortest possible time.
5. Delegates responsibility to the Executive Director for Place, in consultation with the Cabinet Member for Transport and Development, to jointly submit, with Rotherham MBC, the Sheffield and Rotherham Outline Business Case to Government by 31<sup>st</sup> December 2018.
6. Delegates responsibility to Executive Director for Place, in consultation with the Cabinet Member for Transport and Development and the Director of Financial and Commercial Services to commence procurement for any necessary infrastructure, goods and services to implement the Clean Air Zone.
7. Agrees to receive a further Cabinet Paper on Sheffield's clean air proposals should Government require significant changes once Government assessed the proposals in our Outline Business Case.
8. Approves the launch of a statutory consultation in early 2019 on the city's CAZ proposals to tackle NO<sub>2</sub> pollution.
9. Agrees to receive a further Cabinet Report on our finalised proposals along with our Final Business Case in 2019.

## **Background Papers:**

Committee on the Medical Effects of Air Pollutants (2018) *Associations of long-term average concentrations of nitrogen dioxide with mortality*,

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/734799/COMEAP\\_NO2\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEAP_NO2_Report.pdf)

DEFRA (2017) *UK plan for tackling roadside nitrogen dioxide concentrations: detailed plan*,

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/734799/UK\\_plan\\_for\\_tackling\\_roadside\\_nitrogen\\_dioxide\\_concentrations\\_detailed\\_plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/UK_plan_for_tackling_roadside_nitrogen_dioxide_concentrations_detailed_plan.pdf)

[t\\_data/file/633270/air-quality-plan-detail.pdf](t_data/file/633270/air-quality-plan-detail.pdf)

Sheffield City Council (2017) *Air quality annual status report 2017*,  
<https://www.sheffield.gov.uk/content/dam/sheffield/docs/pollution-and-nuisance/air-pollution/air-aware-campaign/Air%20Quality%20Annual%20Status%20Report%2020171.pdf>

Sheffield City Council (2017) *Clean Air Strategy*,  
<https://democracy.sheffield.gov.uk/documents/s29124/Clean%20Air%20Strategy%20Dec%20Cabinet%202.pdf>

Sheffield City Council (2018) *Transport Strategy*,  
<http://democracy.sheffield.gov.uk/documents/s31437/Transport%20Strategy%202.pdf>

WHO (2018) *How air pollution is destroying our health*, <http://www.who.int/air-pollution/news-and-events/how-air-pollution-is-destroying-our-health>

Lead Officer to complete:-	
1	I have consulted the relevant departments in respect of any relevant implications indicated on the Statutory and Council Policy Checklist, and comments have been incorporated / additional forms completed / EIA completed, where required.
	<b>Finance:</b> Paul Schofield
	<b>Legal:</b> Louise Bate
	<b>Equalities:</b> Adele Robinson
<i>Legal, financial/commercial and equalities implications must be included within the report and the name of the officer consulted must be included above.</i>	
2	<b>EMT member who approved submission:</b> Laraine Manley
3	<b>Cabinet Member consulted:</b> Cllr. Jack Scott
4	I confirm that all necessary approval has been obtained in respect of the implications indicated on the Statutory and Council Policy Checklist and that the report has been approved for submission to the Decision Maker by the EMT member indicated at 2. In addition, any additional forms have been completed and signed off as required at 1.
	<b>Lead Officer Name:</b> Tom Finnegan-Smith
	<b>Job Title:</b> Head of Strategic Transport and Infrastructure
<b>Date:</b> 13 <sup>th</sup> November 2018	

## **TOXIC AIR IS A MAJOR GLOBAL AND LOCAL PUBLIC HEALTH ISSUE – AND IT IS DAMAGING THE LIVES OF PEOPLE IN SHEFFIELD**

1. Poor air quality is increasingly seen as one of the world's most significant public health challenges. The World Health Organisation (WHO) have recently reported that air pollution is now responsible for the deaths of 7 million people a year globally, with 90% of the world's population suffering from the implications of breathing toxic air<sup>2</sup>.
2. In Sheffield, it is estimated that poor air quality contributes to 500 deaths a year but it also undermines the quality of life for people in the city. Poor air quality impacts on the day-to-day lives and life chances of communities, for example, 7-12% of annual childhood asthma cases were specifically attributable to traffic related air pollution and it increases the chances of hospital admissions, visits to A&E and respiratory and cardiovascular disease.
3. In the UK, the Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) recently reported the estimated annual number of deaths in the UK from human-made air pollution (PM2.5 and NO<sub>2</sub>) ranges from 28,000 to 36,000 deaths<sup>3</sup>. The Royal College of Physicians estimate that the health problems resulting from exposure to air pollution have a high cost to people who suffer from illness and premature death, to health services and to business which together cost an estimated £20bn every year<sup>4</sup>.
4. Air pollution is a significant social justice issue as it is poorer and more vulnerable communities that are most exposed to and suffer the consequences of harmful air, in particular the young and old, the sick and lower income groups. Further, poor air quality is also an economic issue: the illnesses caused by poor air quality affect people of working age and we know this causes significant time off work and early retirement. Whilst this is difficult to quantify, studies by the Lancet have found that in low-to-medium income countries, air pollution reduces Gross Domestic Product (GDP) by up to 2% and drives up demand and costs on healthcare services<sup>5</sup>.

## **SHEFFIELD AND ROTHERHAM HAVE BEEN MANDATED BY GOVERNMENT TO REDUCE NO<sub>2</sub> EMISSIONS TO WITHIN LEGAL LIMITS IN THE SHORTEST POSSIBLE TIME**

5. The UK has been in breach of the legal limit since January 2010 and along with other major urban areas in the UK, roads in Sheffield and Rotherham breach those legal limits. DEFRA's data indicates that Sheffield has roads where the average concentration of NO<sub>2</sub> in 2017 exceeds the legal limit of 40µg/m<sup>3</sup>, in some places by as much as 30%<sup>6</sup>.

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<sup>2</sup> WHO (2018) '9 out of 10 people worldwide breathe polluted air, but more countries are taking action', <http://www.who.int/news-room/detail/02-05-2018-9-out-of-10-people-worldwide-breathe-polluted-air-but-more-countries-are-taking-action>

<sup>3</sup> Committee on the Medical Effects of Air Pollutants (2018) *Associations of long-term average concentrations of nitrogen dioxide with mortality*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/734799/COMEAP\\_NO2\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEAP_NO2_Report.pdf)

<sup>4</sup> Royal College of Physicians (2016) *Every breath we take: the lifelong impact of air pollution*, <https://www.rcplondon.ac.uk/file/2912/download?token=rhEZPBDI>

<sup>5</sup> The Lancet (2017) *The Lancet Commission on pollution and health*, [https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(17\)32345-0.pdf](https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(17)32345-0.pdf)

<sup>6</sup> NO<sub>2</sub> level on some Sheffield roads in 2017 is 53µg/m<sup>3</sup>. 40µg/m<sup>3</sup> is the legal limit. DEFRA (2017) *UK plan for tackling roadside nitrogen dioxide concentrations* [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/633022/air-quality-plan-detail.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/633022/air-quality-plan-detail.pdf)

6. Sheffield and Rotherham have therefore been required by Government<sup>7</sup> to tackle vehicle emissions from diesel vehicles in particular, and older petrol vehicles, in order to become compliant with legal limits in the '*shortest possible time*'.
7. Government propose the creation of 'Clean Air Zones' (CAZs) to geographically concentrate interventions to tackle the main sources of pollution in local areas. Interventions can be wide-ranging and designed to suit specific local challenges and needs. CAZs can involve charging drivers for entering an specific area in a vehicle that does not meet a specific minimum standard – broadly this means diesel vehicles that are older than Euro 6 (around 2016) or petrol vehicles that are older than Euro 4 (around 2006).
8. Government's priority is speed of delivery/impact and their modelling suggests that CAZs with charging for non-compliant vehicles are *most likely to reduce emissions in the shortest possible time* (ie. being charged to enter a specific area encourages behaviour change and vehicle change most quickly). Government have made clear that they will test any interventions proposed by Sheffield and Rotherham against the assumed speed of impact that charging would have.

**SHEFFIELD IS COMMITTED TO DELIVERING CLEAN AIR FOR ALL:  
THE LEGAL DIRECTIVE FROM GOVERNMENT TO TACKLE NO<sub>2</sub> EMISSIONS WILL DELIVER  
RAPID IMPACT AS PART OF OUR LONG TERM STRATEGY**

9. We have an ambitious vision for improving air quality for everyone in the Sheffield. While Sheffield has been mandated to reduce NO<sub>2</sub> concentrations to within legal limits, we do not consider this to be air that is safe to breathe for our communities and the legal direction from Government is therefore one element of our long-term approach to delivering clean air for all in Sheffield.
10. In December 2017, Sheffield City Council approved a new Clean Air Strategy<sup>8</sup> which sets out an ambition to tackle the biggest causes of air pollution in Sheffield as quickly as possible.
11. Our Clean Air Strategy focuses on tackling Nitrogen Dioxide (NO<sub>2</sub>) emissions<sup>9</sup> which in Sheffield mainly come from road traffic, industry and domestic/commercial buildings. 50% of our NO<sub>2</sub> comes from the tailpipes of vehicles on the city's roads. Multiple parts of our road network and transport corridors breach the legal limit for NO<sub>2</sub>, particularly in the city centre.
12. But, air pollution is fundamentally an issue of how we live and how we choose to move around the city. In June 2018, Sheffield City Council agreed a new Transport Strategy<sup>10</sup> which creates a long-term vision for transforming the city's infrastructure to make it easier to travel around Sheffield. In particular, the Transport Strategy commits to making better use of the highway network by speeding up journeys for space efficient modes, especially for shorter trips and safeguarding walking and cycling and integrated public transport so that these

<sup>7</sup> DEFRA (2017) *UK plan for tackling roadside nitrogen dioxide concentrations*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/633270/air-quality-plan-detail.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf)

<sup>8</sup> Sheffield City Council (2017) *Clean Air Strategy*, <https://democracy.sheffield.gov.uk/documents/s29124/Clean%20Air%20Strategy%20Dec%20Cabinet%202.pdf>

<sup>9</sup> Fine particulate matter dust (PM10 or PM2.5) is also an issue for Sheffield because, although the annual averages are significantly below the EU threshold, the daily average level is higher on more days per year at some locations than is acceptable by EU standards

<sup>10</sup> Sheffield City Council (2018) *Transport Strategy*, <http://democracy.sheffield.gov.uk/documents/s31437/Transport%20Strategy%202020.pdf>

modes are more competitive with the car in terms of journey times and convenience. Further, the Transport Strategy commits to minimising the negative impacts of transport, in particular, reducing air pollution.

13. We have already made significant steps to deliver the commitments to improve air quality from our Clean Air and Transport Strategies. This includes:
- **Anti-idling campaign across the city** - particularly focused on encouraging people to turn their vehicle engines off when dropping off/collecting children from the city's schools
  - **Early measures fund** – we secured £1.247m from Government to deliver the following projects:
    - Electric Taxi Leasing - enabling hackney drivers to try electric cab vehicles. 10 electric taxis will be available and the scheme will be launched in Spring 2019.
    - 12 rapid charge points - to encourage drivers to switch to electric vehicles
    - Improving traffic signal timings on key corridors - to smooth traffic flow and reduce pollution from waiting vehicles
  - **Promoting and supporting active travel** – as part of a successful South Yorkshire bid for £7.5m over 3 years from the DfT's Sustainable Transport Access Fund, we are delivering:
    - Cycleboost – Bike loans, Cycle training, Bike Doctor and maintenance sessions, Cycle parking facilities, and support to Cycle events held in the City including the partnership with British Cycling and HSBC (mass participation event and local led rides).
    - Sustainable and Active Travel support for schools
    - Independent Travel Training – providing personalised support for young people to use public transport and walk as an independent alternative to home to school transport.
    - Support for a range of walking programmes and events including Walking for Life and Sheffield Walking festival.
    - SY Busboost – a focussed support programme to encourage people to try public transport as an alternative to commuting by car.
  - **Delivering our Air Aware campaign** - to encourage and influence changes that support cleaner air outcomes, including developing a Clean Air Champions initiative.
  - **Working with Sheffield City Region** - on the wider strategic transport ambitions for the functioning economic area.
  - **Working with Highways England** - to tackle air pollution from and around the M1.

#### **SHEFFIELD'S CLEAN AIR ZONE PROPOSAL:**

#### **TAKING ACTION TO TACKLE TOXIC AIR QUICKLY IN THE MOST POLLUTED PARTS OF THE CITY**

14. Evidence from our local air quality monitoring and traffic data in Sheffield demonstrates that there are multiple places in our city where NO<sub>2</sub> emissions currently breach the legal limit and it is expected this will continue for the foreseeable future.

15. As set out in more detail in the [evidence from our feasibility study](#) (set out later in the report), Sheffield's NO<sub>2</sub> problem is:
- **Road-based** – 50% of Sheffield's NO<sub>2</sub> emissions come from the tailpipes of vehicles on our roads
  - **Disproportionately caused by particular vehicle types** – whilst private cars make up the majority of vehicles on our roads, diesel and older petrol buses (1% of the vehicles but 5% of emissions), London-style Hackney taxis and Private Hire taxis (3% of vehicles but 4% of emissions and trips heavily focused on the city centre), HGVs (3% of vehicles but 15% of emissions) and LGV vans (13% of vehicles but 26% of emissions) are disproportionately responsible for the level of NO<sub>2</sub> emissions from road transport
  - **Predominantly focused on the city centre** – whilst there are multiple sites across the city where NO<sub>2</sub> emissions breach the legal limit, the problem is most acute in the city centre and Lower Don Valley. Our evidence shows that natural fleet change (ie. drivers replacing and upgrading their vehicles) does not bring emissions in these places within the legal limit by 2021 and therefore, targeted intervention is needed to improve air quality at these sites.
16. Even with the natural churn of people replacing their vehicles and a market shift away from diesel vehicles and towards hybrid and electric vehicles, intervention is still needed to ensure that air quality in Sheffield is at least within the defined legal limits.
17. In order to meet our legal duties to deliver this improvement in the 'shortest possible time', we are required to submit an 'Outline Business Case' by the 31<sup>st</sup> December 2018 which demonstrates how we will reduce NO<sub>2</sub> emissions at the places in Sheffield and Rotherham which will be in breach of the legal limits in 2021. We will then submit a Final Business Case following consultation with residents and businesses in 2019.
18. To achieve compliance in the shortest possible time and, most importantly, deliver rapid improvements to the air we breathe in Sheffield, our proposal is to introduce a charging Clean Air Zone (CAZ) in Sheffield.
19. According to Government's definition, a CAZ *"defines an area where targeted action is taken to improve air quality and resources are prioritised and coordinated in a way that delivers improved health benefits and supports economic growth."*<sup>11</sup>

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<sup>11</sup> DEFRA (2017) *UK plan for tackling roadside nitrogen dioxide concentrations: detailed plan*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/633270/air-quality-plan-detail.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf)

20. A charging CAZ is where “vehicle owners are required to pay a charge to enter, or move within, a zone if they are driving a vehicle that does not meet the particular standard for their vehicle type in that zone.”<sup>12</sup> According to Government’s framework, there are four classes of CAZ (A-D) which stipulate which vehicles clean air charges apply to. These are:

CAZ Charging Class	Vehicles potentially included
CAZ A	Buses, coaches, taxis and private hire vehicles
CAZ B	Buses, coaches, heavy goods vehicles (HGVs) taxis and private hire vehicles
CAZ C	Buses, coaches, HGVs, large vans, minibuses, small vans/ light commercials, taxis and private hire vehicles
CAZ D	Buses, coaches, HGVs, large vans, minibuses, small vans/ light commercials, taxis and private hire vehicles, cars, motorcycles and mopeds

21. Vehicles that do not meet minimum emission standards (ie. non-compliant) will be charged a daily rate if they enter or move within a charging CAZ.

Vehicle type	CAZ minimum emission standards
Buses and coaches	Euro VI
Heavy Goods Vehicles (HGVs)	Euro VI
Vans (Light Goods Vehicles)	Euro 6 (diesel) or Euro 4 (petrol)
Cars	Euro 6 (diesel) or Euro 4 (petrol)

### Sheffield’s Clean Air Zone Proposal

22. The findings of the Sheffield/Rotherham feasibility study indicate that **Sheffield will need to introduce a Category C (CAZ C) charging zone with *additional measures* (therefore referred to as ‘CAZ C+’) in order to achieve legal compliance by 2021.**
23. These additional measures are [set out in more detail in the next section of the paper](#) but are likely to include a combination of targeted support packages to remove and replace the most polluting vehicles on the city’s roads. This could include:
- **Buses** – as a minimum, that all the buses entering the charging CAZ are upgraded or replaced to be Euro VI standard. Our ambition is for all buses in Sheffield to be Euro VI.
  - **Taxis** – a higher standard for taxi and Private Hire Vehicles in Sheffield which is likely to mean that the hackney and private hire taxi will need to be Liquefied Petroleum Gas (LPG) retrofit, petrol hybrid or electric vehicles.
  - **HGVs** – working with local businesses to retrofit and replace the most polluting lorries
  - **LGVs** - working with local businesses to retrofit and replace the most polluting vans
24. To resource the proposed additional measures, Sheffield will seek significant funding from Government’s Implementation Fund and Clean Air Fund in order to support the scale of

<sup>12</sup> DEFRA (2017) *UK plan for tackling roadside nitrogen dioxide concentrations: detailed plan*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/633270/air-quality-plan-detail.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf)

change that is needed to reduce NO<sub>2</sub> emissions.

25. Working with Defra, DfT and Rotherham MBC, Sheffield City Council has updated its transport and air quality models, insofar as reasonably possible within the timescales set by the Legal Directive. This has ensured that our evidence base reflects the latest position in terms of:
  - planned development (i.e. Planning Applications);
  - traffic flows and expected growth;
  - planned new highway and Public Transport infrastructure expected to come forward or be on the ground by January 2021;
  - the latest national background data supplied by the Government's Joint Air Quality Unit (JAQU).
26. Detailed local data has been collected to ensure the Transport Emissions and Air Quality models have the best possible data to inform the fleet mix. We have also amended our transport model to ensure that the impact of Hackney Black Cab Taxis and Private Hire Vehicles could be correctly modelled.
27. As part of the Feasibility Study, we undertook an initial short piece of Behaviour Research with drivers in the Sheffield and Rotherham area to better understand local attitudes to air quality, preferences for different types of cleaner vehicle (eg. electric, cleaner petrol) and reactions to potential different levels of charging. This work included a quantitative survey of London-style Hackney drivers, private hire vehicle drivers, LGV drivers and private car users (512 respondents) and a series of seven focus groups with taxi and LGV drivers (70 participants in total).
28. In terms of the Critical Success Factors set-out by Government, the two key (Gateway) criteria are:
  - Achieve Statutory compliance with Air Quality legislation
  - Proposed scheme(s) are deliverable in the shortest possible time and by no later than 2021 (subject to statutory obligations and in accordance with public law principles)
29. The table below shows the results of our Feasibility Study based on our locally collected air quality data, our air quality model and our transport models. The first two numerical data columns (*2017 base and 2021 Business as Usual (BaU)*), the table shows that there are currently multiple sites in breach of the legal limit in and around Sheffield city centre. With natural replacement of the vehicles on our roads, we do see some improvements over the coming years, but, this improvement does not bring NO<sub>2</sub> concentrations to within legal levels.

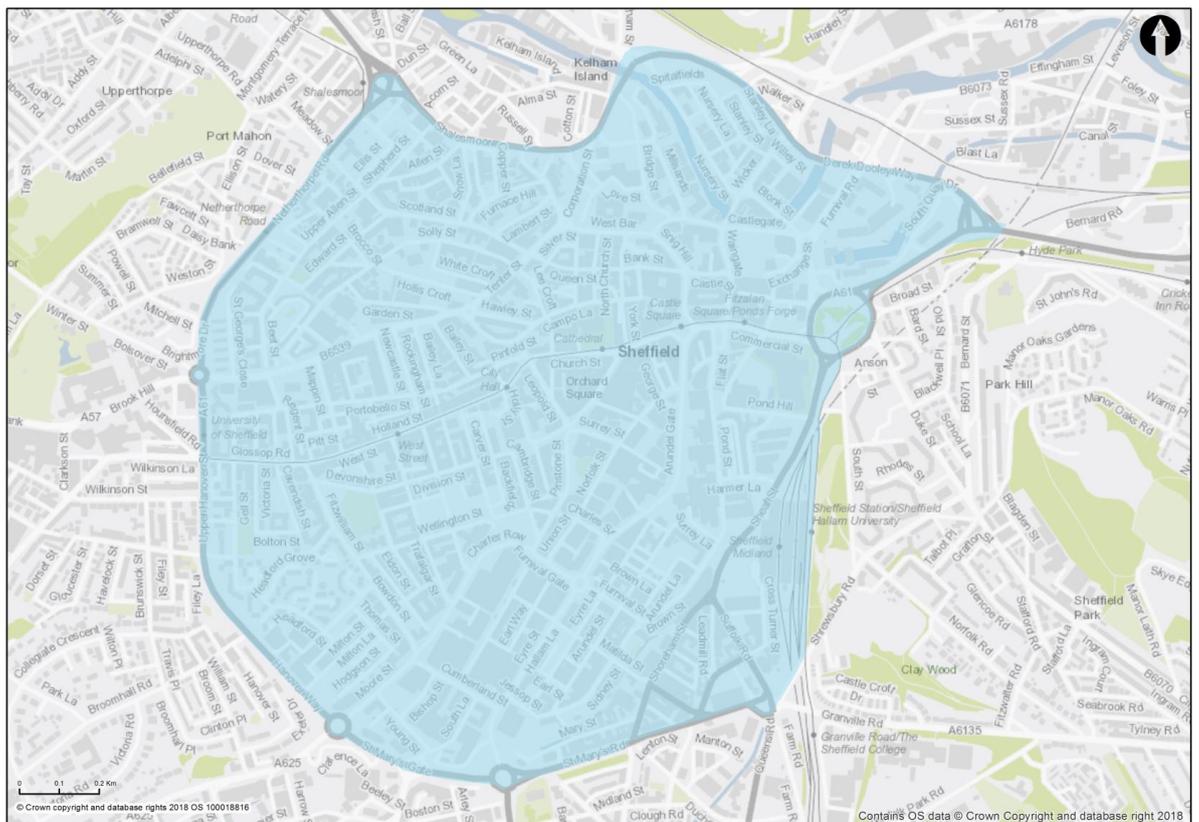
Receptor Locations	2017 Base	2021 BaU	2021 Cordon 3 CAZ C and RMBC Measures (Local)	2021 Cordon 3 CAZ C+ and RMBC Measures (Local)	2021 Cordon 3 CAZ D and RMBC Measures (Local)
<b>Sheffield Sites</b>					
Sheffield Road (M1 34S)	46.1	40.8	39.9	38.4	39.9
Arundel Gate Interchange 4m	48.7	43.3	31.4	35.2	28.8
Derek Dooley Way 1	52.0	45.7	39.7	37.6	34.4
SCC Parkway PCM1	53.0	45.4	42.0	38.8	36.1
Sheffield Parkway A630	48.7	41.9	40.8	37.9	38.0
Sheaf Street at Train Station PCM	58.5	49.0	39.1	39.2	33.2

30. The last three columns then demonstrate our modelled impact of charging CAZ models on the sites in Sheffield city centre. This demonstrates that:
- **2021 CAZ C** – a charging CAZ C without additional measures does not have sufficient impact to get NO<sub>2</sub> concentrations at all sites to within the legal limit
  - **2021 CAZ C+** - achieves legal compliance by 2021 with the additional measures to retrofit and replace non-compliant buses, taxis, lorries and vans.
  - **2021 CAZ D** – a CAZ D also achieves compliance across all of the sites that are currently in breach but this is considered unnecessary as CAZ C+ achieves compliance without the disproportionate impact on private car drivers in Sheffield.
31. Through our comprehensive analysis of various ‘mitigation’ options, we ruled out any options that did not include a ‘charging’ element. This is because without directly targeting tailpipe emissions, we would need an unprecedented and immediate change in how people choose to get around the city; with people not using their private car and investment in substantial public transport, Park & Ride, walking & cycling infrastructure in order to cope with this shift in behaviour. Whilst supporting a significant shift towards public transport and active travel is part of our Transport Strategy ambitions, we have judged that achieving such a shift and implementing the necessary infrastructure would not enable Sheffield to achieve compliance with our legal air quality duties (shortest possible time and by no later than 2021).
32. When comparing the various classes of charging CAZ, it was concluded that a charging CAZ could not be practically delivered earlier than 2021 due to the standard processes that must be undertaken, including Statutory Public Consultation, Government funding approvals, Procurement, Design & Implementation as well as the limits on market capacity for vehicle upgrades. Consequently, this means that as all our options reach compliance with the air quality limits and there is no difference in delivery timescales, our decision was based upon the other Critical Success Factors as set-out by Government, which as are detailed below:
- Deliver value for money in terms of the funding required from Government
  - Minimise economic impact with no one group overly affected more than any other by the CAZ plans
  - Ensure that options deliver required outcomes, whilst mitigating unwanted secondary consequences, for example avoiding displacement of air quality issues, or causing increases in CO<sub>2</sub> emissions

- Ensure that there is alignment with wider strategies and policy for the city
33. Should the Government not support our proposal for a CAZ C+ with additional measures and rigorous monitoring to ensure compliance in the shortest possible time, the only other viable alternative is a CAZ D zone which would introduce charging for non-compliant private vehicles.
  34. Our judgment, based upon our Feasibility Study and the evidence available to us is that introducing a CAZ D (charging private cars) is not required and we will rigorously monitor our NO<sub>2</sub> emissions to confirm this. Further, that a CAZ D in Sheffield would have a significant and disproportionate impact on the city's residents and lower income families in the city. However, if Government assess our preferred option and propose that a CAZ D is required, Cabinet will be provided with a further paper outlining the implications of such a move for the city and the additional resource and mitigations that we would seek from Government.

**Where would our proposed Clean Air Zone be?**

35. Based on the evidence of the places that are in breach of the legal limits now and in 2021, it is proposed that the Sheffield CAZ will cover the area bounded by the inner ringroad. The inner ringroad itself would be included in the CAZ and therefore non-compliant buses, coaches, taxis (London-style hackneys and private hire), HGVs and LGVs would be charged a daily rate for entering and moving within the zone.



36. Whilst the CAZ itself is city centre focused, it is projected to bring significant benefits to other parts of the city by incentivising and, through our proposed additional measures, investing in reducing emissions from the buses, taxis, lorries and vans which crisscross the city's roads and neighbourhoods. The proposal will therefore have a beneficial city-wide impact.

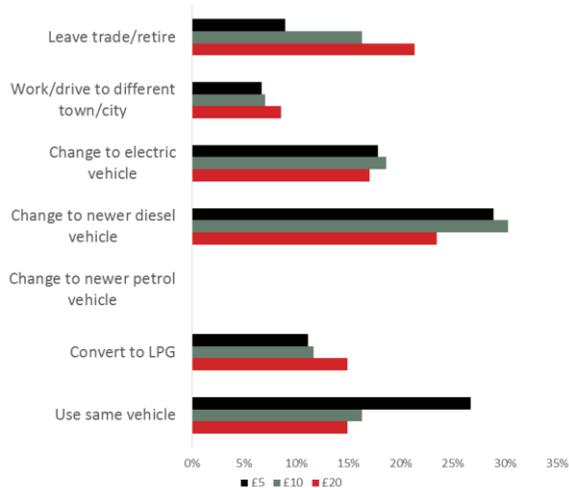
**What would the charge be for entering the CAZ?**

37. The intention of proposing a charging CAZ C+ model in Sheffield is not to penalise drivers; the intention is to encourage and support the removal of the most polluting vehicles from the city's roads in order to make our air cleaner and safer to breathe. Alongside targeted, Government-funded support packages which will enable certain drivers to upgrade and replace non-compliant vehicles, the charging CAZ C+ proposal is intended to deliver the air quality improvements we need in the shortest possible time.

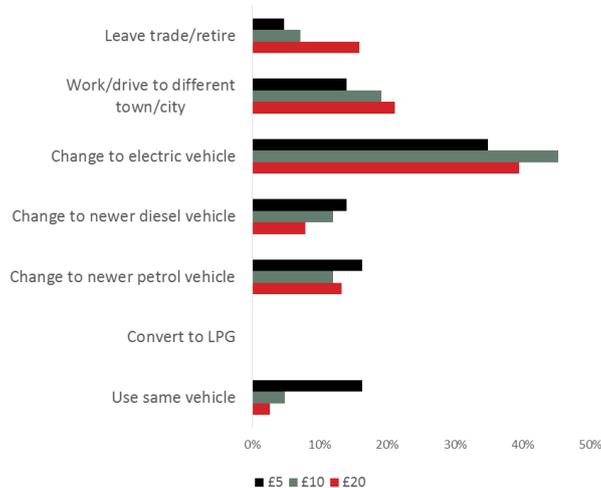
38. In our Behavioural Research, we asked drivers in Sheffield and Rotherham about what they thought about the suggestion of a £5, £10, and £20 charge to enter a charging CAZ in Sheffield. The responses from all types of driver indicate that the higher the charge, the more likely drivers are to take action and make some form of change, whether that be upgrading to a new vehicle. In particular:

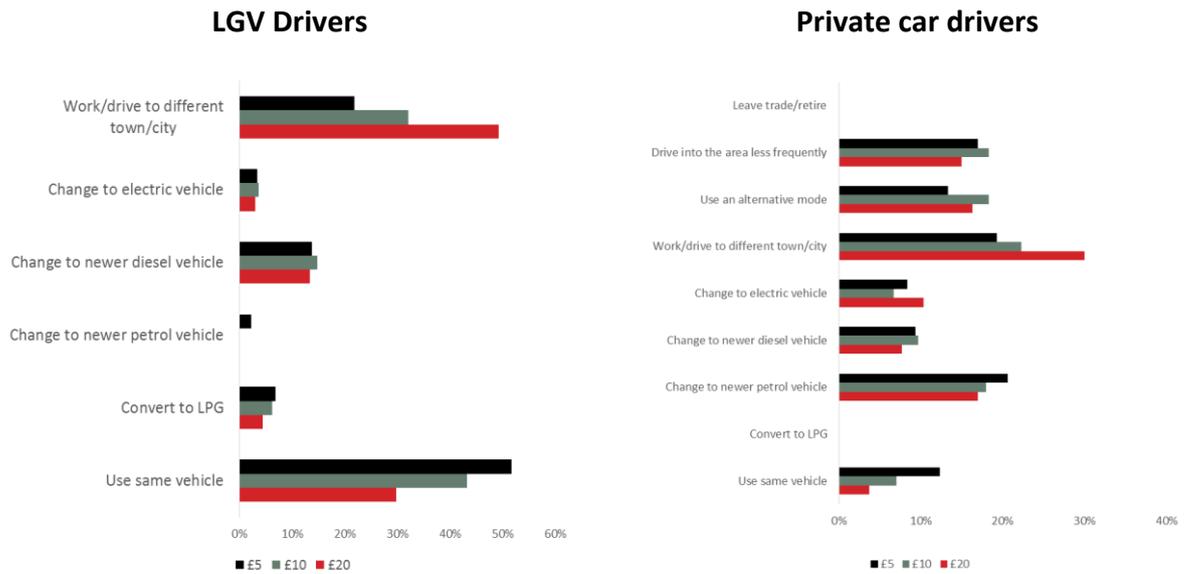
- **London-style Hackney cab drivers** suggested that they would move to a different form of vehicle (electric or newer diesel) but at £5, over a quarter said that they would just pay the charge
- **PHV drivers** suggested that they were highly likely to suggest that they would make changes rather than pay any charge
- **LGV / van drivers** suggested that they are likely to pay the charge or drive elsewhere rather than pay the charge (in the wider research, few LGV drivers suggested that they regularly drove through the city centre)
- **Private car users** were most likely to say that they would go elsewhere rather than the city centre or do so less frequently although they also suggested they would look to alternative modes of travel and cleaner petrol vehicles.

**London-style Hackney taxi drivers**



**PHV drivers**





- 39. Given that there are currently no other charging regimes similar to CAZs outside of London, our preference is to work with other cities (eg. Leeds, Birmingham) outside of London to agree a common charging structure.
- 40. Based on the initial Behavioural Research and proposals elsewhere (eg. Leeds, Birmingham), our proposal is to have the following charges for non-compliant vehicles entering the CAZ area. We will consult further on the charging structure as part of the statutory consultation in early 2019.

<b>Buses, Coaches and HGVs</b>	<b>£50 a day</b>
<b>Taxis, Private Hire Vehicles, Vans/LGVs</b>	<b>£10 a day</b>

- 41. In line with other national charging schemes, the charge is likely to be payable by midnight of the following day. Government are responsible for the development of a national payment portal which will allow all charges from CAZs to be made via one point. This work is currently in the early stages of development.
- 42. **What would the money from charges be used for?**
- 43. Any revenue raised locally through the charging CAZ (although collected nationally) will be given back to the Council but may only be used to support further work to improve air quality. A currently undetermined amount will be payable to the Government to fund the cost of operating the payment portal.
- 44. Sheffield City Council will be responsible for enforcement of non-payment of charges and this will be carried out by the current parking enforcement team within the Council.

### How will the Clean Air Zone be signed and indicated?

45. Government's Joint Air Quality Unit (JAQU) (consisting of relevant staff from Defra and the Department for Transport (DfT)) have defined the signs that should be used to indicate to motorists the presence of the Clean Air Zone restrictions.
46. These signs are set out in the Clean Air Zone Framework, which states that "a minimum requirement for setting up a Clean Air Zone is to have signs in place along major access routes to clearly delineate the zone."<sup>13</sup> The Signs and Road Markings for Charging Clean Air Zones goes into further detail, stating a requirement for the following:
  - Clear Signing at the point of entry and exit into and out of a charging CAZ
  - Signs in advance of entry, to provide adequate information about potential charges applicable and to provide alternative routes to divert around it. (Where appropriate the motorway and trunk road network will require advance signing).
  - Clear and consistent signing is essential, so JAQU has designed a sign centrally, with the assistance of the Department for Transport. This is to ensure nationwide consistency.

#### Example of the Clean Air Zone symbol for the different categories of charging zone



#### Example of Clean Air Zone Entry, Advanced Warning and Exit signs



#### ANPR Camera Enforcement sign



### How will the CAZ be enforced?

47. The enforcement of the CAZ charging zone will be undertaken using Automatic Number Plate Recognition (ANPR) cameras. ANPR cameras will capture images of vehicles entering the zone and when non-compliant vehicles that are not exempt from the zone are identified Penalty Charge Notices will be issued. This process is very similar to the way in which Bus Lane Enforcement is undertaken in Sheffield and is the basis of how the London Congestion Charge operates.

<sup>13</sup> Defra (2017) *Clean Air Zone Framework*, [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/612592/clean-air-zone-framework.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/612592/clean-air-zone-framework.pdf)

48. At all boundary entry points a sign to inform drivers that ANPR camera technology is in use for enforcement purposes will be erected. These will also be placed within the zone as a reminder to drivers within the zone as charges will apply to vehicles that are driven wholly within the boundary of the CAZ, not just those that enter the CAZ or drive through it.
49. The full costs associated with the implementation of the CAZ charging zone, including all signage and enforcement technology will be included within the OBC and sought from the Governments Implementation Fund.
50. Procurement of the necessary infrastructure, goods and services to implement the Clean Air Zone will be undertaken by Sheffield City Council as part of the development of the proposals in 2019.

#### **ADDITIONAL MEASURES - SUPPORTING DRIVERS AFFECTED BY THE CAZ PROPOSALS**

51. The introduction of a charging CAZ in Sheffield is part of our longer term ambition to make the air in Sheffield safe to breathe.
52. The CAZ should enable us to accelerate progress to reduce the level of NO<sub>2</sub> emissions in the city by encouraging drivers and organisations to improve or replace the most polluting vehicles on our roads. CAZs are not intended to be revenue-raising mechanisms as drivers paying the charge while continuing to drive non-compliant vehicles will not deliver the cleaner air or legal compliance that the city needs.
53. But, the introduction of the CAZ on its own does not achieve the legal compliance for Sheffield therefore, the need to retrofit or replace the most polluting vehicles on the city's roads is likely to involve significant change for particular groups of drivers and road users in Sheffield. Through our Outline Business Case, the consultation and the Final Business Case, we will look to secure dedicated Government funding to support those most exposed to the charging CAZ and introduce a wider set of infrastructure measures to support cleaner, more sustainable journeys in the city.

#### **Taxis – London-style black cabs and Private Hire Vehicles (PHV)**

54. We currently have around 857 London-style hackney taxis in Sheffield and around 1,900 private hire vehicles (PHVs). The hackney taxis tend to be much older and are on average around 12 years old and around 62% of the fleet are over 10 years old. PHVs tend to be newer vehicles (on average, 5 years old) although a third are over six years old.
55. Taxis in Sheffield comprise around 3% of the vehicles on the road but contribute around 4% of the NO<sub>x</sub> emissions. This is because of the age of many of our taxis, particularly the London-style hackney cabs, which therefore tend to be more polluting diesel vehicles. But most importantly, Sheffield's taxis spend a lot of their time driving into and around the city centre, thus having a significant impact on NO<sub>2</sub> levels.

56. Improving the taxi vehicles on Sheffield's roads will have significant air quality benefits for communities across the city as taxis drive to and through all our neighbourhoods, connecting people to work, services and the city's leisure and cultural offer. Further, Sheffield's London-style hackney fleet of taxis is fully accessible to people with disabilities and we will ensure that this standard is maintained through our proposals to improve the air quality impact of the vehicles.

57. From the initial research we have done with taxi drivers:

#### London-style Hackney cab drivers

- Most likely to replace their vehicle 'when it reaches a certain age' (54%).
- Most participants (86%) agreed that the councils should try to reduce air pollution whilst 62% believed that the councils should reduce the number of the most polluting vehicles in high pollution areas.
- 64% suggested that LPG conversion had little to no appeal.
- 71% suggested that electric vehicles were unappealing
- Many respondents stated that they would require a financial incentive to upgrade their vehicles

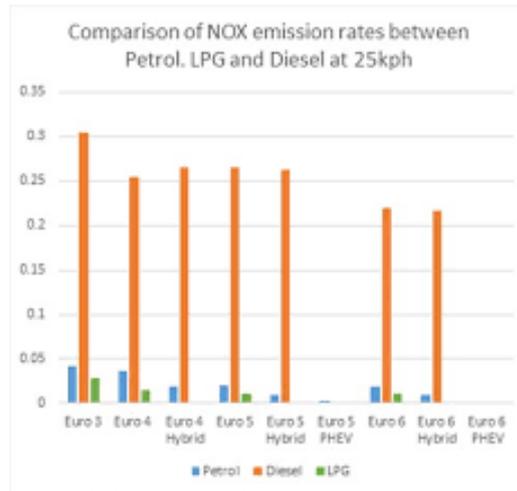
#### Private Hire Vehicle drivers

- Most likely to replace their vehicle is 'when it reaches a certain age' (76%).
- 73% agreed that the councils should try to reduce air pollution whilst only 40% of drivers agreed that the councils should reduce the number of the most polluting vehicles in high pollution areas.
- Over half of PHV respondents (54%) were positive about the idea of buying a new petrol vehicle
- Over half of PHV drivers (52%) liked the idea of using an electric vehicle
- Many drivers suggested they would require a financial incentive to upgrade their vehicle.

58. In order to achieve legal compliance, we are likely to propose to set a higher standard for taxi and PHV in Sheffield. This is likely to mean that the hackney and private hire taxi standard will be set at Liquefied Petroleum Gas (LPG) retrofit, petrol hybrid or electric vehicles.

59. Building on recent analysis of Defra's forecasts of emissions from newer taxi fleet indicates that Euro 6 diesel hackney carriages do not have significantly improved NOx emissions when compared to older Euro standards and therefore will not be sufficient to improve air quality in Sheffield.

60. In addition, for car based PHV's the change in NOx emissions from Euro 5 diesel to a Euro 6 diesel is limited, this is particularly apparent when compared to replacing a Euro 6 car with a petrol-hybrid or electric car.



61. With the higher standard, we anticipate that around 1,880 Private Hire Vehicles and 820 Hackney taxi vehicles will be non-compliant to the required engine standards in the proposed CAZ. In particular, we estimate that this will include almost the entirety of the London-style Hackney carriages due to their age and emission levels.
62. However, where taxi drivers have recently upgraded to newer vehicles which will still be non-compliant under the CAZ, we will consider approaches such as 'sunset periods' which would give those drivers additional time to replace their vehicles. We will set out further details in the Outline Business Case and as part of the statutory consultation.

How we will support drivers

63. The uniqueness of Sheffield's taxi fleet (age, and Hackney Carriages that are fully accessible for people with disabilities) ensures that we are likely to require taxi drivers to upgrade or replace their vehicles at a much faster rate than they would normally in order to achieve compliance under the clean air directive.
64. As part of our Outline Business Case (OBC) to Government, we are likely to set out a support package for taxi drivers in Sheffield that will provide a mix of grant funding and interest-free loans to enable drivers to change their vehicles to meet the new standards. This is in-line with proposals in other cities. We are likely to seek Government funding to cover the cost of the loans through our OBC and we will set a limit on how much funding is available per driver. In order to deliver the air quality improvements we need to become legally compliant, we will specify a defined period within which funding can be accessed by drivers to ensure that vehicles are upgraded quickly.
65. Clearly, the above proposals to ensure that Sheffield has a clean, modern taxi fleet are based on enforcing higher vehicle standards within the city's taxis. However, we are likely to propose that these standards are consulted on and ultimately enforced as part of the CAZ proposals rather than through changes to Sheffield's Taxi Licensing Policy at this time.

## **Buses**

66. There are approximately 450 buses operating on Sheffield's roads which comprise 1% of road traffic but contribute 5% of the emissions. This represents a significant opportunity: by improving the bus fleet, we could significantly improve air quality in the city. A Euro VI bus delivers an almost 95% reduction in emissions against earlier Euro standards. In addition, encouraging higher levels of bus travel as an alternative to private car will also reduce air pollution.
67. To achieve legal compliance in Sheffield, it will be critical that all the buses entering the CAZ area are upgraded or replaced to meet Euro VI standards. Our ambition is for all buses in Sheffield to be Euro VI standards to significantly reduce NO<sub>2</sub> emissions in the city centre but also in communities and neighbourhoods across the city.

### Working with bus operators

68. Working closely with Bus Operators and SYPTE, Sheffield City Council have been awarded £1.947m from the Government's Clean Bus Technology Fund (CBTF) announced in Spring 2018. This funding award will see 117 non-Euro 6 diesel buses operating in Sheffield retro-fitted with technology which will improve their engine performance and reduce emissions to a compliant Euro VI standard.
69. Initial discussions with Bus Operators have indicated that in order to achieve compliance in their fleet operating in Sheffield will require further retrofit engine technology along with the potential for a number of new buses.
70. First South Yorkshire and Stagecoach Yorkshire will deliver the retrofits to their buses, with the Council providing the grants to pay for them from the CBTF. The buses use high frequency services on routes where air quality levels set out by the EU are being breached. 93 First buses and 24 Stagecoach buses will be upgraded by Spring 2019.
71. Bus operators are keen to continue to work collaboratively with the Council to seek additional funding support for retrofit engine technology along the principles of the Government's CBTF and we will be seeking this continued support through our OBC submission.
72. Through early engagement it should also be noted that certain bus operators have indicated that their ability to retrofit their vehicles is not possible due to the age of their vehicles. Further discussions including those through statutory consultation will be required in order to consider the potential implications of this fully.
73. The same approach will be undertaken for Coach operators who have vehicles older than Euro VI standard based within the city.

## **HGVs**

74. Heavy goods vehicles make up only about 3% of total traffic, but create 15% of the NOx

emissions on our roads.

75. Sheffield are one of a number of cities and urban areas in England that have been mandated to reduce NO<sub>2</sub>, the national logistics companies that provide services to our cities are likely to improve their vehicle fleets quickly. However, there may be specific challenges for locally-based companies that depend on HGV for their business.
76. We need to fully understand the implications for local businesses within and around the proposed CAZ area and we will work closely with the city's businesses through the consultation to develop proposals on how to best improve local HGVs.
77. We also recognise that there may be capacity challenges in the market with the speed at which retrofitted and clean HGVs can be delivered and we will consider this as part of the Outline Business Case (OBC).

### **LGVs**

78. Light goods vehicle make up 13% of total traffic and create 26% of the NO<sub>x</sub> emissions from traffic. Our modelling indicates that there are around 6,900 LGVs trips into the city centre every day. Clearly, not all of these vehicles will be owned by Sheffield or Rotherham residents or businesses but will pass through the CAZ and therefore incur a charge if they are not compliant.
79. From the initial research that we have done with LGV drivers in the city, we have found that:
  - The most common vehicle age for LGV drivers is 5 to 9 years old (41%).
  - LGV drivers generally stated that they would replace their vehicles when maintenance costs reach a certain level.
  - Most LGV drivers (87%) agreed that the councils should try to reduce air pollution whilst 58% agreed that the councils should reduce the number of the most polluting vehicles in high pollution areas.
  - Half of LGV drivers said that LPG had little, or no, appeal to them as an alternative to their vehicle
  - Over half of LGV drivers said that electric vehicle alternatives potentially would appeal to them
  - Many drivers suggested they would require a financial incentive in order to upgrade their vehicle.
80. The range of companies, SMEs and individuals that use LGVs is significant in Sheffield, as in most cities. Therefore, the support packages we need to design could be wide-ranging. For example, as with HGVs, larger national organisations and companies that manage their nationwide fleets are more likely to have the resources to undertake a rapid replacement/upgrade of their vehicles or reorganise the deployment of their fleet.
81. However, smaller local businesses and self-employed business people in Sheffield and Rotherham may need additional support to help them upgrade, retrofit or replace older, non-

compliant LGVs.

82. We will work closely with local SMEs, including those within the proposed CAZ area, through the consultation period to develop proposals on how to best support local LGV owners to retrofit or upgrade their vehicle. Approaches could include the following and would likely to involve targeting at smaller, local LGV owners and businesses:
- Seeking Government funding to provide grant or loan based financial support targeted at smaller local businesses dependent on a LGVs
  - Rollout of electric charging points to support use of electric LGVs and incentives to support LGV owners to upgrade
  - Assessing the opportunity for sustainable 'last mile' alternatives for deliveries within the CAZ area
  - Considering how we could use sunset periods and exemptions to support LGV owners.

### **Exemptions from charging**

83. Should Government accept our proposals, the presumption is that our preferred option for a Clean Air Zone Category C with additional measures (CAZ C+) will apply to all non-compliant vehicles that enter or move within the zone.
84. However, as part of the Clean Air Framework<sup>14</sup>, Government set out a number of exemptions to specific types of vehicle which we will apply to any CAZ area in Sheffield.
85. In addition, we will consider any potential locally-specific exemptions in our Outline Business Case and test the need for any other exemptions through the statutory consultation in 2019. Where appropriate, these exemptions could then be included in our Final Business Case proposals. Based on the national framework, this may include:
- Historic and Specialist Vehicles (eg. vintage buses)
  - Emergency Service Vehicles
  - Military vehicles
  - Community transport

### Lack of market capacity

86. As part of the exemptions to the Sheffield CAZ, we need to consider the capacity of the market to deliver retrofit, vehicle replacements and Euro 6 (eg. for HGVs, coaches) in the necessary time to achieve legal compliance.
87. We may need to look to provide exemptions that will allow those companies who have ordered a (by a predefined date) compliant vehicle or a retrofit to have a period of exemption from chargers until the compliant vehicle arrives / the upgrade work is completed. It is likely that there would be a requirement for companies and drivers will have to demonstrate that

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<sup>14</sup> Defra (2017) *Clean Air Zone Framework*,  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/612592/clean-air-zone-framework.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/612592/clean-air-zone-framework.pdf)

they have done everything possible to bring their vehicle to the required standard and therefore to impose a charge would not improve air quality.

#### Diversions on the road network

88. We will also need to consider the impact that any incidents on our road network could have on the CAZ area, particularly where vehicles are directed into the CAZ and whether diverted vehicles would be exempt from the charge for the time that the diversion is in place.

#### **Wider proposals to support our clean air ambitions**

89. Alongside the CAZ and support packages for specific drivers and businesses, we will work closely with communities across Sheffield to support people to make healthier and sustainable travel choices which improve air quality in the city's neighbourhoods. This could include:
- A major, citywide behaviour change campaign, focused on the impact that air pollution has on our health and the different choices people can make
  - Continuing and enhancing our anti-idling campaign around Sheffield's schools
  - Community-led Clean Air Action Groups to propose solutions to local air quality challenges and co-ordinate local clean air activities
90. In addition, to achieve the required improvements in air quality we will also be seeking funding from Government to introduce:
- Controlled Parking Zones in the city where parking is currently unrestricted in order to encourage people to consider more sustainable alternatives
  - Additional electric vehicle charging infrastructure to encourage and enable the uptake in electric vehicles, and in particular support the needs of Taxi and LGV drivers

#### **THE EVIDENCE: WHY WE ARE PROPOSING A CLEAN AIR ZONE IN THE CITY CENTRE?**

91. Working with Rotherham MBC and DEFRA's Joint Air Quality Unit (JAQU), we have undertaken a Feasibility Study to fully understand our air pollution issues. This includes understanding the key sites where air quality breaches the legal limit; the main causes of the air pollution are at those sites; and using transport, air quality and development modelling projections to understand what the scale of the air quality challenge is likely to be in the coming years.
92. This has involved a comprehensive data assessment of air quality in Sheffield/Rotherham using analysis of our locally collected air quality data; the latest data on transport flows in the city and data from Automatic Number Plate Recognition (ANPR) cameras in the city; and an initial piece of Behavioural Research.

**Road transport is the most significant source of NO<sub>2</sub> pollution in Sheffield and some**

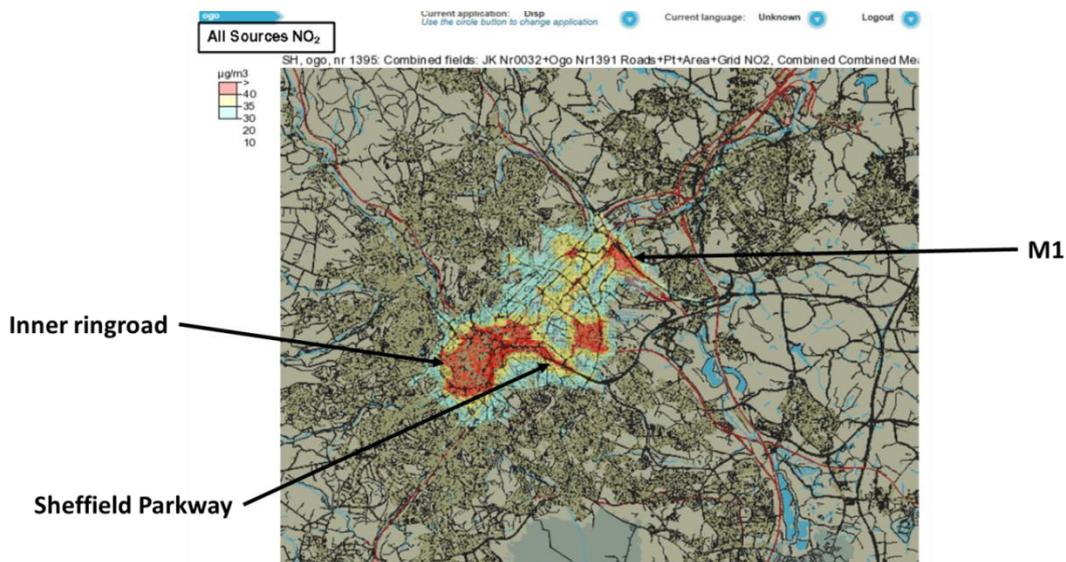
**vehicles produce a disproportionate amount**

- 93. Road transport accounts for 50% of the NO<sub>2</sub> emissions, with a further 35% from industrial sources and the rest coming from domestic and commercial buildings. Industrial process emissions are already tightly regulated and governed by national legislation but at a local level, tackling the pollution caused by road traffic is a critical priority if we are to reduce the impact that poor air has on people in Sheffield. The most significant source of road-based NO<sub>2</sub> pollution is emissions from diesel vehicles, particularly older diesel vehicles.
- 94. As the table below demonstrates, while private vehicles make up the significant majority of the vehicles on Sheffield’s roads, other vehicles cause a disproportionate amount of the NO<sub>2</sub> emissions from exhausts. These are mainly diesel-fuelled buses, London-style black Hackney cabs, Private Hire taxis (PHV), Heavy Goods Vehicles (HGVs/OGVs) and Light Goods Vehicles (LGVs). Therefore, if we want to quickly reduce NO<sub>2</sub> pollution in Sheffield, we need to take action to reduce the impact that some of the oldest and most polluting types of vehicle have on the quality of the air in the city.

Vehicle type	% of Fleet	% NOx
Private Car	81%	50%
LGV <3.5t	13%	26%
Taxi (Hackney & PHV)	3%	4%
Bus	1%	5%
OGV >3.5%	3%	15%

**The city centre and Lower Don Valley experience the most significant NO<sub>2</sub> pollution because of our geography and transport network**

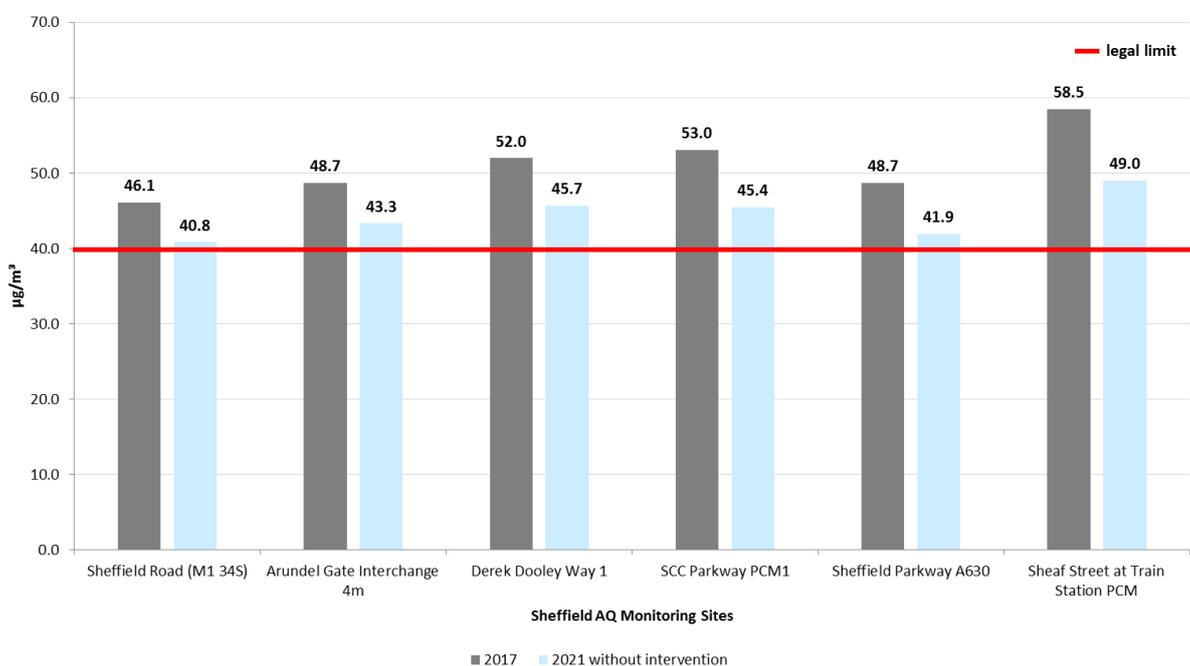
- 95. Our collected and modelled data demonstrates that there is a clear geographical concentration of NO<sub>2</sub> emissions within Sheffield’s inner ringroad. As the map below shows, the areas in breach of the legal limit (ie. above 40µg/m<sup>3</sup> - shown in red) in Sheffield are concentrated in the city centre with some additional areas of exceedance around the M1 and Lower Don Valley.



96. The red lines on the map above are the rail lines which traverse the Sheffield/Rotherham area and whilst Government have stated that the rail network is out of scope here, Sheffield will continue to urge Government to electrify our rail network, improving journey times and reducing emissions from diesel trains.
97. Further, the M1 is a major cause of air pollution for Sheffield and Rotherham but responsibility for the M1 falls to Highways England rather than local councils. Highways England have been involved with the development of Sheffield and Rotherham’s proposals but we are continuing to urge Government to take a stronger, strategic approach with Highways England to address emissions from our motorway network.

**Within the city centre and Lower Don Valley, there are specific roads where, without intervention, NO<sub>2</sub> emissions are predicted to continue to breach the legal limit beyond 2021**

98. Looking more specifically at the city centre and Lower Don Valley, there are a number of roads that currently breach the legal limit for NO<sub>2</sub> emissions and are projected to continue to do so in 2021.
99. With the natural change to the vehicles on our roads (ie. people buying newer, cleaner cars; businesses replacing their fleet vehicles; bus companies replacing their bus fleets etc) the chart below shows that there will be improvements across these sites over the coming years. But, *natural change on its own will not be enough* to ensure that NO<sub>2</sub> pollution at these sites is brought within legal limits.



100. Our evidence shows that there are a number of other sites across the city which currently breach the legal limit for NO<sub>2</sub> pollution (eg. Whitham Road/A57 in Broomhill). However, on these sites, the evidence indicates that through natural fleet replacement and the wider impact of the proposed charging CAZ in the city centre, these sites will not be in breach by 2021.

## **HAS THERE BEEN ANY CONSULTATION?**

101. The introduction of a charging CAZ for Sheffield is a major strategic change for the city and we will undertake a significant, statutory consultation in 2019 ahead of the development of our Final Business Case. The consultation will enable people and businesses in Sheffield to have a say on what the CAZ proposals mean for them and we will undertake intensive face-to-face involvement and engagement with the businesses and drivers that are particularly impacted on by the proposals.
102. Further, the statutory consultation will have a critical role in understanding and analysing the equality implications of the proposed CAZ. We will develop our Equality Impact Assessment throughout the consultation, proposing mitigations and packages support to address any disproportionate impacts on our communities.
103. We have already undertaken some initial research with different road users in Sheffield as part of our Feasibility Study. This work included a quantitative survey of London-style Hackney drivers, private hire vehicle drivers, LGV drivers and private car users (512 respondents) and a series of seven focus groups with taxi and LGV drivers (70 participants in total). This research considered the implications of a charging Clean Air Zone in Sheffield/Rotherham for these different groups of driver, their attitudes to moving to cleaner vehicles and their likely response to different levels of daily charge (£5; £10; £20) for driving through a CAZ.
104. While this research provided valuable initial insight into the approaches and support packages that Sheffield will need to put in place in order to improve emissions from the most polluting vehicles on our roads, it was relatively small in scale and it is our intention to launch a comprehensive consultation on our CAZ proposals in early 2019.
105. We have also held initial discussions, through a joint meeting of the Sheffield and Rotherham Bus Partnerships, with bus operators and SYPTE. This provided a clear position on the bus operators' response to a potential City Centre CAZ charging zone and the opportunity to upgrade bus fleets in Sheffield.

## **RISK ANALYSIS AND IMPLICATIONS OF THE DECISION**

### Risk Management

106. As part of the OBC, we will have a full and detailed risk register which assesses the risk against our CAZ proposals and sets out appropriate mitigations.
107. As a joint study, submission is dependent on the approval of the OBC by both Sheffield City Council and Rotherham MBC.

### Equality of Opportunity Implications

108. As part of the development of our CAZ proposals, we will constantly enhance our Equalities Impact Assessment (EIA) to ensure that the proposals that we submit in our Final Business Case in 2019 are fully cognisant of implications for different communities in Sheffield and that the mitigations focused on those who may be disproportionately affected.
109. A critical step in enhancing our EIA will be the statutory consultation which we will undertake in early 2019. The consultation will be open to all Sheffield residents and will have a particular focus on the drivers and business that will be impacted by the charging proposals but we will also need to fully understand the implications of any vehicle fleet changes for Sheffield's communities.
110. There are likely to be considerable health and wellbeing benefits for all communities in Sheffield through the improvement of air quality and the reduction of NO<sub>2</sub> concentrations in the city. Evidence suggests that it is often lower income communities that are most exposed to and suffer the negative health consequences of poor air quality and therefore, accelerating the reduction in NO<sub>2</sub> with a charging CAZ should bring positive health benefits to our lower income communities. However, through the consultation and development of our proposals, we will need to fully assess any financial inclusion implications for our communities (eg. any impact on travel costs, access to transport).
111. Further, recent studies have shown that the negative health implications of poor air quality are particularly felt by younger and older people more than other age groups, ensuring that there will be positive benefits from the CAZ for the age protected characteristic. Air pollution is also thought to harm unborn babies and scientists have recently found that particles from air pollution in the placentas of pregnant mothers<sup>15</sup>. Therefore, improving the city's air quality should have positive benefits to the wellbeing of pregnant mothers and unborn children in the city.
112. As part of the Outline Business Case (OBC) and the Final Business Case (FBC), we will undertake a comprehensive distributional analysis (part of the Economic Case) to assess the implications for communities and businesses in the city and identify where possible mitigations if required.

### Financial and Commercial Implications

113. This paper seeks approval for the principle of delivering a Clean Air policy and as such there are few financial or commercial implications which will arise directly from this decision. Costs in developing bids etc will be in the most part already within the existing budget funding. In due course detailed proposals will be worked up and subject to further financial evaluation within the Council's existing approval and project management processes. In particular the Council will need to develop a funding package influenced by the degree to which external funding is available.

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<sup>15</sup> Guardian (2018) *Air pollution particles found in mothers' placentas*, <https://www.theguardian.com/environment/2018/sep/16/air-pollution-particles-found-in-mothers-placentas>

114. In line with government Green Book guidance, we are required to undertake Procurement of all necessary infrastructure, goods and services following submission of the Outline Business Case, so that the full business case that we submit can be based on actual costs rather than estimates. The key procurement, both in terms of contract value and impact on delivery of the CAZ that will be undertaken during this period will be the camera infrastructure. A range of ancillary procurements will also be required to deliver cost certainty on various other elements of the CAZ proposal including the additional measures. These will include procuring the signage for the CAZ as well as any third parties required to administer ancillary support packages implemented.

### Legal Implications

115. Under Part IV of the Environment Act 1995, Local Authorities are required to have regard to any national strategy on clean air which is published by the Secretary of State; and to review and assess air quality in their areas and to report against objectives for specified pollutants of concern, to the Department for Environment, Food and Rural Affairs (DEFRA).
116. The Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017 set outs the obligation for Sheffield City Council to carry out a Feasibility Study in relation to tackling roadside nitrogen dioxide concentrations, and to submit initial and final plans identifying the preferred option for delivering compliance in the shortest possible time, and setting out the value for money considerations and implementation arrangements by 31 March 2018 (Strategic Outline Case) and 31st December 2018 (Full Business Case).
117. However, Inception Guidance from the Joint Air Quality Unit states:  
“Local authorities are required to undertake local assessments to consider the best option to achieve compliance within the shortest possible time. Under the terms of the Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017, the **Government has directed that initial plans (equivalent to the Strategic Outline Case) be provided as soon as possible and by the end of March 2018 at the latest. The Direction further directs that the initial plan needs to be followed with a final plan no later than the end of December 2018. Where no public consultation is required we expect a Full Business Case by the end of December 2018.** We recognise that where a significant public consultation is required it may not be possible to complete and submit the Full Business Case by December 2018. In that case, the Outline Business Case that outlines the final plan is to be provided at the earliest opportunity and no later than the end of December 2018 with the Full Business Case to follow shortly after.”<sup>16</sup>
118. Therefore, as Sheffield’s charging CAZ proposals require statutory consultation, we are therefore directed to submit the Outline Business Case before 31<sup>st</sup> December 2018 with the Full Business Case to be submitted following consultation in early 2019.

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<sup>16</sup> Joint Air Quality Unit (2017) *Inception Guidance*.

119. Omitting to submit plans in line with the prescribed deadlines is a risk to the Council and gives rise to potential legal challenge by way of judicial review. Action to manage and improve air quality is legally. The Ambient Air Quality and Cleaner Air for Europe Directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health including fine particulate matter (PM10 and PM2.5) dust and nitrogen dioxide (NO<sub>2</sub>) gas: annual limit of 40µg.m<sup>-3</sup> for NO<sub>2</sub> and daily limit of 50µg.m<sup>-3</sup> for PM10 (which is not to be exceeded more than 35 times a year). Not achieving the air quality targets nationally means not complying with EU law and consequently, this is a risk for the Council.
120. Not achieving the air quality targets nationally means not complying with the law and consequently, this is a risk for the Council. There is the potential for the UK government to be fined if EU limit values are exceeded. Potentially the fines which can be imposed are significant. The reserve powers in the Localism Act to passport fines to local authorities and public bodies (where they have failed to take action when they could) is significant and helps to highlight the need for a clear line of sight between legal obligations and Local Authority responsibilities to improve air quality and provide clarity on the role local authorities play. The government however, can only pass the fines on if they can show that a local authority has not taken appropriate steps to comply with EU and UK law. Failing to do so, would mean SCC is in breach of the above legislation.
121. There is the potential for legal challenge by way of judicial review from members of the public generally, or from environmental groups for failing to meet legally binding limits of fine particulate matter and nitrogen dioxide.
122. There is also a legal responsibility for Sheffield and Rotherham to “carry out a consultation in relation to the implementation of a charging clean air zone under section 170 of the Transport Act 2000. A local authority (or joint local authorities) must consult such local persons and such representatives of local persons as they consider appropriate about the charging scheme. For instance, coach, bus and taxi operators, businesses using HGVs & non-compliant vehicles, would need to be consulted if a CAZ C is considered necessary to achieve compliance. The consultees would need to be expanded to include members of the public if a CAZ D is considered necessary to achieve compliance. It would make good business sense to include members of the public in the consultation exercise and to include options for a CAZC and CAZ D charging zone in the consultation documentation”.

#### Public Health Implications

123. Air pollution is the largest environmental risk to the public’s health. The World Health Organisation Burden of Disease studies are now available at local authority level in England. From these it is estimated that air pollution is responsible for about 5% of deaths and 4% of all illness. We know this is weighted heavily towards the most disadvantaged, who often are more exposed to greater levels of pollution. The Global Burden of Disease (GBD) estimates

may underestimate the level of harm, given the evolving nature of the evidence in this area<sup>17</sup>.

124. Air pollution can be harmful in terms of cardiovascular and respiratory disease and there is some evidence linking air pollution to dementia and other neurological conditions. Poor air quality affects everyone, it has a disproportionate impact on the young and old, the sick and the poor. Poor air quality affects the most disadvantaged communities most – so any improvement in air quality will have positive health consequences.
125. The approach to the Clean Air Zone (CAZ) has been discussed at the Health and Wellbeing Board and partners from the NHS fully support the strategy of reducing air pollution as fast as possible. However, there is a distinction between legal and safe. Of course there is a requirement that we achieve the *legal* standard but from a public health perspective, the HWBB recognised that the CAZ represents an opportunity to push further than this and move to safer air. We may never achieve zero, but clearly there is a long way to push to get the level of air pollution well below the minimum standard of safe.
126. The charging CAZ proposals should deliver improvements to air quality at a quicker rate than would be achievable without intervention and this should bring public health benefits to Sheffield's population. Further, additional measures to improve the fleets of vehicles on our roads, particularly the buses and taxis which drive to and through our neighbourhoods, will bring air quality benefits beyond the city centre CAZ area.
127. The CAZ proposals, alongside the ambitions set out in the Clean Air Strategy and Transport Strategy to promote and invest in active travel, should bring wider health benefits for people in Sheffield. Increasing the number of people who choose to walk, run and cycle as part of their daily routines is good for air quality and will reduce congestion on the roads but will bring enduring health benefits through reducing obesity and cardiovascular disease.

#### **ALTERNATIVE OPTIONS CONSIDERED**

128. The development of our preferred option of a charging CAZ C+ to deliver an immediate impact on the city's air quality has involved a thorough and detailed appraisal of air pollution, traffic flows and scheduled development in the city to understand the interventions that we need introduce to bring the city's air quality into within legal limits in the shortest possible time.
129. What the Feasibility Study has shown is that 'doing nothing' is not an option for Sheffield. This is because of the following:
  - Sheffield and Rotherham have been mandated by Government and are therefore have a legal duty to reduce NO<sub>2</sub> emissions to within legal limits (40µg/m<sup>3</sup>) in the shortest possible time. Failure to do so would likely result in legal action and potentially significant

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<sup>17</sup> Global Burden of Disease, <https://vizhub.healthdata.org/gbd-compare/>

fines.

- Our modelled data demonstrated that there are multiple sites in the city centre and Lower Don Valley that are currently in breach of the legal limits for NO<sub>2</sub> pollution. The national change in the vehicles on the city's roads (drivers/businesses upgrading and replacing their vehicles over time) will not be sufficient to bring NO<sub>2</sub> emissions within legal limits by 2021 and therefore, further intervention is needed.
- More critically, there is an established and increasing scientific evidence base that demonstrates that exposure to air pollution has a devastating effect on human health. In Sheffield, it is estimated that poor air quality contributes to 500 deaths a year but it also undermines the quality of life for people in the city. Poor air quality impacts on the day-to-day lives and life chances of our communities, for example, 7-12% of annual childhood asthma cases were specifically attributable to traffic related air pollution and it increases the chances of hospital admissions, visits to A&E and respiratory and cardiovascular disease. Therefore, urgent action is needed to reduce exposure to air pollution in Sheffield.
- Sheffield City Council's Clean Air Strategy<sup>18</sup> sets out an ambition to deliver clean air for all in the city and this includes a commitment to 'focus on the biggest causes of air pollution and improve them as quickly as possible'. Delivering a CAZ with Government funding to support the drivers that are most exposed to the charging zone will be vital to achieve our clean air ambitions.

130. Given that 'doing nothing' is not an option because of the scale of pollution and the legal directive to reduce NO<sub>2</sub> emissions in the shortest possible time, assessed options for Sheffield and Rotherham have been as follows:

- **CAZ with no charging** – assessed to not deliver the impact needed in the shortest possible time
- **Charging CAZ A (non-compliant buses, taxis)** – incentivises change for two of the most polluting vehicles but insufficient to bring air quality within the legal limit in the shortest possible time at multiple sites across the city's road network because of emissions from HGVs and LGVs
- **Charging CAZ B (non-compliant buses, taxis, HGVs)** – incentivises change for three of the most polluting vehicles but insufficient to bring air quality within the legal limit shortest possible time at multiple sites across the city's road network because of emissions from LGVs.
- **Charging CAZ D (non-compliant buses, taxis, HGVs, LGVs, private cars)** – whilst a charging CAZ D would achieve compliance, our Feasibility Study assessments indicate that a CAZ C with additional measures will achieve compliance in the shortest possible time without charging private car uses. It is our judgment that, based upon all the evidence available to us, introducing a CAZ D is not required. A CAZ D in Sheffield would have a significant and disproportionate impact on the city's residents and lower income families in the city. However, if Government assess our preferred option and propose that a CAZ D is required, Cabinet will be provided with a further paper outlining the implications of

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<sup>18</sup> Sheffield City Council (2017) *Clean Air Strategy*,  
<https://democracy.sheffield.gov.uk/documents/s29124/Clean%20Air%20Strategy%20Dec%20Cabinet%202.pdf>

such a move for the city and the additional resource and mitigations that we would seek from Government.

### **REASONS FOR RECOMMENDATIONS**

131. Based on the outcomes of the Sheffield/Rotherham Feasibility Study, a CAZ C charging zone with additional measures (CAZ C+) is Sheffield's preferred option to achieve legal compliance for the city's NO<sub>2</sub> emissions in the 'shortest possible time'.
132. There is increasing evidence that toxic air has profound implications for the health and life chances of people, particularly more children, older people and lower income communities. Further, air pollution undermines people's quality of life, causing asthma and increasing the chances of hospital admissions, visits to A&E, respiratory and cardiovascular disease.
133. The introduction of a CAZ C+ will deliver a rapid impact on the city's ambitions to make our air safe to breathe for all. Further, taking steps to address emissions from the most polluting vehicles on Sheffield's roads through a CAZ C+ has the potential for Sheffield to access significant Government resource to support the upgrade and replacement of vehicles, investment which would otherwise not be available to us.