Portsmouth Air Quality Quarterly Review

29 November 2021 – 28 February 2022

1 Air pollution

1.1 Introduction

Poor air quality is the largest environmental risk to public health in the UK. Every year, between 28,000–36,000 deaths in the UK are thought to be caused by air pollution. Studies have shown that long-term exposure reduces life expectancy and exasperates pre-existing conditions such as respiratory and cardiovascular diseases. Short-term exposure to elevated levels of air pollution can also cause a range of effects including exacerbation of asthma, effects on lung function, increases in respiratory and cardiovascular hospital admissions and mortality.

1.2 National limits

The main pollutant of concern in Portsmouth is Nitrogen Dioxide (NO_2). Public Health England advise that NO_2, particularly at high concentrations, is a respiratory irritant that can cause inflammation of the airways. There is currently no clear evidence of a threshold concentration of NO_2 in ambient air below which there are no harmful effects for human health.

In 2010 Air Quality Standards Regulations were introduced into English Law and set legal binding limits for concentrations of major air pollutants that affect human health, including nitrogen dioxide. The legal limit for Nitrogen Dioxide, for which Portsmouth are in exceedance, is an annual mean of 40µg/m^3.

Regulation 26 of the legislation requires the Secretary of State to develop and implement a national Air Quality Plan demonstrating how the limit values for air pollution will be achieved in the shortest possible time. Since 2010, the UK has been in breach of legal limits for nitrogen dioxide in many major urban areas.

1.3 Legal challenges

The UK Government has lost 3 challenges in the High and Supreme Courts against environmental campaign group ClientEarth, for failing to take action to achieve the legal limits of air pollution NO_2 in the shortest possible time. Each challenge increased the number of local authorities being directed to take action. Portsmouth was included in the third of these challenges in 2018. Whilst the legal challenges focused on breaches of legal limits, the reasons behind them were to improve air quality and reduce health inequalities across England.

1.4 UK plan for tackling roadside Nitrogen Dioxide concentrations

Government suggest that Charging Clean Air Zones (CAZ) are an effective way to deliver compliance with legal limits for nitrogen dioxide in the shortest possible time. Charging CAZs define areas where vehicle owners are required a pay a charge if they drive through or within. The charge only applies to older, more polluting vehicles, specifically diesel vehicles that are older than Euro 6 and petrol vehicles that are older than Euro 4.

Central government's **UK plan for tackling roadside nitrogen dioxide concentrations**[1] sets out an outline framework for introducing Charging CAZ's. In essence, the worse an area's air quality, the stronger the intervention required to reduce emissions to within legal limits in the shortest possible time. The following classes of CAZ are set out, with an escalating number of vehicle classes being charged. Local authorities should only introduce the minimum required to bring emissions within legal limits:

- Class A – Buses, coaches, taxis, private hire vehicles
- Class B – Buses, coaches, taxis, private hire vehicles, heavy goods vehicles
- Class C – Buses, coaches, taxis, private hire vehicles, heavy goods vehicles, vans, minibuses
- Class D – Buses, coaches, taxis, private hire vehicles, heavy goods vehicles, vans, minibuses, cars, motorcycles (optional)

There is no option for local authorities to pick or choose which vehicles they will charge; instead, they rely on modelled evidence to demonstrate why a particular Class of CAZ is needed to bring about improvements in air quality in the shortest possible time.

The least intrusive classes – A & B – focus largely on vehicles with heavy duty engines. Unlike many light passenger and commercial diesel vehicles, which have not shown the expected real world improvements in engine type in recent years, the latest emission standard (Euro 6) shows significant improvements over Euro 5 in real world emission tests for heavy duty engines. However, these vehicles only make up relatively small percentage of the vehicle fleet (pre-CAZ, only 3% of vehicles operating within Portsmouth were HGV's, buses and coaches[2], but this accounted for 24% of NOx[3] emissions).

Introducing a Class B Clean Air Zone means that non-compliant vehicles running on heavy duty engines will be incentivised to upgrade or retrofit their

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633270/air-quality-plan-detail.pdf
2 https://www.portsmouth.gov.uk/wp-content/uploads/2020/04/appendix-a-local-air-quality-problem-and-underlying-cause.pdf
3 NOx refers to the cumulative sum of NO and NO_2. NO can react with oxygen to form NO_2, so the cumulative total of both gases is considered when working with air pollution data.

vehicles to a cleaner standard. Without the intervention of the Clean Air Zone it is unlikely that the same rates of vehicle upgrade would be achieved.

Taxis and Private Hire Vehicles are also included as they form part of circuiting traffic; whilst a private car might make a single trip in and out of an area in a day, taxis and private hire vehicles may make multiple trips in a single day, thereby continuingly adding to the pollution.

1.5 Portsmouth local Air Quality Plan

Portsmouth has persistent exceedances of the legal limits of NO_2. Extensive modelling showed two locations, on Alfred Road and Commercial Road, which would be in exceedance in 2022 unless action was taken to reduce emissions. Both are on the A3 route in and out of the city. An estimated reduction in NOx of 4%–7% is required to achieve the legal limit at these sites. There are also a further six road sections where NO_2 concentrations were forecast above >37 µg/m^3 in 2022, which, whilst not in exceedance of legal limits, are still considered high.

In order to identify the most suitable options for bringing down levels of NO_2 to within legal limits, a longlist of 64 different interventions was considered. These included both non-charging (such as anti-idling campaigns, changes to traffic signals etc) and charging interventions (i.e. different levels and types of vehicle charging). These options were assessed and refined using a series of assessment criteria. The primary assessment criteria were:

- delivery timescales, where the charging CAZ benchmark was assumed to be 12–18 months
- potential scale of NO_2 reduction, based on emissions modelling undertaken as part of the 2018 Targeted Feasibility Studies or proxy estimates based on the potential change in vehicle flow, speeds and/or delay;
- certainty of delivering the estimated change identified above, e.g. high certainty for options which ban traffic or reduce per vehicle emissions and low certainty for options which rely on individuals choosing to change their behaviour (e.g. travel planning initiatives); and
- risk of displacement of traffic or air quality limit exceedance to other Air Quality Management Areas

The four sub-criteria which were assessed were the strategic case for the intervention, supply side capacity and capability, affordability and achievability.

Delivery of a Charging Clean Air Zone was forecast to take 12–18 months. As this was Central Governments preferred tool for bringing down emissions to within legal limits in the shortest possible time, any alternative suggestion would need to achieve the same reduction in emissions in a similar time frame. Therefore, any options which would take more than 24 months were

assumed to have failed in the objective to reduce emissions to within legal limits in the shortest possible time.

After extensive studies and numerical modelling, looking at both charging and non-charging options, it was identified that a Class B+ CAZ was needed to bring levels of pollutants down to within legal limits in the shortest possible time. There was no non-charging measure which on their own, or in combination with other interventions, could sufficiently reduce emissions to within legal limits in the shortest possible time, as Portsmouth had legally been mandated to do by Central Government.

The final option, which Central Government instructed Portsmouth City Council (PCC) to implement, was a Class B+ CAZ. A Class B CAZ is one which charges non-compliant heavy goods vehicles, buses, coaches, taxis and private hire vehicles. In order to reach compliance with legal limits PCC also delivered a number of non-charging measures alongside the Class B CAZ (the + element) such as changes to traffic signals and revising Portsmouth's taxi and private hire licensing policy. The modelling forecast that this option would be effective at reducing emissions to within legal limits in the shortest possible time. There was therefore no legal need to introduce a CAZ C or D which could charge vans and cars.

The CAZ will need to be in place until compliance with legal limits have been met and have been proved to be permanent. Portsmouth will need to have been compliant with legal limits for at least two years and provide demonstratable evidence in the success of the measures to improve air quality, such that the removal of the Clean Air Zone will not lead to a reversal of these. Central Government are developing a framework for Clean Air Zone decommissioning that Portsmouth will work within.

1.6 Impact of the pandemic on air quality in Portsmouth

Since PCC was legally mandated to implement a Class B CAZ, the COVID-19 pandemic has significantly impacted on local economies and how, why and when we travel. The pandemic has the potential to influence future NO_2 concentrations, by impacting future travel behaviour, the economy (affecting both the volume of travel and the rate at which vehicles are upgraded), and background NO_2 levels.

Within Portsmouth, the initial lockdown measures resulted in significant reductions in vehicle movements in the city as residents observed the lockdown restrictions. Those who could worked at home, schools closed, and many shops, services and leisure businesses closed or switched to online operation only. At the height of the March 2020 lockdown use of motorised traffic in the city decreased to less than a third of pre-lockdown levels and cycling numbers increased by more than 150% compared to 2019. However, as lockdown eased, traffic levels increased along the main routes in the city and have mostly recovered to the levels seen pre-pandemic.

There is some evidence that the peak in people cycling more remains higher than it was in 2019, before the pandemic. Any move away from the private car to increased bike use will lead to better air quality, however, it is too early to draw any long-term conclusions from the data.

An important implication of the pandemic is the disruption that it was caused to the automobile market. In 2020, new car sales were down to their lowest level since 1992[4], and the number of newly licensed Heavy Goods Vehicles nationally was at its lowest level since 2014[5]. With the difficulties in obtaining a new vehicle, this has been a boost to the second-hand market.

From an air quality perspective, this is problematic as the newer vehicles are significantly less polluting than older vehicles. As a result, the improvement in per vehicle emissions has been less than the improvement that would have occurred without COVID-19 (as without the pandemic a greater number of older vehicles would have been replaced by new cars).

The drop in new Heavy Goods Vehicles is particularly a cause for concern as it is in the vehicles with Heavy Duty Engines where the biggest improvements in air quality have been seen in recent years. Lower rates of upgrade in this vehicle group could mean older, more polluting vehicles continuing to operate. PCC will continue to monitor these statistics. The introduction of a Class B CAZ is likely to drive upgrades in this vehicle group, as otherwise they will be subject to a £50 daily charge.

4 https://www.bbc.co.uk/news/business-55551315
5 https://www.gov.uk/government/statistical-data-sets/veh05-licensed-heavy-goods-vehicles

2 Portsmouth Charging Clean Air Zone

2.1 Portsmouth CAZ

The Portsmouth Charging CAZ went live on the 29 November 2021. All non-compliant vehicles will be charged upon entry to the CAZ. Vehicle registration plates are captured using Automatic Number Plate Recognition (ANPR) cameras upon entry to the zone; these are sent to the Government's automated central service which uses DVLA vehicle records to determine which vehicles are non-compliant, and whether or not they have paid the CAZ charge.

PCC only need to take action when non-compliant vehicles have entered the CAZ and not paid the charge, and so are liable for a Penalty Charge Notice.

The metrics included within this section are for the first three months of operation for the Portsmouth CAZ. Please note, that this data will be updated and reported on a quarterly basis.

2.1.1 Portsmouth Clean Air Zone Scheme Information

Go Live Date: 29 November 2021

Size: 2.62km^2

Website: **https://cleanerairportsmouth.co.uk**

2.1.2 Vehicle Charge Summary

Category	November/ December	January	February
Total vehicles subject to a charge	1,126	1,587	1,343
Total vehicles entering the CAZ	1,054,124	1,143,374	1,123,542
Total number PCNs issued*	549	478	394

*For non-compliant entries in that month.

The data suggests that there has been a slow increase in the number of vehicles entering the Clean Air Zone since it launched. From 13 December through to 26 January, government guidance was in place instructing people to work from home where possible due the Covid-19 pandemic. It is likely that this had had an impact on the total number of vehicles driving through the CAZ in that time, particularly cars. As cars are not subject to the CAZ charge it's unlikely that this would have an impact on the number of vehicles being issued a charge.

The increase in total vehicles subject to a charge between December and January is likely due to internal adjustments to the cameras to achieve an

optimum state in terms of capturing the highest possible number of number plate reads, balanced against the workload of correcting any misreads.

2.1.3 Vehicle Compliance Summary

Category	November/ December	January	February
Compliance rate %	96%	96%	95%
Non-compliance rate %	4%	4%	4%
Average daily unique compliant vehicles	30,616	35,341	38,307
Average daily unique non-compliant vehicles	1,253	1,395	1,537
Average daily unique vehicles detected in Zone	31,943	36,883	40,126

The data generally shows a compliance rate of 96%, and non-compliance at 4%[6]. The rate of non-compliance is significantly inflated by a large number of nationally and locally exempt vehicles. The CAZ system categorises all nationally exempt vehicles as 'non-compliant' – meaning that many vehicles that wouldn't be charged under a Portsmouth CAZ (such as cars, vans etc) are being included within that number of non-compliant vehicles. The compliance rate is, in turn, likely to be higher than stated. Likewise, locally exempt figures include vehicles that have been whitelisted for purposes other than a PCC-granted Local Exemption.

Future iterations of this report will include figures on the number of vehicles that have been granted a Local Exemption as agreed by PCC. This is not possible for the first months of operation due to the way in which the reporting system was initially set up.

2.1.4 Enforcement Summary

Category	November/ December	January	February
Daily Average number of vehicles issued a PCN	17	15	14
Total Number of Penalty Charge Notice's Issued	549	478	394
Percentage of vehicles subject to a charge issued a PCN	49%	30%	29%
Percentage of all unique vehicles issued a PCN	0.05%	0.04%	0.04%
Percentage of PCN's paid	81%	81%	61%

6 Some vehicles are unrecognised so the combined figure of Compliant and Non-Compliant vehicles will not always equal 100% of the total number of vehicles entering the Clean Air Zone.

The number of vehicles being issued with Penalty Charge Notice (PCN) started at almost half of all chargeable vehicles when the CAZ launched. PCC were aware that some people may not be aware of the CAZ, and so ran an early 'soft enforcement' whereby for the first month of operation those in receipt of a PCN had a further week's grace to pay the CAZ charge only, without the additional penalty charge. The data shows the number of chargeable vehicles being issued with a PCN has started to fall, with the average number of PCNs issued in February at 14 per day.

2.1.5 Comparison against forecasts

The numbers of vehicles are lower than forecast, as are the number of non-compliant vehicles. For the first three months of CAZ operation, PCC forecast an average of 306 non-compliant vehicles per day, whereas the average actual is 44 vehicles subject to a charge per day. Likewise, the forecast traffic flows were 52,100 unique vehicles per day, whereas the average monitored daily flow is 36,100 unique vehicles (although this represents an average and has been steadily increasing with time). The income from the CAZ is consequentially lower than expected, with the funds raised going towards the operational running costs of the scheme.

The launch of the CAZ coincided with the introduction of Work from Home guidance by the government as part of their response to the Covid-19 pandemic, which is likely to have resulted in fewer vehicles travelling through the CAZ. The launch was also preceded by an eight-month period where PCC worked with the vehicle owners who would be most impacted to upgrade their vehicles, either through retrofitting, replacement or lease. More details can be found in section 3 below. Whilst it is too early to draw definitive conclusions as to why the number of non-compliant vehicles is lower than forecast, it's likely that these are two contributory factors.

PCC are collecting both vehicle data and air quality data in relation to the CAZ. Whilst vehicle data is quickly available for comparison against forecasts, the air quality monitoring data has much longer lead in times (see section 2.2). The exceedances in NO_2 levels are due to road traffic and so a reduction in the numbers of older, more polluting vehicles is expected to result in improved air quality. This will be closely monitored.

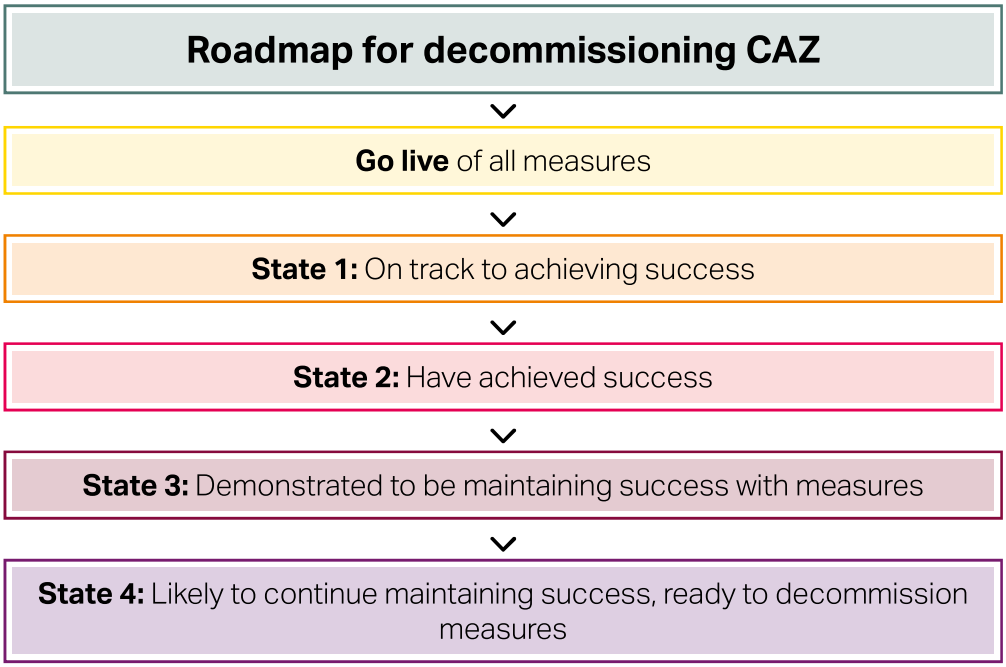
2.2 Long term monitoring and decommissioning

The Portsmouth CAZ will remain in operation until Portsmouth has achieved and maintained compliance with legally binding targets in air quality. Whether or not Portsmouth has achieved compliance will rest on an evidence base of long-term monitoring. This will need to demonstrate a year+ worth of data that the shows NO_2 levels are below the legal limit of 40µg/m^3, and a further year to ensure that levels remain within legal limits.

The data that central government use to monitor compliance with legal limits is based on their national Automatic Urban and Rural Network of air quality monitors and modelled concentrations from the Pollution Climate Mapping (PCM). This is different from the data that PCC collect to monitor air quality in the city. PCC rely on a network of diffusion tubes and a limited number of continuous monitoring sites for air quality data. The diffusion tubes themselves are analysed and verified yearly, meaning that data for 2022 will not be available until 2023. Whilst useful, the six continuous monitoring sites on their own cannot give a true picture of air quality in Portsmouth as they only provide a snapshot of air quality in a particular location and not in the city as a whole.

The CAZ will not be 'switched off' as soon as legal limits have been met – this runs the significant risk that air quality would just return to levels seen before the CAZ was introduced. Instead, the CAZ will be decommissioned when real world data and modelling demonstrates that removing the CAZ is unlikely to result in emission levels reaching above the legal limits. Figure 1 below shows the stages for decommissioning that have been laid out by central government.

Figure 1. Roadmap for Decommissioning



2.3 External monitoring summary

As part of the long-term monitoring of the CAZ, PCC are working with central government to monitor roads external to the CAZ to make sure that more polluting vehicles do not simply move to alternative routes through the city.

Central government are providing Portsmouth with the raw data for PCC to analyse. The results will be incorporated into the next Quarterly Report.

3 Clean Air Fund

3.1 Introduction

PCC recognises that by introducing the CAZ, many businesses will find their operations interrupted on a day-to-day basis. In order to help them upgrade their vehicles before the CAZ launched, PCC submitted an application to central government's Clean Air Fund (CAF) to secure funding for Heavy Goods Vehicles, buses, coaches, taxis and Private Hire Vehicles. Applications opened in March 2021 and since then have been heavily subscribed.

Whilst we have not been able to award funding for every applicant who requested it, we have been able to support those most in need in replacing their vehicles. Applications were scored against a set of criteria, the most significant of which were:

- Location – is the business located in Portsmouth or the Isle of Wight?
- Is the business micro, small or medium sized (i.e. 0–249 employees)?
- How often does the vehicle enter the CAZ?
- Can the business rotate their fleet or plan routes that don't result in non-compliant vehicles entering the CAZ?

Due to the high number of applicants, the fund for HGVs, buses and coaches is now closed. We still have funding available for taxis, and we'd encourage any taxis or private hire vehicles licensed with PCC who have yet to upgrade to contact us.

Some CAF vehicles who are facing a delay in delivery of new vehicles have been granted temporary exemptions as the delay is due to the disruption caused by Brexit and the pandemic.

3.2 Heavy Goods Vehicles

Traffic surveys undertaken to support the implementation of the Portsmouth CAZ suggested that funding was needed to upgrade 69 Heavy Goods Vehicles. PCC were successful in securing grants of £16,000 per vehicle. This fund has been fully subscribed.

As there are not many retrofit options for Heavy Goods Vehicles, most have opted to replace their older, non-compliant vehicle with one that is Euro 6 compliant.

3.3 Buses and coaches

As with HGVs, traffic surveys done to support the implementation of the CAZ suggested that funding was needed to support the upgrade of 57 buses and coaches. PCC were successful in securing grants of £15,000 per vehicle. This funding was targeted at small and medium sized enterprises. A previous

round of funding in 2019 focused on scheduled bus services run by First and Stagecoach retrofitted 105 vehicles who regularly entered the CAZ, to bring them up to Euro VI standard.

The CAF for buses and coaches has been fully subscribed, with 23 vehicles choosing to replace their older, non-compliant vehicle with a Euro 6. A further 33 vehicles have so far chosen to retrofit their existing vehicles. A single vehicle has used the CAF funding to exit their lease agreement on a non-compliant vehicle.

3.4 Taxis and Private Hire Vehicles

PCC operate as the Licensing Authority for the Hackney Carriages (taxis) and Private Hire Vehicles (PHVs) based in Portsmouth. As such, the council applied for enough funding to support the drivers of all the non-compliant vehicles in the fleet to upgrade. Through the CAF, grants of £1,500 per vehicle for a standard taxi or PHV, and £5,000 per Wheelchair Accessible Vehicles (WAVs), were secured. The higher grant amount for the Wheelchair Accessible Vehicles reflected the higher upgrade costs. Since the CAF opened to Hackney Carriages and Private Hire Vehicles in March 2021, PCC has actively supported the replacement of 119 vehicles, including 26 WAVs.

Wheelchair Accessible Vehicles also play a key role in providing mobility for wheelchair users in Portsmouth and so it was particularly important to ensure that vehicle owners were supported in upgrading their vehicles. PCC were able to secure an additional £1,000 per vehicle from central government, raising the funding available from £4,000 to £5,000. Moreover, around 30 PCC licensed Wheelchair Accessible Vehicles were granted a six-month sunset period where they were exempt from the CAZ charge, which ended on the 31 May 2022. This sunset period was in place to give drivers longer to upgrade their vehicles, recognising the higher upgrade costs for WAVs and the key role that they play in supporting those with mobility difficulties. We are actively supporting vehicle owners through our dedicated Engagement Officer to help them reach compliance.

Grants remain open to those licensed in Portsmouth who have yet to upgrade. For further enquiries please email **CleanerAir@portsmouthcc.gov.uk**.

4 Changes to hackney carriage and private hire licensing policy

In December 2020, PCC's Licensing Committee agreed to change licensing requirements for hackney carriages and private hire vehicles so that they could only be licensed until they reached eight years of age. This meant that older, more polluting vehicles would be phased out of use in the taxi and private hire trade. Owners of older vehicles could apply for a CAF grant to help them upgrade.

The new requirements came into effect on 1 January 2022, so owners of non-compliant vehicles had a full year to replace them. Portsmouth local fleet of taxis and PHV is now 97% compliant with the requirements of the Portsmouth CAZ (as of May 2022) – up from 62% when the CAZ Outline Business Case was submitted in the autumn of 2019.

It was also agreed by the Licensing Committee that any new vehicle licensed after 1 January 2025 would need to be Zero Emissions Capable. Many hybrids and all electric vehicles are classed as Zero Emissions Capable[7]. By making this commitment to cleaner vehicles in the longer term, PCC was able to successfully bid for £500,000 in funding for rapid electric vehicle (EV) chargers specifically for the taxi and private hire trade.

Recognising the importance that Wheelchair Accessible Vehicles provide to key communities within Portsmouth, proposals are being developed through the Licensing Committee to consider extending the age limit of these vehicles from eight to 12 years. An update on this proposal will be reported in the next quarterly review.

7 Transport for London defines a Zero Emission Capable private hire vehicle as one that emits:

- No more than 50g/km CO_2, with zero exhaust emissions for a minimum range of 10 miles (16.09 km)
- No more than 75g/km CO_2 exhaust emissions, and be capable of operating with no emissions for a minimum range of 20 miles (32.19km)

5 Alfred Road signal changes

Alfred Road is one the two sites on Portsea Island where emissions were forecast to exceed legal limits in 2022. Whilst this site is within the CAZ, PCC has also made changes to the signals to optimise traffic flow. Less queuing traffic will contribute to a lower build-up of emissions at this location.

In particular, PCC has made changes to the traffic signals at Alfred Road / Queen Street junction. These are:

- A shorter cycle time during the AM and PM peak periods. A junction's cycle time is the time it takes to move through all the 'stages', with all arms having a green light, including space for pedestrian movements. A shorter cycle time means shorter wait times for vehicles, resulting in shorter queues and lower 'at point' emissions, and shorter wait times for pedestrians and students.
- Reversing two of the signal phases. This will allow a 'green wave' effect for southbound traffic to flow straight through the junction, reducing the amount of congestion at the exceedance location.

In combination with the CAZ and other measures being introduced to improve air quality in the city, these changes are forecast to lead to an improvement in the level of air pollution at Alfred Road.

6 Workplace Sustainable Travel Fund

The aim of the Workplace Sustainable Travel Fund is to reduce single occupancy car journeys and encourage cycling and walking for both business journeys and travel to and from work. These behaviours translate into helping to improve the air quality in Portsmouth.

The 2021/22 fund was distributed as grants of up to £4,000, with at least 10% match funding required. The fund was oversubscribed, with 33 applications received. PCC were able to award funding to 22 applicants – 17 with the full funding requested and 5 part-funded.

Applications were received from churches, a nursery, various businesses (such as solicitors, mobile barista's, engineering consultancies) and non-for-profit organisations. Using the funding, they were able to purchase pool bikes, e-cargo bikes, bike shelters, cycling and walking accessories (helmets, hi-vis, waterproof clothing).

7 Electric vehicle charging points

7.1 Rapid EVs for Taxis and PHV

Due to the changes made in Licensing Policy for taxis and private hire vehicles, PCC were able to bid for funding from Central Government for £500,000 for rapid electric vehicle charging points around the city exclusively for the use of the taxi and private hire trade. The rapid chargers are sized at 50kW each and to begin with the tariff is expected to be 40p/kWh.

The first of these was installed in February 2022 at Stubbington Avenue. The next phase is a planned charger at both London Road and Isambard Brunel Surface carparks followed by the Park and Ride and D-day Museum with up to three chargers each.

With a requirement for all new taxis and private hire vehicles to be Zero Emissions Capable by 2025, the introduction of these charge points will enable this change.

7.2 On-street residential EV charging points

PCC started installing on-street electric vehicle (EV) charging points in March 2019, with a successive wave in February 2022. To date there have been 98 on-street charge points installed.

Use of the on-street electric charge points is open to all residents. There are two operators of on-street charging points in Portsmouth, Ubtricity and Joju, each with their own app for use. If the user doesn't have either app downloaded, payment can also be made through scanning a QR code on the charge point with a smart phone.

Phase 1 of the EV charge point installation, which began in March 2019, saw the installation of 36 chargers. The shift to electric vehicles will have reduced the amount of nitrogen dioxide and particulate matter generated from vehicle exhausts. Moreover, to date these are estimated to have saved in the region of 122.7 tonnes of CO_2e (carbon dioxide or equivalent) over three years of operation.

8 Refuse collection vehicles

Portsmouth's fleet of refuse collection vehicles are now run-on Green D+ Hydro-treated Vegetable Oil (HVO), rather than diesel. HVO fuels are made using used second-hand oils and fats from cooking and other industries.

Emissions data indicates that Green D+ HVO fuel results in the following fuel efficiencies:

- Carbon Dioxide (equivalent) – reduction of up to 90%
- Nitrogen Oxide – reduction of up to 30%.
- Particulates – reduction of up to 85%.

By using HVO fuels for refuse collection vehicles this reduces the impact that statutory services such as refuse collections have on the city's air quality.

Whilst the switch from regular fuel to the Green D+ HVO fuel isn't sufficient to bring the refuse collection vehicles in line with Euro 6 standards – particularly with regards to NOx, it still offers a smart, effective reduction at very little cost to the taxpayer. Because the refuse collection vehicles will be operating across the city, and not just within the CAZ, these emissions savings will benefit everyone. It also means that the council can invest in new Euro 6 refuse collection vehicles when the current contract ends in October 2023.

Moreover, the significant reduction in CO_2 (e) means that the use of Green D+ HVO fuel has wider ranging benefits to the environment, beyond improvements to air quality. The benefits of Green D+ is such that one engine running on diesel produces as much CO_2 (e) as 10 running on Green D+ – helping Portsmouth tackle the climate emergency through simple steps in the way in which the council operates.

9 Zero Emission Bus Regional Area (ZEBRA)

In partnership with First Solent and Hampshire County Council, PCC has been awarded £6.5 million to replace 34 diesel buses with new electric buses on three key routes across the Gosport, Fareham and Portsmouth area (First bus routes 1, 3, 9/9a).

Portsmouth and Hampshire are just one of twelve areas across England to be awarded funding for electric buses, alongside the required charging infrastructure. The buses are forecast to be able to operate for up to 300 miles between charges.

The buses will run through areas where a quarter of households are without a car, providing much needed clean connectivity. Furthermore, as electric vehicles are much less polluting than diesel vehicle, with zero tailpipe exhausts, this will support air quality improvements on the bus routes that travel through four of Portsmouth's air pollution hotspots.

10 Preliminary air quality reporting

10.1 Baseline air quality modelling

The legal limit for NO_2 is an annual mean of 40 µg/m^3. Extensive modelling has been undertaken to identify areas where air quality is not expected to meet legal limits in 2022. This modelling is based on extensive roadside air quality monitoring and traffic surveys.

Two local road sections in central Portsmouth were identified where modelled NO_2 concentrations are forecast to exceed the statutory limit of 40 µg/m^3 (or 40.49 µg/m^3 unrounded) in 2022. These are:

- **A3 Alfred Road (Unicorn Rd to Queen St, 41.7 µg/m^3);**
- **A3 Commercial Road (south of Church St, 41.1 µg/m^3).**

These road links are located in the city centre area, on the main A3 route in and out of the city. An estimated reduction in NOx of 4%–7% is required to achieve the statutory limit.

For context, 2022 is the earliest year in which compliance is considered feasible as a result of implementing a charging CAZ, and represents the benchmark for assessing options. Portsmouth is under ministerial direction to reach the legal limit in the shortest possible time. The modelling in Figure 3 shows the forecast modelled air quality with and without the CAZ. Figures 4 and 5 below show the location of the air quality exceedance / near exceedance locations.

In the absence of any intervention, **compliance would be achieved in 2023 at the identified exceedance locations, due to assumed background changes in fleet composition**. However, the coronavirus pandemic has created some uncertainty around the background rate at which vehicles are renewed, due to a decline in the number of new vehicle registrations in the first six months of 2020. This could extend the baseline year of compliance.

10.2 Trends in air quality

There are five Air Quality Management Areas (AQMAs) currently in place within Portsmouth's statutory boundary, due to exceedance in annual NO_2 at these locations. Four of these are either within or border the CAZ, with the fifth covering the southern end of Eastern Road (see figure 2 below). Annual reporting at these five locations has shown that in most locations there has been a slow downward trend in NO_2 since their designation, as a result of actions undertaken by PCC and a renewing of vehicles to cleaner models, and personal choices made by residents to travel in more sustainable ways. A more detailed analysis is available in the Air Quality Annual Status Report (ASR). Despite the decline air quality is still poor in many parts of the city.

Because of the danger to human health that poor air quality poses, Portsmouth is legally obliged to bring levels of NO_2 down to within legal limits in the shortest possible time. This meant that PCC had to take stringent actions, such as introducing the CAZ and its complimentary measures. This may bring Portsmouth into compliance with legal limits as shown in Figure 3 below, but it is recognised that there is still further to go to improve air quality and residents' health and wellbeing. That is why measures such as the ZEBRA bus scheme and on-street electric vehicle charging points are being pursued, with further actions being planned as PCC explore other ways in which Portsmouth's air quality can be further improved.

Figure 2. Portsmouth Clean Air Zone and Air Quality Management Areas

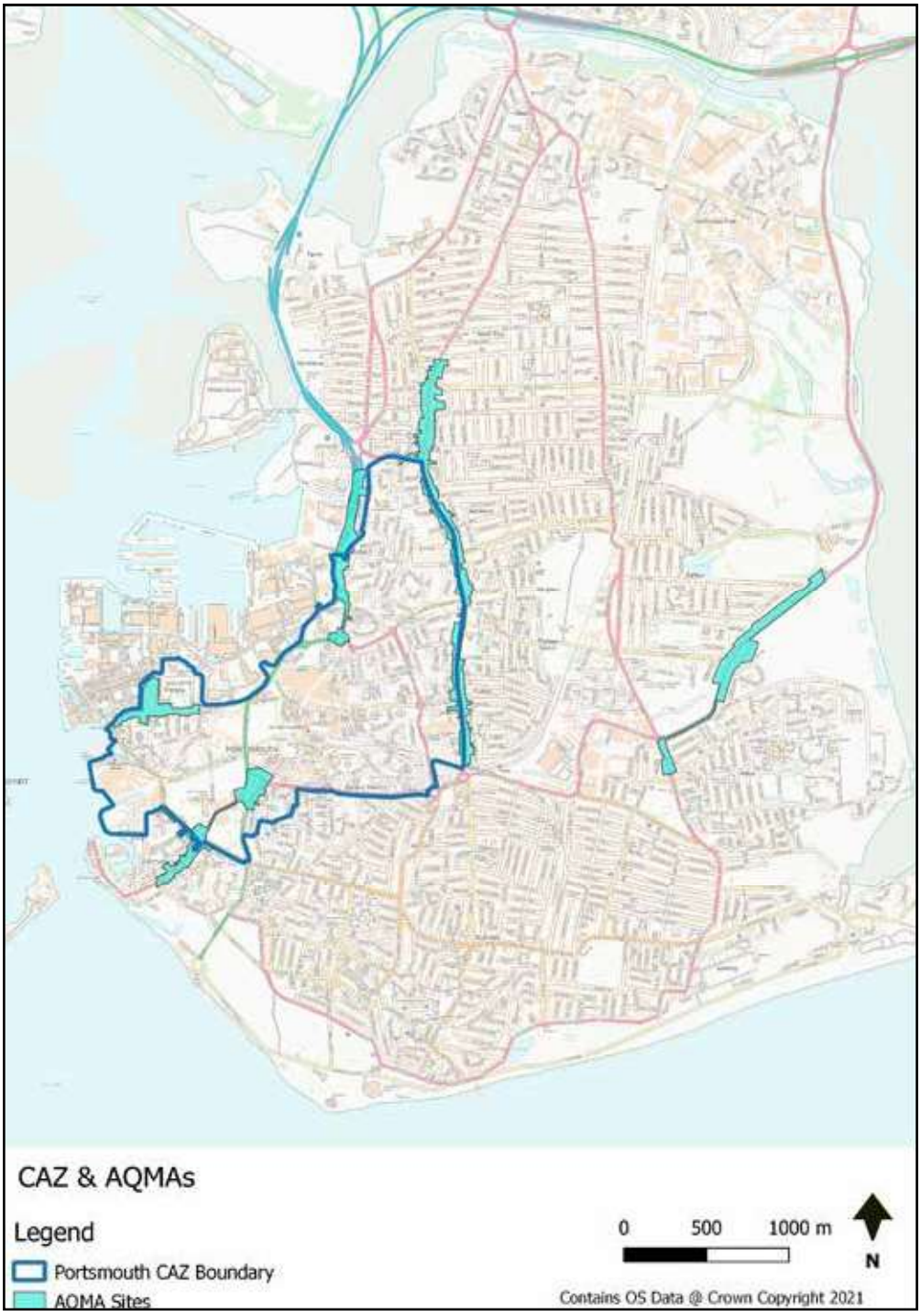


Figure 3. Modelled NO2 (µg/m^3) air quality modelling, with and without the Clean Air Zone

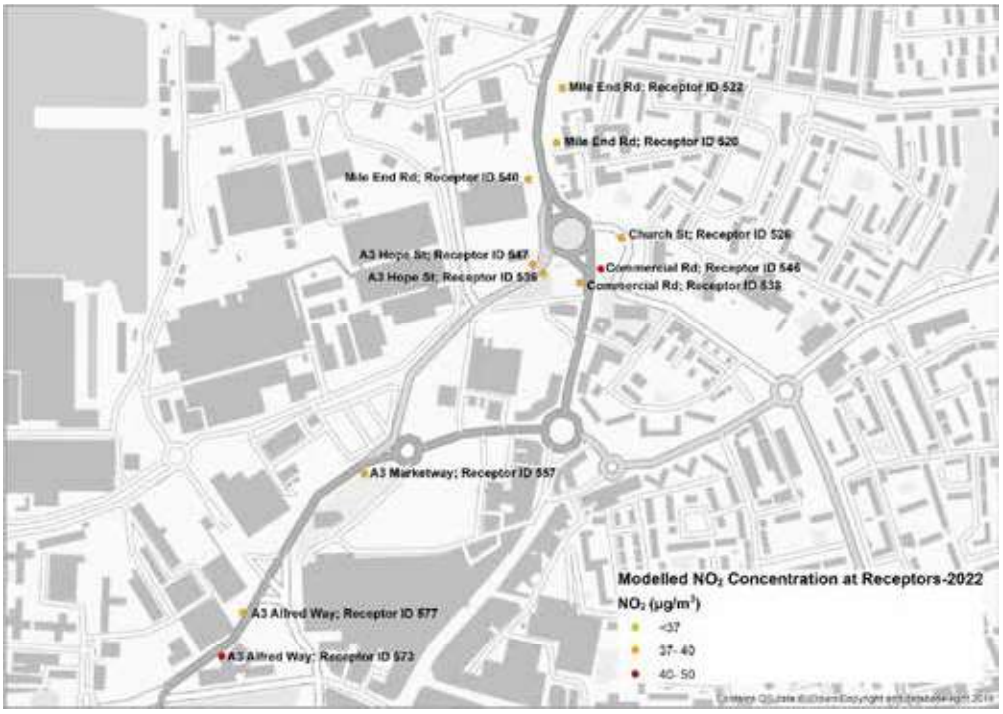
Receptor ID	Road Name	Future Baseline (2022)	CAZ B + non-charging measures (2022)
Exceedance locations			
573	**A3 Alfred Road (Unicorn Rd to Queen St, s/b)**	**E 41.7**	**N 40.2**
546	**A3 Commercial Road (south of Church St Rbt, s/b)**	**E 41.1**	**N 39.5**
Near exceedances (37 µg/m^3)			
526	Church Street (east of Church St Rbt, n/b) (revised assessment)	**N <38.7[a]**	**N <38.7[a]**
536	A3 Hope Street (south of Church St R'bout, s/b)	**N 38.9**	**N 37.8**
824	A2030 Eastern Road Water Bridge (s/b)	**N 38.8**	**N 38.5**
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	**N 38.5**	**N 37.9**
520	Mile End Road (north of Church St R'bout, s/b)	**N 37.6**	**N (36.9)**
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	**N 37.4**	**N (36.2)**
Road sections on the Strategic Road Network exceeding the statutory limit (40.49 µg/m^3) in 2022			
986	A27 (north of Portsea Island, w/b)	**E 48.5**	**E 48.2**
1089	A27 (east of Portsea Island, w/b)	**E 46.1**	**E 46.0**
11	M27 (west of Portsea Island, w/b)	**E 45.3**	**E 45.3**
968	A27 (north of Portsea Island, e/b)	**E 43.7**	**E 43.1**
834	A27 (east of Portsea Island, w/b)	**E 41.1**	**E 40.8**

Exceedances (>40.49µg/m^3) shown preceeded with E, near exceedances (>37µg/m^3) shown preceeded with N, lower concentrations shown in brackets.

Note a: The concentration at Church Rd has not been modelled directly, but the option reduces traffic levels and improve the average fleet emissions compared with the baseline. It therefore follows that the concentration will follow the same trend as at all other sites and be lower than the baseline concentration.

Figure 4. Location of roadside receptor sites with modelled exceedances in 2022 baseline

Figure 5. The City Centre Exceedance locations



10.3 Exceedance locations on the strategic road network

There are also five road sections on the A27/M27 Strategic Road Network (operated by National Highways) where NO_2 concentrations are forecast to exceed the statutory limit in 2022. The highest exceedance is on the section of the A27 immediately north of Portsea Island, requiring a reduction in road NOx of 30% to achieve the limit value.

These locations are National Highways' responsibility, but PCC is expected to ensure local measures do not adversely impact on these sites. The introduction of the CAZ in the south-west of the city is not expected to adversely impact these sites.

10.4 Future reporting

Section 2.2 describes the process for long term monitoring of the Clean Air Zone.

PCC also produce an Annual Status Report looking at air quality across Portsmouth for the previous year. Due to the nature of air quality monitoring (much of it being in the form of diffusion tubes which need to be collected and analysed on an annual basis) this is only reported annually. Air quality can also be affected by factors such as seasonality and local transport conditions which makes an annual assessment the most robust approach.

The results of 2021's Annual Status Report on air quality will be incorporated into future iterations of this report where it can complement the forecast data in understanding the emerging picture of the impacts of the CAZ.

11 Next steps and where to find out more

When will the next report be published?

This report will be published four times a year – once every quarter, bringing residents an update on the measures being implemented across the city to improve air quality.

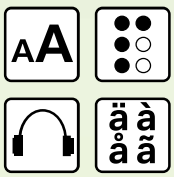
Where can people find out more?

There is a website dedicated to air quality in Portsmouth – **https://cleanerairportsmouth.co.uk**. Updates are also posted on PCC social media feeds.

Where can I find out more about changes to Air Quality as a result of the measures included in this report?

As time goes on, we will update the Quarterly report with data as it becomes available. Air Quality data is also reported annually in **Portsmouth City Councils Air Quality Annual Status Report**[8]. The data for 2021 will be released later this year, once it has been verified and reviewed.

8 https://www.portsmouth.gov.uk/services/environmental-health/air-quality-and-pollution/air-quality-in-portsmouth



You can get this information in large print, Braille, audio or in another language by calling 023 9268 8651

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