

PORTSMOUTH LOCAL AIR QUALITY PLAN OUTLINE BUSINESS CASE

Local authorities covered Portsmouth City Council

Main contact Air Quality Lead for Transport

Version control Draft

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Stakeholder Report (including results of Stated Preference Survey)		
Report on Economic Impacts of a CAZ		

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Document Register

Version	Description	Originator	Checker	Reviewer	Approver
1.0	Incorporates comments on policy sections from PCC (02,08,2019)	Various	HT, KR (PCC)	JR	HT (30,08,2019)
2.0	Update for JAQU	Various	JR		09/10/2019
3.0	Draft for publication	Various	JR, TM	MW	HT 18/10/2019

1. Introduction

1.1. Background context

On 26 July 2017, the government published the UK plan for tackling roadside nitrogen dioxide (NO₂) concentrations ('the UK Plan'). This set out how the government would bring the UK NO₂ concentrations within the statutory annual limit of 40 micrograms per cubic metre (µg/m³) in the shortest possible time. As part of the UK Plan, the government set out how 28 local authorities (first and second wave local authorities) with the most severe NO₂ exceedances¹ should develop local plans to implement measures to achieve compliance with statutory NO₂ limits (set out in the Ambient Air Quality Directive) within the shortest possible time.

On 5 October 2018, the government published a supplement to the UK Plan, setting out conclusions for each of the 33 'third wave' local authorities², based on Targeted Feasibility Studies undertaken for each of these authorities. The supplement identified eight local authorities with more persistent long-term exceedances. Portsmouth is one of the eight authorities falling into this category.

Under the terms of the Environment Act 1995, the government has issued a Ministerial Direction to this group of local authorities. **This Direction requires these local authorities to develop a local plan to identify the option which will deliver compliance with legal limits for nitrogen dioxide in the shortest possible time.**

Portsmouth City Council (PCC) is therefore required to undertake a local assessment to consider the best option to achieve compliance within the shortest possible time. An initial plan (in the form of a Strategic Outline Case) was provided on 31 January 2019. A final plan must be submitted no later than 31 October 2019, in the form of an Outline or Full Business Case. If statutory public consultation is required, an Outline Business Case that outlines the final plan must be submitted at the earliest opportunity and no later than 31 October 2019, with the Full Business Case to follow shortly after.

In the technical report published alongside the UK Plan, government identified charging Clean Air Zones (CAZ)³ as the measure, able to be modelled nationally, which would achieve compliance with NO₂ limits in the shortest possible time. Given the potential impacts on individuals and businesses, the government believes that if a local authority can identify measures other than charging zones that can be shown to deliver NO₂ compliance as quickly as a charging CAZ then those measures should be preferred.

The UK Plan states that local plans should seek to target measures so as to minimise their impact on local residents and businesses. Where local plans will have a significant impact on residents and businesses, government will work with local authorities to consider mitigation options.

The Department for Environment, Food and Rural Affairs and the Department for Transport's Joint Air Quality Unit (JAQU) is responsible for overseeing the delivery of the UK Plan which includes supporting local authorities and other organisations on the delivery of local measures in their area.

¹ Based on DEFRA Pollution Climate Mapping (PCM) model outputs, these authorities were forecast to exceed legal NO₂ limits in 2020.

² Identified in the UK Plan as having shorter-term NO₂ exceedances with projected compliance with legal limits by 2021.

³ A CAZ defines an area where targeted action is taken to improve air quality and resources are prioritised and coordinated in order to shape the urban environment in a way that delivers improved health benefits and supports economic growth. It may or may not include a charging element.

1.2. Outline Business Case

The purpose of this document is to justify the selection of the preferred option for delivering compliance in the shortest possible time, building on the evidence presented in the Strategic Outline Case. It should also set out the likely implementation plan procurement route and demonstrate the affordability of the local plan.

The document will be assessed by government to ensure that it delivers the necessary air quality compliance, is fair, cost effective and where possible delivers wider benefits. The document will only be approved by government, and thus considered appropriate for funding, if it can be shown that:

- It is likely to cause NO₂ levels in the area to reach legal compliance within the shortest time possible (and provides a route to compliance which reduces exposure as quickly as possible);
- The effects and impacts on local residents and businesses, including disadvantaged groups, have been assessed and that there are no unintended consequences;
- Proposals that request government funding support demonstrate value for money; and
- The local measures have been carefully analysed using detailed local evidence and local air quality modelling tools and analysis methods, improving on the analysis at the national level.

All short-listed and the preferred option must pass a Critical Success Factor test on whether the option proposed would deliver compliance in the shortest possible time. Additional factors, such as cost, can only be considered when options are equally effective at achieving compliance in the shortest possible time. The short list must include a benchmark charging CAZ of a high enough class to bring about compliance.

The rest of this document is structured around the five cases model, covering the five core elements of a business case:

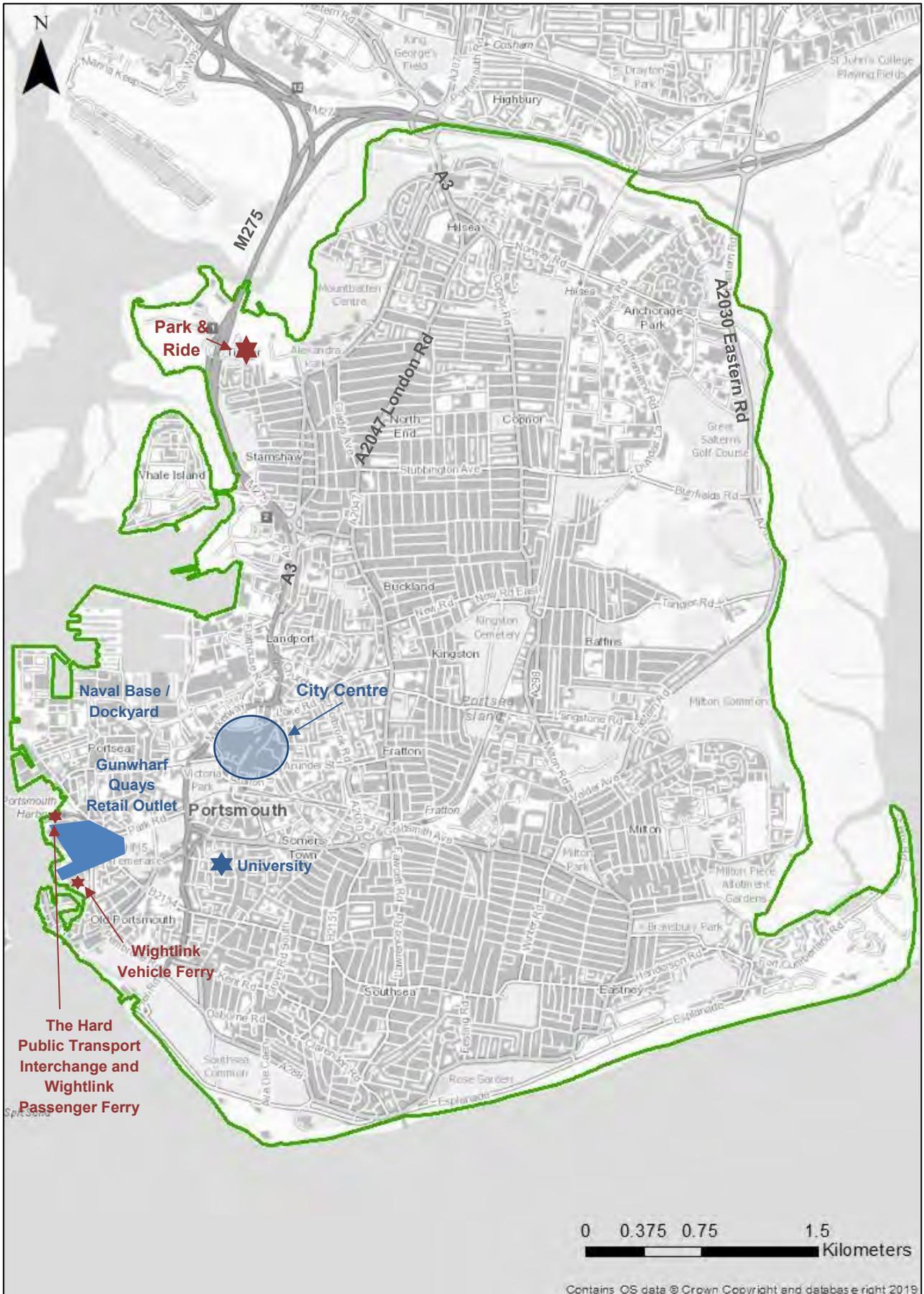
- **Strategic Case** - Makes the case for change. Analyses the current situation and identifies the required change, what outcomes are expected, and how this fits with wider government policies and objectives; sets out input from stakeholder engagement.
- **Economic Case** - What is the net value to society (the public value) of the proposal? What are the risks and their costs, and how are they best managed? Assessment of shortlist, considering costs and benefits in detail to identify a preferred option; including a distributional analysis of the option.
- **Commercial Case** - Can a realistic and credible implementation approach be developed, who will manage which risks? Outlines the required services and an associated procurement strategy and timeline.
- **Financial Case** - What is the impact of the proposal on the budget of the public sector in terms of total cost both capital and revenue? Sets out the financial profile, as well as the impact and consequences of the proposed deal.
- **Management Case** - Are there realistic and robust delivery plans, how can the proposal be delivered? Outlines the arrangements required to ensure successful delivery of the scheme, including risk register, monitoring and evaluation plan, project plan, organogram of project team and governance structure.

1.3. Study area

A map of the study area is shown in [Figure 1-1](#) for context. The study area comprises the whole of Portsea Island, i.e. the area south of Portsea Island, which can only be accessed from the mainland by vehicular traffic via the M275, the A3 or the A2030.

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Table 1-1 Map of the study area (Portsea Island)



2. Strategic Case

2.1. Introduction

This section sets out the case for change, in terms of:

- the local air quality problem (including the results of the baseline air quality and transport modelling);
- national and local policy drivers;
- the objectives for intervention and the desired goal;
- the benefits, risks, constraints and dependencies related to addressing the identified issue;
- a logic map setting out the theory of change to guide the identification of suitable options;
- input from stakeholder engagement, including stakeholder survey and focus groups; and
- an assessment of potential economic impacts of a CAZ on businesses in the city.

2.2. Local air quality problem

2.2.1. Exceedance locations

a) Exceedance locations on the local road network

At the time the Strategic Outline Case was produced, there were five locations where the annual mean NO₂ EU Limit Value of 40 µg/m³ was modelled as being exceeded by either the DEFRA PCM model or by local modelling work, with all forecast to remain above the 40 µg/m³ limit until at least 2020. These were:

- A3 Alfred Road, between Hope Street roundabout and the Queen Street / Anglesea Road / Alfred Road intersection (PCM link 18114);
- A3 Mile End Road, between the southern end of the M275 and Church Street roundabout (PCM link 48196);
- A2047 Kingston Road / Fratton Road, located south of the eastern end of Kingston Crescent down to intersection with A2030 Road (PCM link 36116);
- A2047 Kingston Crescent located west from the junction with London Road and Kingston Road, and A2047 London Road between the junction with Kingston Crescent and Laburnum Grove (PCM link 38333); and
- A2047 London Road, from Magdalen Road to Derby Road/Laburnum Grove, north of Kingston Crescent (PCM link 6118).

Since then, a more detailed local model has been developed, using:

- the latest 2018 roadside monitoring data (based on 107 diffusion tube locations and 4 continuous air quality monitoring stations, see [Appendix A.2](#) for further information);
- Automatic Number Plate Recognition surveys at over 70 camera locations across the city (undertaken over a 7 day period in March 2019); and
- forecast traffic flows, speeds, and vehicle types from the Sub-Regional Transport Model (SRTM).

In addition, mitigation measures have been funded in terms of the retrofitting of 105 buses which pass through the A3 Mile End Road and A3 Alfred Road PCM exceedance links to Euro 6 emissions standard (due to be completed by end of 2019).

The latest modelling data identifies two local road sections in central Portsmouth where modelled NO₂ concentrations are forecast to exceed the EU limit (of 40.49 µg/m³) in 2022 (see [Table 2-1](#) and [Figure 2-1](#)).

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Table 2-1 Roadside receptor sites with modelled exceedances (and near exceedances) in 2022 baseline (Based on Emissions Factor Toolkit v9.1b)

Receptor ID	Road Name	Modelled NO ₂ (µg/m ³) – 2022 baseline	Modelled Road-NOx (µg/m ³) – 2022 baseline	% Road NOx reduction to meet EU limit ^a	Year compliance would be achieved, assuming no intervention
Road sections on the local network modelled as exceeding the EU limit (40 µg/m³) in 2022					
573	A3 Alfred Road (Unicorn Rd to Queen St, s/b)	41.7	47.3	-6.7%	2023
546	A3 Commercial Road (south of Church St Rbt, s/b)	41.1	39.6	-3.8%	2023
Road sections on the local network not exceeding the EU limit, but still above 37 µg/m³ in 2022					
526	Church Street (east of Church St Rbt, n/b)	40.4	37.6	(+0.6%)	% increase in Road NOx that would results in EU limit being exceeded.
526	Church Street (sensitivity test) – described below	38.7	33.4	(+1.0%)	
536	A3 Hope Street (south of Church St R'bout, s/b)	38.9	34.9	(+11.0%)	
824	A2030 Eastern Road Water Bridge (s/b)	38.8	43.9	(+9.5%)	
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	38.5	33.1	(+14.3%)	
520	Mile End Road (north of Church St R'bout, s/b)	37.6	30.9	(+22.2%)	
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	37.4	38.5	(+19.8%)	
Road sections on the Strategic Road Network exceeding the EU limit (40 µg/m³) in 2022					
986	A27 (north of Portsea Island, w/b)	48.5	68.6	-29.5%	2026
1089	A27 (east of Portsea Island, w/b)	46.1	65.3	-21.3%	2025
11	M27 (west of Portsea Island, w/b)	45.3	68.0	-17.9%	2025
968	A27 (north of Portsea Island, e/b)	43.7	59.9	-14.7%	2024
834	A27 (east of Portsea Island, w/b)	41.1	49.0	-3.0%	2023

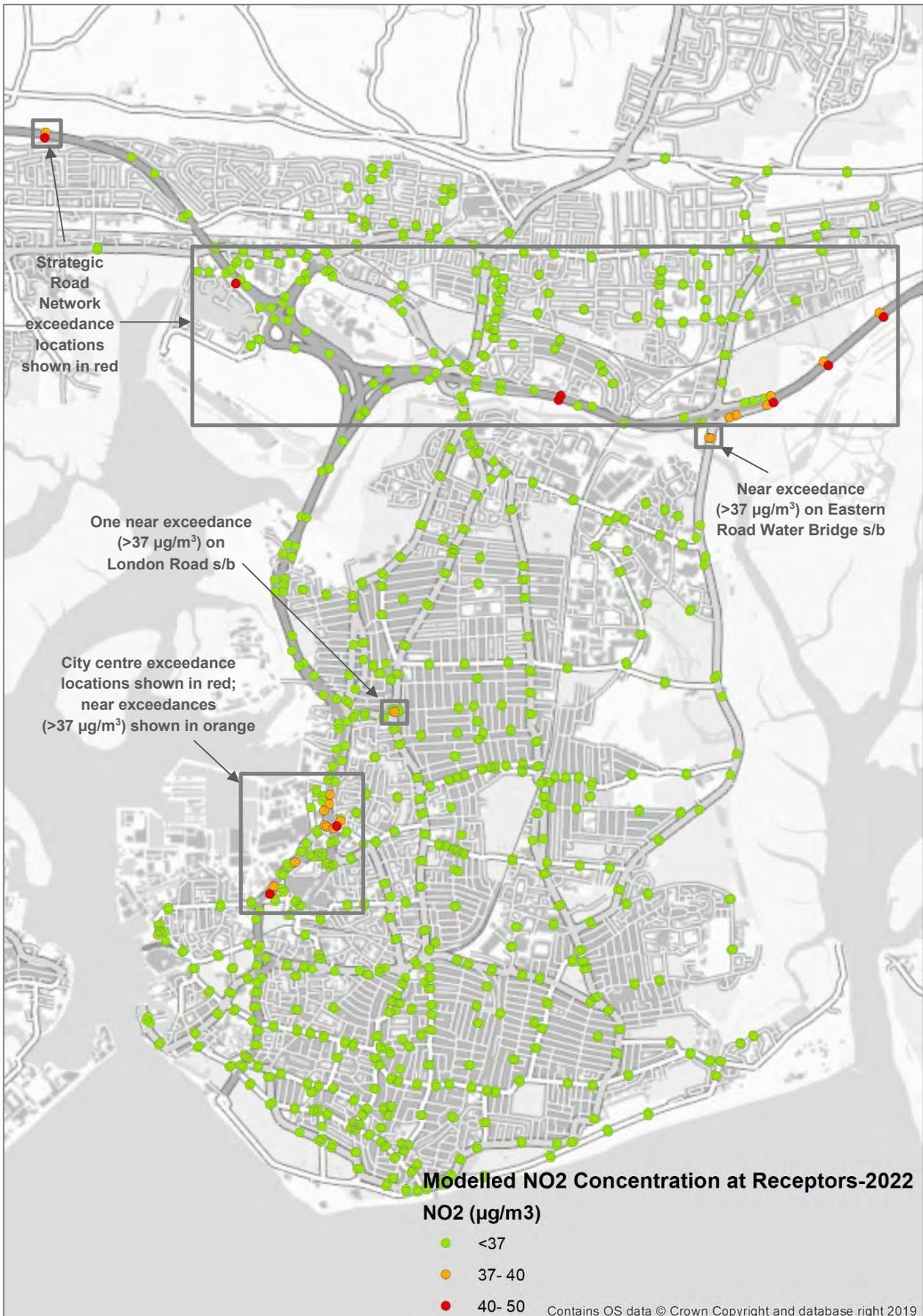
Nitrogen oxides or NO_x is the term that applies to a combination of nitric oxide (NO) and NO₂. NO_x gases are emitted from vehicles but as NO is considered to be harmless to health, the EU Limit Value is based on NO₂ concentrations. Air quality modelling is conducted for NO_x emissions from the road and then this is converted to NO₂ taking into account the non-linear relationship between the two and the contribution from background concentrations. Therefore, the level of road NO_x reduction is calculated to consider the level of traffic emission reductions required to achieve the NO₂ limit value.

Some road links have more than one receptor exceeding the EU limit, but only the highest receptor is listed in the table above.

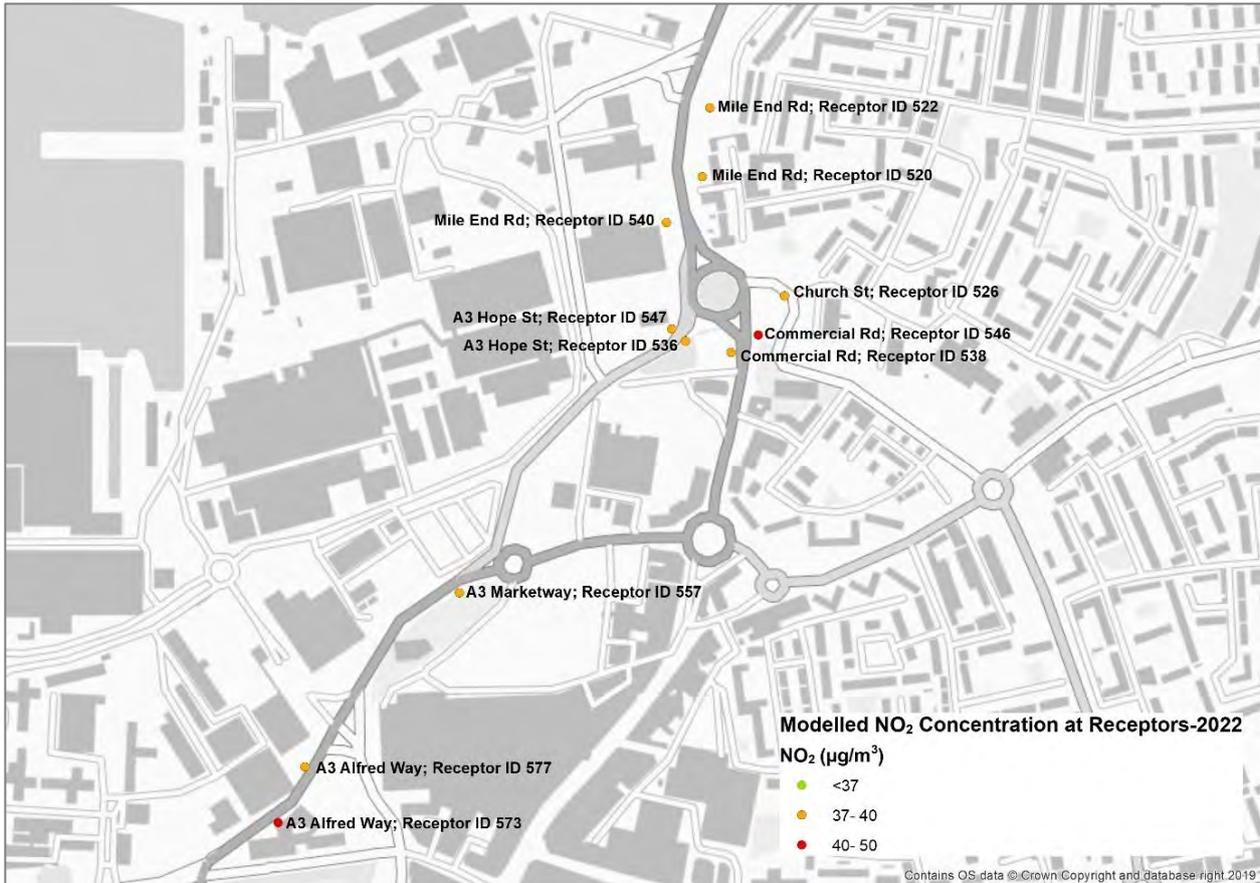
Note a: % reduction required to achieve a NO₂ concentration of 40.49 µg/m³.

Figure 2-1 Location of roadside receptor sites with modelled exceedances in 2022 baseline (EFT v1.9b)

a) All receptors



b) City centre exceedance and near exceedance locations



These are:

- A3 Alfred Road (Unicorn Rd to Queen St, 41.7 µg/m³),
- A3 Commercial Road (south of Church St, 41.1 µg/m³).

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 NO_x of 4%-7% is required to achieve the EU limit.

For context, 2022 is the earliest year in a which compliance is considered feasible as a result of implementing a charging Clean Air Zone⁴, and represents the benchmark year for assessing option viability.

In the absence of any intervention, compliance would be achieved in 2023 at the identified exceedance locations, due to background changes in fleet composition.

b) Locations on the local road network just below the EU limit (near exceedances)

There are a further six road sections where NO₂ concentrations are above >37 µg/m³ in 2022. It is important that measures implemented to address exceedances at Commercial Road and Alfred Road, do not simply displace traffic and push NO₂ concentrations above the EU limit at these 'near exceedance' sites.

⁴ PCC estimate that the earliest a charging CAZ could be implemented is late 2021, with compliance expected to be achieved at the end of the first year (i.e. late 2022).

Church Street sensitivity test

Following a comparison between the strategic transport model outputs and observed traffic counts in the city centre, it is apparent that the **SRTM⁵ traffic model substantially over-estimates flows on Church Street**, primarily as a result of the modelled link capturing movements on other local roads which are not represented in the strategic model network.

Table 2-2 summarises the comparison of modelled traffic against observed data. The comparison draws on the two available sources of observed data:

- the vehicles counted by the ANPR camera installed on the northern part of Church Street for the week of 18/03/19 to 24/03/19 providing two way all day coverage; and
- a classified count on a single day (Thursday 04/04/19) for the AM and PM peak periods at the junction between Church Street, Holbrook Road and Lake Road to the south of the link.

Table 2-2 Comparison between modelled and observed traffic data, Church Street, 2019

Section - Direction	Modelled Baseline 2019 (SRTM)				ANPR 2019*				One day Classified Turning Count 2019 **	
	AM peak hour	IP peak hour	PM peak hour	24hr AADT	AM peak hour	IP peak hour	PM peak hour	24hr AADT	AM peak hour	PM peak hour
North – NB	1,044	764	787	10533	-	-	-	-	-	-
North – SB	983	758	1,169	11,506	-	-	-	-	-	-
North – 2way	2,028	1,523	1,957	22,037	1,057	880	768	14,225	-	-
South – NB	1,303	768	1,260	12,735	-	-	-	-	517	440
South – SB	765	650	756	8,884	-	-	-	-	584	334
South – 2way	2,067	1,352	2,017	21,620	-	-	-	-	1,101	774

Key: Comparable modelled flows and ANPR counts. Comparable modelled flows and turning counts.

North refers to the short section between Church Street Roundabout and Wingfield Street and most closely represents the conditions at receptor ID526. South refers to the section between Wingfield Street and Lake Road Roundabout, a 350 metre section south of ID526.

* ANPR data is a 7 day average, adjusted to account for average 93% capture rate over the week.

** Turning count undertaken on Thursday 04/04/19

The data shows that two-way modelled flows on the short section between Church Street Roundabout and Wingfield Street, which most closely represents the conditions at receptor ID526, are 22,037 compared with an ANPR count of 14,225.

A comparison of modelled speeds against available data from Trafficmaster, TomTom and Google mapping showed that modelled speeds appear to be close to observed speeds, despite the difference in flow levels. For example, TomTom GPS journey speed data for 2018 (24hr flow weighted average) provides the following comparison for the section between Church Street Roundabout and Wingfield Street (see Figure A-4):

- southbound: median speed = 29kph and mean speed = 29kph, compared to a modelled speed of 31kph;
- northbound: median speed = 13kph and mean speed = 15kph, compared to a modelled speed of 9kph.

⁵ Sub Regional Transport Model

As a result of the over-estimate of modelled traffic flows, the air quality model over-estimates NO₂ concentrations compared to the measured data on Church Street. A sensitivity modelling test was conducted whereby the observed traffic flows were growthed to 2022 levels (using the forecast growth from SRTM and a further 15% uplift to allow for uncertainty) to provide a more realistic, lower future flow estimate for Church Street. Using these revised traffic flows, the predicted modelled NO₂ concentration at receptor 526 is forecast to be lower in 2022 (38.7 µg/m³) compared to the predictions from the SRTM baseline forecast traffic outputs (40.4 µg/m³) as presented in [Table 2-1](#) above.

Based on the evidence from the traffic count data presented in [Table 2-2](#), the sensitivity test is judged to be a more accurate representation of concentrations on Church Street and from this point on we will assume the revised baseline figure of 38.7 µg/m³ for Church Street.

c) Exceedance locations on the strategic road network

There are also five road sections on the A27/M27 Strategic Road Network (operated by Highways England) where NO₂ concentrations are forecast to exceed the EU limit in 2022. The highest exceedance is on the section of the A27 immediately north of Portsea Island, requiring a reduction in road NO_x of 30% to achieve the EU limit.

These are Highways England's responsibility, but PCC is expected to communicate with Highways England as local plans are developed and ensure local measures do not adversely impact on these sites.

2.2.2. Contributory factors

The main contributory factors contributing to the above exceedances are summarised below, with further detail provided in [Appendix A](#).

a) Background air quality

The total modelled NO_x and NO₂ concentrations include a contribution from both road traffic emissions as well as emissions from other local sources (e.g. domestic boilers, industry, shipping and rail) as well as more rural sources from outside of Portsmouth.

This background NO_x component is sourced from Defra mapping, forecast from a 2017 base year and averaged across 1km grid squares⁶ (grid square locations shown in [Figure A-2](#)). In 2022, across Portsea Island, on average non-road sources make up more than 70% of the background NO_x, with the rural component (30%) and shipping (23%) being the most significant of these ([Table 2-3](#)).

For the grid area covering exceedance PCM link 80848 (including Church Street/Commercial Road) almost half of emissions are from shipping (45%), and in the area covering PCM link 18114 (including Alfred Road) 34% is from shipping and 12% from off-road sources (i.e. port-side operations). This is higher than in other parts of the city, and potentially includes significant emissions from Portsmouth International Port and the Naval Dockyard. Less than a quarter of emissions, when aggregated across the respective 1km grid squares are associated with road transport (22% and 17% respectively), representing a significant challenge for this Plan which is primarily focused on transport-focused solutions. However, it is noted that at the exceedance locations, the contribution from the road itself is much greater than the average value across the grid square presented in [Table 2-3](#).

⁶ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017>

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Table 2-3: Contribution of sources to background NO_x concentrations in 2022 (for non-compliant links and across Portsea Island).

Area (Background grid square and receptors)	Total back-ground NO _x (µg/m ³)	Percentage contribution to NO _x concentrations									
		Industry	Domestic heating	Railway	Shipping	Off-road industrial	Off-road other	Point sources	Rural (outside PCC)	Total Non-Road Sources	Total Road Sources
M275/A3 Mile End Rd/ Church St/Commercial Road (incl. International Port) Grid square: 464500, 101500 PCM link 80848	40.4 µg/m ³	1.9 %	6.8 %	0.0 %	45.2 %	3.1 %	0.1 %	2.2 %	18.6 %	77.9 %	22.1 %
A3 Alfred Rd/Marketway (incl. the Naval Dockyard) Grid square: 463500, 100500 PCM link 18114	33.0 µg/m ³	2.2 %	6.2 %	0.1 %	34.0 %	11.6 %	0.1 %	6.4 %	22.7 %	83.3 %	16.7 %
Portsea Island (average of grid squares)	24.8 µg/m ³	3.3 %	7.9 %	0.1 %	22.7 %	4.7 %	0.2 %	4.1 %	30.3 %	73.4 %	25.6 %

Source: Defra background maps for 2022 (based on 2017 base data)

Previous modelling studies estimated that in 2010 shipping contributed to 9.6% of NO_x concentrations within Air Quality Management Area (AQMA) 11, which includes the Commercial Road exceedance (See Figure A-12).

As highlighted below (Section 2.3.4), Portsmouth International Port is currently undertaking work to understand its air quality impacts and is preparing a Port Air Quality Strategy (PAQS) by July 2020. This will outline proposals for reducing emissions associated with port activities, which will also contribute to achieving the EU limit value for NO₂ concentrations on Commercial Road and Alfred Road.

b) Traffic characteristics

Traffic volume / speeds - The exceedance sites are located in the city centre area, on **the main A3 route in and out of the city** (see Figure A-3). The A3 is the busiest of the three routes into / out of Portsmouth and flows directly from / into the M275. The 24 hour Annual Average Daily Traffic flow, predicted for 2022, is:

- 37,054 for A3 Alfred Road (4% growth between 2018 and 2022); and
- 32,298 for A3 Commercial Road (south of Church St Roundabout) (3% growth between 2018 and 2022).

GPS journey speed data recorded via TomTom devices shows the following 24hr average (median) speeds (see Figure A-4):

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- A3 Alfred Road (37kph s/b, 37kph n/b)⁷; and
- A3 Commercial Road (south of Church St Roundabout) (36kph s/b, 15kph n/b)⁸.

Journey purpose - Evidence from the Sub-Regional Transport Model (SRTM, 2026) (see Table A-2) shows that **the majority of trips in Portsmouth (78%) are non-business car trips (Car Other)**, followed by Car Business (9%), LGVs (7%), HGVs (7%).

Overall, 46% of trips are local journeys within Portsea Island, and **54% are travelling to/from the mainland**⁹. By journey purpose:

- Car Other trips are a mix of local journeys (47%) and trips to / from the mainland (53%);
- the majority of Car Business (66%) and HGV trips (61%) are to / from the island; and
- the majority of LGV trips (57%) are within the island.

Local and non-local movements – The majority of traffic on the two exceedance routes is travelling to/from external locations to Portsea Island¹⁰:

- 82% for A3 Alfred Road and
- 85% for A3 Commercial Road (south of Church St Roundabout).

This reflects their strategic nature. Neighbouring Fareham and Havant represent key trip ends, along with the city centre and area to the south-west of the city centre (Charles Dickens and St Thomas wards).

Frequency of driving in Portsmouth – The results from the Stakeholder Survey (Table 2-4) undertaken to inform this Air Quality Plan show that a substantial proportion of car drivers make trips within Portsea Island most days (64%, at least 4 days/week), or, in the case of non-residents, drive onto the island most days (45%, at least 4 days/week). These drivers are likely to be contributing most to the exceedances and would be most affected by the introduction of a charging CAZ D.

The corresponding proportions are similar for non-compliant diesel cars (66% and 47% respectively), and for non-compliant petrol cars (61% and 41% respectively).

⁷ S/b data is based on average journey times between Unicorn Road to Queen Street junctions and may mask slower speeds resulting from queuing on the approach to the Queen Street junction. N/b data is based on a shorter section of road providing a better representation of the conditions at the exceedance location.

⁸ S/b and n/b data is based on average journey times between Church Street and Commercial Road, providing a good representation of conditions at the exceedance location.

⁹ As explained further below, buses, coaches and HGVs that meet Euro VI emissions standards are considered compliant. Cars, vans and taxis that meet Euro 6 (diesel) or Euro 4 (petrol) emissions are considered compliant.

¹⁰ Approximation based on the modelled origin flows and destination flows in each direction, and using a 2026 baseline as an approximation for 2022. The overall share of external traffic represents the share of traffic from or to external regions in both directions. Portsmouth wards located outside of Portsea Island and Isle of Wight are considered external.

Table 2-4 Travel frequency amongst stakeholder survey respondents

	Drive <u>around</u> (to a destination on) Portsea Island	Drive <u>off of</u> Portsea Island	Drive <u>on to</u> Portsea Island
Daily	40%	22%	13%
4-6 days	24%	19%	32%
2-3 days	22%	24%	21%
Once a week	8%	20%	12%
Less than once a week	4%	15%	20%
I do not drive to destinations on Portsea Island	2%	1%	1%
I do not drive	<0%	0%	0%
Total	100%	100%	100%
n (sample)	2306	2305	1547

c) Vehicle / fleet characteristics

Background - NOx emission rates vary by vehicle type, age and Euro emission standard. Overall, newer vehicles emit lower NOx emissions compared to older vehicles (see Figures A-5 and A-6).

European emission standards define the acceptable limits for exhaust emissions of new vehicles sold in the European Union and EEA member states. Euro VI HGVs and buses are much less polluting than Euro V vehicles. A new Euro 6 diesel car (4 years old) has a NOx emission standard of 0.08 g/km compared to a Euro 3 (18 years old) which has a standard of 0.5 g/km¹¹. The latest Euro 6 petrol cars have the lowest emissions factors. Electric vehicles have no NOx exhaust emissions.

The Euro 6 standard applies to all new type approvals from September 2014 and all new cars from September 2015, with more stringent testing introduced more recently:

- The Euro 6(c) test became more stringent from Sep 2017. New test procedures were introduced (WLTP) to deliver results which more accurately reflect real driving behaviour than the previous NEDC procedure.
- A RDE (Real Driving Emissions) test was also introduced in Sep 2017 (Euro 6d). Euro 6d will take effect fully from January 2020 for type approvals (and from January 2021 for new registrations), although a Euro 6d-TEMP standard was also introduced in Sep 2017, which allows some discrepancy between real and lab tests. Euro 6d diesel vehicles (from 2020/2021) will have considerably lower emissions rates than earlier Euro 6 vehicles.

Figure 2-2 provides a comparison of NOx emission rates based on national information for a typical urban fleet in 2017. This clearly shows highest emissions from HGVs and buses, and higher emissions from diesel cars compared to petrol cars, which have the lowest overall emission rates¹².

Compliant vehicles (in terms of a Charging Clean Air Zone) are:

- Buses, coaches and HGVs that meet Euro VI emissions standards – introduced 2013.

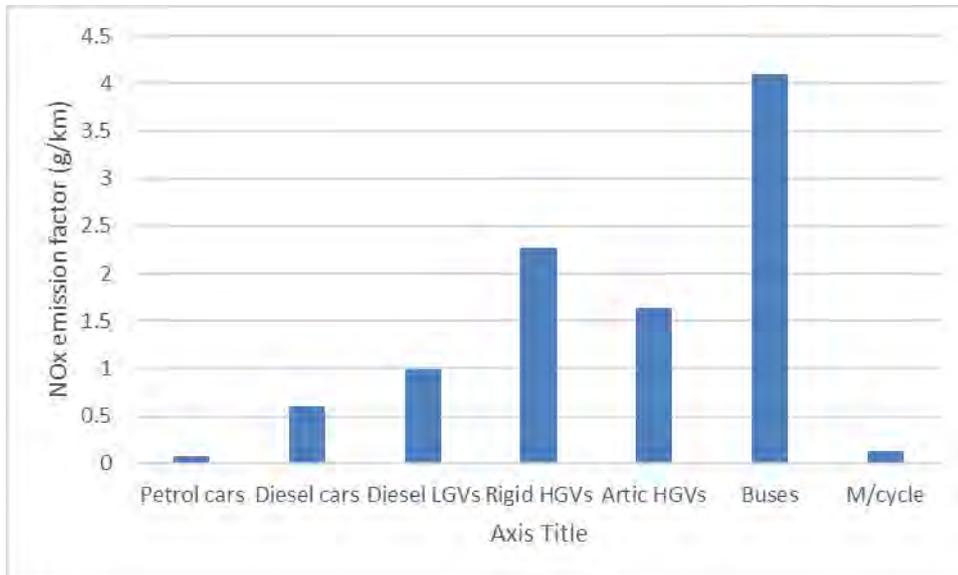
¹¹ However, it is noted that real-world NOx emissions from diesels (particular cars) have been found to be higher than standards given in the type approval tests conducted in the laboratory, with some studies showing that emissions of a Euro 6 diesel may be seven times higher (i.e. 0.56 g/km) on the road. ICCT (2014). Real World Exhaust Emissions from Modern Diesel Cars. https://www.theicct.org/sites/default/files/publications/ICCT_PEMS-study_diesel-cars_20141013_0.pdf

¹² NAEI (2017). National Atmospheric Emissions Inventory. Available at: <http://naei.beis.gov.uk/data/ef-transport>

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- Cars, vans and taxis that meet Euro 6 (diesel) emission standards – introduced September 2015.
- Cars, vans and taxis that meet Euro 4 (petrol) emissions standards – introduced January 2005.

Figure 2-2 Comparison of NOx emission rates (g/km) in a typical UK vehicle fleet (2017)



Source: Data based on fleet weighted hot exhaust road transport emission factors for urban areas

Portsmouth fleet - For most vehicle types (except LGVs), the Portsmouth fleet is **older than the national average** (see Figure A-7).

Role of different vehicle types in Portsmouth – Modelling analysis based on ANPR data collected over 7 days in March 2019 shows that overall **diesel cars (both compliant and non-compliant vehicles) are the main contributor to NOx emission** in 2018, accounting for almost half of current emissions (47%). Other diesel vehicles such as buses / coaches (8%), diesel LGVs (20%), and rigid HGVs (12%) are also significant. Overall, light duty vehicles (cars, taxis, light goods vans, minibuses) account for 76% of road emissions in 2018, and heavy duty vehicles (HGVs, buses, coaches) account for 24% of road NOx emissions (Table A-4).

The contribution of buses drops to 3% in 2022 as a result of the retrofitting of 105 buses which pass through the A3 exceedance links on Mile End Road and Alfred Road (funded by Defra). Overall, the contribution of heavy duty vehicles drops to 15% by 2022, with light vehicles accounting for 85%. The relative contribution of diesel cars increases slightly to 50%, as a result of changes in other vehicle types.

Non-compliant vehicle movements (observations) in Portsmouth – The ANPR data shows that **45% of vehicle movements¹³ in the city are undertaken by older, more polluting vehicles** that would not meet the emissions criteria for a charging Clean Air Zone (Table A-5)¹⁴. Some 24% of fleet movements are undertaken by non-compliant diesel cars, 9% by non-compliant petrol cars, 9% by non-compliant diesel LGVs, and 2% by non-compliant taxis. The remaining 1% of non-compliant vehicle trips relate to petrol LGVs, HGVs and diesel buses.

In 2019, some 70% of diesel car trips are made by non-compliant vehicles (in 2019). However, by 2022, this proportion is predicted to reduce to 47%, due to natural evolution of the fleet. However,

¹³ Vehicle movements have been calculated based on vehicle observations at all ANPR locations over the seven days.

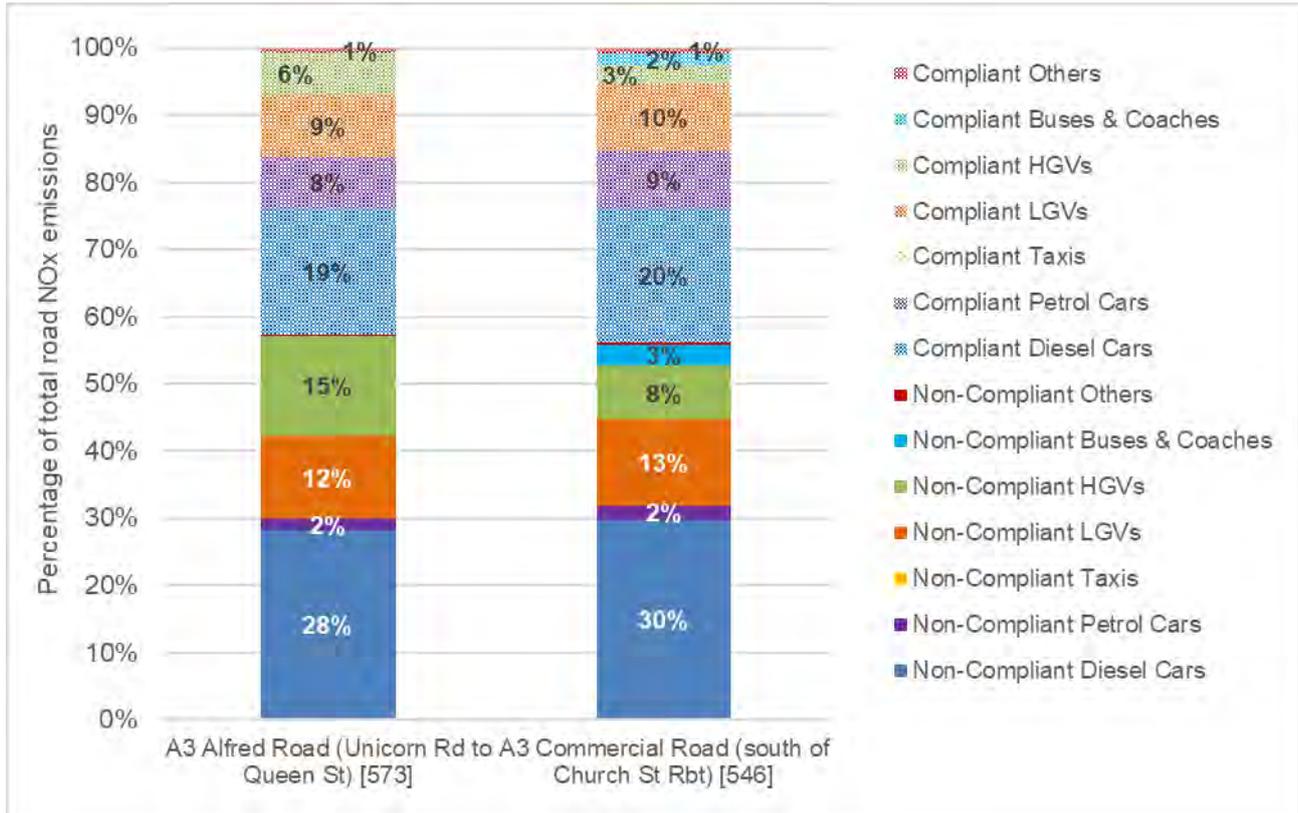
¹⁴ Source apportionment calculations are based on EFT v9.0, but the results are unlikely to differ significantly from those based on the latest EFT.

as described above, changes in other vehicle types means that overall contribution of diesel vehicles is actually higher in 2022 than 2018.

Source of road NOx at exceedance locations – In both exceedance locations, **non-compliant diesel cars are the largest source of emissions**, accounting for 30% on Alfred Road and 27% on Commercial Road (Figure 2-3)¹⁵. However, around **45% of total emissions are associated with compliant vehicles**.

These results suggest that **options need to be addressed at a range of vehicle types**, including diesel cars.

Figure 2-3: Source of 2022 traffic NOx at the local road sites with exceedances



P:\GBEMB\TP\HA\PROJECTS\5185637 - PCC AQ Plan - ROBI2323\40. Technical\08. Emissions Calculations\6. Baseline_Apportion\Baseline_emissions_vehicle_type_v11.xlsm

Source apportionment maps – Detailed maps showing the contribution by vehicle type to NOx emissions across the city are provided for the year 2022 in Figure A-8.

Registered location of non-compliant vehicles – Data from the ANPR survey shows that the proportion of non-compliant vehicles varies from 39% to 51% across the various wards in Portsmouth (Table A-7). The wards with the highest proportion of non-compliant vehicles are Charles Dickens ward covering the city centre (47%), and Fratton ward to the north of the city centre (49%).

d) Site-specific characteristics

Both exceedance sites are located on the main strategic route through the city, carrying some of the highest flows.

¹⁵ Source apportionment calculations are based on EFT v9.0, but the results are unlikely to differ significantly from those based on the latest EFT.

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- A3 Commercial Road (Receptor 546) – Located at the bottom of the M275, providing the main route into the city centre for traffic via the western corridor, and out of the city for traffic from the city centre and areas to the south east. There are three lanes southbound, including a bus lane along part of the route; and one lane northbound, increasing to three on the approach to Church Street Roundabout. A 30mph speed limit is in place. The exceedance site is adjacent to the southbound carriageway, south of the exit from Church Street Roundabout.

Average daily traffic flows on the roundabout and this road are currently over 30,000, with over 25,000 vehicles a day travelling in the southbound direction at an average modelled speed of 37 kph in 2018 (Figure A-4). Although flows are lower on the northbound carriageway, there is more queuing towards the roundabout with speeds in the traffic model averaging 27kph on the approach to the roundabout over the day¹⁶. As the prevailing wind direction is from SW, receptor 546 will receive a greater contribution from emissions than locations on the other side of the road.

Commercial Road is located between the two PCM links targeted by the bus retrofit scheme, but non-compliant buses and coaches are still accounting for a small proportion of road-related emissions (3%)¹⁷. In this area (aggregated over a 1km grid square), over three-quarter of the NO_x concentration comes from non-road sources, which includes emissions associated with Portsmouth International Port and the Naval Dockyard.

There is a NO₂ monitoring site (DT34) set further from the road and located south of receptor 546 (close to Marketway Roundabout), reporting a concentration of 33.3 µg/m³ in 2018, but not in the vicinity of receptor 546. The air quality model is over-estimating at this location.

- A3 Alfred Road (Receptor 573) – Located further south on the A3, providing the main access route to the University area, The Hard / Gunwharf Quays and the seafront, carrying over 35,000 vehicles per day. There are two lanes in both directions, and a 30mph (48 km/h) speed limit in place. The exceedance site is on the southbound carriageway, just north of the junction with Queen Street and next to the cathedral. The building line is close to the road along the entire route, but the street is not considered to be a canyon from an air quality modelling perspective.

Road source emissions appear to be related to the large volume of traffic on this route, a relatively high proportion of HGVs (non-compliant HGVs account for 15% of emissions and relatively low modelled speeds (18kph in each direction in 2018, see Figure A-4) which is likely to be associated with the junction¹⁸. As the prevailing wind direction is from SW, receptor 573 will receive a greater contribution from emissions than locations on the other side of the road.

In this area, (aggregated over a 1km grid square), over 80% of the NO_x concentration comes from non-road sources, which includes emissions associated with the Naval Base / Dockyard.

There are three NO₂ monitoring sites on Alfred Road, which measured concentrations of 47.5 to 50.4 µg/m³ in 2018. The AQ model is under-predicting at this location.

¹⁶ In comparison, journey time data obtained from TomTom for 2018 shows average speeds are 34kph in the southbound direction and 15kph in the northbound direction (slightly slower than modelled speeds).

¹⁷ This includes local vehicles which cannot be retrofitted and non-local vehicles travelling into the city on a frequent and non-frequent basis (e.g. coach trips to the Historic Dockyard, Gunwharf Quays, and the Isle of Wight).

¹⁸ Although observed levels of flow recorded on Google Maps suggest that Alfred Road is not a particularly congested point on the network; and localised modelling shows that the junction is not operating over capacity even during peak hours.

See Figures A-9 to A-10 for images.

2.2.3. Wider air quality issues (Portsmouth AQMAs)

There are five Air Quality Management Areas (AQMAs) currently in place in Portsmouth which were declared due to exceedances in the annual nitrogen dioxide National Air Quality Objective (NAQO) (Figure A-11).

The Commercial Road exceedance falls within AQMA 11, which extends from Rudmore Roundabout south to the roundabout about the bottom of Commercial Road.

There are four further AQMAs in Portsmouth which do not currently contain any exceedances in relation to the EU limit for NO₂ concentrations, but any increase in traffic volumes on these routes could exacerbate recent air quality problems. This is a particular concern regarding AQMA6, which contains an EU limit near exceedance site on London Road.

2.2.4. Recent and current measures to reduce emissions in Portsmouth

A number of measures have been implemented in recent years, are currently being implemented, or are expected to be implemented soon, and have the potential to make a positive contribution to improving air quality on the identified exceedance links. These are summarised below:

- Bus retrofit programme - Defra funding to retrofit 105 buses which pass through the A3 Mile End Road and A3 Alfred Road PCM exceedance links to Euro 6 emissions standard. Due to be completed by end of 2019.
- Traffic signal improvements - PCC is modernising existing signal infrastructure and improving the overall operation of the traffic signal equipment across the city to improve traffic throughput, reduce delays and improve the safety of road users and pedestrians.
- Traffic management measures to improve traffic flow – Including Mile End Relining Scheme (early 2019), and Church Street Roundabout improvement (2016).
- Public transport improvements – Including re-development of The Hard Public Transport Interchange (2017), launch of Park and Ride 2 (PR2) service serving the University and city centre businesses (Sep 2018), deployment of real time information at bus stops on key corridors and installation of MOVA at three key junctions to improve bus priority (TCF Tranche 1, 2019). In addition, from December 2018, additional and faster train services began operating to and from Portsmouth to Southampton and Portsmouth to London.
- Electric Vehicle (EV) Chargepoints - Funding was secured from the Office for Low Emission Vehicles (OLEV) On-street Residential Chargepoint Scheme (ORCS) to install 36 charge points in residential areas by the end of April 2019, enabling residents without off-street parking the ability to charge their vehicles at home. Following the success of this project PCC are also hoping to secure additional funding to install an additional 60-70 charge points due to demand from residents. PCC have also installed EV charging points in three public pay and display car parks as part of a small trial before considering providing EV charging in more Council operated car parks.
- Air Quality Grant Programme (2018/19) and promotion of active travel modes - PCC were awarded an Air Quality Grant (AQG) of £450,000 from Defra for delivery of targeted improvements in air quality within Portsmouth, including infrastructure improvements, communications and marketing, initiatives to promote sustainable travel in workplaces and schools, eco-driving, and an anti-idling awareness campaign. The programme is expected to have contributed to improving air quality, as part of the Council's on-going programme to encourage more sustainable travel, building on the 2016/17 Sustainable Travel Transition Year programme, and including the creation of 10 Quieter Routes for cycling, and other infrastructure improvements for cyclists.

- Residents Parking Zone permits – Reduced fee / free permits for low emission vehicles. In September 2019, it was agreed (subject to the statutory notice procedure), that the charges for residents permits be changed so that the first permit for a household is free if the vehicle is powered solely by electricity and that the charge for a first permit is reduced by 50% to £15 if the vehicle emits less than 100g of CO₂ per km (provided it is not powered by a diesel internal combustion engine and that it was registered after 1 March 2001).
- Portsmouth University parking policy – A new parking policy for Portsmouth University comes into force in September 2019 which will significantly increase charges for the majority of staff. In addition, University staff living within a 2 mile exclusion zone around University will not be eligible to apply for a staff parking permit.
- Wightlink has been proactive in reducing emissions from ships, traffic and logistics in recent years. For example, in the last 3 years fuel consumption at Wightlink has reduced by 33%. In September 2019, Wightlink will be launching their formal green agenda.

2.3. Air quality policy context

2.3.1. UK government policy and strategy

In July 2017 the UK government (DEFRA and DfT) published the **UK plan for tackling roadside NO₂ concentrations**, setting out its commitment to achieving a cleaner and healthier environment, with the aim of benefitting both people and the economy.

Air pollution is the largest environmental risk to public health in the UK¹⁹, and it is known to have disproportionate effects on vulnerable groups. Air quality disproportionately affects the very old, the very young, and those with chronic conditions. It also has greater impact on those who live, work or go to school in more deprived areas.

A recent report by the Committee on the Medical Effects of Air Pollutants (COMEAP, 2018) shows that the combined effect of long-term exposure to air pollution in the UK in 2013, from both NO₂ and particulate matter (PM), was an effect equivalent to 28,000 to 36,000 deaths at typical ages, associated with a loss of 328,000 – 416,000 life years²⁰.

Furthermore, data from the Public Health Outcomes Framework²¹ indicates that in 2016, 6.6% of all premature deaths in Portsmouth could be attributed to air pollution, compared to 5.4% of all early deaths in England, and 5.5% in the South East. The burden of disease attributed to poor air quality is therefore estimated to be greater than the regional and national average.

The natural environment can also be damaged through high NO₂ concentrations contributing to acidification and eutrophication, which can have an adverse impact on animals, plants and biodiversity. Economically, air pollution can increase social costs from lost working days, due to ill health caused by air-pollution related health problems.

Consequently, the government are adopting legally binding national emission limits for air pollutants, to tackle poor air quality. The government's top priority is to reduce the NO₂ concentrations on and near roads, where traffic is causing higher NO₂ levels. Due to elevated levels of traffic on roads in urban areas, reducing air pollution in towns and cities is an important focus.

The government is planning to achieve the air pollution reduction through encouraging innovative vehicle solutions such as electric vehicles, alongside ending the sale of conventional petrol and

¹⁹ Air Quality, A Briefing for Directors of Public Health, March 2017, Defra and Public Health England

²⁰ COMEAP (2018); Associations of long-term average concentrations of nitrogen dioxide with mortality.

²¹ <https://fingertips.phe.org.uk/search/air#page/0/gid/1/pat/6/par/E12000008/ati/102/are/E06000044>

diesel cars and vans by 2040, as well as targeting behaviour change amongst communities, employers, education establishments and policy makers.

2.3.2. Clean Air Zone framework

A Clean Air Zone (CAZ) defines an area where targeted action is taken to improve air quality and resources are prioritised and coordinated to shape the urban environment in a way that delivers improved health benefits.

There are two types of CAZ:

- Non-charging Clean Air Zones – These are defined geographic areas used as a focus for action to improve air quality, but does not include the use of charge based access restrictions.
- Charging Clean Air Zones – These are zones where, in addition to the above, 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.

CAZ proposals are not required to include a charging zone, and local authorities may consider alternatives to charging such as access restrictions for certain types of vehicles.

Following a consultation in 2016, the UK government has published a Clean Air Zone Framework in England²² setting out the principles for the operation of Clean Air Zones in any cities which decide, or are required, to do so.

Under the Framework, charging Clean Air Zones are sub-divided into classes A – D on the basis of the types of vehicles to which the charging schemes may apply:

- Class A CAZ – Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches
- Class B CAZ – Targeting taxis and PHVs, buses, coaches and HGVs
- Class C CAZ – Targeting taxis and PHVs, buses, coaches, HGVs and LGVs
- Class D CAZ – Targeting taxis and PHVs, buses, coaches, HGVs, LGVs and private cars

As described above, the following vehicles are considered non-compliant and are therefore required to pay the charge levied on non-compliant vehicles travelling within the CAZ:

- Buses, coaches and HGVs that do not meet Euro VI emission standards – introduced 2013;
- Cars, vans and taxis that do not meet Euro 6 (diesel) emission standards – introduced in September 2015; and
- Cars, vans and taxis that do not meet Euro 4 (petrol) emission standards – introduced in January 2005.

Any revenues collected by local authorities will be reinvested to support local transport policies, which could cover public health projects or strategic planning projects to promote cleaner air. A CAZ must be in place for at least three years.

Local authorities may also consider placing absolute restrictions on the access of certain types of vehicles to the Zone at all, or at specified times.

The Framework also provides a range of non-charging measures which local authorities can use, for example:

- Exploring innovative retrofitting technologies and new fuels;
- Buying ULEVs and encouraging local transport operators to do the same;
- Encouraging private uptake of ULEVs via ensuring adequate charge points;

²² Defra and DfT (2017) Clean Air Zone Framework for England
www.gov.uk/government/publications/air-quality-clean-air-zone-framework-for-england

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- Encouraging use of public transport, cycling, walking, park & ride schemes, car clubs and car sharing;
- Improving road layouts and junctions to optimise traffic flow; and
- Working with local businesses and neighbouring authorities to ensure a consistent approach.

Over time, it is expected that all roads will achieve statutory NO₂ limit values due to the natural upgrade of the national vehicle fleet to cleaner models. Charging Clean Air Zones aim to accelerate this turnover and thus need to be maintained only for as long as the statutory NO₂ limit values are exceeded. As soon as it is possible to do so while maintaining legal compliance, these Clean Air Zones can be removed.

The government believe that implementation of a CAZ will generally achieve compliance with NO₂ limits in the shortest possible time, but also recognise the potential impacts on individuals and businesses. It is therefore important that the relative benefits of a charging CAZ are considered alongside other measures as part of the Outline Business Case for reducing NO₂ emissions in Portsmouth as soon as possible.

2.3.3. Portsmouth Air Quality Strategy (2017-2027)

Portsmouth's Air Quality Strategy sets out a commitment to "work collaboratively to improve and maintain a healthy local air quality in the city in order to protect health and the environment, enhancing our status as a great waterfront city".

It sets out the following strategic aims:

- Foster closer working relationships between council directorates and external partners;
- Create a focus on sustainable travel, including the promotion of a modal shift in transport from the car to active travel;
- Provide high quality information and guidance on local air quality to members of the public;
- Develop and implement measures to reduce traffic and congestion-related emissions, addressing road network flow and functionality;
- Support and stimulate sustainable citywide economic growth, including a focus on reducing carbon emissions; and
- Ensure that as a council we lead by example in supporting sustainable working practices, minimising our own emissions and carbon footprint.

The strategic objectives are underpinned by the following core principles: evidenced-based practice, innovation, collaborative working, monitoring and evaluation, ambition, seeking funding, and analysis.

In addition, various approaches and actions PCC intend to take to improve local air quality are detailed, many of which will be incorporated into the Air Quality Action Plan which will be developed further following approval of this Air Quality Local Plan.

2.3.4. Portsmouth International Port Air Quality Strategy

In January 2019 the Government published the Clean Air Strategy which set out plans to address air pollution across the UK, aiming to protect the environment and public health. Previous approaches to addressing air pollution had focused on tackling the individual biggest sources of pollution, and for the transport sector the focus to date has mainly been on road traffic.

As outlined in this OBC, work is ongoing to reduce emissions from road traffic; however work to consider the impact of other emitters such as shipping and ports is still underway. As a result these sectors are now being asked by Government to play a larger role in delivering clean air for all.

The Clean Air Strategy requests that all large English ports submit an initial commitment to understanding their air quality impacts by December 2019, followed by production of a final Port Air Quality Strategy (PAQS) by July 2020. The PAQS are intended to give ports an opportunity to demonstrate their commitment to tackling air quality issues as well as their proactive engagement with Government, local communities and wider stakeholders to reduce pollutant emissions from their activities.

In line with this requirement Portsmouth International Port are currently preparing their PAQS ahead of the initial submission later in 2019. However, it should be noted that work to reduce the emissions from Portsmouth International Port has been in progress for some time and this year the Port Director announced the port's ambition to become the UK's first zero emission port. Measures undertaken to date include, but are not limited to:

- Being one of 10 partners in the Ports Energy and Carbon Savings (PECS) Interreg 2 Seas project to develop, test and implement different tools and technologies to reduce the carbon footprint on SME ports and marinas and to make their functioning more energy efficient and cost effective;
- Working with operator Brittany Ferries to introduce the first passenger ship in the world powered by liquefied natural gas (LNG) to the fleet in Portsmouth;
- Development of a new terminal building in 2011 which was the first public building in the country to be largely heated and cooled using thermal energy and sea water.

2.4. Wider local policy context

2.4.1. Introduction

Portsmouth is a bustling south coast city with unique geography, being surrounded by 49km of coastline on three sides. Its historic, diverse and vibrant waterfront contains the Naval Dockyard, Portsmouth International Port, and major tourist attractions (such as Southsea seafront, Gunwharf Quays retail outlet, and the world-renowned Historic Dockyard / Mary Rose Museum). In addition, the University of Portsmouth in the city centre has a population of c. 20,000 students and has ambitious plans for growth.

It is one of the most densely populated cities in Europe (with a population density higher than some parts of London), and its population of around 211,800²³ is expected to grow to 235,500 by 2034²⁴.

In terms of transport, Portsea Island only has three roads linking to the mainland, the M275 and A2030 connecting to the wider strategic road network, and the A3. The M275 provides a direct link from the strategic road network to Portsmouth International Port and onwards into the heart of the city via the A3. Portsmouth has five rail stations and direct rail connections with London Waterloo and Victoria, as well as Bristol and Wales. It has good bus and coach links across the city, sub-region and country. There are regular ferry services to Gosport, the Isle of Wight and Hayling Island as well as cross-channel services to Europe and the Channel Islands.

Portsmouth is a key centre for the local economy, with high visitor numbers, and high levels of inbound and outbound vehicular commuting, which can contribute to significant congestion within some parts of the city, particularly at peak times. The city is a net importer of labour, with over 25,000 inbound commuters arriving from other parts of the city region each day compared to just over 13,000 Portsmouth residents travelling out of the city to jobs in other parts of the city region. This indicates that surrounding suburbs such as Fareham, Gosport and Havant are feeding

²³ NOMIS -

<https://www.nomisweb.co.uk/reports/Imp/la/1946157284/report.aspx?town=portsmouth#tabrespop>

²⁴ Office for National Statistics - Subnational population projections for England: 2014-based projections

Portsmouth's employment market, with respectively 17%, 18% and 24% of their residents working in Portsmouth. Meanwhile Portsmouth itself has a fairly high level of commuting self- containment (65%) – a majority of city residents also work in the city, reflecting some of the geographic difficulties facing out-commuting flows, particularly from Portsea Island, as a result of a limited selection of routes off the island - as well as a reasonably wide range of employment opportunities available within the city.

These factors create unique challenges for Portsmouth in terms of improving its air quality.

2.4.2. Economic growth context

There are ambitious plans for growth across the city and wider sub-region. The PUSH²⁵ Spatial Strategy Position Statement identifies a need for 17,020 dwellings in Portsmouth by 2034 and 92,000 square metres of office floorspace and 28,000 of mixed B-Class floorspace.

The two exceedance sites are located in the city centre, a key development area within the city, and are therefore expected to experience increased travel demand in future years.

2.4.3. Transport context²⁶

Roads – Portsmouth's economic success has created challenges on the road network, and a number of the principle roads in the city suffer congestion at peak times. According to the 2011 census, c.56,000 people who work in Portsmouth (both residents of the city and people travelling from further afield) commute by car, either as a driver or a passenger; and approximately 40,000 Portsmouth residents drive to work each day (to destinations within Portsmouth and further afield). Furthermore the two ports cater for approximately 1.5 million vehicle movements annually.

Within the city, there is limited space to provide additional highway space, and although improving pinch points in the network may provide some journey time benefits, there is little opportunity to significantly add capacity to the highway network.

Buses - About 7.5% of work journeys in the city are undertaken by bus according to the 2011 census. There have been significant investments in the city's bus system in recent years, including new bus fleets, bus priority, improved shelters, real time information (RTI) and all operator contactless ticketing, as well as the introduction of Park & Ride and the re-development of The Hard Gateway (public transport interchange).

However, on congested routes bus services can suffer poor journey time reliability making them less attractive to people. It is also acknowledged that bus fares in the city are high, with the cost of parking and private hire vehicles, being a competitive alternative. As a result, Portsmouth has the lowest number of bus journeys per person per year in the south east²⁷.

Rail – Some 3% of people who work in Portsmouth currently catch the train to work according to 2011 Census. Portsmouth and Southsea, Portsmouth Harbour and Fratton are the major train stations in the city, and the city has identified improvements to them which will enhance their position as gateways into the city. In general, train services don't currently compete well with the car, in terms of speed and convenience, for many destinations in the Solent including Southampton and Southampton Airport.

However, there are a number of proposals to improve rail services in the sub-region, affecting Portsmouth in particular, promoted by Network Rail and Solent Transport.

Walking and cycling – Levels of cycling in the city are higher than in other parts of the sub-region.

²⁵ Partnership for Urban South Hampshire

²⁶ Large taken from the Evidence Base for LTP Refresh (April 2017).

²⁷ DfT annual bus statistics, Table BUS0110

Overall, 8.3% of the people working in Portsmouth regularly cycled to work in 2011, but there is considerable variation in levels of cycling across the city, with low levels in the city centre and north of the M27²⁸. Levels of walking in Portsmouth are higher than the national average²⁹, but again vary across the city.

The city council has delivered a comprehensive behaviour change programme over the last five years to encourage people in Portsmouth to walk and cycle more. In the 2018 NHT Survey, Portsmouth ranked 7th out of 113 local authorities for walking provision and 22nd out of 113 for provision of cycle routes.

Licensed taxis and Private Hire Vehicles - Portsmouth has a comprehensive taxi and private hire service, offering competitive rates and high availability of vehicles. There are currently 234 licensed (hackney carriage) taxis and 976 private hire vehicles (1210 in total) in the city equating to one licensed taxi or private hire vehicle for every 174 people. Virtually all hackney carriages are owned by self-employed drivers. Approximately half of private hire vehicles are owned by self-employed drivers, or very small operators with less than five licenses. The remainder are run by operators with more than five licenses. The majority of these vehicles are believed to be leased rather than owned outright. The majority of operators own less than 25 vehicles, but there are a small number of operators with much larger fleets.

The composition of the registered private hire and licensed taxi fleet is 93% diesel (93%), 4% petrol, 3% hybrid, and <1% electric. Currently, half of taxis would be compliant with the requirements of a charging Clean Air Zone, with the remaining half representing older and more polluting vehicles.

Parking - There is an oversupply of off-street parking in the city centre, contributing to low prices and helping to push up demand. The city council only owns and operates approximately a quarter of the city centre off-street parking provision, limiting its parking management capability.

A one day parking audit undertaken in Summer 2019 showed that average occupancy across nine city centre car parks (2263 spaces) peaked at 52% occupancy (around 12:00 midday). Surveys were only conducted between 07:00 and 12:00, but previous parking audits have shown that car park occupancy peaks around midday and declines over the course of the afternoon. The busiest car parks were Guildhall and Isambard Brunnel MSPC where occupancy was greater than 75% between 10:00 and 12:00. Overall, the results were similar on a Saturday, but use of the above two car parks were lower, reflecting their commuter-focused market.

There are proposals to increase the parking provision at the Park & Ride site through the addition of decking. The re-development of city council owned city centre car parks has also been identified as a future opportunity to help unlock development land and reduce the supply of parking.

The city council has introduced Controlled Parking Zones (CPZs) in many areas throughout the city to help improve residents' access to on-street parking near to their homes, and further CPZs are proposed.

Car ownership - Car ownership in Portsmouth has been growing steadily in recent decades, from 90,200 licensed cars in 2009 to 103,154 licensed cars in 2018, placing additional pressure on the road network and parking provision for residents, visitors and workers. Within the overall increase in vehicles in the city, in recent years there has been a growth in the number of electric vehicles. For example of the 103,154 cars and 17,500 light goods vehicles licensed in Portsmouth

²⁸ Census 2011

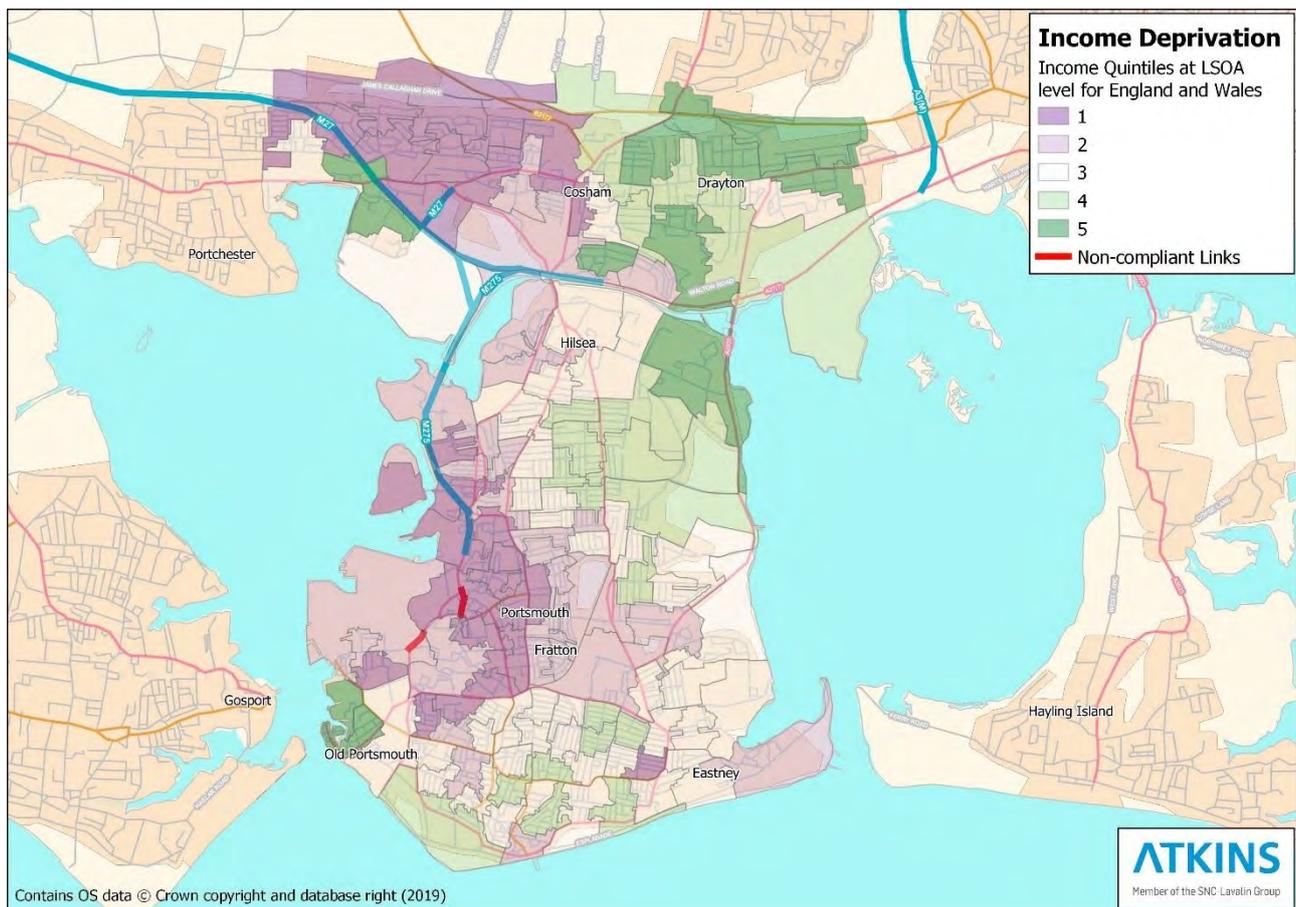
²⁹ Census 2011

(postcodes PO1 to PO6) at the end of 2018 (Q4), 1,648 were plug-in cars, LGVs and quadricycles³⁰.

2.4.4. Socio-demographic context

Portsmouth faces a number of public health challenges, which mean that 64% of early deaths in the city are attributable to cancer, coronary heart disease, respiratory disease and liver disease³¹. It is estimated that in Portsmouth, 95 deaths per year occur where air pollution has been a contributing factor³².

Figure 2-4 Levels of income deprivation in Portsmouth



Source: English indices of deprivation 2015: income deprivation component (DCLG)

Portsmouth is currently ranked 63rd out of 326 local authorities, where 1 is the most deprived in terms of average score. Unemployment levels in the city are double the average for the south east of England, and in some wards levels of poverty are twice the national average³³. Higher levels of deprivation are indicators for poorer public health and lower levels of physical activity nationally. As shown in Figure 2-4, the two exceedance links coincide with the areas of highest deprivation within the city, as well as high proportions of children, people with disabilities, and Black and Minority Ethnic (BAME) residents (all amongst the 20 top LSOAs in England and Wales). These

³⁰ <https://www.gov.uk/government/statistical-data-sets/allvehicles-veh01>. It is recognised that this may under-estimate the actual number of electric vehicles owned by Portsmouth residents, as electric cars are often centrally registered first before being sent to dealers where there is a specific demand.

³¹ Portsmouth CC Public Health Strategy

³² Public Health England, Centre for Radiation, Chemical and Environmental Hazards (PHE-CRCE) (2014); Estimating local mortality burdens associated with particulate air pollution.

³³ JSNA Annual Summary 2016

groups are currently being disproportionately affected by poor air quality and the associated impacts on health.

Portsmouth also has an ageing population³⁴; and elderly people can be disproportionately affected by air pollution.

2.4.5. Fit with other local policies and strategies

A summary of other local policies and strategies is presented in **Table 2-5** which will complement this local plan.

The table highlights the local focus on promoting economic growth, reducing levels of social deprivation, improving transport connectivity by sustainable modes, and encourage active travel.

While the focus is on identifying options which will achieve compliance in the shortest possible time, it is also important that options fit and/or complement these local priorities, or if not, mitigation measures are put in place to minimise the dis-benefits.

Table 2-5 Relevant local policies and strategies

Local policies and strategies	Key relevant themes
Economic growth and development	
<u>Local</u> <ul style="list-style-type: none"> Emerging Local Plan Emerging Revised Parking Standards Emerging Economic Development and Regeneration Strategy 	Encouraging economic growth and reducing social deprivation. <i>'To make Portsmouth the premier waterfront city with an unrivalled maritime heritage - a great place to live, work and visit'. (Local Plan)</i> <i>'Delivering sustainable, economic-led growth and regeneration ... offering a better quality of life for everyone who lives, works and spends their leisure time here' (PUSH Spatial Strategy Position Statement)</i>
<u>Sub-Regional</u> <ul style="list-style-type: none"> Solent LEP³⁵ Strategic Economic Plan PUSH³⁶ Spatial Strategy 	
Transport	
<u>Local</u> <ul style="list-style-type: none"> Emerging Local Transport Plan Park & Ride Strategy Emerging Parking Strategy Emerging Walking & Cycling Strategy Highway Maintenance Strategy Street Lighting Strategy 	Supporting economic growth and improving strategic access to Portsmouth. Developing a sustainable and connected transport network. <i>'Need for a modern and resilient transport network that can enable the region to fulfil its economic potential by providing the conditions that enable businesses and people to thrive and productivity to increase'. (Strategic Transport Investment Plan)</i>
<u>Sub-Regional / Regional</u> <ul style="list-style-type: none"> Solent LEP Strategic Transport Investment Plan Transport for the South East Emerging Transport Strategy 	

³⁴ Portsmouth's ageing population strategy 2010-2020

³⁵ Local Enterprise Partnership

³⁶ Partnership for Urban South Hampshire

Health and well-being	
<ul style="list-style-type: none"> • Joint Health and Well-being Strategy • Obesity Strategy • Physical Activity Strategy • Anti-Poverty Strategy • Ageing Population Strategy • Emerging Equalities and Diversity Strategy • Children's Trust Board children's physical health and wellbeing strategy 2018-2021 • Portsmouth Clinical Commissioning Group - 20/20 Vision 	<p>Improving public health and well-being</p> <p>Increasing levels of physical activity</p> <p>Tackling social isolation (particularly amongst the elderly)</p> <p>Reducing social deprivation and health inequalities</p> <p>Promoting good health in children, from conception to adulthood</p>
Environment and Communities	
<ul style="list-style-type: none"> • Air Quality Strategy • Sustainability Strategy • Climate Change Strategy 	<p>Improve air quality</p> <p>Enable a sustainable transport system in Portsmouth and promote sustainable travel choices across Portsmouth City Council</p> <p>Reduce Portsmouth's carbon footprint and adapt to climate change</p>

2.5. Spending objectives / critical success factors

The case for intervention is set out in Section 2.2 to 2.4 above. Local modelling to date indicates that NO₂ concentrations in Portsmouth will continue to be non-compliant until 2023, which means that PCC will need to implement measures to bring forward compliance as quickly as possible.

The objectives which any intervention (package of measures) should seek to achieve are summarised below. These reflect the guidance set out by JAQU in Third Wave Local Authorities – Guidance (Options Appraisal), and the local Portsmouth context.

2.5.1. Primary objective

The primary objective of the Portsmouth Air Quality Local Plan is:

- to deliver a scheme that leads to compliance with NO₂ concentrations in the shortest possible time, without significantly worsening emissions elsewhere.

This objective has been set by JAQU and is crucial to the overall success of the project. Packages of options that do not meet this criterion should be rejected.

2.5.2. Secondary objectives

In addition, interventions should seek to achieve the following secondary objectives:

- deliver value for money;
- ensure that particular groups of stakeholders are not disproportionately impacted by any negative impacts associated with the proposed intervention;
- complement existing and planned wider policies for the city (including promote economic growth, reduce levels of social deprivation, improve health and encourage sustainable and active travel);
- be deliverable in terms of supply side capacity and capability;
- be affordable; and

- be achievable (taking into account technical, legislative, and political and public acceptability constraints).

2.6. Benefits, risks, constraints and dependencies

The following section identifies benefits, risks, constraints and dependencies related to addressing the identified air quality problem.

2.6.1. Benefits

- Opportunity to promote and optimise public transport use and walking and cycling infrastructure.
- Opportunity to deliver longer term environmental benefits, and for Portsmouth to become an exemplar city.
- Opportunity to enhance understanding of successful measures for achieving air quality improvements, for longer term use in Portsmouth and elsewhere.

2.6.2. Risks

- Risk that problem will simply be displaced to other parts of the city (and neighbouring authorities), if inappropriate options are shortlisted.
- The M275/A3 'western corridor' route is the most attractive route into Portsmouth and there is a risk that any measures to discourage vehicle trips simply free up space for other vehicles to route away from less attractive routes currently being used.
- Risk that measures conflict with other local objectives for economic growth and development or other local objectives.
- Risk of on-going health issues if measures are insufficient to significantly reduce emissions in the shortest possible time.
- Uncertainty over Brexit and potential impact upon the operation of the Portsmouth International Port, including the volume, nature and flow of vehicles entering / leaving the port.
- Risk that charging measures have a disproportionate impact on low income groups and becomes a regressive tax.
- Accuracy of the transport and air quality models, which are only able to provide a best estimate of future conditions given the evidence available and are intended as a tool rather than a true representation of conditions.

2.6.3. Constraints

- Being a majority island city with only three roads linking Portsea Island to the mainland, Portsmouth has a unique layout and any changes to the main road network require city wide consideration to ensure that potential displacement of traffic does not increase congestion and air pollution in other locations.
- Limited local authority control of city centre parking due to substantial amount of privately controlled parking.
- Uncertainty about future economic growth, and impacts on traffic flow, vehicle composition, and mode choice.
- Less than a quarter of NO₂ concentrations in the vicinity of the exceedance locations are associated with road transport sources, representing a significant challenge for this Plan which is primarily focused on transport-focused solutions.

2.6.4. Dependencies

- **Transforming Cities Fund** – Rapid Transit proposals are being developed with the DfT to deliver a step change in public transport in the City Region. A draft Strategic Outline Business

Case (SOBC) was submitted to the Department for Transport in June 2019 setting out a holistic proposition for South East Hampshire Rapid Transit (SEHRT) and making the case for funding from Tranche 2 of the Department for Transport's (DfT's) Transforming Cities Fund (TCF). A Final Outline Business Case will be submitted in November 2019, with a funding decision in April 2020.

The vision is to deliver a high-quality integrated, sustainable multimodal travel system which will connect communities in Gosport, Fareham, Havant, Waterlooville and Isle of Wight with Portsmouth, spread prosperity and drive up productivity. This will involve a branded network of fast, frequent, reliable and quality services and infrastructure, primarily on-street, providing turn up and go, end to end connectivity, limited-stop travel and interchange at key locations within the city region.

The Tranche 2 bid focused on a proposed network of rapid transit routes and supporting infrastructure improvements. One of the principle routes proposed passes through the city centre (including Commercial Road) and Alfred Road, with various infrastructure measures proposed.

In support of the TCF bid, both Stagecoach and First are looking to invest in new vehicles. Stagecoach is looking to invest in new electric double decker buses, and First is looking to invest in 40 new diesel vehicles. Both operators are supportive of upgrading ticket machines for Tap On Tap Off (TOTO) across the TCF network (due to be implemented by the end of 2021).

Complementary policies include: Portsmouth City Council Parking Strategy, Portsmouth Local Cycling and Walking Investment Plan, Portsmouth City Council Local Transport Plan, Low Emission Vehicle Strategy, Portsmouth City Council Parking Supplementary Planning Document, and Portsmouth Local Plan.

- **Portsmouth Park & Ride Expansion** – The Council is currently developing a business case to examine the potential for a significant expansion of the Park & Ride site at Junction 1 of the M275. The location of the site provides the opportunity to remove cars from the network before they reach the exceedance locations in the city centre. An expanded Park & Ride site could play an important role in providing an alternative option for car drivers. The case for an expanded facility is based on strategic policy objectives and cross-cutting priorities which are of city-wide and long-term importance and critical to the city's future, with benefits focused on the longer term horizon.
- **Solent Future Mobility Zone Bid** – Solent Transport is bidding for Future Mobility Zone funding (up to £43.95m) to deliver innovation in urban transport. The funding is available over a four year period to March 2023, with successful bidders due to be announced in November 2019. The bid focuses on two over-arching themes:
 - Theme 1: Personal Mobility: providing new modes of travel, and developing new, complementary means of planning and paying for journeys; and
 - Theme 2: Sustainable Urban Logistics: developing innovative approaches to address impacts of freight and logistics in urban environments, recognising that due to changes to the way people shop and work and increasing levels of online retail and service related-activity, light goods vehicles are the fastest growing sector of road traffic and a significant contributor to local congestion and air quality issues.

In addition, two projects are proposed which would bring both themes together, exploring novel combined approaches to movement of people and freight.

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Theme 1: Personal Mobility	
Mobility as a Service (MaaS app) – University trial project (£7.5m)	Creation of a viable platform which links together other Theme 1 projects across the whole Solent sub-region through delivery of a “marketplace” providing planning/ access/ booking/ payment for new modes such as Dynamic Demand Responsive Transit, cycle share and lift share alongside more traditional public transport. Initially focused on the Universities of Portsmouth (UoP) and Southampton (UoS) as testbeds.
Growing Solent Go (£1.3m)	Improvements to Solent Go’s product line, designed to reduce cost and convenience deterrents to multi-operator/ multi-stage public transport journeys in the Solent area, and purchased and ticketed via the MaaS “marketplace” app.
Mobility Credits trial (£1.0m)	Small scale trial of mobility credits through provision of “free” spend (£30-£100/month) on a smartphone travel planning/ ticketing MaaS app each month to a trial group of residents within Havant Borough (a suburban area in Portsmouth city region). The project would be targeted at users in low income groups, aged 35 and under.
Dynamic Demand Responsive Transit (£3.5m)	Trial of DDRT services in different geographical areas and with differences in the nature of service offered, to identify potential routes to viability.
Bike/ e-bike share and smart cycle locks trial (£4.8m)	Project to kickstart a Solent bike share scheme focused on Portsmouth (with an extension into Gosport along the Eclipse BRT corridor) and Southampton. This scheme would aim to be the most secure bike share scheme in the country.
Lift sharing (£0.8m)	Project to support major employers to set up lift-sharing schemes in workplaces, and enable car sharing as an option within the Solent MaaS app.
Theme 2: Sustainable Urban Logistics	
Drone Logistics (£8.0m)	The SMZ Drone Logistics Project would realise the first Unmanned Aerial Vehicle (UAV) beyond-visual-line-of-sight (BVLOS) flights between medical centres across the Solent region (e.g. between Queen Alexandra Hospital in Portsmouth and St Mary’s Hospital on the Isle of Wight) trips which currently need to travel through Portsmouth.
Halls / Higher Education Institution (HEI) Consolidation project (£1.3m)	Large scale trials of consolidated business-to-consumer (B2C) parcel delivery to students living in halls of residence at Higher Education Institutions (HEIs) in Southampton and Portsmouth, and to university staff working on campus. This would be achieved using established distribution centres and various micro-consolidation options.
Macro Consolidation (£2.8m)	This project would deliver an out-of-city freight consolidation centre for Portsmouth and increase the use of an existing centre in Southampton, to reduce the volume of commercial traffic in urban centres, and transfer deliveries to cleaner vehicles for the “last mile”. Supported by Delivery and Service Plans (DSPs) or “Freight Travel Plans” which identify the operational, environmental and financial opportunities related to freight and servicing activities at specific business locations and are the first stage in developing sustainable consolidation approaches.
Micro Consolidation (£2.9m)	This project would trial the creation and use of ‘Micro-Consolidation Points’ to assist last-mile freight activities in both cities. This will involve: <ul style="list-style-type: none"> • Dynamically managing the use of existing parking spaces/ bays, local mobility hubs and /or public transport interchanges for timed drop-offs and pick-ups by parcel carriers through a newly developed loading bay booking tool; and/or;

	<ul style="list-style-type: none"> Installing locker systems and using established 'attended delivery' services for drop-off and pick-up to create opportunities for last-mile e-cargo bike deliveries, portering or direct pick-up or drop-off.
Linking Projects	
MPV and Local Mobility Hubs / Interchanges (£3.2m)	<ul style="list-style-type: none"> Combination of Demand Responsive Transit and Last Mile Freight - Project to identify potential new uses for DRT in quieter periods which may help to improve their financial sustainability. Multi-Purpose Vehicle (MPV) feasibility investigation and trial. Local Mobility Hubs and Interchanges - Many of the above projects would be brought together in one place at transport interchanges and local mobility hubs.

The above proposals would all play an important role in improving the attractiveness of sustainable modes for personal mobility and freight / delivery / servicing movements, reducing vehicle emissions in the two exceedance locations and across the wider study area. **Due to the uncommitted nature of these projects they have not been included within the core packages of interventions proposed as part of this Outline Business Case, however, they are expected to have a positive impact on air quality, reinforcing the benefits of the proposed package in the medium to longer term.**

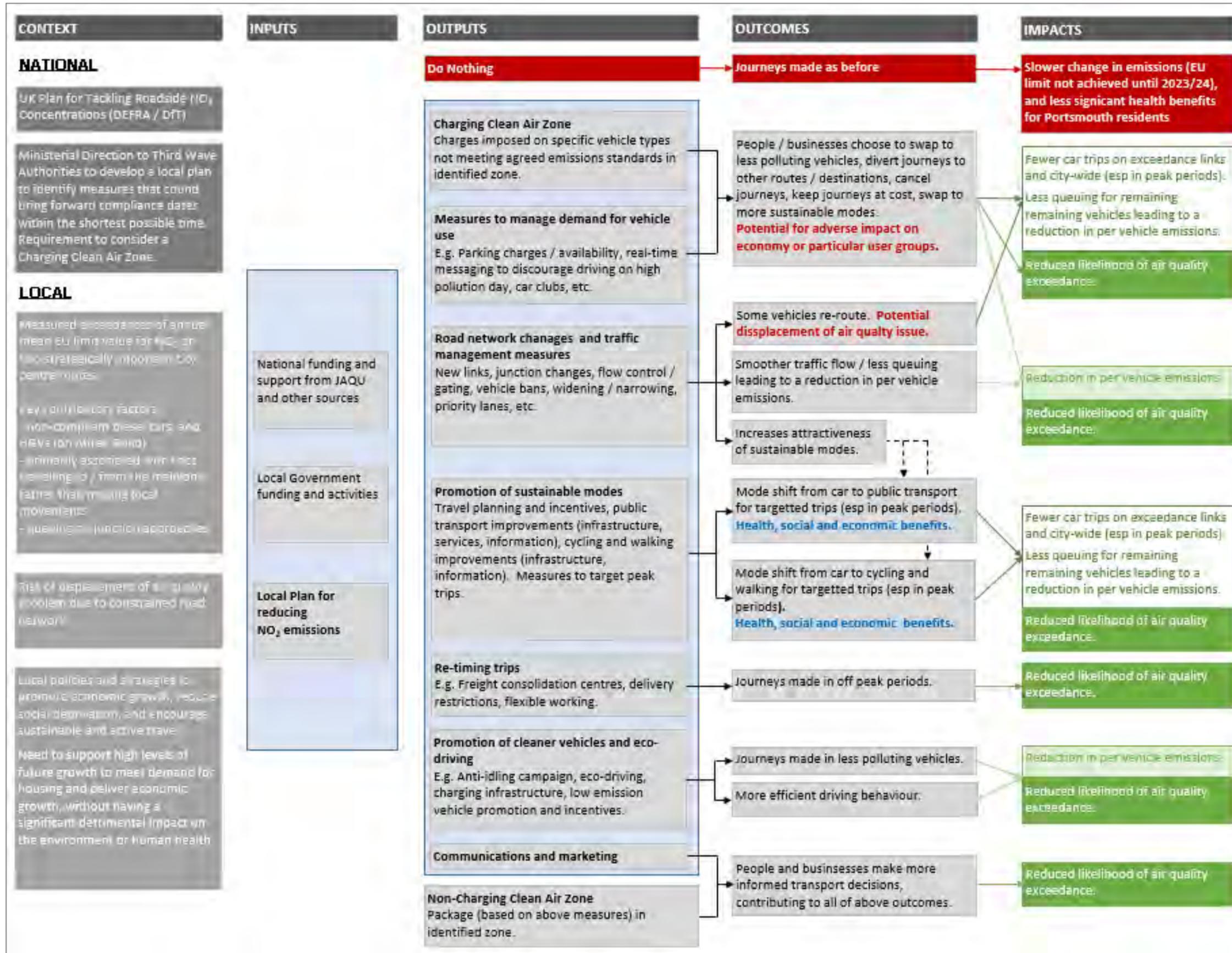
2.7. Theory of change and logic mapping for options

Figure 2-5 represents Portsmouth City Council's overarching vision of change for achieving compliance with EU limit values for NO₂ in the shortest possible time.

A logic map is a systematic and visual way of presenting the 'theory of change' underpinning a programme / policy, setting out how expenditure and invested resources (inputs) generates activities (outputs) which are then expected to lead to particular changes in outcomes and impacts.

It will be used initially to guide the option development and assessment process, and later to scope the baseline data requirements for ex-post evaluation.

Figure 2-5 Logic map to represent Portsmouth City Council's overarching vision of change



2.8. Stakeholder input / support

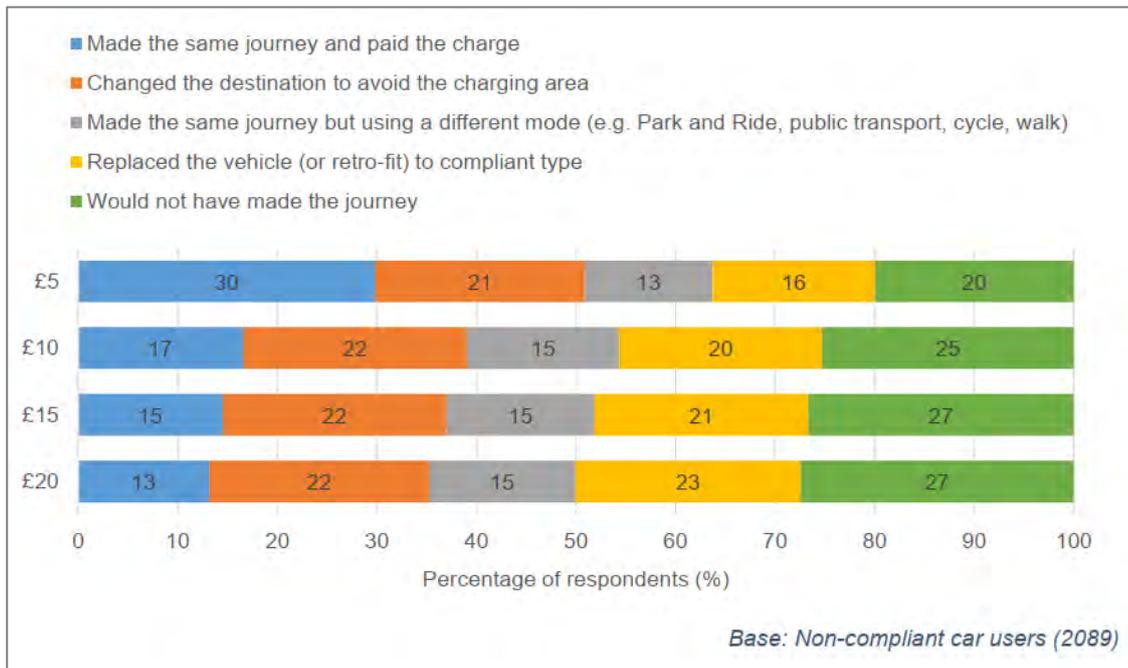
2.8.1. Stakeholder survey

An online survey of those who currently drive in the proposed charging CAZ boundary was undertaken in June 2019 to understand how the travel behaviour of drivers in Portsmouth could change should a charging zone be introduced. Responses were received from 4,636 individuals of which 91% were car drivers, 2% were taxi drivers, and 4% drove a Light Goods Vehicle. In addition, some 62 businesses interacted with the business survey.

Feedback from car drivers

- **Profile** - Over half of car drivers responding live on Portsea Island, with the rest coming from further afield. A good spread of ages was achieved; and two-thirds (67%) work full time. The average household income for compliant drivers is £46,726 compared to £43,284 for the sampled non-compliant drivers.
- **Compliant / non-compliant car use** - The majority of respondents (59%) normally drive non-compliant cars, of which 64% are driving diesel vehicles and 36% are driving petrol vehicles.
- **Vehicle replacement** - Some 40% of drivers of non-compliant cars expect to replace their vehicle in the next 5 years (by 2024), with 27% planning to do so in the next two or three years. However, 60% of non-compliant cars will potentially still be on the road in 2024.
- **Frequency and purpose of travel** - The majority of non-compliant respondents (>80%) travel on to or off of Portsea Island at least once a week. It is therefore clear that the implementation of a Portsea Island-wide CAZ would affect a large proportion of both residents and non-residents. In addition, the majority of residents with non-compliant vehicles (>93%) are making journeys within the proposed CAZ on at least a weekly basis. Over half of the most frequent journeys being made by non-compliant car drivers are commutes to and from work (54% of respondents).
- **Response to a charging CAZ** - Figure 2-6 shows the impact a CAZ would have on non-compliant car users. Overall the results show that the introduction of even a daily £5 charging point has a marked impact upon non-compliant car travel within and through Portsea Island; 41% would avoid the charging area (changed their destination or not made the journey), 29% would either replace their vehicle or travel using a different mode although 30% would still make the journey in their non-compliant car and just pay the charge. An increase to £10 sees a shift in behaviour with fewer people willing to pay the charge (17%); people would rather replace or retro-fit their vehicle or not make the journey. Increases beyond £10 however, have little further impact upon non-compliant car users.
- **Response amongst drivers with a disability** - A charging CAZ would encourage a higher proportion of those with a disability to not make their journeys, potentially isolating this group of people (e.g. 31% of those with a disability vs 24% of those without a disability assuming a £10 charge). Replacing or retro-fitting their vehicle is also much less appealing to those with a disability at all charging levels (<16%). Consistently people with a disability are less likely to make the same journey using a different mode - it's simply not a viable option for many because of their disabilities.

Figure 2-6 Non-compliant car drivers stated response to a charging CAZ



- Response by journey purpose** - Figure 2-7 suggests that a charging CAZ will drive leisure and retail shoppers elsewhere and encourage them to stay at home; 33% of respondents will change their destination to avoid the charging area (i.e. go to a retail outlet or entertainment venue outside of Portsmouth) at the £10 level, or simply won't make the journey at all (34% of respondents). Based on these results a charging CAZ would have a significant adverse impact on the leisure and shopping economy in Portsmouth. Around a fifth of people whose most frequent journey within or through Portsea Island is commuting will pay a £10 charge.
- Appeal of schemes to help reduce pollution from private vehicles** - Figure 2-8 shows the popularity of other schemes to help reduce pollution. A fast, high quality bus service (as might be delivered through the Transforming Cities Fund bid for a SR Hants Rapid Transit scheme) was the most popular option (supported by 33%), followed by high quality cycle routes, and an enhanced Park & Ride (mainly amongst those travelling into the potential CAZ). Drivers travelling within the CAZ are generally more positive towards the mitigation measures compared to those driving through the CAZ frequently, particularly towards the mobility credit scheme offering free public transport.
- Other comments** - There was widespread concerns that a CAZ would have a detrimental effect on local businesses.

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Figure 2-7 Non-compliant car drivers stated response to a charging CAZ by reason for most frequent travel

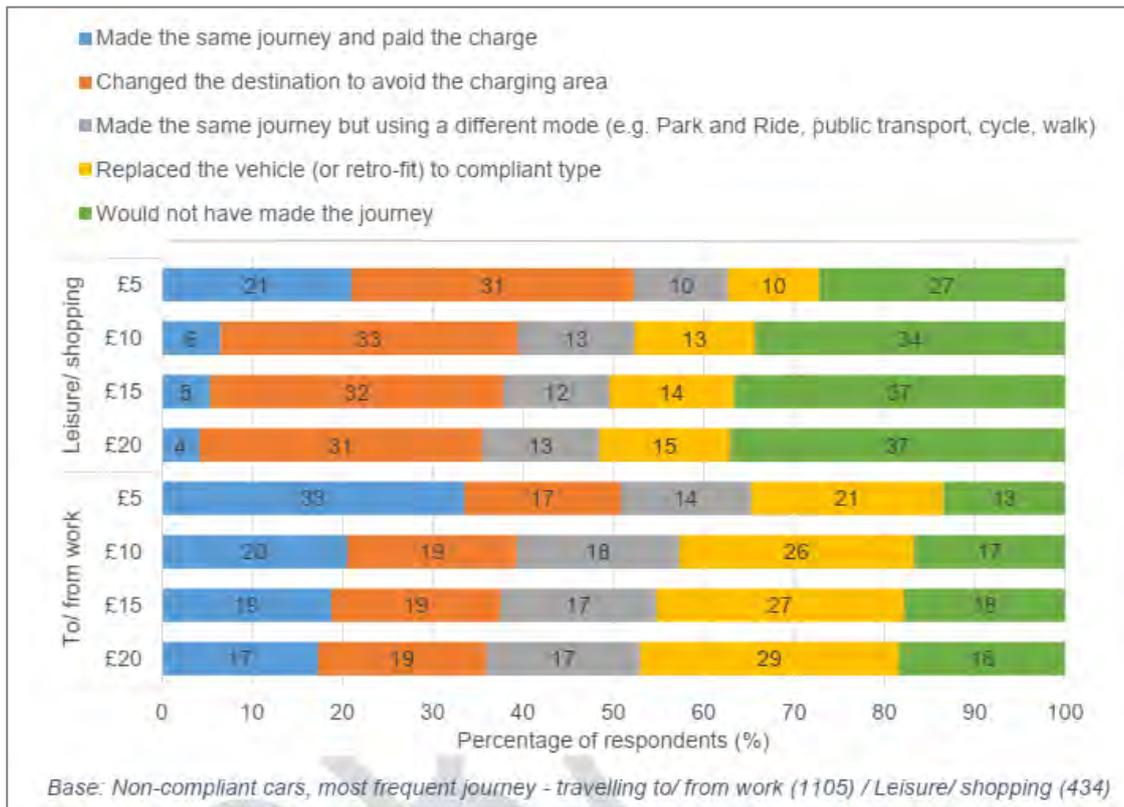
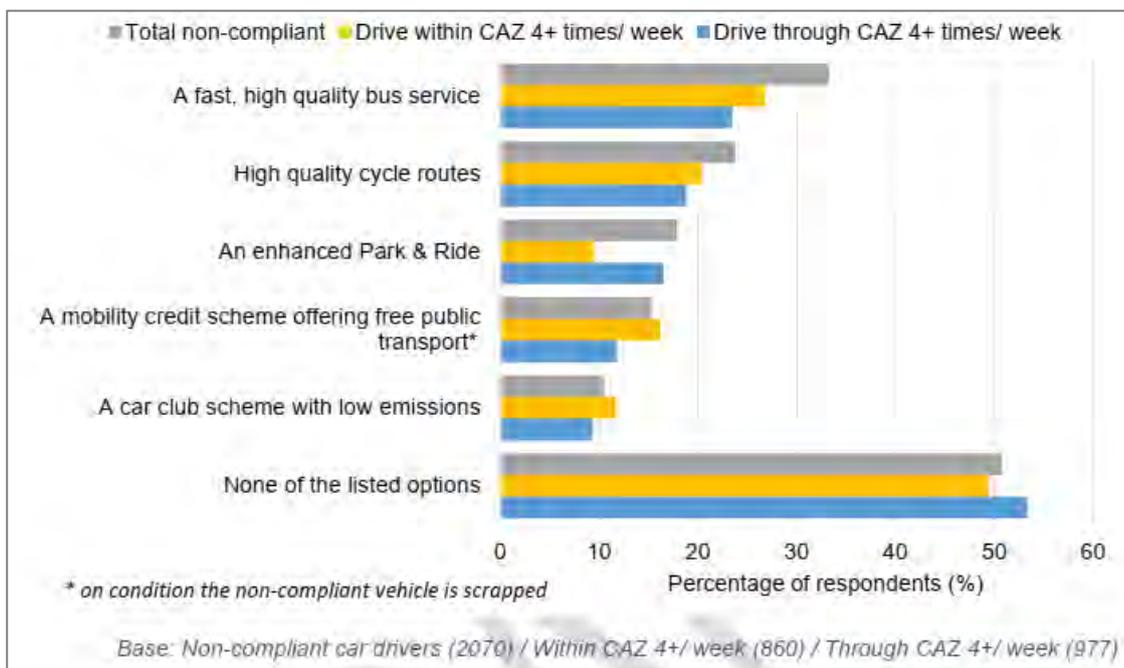


Figure 2-8 Appeal of schemes to help reduce pollution from private cars



Feedback from taxi drivers

- Sample size** – The taxi results are based on a small sample of 29 non-compliant drivers who own their vehicle. Drivers of leased vehicles were routed out of the survey prior to being asked for their response to a charging CAZ because they cannot personally decide to replace a non-compliant leased vehicle. The results are therefore assumed to be indicative only and may not be representative of the wider population of taxi drivers in Portsmouth.

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- **Vehicle replacement** – A large majority of respondents (72%) are planning to replace their non-compliant taxi/PHV within the next five years, with 55% planning to do so within the next three years. Encouragingly, a small majority (52%) have plans to replace their non-compliant taxis/PHVs with compliant diesel or hybrid cars within the next four years.
- **Response to a charging CAZ** – Based on a small sample of 26 non-compliant taxi drivers and assuming a £10 CAZ charge, 9 drivers said they would retire early or leave the taxi trade, and 8 said they would stop working in the CAZ area. This would have significant consequences for the taxi trade in Portsmouth if representative of the wider taxi driver population.
- **Appeal of schemes to help reduce pollution from private vehicles** – Some 19 drivers were supportive of ‘an interest free loan to support upgrade to ultralow emission vehicle’, with 9 supporting ‘a grant to support upgrade to an electric vehicle, supported by the installation of EV charging points at taxi ranks and other key locations around the city’.

Feedback from Light Goods Vehicle drivers

- **Sample size** – Just over 100 responses were received from non-compliant LGV drivers. The results are therefore assumed to be indicative only and may not be representative of the wider population of LGV drivers in Portsmouth.
- **Profile** – The majority of LGV drivers responding (65%) live on Portsea Island, with the rest coming from further afield. Those living on Portsea Island are more likely to have a non-compliant vehicle. Just under half (47% of respondents) earn less than £20,000 per annum.
- **Compliant / non-compliant car use** - The majority of respondents (79%) normally drive a non-compliant LGV.
- **Vehicle replacement** - Almost three-quarters (73%) of non-compliant LGV/van drivers responding to the survey said they have no specific plans to replace their vehicle in the next five years. Based on these results, there is likely to be a high proportion of non-compliant LGVs are still likely to be on the road in 2022.
- **Frequency and purpose of travel** - Non-compliant LGV/van drivers are travelling around (within) Portsea Island frequently with 65% of respondents travelling daily; with only 30% travelling on/off the island on a daily basis (i.e. these results suggest there are a lot of local movements). The majority of non-compliant LGV/van drivers are commuting (42% of respondents) or travelling for work (36% of respondents).
- **Response to a charging CAZ** – Based on a sample of 95 non-compliant LGV drivers and assuming a £10 CAZ charge, 23 drivers said they would pay the charge, 28 said that they would change their destination, 18 would replace or retro-fit their vehicle, and 18 would not make the journey. Making the same journey using a different mode is not a popular choice amongst LGV drivers, with just 8 drivers selecting this option; believed to be because LGV drivers often need their vehicles to carry essential work equipment.
- **Appeal of schemes to help reduce pollution from private vehicles** – Some 32 drivers were supportive of ‘an interest free loan to support upgrade to ultralow emission vehicle’, with 30 supporting ‘a grant to support upgrade to an electric vehicle, supported by the installation of EV charging points at taxi ranks and other key locations around the city’. Only 3 were supportive of a freight consolidation centre, although this is more likely to be appropriate for HGV movements.

Feedback from businesses

A separate consultation survey was designed and distributed directly to local businesses (with fleets of Light Good Vehicles (LGVs) and/or Heavy Goods Vehicles (HGVs)) through PCC distribution lists and it was promoted on social media.

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- **Sample size** – In total, 62 businesses responded, reflecting a range of business sizes. The results are assumed to be indicative only and may not be representative of the wider population of businesses in Portsmouth.
- **Response to a charging CAZ** – Around half of the 26 businesses with LGV fleets said they would relocate their business out of the CAZ; and just under half of the 16 businesses with HGV drivers said they would do the same. It is thought that these responses are indicative of the concern businesses in Portsmouth have about a potential CAZ, but that in practice the level of relocation would be much lower. At the time of the survey there had been no other engagement with the business community about a potential CAZ. Nevertheless, the results highlight the need for further consideration to be given to the potential business impacts of a CAZ.
- **Appeal of schemes to help reduce pollution from private vehicles** – The most popular options amongst the 26 businesses with LGV fleets were ‘a grant to upgrade to an electric vehicle, supported by the installation of EV charging points at key locations around the city’ (9 businesses), and ‘an interest free loan to support upgrade to ultra-low emission vehicle’ (7 businesses).
- The most popular options amongst the 16 businesses with HGV fleets were ‘a grant to retrofit the existing fleet so that the vehicles become Euro VI compliant’ (5 businesses), ‘an interest free loan to support upgrade to ultralow emission vehicles (5 businesses), and ‘reducing the CAZ charge for journeys made outside of peak hours’ (4 businesses).

2.8.2. Focus groups

A number of focus groups were held with taxi drivers (hackney carriage drivers, private hire vehicle drivers, and taxi companies) and local businesses (including city centre retailers, manufacturing businesses, hauliers, Wightlink, Portsmouth International Port and the Naval Base).

Key issues identified by taxi drivers / companies:

- Concern from drivers and operators about the cost of upgrading vehicles to compliant types;
- Drivers would be interested in Electric Vehicles however there is a lack of charging infrastructure in the city, particularly at taxi ranks another other pick-up locations and the cost of purchasing an EV is prohibitive;
- Drivers and operators would like to see loans and grants available to help with the cost of switching to a compliant vehicle type, however there is limited appetite for retrofit due to the perception that it is not worth investing in older vehicles;
- Particular concern about the cost of upgrading wheelchair accessible vehicles to compliant types and would like to see a bigger loan or grant available for replacement of this type of vehicle;
- Many of Portsmouth's private hire vehicles are leased, and therefore there is a concern that if the availability of loans or grants for replacement was limited to only small fleets, the majority of private hire vehicles would not be eligible for support.

Key issues identified by local businesses:

- A number of businesses identified plans to upgrade their vehicles to Euro 4 or Euro 6 compliance standards, with a small number of businesses already underway with this process. It is typically larger companies who have the capacity to do this and concerns were raised over the affordability for such fleet upgrades amongst smaller organisations, suggesting that interest-free loans or grant money could assist them in purchasing compliant vehicles;

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- Some businesses operating within Portsmouth lease their vehicle fleets meaning they are unable to upgrade their vehicles, however, it would be helpful to have funding available to facilitate businesses 'buying-out' of existing leases so that they can enter into new agreements to lead compliant vehicle types;
- The majority of local businesses have LGV fleets, and there is a perception that the HGVs which do come into the city are most commonly operated by large companies who trade across the country and will have greater ability to either face the costs of a CAZ with non-compliant vehicles, or upgrade their fleets with compliant vehicles if this has not already been done;
- A centralised distribution point is recognised as a facility which would be used by some businesses. However, others raised concern about such a facility adding another stage to the distribution process and the potential increased cost to retailers as well as risk of goods being lost in the system throughout the process;
- Adjustments to clean air zone times of operation was a common theme, with some businesses suggesting that they would be happy to make alterations to delivery schedules if there were time windows where charges were relieved. Others stressed this would not be beneficial to them because it could require further costings, for example having staff available to receive deliveries at retail outlets out of normal working hours;
- There is major concern from some port and ferry travel companies over the high level of impact they predict a CAZ will have on them. They have estimated that not only would a CAZ result in major economic issues for their business with reduced clients, but that there may also be a further significant impact on the local economy, particularly the Isle of Wight;
- Wightlink which operates ferry services between Portsmouth with the Isle of Wight noted that some of their customers use the services to connect with specialist buses which transfer hospital patients, and that where possible these types of vehicles should be recognised for their fundamental services and need to be considered for exemption;
- There is concern that specialist fleets will struggle with CAZ charges - such as gritters or vehicles with specialised kit temperature control. These types of vehicles are not operated frequently and are harder to replace, with a longer procurement time.

2.9. Potential economic impacts of a CAZ on businesses in the city

To follow.

3. Economic Case

3.1. Introduction

This section presents an overview of the assessment and analysis undertaken to identify the preferred option.

In particular, it:

- describes the optioneering process used to identify a shortlist of options for assessment;
- sets out the process for identifying the final shortlist of a benchmark CAZ (Portsea Island CAZ C) and an Alternative Package (Small Area CAZ B + non-charging measures);
- compares the performance of the two final shortlisted options in delivering the primary Critical Success Factor (compliance with the EU Limit in the shortest possible time) and the various secondary Critical Success Factors; and
- identifies the Alternative Package (Small Area CAZ B + non-charging measures) as the preferred package for implementation.

3.2. Optioneering process

The Strategic Outline Case (submitted January 2019) set out the process for identifying a long list of options (structured around the spending objectives / critical success factors), in order to identify a shortlist of better performing packages of options to take forward to Outline Business Case. This process is summarised in [Appendix B](#).

The SOC shortlist was re-assessed following the submission of the SOC, and the results from the detailed local air quality modelling (undertaken to inform the OBC) which show exceedances in slightly different locations from those suggested by the original PCM analysis. The process was based on the following activities:

- A PCC workshop with officers to discuss further options (March 2019)
- Input from the Air Quality Stakeholder Group and Air Quality Project Board
- Inputs from Members
- Initial modelling of traffic and emissions impact
- Further research and data collection relating to the various options.

This resulted in the following revised shortlist of options for further consideration ([Table 3-1](#)).

Table 3-1 Shortlisted package options for further consideration

ID	Description	OBC status
Charging Clean Air Zone		
Portsea Island CAZ B	Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches, and HGVs on Portsea island.	Potential package component.
Portsea Island CAZ C	Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches, HGVs, LGVs on Portsea Island. Higher charges for buses and HGVs.	Expected Benchmark CAZ.
CAZ ? Small Area	CAZ B or C, focused on a smaller area	Potential package component.
CAZ ? (Ext/int)	Portsea Island CAZ B or C, focused on int/ext trips only (i.e. exempting local trips)	Potential package component.

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trips only)		
A. Measures to reduce private car use		
A1	Increase car-parking charges to discourage car use	Potential package component to encourage mode shift.
A2	Reduce number of car parking spaces to discourage car use	Potential package component to encourage mode shift.
A4	Increase on-street parking charges for residents (or vary charges based on vehicle emissions) to discourage car ownership or purchase of a cleaner vehicle	Potential complementary measure to discourage car ownership or use of a cleaner vehicle amongst Portsea Island residents. (See also D7)
A6	Advance and real time (social and conventional media, VMS) messaging to discourage driving on days of high pollution	Potential complementary measure to raise awareness and change behaviour.
A8	Introduce car clubs and car hire schemes (using low emission vehicles) in exceedance areas, with subsidised hire rates. To discourage car ownership and use	Potential complementary measure to discourage car ownership (but most effective as potential CAZ D mitigation measure).
A10	Mobility credit scheme - Provision of 'mobility credit' in return for giving up car use i.e. credit for use on other modes of transport or low emission car club cars	Potential complementary measure to discourage car ownership (but most effective as potential CAZ D mitigation measure).
B. Road network Measures to reduce private car use		
B6	Change traffic priorities at Alfred Road / Queen Street (Additional green time to s/bound movements from Alfred Road to Queen Street)	Potential package component (as a temporary measure, prior to introduction of additional bus priority measures as part of the proposed SE Hants Rapid Transit (TCF bid)
B22b	Rapid transit - Full TCF proposal for sub-region	Potential medium term solution (i.e. post 2022), subject to securing funding (i.e. sensitivity test).
D. Measures to encourage use of cleaner vehicles and more sustainable driving (to reduce tailpipe emissions)		
D1	Anti-idling campaign	Potential complementary measure to raise awareness and change behaviour.
D7	Discounted charges for residents on-street parking permits for low emission vehicles (vary charges based on vehicle emissions)	Potential complementary measure to discourage car ownership or use of a cleaner vehicle amongst Portsea residents. See also A4.
D9	Support to convert buses to lower emission fuels (including hybrid buses, biofuel powered buses, and electric buses, as an alternative to petrol and diesel)	Potential complementary measure (based on operator commitment, subject to securing TCF funding for rapid transit proposals – medium term measure). See B22b.
D10,D11	Encourage use of lower emissions taxis through incentives and tightening of existing licensing policies. Introduce charging points for taxis.	Potential package component or potential CAZ mitigation measure
D12	Encourage use of lower emission vehicles for business fleets (HGV / LGV fleets)	Options being developed as part of Solent Mobility Zone Bid
D13	Eco-driver training for businesses	Potential complementary measure
E. Mode shift to sustainable modes		
E1	Workplace Travel Planning	Potential complementary measure to raise awareness and change behaviour
E2	School Travel Planning	Potential complementary measure to raise awareness and change behaviour

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<u>E3</u>	Personal Journey Planning for residents	Potential complementary measure to raise awareness and change behaviour
<u>E4</u>	Promote easitNETWORK and easitSHARE	Potential complementary measure to raise awareness and change behaviour
<u>E7a</u>	Promotion of Portsmouth Park & Ride amongst commuters	Potential complementary measure (most effective if combined with a CAZ D or significant parking restraint elsewhere)
<u>E9b</u>	Contactless payment	Potential complementary measure to encourage mode shift (as part of TCF Tranche 2 bid). See B22b.
<u>E11</u>	Mobility as a Service (MaaS)	Potential complementary measure to encourage mode shift (part of Solent Mobility Zone bid).
E12	Improve cycling and walking facilities (e.g. cycle lanes, secure cycle storage, safe crossings, etc.)	Potential package component
F. Communications and marketing		
<u>F1</u>	Targeted communications and marketing	Potential complementary measure (an important element of any package of measures).
G. Other		
G2a	Freight consolidation measures (via Solent Consolidation Centre, and micro-trials)	Potential package component to reduce freight impact (part of Solent Mobility Zone bid).
G2b	Service and Delivery Plans	Potential package component to reduce freight impact (part of Solent Mobility Zone bid).
G3	Port-specific measures	Portsmouth International Port are preparing a Port Air Quality Strategy (PAQS) by July 2020. This will outline proposals for reducing emissions intensity associated with port activities, which will also influence NO ₂ concentrations on Commercial Road and Alfred Road.

Through an iterative process of further analysis and assessment of likely impacts, deliverability considerations, and consultation with the Air Quality Board, the shortlist of package options identified above was further refined to produce the following filtered list of options to be assessed further with detailed modelling in order to identify a final shortlist of a Benchmark and Alternative Package for comparison:

Table 3-2 Packages of options modelled in detail

Options / packages	Detail
0. 2022 Baseline	2022 Projected Base Year including committed developments.
1. Portsea Island CAZ B	Targeting taxis and private hire vehicles (PHV), buses, coaches, HGVs across Portsea Island.
2. Portsea Island CAZ C	Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches, HGVs, LGVs on Portsea Island.
3. Small Area CAZ B	Targeting taxis and private hire vehicles (PHV), buses, coaches, HGVs within a smaller area of the city.
4. Small Area CAZ B with non-charging measures	As Test 3 + parking measures + strategic cycling routes + modification to the traffic signal timings at the Alfred Road / Queen Street junction + complementary measures (not modelled).
5. Portsea Island CAZ B external trips only	As Test 1 but charge only applied to trips into / out of Portsea Island (i.e. not including internal trips), as these trips make up the vast majority of movements on the two exceedance links.

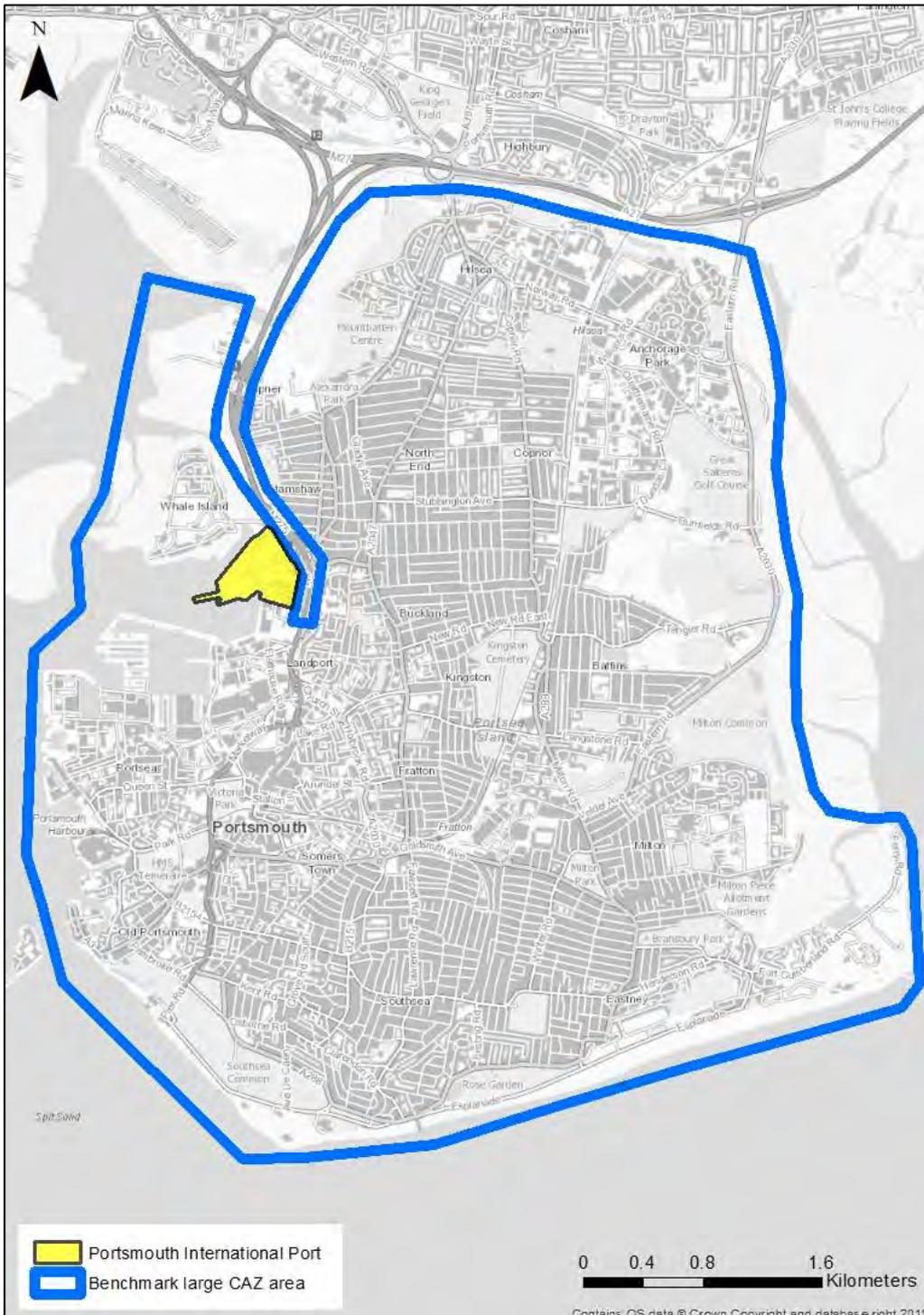
3.3. CAZ Benchmark

In line with the guidance for third wave local authorities, our short list of options includes a benchmark charging CAZ of a high enough class to bring about compliance. The process for identifying the CAZ benchmark is set out below.

3.3.1. CAZ boundary

The indicative boundary for the benchmark CAZ is shown in Figure 3-1. It is focused on the whole of the Portsea Island area, excluding the M275 and the western arm of Rudmore Roundabout (providing the option to exempt traffic to Portsmouth International Port).

Figure 3-1 Indicative boundary for benchmark Portsea Island CAZ



The cordon would capture all traffic entering Portsmouth via:

- the A3 Mile End Road (south of the M275);
- Portsbridge Roundabout / London Road (A3); and
- Eastern Road (A2030).

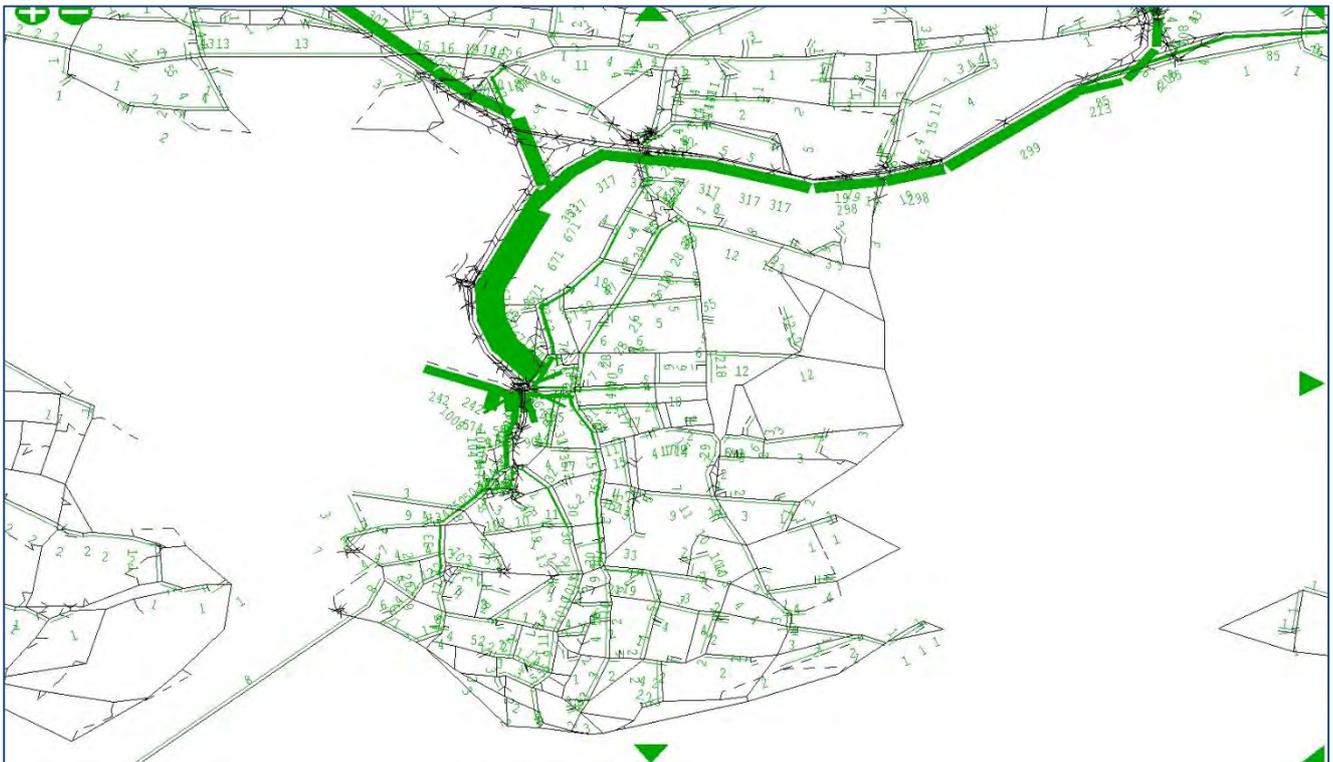
Drivers would have the opportunity to use the P&R or to turn around using Tipner Roundabout, thereby avoiding the charge. Drivers would also be able to access the land at Tipner West, without a charge.

3.3.2. Exclusion of Portsmouth International Port

Portsmouth International Port has been excluded from the charging zone due to the potential negative economic impacts. To inform this decision, further analysis was undertaken to understand what impact this might have on the wider network and how local trips might be impacted.

Analysis of the traffic model forecasts shows that the vast majority of flows accessing the Port come via the M275 (Figure 3-2) and would not need to pay a charge if the CAZ area starts south of Rudmore Roundabout. These trips are not contributing to the NO₂ exceedances on Commercial Road and Alfred Road.

Figure 3-2 2026 AM – Portsmouth International Port Inbound Flows (pcus)



The above plot shows all flows accessing the M275 J2 Rudmore Roundabout from the western arm. This includes both Port flows and those to Whale Island.

Only a small proportion of trips are associated with origins / destinations within Portsea Island. These trips would be subject to the CAZ charge. A proportion of these are likely to be journey-to-work trips, and therefore largely unaffected by a CAZ B or CAZ C..

3.3.3. CAZ charge

It is envisaged that the charge would be applied on a daily basis (24 hour period from midnight to midnight) as is used for the London ULEZ. This is considered preferable to applying a charge for

every trip crossing the cordon and avoids complications associated with vehicles crossing the cordon twice during one trip (such as those travelling to/from Tipner and Whale Island).

A charge of £50/day has been assumed for buses and HGVs, and £10/day for all other vehicles. The CAZ charge is applied to all trips undertaken by affected modes, and at this stage no account is taken of any potential exemptions (other than excluding trips to the Portsmouth International Port, as described above).

3.3.4. Other model assumptions

The CAZ options have been represented in the traffic and air quality modelling using the assumptions that:

- Fleet will continue to turnover, leading to some natural upgrade from non-compliant to compliant vehicles between the current year and 2022 (compliance year);
- 90% of buses and coaches and mini buses will be compliant after upgrades in response to the CAZ (as the majority will already be compliant due to the ongoing programme of retrofits);
- 90% of taxi trips in Portsmouth will all be undertaken by compliant Euro 6 vehicles after upgrades in response to the CAZ (with the remaining 10% paying the charge);
- Car, LGV and HGV drivers respond to the CAZ in line with the JAQU national average response rates as set out in Table 3-3, drawn from Table 13 in the Third Wave Option Appraisal Guidance³⁷. The SRTM demand model was used to estimate mode shift in response to the CAZ charge for car drivers
- Daily charges have been converted into charges per trip on the basis of the estimated number of return trips made per vehicle within the day. However, for LGVs and HGVs, as there is no scope for mode or destination shift within the model, this value only influences the routing for the small subset of trips that have a choice of passing through the CAZ zone or taking another route to their destination. The per trip costs are therefore primarily relevant for car trips in the CAZ D test, for which mode shift options in response to changes in trip cost are available.

Table 3-3 LGV and HGV CAZ responses assumed (JAQU national average figures)

Response	LGV trips	LGV vehicles	HGV trips	HGV vehicles	Car trips	Car vehicles
Replace/upgrade vehicle	64%	25%	83%	44%	64%	22%
Cancel trip	6%	12%	4%	13%	7%	16%
Change mode	2%	4%	0%	0%	11%	23%
Avoid zone	8%	17%	4%	13%	11%	23%
Pay charge	20%	42%	9%	29%	7%	16%

3.3.5. Level of CAZ required for the benchmark

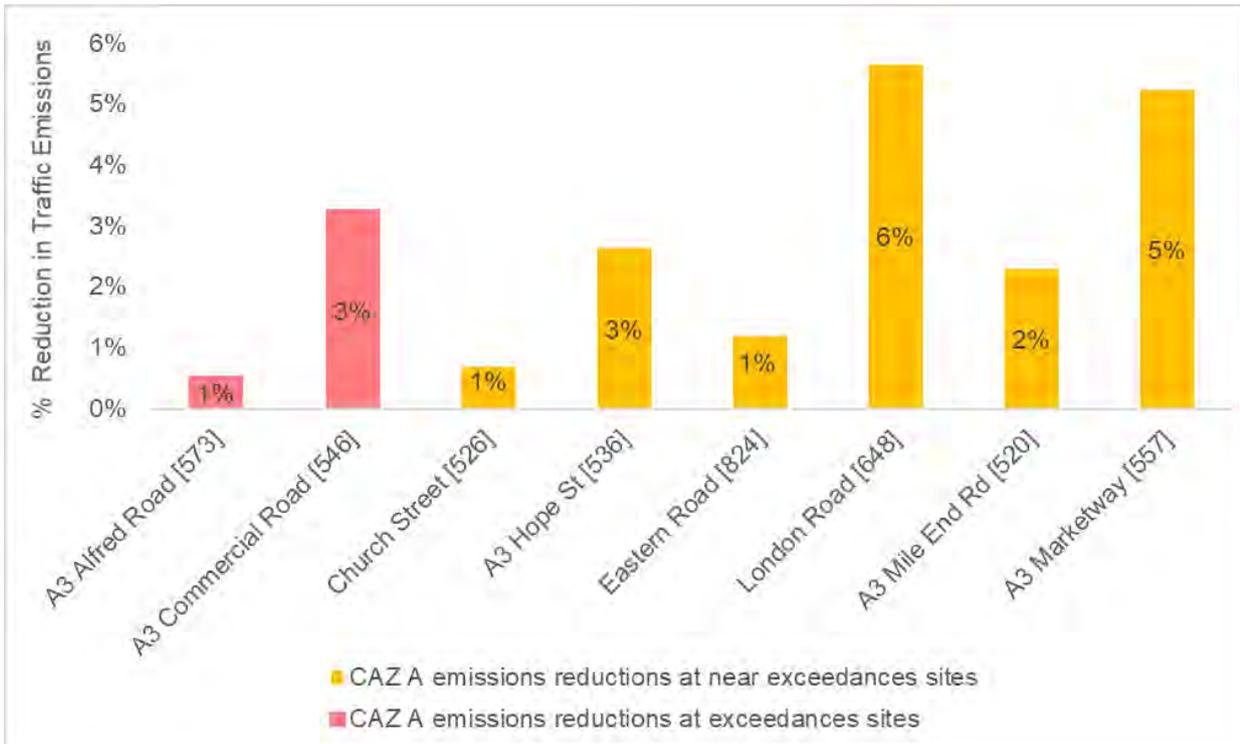
Modelled reduction in road NOx – Figure 3-3 shows the forecast reduction in road NOx emissions achieved by different levels of CAZ (implemented across the whole of Portsea Island) for the exceedance locations (shown in red) and the near exceedance locations (shown in orange).

³⁷ The national average response rates were used throughout as the CAZ D scenario was tested before the stakeholder survey was complete and the sample provided by the stakeholder survey for LGV and HGV trips was not sufficiently large to provide robust results, with the majority of responses received from car drivers.

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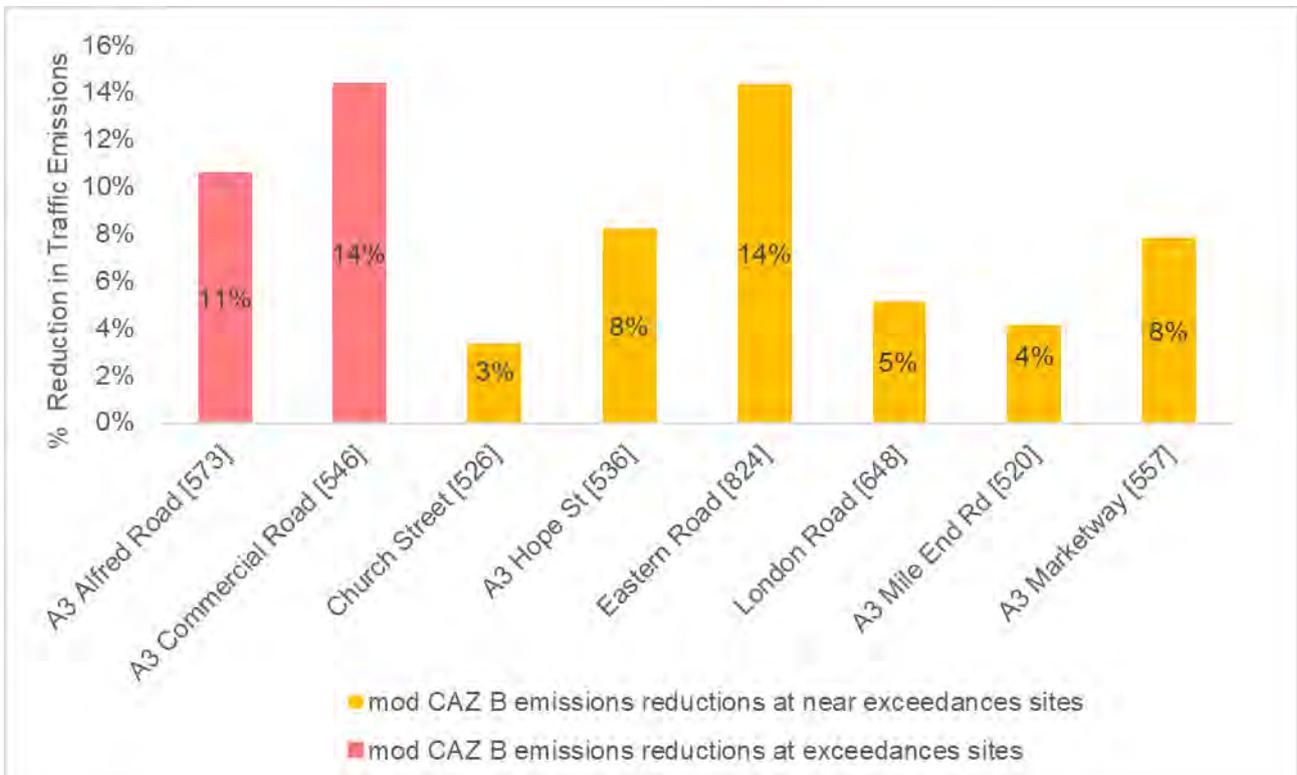
Figure 3-3 Modelled reduction in road NOx in 2022 for different levels of CAZ

CAZ A (Indicative traffic model outputs and emissions spreadsheet)



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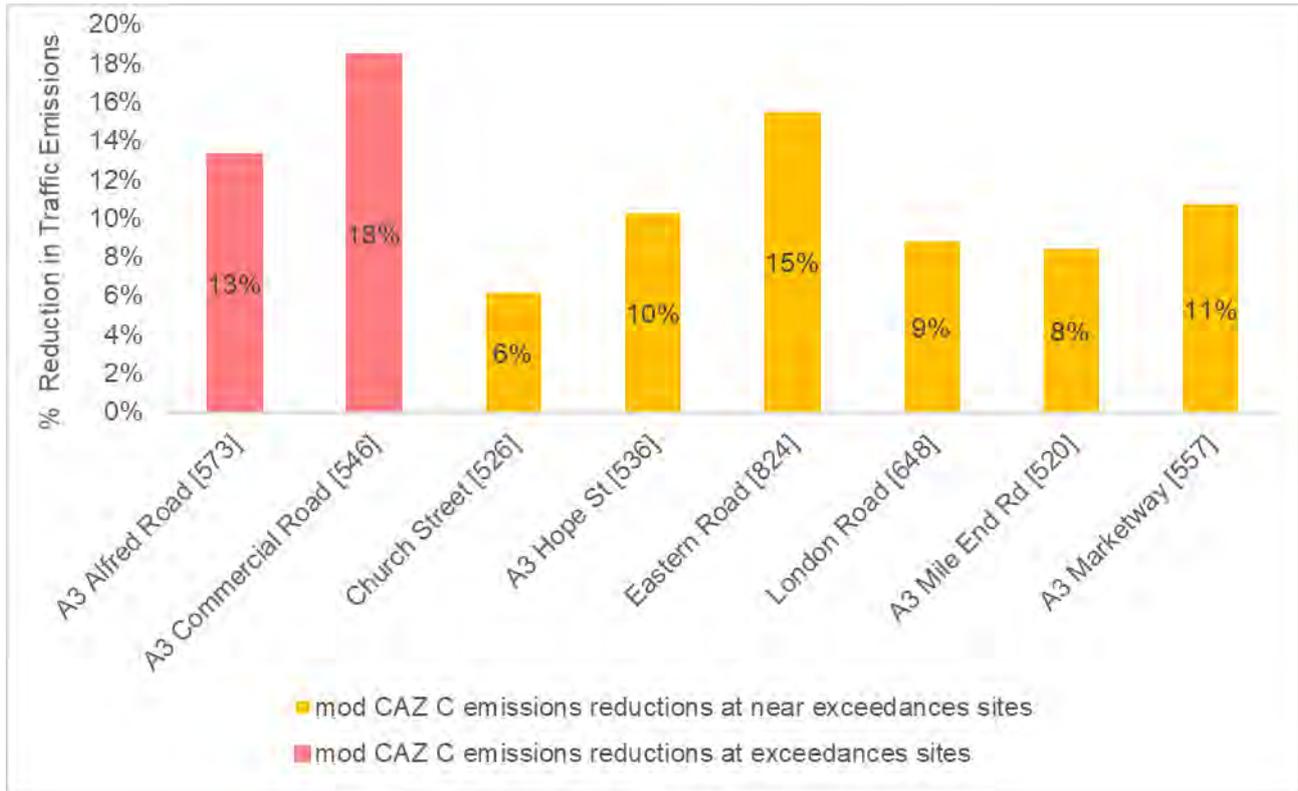
CAZ B (based on CAZ B traffic model outputs and emissions spreadsheet)



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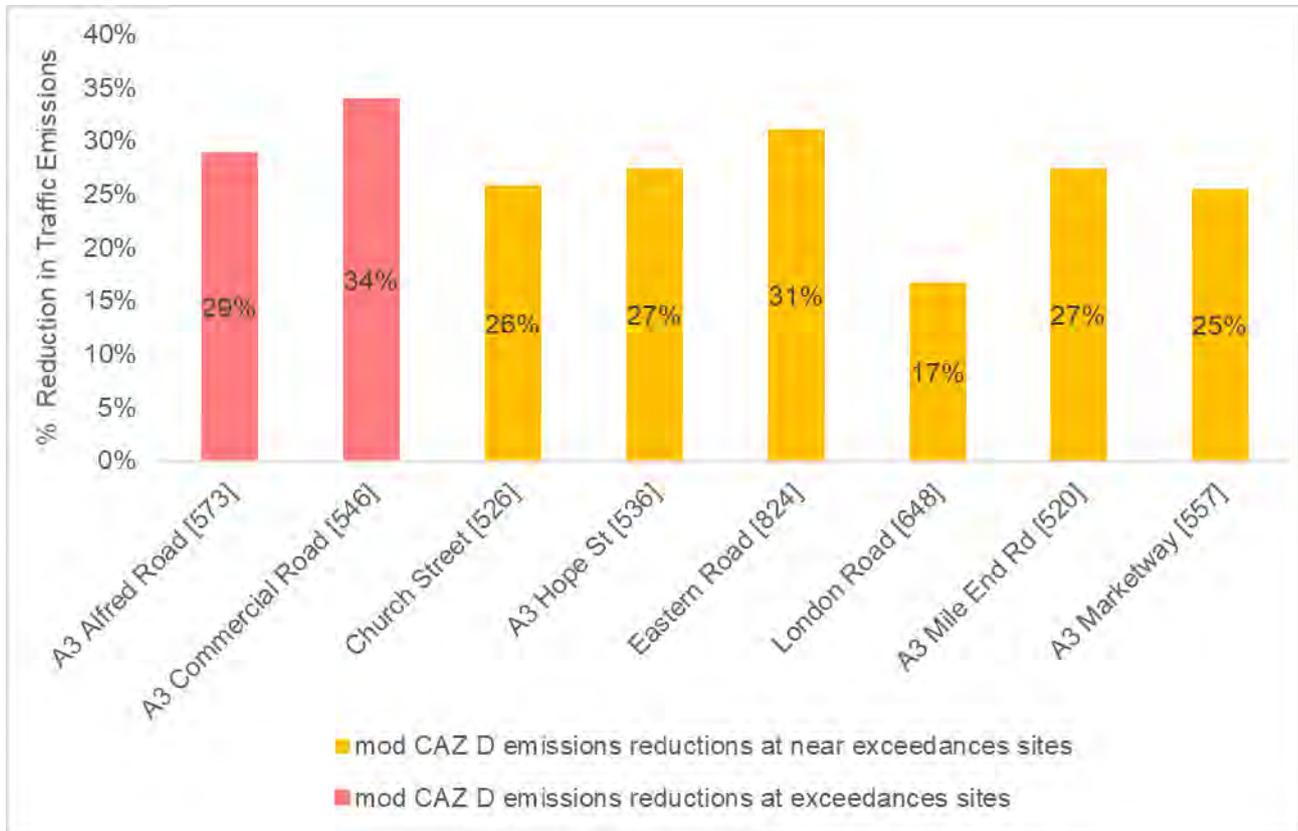
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CAZ C (based on CAZ C traffic model outputs and emissions spreadsheet)



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CAZ D (based on CAZ D traffic model outputs and emissions spreadsheet)



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The results are based on outputs from the traffic model and estimated impact of the changes in traffic flows and speed and vehicle fleet on traffic emissions (based on Emissions Factor Toolkit v1.9b).

The emissions spreadsheet provides an approximation of the impact on NO₂ concentrations that the air quality model will forecast at each receptor for each CAZ option. However, it is not a precise indication as the relationship between NO_x emissions and NO₂ concentrations is not direct/linear and the spreadsheet only accounts for emissions on the link the receptor is located on and not the secondary effects of emissions from other nearby links (which are included in the air quality model). The approach provides an understanding of the scale of the impact of the different CAZ options and how they compare but may give slightly different results to the full air quality model.

The graphs below show that a CAZ A (targeting taxis and private hire vehicles, buses and coaches) achieves only a small reduction in road emissions (1% and 3% on Alfred Road and Commercial Road respectively). A CAZ B (which also includes HGVs) would be substantially more effective in reducing emissions on the two exceedance links (reducing road emissions by 11% and 14% on Alfred Road and Commercial Road respectively), reflecting the relatively high proportion of non-compliant HGVs on these links. A CAZ C (which also includes LGVs) would achieve a further reduction in emissions, but the difference between a CAZ B and CAZ C is relatively small, reflecting the average age of LGVs in Portsmouth (LGVs are typically newer than the national average). Finally, a CAZ D (covering all vehicle types) would be most effective, achieving a much greater reduction in road emissions than a CAZ C (29% and 34% on Alfred Road and Commercial Road respectively). This is not surprising as cars (compliant and non-compliant) account for 57% of road emissions on Alfred Road and 61% on Commercial Road (see Figure 2-3).

Modelled reduction in NO₂ (µg/m³) – Table 3-4 shows forecasts from the Air Quality modelling of how the forecast changes in road emissions for CAZ B and CAZ C relate to changes in NO₂ concentration in 2022, taking account of other factors such as weather conditions and street geometry and accounting for background concentrations.

A CAZ C is forecast to deliver compliance in NO₂ concentrations at the Alfred Road and Commercial Road exceedance locations in 2022, without worsening emissions elsewhere. A CAZ B is also forecast to deliver compliance at both exceedance locations in 2022, but the concentrations of NO₂ on Alfred Road are very close to the EU limit of 40.49µg/m³.

Under both scenarios there are outstanding exceedances on the Strategic Road Network, but to a lesser extent than in the baseline scenario.

Given the forecast proximity of the Alfred Road concentration to the EU limit in a CAZ B scenario, a Level C CAZ applied at a cordon around Portsea Island, as shown in Figure 3-1, is taken forward as the benchmark CAZ against which other options are compared.

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Table 3-4 Modelled NO₂ (µg/m³) in 2022 for different levels of CAZ (Based on Emissions Factor Toolkit, V9.1b)

ID	Road Name	Modelled NO ₂ (µg/m ³) in 2022		
		Future baseline	Portsea Is. CAZ-B	Portsea Is. CAZ-C
Exceedance locations				
573	A3 Alfred Road (Unicorn Rd to Queen St, s/b)	41.7	40.4	39.7
546	A3 Commercial Road (south of Church St Rbt, s/b)	41.1	40.0	39.2
Near exceedances (37 µg/m³)				
526	Church Street (east of Church St Rbt, n/b) (revised assessment)	38.7	<38.7 ^a	<38.7 ^a
536	A3 Hope Street (south of Church St R'bout, s/b)	38.9	37.9	37.5
824	A2030 Eastern Road Water Bridge (s/b)	38.8	(36.8)	(36.3)
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	38.5	38.1	37.3
520	Mile End Road (north of Church St R'bout, s/b)	37.6	37.0	(36.3)
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	37.4	(36.3)	(35.7)
Strategic Road Network				
986	A27 (north of Portsea Island, w/b)	48.5	46.7	45.4
1089	A27 (east of Portsea Island, w/b)	46.1	45.1	43.8
11	M27 (west of Portsea Island, w/b)	45.3	44.0	42.6
968	A27 (north of Portsea Island, e/b)	43.7	41.7	40.7
834	A27 (east of Portsea Island, w/b)	41.1	39.7	38.8

Exceedances (>40.49µg/m³) shown in bold, near exceedances (>37µg/m³) shown in grey, lower concentrations shown in brackets.

Future baseline and both CAZ scenarios are based on EFTv1.9b.

Note a: The concentration at Church Rd has not been modelled directly, but a Portsea Island CAZ reduces traffic levels and improves 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.

3.4. Alternative package (CAZ B + non-charging measures)

In recognition of the potential scale of impacts of a CAZ C on individuals and businesses, an alternative package based on a CAZ B plus non-charging measures has also been considered as part of the short list of options.

3.4.1. CAZ B specification

The following CAZ B options have been considered as a potential basis for the alternative package:

- CAZ B1 – Portsea Island CAZ B
- CAZ B2 – Small Area CAZ B
- CAZ B3 – Portsea Island CAZ B (external to internal trips only), i.e. excluding local movements within Portsea Island

The indicative boundary for the Small Area CAZ B is shown in Figure 3-4.

Figure 3-4 Indicative boundary for Small Area CAZ (indicative boundary)



The boundary includes key destinations for targeted traffic on the two exceedance links including the City Centre, Gunwharf Quay / Wightlink Terminal, and the Naval Dockyard, and is intended to minimise re-routing. In particular, the inclusion of Kingston Crescent and Fratton Road is intended to minimise re-routing along London Road and Fratton Road which could result in new exceedances elsewhere in the city.

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Table 3-5 Modelled NO₂ (µg/m³) for CAZ B scenarios in 2022 (Based on Emissions Factor Toolkit, V9.1b)

Receptor ID	Road Name	Future Baseline	Portsea Island CAZ-B	Small Area CAZ B	Portsea Island CAZ-B (ext trips only) ^b
Exceedance locations					
573	A3 Alfred Road (Unicorn Rd to Queen St, s/b)	41.7	40.4	40.3	41.4
546	A3 Commercial Road (south of Church St Rbt, s/b)	41.1	40.0	39.9	40.6
Near exceedances (37 µg/m³)					
526	Church Street (east of Church St Rbt, n/b) (revised assessment)	38.7	<38.7 ^a	<38.7 ^a	-
536	A3 Hope Street (south of Church St R'bout, s/b)	38.9	37.9	37.8	38.4
824	A2030 Eastern Road Water Bridge (s/b)	38.8	(36.8)	38.4	37.0
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	38.5	38.1	37.7	38.5
520	Mile End Road (north of Church St R'bout, s/b)	37.6	37.0	(36.9)	37.5
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	37.4	(36.3)	(36.3)	37.1
Road sections on the Strategic Road Network exceeding the EU limit (40 µg/m³) in 2022					
986	A27 (north of Portsea Island, w/b)	48.5	46.7	48.2	46.9
1089	A27 (east of Portsea Island, w/b)	46.1	45.1	46.0	45.2
11	M27 (west of Portsea Island, w/b)	45.3	44.0	45.3	44.0
968	A27 (north of Portsea Island, e/b)	43.7	41.7	43.1	42.0
834	A27 (east of Portsea Island, w/b)	41.1	39.7	40.9	39.9

Exceedances (>40.49µg/m³) shown in bold, near exceedances (>37µg/m³) shown in grey, lower concentrations shown in brackets.

Note a: The concentration at Church Rd has not been modelled directly, but the Portsea Island and Small Area CAZ scenarios reduce traffic levels and improve 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. Portsea Island CAZ (ext trips only) results in a slight increase in flows on Church Street, but concentrations are believed to remain below the EU limit.

Note b: All scenarios are based on EFTv1.9b, but Portsea Island CAZ-B (ext trips only) is based on a different approach for applying future petrol / diesel projections to compliant and non-compliant vehicles. This approach is believed to over-estimate concentrations by 0.2 µg/m³.

Table 3-5 shows that the **Small Area CAZ B** performs as well as the Portsea Island CAZ B at exceedance locations on the PCC network. As most significant destinations for taxis/private hire vehicles and HGVs are inside the cordon, minimal re-routing occurs. The slight re-routing which does occur results in a small shift in traffic composition from heavy to light vehicles relative to the Portsea Island CAZ and actually improves performance slightly on the two exceedance links, without introducing exceedances elsewhere.

Eastern Road shows an increase in NO₂ concentration relative to Portsea Island CAZ B due to fewer HGVs needing to upgrade (e.g. vehicles to Anchorage Park are no longer affected by the CAZ), however the concentration is still lower than in the baseline and below the EU limit.

The Small Area CAZ performs slightly less well than the Portsea Island CAZ at SRN exceedance locations, due to the lower overall upgrade of vehicles, but still performs better than the baseline.

The version of the Portsea Island CAZ B based on **External Trips Only** performs less well than the full Portsea Island CAZ B at each exceedance and near exceedance location. This primarily reflects the smaller scale reduction in non-compliant HGVs. It results in a slight increase relative to the baseline at Church Street due to small increase in HGVs using the route, although the concentrations are believed to remain below the EU limit.

While a Portsea Island CAZ B and Small Area CAZ B would both achieve compliance in 2022, a Small Area CAZ achieves a greater reduction in NO₂ concentration and would be implemented more quickly due to the smaller geographical scale. A Small Area CAZ B is therefore shown to deliver compliance in the shortest possible time, without significantly worsening emissions elsewhere, meeting the Primary Critical Success Factor for this element of the Alternative Package. It is also expected to have less of an adverse economic impact on individuals and businesses than the other CAZ B options. A Small Area CAZ B has therefore been taken forward as the basis for the Alternative Package.

3.4.2. Non-charging measures

The supporting non-charging measures included in the Alternative Package are intended to achieve a further reduction in NO₂ concentrations beyond that which could be achieved through the implementation of a Small Area CAZ B only.

Modelled interventions – The measures included have been selected through the shortlisting process outlined at the beginning of this chapter and have been identified as the most appropriate measures for achieving emissions reductions on the exceedance links, whilst also contributing to the secondary Critical Success Factors for the plan - see Table B-4 for supporting justification for the proposed measures.

The following non-charging measures have been modelled:

- Changes to parking capacity and pricing south of the city centre including increased charges for Council and University staff, increased tariffs in short-stay car parks and seafront parking, reduced capacity in city centre car parks, and a restructuring of the Park & Ride charge.
- Strategic cycling routes proposed within the draft Local Cycling and Walking Investment Plan on two priority corridors (Eastern Road Water Bridge to City Centre and Southsea to City Centre to London Road and out of the city).
- Alfred Road signal changes to allow for extra green time for southbound traffic on Alfred Road to reduce delay on this road to reduce emissions from queuing traffic.

The measures are focused on car drivers (with compliant and non-compliant vehicles) as cars account for the biggest proportion of emissions overall. They are also intended to complement existing and planned wider policies for the city (including promote economic growth, reduce levels of social deprivation, improve health and encourage sustainable and active travel), in order to

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leave a positive legacy within the city. For example, the proposed cycling routes are part of the Draft Local Cycling and Walking Investment Plan (LCWIP). More effective management of parking supply and charges forms a core part of the city’s strategy for encouraging greater use of sustainable transport (including the proposed Rapid Transit services and Park & Ride), as well as enabling development and growth ambitions for the city, as set out in the emerging Local Plan.

Table 3-6 Proposed non-charging measures (modelled)

Measure	Description
Parking measures (A1, A2, E7a)	<p>Various changes to parking capacity and pricing in the area to the south of the city centre:</p> <p>Portsmouth City Centre staff parking</p> <ul style="list-style-type: none"> • 100% decrease from 2020 in the number of Council staff car parking passes paid for by the council, including 353 season tickets (£630pa, paid for by PCC) and 168 Park-It cards (paid for by PCC) for use at Isambard Kingdom Brunel Multi Storey car park. • Removal of reduced rate for a further 176 staff with Park-It cards (currently £3.45 per day). • Up to 697 PCC staff affected. From 2020, these staff will need to pay the standard tariff of £12 per day, park elsewhere, or change modes. <p>University staff parking</p> <ul style="list-style-type: none"> • A new parking policy for Portsmouth University came into force in September 2019 which will significantly increase charges for the majority of staff. Under the old policy staff paid 0.3% of their salary a year for a parking permit. This normally meant paying £50-£350 a year. Under the new policy staff will pay £500 a year, with this being phased in over 3 years for those on lower pay grades. Blue badge holders are not charged. • In addition, University staff living within a 2 mile exclusion zone around University are no longer eligible to apply for a staff parking permit. <i>There are 500 people who previously had a permit but are now in the exclusion zone and are now unable to get a permit unless they are blue badge holders or carers.</i> <i>The no. of permits issued has already reduced - in mid-September only 750 staff permits had been issued, compared to 1643 staff permits being in use last academic year.</i> <p>Reduction in parking capacity</p> <ul style="list-style-type: none"> • Closure of Market Way car park (500 spaces, PCC owned/NCP leased) and Clarence Street car park (154 spaces, PCC owned) from 2021. • Other car park space reduction within the outer city centre ring zones (183 spaces). <p>Increase in parking tariffs</p> <ul style="list-style-type: none"> • Increase in parking tariffs at Harbour car park (62 spaces, PCC owned) from 2021 – To match tariffs at Gunwharf Quay car park. <ul style="list-style-type: none"> - Existing tariff: <2 hrs = £2.60, <3 hrs = £3.50, <4 hrs = £4.50 <5 hrs = £8, Over 5hrs = £12.00 - New tariff: <2 hrs = £2.90, <3 hrs = £3.90, <4 hrs = £6.00 <5 hrs = £6.90, Over 5hrs = £12.00 <p>Increase in seafront parking tariffs off street and on street</p>

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	<ul style="list-style-type: none"> On-street increases 15% over the 3 years from 2020-2023 Off-street car parks increases 10% over 3 years from 2020-2023 <p>Park & Ride charge restructuring</p> <p>Park & Ride restructure of charging from group (£4 per day for up to 5 people) to individual (£2 per day, children free).</p>
Strategic cycling routes (E12)	<p>Two priority corridors</p> <ul style="list-style-type: none"> Old Portsmouth – City Centre – Eastern Road Water Bridge and beyond to various destinations beyond PCC boundary (Southern Havant, Northern Havant, Waterlooville) Southsea – City Centre – London Road – Portsbridge Roundabout and beyond to various destinations beyond PCC boundary (A3 Corridor, employment on Portsdown Hill, Porchester / Fareham) <p>These routes have been proposed in the Draft Local Cycling and Walking Investment Plan (LCWIP) and assessed as being of most relevance to reducing emissions at exceedance locations as well as near exceedance locations. Both are longer distance routes designed to encourage mode shift between the mainland and the city centre area (and beyond), reflecting the characteristics of traffic on the two exceedance links.</p> <p>Routes are mix of quiet routes, on-road and off-road cycle lanes and supporting infrastructure.</p>
Alfred Road signal changes (B6)	<p>Provision of extra green time to southbound traffic on Alfred Road, to increase average link speed from current low levels to reduce emissions rates. No change to east-west movements to minimise impact on buses.</p> <p>Intended as a temporary measure, prior to introduction of additional bus priority measures as part of the proposed SE Hants Rapid Transit (TCF bid).</p>

Complementary measures (not modelled) - In addition, various other complementary measures are being proposed to provide certainty of meeting the EU limit for NO₂ across the city, at both exceedance and near exceedance locations.

These measures cannot be modelled but will play an important role in ensuring the successful delivery of the AQ Plan. Again, they are largely focused on car drivers as cars account for the biggest proportion of emissions and they are intended to complement existing and planned wider policies for the city (including promotion of low emission vehicles, the emerging Parking Strategy, promotion of Park & Ride, and Portsmouth International Port Air Quality Strategy).

Table 3-7 Other proposed non-charging measures (not modelled)

Measure	Description
Taxi license requirements (D10)	Progressive tightening of taxi licensing rules to ensure use of lower emission vehicles and ensure national projections regarding fleet upgrades occur in Portsmouth.
EV charging points (D11)	Fast charging points at taxi ranks to enable taxi drivers to upgrade to electric vehicles.
Residents Parking Zone permits (A4, D7)	Reduced fee / free permits for low emission vehicles. In September 2019, it was agreed (subject to the statutory notice procedure), that the charges for residents permits be changed so that the first permit for a household is free if the vehicle is powered solely by electricity and that the charge for a first permit is reduced by 50% to £15 if the vehicle emits less than 100g of

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	CO2 per km (provided it is not powered by a diesel internal combustion engine and that it was registered after 1 March 2001).
Travel planning (E1, E2, E3, E4, E7a)	Travel planning measures to ensure that assumptions regarding increased levels of cycling and sustainable travel use are realised. Building on interventions with residents, schools, and workplaces delivered through the recent Air Quality Grant Programme (2018/19) and other funding programmes to encourage sustainable travel.
Targeted communications and marketing (F1)	Including continuation of anti-idling campaign (D1), advance and real time (social and conventional media, VMS) messaging (A6). Integrated with travel planning measures.

Wider strategies and proposals – In addition, the following strategies and proposals are expected to have a positive impact on air quality, reinforcing the benefits of the above package in the medium to longer term:

- Port measures emerging from Portsmouth International Port Air Quality Strategy – expected to have a significant impact on background NO₂ concentrations in the vicinity of the exceedance links;
- Transforming Cities Fund bid to implement a South East Hampshire Rapid Transit (SEHRT), including key corridors into Portsmouth and associated measures;
- Solent Future Mobility Fund bid to deliver innovation in urban transport, covering personal mobility and sustainable urban logistics;
- The proposed expansion of Portsmouth Park & Ride.

3.5. Comparison of package performance in delivering Primary Critical Success Factor

This section compares the performance of the shortlisted options of:

- Benchmark (Portsea Island CAZ C), and
- the Alternative Package (Small Area CAZ B + non-charging measures),

in terms of achieving compliance with the NO₂ concentrations in the shortest possible time, without significantly worsening emissions elsewhere; the primary Critical Success Factor for this Plan.

3.5.1. Comparison of package performance on compliance (based on core assumptions)

Table 3-8 shows that both packages deliver compliance with the EU limit for NO₂ concentrations in 2022, which is considered the shortest possible time and is a year earlier than predicted through natural fleet upgrades. Neither scenario results in a worsening of emissions elsewhere.

3.5.2. Impact of sensitivity tests on compliance

The following section sets out the results of various sensitivity tests undertaken to assess the robustness of the forecast concentrations for the Alternative Package, in terms of ensuring compliance is achieved in 2022. The tests undertaken involve changes to both the transport and air quality assumptions which inform the modelling process:

Category	Description of sensitivity tests undertaken															
Transport assumptions	HGV pay charge response assumption - Sensitivity test undertaken assuming a doubling of the percentage choosing to pay the charge and continue with a non-compliant vehicle, reducing the proportions of the other responses as below: <table border="1" data-bbox="411 1104 1425 1391"> <thead> <tr> <th></th> <th>Core test</th> <th>Sensitivity test</th> </tr> </thead> <tbody> <tr> <td>Upgrade</td> <td>83%</td> <td>74.8%</td> </tr> <tr> <td>Avoid</td> <td>4%</td> <td>3.6%</td> </tr> <tr> <td>Cancel</td> <td>4%</td> <td>3.6%</td> </tr> <tr> <td>Pay charge</td> <td>9%</td> <td>18%</td> </tr> </tbody> </table>		Core test	Sensitivity test	Upgrade	83%	74.8%	Avoid	4%	3.6%	Cancel	4%	3.6%	Pay charge	9%	18%
		Core test	Sensitivity test													
	Upgrade	83%	74.8%													
Avoid	4%	3.6%														
Cancel	4%	3.6%														
Pay charge	9%	18%														
HGV daily trip rate assumption – Upper bound sensitivity test undertaken assuming each HGV makes only one trip into the CAZ per day (resulting in a charge of £50 per day) rather than multiple trips.																
Air quality assumptions	Metrological assumptions - ADMS-Roads run with 2017 and 2016 meteorological year from Thorney Island (to compare against 2018 data used from the same sites for core tests).															
	Surface roughness assumption - ADMS-Roads run with a modified surface roughness to represent the more built up conditions in the city centre															

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Table 3-8 Modelled NO₂ (µg/m³) for CAZ C Benchmark and Alternative Package (CAZ B + non-charging measures) in 2022 (Based on Emissions Factor Toolkit, V9.1b)

Receptor ID	Road Name	Future Baseline	Portsea Island CAZ-C (Benchmark)	CAZ B + non-charging measures (Alternative Package)
Exceedance locations				
573	A3 Alfred Road (Unicorn Rd to Queen St, s/b)	41.7	39.7	40.1
546	A3 Commercial Road (south of Church St Rbt, s/b)	41.1	39.2	39.5
Near exceedances (37 µg/m³)				
526	Church Street (east of Church St Rbt, n/b) (revised assessment)	38.7	<38.7 ^a	<38.7 ^a
536	A3 Hope Street (south of Church St R'bout, s/b)	38.9	37.5	37.8
824	A2030 Eastern Road Water Bridge (s/b)	38.8	(36.3)	38.3
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	38.5	37.3	37.6
520	Mile End Road (north of Church St R'bout, s/b)	37.6	(36.3)	(36.9)
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	37.4	(35.7)	(36.2)
Road sections on the Strategic Road Network exceeding the EU limit (40 µg/m³) in 2022				
986	A27 (north of Portsea Island, w/b)	48.5	45.4	48.2
1089	A27 (east of Portsea Island, w/b)	46.1	43.8	46.0
11	M27 (west of Portsea Island, w/b)	45.3	42.6	45.3
968	A27 (north of Portsea Island, e/b)	43.7	40.7	43.1
834	A27 (east of Portsea Island, w/b)	41.1	38.8	40.8

Exceedances (>40.49µg/m³) shown in bold, near exceedances (>37µg/m³) shown in grey, lower concentrations shown in brackets.

Note a: The concentration at Church Rd has not been modelled directly, but both options reduce 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.

For each of these tests, the air quality model was run for 2018 to re-visit the model verification and then run for the 2022 scenarios.

Due to timescale considerations, the sensitivity tests were undertaken using an early version of the Alternative Package (comprising Small Area CAZ B, the parking measures, and the proposed strategic cycling routes, but excluding the Alfred Road signal improvements)³⁸, with the results presented in terms of the scale of change associated with each sensitivity scenario, i.e. change in modelled NO₂ (µg/m³).

Table 3-9 shows the impact of changes to both the transport and air quality assumptions, in terms of change in modelled NO₂ (µg/m³). **In all cases the absolute concentrations on the exceedance and near exceedance links remain below the EU limit for NO₂ concentrations of 40.49 µg/m³.**

HGV upgrade sensitivity test – For the core scenario, assumptions regarding the responses of HGV drivers to a CAZ are based on the national assumption provided by JAQU. This assumes that 9% of HGV drivers choose to pay the £50 indicative CAZ charge, with most (83%) choosing to upgrade. It is likely that the proportion choosing to pay the charge will differ at a local level. A pessimistic sensitivity scenario (**Table 3-9**) has therefore been modelled based on the assumption that the number choosing to pay would be twice as high, resulting in a corresponding reduction in the proportion choosing to upgrade, avoid the CAZ, or cancel their trip. No changes were made to other vehicle types in the fleet.

Table 3-9 HGV response assumptions for the core scenario and sensitivity test

	Central / Core Scenario	Sensitivity Test
Upgrade	83%	74.8%
Avoid	4%	3.6%
Cancel	4%	3.6%
Pay charge	9%	18%

Table 3-9 shows that the impact of this change on modelled NO₂ concentrations in 2022 is very small, with increases of less than 0.1 µg/m³ predicted at receptors within the city centre compared to the central / core test. This response reflects the fact that although the percentage change in trips forecast to pay is large, the responses of upgrade, avoid and cancellation still account for over 80% of trips and are only reduced by 10% relative to the core scenario.

HGV daily trip rate assumption – The daily trip rate and therefore average charge per trip for HGVs assumed in the traffic model only influences routing choices. The upgrade and cancellation responses are exogenous inputs to the model based on the JAQU national averages, with their own underlying assumptions on average daily trip rates. Therefore, the key potential influence of a revised modelled daily trip rate is on the number of HGVs choosing to re-route in order to avoid paying the charge. However, the majority of HGVs paying the charge in the core test have either an origin or destination in the CAZ area and therefore would not benefit from rerouting. The traffic flow plots for the core and sensitivity scenarios confirm this, showing very little difference³⁹, with any changes most likely attributed to model noise. Sensitivity of the modelled result to the assumed daily trip rate is therefore very low.

³⁸ Except for HGV trip rate test, which test was based on model runs which included only the Small Area CAZ B, and not the other non-charging measures proposed.

³⁹ It should be noted that this sensitivity test was based on model runs which included only the Small Area CAZ B, and not the other non-charging measures proposed. However this will not have affected the conclusions reported.

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Table 3-10 Impact of sensitivity tests on modelled NO₂ (µg/m³) concentrations in 2022, for early version of Alternative Package – change in modelled NO₂ (µg/m³)

Receptor ID	Road Name	HGV pay charge assumption (double national average)	Meteorological test (2017 met year)	Meteorological test (2016 met year)	Surface roughness test (high surface roughness)
Exceedance locations					
573	A3 Alfred Road (Unicorn Rd to Queen St, s/b)	+0.1	-0.6	-0.3	-0.7
546	A3 Commercial Road (south of Church St Rbt, s/b)	0.0	+0.4	+0.0	-0.5
Near exceedances (37 µg/m³)					
526	Church Street (east of Church St Rbt, n/b) (revised assessment)	0.0	-0.4	-0.5	-0.4
536	A3 Hope Street (south of Church St R'bout, s/b)	0.0	-1.3	-0.5	-0.5
824	A2030 Eastern Road Water Bridge (s/b)	0.0	+1.5	+0.9	+0.4
648	A2047 London Road (Stubbington Ave to Kingston Crescent, s/b)	+0.1	+0.1	+0.1	-0.2
520	Mile End Road (north of Church St R'bout, s/b)	0.0	+0.7	+0.2	-0.2
557	A3 Marketway (Hope St Rbt to Unicorn Rd)	+0.1	-0.9	-0.3	-0.6
Road sections on the Strategic Road Network exceeding the EU limit (40 µg/m³) in 2022					
986	A27 (north of Portsea Island, w/b)	+0.1	-1.8	-0.4	-0.4
1089	A27 (east of Portsea Island, w/b)	0.0	+1.6	+1.3	-0.4
11	M27 (west of Portsea Island, w/b)	0.0	-1.8	-0.5	-0.6
968	A27 (north of Portsea Island, e/b)	0.0	+2.0	-0.6	+0.1
834	A27 (east of Portsea Island, w/b)	0.0	+0.1	+0.3	+0.8

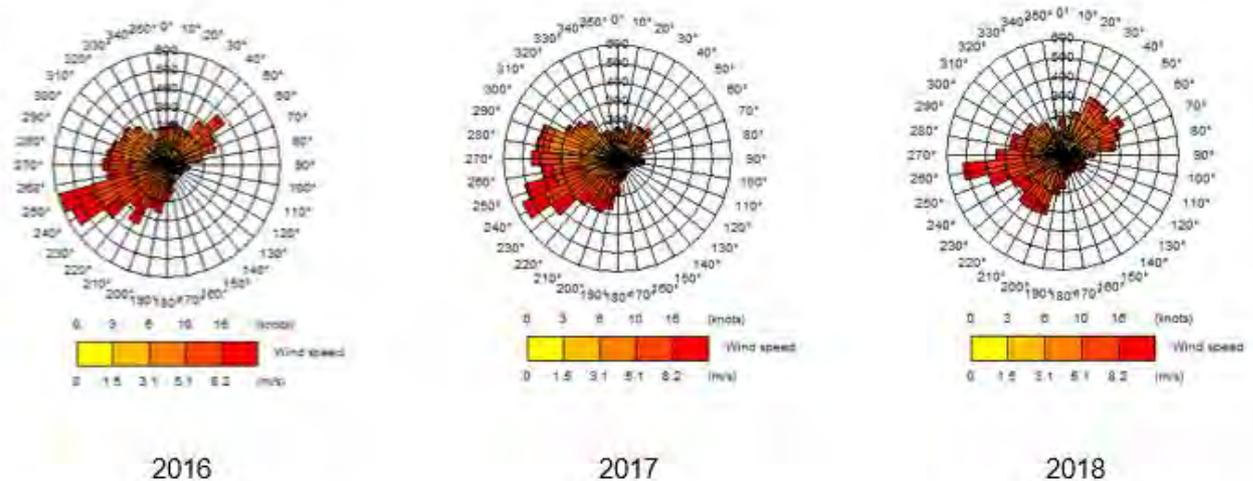
Exceedances (>40.49µg/m³) shown in bold, near exceedances (>37µg/m³) shown in grey, lower concentrations shown in brackets.

Note a: The concentration at Church Rd has not been modelled directly, but a CAZ reduces traffic levels compared with baseline, and improves 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.

Note b: All scenarios are based on EFTv1.9b, but Portsea Island CAZ-B (ext trips only) is based on a different approach for applying future petrol / diesel projections to compliant and non-compliant vehicles. This approach is believed to over-estimate concentrations by 0.2 µg/m³.

Impact of changes to metrological assumptions. For the core scenario, the ADMS-Roads Air Quality model was run for the 2018 Base Year with 2018 meteorological data, with the same set of data used for the 2022 Future Year models. As pollutant concentrations can vary significantly from year to year due to the influence of meteorological conditions, sensitivity tests have been conducted using meteorological data from 2017 and 2016 from the Thorney Island Meteorological Office site. The dominant wind direction in all years is from the south-west, but there are variations seen from year to year as shown in [Figure 3-5](#). For example, the wind directions in 2016 and 2018 are similar with winds also coming from the north-east, whereas in 2017, the wind direction was predominantly distributed from south-west to west. Wind speeds were highest in 2016, and lowest in 2017.

Figure 3-5: Wind roses (wind speed/direction) at Thorney Island Met Office site



The sensitivity results show that NO₂ concentrations at the locations of concern are broadly similar for each of the three years of meteorological data used, but there are variations in concentrations between different receptor locations, as some concentrations go down in some years, whilst others go up ([Table 3-9](#)). These differences are due to changes in the wind direction/speed in each year in relation to the orientation of the road and position of the receptor relative to this.

For example, receptor 546 (A3 Commercial Road) has the same NO₂ concentration in 2016 and 2018 but levels are higher in 2017. This site is located to the east of a road going north-south. In 2017, as the wind direction is predominately from south-west/west this will blow road traffic emissions across the road towards the receptor more often than in other years, resulting in a higher annual mean concentration.

Conversely, concentrations at receptor 573 (A3 Alfred Road) go down in 2016 and 2017. This receptor is located to the south of a road that is orientated on a north-east to south-west axis, so the higher number of days with wind direction coming from east in 2018 will result in the emissions from the road being blown towards the receptor on more occasions compared to the other years when the wind direction is more like the 2018 trend.

Concentrations of NO₂ on the two exceedance links remain below the EU limit of 40.49 µg/m³ in all metrological conditions, and at all near exceedance locations within the city. The biggest increase in NO₂ concentration occurs on Eastern Road Water Bridge, where the meteorological conditions in 2017 and 2016 result in an increase of 1.5 and 0.9

$\mu\text{g}/\text{m}^3$ respectively, relative to 2018 conditions. However, in all scenarios, the NO_2 concentration at Eastern Road Water Bridge remains below $40.0 \mu\text{g}/\text{m}^3$.

Impact of changes to surface roughness assumptions – The surface roughness (SR) parameter within ADMS-Roads model takes into account the texture of the ground (i.e. what the surface topography is like and how built-up it is). This determines how air flow interacts with the ground and affects the level of NO_2 concentration.

For the core / central scenario, a surface roughness value of 0.5m was applied across the whole of the Portsmouth study area, corresponding to “open suburbia” conditions in the model. This was considered appropriate to reflect the average conditions across the large study area.

However, as the exceedance locations are situated within the city centre, a sensitivity test has been conducted to examine the effects of applying a higher SR value (1.5m rather than 0.5m) within the ADMS-Road model, to represent the more built up nature of the city centre.

The results of this test demonstrate that overall, the higher SR value results in lower modelled road NO_x at most locations. A higher surface roughness generally results in more turbulence and faster dispersion of emissions. The majority of the receptor locations are therefore predicted to have lower NO_2 concentrations compared to the core scenario. Some receptors, however, are predicted to have slightly higher NO_2 concentrations (e.g. receptor 824 on Eastern Road Water Bridge) due to the higher model verification factor compared to that applied in the core / central test.

Road NO_x concentrations (and therefore NO_2 concentrations) are higher at a small number of receptors that are located on elevated sections of road (e.g. specific sites on the A27 and M27). This is because due to emissions are not expected to disperse so rapidly away from the road above the receptor.

The modelled NO_2 concentrations on the exceedance links reduce by $0.7 \mu\text{g}/\text{m}^3$ and $0.5 \mu\text{g}/\text{m}^3$ respectively; **providing confidence that the EU limit will be achieved on both these links**. The NO_2 concentrations on the near exceedance links reduce by up to $0.6 \mu\text{g}/\text{m}^3$ (with the exception of Eastern Road Water Bridge), which provides certainty that the annual concentrations will also remain below the EU limit at all these sites (including Eastern Road Water Bridge).

3.5.3. Summary

The above results show that both the Benchmark and the Alternative Package deliver compliance with the EU limit for NO_2 concentrations in 2022, based on the core assumptions. This is considered the shortest possible time and is a year earlier than predicted through natural fleet upgrades. Neither scenario results in a worsening of emissions elsewhere.

Sensitivity analysis suggests that the core scenario for the Alternative Package represents a pessimistic or worst case picture in terms of the assumed meteorological conditions and surface roughness (urban / built-up) conditions.

In terms of the transport assumptions, concentrations would remain below the EU limit even with a doubling of the proportion of HGVs choosing to pay the £50 indicative CAZ charge. Changes in the average number of trips per day undertaken per vehicle (and associated

perceived charge per trip) is shown to have very little impact on routing and therefore flows and emissions.

Based on the findings of these sensitivity tests, the results presented in this study provide confidence that **the Alternative Package will achieve compliance with the EU limit on both exceedance links, and that concentrations will remain well below the EU limit at all 'near exceedance' sites.**

It should be noted that, as the sensitivity tests were undertaken using an early version of the Alternative Package (comprising Small Area CAZ B, the parking measures, and the proposed strategic cycling routes, but excluding the Alfred Road signal changes), the absolute concentrations can be expected to reduce further under the meteorological and surface roughness conditions tested above.

4. Commercial Case

4.1. Introduction

The Commercial case sets out the works and services that will be required to deliver the preferred package of a Class B Clean Air Zone (CAZ) and supporting measures, the risks associated with the delivery and the procurement routes available to deliver the project in the most efficient way. This section sets out the intended approach to procurement and the commercial strategy.

Portsmouth City Council's preferred package of measures is a CAZ B + non-charging interventions:

- Changes to parking capacity and pricing south of the city centre including increased charges for Council and University staff, increased tariffs in short-stay car parks and seafront parking, reduced capacity in city centre car parks, and a restructuring of the Park & Ride charge.
- Strategic cycling routes proposed within the draft Local Cycling and Walking Investment Plan on two priority corridors (Eastern Road Water Bridge to City Centre and Southsea to City Centre to London Road and out of the city).
- Alfred Road signal changes to allow for extra green time for southbound traffic on Alfred Road to increase average speed on this road.
- Progressive tightening of taxi licensing rules to ensure use of lower emission vehicles and ensure national projections regarding fleet upgrades occur in Portsmouth.
- Fast charging points at taxi ranks to enable taxi drivers to upgrade to electric vehicles.
- Reduced fee / free permits for low emission vehicles.
- Travel planning measures to ensure that assumptions regarding increased levels of cycling and sustainable travel use are realised.
- Targeted communications and marketing initiatives, including continuation of anti-idling campaign, advance and real time (social and conventional media, VMS) messaging. integrated with the above travel planning measures.

4.2. Works and services

It is recognised that a range of works and services will be required to deliver the preferred package of measures, from a variety of internal and external providers.

In respect of the implementation and operation of the charging CAZ element of the package, the following activities will require procurement:

- Scheme design and specification
- On-road infrastructure (signs, roadmarkings, network changes)
- Roadside technology (ANPR cameras including installation, commissioning)
- Communications (linking roadside infrastructure to back office systems)
- Back office databases and data processing facilities
- Back office payment and penalty systems
- Maintenance and support
- Ongoing development and further services
- Operation of service (roadside technology to back office systems)
- Enforcement of non-payment (including appeals)

In addition, the works and services required to deliver the supporting measures will include:

- Amendments to taxi policy to ensure taxi upgrades by 2022, supported by incentives
- Policy changes to Council run car parks and associated on road infrastructure (signs)
- New infrastructure for cycling routes
- Travel Planning
- Anti-idling publicity
- Behaviour change and awareness raising events

4.3. Sourcing approaches

In the Strategic Outline Case it was established that there are a number of procurement routes that could be followed to procure the required works and services and further consideration has been given to the likely and preferred option to be undertaken for the different elements of the preferred package.

The main procurement routes to deliver the scheme are:

- Restricted Procedure through the Official Journal of the European Union (OJEU) and in accordance with the Public Contract Regulations 2015
- Using established Portsmouth City Council Frameworks and contracts
- Open Procedure through OJEU
- Using Frameworks established by Hampshire County Council

The preferred use of these procurement routes within the project are detailed below:

4.3.1. Class B Clean Air Zone

The preferred procurement route for the supply, installation and maintenance of all hardware and supporting software for the Clean Air Zone is an OJEU compliant Restricted Procedure.

This approach will follow a two stage principle that will enable the selection of three to four of the most suitable bidders to receive the invitation to tender. During the tender stage, face to face dialogue meetings will be held with the shortlisted bidders as allowed by the regulations, to enable bidders to gain a greater understanding of the Council's requirements, to test innovative and variant approaches ensuring that unacceptable or unworkable offers are not continued through to final submission, as well as enabling dialogue between bidders and the Council in respect of contractual terms and allocation of risk.

Soft market testing with suppliers has evidenced that this approach is preferred by the market who have confirmed that one to one dialogue will enable them to submit significantly more developed bids than could be achieved during an Open Procedure. Well-developed final bids based on a clear understanding of the requirements, contractual terms and allocation of risk will result in a streamlined evaluation with minimal post-tender clarifications and negotiations. This approach will also deliver faster mobilisation because the preferred bidder will not be required to significantly develop their proposal any further in order to begin performing the contract.

This bespoke process enables the appointment of the preferred bidder on a two stage partnership basis to allow for open collaboration on the final scheme design prior to entering into a supply, install and maintain contract using price elements from the original competitive tender bid. This ensures the final design of the scheme will be in accordance with industry best practice and will provide an effective Clean Air Zone to deliver compliance as soon as possible. The process will also secure camera unit prices, installation labour rates, materials uplifts, servicing and maintenance rates, project management rates and overhead and profit levels for the duration of the agreement.

The process also allows the Council to incorporate other requirements as necessary, for example the Council's bus lane enforcement camera contract due to expire in 2020 and additional services that may be required in the future. This aggregation of demand will enable the Council to offer a more valuable opportunity to bidders which in turn should provide better costs and greater innovation.

Use of the Restricted Procedure may cause concern in respect of timescales as traditionally this is seen as a much longer process. While the Open Procedure appears to provide some timetable improvements, in reality a 30 day tender period will produce final bids that will require significant clarification and development. Potential misunderstanding of requirements, risk allocation and contractual terms will result in a more complicated and lengthy evaluation process as post-tender clarifications are sought. Meaningful dialogue with bidders is not practically possible within the Open Procedure due to the greater number of bidders which will require an extended tender period and a greater level of resource, which is unlikely to be well received by bidders given the potential number of suppliers involved.

A comparison of the projected timetable for an Open and a Restricted Procedure for this project are detailed below:

Table to follow

While use of the Restricted Procedure is preferred by the council, other approaches have been considered. As already noted, the Open Procedure delivers significantly fewer benefits in a comparatively similar time frame and therefore was not considered for the main CAZ infrastructure and supporting systems.

The Crown Commercial Service's Traffic Management Technology 2 framework (RM1089) has been evaluated as a potential sourcing route. While this is a comprehensive framework of products and services, discussions with the framework manager confirmed that utilisation of the framework requires a significantly developed specification. This will take time to develop which will delay any mini-competition. Feedback from Leeds and Birmingham indicates that flexibility in respect of specification and required outputs is key to ensure that the project can adapt when required and therefore it is the intention of the council to use a

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two stage process that selects the preferred bidder on the basis of an output specification and allows the preferred bidder to contribute to the design of the scheme. This approach was not considered to be acceptable by the framework manager and as a result use of the framework has been discounted.

Use of a VEAT notice to award the contract to the Council's current bus lane enforcement supplier has also been considered. An OJEU compliant Open Procedure to select the supplier was undertaken in 2014 with the resulting contract commencing in July 2015. This option has also been discounted due the lack of justification for the lack of competition, namely, the current ANPR camera network does not give rise to an absence of competition for technical reasons and soft market testing demonstrates the breadth of the supply market that has not been tested in over five years. It has also been noted that while mobilisation of the previous contract included nine months of systems integration, a new supplier has the option to provide a standalone back office system which would negate these issues. This approach presents too great a risk.

The aim of the procurement exercise is to secure a supplier to design, supply, install, operate and maintain all hardware and software operations of the charging CAZ. Enforcement of non-payment activities including processing of appeals will be managed by Portsmouth City Council's in-house parking service. In the event that penalty charge notices remain unpaid, further enforcement will be undertaken using Portsmouth City Council's current parking enforcement contract.

Where additional on-road infrastructure is required in respect of additional signage and on road civils works, the following frameworks and contracts will be utilised:

- Signage - single supplier framework provided by Hampshire County Council for the supply and installation of signs and sign posts for the traffic network. Portsmouth City Council are named users of the agreement as stated within the OJEU Notice and will place orders with Signway Supplies Limited via direct award.
- Civils Works:
 - Multi supplier framework provided by Portsmouth City Council for highways minor works in the Portsmouth area. Mini-competitions will be run from the framework to select contractors who are able to deliver any necessary works to the necessary timescales. Where time is of the essence, a direct award to the highest ranking framework contractor is permitted. All works delivered under NEC4 Engineering and Construction Short Contracts.
 - City Centre Road Scheme Design and Build Contractor secured from an OJEU Restricted Procedure Works. Works within the "City Centre Road Scheme" boundary to be completed by the contractor using NEC4 Engineering and Construction Short Contracts.
 - Call-off order to be placed with Portsmouth PFI Highways Contractor, Ensign Highways Limited, utilising the existing contractual arrangements.

This OJEU compliant process will be delivered by the Council's procurement team who are fully resourced to deliver the project. The process will follow the Council's internal Gateway governance and review pathway which ensures that all elements of the procurement process are reviewed and approved by a board consisting of Senior Procurement Managers, Legal Advisors and Senior Peer Reviewers. Review is undertaken at business case, procurement strategy and final recommendation stages.

In order to ensure all aspects of the project and its impacts are effectively considered, several working groups have been established. These groups include representation from:

- Transport
- IT
- Parking and Enforcement
- Procurement
- Legal
- PFI Contract Management Team
- Communication
- City Helpdesk team
- Finance

4.3.2. Supporting/non-charging measures

The majority of all supporting and non-charging measures will be delivered using existing Portsmouth City Council contracts and frameworks. Where new providers or contracts are required, for example for the travel planning services, these will be obtained in accordance with the Public Contracts Regulations 2015 and Portsmouth City Council's Contract Procedure Rules.

The Council's Contract Procedure Rules ensure that all services with a value of over £100,000 are approved by the Council's procurement and legal services as well as obtaining necessary sign off from the relevant Director of Service and budget holder.

All new sourcing processes will be staggered to ensure there is no conflict with the procurement of the main CAZ scheme.

A summary of the preferred procurement strategy for all supporting and non-charging measures can be found in the table below:

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Table 4-1 Summary of preferred procurement route

Measure	Key Requirements	Procurement Route	Contract Model	Approximate Value
Amendments to taxi licensing policy	<ul style="list-style-type: none"> Changes to council policy Consultation with stakeholders Publicity and awareness raising 	<p>All requirements to be resourced via internal council services and staff including licencing and communications.</p> <p>Where required, the council's existing printing contracts can be used for publicity materials.</p>	Portsmouth City Council standard service contracts in place.	TBC
Parking charge increases to Council run car parks	<ul style="list-style-type: none"> Changes to council policy Consultation with stakeholders Publicity and awareness raising 	<p>All requirements to be resourced via internal council services and staff including transport and communications.</p> <p>Where required, the council's existing printing contracts can be used for publicity materials.</p>	Portsmouth City Council standard service contracts in place.	TBC
Cycle route infrastructure	<ul style="list-style-type: none"> Design of cycle route expansion Civils works for network improvements 	Designs to be undertaken by the council's in-house transport infrastructure team supported where necessary by the council's professional services strategic partner, Atkins.	Use of existing PFI contract or call-off using NEC4 Engineering and Construction Short Contract.	TBC

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		All civils works will be completed utilising the council's Highways Minor Works Framework, appointed PFI contractor or City Centre Road Scheme contractor depending on the location, programming and value of the scheme.		
Travel Planning	<i>TBC</i>	<i>TBC</i>	<i>TBC</i>	<i>TBC</i>
Bus Retrofit	<ul style="list-style-type: none"> All buses to be retrofitted to ensure Euro 6 compliance 			
Anti-idling publicity	<ul style="list-style-type: none"> Publicity and awareness raising 	All communications including campaign designs to be undertaken by the council's in-house communications team and distributed by existing contracts for print and variable message signs.		
Incentives for HGVs to upgrade fleet	<i>TBC</i>	<i>TBC</i>	<i>TBC</i>	<i>TBC</i>
Behaviour change and awareness raising events	<ul style="list-style-type: none"> Publicity and awareness raising 	All communications including campaign designs to be undertaken by the council's in-house communications team and	Portsmouth City Council standard service contracts in place.	<i>TBC</i>

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		distributed by existing contracts for print and advertising.		
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4.4. Contracting arrangements

The contracts governing the design, supply and installation of the charging CAZ, including camera hardware, back office databases including data processing, payment and penalty systems, will be from the NEC4 suite of contracts. The initial design and consultancy phase will be governed by the NEC4 Professional Services Short Contract with the Engineering and Construction Short Contract governing the supply and installation of the system.

Using a separate contract for the design and consultancy phase ensures the council does not commit itself to the larger supply and installation contract and therefore minimises the council's exposure to risk. Once the design is completed the council will then commit to the supply and installation contract with the preferred bidder. In the event that the preferred bidder does not provide the services required by the council and proposed within the tender return, the council will not enter into the supply and installation contract and will seek to enter into an agreement with the second placed bidder.

The operation and maintenance agreement will be based on the preferred bidder's terms, subject to the agreement of both parties and consideration of any council non-negotiable terms. Use of the preferred bidders' terms will ensure that the terms and Service Levels incorporated into the maintenance agreement reflect those between the preferred bidder and its suppliers. Proposed terms will form part of the discussions held with shortlisted bidders and will form part of the qualitative assessment of the tender.

4.5. Payment mechanisms

Where existing arrangements and contracts are to be utilised, pricing and payment for any works and services will be in accordance with those arrangements.

Unless otherwise agreed, payment will be in accordance with Portsmouth City Council standard payment terms, 30 days from date of invoice in arrears.

4.6. Risk allocation

Where existing framework agreements and contracts will be utilised, established working practices, contract and supplier management processes and established pricing mechanisms provide significant confidence in respect of risk mitigation in delivering various elements of the charging clean air zone and supporting measures.

The preferred procurement approach in respect of the main CAZ supplier offers significant benefits in terms of risk mitigation, however, some key risk will remain and these must be managed and account for.

Key procurement risks include:

Risk	Likelihood	Impact	Mitigation measures
Procurement is challenged	Moderate	High	<ul style="list-style-type: none"> Compliant, fully auditable processes will be followed ensuring that all bidders are equitably treated, evaluation is effectively moderated and standstill letters provide suitable feedback.

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Preferred bidder declines the contract	Low	Moderate	<ul style="list-style-type: none"> • Early and continued engagement with suppliers to ensure interest is maintained. • Dialogue with bidders to ensure all returns are in accordance with the council's requirements and preferred options. • Ability within the process to award to the second placed bidder if necessary
Preferred bidder fails to perform during design phase	Low	Moderate	<ul style="list-style-type: none"> • Termination provisions within the NEC4 PSSC. • Adequate z-clauses in respect of intellectual property. • Ability within the process to award to the second placed bidder if necessary
Failure to meet project timescales	Low	High	<ul style="list-style-type: none"> • Early engagement and continued dialogue with bidders during the tender process to ensure project timescales are clearly communicated and understood. • Good contract management throughout to ensure problems can be resolved early through suitable change mechanisms where required. • Suitable contract clauses including delay damages
Failure to meet project budget	Low	High	
Supplier failure	Low	High	<ul style="list-style-type: none"> • Financial appraisal to be undertaken as part of the supplier selection and tender process. • Parent company guarantees to be sought where necessary. • Preferred bidder to be added to the council's financial watch list with updates of any changes to be provided by Creditsafe. • Ability to award to the second placed bidder if necessary

5. Financial Case

Not published due to commercially sensitive nature

6. Management Case

6.1. Introduction

This management case sets out the framework that PCC will use to deliver the preferred package of measures to achieve compliance with legal limits for nitrogen dioxide. In line with JAQU guidance, the management case builds on the SOC by making recommendations about the optimal solutions to the following issues:

- Governance structure during the implementation and operational phases, including key management roles and responsibilities
- Evaluation and monitoring processes with associated benefits realisation
- Risk management and mitigation
- Realistic and achievable project plan

6.2. Experience of Delivering Successful Projects

PCC's track record in delivering large scale capital projects and smaller scale revenue schemes provides the Council with valuable experience which can be drawn upon for delivery of this project. Below are some examples of the projects that PCC has delivered, either alone or with partner organisations.

Project	Description	Partners involved	Key successes
Tipner Interchange and Park & Ride scheme	<p>The Tipner Interchange scheme provides a motorway junction on the M275, bus lane and Park and Ride site which will enable a major mixed use development to be built in Portsmouth as well as delivering improved public transport links into the City Centre.</p> <p>The scheme included:</p> <ul style="list-style-type: none"> - A new grade separated motorway junction on the M275 at Tipner to provide direct access to the development site - A high quality Park and Ride facility, which will be served by 6 buses per hour 	<ul style="list-style-type: none"> - Colas VolkerFitzpatrick Joint Venture - Solent LEP, Hampshire Chamber of Commerce, Portsmouth and South East Hampshire Partnership, Business Solent (business representatives) - Tipner Regeneration Company, Lakeside North Harbour Unit Trust, Centros, Morgan Sindall Investments, Parity Trust (developer and investor interests) - Cascades Shopping Centre, Gunwharf Quays, Wightlink, Portsmouth Historic 	<ul style="list-style-type: none"> - Good partnership working - Motorway remained open throughout construction - Delivered to timescale - Surface water run-off is captured by a sustainable SUDS drainage system paired with permavoid separation tanks. A green roof complemented the SUDS solution - Winner of ICE South East Engineering Excellence Award 2014 for Project Management - Colas scored an 'Excellent' in the Considerate Constructors Scheme award for the project

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	<ul style="list-style-type: none"> - Creation of an additional southbound lane for buses on the M275 from the new interchange to the end of the motorway at the Rudmore roundabout - Bus priority measures, including partial signalisation of the Rudmore Roundabout where it ends 	<p>Dockyard, Portsmouth Football Club, Portsmouth University, Portsmouth International Port, Royal Navy, Daniamant, Portsmouth High School, Education Business Partnership (major employers and/or trip attractors, and other business organisations).</p> <p>And the following strategic stakeholders:</p> <ul style="list-style-type: none"> - Leader of Portsmouth City Council, Transport for South Hampshire, Partnership for Urban South Hampshire, South East England Development Agency, Hampshire County Council, Fareham Borough Council, Havant Borough Council - Stagecoach, Portsmouth Cycle Forum, Portsmouth Disability Forum. 	<ul style="list-style-type: none"> - On demand on-site recovery service, saved £400,000 - Minimised noise pollution using vibration monitor in the vicinity.
<p>The Hard Interchange,</p>	<p>The transport interchange at The Hard in Portsmouth, has created a new transport hub. It is the first step in a vision to regenerate the area around The Hard which is located between the world-famous Historic Dockyard and Gunwharf Quays. It sets the benchmark for the area and the tone for an impressive new gateway to Portsmouth.</p>	<ul style="list-style-type: none"> - SHBOA (South Hampshire Bus Operators Association) - First Bus - Stagecoach - South West Trains - Network Rail - Gosport Ferry - Wightlink - National Express - Portsmouth Cycle Forum - Taxi operators - Brunel House developer 	<p>The interchange remained open throughout the construction phase and customers had access to all forms of transport throughout.</p> <p>The building has won several awards, including:</p> <ul style="list-style-type: none"> - Portsmouth Society - Best New Building - ICE South East England Engineering Excellence Awards 2017 - Greatest Contribution to South East England

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	<p>Services offered to the public in the new building include:</p> <ul style="list-style-type: none"> - First Travel Centre for bus and National Express information and tickets - Visitor Information, including Waterfront Gifts - Toilets - Refreshments - Seating areas <p>The 10 bays all have real-time information screens to show arrival times and are used by First Bus, Stagecoach, National Express, Megabus and Park & Ride.</p> <p>The project was carried out by contractors Osborne and local firms were subcontracted. It was funded by the Solent Local Enterprise Partnership and Portsmouth City Council.</p>	<p>(Bouygues Development)</p> <ul style="list-style-type: none"> - Gunwharf Quays - The Historic Dockyard - Gosport Borough Council - Isle of Wight Council 	<ul style="list-style-type: none"> - ICE South East England Engineering Excellence Awards 2017 - South Award for Engineering Excellence Winner - Runner up at the SPACE awards
Dunsbury Hill Park link road	<p>A £10M construction project that enabled the wider development of the Dunsbury Hill Business Park.</p>	<p>The road was completed in 2017 by the contractor Volker Fitzpatrick. The Council project managed the design and construction contractors, along with separately appointed quantity surveyors to ensure that the scheme represented good value for money.</p>	<p>Since the road was completed, the business park has progressed, with tenants now occupying a number of the business units.</p>
Local Sustainable Transport Fund (Transport for South Hampshire and Portsmouth City Council)	<p>Programme of sustainable travel infrastructure and supporting interventions including Solent Go smart ticketing and development of the My Journey brand and communications. Delivered across identified corridors in the Solent sub-region and focusing on travel to and</p>	<ul style="list-style-type: none"> - Transport for South Hampshire - Hampshire County Council - Portsmouth City Council - Southampton City Council - University of Southampton - Sustrans 	<ul style="list-style-type: none"> - Reduction of car traffic of two to three percentage points on corridors where LSTF measures have been concentrated, compared to those that have not. In certain key corridors, such as the A32 in Gosport, journey times have reduced

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	between the city centre, harbour area and Southsea in Portsmouth.	<ul style="list-style-type: none"> - South Hampshire Bus Operators Association - South West Trains - Local ferry operators 	<ul style="list-style-type: none"> - Reduction in commuting by car (as the car driver) of between 4-10% in those organisations that have invested in workplace travel planning initiatives - Since 2011/12, there has been a 7% increase in the number of rail trips and a 3% increase in the number of bus trips in South Hampshire. In areas where the programme has been implemented car driving has reduced by an average of ten percentage points compared to those areas where it has not been fully implemented.
Northern Road Bridge	<p>In 2012 Portsmouth City Council obtained £11m of DfT funding to enable the rebuild of the bridge to maintain vital traffic and bus link between Portsea Island and mainland Portsmouth</p> <p>The existing structure was demolished and a subsequent like for like replacement.</p> <p>A side project of a One Way System in Cosham town centre has been established to enable improved traffic flow during the bridge closure period.</p>	<ul style="list-style-type: none"> - DfT - Network rail - TfSH (now Solent Transport) - Highbury college - Local Residents within 200 metres of the bridge – 9 responded - The Chamber of Commerce, Local Businesses - Queen Alexandra Hospital & Emergency Services - First Bus - Stagecoach - South West Trains - Portsmouth Cycle Forum - Portsmouth Disability Forum - Taxi operators - Public Sector Bodies - Statutory Undertakers - Local MP's and Council Leaders 	<p>The scheme was completed on time and under budget.</p> <p>The new bridge, complete since February 2014 incorporates the following improvements:</p> <ul style="list-style-type: none"> - An increase in the former two lanes, to three - two lanes for normal traffic and a south bound bus lane - Wide, attractive footways laid with resin bound gravel infill. - Attractive, bio-diverse landscaping on the embankments - Artwork on both parapets, designed by local community stakeholders and attractively lit at night by ground level LEDs. - Improved drainage (use of "beany kerbs") - High quality road surface

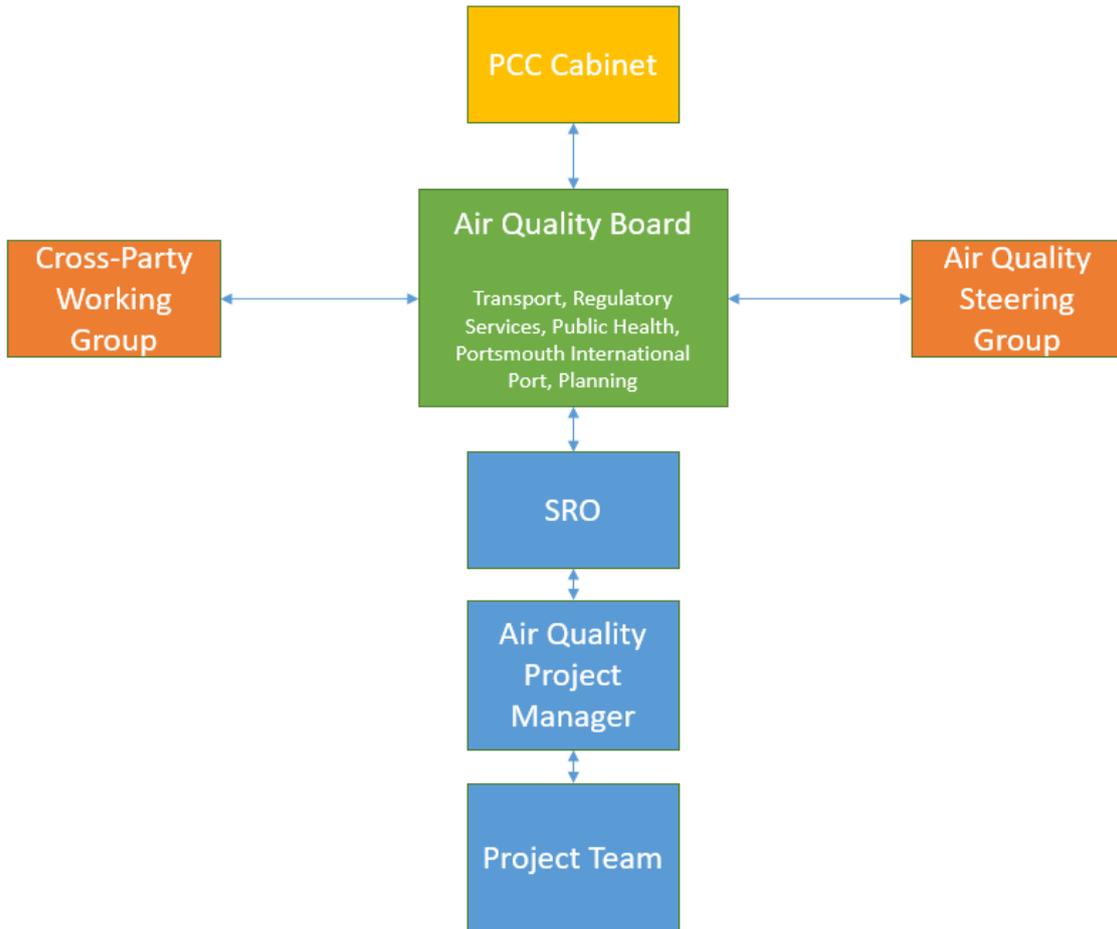
			<ul style="list-style-type: none"> - The bridge is now higher - future proofing against issues which would otherwise have arisen from the planned electrification of the line via an elevated cable. - Sway wall structure requires no maintenance - Extra ducting capacity for "Utility" cables <p>Minimum disruption was caused during the works period, due to the bridge being demolished in two phases. This enabled two operational lanes to be maintained for the majority of the scheme and a restricted use single lane for just 18 weeks.</p> <ul style="list-style-type: none"> - The scheme was awarded the ICE Southern / SE Technical Expertise & Innovation award.
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6.3. Project Governance

Portsmouth City Council is a unitary authority with responsibilities including highways, planning, public health and environmental monitoring and ownership of Portsmouth International Port. These departments together form an Air Quality Board working closely to address the air quality issues in the city. The council also works closely with stakeholders through a steering group attended by transport operators, businesses, and local interest groups.

In delivering the preferred package of measures the project will continue to be managed in accordance with PRINCE2 principles. The governance structure outlined below has been in place throughout the development of the Air Quality Plan to date and will continue to be used for development of the FBC and delivery of the project.

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As highlighted in the organogram above, a number of key roles for delivery of the project have been identified, and their key responsibilities are set out below:

Senior Responsible Owner (SRO)- The SRO has overall responsibility for ensuring the AQLP meets its objective to achieve compliance in the shortest possible time, and delivers the projected benefits within the time and cost parameters set out in this business case. For the implementation and operational phases of the project the SRO will continue to be PCC's Assistant Director- Transport.

Air Quality Board- The board will continue to guide the direction of the project, overseeing the delivery of the preferred package of measures. The board will continue to consist of Directors and Senior Officers from across Portsmouth City Council and will:

- Oversee the delivery of compliance with the National Air Quality objectives as required by law, in the shortest possible timeframe;
- Review and approve the Project Initiation Document;
- Receive Highlight Reports from the Project Manager;
- Review and approve any issues, risks and additional requirements escalated by the Project Manager;
- Communicate information about the project to other senior officers and members and liaise with the Project Manager regarding any feedback;

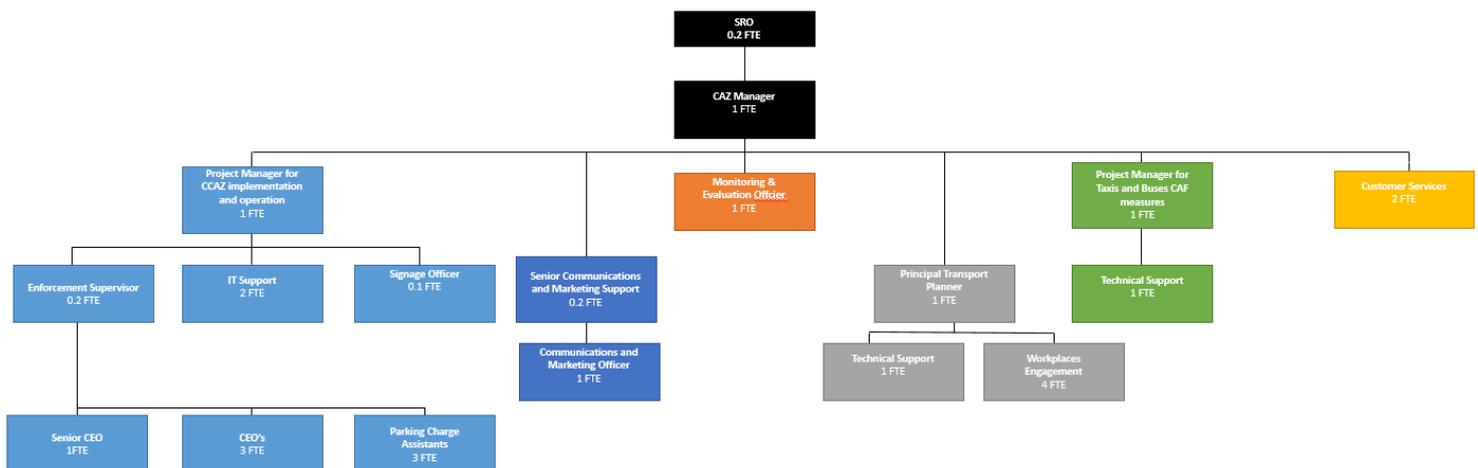
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- Foster collaborative working and sharing of information, integrating air quality into all Portsmouth City Council decision making and relevant plans and strategies;
- Ensure that the objectives of the project are met;
- Ensure that the project is undertaken within the agreed scope;
- On completion, review and approve the project Close Out Report.

Cabinet- Portsmouth City Council's Cabinet will formally approve the proposals in the OBC and will also do the same for the FBC. Between formal Cabinet meetings this group will continue to receive regular updates on the progress of the project.

Air Quality Lead- The Air Quality Lead will be responsible for the day to day management of the project on behalf of the Air Quality Board and will have oversight of all air quality workstreams.

Project Team- The project team will be responsible for ensuring the objectives of the project are met and the project is undertaken within the agreed scope. The team will form sub-groups to focus on particular areas and will consist of PCC officers from a range of services including, transport, parking, planning, public health, communications, finance, legal and procurement. For the implementation and operational phases of the project the Project Team will continue to be overseen by PCC's Air Quality Team Leader. The structure of the project team is detailed in the organogram shown below:



Specialist Advisors- Due to the large and complex nature of the project, specialist advisors will be engaged where necessary to supplement the existing project team's capacity and skills.

Air Quality Steering Group- This group is already established and is attended by representatives from local business and interest groups. Whilst this group does not have a decision making role they have been an essential part in guiding the development of measures to date and their continued support will be invaluable for promoting and garnering public support for the preferred package.

Cross-Party Working Group- Again, this is not a decision making body, however the meetings of this working group have ensured that all Councillors have had an opportunity to keep up to date with the development of the Air Quality Local Plan and to feed their ideas

into the options development process. After OBC submission the meeting of this group will be essential for garnering public support and guiding the delivery of measures.

6.4. Project management processes

The package will be delivered in accordance with PRINCE2 methodology, with clearly identified roles and responsibilities as set out in the project team and governance sections.

The project management processes will involve weekly reports to the finance team, and weekly review of progress. Any issues highlighted (e.g. overspend or underspend, timescale slippages) will be escalated to the SRO who will seek approval of the Air Quality Board for any changes or decisions required.

The Air Quality Board will meet monthly, and the Project Manager will present a Highlight Report at each of the meetings. This will provide an overview of progress on the project and be used as a tool to formally record any issues and risks to delivery of the project.

The Monitoring and Evaluation Officer will complete the Project Delivery and Budget Tracker document in conjunction with the Air Quality Lead on a quarterly basis and return this to JAQU.

The reporting cycle for the project is focused around the monthly Air Quality Board meetings as this is the decision making where progress will be reported and any changes agreed. The frequency of these meetings will ensure that any risks to delivery can be identified and raised in a timely manner, and potential addressed in between each of the quarterly monitoring reports being issued to Delivery.

Event	Frequency	Lead-in Time	Comments	Line of Reporting
Air Quality Board	Monthly	1 week for papers	To take place during 3 rd week of the month.	<ul style="list-style-type: none"> - Updates from Air Quality Lead - Actions to Project Team - Sign-off Project Delivery & Budget Tracker - Updates to Cabinet - Decisions on minor changes
Project Delivery & Budget Tracker	Quarterly	1 week for papers	To be submitted at during the last week of the relevant month. Draft report to be taken to the AQB the week prior to submission for sign-off.	<ul style="list-style-type: none"> - Updates from Monitoring & Evaluation Officer and Air Quality Lead (after sign off from Air Quality Board)
Cabinet	6 weekly	10 days for publication of final papers 15 days for draft paper for	Updates from AQB to be taken to Cabinet on a regular basis (suitable timescale to be agreed with the Cabinet Members	<ul style="list-style-type: none"> - Updates from Air Quality Board (SRO) - Actions to Air Quality Board - Decisions on significant changes

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		briefing meeting	for Transport and for Environment)	
Gateway Board	Key Milestones	1 week for papers	To attend Gateway Board for approval of procurement activity at outlines business case, procurement strategy and final recommendations stages.	<ul style="list-style-type: none"> - Updates from Project Team - Decisions on procurement - Updates to Air Quality Board
SRO & Air Quality Lead Catch-up	Weekly	N/A	To discuss progress, risks and challenges	<ul style="list-style-type: none"> - Updates from Air Quality Lead to SRO - Actions both ways - Decisions on day to day operation/ activity - Updates to Air Quality Board

PCCs Cabinet meetings occur roughly every 6 weeks, however this can vary. Updates on the progress of the project will be taken from the Board to Cabinet on a regular basis and any significant changes to the project will be taken to the Cabinet for approval, as outlined in the Change Management Plan.

As well as reporting to the Air Quality Board and to Cabinet, the project will also need to take reports and seeks approval from PCC's internal Gateway Board. This Board is comprised of Senior Procurement Managers, Legal Advisors and Senior Peer Reviewers. This board will review the procurement activities of the project to ensure that all elements are robust and legal.

The plan below provides a summary of the reporting cycles that this project will subject to. Details of the timings of the individual meetings are contained within the project plan attached at appendix C to this document.

6.5. Risk management

The process of identifying, assessing, responding to, monitoring, controlling and reporting risks is summarised in this section. It outlines how risk management activities will be performed, recorded and monitored throughout the local plan development and sets out proposed risk management structure, within the existing governance illustrated above.

Risk identification is the responsibility of the entire project team. The project manager will be responsible for identifying impact and interdependencies and for reporting risks to the Air Quality Board.

All risks will be logged onto a project register. Key risks will be allocated an owner. The risk owner will be responsible for assessing, in more detail, the range of possible outcomes, defining the level of risk, contingency planning, monitoring, controlling and updating the status of the risk throughout the local plan development.

Key risks will be reported up to the Senior Project Manager and SRO. New or updated risks across the range of projects being delivered will be discussed and challenged by the project team before reporting issues and exceptions to the Air Quality Board.

Risks closure will be considered by the project manager when the event has passed, is no longer valid or considered a risk. These will remain on the log and associated costs will either be transferred to the project, or removed.

The project risk register can be found at appendix C to this report.

6.6. Communication and Stakeholder Engagement

6.6.1. Communications and Engagement Plan

As outlined in section 2.8 of the Strategic Case consultation has already taken place with residents, visitors and businesses in the city. It is anticipated that further consultation and engagement activity will be undertaken prior to submission of the Final Business Case to inform the operation of the CCAZ and the best approach to delivering mitigation measures.

It is acknowledge that effective and efficient engagement will be required to ensure that both internal and external stakeholders are aware of the measures proposed and how these measures could potentially impact them. Therefore a dedicated communications and engagement resource is required to manage and coordinate messaging, ensuring that this dovetails with the communications activities and messaging being delivered nationally by JAQU. The tasks conducted by the dedicated resource are detailed in the Communications and Engagement Plan attached at appendix D.

The plan details how various stakeholders can help to shape the proposals and how PCC will raise awareness of air quality issues and mitigation measures in the city. The main objectives of the planned communications and engagement activity are:

- To educate people about the CCAZ and the classes of vehicles affected
- To inform individuals and businesses about the support available to them to switch to complaint vehicles or sustainable and active modes
- To convince people to take action that helps reduce air pollution
- To educate people on the health impacts of poor air quality
- To increase awareness of how city network and transport improvements contribute to reducing air pollution
- To inspire a shift to more active travel through fun activities and events
- To create awareness and inspire use of sustainable travel
- To build the councils reputation as a council that is taking the issue of air quality seriously whilst also recognising the potential economic impact on the city, Isle of Wight and surrounding area, creating awareness of support in place.

6.6.2. CCAZ Public Consultation

A key part of the public engagement activity will be a consultation to seek views on the operation of the CCAZ, addressing issues such as local exemptions and sunset periods, appetite for mitigation measures and views on how any revenue collected from the CCAZ should be spent. This engagement activity will be made up of the following elements:

- **Public survey:** Seeking views from residents, visitors and businesses in Portsmouth and the surrounding areas

- **Public roadshow events:** To provide an opportunity for members of the public to ask questions about the CCAZ and supporting measures and to explore issues in more depth than will be possible in a survey
- **Business workshops:** Providing an opportunity for businesses within the CCAZ to provide their views, with a particular focus on their appetite for mitigation measures and support packages
- **Taxi trade workshops:** An opportunity to explain with the taxi trade how the CCAZ could affect them, explain the planned changes to licensing requirements in the city and seek views on their appetite for mitigation measures and support packages

This public consultation will commence in early 2020, following the approval of this Outline Business Case. This will allow sufficient time for insights gathered through the consultation to be fed into the development of the CCAZ and mitigation measures prior to submission of the FBC.

6.7. Delivery and Implementation

An indicative Project Plan is provided in Appendix C, demonstrating how the project is envisaged to progress following submission of the Outline Business Case through to submission of the Full Business Case.

6.8. Monitoring and evaluation

The monitoring and evaluation officer will work with the project manager to produce monthly financial updates to JAQU and quarterly reporting of monitored air quality and traffic data. Monitoring and evaluation of the project both during delivery and post-completion will be an essential part of realising the benefits of our work. A Monitoring and Evaluation Plan has been developed to set out the approach to determining and monitoring the impact of the project and to realising benefits. This can be found at appendix C. The table below provides a high level overview of the monitoring outputs and data sources that will be used to evaluate the success of the project.

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	Air quality monitoring data	Traffic flow data	Local vehicle fleet data	Public transport usage	Park and Ride passenger data	Job seekers allowance claims	Local GVA figures	Monthly financial reporting data	Monthly progress reporting and Highlight reporting
Primary Objective									
Deliver compliance with NO2 concentrations in the shortest possible time without significantly worsening emissions elsewhere	✓	✓	✓						
Secondary Objectives									
Deliver value for money								✓	✓
Ensure that particular groups of stakeholders are not disproportionately impacted by any negative impacts associated with the proposed intervention						✓	✓		
Complement existing and planned wider policies for the city				✓	✓				
Be deliverable in terms of supply side capacity and capability									✓
Be affordable								✓	✓

Appendix A. Local air quality problem and underlying causes

A.1. Introduction

This appendix provides supporting data in relation to the Strategic Case set out in [Chapter 2](#) (primarily [Section 2.2 Local air quality problem](#)).

A.2. 2018 roadside monitoring data

PCC currently has 107 diffusion tube locations, with 59 new locations added during 2018 and 4 continuous air quality monitoring stations (CAQMs) to measure local air quality.

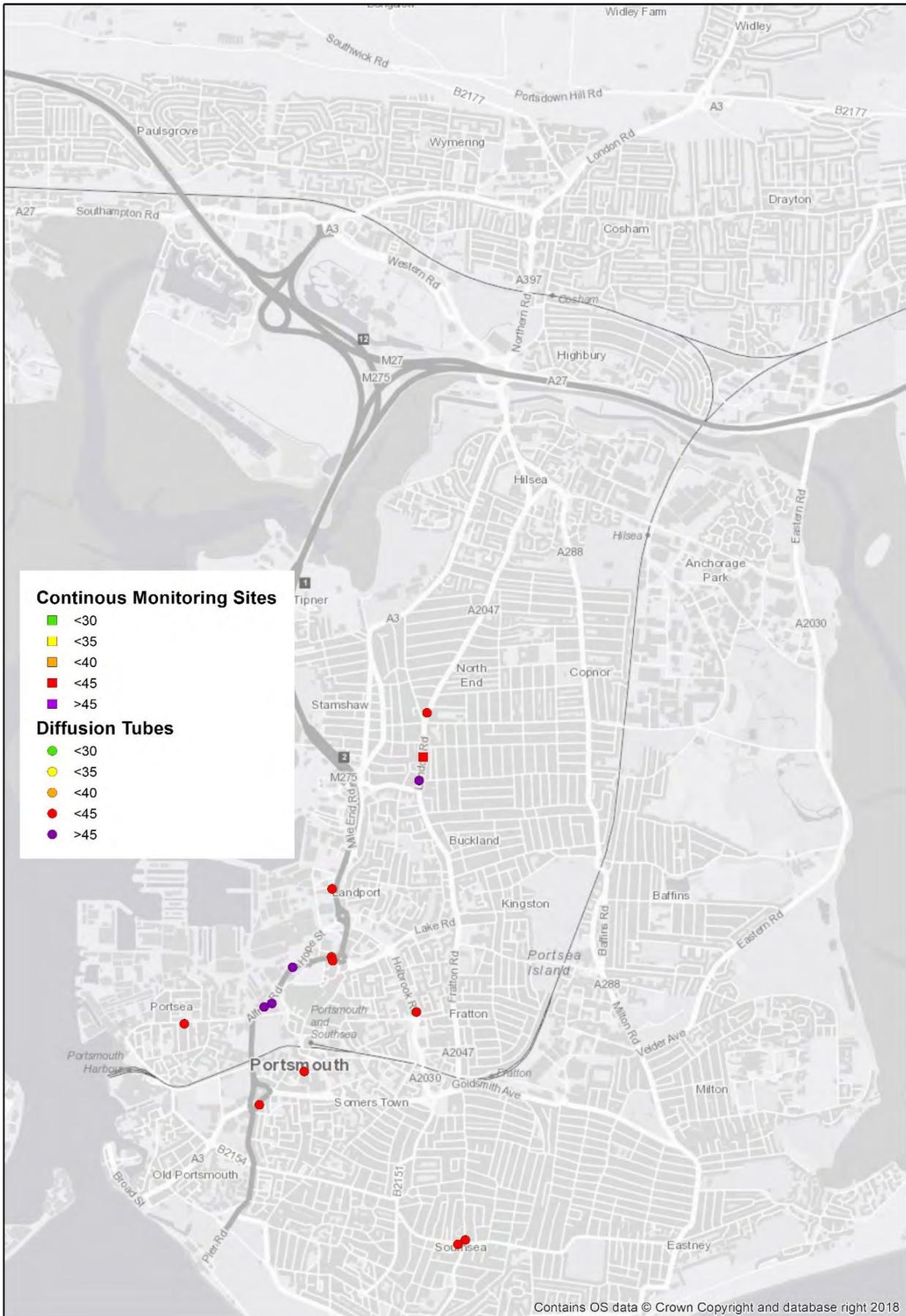
Further detail can be found in the 2019 Air Quality Annual Status Report (June 2019).

Table A-1 2018 roadside air quality monitoring data – exceedance locations

Site ID	Exceedance locations	Annual mean emissions – Bias adjusted (0.891) and annualised
117	A3 - Alfred Road Column 9 (AR-Col 9)	50.42
118	A3 - Alfred Road Column 12 (AR-Col 12)	50.38
120	A3 - Alfred Road Opposite MW-StABS (MW-OppStABS)	47.51
46	A3 - Mile End Road Column 5 (MERC05)	44.51
26	A2047 - "The Tap Pub" London Road (Tap PH)	46.02
108	A2047 - 137 London Road (LR-137)	44.18
37	A2047 – London Road (continuous monitoring site)	40.57
94	Fratton - 2&3 Selborn Terrace Changed to Column5 Fratton Road (FR-Col5)	40.33
133	Fratton - Labour Party Club Holbrook Road (HR-LPC) – <i>Based on two months only.</i>	43.07
1	City Centre - Lord Montgomery Way (FST) (St Michael's Gyratory)	42.92
45	City Centre - Opposite 6 Market Way (Opp MW-6)	41.97
44	City Centre - 4 Market Way (MW-4)	40.41
50	City Centre - Queen Street-47 (QS-47)	40.37
84	Southsea - Albert Road-145 on Lawrence Road (AR-145)	42.82
85	Southsea - Albert Road-98/100 (AR-98/100)	40.41

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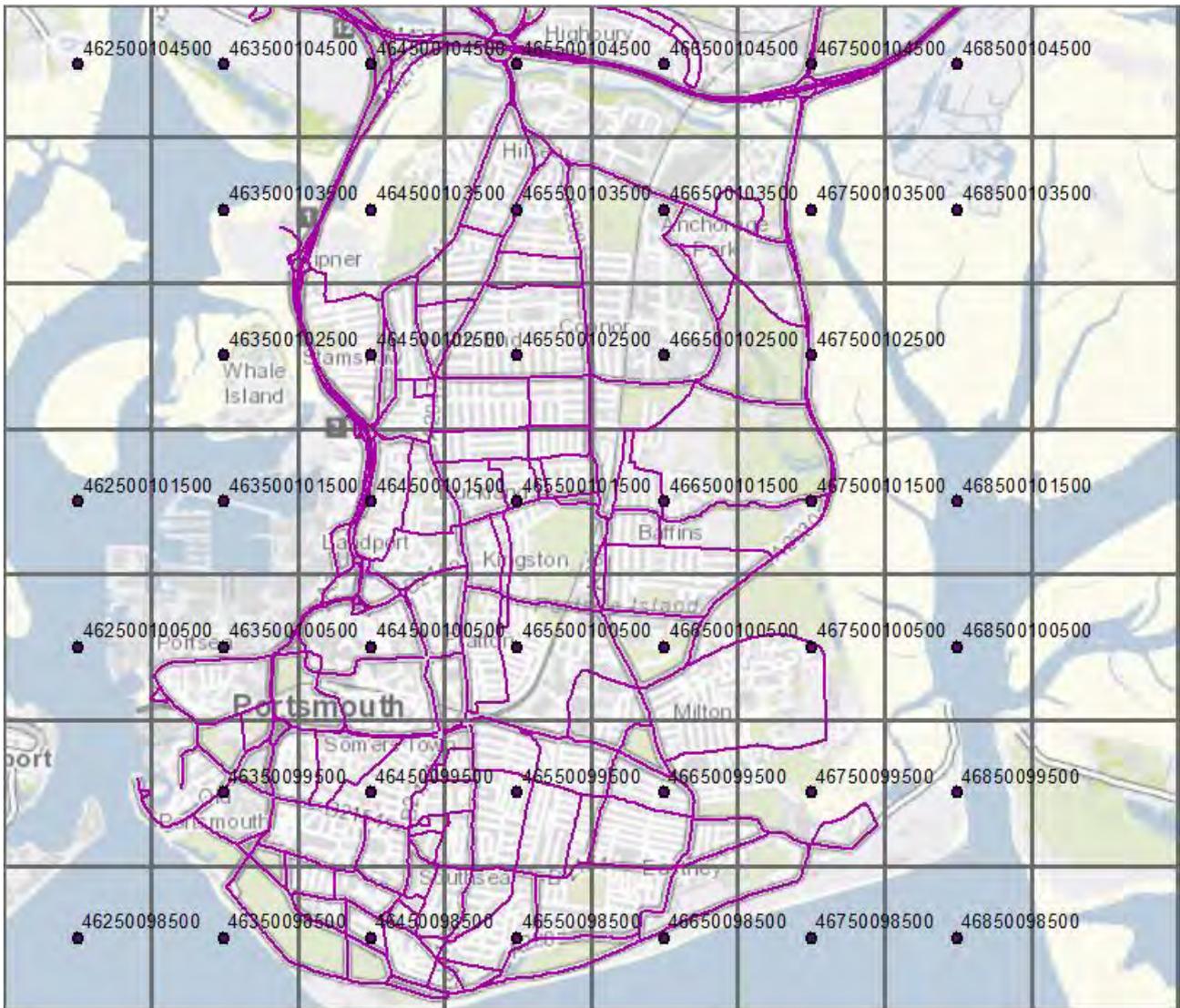
Figure A-1 2018 roadside air quality monitoring data – exceedance locations



A.3. Contributory factors

A.3.1. Background air quality

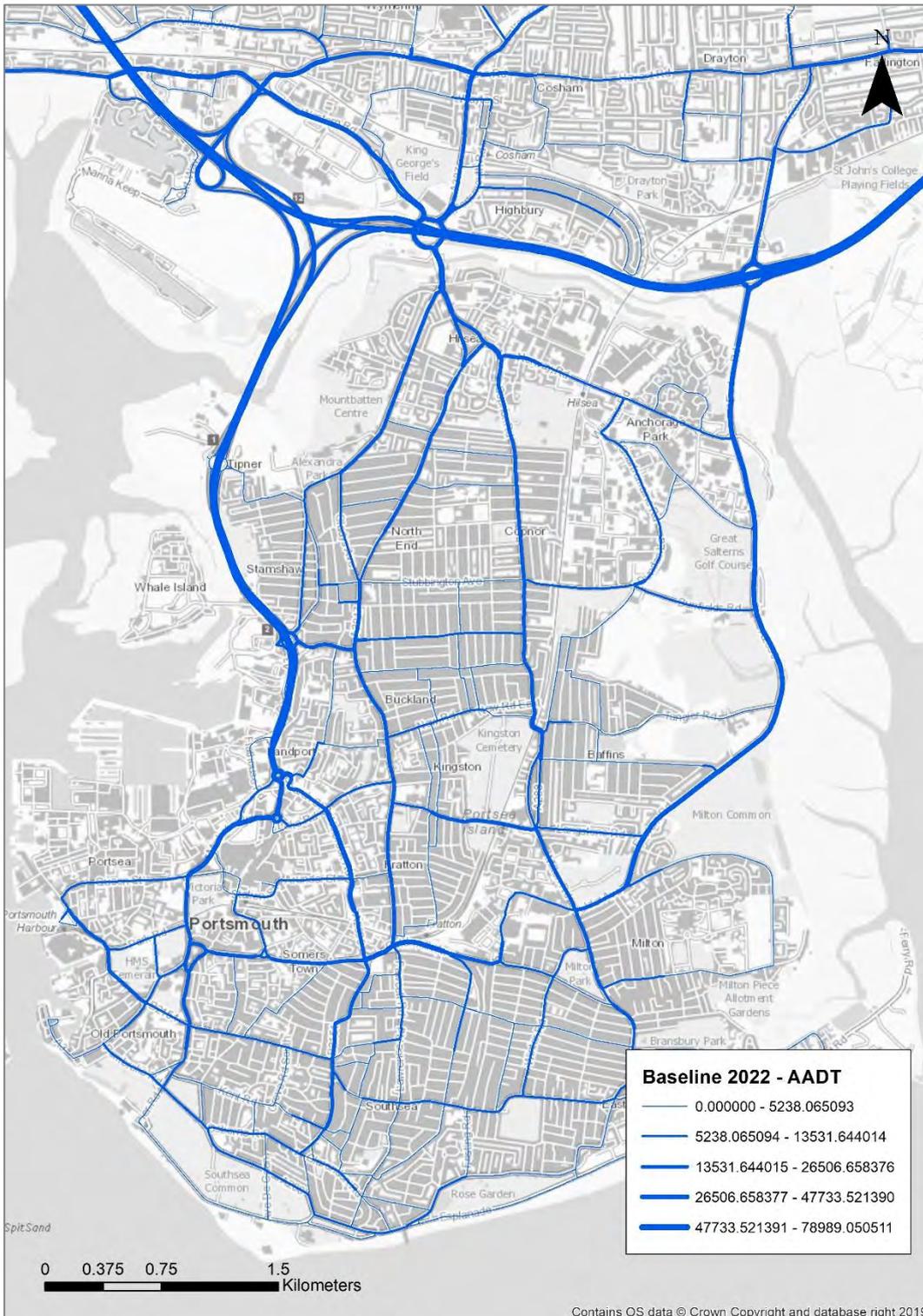
Figure A-2 1km grid squares used by Defra to model background air quality concentrations



A.3.2. Traffic characteristics

Traffic volume

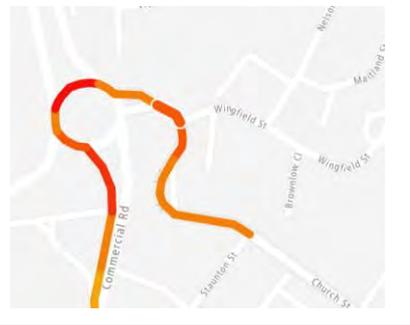
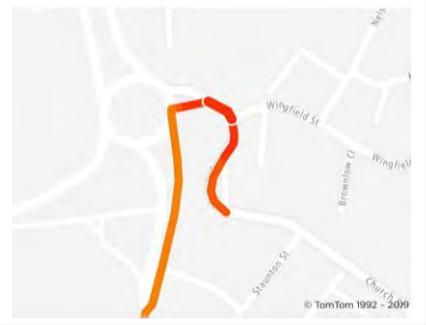
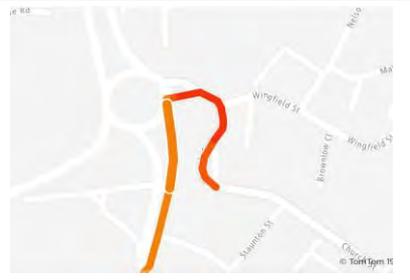
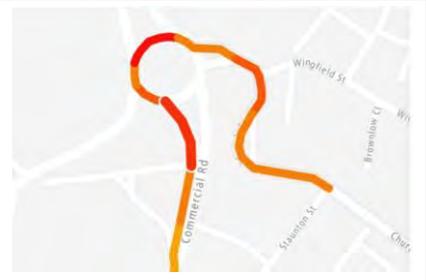
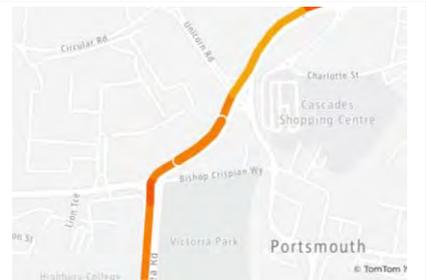
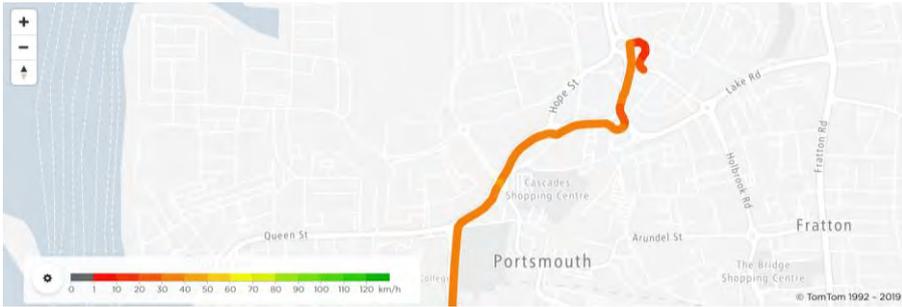
Figure A-3 2022 two-way flows in 2022 (SRTM, 2022)



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Traffic speeds at exceedance locations

Figure A-4 Average 24hr observed speeds at exceedance locations during 2018 (TomTom data)

Church St (S/b)		Church St (N/b)	
<p>Median speed = 29kph Mean speed = 29kph Modelled speed = 31kph</p>		<p>Median speed = 13kph Mean speed = 15kph Modelled speed = 9kph</p>	
<p><i>S/b and n/b data is based on average journey times between Church Street Roundabout exit and Wingfield Road, providing a good representation of conditions at the exceedance location. (Modelled speed for link 53330_53341)</i></p>			
A3 Commercial Road (S/b)		A3 Commercial Road (N/b)	
<p>Median speed = 36kph Mean speed = 34kph Modelled speed = 37kph</p>		<p>Median speed = 17kph Mean speed = 15kph Modelled speed = 27kph</p>	
<p><i>S/b and n/b data is based on average journey times between Church Street and Commercial Road, providing a good representation of conditions at the exceedance location. (Modelled speed for link 53339_53360)</i></p>			
A3 Alfred Road (S/b)		A3 Alfred Road (N/b)	
<p>Median speed = 34kph Mean speed = 37kph Modelled speed = 19kph*</p>		<p>Median speed = 37kph Mean speed = 35kph Similar speeds at next segment down Modelled speed = 18kph*</p>	
<p><i>S/b data is based on average journey times between Unicorn Road to Queen Street junctions and may mask slower speeds resulting from queuing on the approach to the Queen Street junction. N/b data is based on a shorter section of road providing a better representation of the conditions at the exceedance location. (Modelled speed for link 53711_53710. *This covers Unicorn Road to Queen Street, i.e. a longer section, which includes the junctions)</i></p>			
Overview of southbound traffic speeds through the city centre			
			

Local and non-local movements by user category and vehicle compliance

Table A-2 Local and non-local movements by user category – Proxy for 2022 Baseline (SRTM, 2026)

User category	Total trips within Portsea Island	% user type	Trips within Island	Trips to/from Island
Car – Business (all vehicles)	31,090	9%	34%	66%
Car – Other (all vehicles)	279,034	78%	47%	53%
LGV (all vehicles)	25,992	7%	57%	43%
HGV (all vehicles)	23,726	7%	39%	61%
All user classes	359,842	100%	46%	54%

Source: SRTM 2026, Baseline, All day

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Vehicle trips within Portsea Island, by time period

Table A-3 Vehicle trips within Portsea Island, by time period – Proxy for 2022 Baseline (SRTM, 2026)

Portsmouth District	Cars/Taxi	LGVs	HGVs	Total
AM Peak	64,473	6,825	6,183	77,481
Inter-Peak	135,747	13,333	9,902	158,982
PM Peak	79,432	5,832	4,696	89,960
Off-Peak	30,471	2	2,945	33,419
Total	310,124	25,992	23,726	359,842

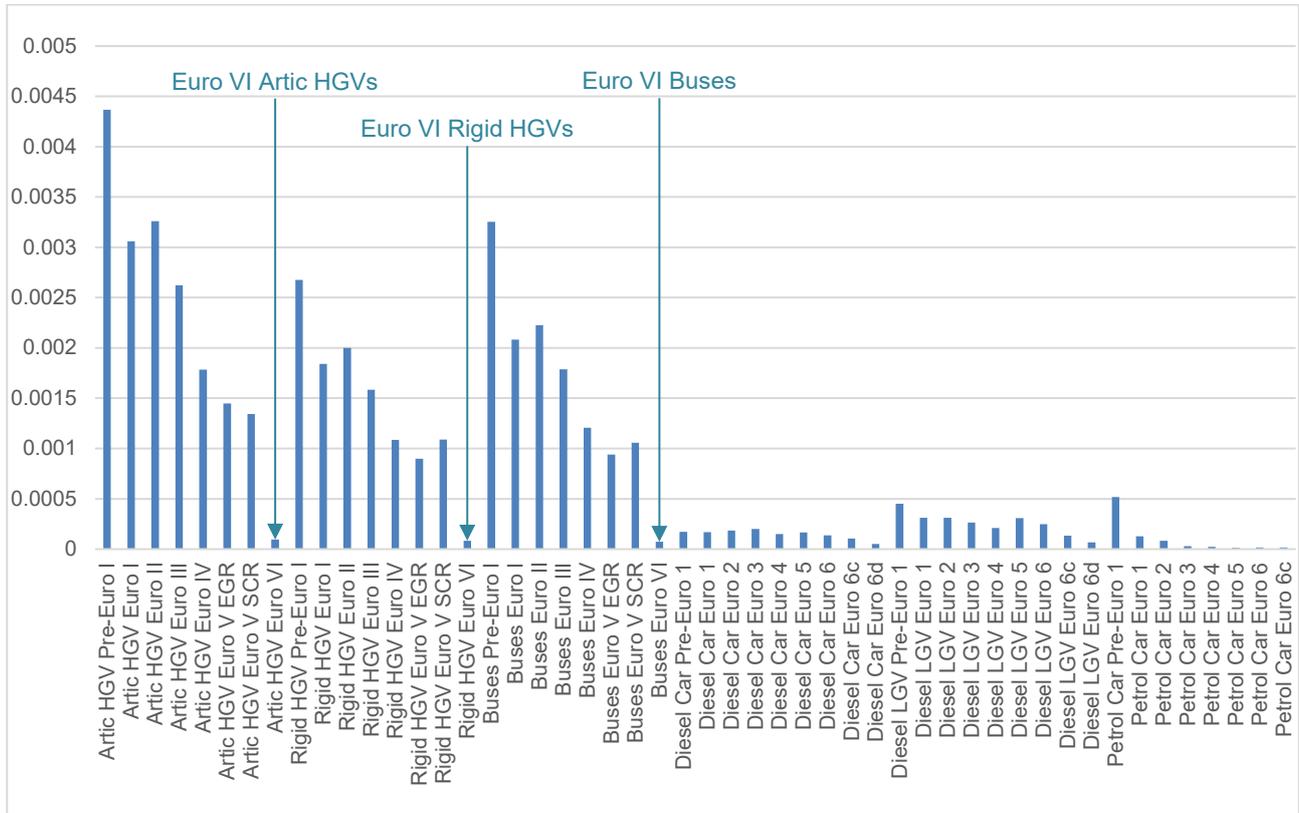
Source: SRTM 2026, Baseline, All day

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A.3.3. Vehicle characteristics

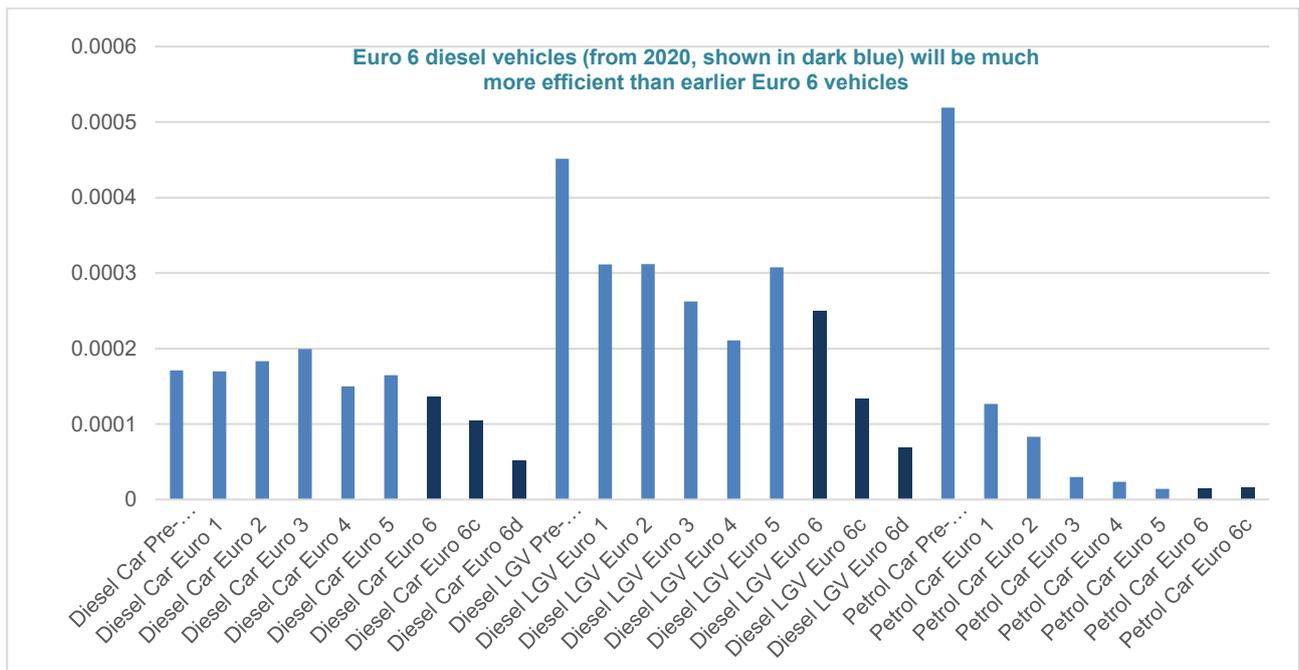
Variation in emissions rates across different vehicle types

Figure A-5 Emissions factors by vehicle type and Euro category (all vehicles) - NOx emissions are 40 kph



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Figure A-6 Emissions factors by vehicle type and Euro category (cars and LGVs) - NOx emissions are 40 kph

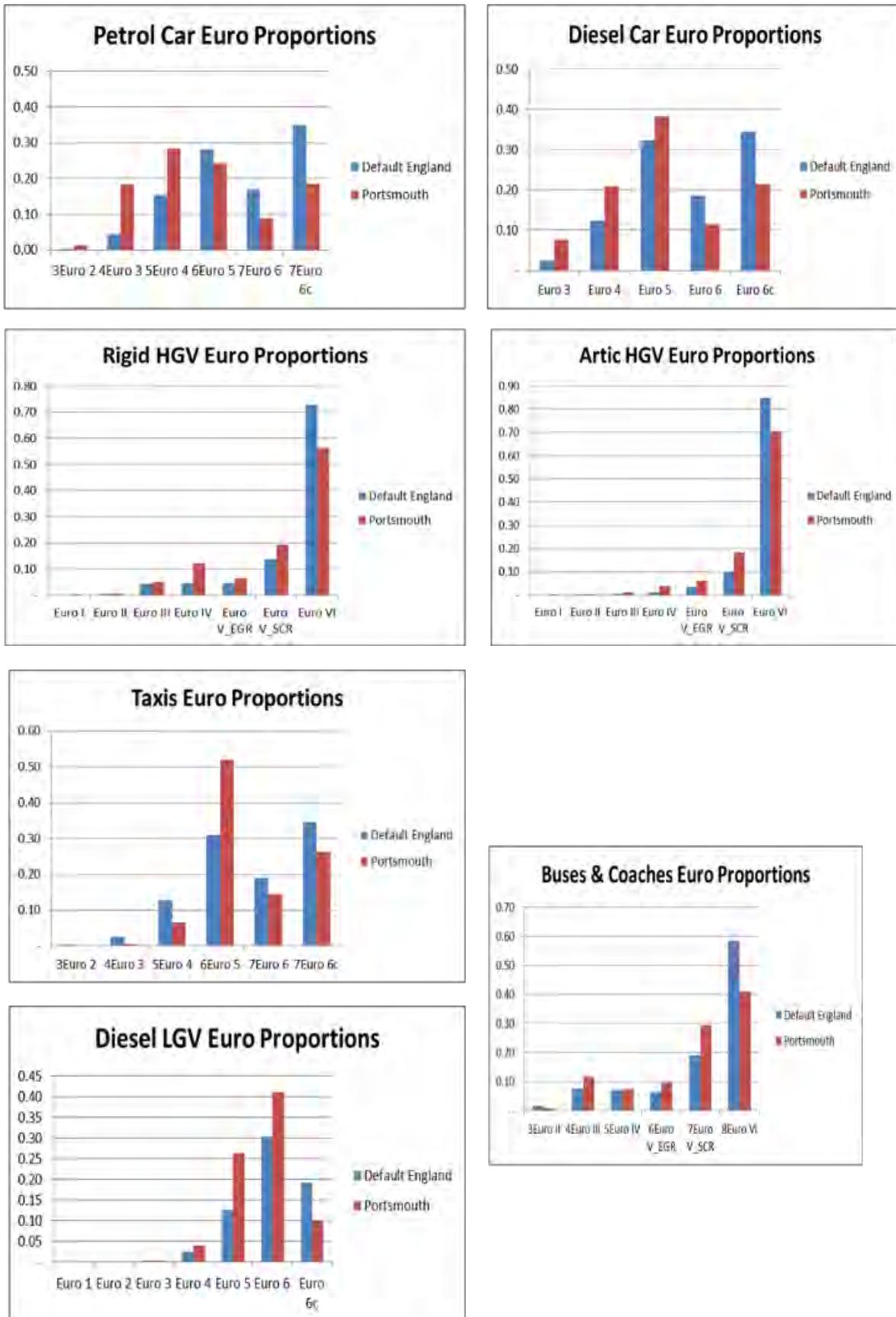


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Vehicle / fleet characteristics in Portsmouth

For most vehicle types (except LGVs), the Portsmouth fleet is older than the national average.

Figure A-7 How does the Portsmouth fleet compare with the national average?



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Contribution of NOx emissions from different vehicle types in Portsmouth

Table A-4 Contribution of NOx emissions from different vehicle types in Portsmouth

Vehicle type	2018 Contribution	2022 Contribution
Petrol cars	8.4%	10.5%
Diesel cars	47.4%	49.6%
Taxis	<1%	<1%
Petrol LGVs	<1%	<1%
Diesel LGVs	19.6%	23.8%
Rigid HGVs	11.6%	7.9%
Artic HGVs	4.8%	3.8%
Buses / Coaches	7.8%	3.2%
Other	<1%	1.2%
Light Duty Vehicles (cars, taxis, light goods vehicles, minibuses)	75.8%	85.2%
Heavy Duty Vehicles (HGVs, buses, coaches)	24.2%	14.8%

Source: Modelled estimates based on ANPR data (March 2019, 7 days), and Emissions Factor Toolkit (v9.1b).

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Number and type of non-compliant vehicle movements in Portsmouth

Table A-5 Number and type of non-compliant vehicle movements (observations) in Portsmouth

Vehicle type	Non-compliant vehicle movements (2019)	Compliant vehicle movements (2019)	Total vehicle movements (2019)	% non-compliant vehicle movements (2019)	What % of the total fleet do non-compliant vehicles account for (2019)?	Predicted % non-compliant vehicle movements (2022 future base)
Diesel cars	1,896,439	816,376	2,712,815	70%	23.5%	47%
Petrol cars	715,954	2,838,207	3,554,161	20%	8.9%	6%
Diesel black cabs	1,337	28	1,365	98%	0.0%	51%
Diesel taxi cars	170,113	200,417	370,530	46%	2.1%	32%
Petrol taxi cars	0	19746	19,746	0%	0.0%	0%
Other taxi cars	174	16566	16,740	1%	0.0%	0%
Electric cars	0	10011	10,011	0%	0.0%	0%
Hybrid cars	1546	102172	103,718	1%	0.0%	0%
Gas cars	2,625	0	2,625	100%	0.0%	100%
Diesel LGVs	730,820	282,869	1,013,689	72%	9.0%	45%
Petrol LGVs	3,155	3,922	7,077	45%	0.0%	6%
Other LGVs	679	2241	2,920	23%	0.0%	0%
Rigid HGVs	40,218	52,313	92,531	43%	0.5%	21%
Artic HGVs	13,633	32,543	46,176	30%	0.2%	10%
Mini buses	15,822	11,317	27,139	58%	0.2%	n/a*
Diesel buses/coaches	62,220	42,479	104,699	59%	0.8%	11%
Total	3,654,735	4,431,207	8,085,942	45%	-	-

Source: Modelled estimates based on ANPR data (March 2019, 7 days), and Emissions Factor Toolkit (v9.0). The results are unlikely to differ significantly from those based on the latest EFT.

*For emissions purpose, mini-buses are incorporated into diesel LGVs in 2022

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Number and type of non-compliant vehicles in Portsmouth

Table A-6 Number and type of non-compliant unique vehicles in Portsmouth

Vehicle type	Non-compliant unique vehicles (2019)	Compliant unique vehicles (2019)	Total unique vehicles (2019)	% non-compliant unique vehicles (2019)	What % of the total fleet do non-compliant vehicles account for (2019)?	Predicted % non-compliant (2022 future base)
Diesel cars	102,164	49,293	151,457	67%	24.4%	45%
Petrol cars	37,506	150,903	188,409	20%	9.0%	6%
Diesel black cabs	40	2	42	95%	0.0%	50%
Diesel taxi cars	477	503	980	49%	0.1%	34%
Petrol taxi cars	0	47	47	0%	0.0%	0%
Other taxi cars	1	40	41	2%	0.0%	0%
Electric cars	0	661	661	0%	0.0%	0%
Hybrid cars	95	6855	6,950	1%	0.0%	0%
Gas cars	1	2	3	33%	0.0%	33%
Diesel LGVs	39,484	15,271	54,755	72%	9.4%	45%
Petrol LGVs	363	265	628	58%	0.1%	8%
Other LGVs	32	80	112	29%	0.0%	0%
Rigid HGVs	3,567	3,551	7,118	50%	0.9%	24%
Artic HGVs	1,554	4,204	5,758	27%	0.4%	9%
Mini buses	695	242	937	74%	0.2%	n/a*
Diesel buses/coaches	421	326	747	56%	0.1%	10%
Total	186,400	232,245	418,645	45%	-	-

Source: Modelled estimates based on ANPR data (March 2019, 7 days), and Emissions Factor Toolkit (v9.0). The results are unlikely to differ significantly from those based on the latest EFT.

*For emissions purpose, mini-buses are incorporated into diesel LGVs in 2022

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a) Unique vehicle observations by day of survey – 2022 projection, based on cameras in Small Area CAZ

Vehicle Type	Compliance	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Avg
BLACK CAB	1	1	2	3	3	3	5	6	4
BLACK CAB	0	2	3	4	4	3	5	7	4
BUSES & COACHES	1	216	236	213	238	170	178	223	211
BUSES & COACHES	0	25	28	25	28	20	21	26	25
CARS_DIESEL	1	9803	10078	10163	10669	10015	9524	9952	10029
CARS_DIESEL	0	9898	10175	10261	10772	10112	9617	10049	10126
CARS_DIESEL_HYBRID	1	15	11	10	14	16	20	15	14
CARS_DIESEL_HYBRID	0	1	1	1	1	1	1	1	1
CARS_ELECTRIC	1	80	73	83	75	61	58	82	73
CARS_ELECTRIC	0	0	0	0	0	0	0	0	0
CARS_LPG	1	0	0	0	0	0	0	0	0
CARS_LPG	0	19	18	26	23	18	17	21	20
CARS_PETROL	1	27435	28001	28525	29556	26701	24908	28261	27627
CARS_PETROL	0	1756	1793	1826	1892	1709	1595	1809	1769
CARS_PETROL_HYBRID	1	672	710	710	721	713	724	716	709
CARS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
HGV_ARTIC	1	167	160	151	159	101	71	157	138
HGV_ARTIC	0	19	19	18	18	12	8	18	16
HGV_RIGID	1	435	452	449	424	157	102	383	343
HGV_RIGID	0	118	122	121	115	43	28	104	93
LGVS_DIESEL	1	4100	4244	4200	4193	2446	1935	4100	3602
LGVS_DIESEL	0	3319	3437	3400	3395	1981	1567	3319	2917
LGVS_ELECTRIC	1	22	24	25	17	4	3	22	17
LGVS_ELECTRIC	0	0	0	0	0	0	0	0	0
LGVS_LPG	1	0	0	0	0	0	0	0	0
LGVS_LPG	0	4	5	4	5	5	4	3	4
LGVS_PETROL	1	57	58	59	71	57	54	62	60
LGVS_PETROL	0	3	4	4	4	3	3	4	4
LGVS_PETROL_HYBRID	1	7	3	7	7	0	0	6	4
LGVS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
MINIBUSES_DIESEL	1	103	103	100	101	49	42	99	85
MINIBUSES_DIESEL	0	83	84	81	82	39	34	80	69
MINIBUSES_PETROL	1	2	3	2	3	3	1	3	2
MINIBUSES_PETROL	0	0	0	0	0	0	0	0	0
MOPEDS	1	55	44	50	53	48	45	64	51
MOPEDS	0	1	1	1	1	1	1	2	1
MOTORCYCLES	1	157	133	151	152	119	142	170	146
MOTORCYCLES	0	12	10	11	11	9	11	13	11
TAXIS_DIESEL	1	515	517	525	533	510	487	527	516
TAXIS_DIESEL	0	244	245	249	253	243	231	251	245
TAXIS_DIESEL_HYBRID	1	1	2	2	1	1	1	2	1
TAXIS_DIESEL_HYBRID	0	0	0	0	0	0	0	0	0
TAXIS_ELECTRIC	1	1	1	1	1	0	0	1	1
TAXIS_ELECTRIC	0	0	0	0	0	0	0	0	0
TAXIS_PETROL	1	37	39	42	44	41	35	39	40
TAXIS_PETROL	0	0	0	0	0	0	0	0	0
TAXIS_PETROL_HYBRID	1	27	30	30	30	29	30	29	29
TAXIS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
Grand Total		59412	60869	61533	63669	55443	51508	60626	59005

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b) No. of days Unique vehicle observed – 2022 projection, based on cameras in Small Area CAZ

Vehicle Type	Compliance	1	2	3	4	5	6	7	Grand Total	Compliance/ NonCompliance Rate
BLACK_CAB	1	6	1	1	0	0	1	0	11	49%
BLACK_CAB	0	7	2	2	1	0	1	1	12	51%
BUSES & COACHES	1	201	64	36	27	43	55	55	481	89%
BUSES & COACHES	0	24	7	4	3	5	6	7	56	11%
CARS_DIESEL	1	17621	5268	2482	1932	1842	1433	1295	31873	50%
CARS_DIESEL	0	17792	5319	2506	1951	1860	1446	1308	32182	50%
CARS_DIESEL_HYBRID	1	34	8	4	3	2	1	2	54	94%
CARS_DIESEL_HYBRID	0	2	1	0	0	0	0	0	3	6%
CARS_ELECTRIC	1	139	40	21	17	16	9	4	246	100%
CARS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
CARS_LPG	1	0	0	0	0	0	0	0	0	0%
CARS_LPG	0	29	5	7	4	4	3	4	56	100%
CARS_PETROL	1	42602	13849	7184	5683	5916	4259	3381	82874	94%
CARS_PETROL	0	2727	887	460	364	379	273	216	5306	6%
CARS_PETROL_HYBRID	1	1626	408	161	108	125	87	66	2581	100%
CARS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
HGV_ARTIC	1	510	78	27	18	10	8	7	658	90%
HGV_ARTIC	0	59	9	3	2	1	1	1	76	10%
HGV_RIGID	1	932	239	85	53	59	28	9	1405	79%
HGV_RIGID	0	252	65	23	14	16	7	3	380	21%
LGVS_DIESEL	1	5763	1901	953	772	896	490	326	11102	55%
LGVS_DIESEL	0	4666	1540	772	625	726	397	264	8989	45%
LGVS_ELECTRIC	1	18	4	9	6	3	3	1	44	100%
LGVS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
LGVS_LPG	1	0	0	0	0	0	0	0	0	0%
LGVS_LPG	0	5	4	2	1	0	0	1	13	100%
LGVS_PETROL	1	140	37	21	11	5	7	5	225	94%
LGVS_PETROL	0	9	2	1	1	0	0	0	14	6%
LGVS_PETROL_HYBRID	1	2	2	2	2	2	0	0	10	100%
LGVS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
MINIBUSES_DIESEL	1	111	42	18	18	36	9	6	240	55%
MINIBUSES_DIESEL	0	90	34	14	14	30	7	5	194	45%
MINIBUSES_PETROL	1	10	1	0	1	0	0	0	12	94%
MINIBUSES_PETROL	0	1	0	0	0	0	0	0	1	6%
MOPEDS	1	162	37	16	6	8	1	1	230	97%
MOPEDS	0	4	1	0	0	0	0	0	6	3%
MOTORCYCLES	1	557	71	34	28	11	7	3	709	93%
MOTORCYCLES	0	41	5	2	2	1	0	0	53	7%
TAXIS_DIESEL	1	40	30	26	36	55	106	340	633	68%
TAXIS_DIESEL	0	19	14	13	17	26	51	161	301	32%
TAXIS_DIESEL_HYBRID	1	0	0	1	0	0	0	1	2	94%
TAXIS_DIESEL_HYBRID	0	0	0	0	0	0	0	0	0	6%
TAXIS_ELECTRIC	1	0	0	0	0	1	0	0	1	100%
TAXIS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
TAXIS_PETROL	1	2	1	2	0	3	14	24	46	100%
TAXIS_PETROL	0	0	0	0	0	0	0	0	0	0%
TAXIS_PETROL_HYBRID	1	2	0	3	1	4	5	20	35	100%
TAXIS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
Grand Total		96205	29976	14895	11721	12085	8715	7517	181114	

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c) Unique vehicle observations by day of survey – 2022 projection, based on cameras in Portsea Island CAZ

Vehicle Type	Compliance	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Avg
BLACK_CAB	1	3	4	4	6	6	6	9	6
BLACK_CAB	0	3	5	5	7	7	7	9	6
BUSES & COACHES	1	228	251	223	257	177	189	236	223
BUSES & COACHES	0	27	30	26	30	21	22	28	26
CARS_DIESEL	1	15451	15801	15886	16498	14861	14026	15620	15449
CARS_DIESEL	0	15600	15953	16039	16658	15004	14162	15772	15598
CARS_DIESEL_HYBRID	1	26	28	25	35	26	25	29	28
CARS_DIESEL_HYBRID	0	2	2	2	2	2	2	2	2
CARS_ELECTRIC	1	124	115	124	128	89	87	136	115
CARS_ELECTRIC	0	0	0	0	0	0	0	0	0
CARS_LPG	1	0	0	0	0	0	0	0	0
CARS_LPG	0	33	31	36	34	26	22	33	31
CARS_PETROL	1	43930	44395	45104	46374	40428	37759	44868	43265
CARS_PETROL	0	2812	2842	2887	2969	2588	2417	2872	2770
CARS_PETROL_HYBRID	1	1092	1127	1143	1136	1018	1019	1132	1095
CARS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
HGV_ARTIC	1	612	621	686	637	316	232	573	525
HGV_ARTIC	0	71	72	80	74	37	27	67	61
HGV_RIGID	1	940	985	974	917	282	157	871	732
HGV_RIGID	0	254	266	263	248	76	42	235	198
LGVS_DIESEL	1	7070	7176	7187	7181	4198	3259	7003	6153
LGVS_DIESEL	0	5724	5810	5820	5814	3399	2638	5671	4982
LGVS_ELECTRIC	1	29	29	32	23	7	5	25	21
LGVS_ELECTRIC	0	0	0	0	0	0	0	0	0
LGVS_LPG	1	0	0	0	0	0	0	0	0
LGVS_LPG	0	8	7	6	9	6	6	6	7
LGVS_PETROL	1	109	112	109	127	95	89	137	111
LGVS_PETROL	0	7	7	7	8	6	5	8	7
LGVS_PETROL_HYBRID	1	9	4	9	7	0	0	7	5
LGVS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
MINIBUSES_DIESEL	1	134	138	138	138	65	61	129	115
MINIBUSES_DIESEL	0	108	111	112	112	53	49	105	93
MINIBUSES_PETROL	1	6	5	6	8	4	3	6	5
MINIBUSES_PETROL	0	0	0	0	1	0	0	0	0
MOPEDS	1	95	84	78	87	88	82	115	90
MOPEDS	0	3	2	2	2	2	2	3	2
MOTORCYCLES	1	268	251	244	278	208	259	307	259
MOTORCYCLES	0	20	19	18	21	15	19	23	19
TAXIS_DIESEL	1	546	546	555	563	535	509	559	545
TAXIS_DIESEL	0	259	260	264	267	254	242	266	259
TAXIS_DIESEL_HYBRID	1	2	2	2	1	1	1	2	1
TAXIS_DIESEL_HYBRID	0	0	0	0	0	0	0	0	0
TAXIS_ELECTRIC	1	1	1	1	1	1	0	1	1
TAXIS_ELECTRIC	0	0	0	0	0	0	0	0	0
TAXIS_PETROL	1	40	41	43	44	43	39	44	42
TAXIS_PETROL	0	0	0	0	0	0	0	0	0
TAXIS_PETROL_HYBRID	1	30	31	33	32	32	31	32	32
TAXIS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0
Grand Total		95676	97164	98173	100734	83976	77500	96941	92881

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No. of days Unique vehicle observed – 2022 projection, based on cameras in Portsea Island CAZ

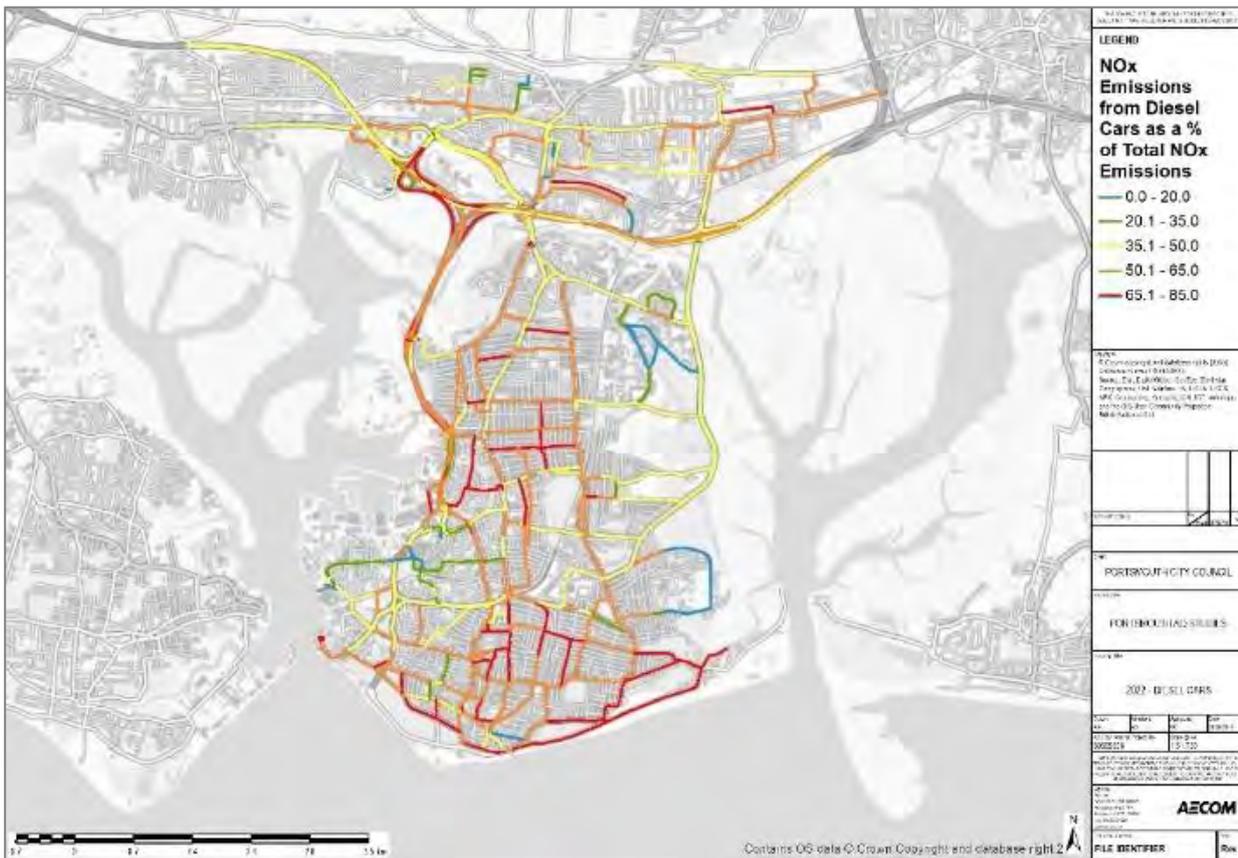
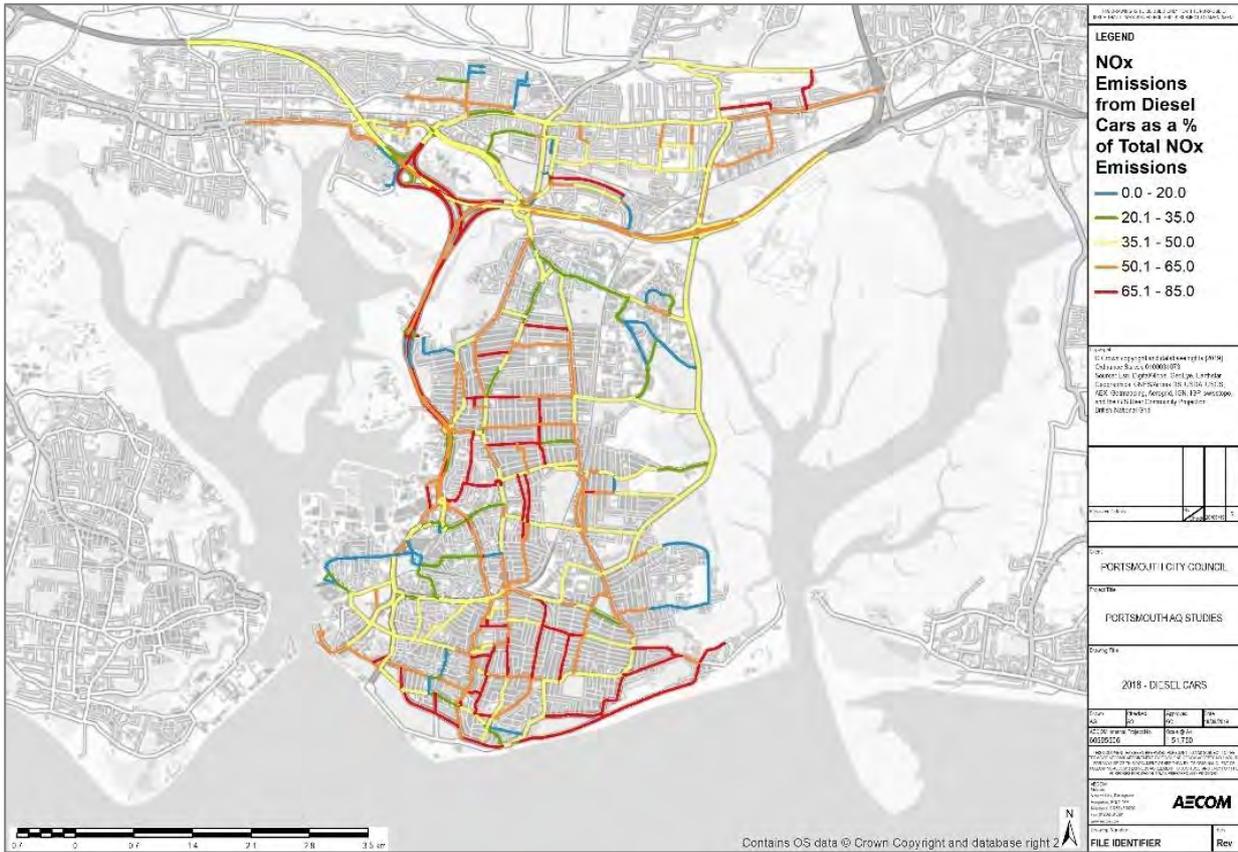
Vehicle Type	Compliance	1	2	3	4	5	6	7	Grand Total	Compliance/ NonCompliance Rate
BLACK_CAB	1	10	1	2	1	0	1	1	18	49%
BLACK_CAB	0	11	2	3	1	1	1	1	18	51%
BUSES & COACHES	1	235	75	33	32	43	56	56	532	89%
BUSES & COACHES	0	28	9	4	4	5	7	7	62	11%
CARS_DIESEL	1	21863	6444	3164	2587	2822	2733	3292	42905	50%
CARS_DIESEL	0	22074	6507	3194	2613	2849	2760	3323	43320	50%
CARS_DIESEL_HYBRID	1	46	14	5	7	3	6	5	84	94%
CARS_DIESEL_HYBRID	0	3	1	0	0	0	0	0	6	6%
CARS_ELECTRIC	1	174	62	23	22	22	14	22	339	100%
CARS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
CARS_LPG	1	0	0	0	0	0	0	0	0	0%
CARS_LPG	0	44	8	6	5	9	5	6	83	100%
CARS_PETROL	1	50712	16644	8801	7773	9349	8521	9070	110869	94%
CARS_PETROL	0	3246	1065	563	498	599	545	581	7098	6%
CARS_PETROL_HYBRID	1	2033	514	222	166	190	187	172	3484	100%
CARS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
HGV_ARTIC	1	1609	331	130	77	53	33	35	2269	90%
HGV_ARTIC	0	187	39	15	9	6	4	4	263	10%
HGV_RIGID	1	1704	424	165	129	214	60	19	2715	79%
HGV_RIGID	0	461	115	44	35	58	16	5	734	21%
LGVS_DIESEL	1	7863	2544	1355	1163	1655	1128	909	16617	55%
LGVS_DIESEL	0	6366	2059	1098	942	1340	913	736	13454	45%
LGVS_ELECTRIC	1	18	5	9	7	6	5	1	51	100%
LGVS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
LGVS_LPG	1	0	0	0	0	0	0	0	0	0%
LGVS_LPG	0	11	2	1	0	2	1	2	19	100%
LGVS_PETROL	1	221	52	34	20	16	19	11	373	94%
LGVS_PETROL	0	14	3	2	1	1	1	1	23	6%
LGVS_PETROL_HYBRID	1	3	2	1	4	2	0	0	12	100%
LGVS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
MINIBUSES_DIESEL	1	145	44	29	27	47	11	11	313	55%
MINIBUSES_DIESEL	0	117	35	23	21	38	9	9	253	45%
MINIBUSES_PETROL	1	13	6	1	1	0	1	0	22	94%
MINIBUSES_PETROL	0	1	0	0	0	0	0	0	1	6%
MOPEDS	1	241	57	30	17	11	6	4	365	97%
MOPEDS	0	6	2	1	0	0	0	0	10	3%
MOTORCYCLES	1	890	141	65	40	25	13	12	1186	93%
MOTORCYCLES	0	66	10	5	3	2	1	1	88	7%
TAXIS_DIESEL	1	39	22	24	29	47	94	393	647	68%
TAXIS_DIESEL	0	19	10	11	14	22	44	186	307	32%
TAXIS_DIESEL_HYBRID	1	0	0	0	1	0	0	1	2	94%
TAXIS_DIESEL_HYBRID	0	0	0	0	0	0	0	0	0	6%
TAXIS_ELECTRIC	1	0	0	0	0	0	1	0	1	100%
TAXIS_ELECTRIC	0	0	0	0	0	0	0	0	0	0%
TAXIS_PETROL	1	2	1	0	2	3	6	33	47	100%
TAXIS_PETROL	0	0	0	0	0	0	0	0	0	0%
TAXIS_PETROL_HYBRID	1	3	0	2	2	1	4	25	37	100%
TAXIS_PETROL_HYBRID	0	0	0	0	0	0	0	0	0	0%
Grand Total		120478	37250	19065	16253	19441	17206	18934	248627	

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NOx emissions source apportionment (2018 and 2022)

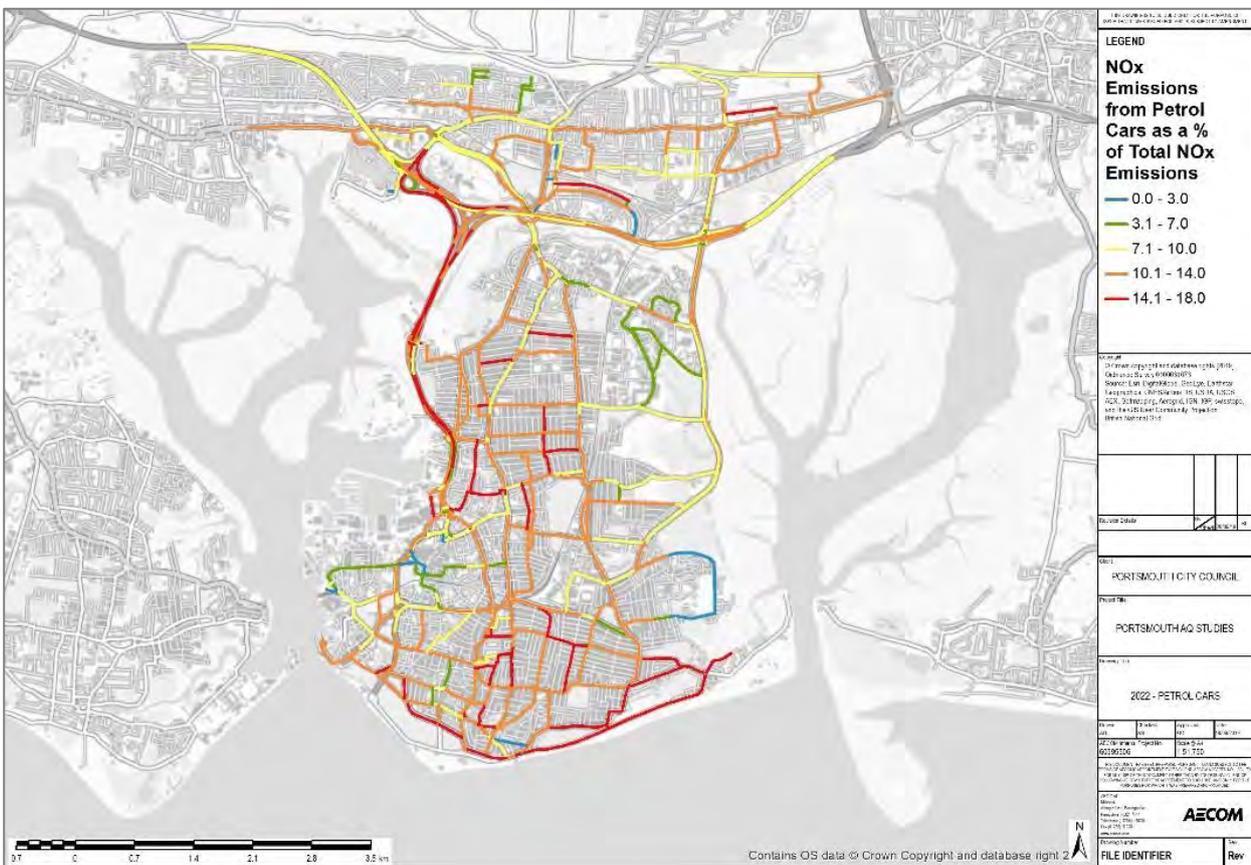
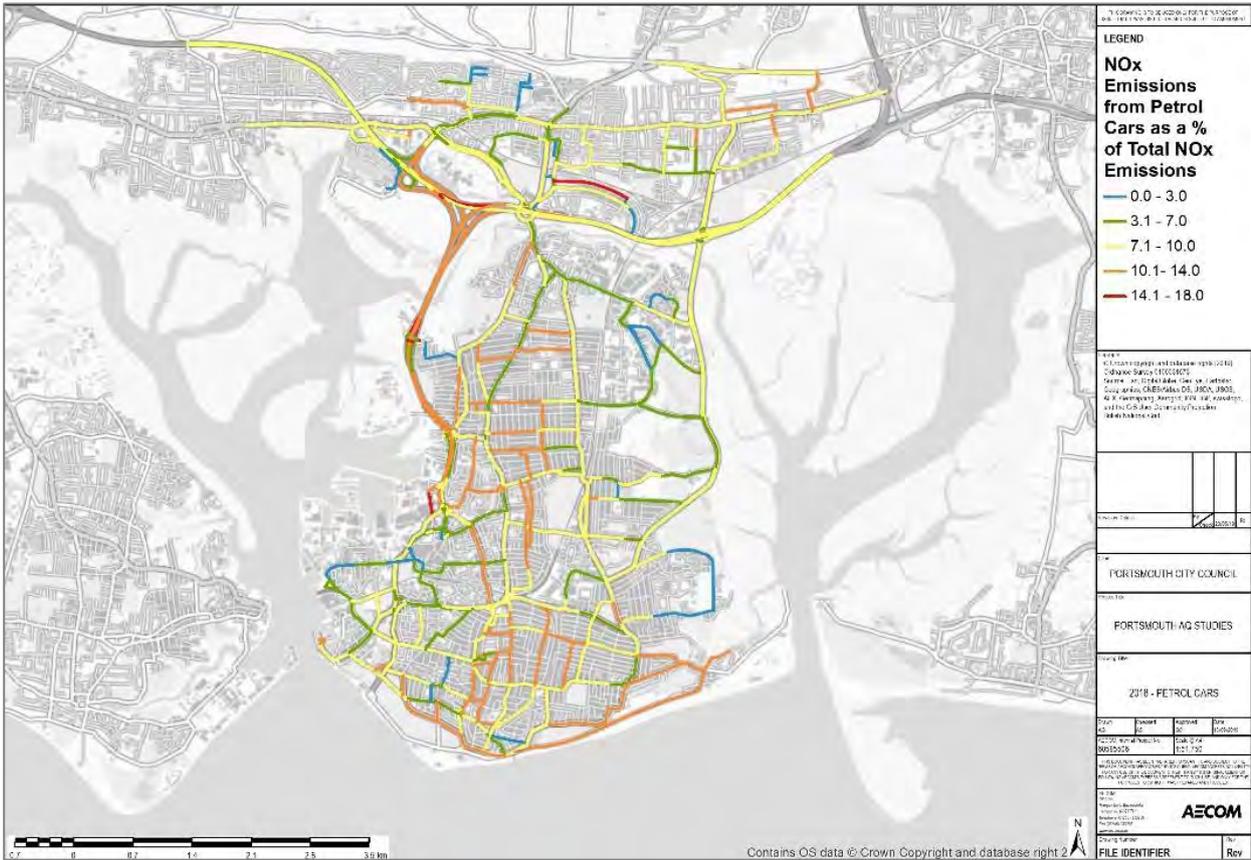
Figure A-8 Source of road NOx by vehicle type across Portsmouth

Diesel cars (2018, 2022)



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Petrol cars (2018,2022)



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Diesel LGVs (2018,2022)



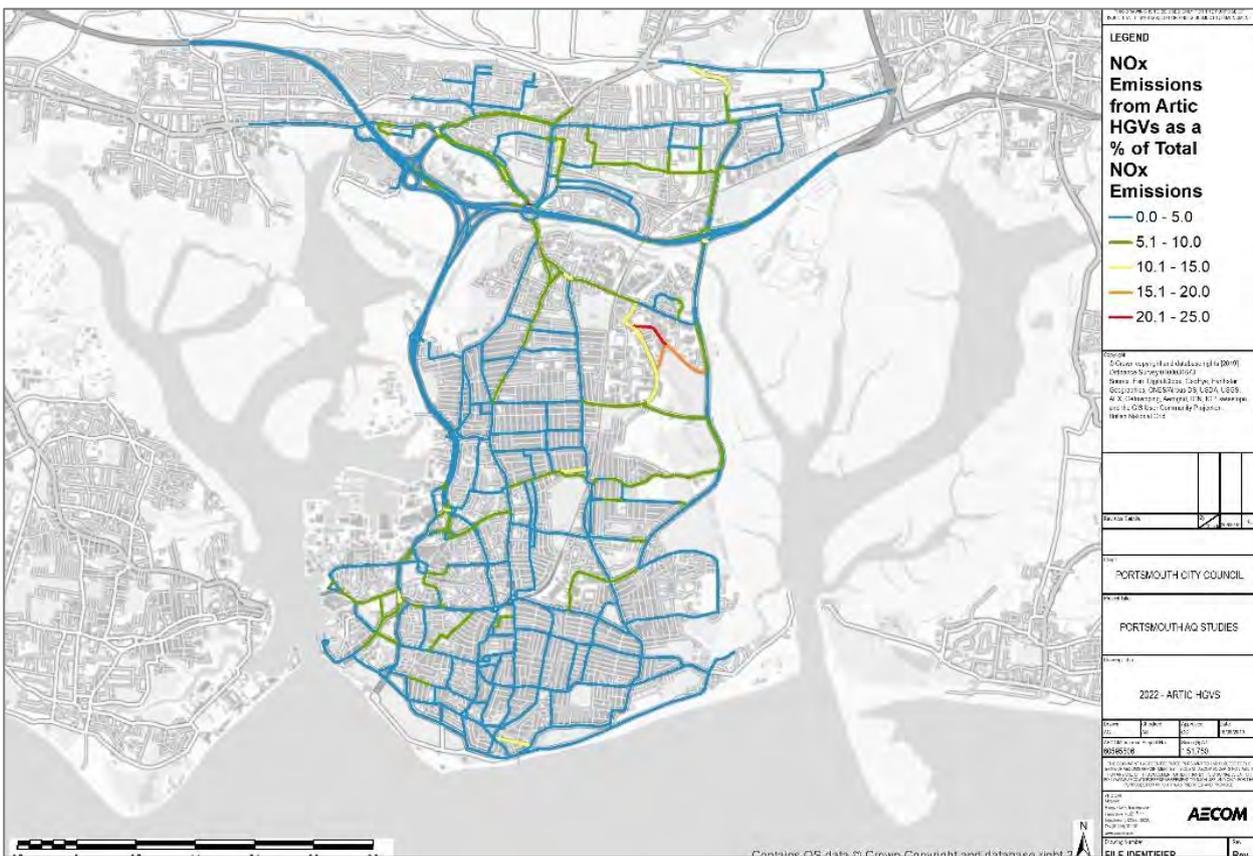
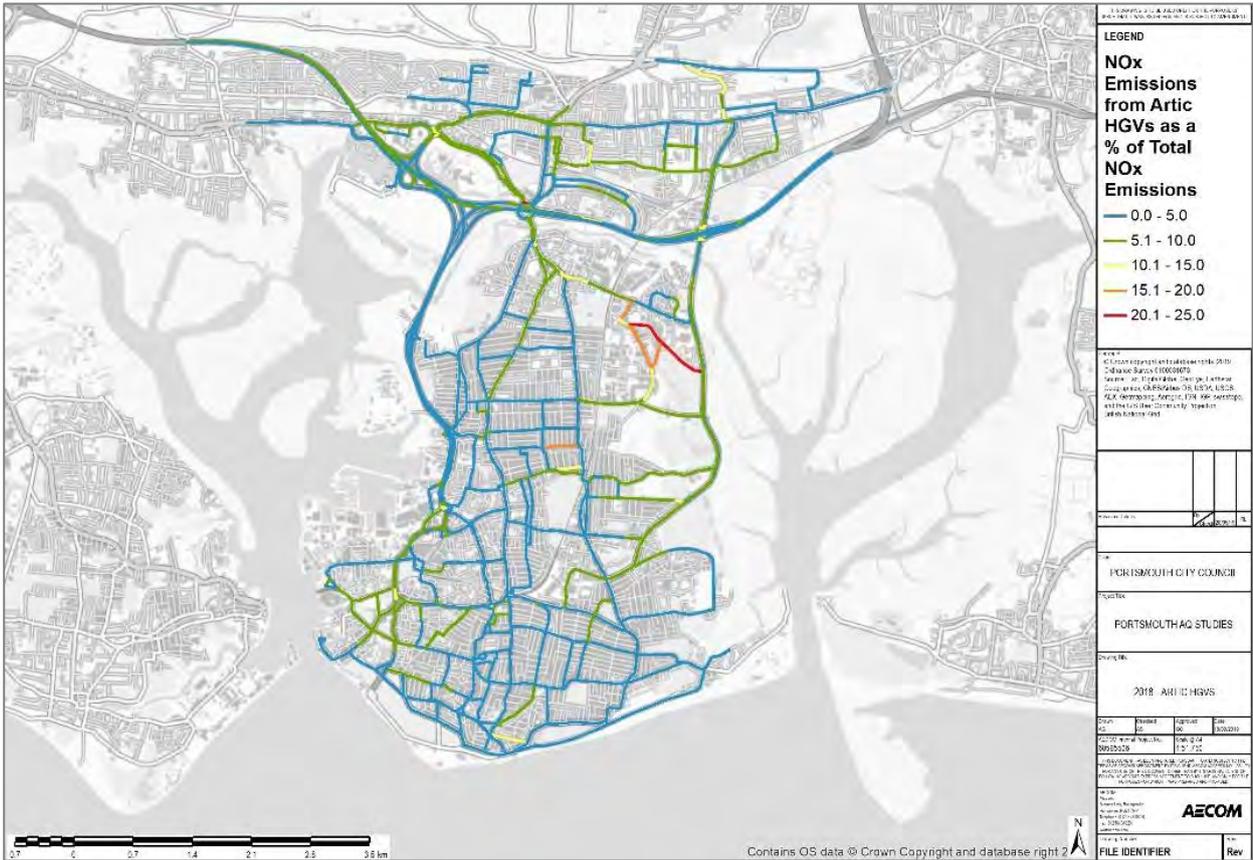
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Petrol LGVs (2018, 2022)



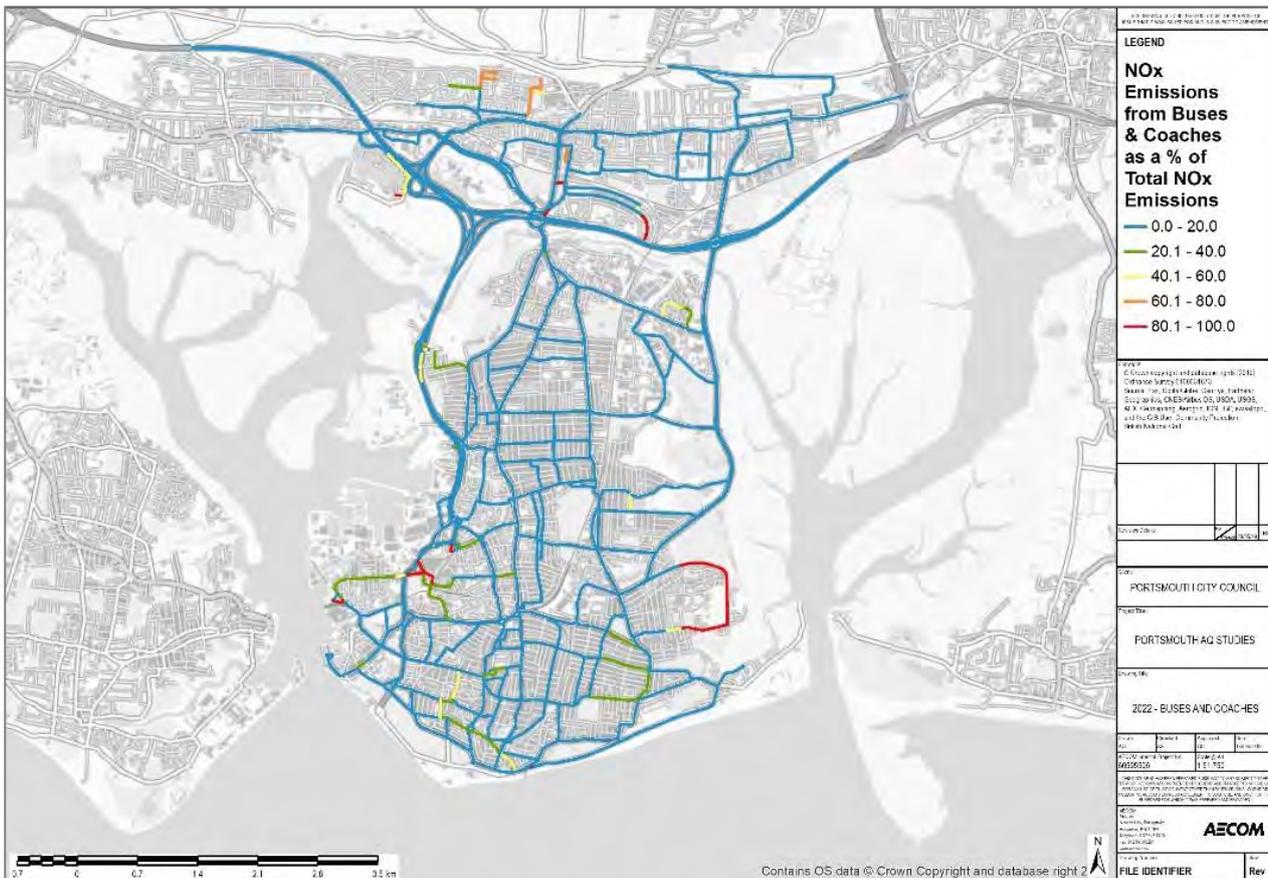
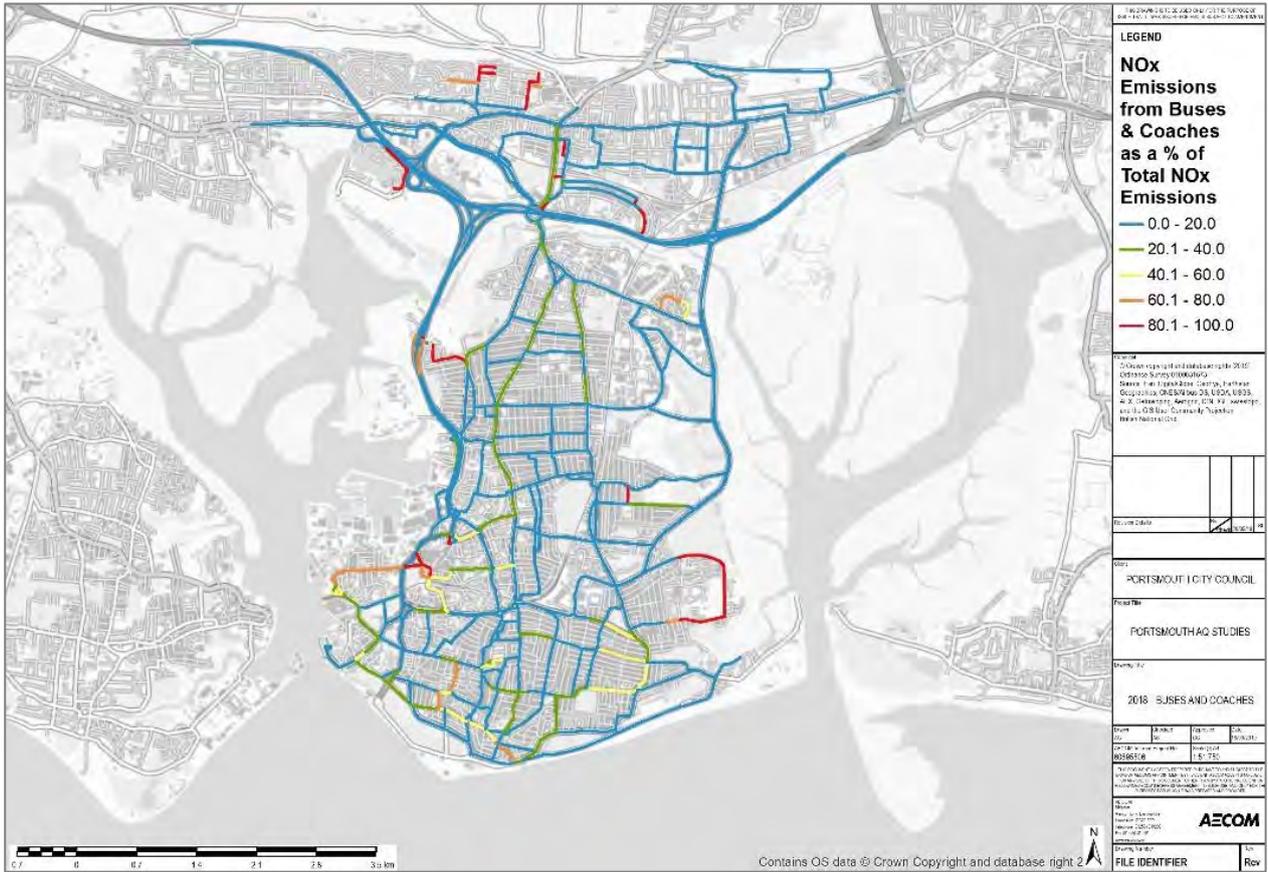
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Articulated HGVs (2018, 2022)



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Buses / coaches (2018, 2022)



Source: Modelled estimates based on ANPR data (March 2019, 7 days), and Emissions Factor Toolkit (v9.0). The results are unlikely to differ significantly from those based on the latest EFT.

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Registered location of compliant and non-compliant vehicles

Table A-7 Registered location of cars observed over seven days of ANPR survey

Region		Petrol		Diesel		Total	
		Compliant	Non-compliant	Compliant	Non-compliant	Compliant	Non-compliant
Portsmouth	Baffins Ward	51%	15%	7%	27%	58%	42%
	Central Southsea	49%	17%	7%	28%	56%	44%
	Charles Dickens Ward	47%	18%	7%	29%	53%	47%
	Copnor Ward	51%	15%	9%	26%	59%	41%
	Cosham Ward	50%	13%	9%	28%	59%	41%
	Drayton and Farlington Ward	53%	11%	10%	26%	63%	37%
	Eastney and Craneswater Ward	50%	17%	6%	27%	56%	44%
	Fratton Ward	46%	19%	5%	29%	51%	49%
	Hilsea Ward	50%	15%	7%	27%	57%	43%
	Milton Ward	49%	15%	8%	28%	57%	43%
	Nelson Ward	48%	17%	5%	29%	54%	46%
	Paulsgrove Ward	47%	14%	11%	29%	58%	42%
	St. Jude Ward	47%	18%	7%	28%	54%	46%
	St. Thomas Ward	47%	17%	7%	28%	54%	46%
Study area	Eastleigh	45%	8%	13%	34%	59%	41%
	East Hampshire	47%	9%	11%	33%	58%	42%
	Fareham	50%	9%	11%	30%	61%	39%
	Gosport	49%	11%	9%	31%	58%	42%
	Havant	47%	12%	9%	31%	57%	43%
	Isle of Wight	44%	13%	11%	33%	54%	46%
	New Forest	41%	9%	13%	37%	54%	46%
	Southampton	45%	10%	9%	35%	54%	46%
	Test Valley	48%	6%	16%	29%	65%	35%
	Winchester	44%	8%	13%	35%	57%	43%
External to study area	East	43%	10%	12%	35%	55%	45%
	North	41%	8%	16%	35%	57%	43%
	West	42%	9%	14%	35%	56%	44%
	Rest of UK	46%	9%	15%	30%	62%	38%
Average		47%	11%	11%	31%	57%	43%

The above table covers petrol and diesel cars with a valid registered postcode only. 'Other' fuel types have been excluded from the summary and represent a minor proportion of the total. Vehicle registration postcode was available to sector level. Postcode sectors were assigned to a study region dependent on where the majority of postcodes within each sector fall.

A.3.4. Site specific characteristics

Figure A-9 A3 Commercial Road (ID546, 538) – Looking north towards Church Street Roundabout

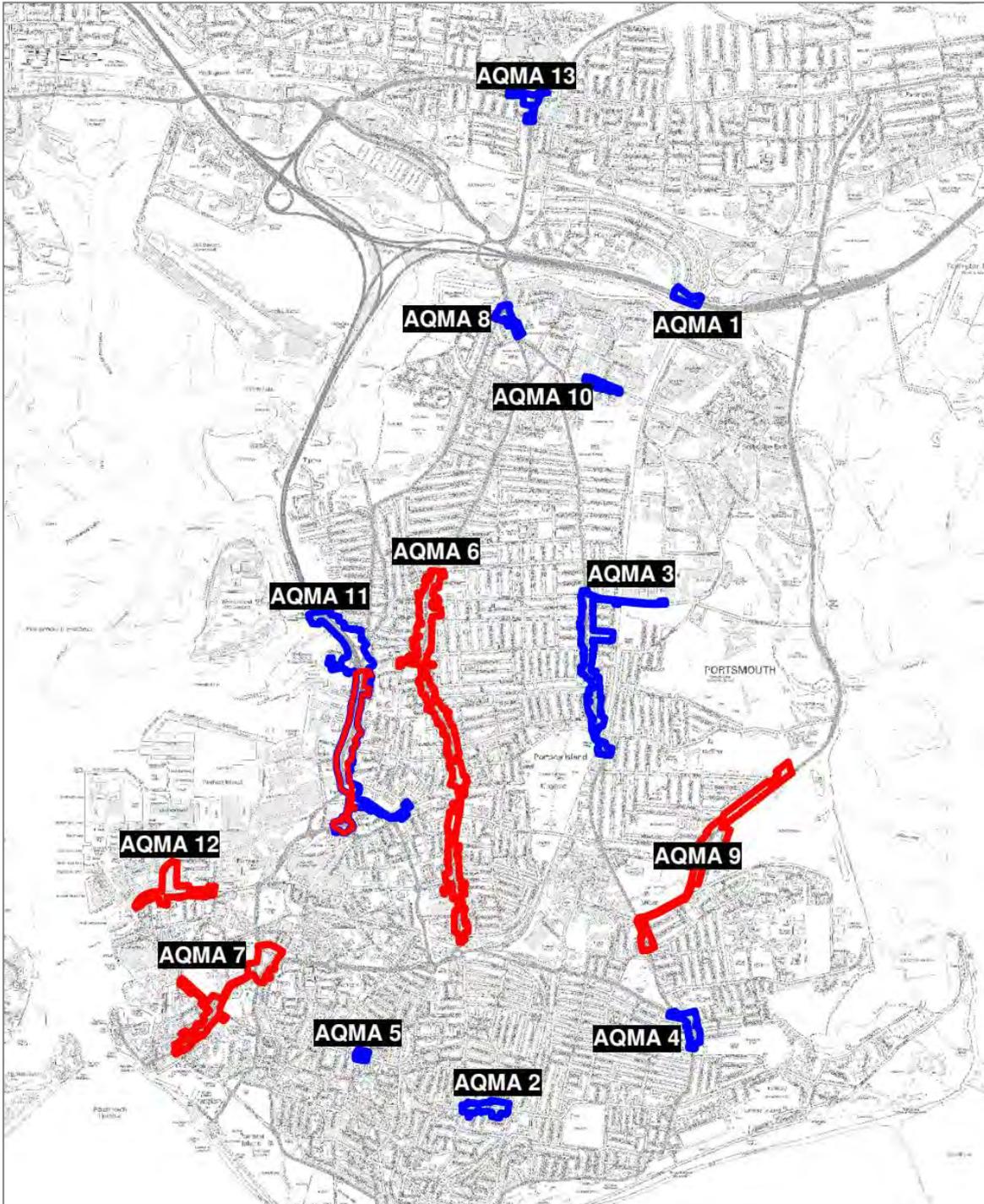


Figure A-10 A3 Alfred Road (ID573) – Unicorn Rd to Queen St (looking south towards junction)



A.3.5. Air Quality Management Areas in Portsmouth

Figure A-11 Locations of all AQMAs in Portsmouth (Blue: revoked, Red: retained)



<https://www.portsmouth.gov.uk/ext/documents-external/cmu-air-quality-map.pdf>

Appendix B. Summary of optioneering process to identify shortlist

B.1. Introduction

The Strategic Outline Case (SOC) (submitted January 2019) set out the process for identifying a long list of options (structured around the spending objectives / critical success factors), in order to identify a shortlist of better performing packages of options to take forward to Outline Business Case (OBC). This section summarises the process and reviews the short list in the context of the current understanding of the Strategic Case, as set out in this OBC.

B.2. Identification of long list for the SOC

In line with the Green Book recommended approach to developing policy options, a long list of options was identified based around the following framework (and evidence available at the time):

- Scope options – Potential interventions should meet the following criteria:
 - City-wide focus, but with targeted focus on exceedance areas (reflecting the island geography of the city with only three roads linking to the mainland and significant potential for displacement of emissions);
 - Targeting all vehicles (especially the most polluting vehicles); and
 - Targeting all day / all-purpose trips (but with a particular focus on peak period trips, where appropriate).
- Service solution options – A long list of 64 options was generated comprising individual policies and interventions which could potentially address the problems, issues, and scope identified; structured around the following themes identified in the logic map prepared as part of the SOC Strategic Case chapter:
 - Charging Clean Air Zone (CAZ);
 - Measures to reduce private vehicle use (including reducing the need to travel);
 - Road network changes and traffic management measures to reduce traffic flow / congestion;
 - Measures to re-time vehicle trips;
 - Measures to encourage use of cleaner vehicles and more sustainable driving (to reduce tailpipe emissions);
 - Measures to encourage mode shift to sustainable modes (including reducing the need to travel);
 - Communications and marketing; and Other.

The list was based on:

- suggestions put forward by local authority officers and members at a workshop for the Targeted Feasibility Study in August 2018;
- a review of options considered by other local authorities developing Air Quality Local Plans, and other examples of best practice;
- a review of the problems and issues and scope identified, and recent policy developments in Portsmouth, to identify any gaps.

An initial sift was undertaken in order to sift out options which:

- are unlikely to improve air quality;
- are unlikely to be deliverable in the required timescale;
- are not considered technically feasible, deliverable under current legislation, or would be seen as wholly unacceptable by stakeholders.

As a result, 10 schemes were rejected, leaving a long list of 55 for further consideration. See Table E1 in the Strategic Outline Case, for more information.

- Service delivery options – Options relating to who will deliver the local plan:
 - Fully delivered in house by local authority;
 - Fully delivered by external consultant; and
 - Some elements delivered by each.
- Funding options – Options around who will provide the funding required to deliver the plan:
 - Public funding only;
 - Public funding with substantial private funding support for non-charging measures; and
 - Public funding with private partners sought where possible.

B.3. Assessment of sifted long list for the SOC

The options in the sifted long list were assessed in two stages:

- firstly considering the potential of each option to achieve or contribute (as part of a package) to compliance in the shortest possible time (Primary Critical Success Factor); and
- secondly considering how each option performs in terms of strategic fit, value for money, distributional impacts, commercial delivery, affordability, and achievement issues (Secondary Success Factors).

B.3.1. Multi-criteria analysis framework

The analysis used to undertake this assessment is set out in Table B-1.

Figure B-1 Multi-criteria analysis framework used for SOC

Criteria	Description / consideration	Scoring
Primary Critical Success Factor		
Compliance	a) Does the option allow PCC to achieve NO ₂ compliance in the shortest possible time? <i>At the time it was expected that the earliest possible time a charging CAZ could be implemented would be within 12-18 months of the delivery of the business case in October 2019, which would be in 2021. Further work around the programme has indicated that the earliest date for implementing a CAZ is late 2021, with compliance expected in 2022.</i> b) Does the option allow PCC to achieve NO ₂ compliance in the shortest possible time, if combined with other options? <i>Options which meet this criterion, but not criterion (a) should be packaged with other options and re-assessed.</i>	Scored as Pass or Fail. Only options that 'pass' to be taken forward for further consideration.
Secondary Critical Success Factors		
Local objective	a) Does the option reduce emissions on identified links, without significantly worsening emissions elsewhere (for example, due to displacement of traffic to alternative routes)?	Score using a 5 point scale.
Strategic fit	a) Does the option promote economic growth, reduce levels of social deprivation, and/or encourage sustainable and active travel?	Score using a 5 point scale.

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Value for money	<p>a) Do the likely benefits of this option exceed the costs?</p> <p>b) Has the option been designed to deliver effectively while maximising benefits and minimising cost?</p> <p><i>At the time of the SOC there was felt to be insufficient evidence or information to make a meaningful assessment of value for money. Instead value for money has been assessed as part of the Outline Business Case.</i></p>	Score using a 5 point scale.
Distributional impacts	<p>a) Does the option significantly affect one or a number of particular groups of stakeholders (in a transport context)?</p> <p>b) Is there potential to insure some groups against the detrimental impacts of an option?</p> <p><i>The locations with the highest NO₂ emissions are in areas with high levels of deprivation and high proportions of children, people with disabilities, and non-white ethnicity. All options which score strongly against the compliance objective are assumed to result in positive health benefits for these groups. This assessment therefore focuses on other distributional impacts.</i></p>	Score using a 5 point scale.
Supply side capacity and capability	<p>a) Are there capable contractors available to provide the required services?</p> <p>b) Is there a sufficiently well-developed market to support the efficient delivery of the option?</p> <p>c) Who will deliver this solution (LA, external party, or both), and who will lead organisation for the delivery of this option?</p> <p><i>Options which PCC have experience in delivering and a clear route to procurement score most highly. Those which require third parties to lead delivery (e.g. business, transport operators, etc.) are scored less favourably.</i></p>	Score using a 5 point scale.
Affordability	<p>a) Is the option likely to be affordable in both the short and long run in comparison to other options considered?</p> <p>b) How will this option be funded (public, private or mix of funding sources)?</p> <p><i>Options categorised using the nominal monetary value bandings.</i></p>	Score using a 5 point scale.
Achievability	<p>a) Can it be delivered on a local scale / in the local context?</p> <p>b) Given market limitations, are adequate resources available (currently or can be obtained in sufficient time) to manage and implement such an option successfully?</p> <p>c) Is it based on proven / existing technology?</p> <p><i>Conventional options with low deliverability risks have been scored most highly. Options requiring extensive mitigation, likely to require challenging consultation and engagement to secure political and public support, where there are limited applications of the intervention to date, or where PCC have limited ability to influence the extent to which the intervention is successfully delivered are scored less favourably.</i></p>	Score using a 5 point scale.

The primary CSF was scored using a pass/fail score as recommended by JAQU. The secondary CSFs were scored using a five-point scale (+2 to -2, where +2 represents the most positive

assessment and -2 represents the least positive assessment), with key metrics and statistics used as a guide to support the scoring where possible.

B.3.2. Compliance (and local objective) assessment

In order to determine the relative performance of options in achieving compliance in the shortest possible time, each option was assessed against the following sub-criteria:

- delivery timescales, where the Charging CAZ benchmark was assumed to be 12-18 months (at the time of the SOC);
- potential scale of NO₂ 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 AQMAs (reflecting the local objective).

Options which will take more than 24 months were assumed to have failed in the context of the Primary Critical Success Factor, and were not taken forward for further assessment against the Secondary Critical Success Factors. Schemes assessed as taking 18-24 months to deliver were retained, as further investigation may conclude that the intervention can be delivered within a similar or shorter time to a Charging CAZ.

It was acknowledged that many of the options would have a low impact if implemented on their own but are likely to be effective if implemented as part of a package of measures. Options which scored less favourably than a Charging CAZ in terms of 'potential scale of NO₂ reduction' were therefore retained and taken forward for assessment against the Secondary Critical Success Factors and subsequent packaging as part of the short listing process.

See Table E2 in the Strategic Outline Case, for assessment evidence.

B.3.3. Secondary critical success factor assessment

In order to determine the relative performance of options in achieving compliance in the shortest possible time, each option was assessed against the following sub-criteria:

- Strategic case
- Supply side capacity and capability
- Affordability
- Achievability

At this stage (SOC) there was felt to be insufficient evidence or information to make a meaningful assessment of value for money.

See Table E3 in the Strategic Outline Case, for assessment evidence.

B.4. Shortlisted options and packages for SOC

The SOC submitted in January 2019 identified a Benchmark Charging Clean Air Zone (CAZ) option and three non charging air quality improvement package options as summarised in Table B-2.

CAZ Benchmark - A Class B CAZ (focused on Portsea Island) was selected as the benchmark option at this stage. The emissions source apportionment data available at the time suggested that

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buses, coaches and HGVs combined make a significant contribution to emissions on the exceedance links, particularly the A2047 where the exceedances are greatest. Although the specific emissions impact of taxis was not available at the time, their volumes were known to be high on the A3 and A2047. Therefore, on the basis of evidence available at the time, the view was taken that a Class B CAZ has the potential to bring forward compliance to the earliest possible date.

Non-charging options – Evidence available at the time suggested that the most effective non-charging interventions were focused around traffic management measures on the A2047 (London Road), junction improvements on A3, and use of cleaner buses. However, they would only be successful with modal shift and cleaner vehicle uptake and so these relevant supporting measures were also brought forward as part of the package approach.

The three non-charging packages identified each included a major traffic management measure on London Road (the location with the highest exceedance at the time), supported by a range of complementary measures.

Figure B-2 Shortlisted package options for SOC

Proposed packages		Comprising long list measures	Estimated delivery timescale
1	Charging Clean Air Zone	Citywide, Class B Charging CAZ	12 to 18 months
2	Ban traffic except buses and cycles between Stubbington Avenue and Kingston Crescent with complementary traffic management and junction improvements at other key locations and the promotion of modal shift and uptake of cleaner vehicles.	B11, B21, B6, D8, D10, D11, D2, D3, E1, E7, D12, E2, F1, E12, D1, A6, D13, A8, E3, E4, A9, E9, E11	12 to 18 months
3	Ban traffic except buses, taxis and cycles between Stubbington Avenue and Kingston Crescent with complementary traffic management and junction improvements at other key locations and the promotion of modal shift and uptake of cleaner vehicles.	B12, B21, B6, D8, D10, D11, D2, D3, E1, E7, D12, E2, F1, E12, D1, A6, D13, A8, E3, E4, A9, E9, E11	12 to 18 months
4	One-way system on London Road between Stubbington Avenue and Kingston Crescent with complementary traffic management and junction improvements at other key locations and the promotion of modal shift and uptake of cleaner vehicles.	B13, B21, B6, D8, D10, D11, D2, D3, E1, E7, D12, E2, F1, E12, D1, A6, D13, A8, E3, E4, A9, E9, E11	12 to 18 months

Key for long list measures:

Intervention option	
B11	Ban traffic except buses and cycles between Stubbington Avenue and Kingston Crescent during all or part of the day (AQMA6)
B12	Ban traffic except buses, taxis (but not private hire vehicles), cycles between Stubbington Avenue and Kingston Crescent during all or part of the day (AQMA6)

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Intervention option	
B13	One-way system on London Road between Stubbington Avenue and Kingston Crescent during all or part of the day (AQMA6)
B21	Time restrictions on deliveries on London Road (AQMA6)
B6	Change traffic priorities at Unicorn Gate Junction, with bus priority on Queen Street (Road Link 18114, A3 Alfred Road)
D8	Retrofitting buses on A2047 routes to Euro 6 standards
D10	Encourage use of lower emission taxis through incentives / review and update existing taxi licensing policies
D11	Introduce charging points for taxis
D2	On-street charging points in residential areas
D3	Public charging points in the city centre
E1	Workplace Travel Planning (including Workplace Sustainable Travel Fund; personal journey planning; cycle training; Bike Doctor; promotional activities; encourage flexible working; etc.)
E7	Promotion of Portsmouth Park & Ride amongst commuters
D12	Encourage use of lower emission vehicles for business fleets (HGV / LGV fleets) – through subsidies and promotional campaigns
E2	School Travel Planning (including travel to school initiatives; pedestrian, cycle and scooter training; parking for cycles and commuters; promotional activities; etc.)
F1	Targeted communications and marketing
E12	Improve cycling and walking facilities (e.g. cycle lanes, secure cycle storage, safe crossings, etc.)
D1	Anti-idling campaign
A6	Advance and real time (social and conventional media, VMS) messaging to discourage driving on days of high pollution and incentivise alternative behaviour
D13	Eco-driver training for businesses (wide scale / intensive application)
A8	Introduce car clubs and car hire schemes (using low emission vehicles) in exceedance areas, with subsidised hire rates
E3	Personal Journey Planning for residents (and as associated incentives to develop and promote walking and cycling)
E4	Promote easitNETWORK and easitSHARE (easitPORTSMOUTH)
A9	Scrappage scheme for the most polluting vehicles
E9	Improve bus connectivity
E11	Mobility as a Service (MaaS)

B.5. Review of options and packages for OBC

The SOC shortlist has been re-assessed following the submission of the SOC, to take into account the current understanding of exceedances across the city, their underlying causes, and emerging evidence on the likely effectiveness of different solutions.

The process has been based on the following activities:

- A PCC workshop with officers to discuss further options
- Input from the Air Quality Stakeholder Group and the Air Quality Project Board
- Inputs from Members
- Initial modelling of traffic and emissions impact, prior to detail transport and air quality modelling*
- Further research and data collection relating to the various options.

**Early option development has been informed by an emissions spreadsheet model. This uses traffic flow and speed output by vehicle type, time period and link from the Sub-Regional Transport Model (SRTM) in conjunction with the local fleet composition and emissions factors from the latest Emissions Factor Toolkit (EFT, as used in the air quality modelling) to estimate NOx emissions on each link for the baseline and early modelled scenarios (such as London Road closure). This has allowed the scale of impact of the modelled measures to be assessed in terms of percentage change of NOx emissions on the links nearest to each exceedance location to provide an indication of the extent to which the measure might contribute to reducing the exceedance (recognising that the link between NOx emissions and NO2 concentration is not linear). The spreadsheet also enables simple tests of the impact of measures relating to changing fleet composition, such as a indicative representations of CAZ options (by removing the relevant proportion of trips to reflect cancelled or avoided trips and changing the fleet composition to represent the upgrade effect).*

As the focus of the emissions spreadsheet is on percentage changes in emissions, 2026 SRTM model runs only were used at this stage (with 2021/2022 fleet mix). This approach was considered proportionate for this stage of the process as the production of 2022 flows would have involved the modelling of 2 years (2019 and 2026) and interpolation.

This process has resulted in the following revised shortlist of options for further consideration (Table B-3).

Table B-4 (at the end of this section) provides details of the full long list (as updated for the OBC, including a number of new or refined options), and the evidence used to produce the revised short list.

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Figure B-3 Shortlisted package options for OBC (based on high level assessment)

(Complementary or mitigation measures are underlined, potential package (abatement) options are in **bold**)

ID	Description	OBC status
Charging Clean Air Zone		
CAZ B	Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches, and HGVs on Portsea island.	Potential package component.
CAZ C	Targeting taxis and Private Hire Vehicles (PHVs), buses and coaches, HGVs, LGVs on Portsea Island. Higher charges for buses and HGVs.	Expected Benchmark CAZ.
CAZ ? Small Area	CAZ B or C, focused on City Centre area only	Potential package component.
CAZ ? (Ext/int trips only)	Portsea Island CAZ B or C, focused on int/ext trips only (i.e. exempting local trips)	Potential package component.
A. Measures to reduce private car use		
A1	Increase car-parking charges to discourage car use	Potential package component to encourage mode shift.
A2	Reduce number of car parking spaces to discourage car use	Potential package component to encourage mode shift.
<u>A4</u>	Increase on-street parking charges for residents (or vary charges based on vehicle emissions) to discourage car ownership or purchase of a cleaner vehicle	Potential complementary measure to discourage car ownership or use of a cleaner vehicle amongst Portsea Island residents. (See also D7)
<u>A6</u>	Advance and real time (social and conventional media, VMS) messaging to discourage driving on days of high pollution	Potential complementary measure to raise awareness and change behaviour.
<u>A8</u>	Introduce car clubs and car hire schemes (using low emission vehicles) in exceedance areas, with subsidised hire rates. To discourage car ownership and use	Potential complementary measure to discourage car ownership (but most effective as potential CAZ D mitigation measure).
<u>A10</u>	Mobility credit scheme - Provision of 'mobility credit' in return for giving up car use i.e. credit for use on other modes of transport or low emission car club cars	Potential complementary measure to discourage car ownership (but most effective as potential CAZ D mitigation measure).
B. Road network Measures to reduce private car use		
B6	Change traffic priorities at Alfred Road / Queen Street (Additional green time to s/bound movements from Alfred Road to Queen Street)	Potential package component (as a temporary measure, prior to introduction of additional bus priority measures as part of the proposed SE Hants Rapid Transit (TCF bid)
B22b	Rapid transit - Full TCF proposal for sub-region	Potential medium term solution (i.e. post 2022), subject to securing funding (i.e. sensitivity test).
D. Measures to encourage use of cleaner vehicles and more sustainable driving (to reduce tailpipe emissions)		
<u>D1</u>	Anti-idling campaign	Potential complementary measure to raise awareness and change behaviour.
<u>D7</u>	Discounted charges for residents on-street parking permits for low emission vehicles (vary charges based on vehicle emissions)	Potential complementary measure to discourage car ownership or use of a cleaner vehicle amongst Portsea residents. See also A4.

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<u>D9</u>	Support to convert buses to lower emission fuels (including hybrid buses, biofuel powered buses, and electric buses, as an alternative to petrol and diesel)	Potential complementary measure (based on operator commitment, subject to securing TCF funding for rapid transit proposals – medium term measure). See B22b.
D10,D11	Encourage use of lower emission taxis through incentives and tightening of existing licensing policies. Introduce charging points for taxis	Potential package component or potential CAZ mitigation measure
D12	Encourage use of lower emission vehicles for business fleets (HGV / LGV fleets)	Options being developed as part of Solent Mobility Zone Bid
<u>D13</u>	Eco-driver training for businesses	Potential complementary measure
E. Mode shift to sustainable modes		
<u>E1</u>	Workplace Travel Planning	Potential complementary measure to raise awareness and change behaviour
<u>E2</u>	School Travel Planning	Potential complementary measure to raise awareness and change behaviour
<u>E3</u>	Personal Journey Planning for residents	Potential complementary measure to raise awareness and change behaviour
<u>E4</u>	Promote easitNETWORK and easitSHARE	Potential complementary measure to raise awareness and change behaviour
<u>E7a</u>	Promotion of Portsmouth Park & Ride amongst commuters	Potential complementary measure (most effective if combined with a CAZ D or significant parking restraint in city centre / The Hard area)
<u>E9b</u>	Contactless payment	Potential complementary measure to encourage mode shift (as part of TCF Tranche 2 bid). See B22b.
<u>E11</u>	Mobility as a Service (MaaS)	Potential complementary measure to encourage mode shift (part of Solent Mobility Zone bid).
E12	Improve cycling and walking facilities (e.g. cycle lanes, secure cycle storage, safe crossings, etc.)	Potential package component
F. Communications and marketing		
<u>F1</u>	Targeted communications and marketing	Potential complementary measure (an important element of any package of measures).
G. Other		
G2a	Freight consolidation measures (via Solent Consolidation Centre, and micro-trials)	Potential package component to reduce freight impact (part of Solent Mobility Zone bid).
G2b	Service and Delivery Plans	Potential package component to reduce freight impact (part of Solent Mobility Zone bid).
G3	Port-specific measures	Being considered further

Appendix C. Management Case Supporting Documents

C.1. Project Timetable

Separate Document

Appendix D. Engagement and Stakeholder Management

D.1. Communications and Engagement Plan

Separate document



Portsmouth
CITY COUNCIL

Air Quality
Communications and Engagement Plan
2019 - 2022

Version 0.1 Draft

Owner Lexa Wokersien, Communications and Engagement Officer
(Travel and transport)

Approved DATE by Air Quality Project Board

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Appendix A - Clean air zone consultation and implementation

Appendix B - Air pollution awareness campaign recommendations

Appendix C - Outline budget and resource

Revised versions

Version	Date	Approved by	Significant updates in revised version
1.0			NA

1.0 Background

- 1.1 The Air Quality Communications Plan is integral to Portsmouth City Council (PCC) delivering against the Ministerial Direction to produce an Air Quality Local Plan that delivers compliance with statutory annual legal limits for Nitrogen Dioxide (NO₂) in the shortest possible time.
- 1.2 Improving air quality is a key focus for the Council as highlighted by one of the Council's five priorities that states we will "Make our city cleaner, safer and greener." One aspect of this is further defined as "Improving air quality by tackling congestion and parking issues, and by encouraging more people to walk, cycle and use public transport, including park and ride".
- 1.3 Against this landscape of a clear focus of addressing the climate emergency, this communications plan will build on the past communications of air quality improvements in the city. In the past year communications activity has included:
 - Creating awareness of air quality improvements e.g. retrofitting bus's that travel within the exceedance areas
 - Anti-idling awareness raising campaign, Cough Cough engine off campaign
 - Encouraging the switch to Electric Vehicles with promotion of easy to use on street Charge Points (41 EV charge points are now installed in the city)
 - Creating awareness of infrastructure improvements that make it easier to choose active travel (E.g. First Tiger Crossing in the city)
 - Challenges for children that encourage active travel and awareness of healthier ways to travel (E.g. Summer challenge: Stomp for Stamps)
 - Support of national campaigns to create awareness e.g. clean air day
- 1.4 Further to this in March 2019, the council declared a climate change emergency. A leaflet was sent to every property in Portsmouth highlighting the concerns about the latest air pollution monitoring data whilst also highlighting that Governments approach is to require cities with exceedances to adopt a Clean Air Zone. Following this a survey was carried out to understand how this would impact the city and what would influence behavioural change.
- 1.5 The scene is now set to introduce the level of Clean Air Zone that is required by Government and implement additional measures that reduce air pollution in the shortest time.

2.0 Purpose

- 2.1 The purpose of this plan is to define the overarching air quality messages that will flow through all relevant communications, detail who needs to be informed, and recommend communications activities that will educate, create awareness and positive action. Note that as the climate change messaging is developed this will be an important part of the wider agenda.
- 2.2 The appendices propose an approach to the Clean Air Zone implementation that would be refined once a decision on the approach is made and the supporting air quality campaign that supports the wider issue of behaviour change and awareness.

3.0 Aim

- 3.1 The plan aims to help people make environmentally friendly and sustainable choices about how they get to their chosen destination by effectively communicating key messages through a variety of channels, events and activities that empower people to make informed decisions, whilst also mitigating controversy around air quality improvement measures.

4.0 Objectives

- To encourage participation in the CAZ consultation
- To educate people about the CAZ, who's affected and how to travel within the zone without getting a penalty charge
- To inform individuals and businesses about the support available to them to switch to complaint vehicles or sustainable and active modes
- To convince people to take action that helps reduce air pollution
- To educate people on the health impacts of poor air quality
- To increase awareness of how city network and transport improvements contribute to reducing air pollution
- To inspire a shift to more active travel through fun activities and events
- To create awareness and inspire use of sustainable travel
- To build the councils reputation as a council that is taking the issue of air quality seriously whilst also recognising the potential economic impact on the city, Isle of Wight and surrounding area, creating awareness of support in place.

5.0 Partnership approach

- 5.1 The air pollution communications messaging will work hand in glove with communications from across the council in connection with Climate Change. The Cabinet member for Environment and Climate Change is the spokesperson climate change and therefore air quality.
- 5.2 All communications connected to health and wellbeing will be developed and supported by public health, with the Cabinet Member for Public Health as spokesperson for the health impacts and the benefits of active travel.
- 5.3 All Travel and Transport communication with an air quality benefit will include messaging and Cabinet Member for Traffic and Transportation as spokesperson.
- 5.4 A number of groups have been established that are essential in assisting with the development of communications as well as ensuring all key stakeholders have a voice. These include:
 - Cross party working group with all parties invited to ensure all elected individuals are regularly updated on developments with our work to improve air quality in the city
 - Air Quality steering group includes key stakeholders from across the city
 - Air Quality Project Board meets monthly. This is the decision making body for our air quality Local Plan

6.0 Overall messages

- 6.1 Reducing air pollution in Portsmouth is essential to the health and wellbeing of everyone, and the ecosystems that rely on clean air.
- 6.2 Air pollution, specifically Nitrogen Dioxide (NO₂), is caused by a number of factors; the most significant contributor in Portsmouth is emissions from road transport.
- 6.3 Portsmouth City Council is taking action to help people choose cleaner greener ways to travel to their chosen destination, and together we will improve our city's air quality.
- 6.4 To address the air quality issue in the shortest possible time, it is proposed to introduce a Class B Clean Air Zone, along with additional supporting measures. Modelling has indicated that this approach would achieve citywide compliance by 2022.
- 6.5 The charging clean air zone is only a small part of the solution to addressing air pollution in the city, and should not be considered in isolation.

7.0 Message detail

- 7.1 Message 1: Reducing air pollution in Portsmouth is essential to the health and wellbeing of everyone, and the ecosystems that rely on clean air.
- Poor air quality can affect health at all stages of life. Those most affected are the young, old and those with pre-existing conditions.
 - There is no safe level of exposure to air pollution, and that is why the Council will strive for continuous improvement in air quality, beyond the requirements of the Ministerial Direction issued to PCC in October 2018.
 - Conditions caused or exacerbated by air pollution include asthma, chronic bronchitis, chronic heart disease (CHD), and strokes. These conditions significantly reduce quality of life.
 - Over time, high levels of air pollution have a negative impact on plants and animals putting pressure on the natural habitat.
- 7.2 Message 2: Air pollution, specifically Nitrogen Oxide, is caused by a number of factors; the most significant contributor is older vehicles.
- There are 5 Air Quality Management areas currently in place within Portsmouth statutory boundary which were declared due to exceedances in air pollution. Whilst some of these areas are no longer in exceedance, they are being closely monitored. In addition to this DEFRA's modelling has predicted exceedances on Alfred Road and Mile End.
 - Over the past couple of years the council has increased its monitoring areas through the deployment of more NO₂ diffusion tubes
- 7.3 Message 3: Portsmouth City Council is taking action to help people choose cleaner greener ways to travel to their destination, and together we will improve our city's air quality.
- The Council significantly invests in infrastructure and offers people that visit, study, work or live in the city a variety of convenient ways to travel that reduce the impact on air pollution.
 - Improving infrastructure increases confidence in people to use active travel through the reduction of congestion and safer roads and junctions.
 - The Council has and is taking action by:
 - Thoroughly understanding and investigating the problem, to develop plans that will improve the problem for future generations.
 - Investing in infrastructure improvements that reduce congestion, making it safer to cycle and walk.
 - Investing in improvements to public transport to make it cleaner.
 - Encouraging active travel through fun events and competitions.
 - Making cycling safer in the city.
 - Encouraging drivers to switch their engines off when stationary.
 - Many of the everyday activities that create air pollution also increase personal exposure for ourselves and our families. You can take action by:
 - Choosing a cleaner journey – share a ride to work, cycle, or take the bus.
 - Combining errands for fewer trips and walk when possible.

- Avoiding excessive idling of your car by switching your engine off when you're stationary for a minute or so.
- Avoiding driving around looking for parking spaces.
- Choosing a petrol, hybrid or electric car when you need new wheels. You could start by taking one for a test drive.
- Finding out about the quieter cycle and walking routes to enjoy cleaner air.

7.4 Message 4: To address the air quality issue in the shortest possible time, the Council has identified actions that will achieve this by 2022 including, as required by Government, a Class B Charging Clean Air Zone.

- The council is taking this seriously and considering all options to improve air quality whilst also ensuring minimal impact on the economy where possible.
- The Government sets the legal limits we must comply with and impose the approach the city must take to address the issues.
- The council has modelled a variety of options for a Clean Air Zone and has identified that a Class B Clean Air Zone will achieve compliance in the shortest possible time and this will be included in the Local Air Quality Plan that will be submitted to DEFRA on 31st October for a decision on the approach and funding allocation..
- Alongside this the council is putting forward a number of non-charging measures that are essential to also improving public transport, supporting those impacted by paying for a clean air zone as well as continuing to encourage behavioural change.
- The council is also bidding for funding to support Rapid Transit improvements as well as making further improvements to the city that are council funded.

7.5 Message 5: The charging clean air zone is only a small part of the solution to addressing air pollution in the city, and should not be considered in isolation.

- The class B charging clean air zone levies a charge on certain non-compliant vehicle types; taxis and PHVs, buses, coaches and HGVs however it is acknowledged that private cars, which are not charged under a class B, are significant contributors to levels of air pollution in the city.
- The Council is working to address air pollution in the city and the wider climate emergency, and everyone has their part to play to create cleaner air in Portsmouth.

8.0 Audience

8.1 In this plan the audience has been considered in terms of their intent at different stages of their journey when they interact with our communications.

8.2 The key to success with this approach is to work out the best way to win the micro moments, supporting our audience at the stage of the journey they are at and empowering them to change behaviour and ultimately care about their health and clean air in Portsmouth.

Journey stage (our response)	See (Be there)	Think (Be useful)	Do (Be quick)	Care (Connect the dots)
Audience	Anyone that wants to get to a destination in Portsmouth.	Anyone considering how they travel to their destination in Portsmouth. E.g. buying a new or used vehicle, wanting to cycle or considering catching a bus.	Anyone looking to change the way they travel to their destination now. Anyone wanting to travel through the Clean Air Zone in a bus, HGV or taxi.	Anyone that cares about the way they travel in Portsmouth.
Messages	Love the air you breathe The way you travel affects the air you breathe. CAZ is a specific zone in the city and certain vehicles are impacted.	You can improve the air you breathe with changing the way you travel. Getting around Portsmouth is easy by walking, cycling and public transport. You can reduce the hassle of finding parking. You will need to pay to travel in the CAZ zone if you have a taxi or private hire vehicle, bus or HGV and are not exempt.	I can pay to travel within the CAZ if I need to. It's easy to book train and bus tickets It's easy to find the best route. It's easy to find quieter cleaner routes. It's easy to locate and pay to park. You can join in fun events.	The council is continuously making improvements to travel and transport to reduce the impact on air quality. You can play your part.
What we want people to think in this stage	Understand that the way we choose to travel can impact air pollution. Understand that we all have a part to play in reducing air pollution. Understand whether I am impacted by the CAZ and if not why I still need to consider the way I travel and its impact.	Understand that active travel is an easy option. Understand ease of public transport. Understand the easiest way to park in the city. Understand who, how and when you need to pay to travel in the CAZ.	Understand the best route options. Understand the quickest way to park and pay. Understand how to pay to travel in the CAZ.	Understand the latest improvements. Understand other things they could do. Understand how to share views.
Channels	Social media Bill boards Posters Council magazine articles Fliers Events	PCC website Myjourney website Visit Portsmouth website Park and Ride Website Responses on Social Customer Services responses Media	Consultation Events Competitions Activities for children Website for payments	Roads email Flagship email Pedal Portsmouth email Park and Ride email
KPI(s)	Social media reach	Searches and direct traffic to website - Click through rate - Web views	Consultation participation Event attendance Users of Public transport Participants in competitions	Signups to emails Opens of emails

Air Quality Communications and Engagement Plan 2019-2022

		- Social media engagement		
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8.3 Within the appendix, further information can be found on the audience segmentation for the CAZ implementation and the behaviour change marketing campaign.

9.0 Communications approach

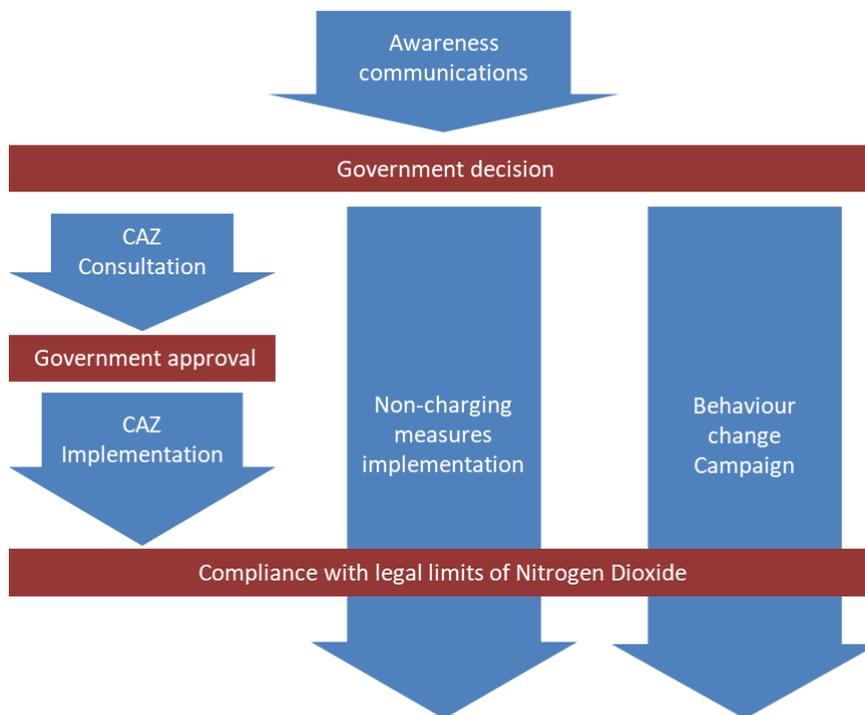
9.1 Since the beginning of 2019, with the announcement of the climate emergency, there has been regular awareness raising of the air pollution problem within Portsmouth including both the need to address the issue and what steps can be taken by everyone. This will continue until we have a Government decision on the Class of CAZ and additional measures we can introduce to improve air quality.

9.2 Following the decision, Communications will focus on supporting the consultation and encouraging participation.

9.3 Alongside this guidance and information will be given on supporting measures for those impacted by the CAZ.

9.4 A three year behaviour change campaign will be developed based on the findings from the consultation to support help improve air quality across the whole city for the foreseeable future.

Communications approach



Key

Communications activities

Approach decision points

10.0 Communications approach for wider projects

10.1 A cohesive air quality narrative is essential in all communications associated with the impact of cars in creating pollution and anything that reduces cars on the roads. This includes Tipner west development, Transforming cities projects and Seafront masterplan.

10.2 More specifically communications during 2019/20 that we are planning to include the air quality narrative are as follows:

- Launch Appy parking - helping making the parking event easier by locating spaces and paying via the app.
- Expansion of the Residential parking zones consultation - based on demand and helping to manage the parking issue for residents when they need it the most.
- Improvements to cycle routes E.g. Cycle improvements on central road corridor
- Improvements to infrastructure that make routes safer E.g. speed limit signage and new zebra crossings.
- Promoting safer cycling E.g. Be bright, be seen at the Glow Ride event.
- Promoting the new on street EV Charge points.

11.0 Implementation of communications that educate

Date	Actions	Channels	Outcomes	Lead	Status
Aug	Create awareness of Council recommendations going to cabinet.	Press Release	Coverage in local press - Achieved Portsmouth News	Communications and Engagement Officer	Completed
Sep	Create awareness of decision by Cabinet on class of CAZ	Response to press enquiries	Coverage in local press - Achieved National coverage	Communications and Engagement Officer	Completed
Oct	Support CAZ focus groups	Focus groups	Information to inform CAZ messaging	Project Manager	Completed
Oct	Create awareness of the full package being proposed to Govt in Air quality Local Plan and next steps.	Press Release Social media Website	Coverage in local press Engagement on social media Views of website	Communications and Engagement Officer	Oct
Dec TBC	Create awareness of Govt. decision and next steps.	Press Release Social media Website	Coverage in local press, National and trade press Engagement on social media Views of website	Communications and Engagement Officer	Nov/Dec

12.0 Post decision activity - consultation

Date	Actions	Channels	Outcomes	Lead	Status
Jan TBC	Invitations to consultation	Emails, social media, PR	Attendance at event Feedback received	Communications and Engagement Officer	TBC
Jan/ Feb TBC	CAZ consultation - Consultation with those that would be impacted by a CAZ decide the detail of the CAZ. E.g. Timing, location, costs etc.	Events Survey	Information that informs the CAZ design that is recommended to cabinet. (Does this then go to JAQU for approval)	Communications and Engagement Officer/ Market Research Officer	TBC
Mar TBC	Develop Air Quality campaign	Plan submitted to Project Board	Approval of Plan	Communications and Engagement Officer	TBC

13.0 Risks and mitigation

ID	Risk	Mitigation
1	Other events requiring resource as a priority. E.g. Brexit impact of traffic and transport in the city.	This plan is in place that can be developed and responsive to any other activities taking place.
2	Consultation fatigue in the city due to consultation on many Council activities.	Discussions with other teams to look at how the times of different consultations can work together and minimise the overlap, as well as looking for opportunities to merge consultations where appropriate.
3	Political uncertainty.	Ensure wide stakeholder involvement in the development of plans.
4	During purdah communications about consultations cease.	The timing of consultation considered to minimise impact of purdah. Also ensure a high level of communications prior to purdah.
5	Inaccurate communication of CAZ in the media. Engagement on social media Views of website	Providing briefings to the media at key milestones and providing clear press releases to support the accurate portrayal of information.
6	Lack of understanding by residents of why this is taking place and seen by residents as another Council money generating activity.	Awareness campaign that creates an emotional connection with those that see it and win the hearts and minds of people whilst also including the key facts.
7	Confusion over who the CAZ will impact.	Clear information and guidance for the help desk and on the website that gives clear simple information and guidance that is in plain English.

14.0 Budget and Resource

- 14.1 Budget will be required to promote the Clean Air Zone consultation and implementation of the CAZ and supporting measures.
- 14.2 Alongside this, budget will be required for behaviour change campaign that will run over three years and developed from the research to understand what will create behavioural shift in Portsmouth. The appendix highlights how this will be a high profile campaign that will also draw on the variety of initiatives already taking place.
- 14.3 Consideration needs to be given to additional communications resource required to support the implementation, the breadth of communications required to support improving Air quality in addition to continuing day to day communications activity.

Clean Air Zone consultation (marketing and communications)	
Clean Air Zone and support measures implementation	
Marketing and Communications behaviour change campaign (3 years)	
Total cost	

- 14.4 Further information on budget and resourcing can be found in the appendix C.

Appendix A - Clean air zone consultation and implementation

1.0 Purpose

- 1.1 Following confirmation from government as to the approach Portsmouth should take to improving air quality, there will be a period of consultation on the Clean Air Zone specifics, followed by refinement of the specific details of the zone and implementation. Alongside this the impacted groups will be informed of the support available to improve their vehicles and any infrastructure improvements. The purpose of this appendix is to identify the types of communications activity that may be required to implement a clean air zone.

2.0 Approach concept

- 2.1 The goal would be to provide people with an opportunity to share their views on the Clean Air Zone. Once the approach is established communications would then move into a phase of education, launch and embedding communications.
- 2.2 The approach would be broken down into a number of phases:
- Phase 1: Preparation for consultation - Developing the support materials for the consultation events and promotion.
 - Phase 2: Promoting consultation - Making people aware of the consultation.
 - Phase 3: Preparation for CAZ Communications - Developing the support materials for educating everyone on how the CAZ works and the support available to mitigate impact.
 - Phase 4: CAZ education communications - Creating awareness through a variety of channels.
 - Phase 5: Launch CAZ - Communicate the CAZ is in operation and reminders of how this works.
 - Phase 6: Embed CAZ - Reinforce how the CAZ operates.
- 2.3 Alongside this would run a behaviour change campaign that encourages everyone's involvement in improving air quality. For further details see Appendix B.

3.0 Audience

- 3.1 The widest audience includes:
- Everyone that lives in Portsmouth
 - From this audience we need to understand what would promote behavioural change to create cleaner air.
 - And we need to make them aware that private vehicles are not impacted by the CAZ.
 - Everyone that lives on the Isle of Wight as Portsmouth is one of the main routes that connects them to the main land.
 - We need to make them aware that private vehicles are not impacted by the CAZ so that they continue to travel using Wightlink.

- 3.2 For a Class B zone the primary audiences would need the opportunity to be involved in the consultation, and be informed about the implementation and support available. These groups include:
- Bus and Coach Companies traveling through the zone. (Public transport, local, national and International coaches)
 - HGVs carrying out deliveries within the zone or traveling to from the Isle of Wight
 - Taxis and Private Hire Vehicles within Portsmouth or those traveling within the zone from outside of Portsmouth
- 3.3 Further consideration should be given to specific audiences including:
- any passenger transport for those traveling from the Island to the mainland
 - Businesses on the Island getting deliveries
 - Isle of Wight residents and business getting deliveries
 - School trips by coach and bus from the Island

4.0 Content

- 4.1 The first two phases would encourage participation in the survey with the hook being that people can provide feedback on certain aspects of the zone. It would be very clear however, what is in and out of scope for feedback. E.g. the requirement for a charging Clean Air Zone cannot be changed, however the timings of the enforcement of the zone and vehicle exclusions can be reviewed as long as they do not impact upon the city's year of compliance.
- 4.2 Phase 2, 3 and 4 content would be clear and informative. Educating those that are impacted and giving them guidance on the support that is available. A variety of channels would be used so that clear information is available when it is searched for and those wanting to be kept up to date can receive further information.

5.0 Resources and budget

- 5.1 Detailed in appendix C.

Appendix B - Air pollution awareness campaign recommendations

1.0 Introduction

- 1.1 Winning the hearts and minds of people is essential as everyone has a role to play in taking action to reduce air pollution in Portsmouth. However to successfully achieve this it is essential understand what will create behavioural change in the city.
- 1.2 Once we understand this through the consultation we can encourage behavioural change for a cleaner, greener, safer city.
- 1.3 Behaviour change is not achieved overnight and this is why this campaign will last three years.

2.0 Purpose

- 2.1 The purpose of this appendix is to outline what a communications campaign could include to inform the budget.

3.0 Approach

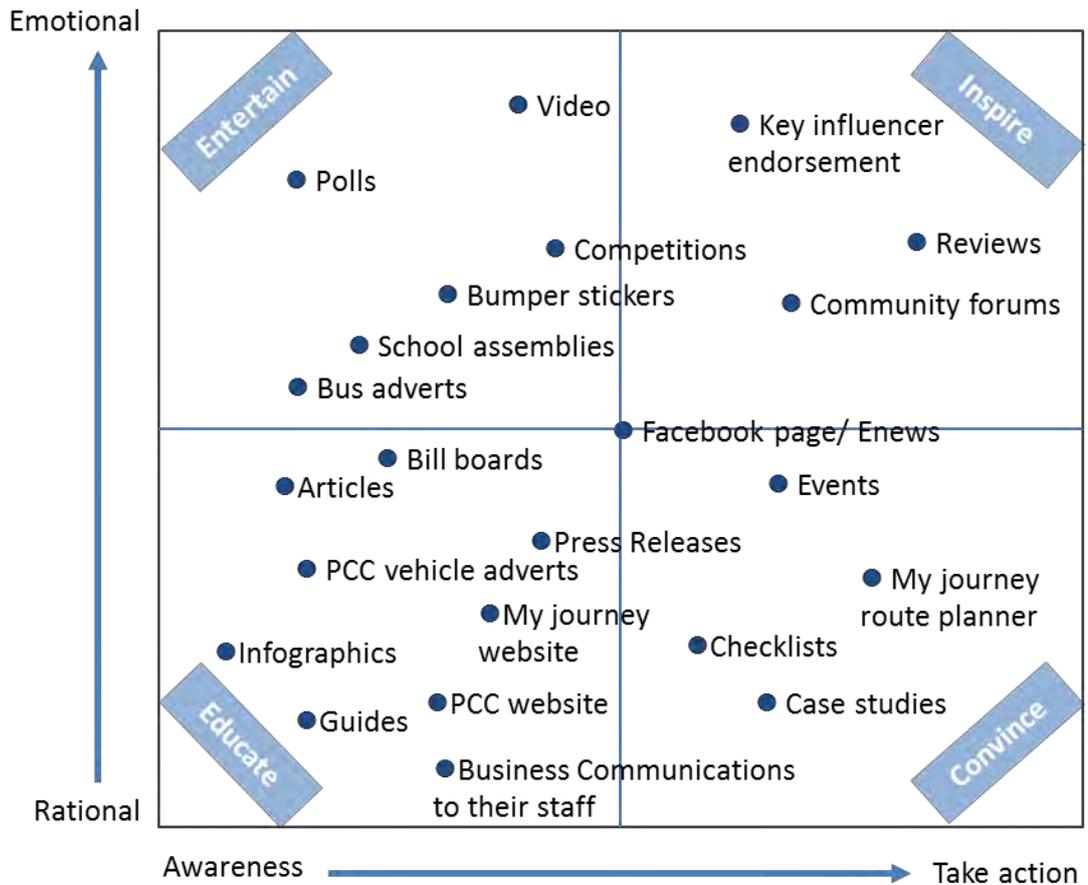
- 3.1 As part of the consultation behavioural change research would be carried out to understand what influences people in the way they travel. The campaign would then be based on these findings.
- 3.2 Behaviour change does not happen overnight therefore a 3 year campaign would be developed to support change in Portsmouth. The campaign would be broken down into a number of phases these would include:
 - Phase 1: Campaign preparation - Prepare materials for the launch of the campaign.
 - Phase 2: Launch and convince - High impact launch that convinces people there is a need to change.
 - Phase 3: Position - Outline how changes can be made and what can be done.
 - Phase 4: Encourage action - Encourage people to take action and make the shift in behaviour.
 - Phase 5: Embed - Reinforce the importance of the change and encourage people to keep doing it.
- 3.3 Collaborative working between Council departments is essential to leveraging further benefits to the campaign including Regeneration, Public Health and Housing. This will ensure a consistent joined up approach and clear accurate persuasive messages.
- 3.4 The key performance indicators would be developed and monitored throughout the campaign to ensure the approach was improved and kept a pace with behaviour change.

4.0 Audience

Journey stage	See	Think	Do	Care (want to be involved)
Attributes	Anyone that wants to get to a destination in Portsmouth.	Anyone considering how they travel to their destination.	Anyone looking to change the way they travel to their destination now.	Anyone that cares about the way they travel in Portsmouth.
Audience Segment 1 Residents	People that live in Portsmouth. People who remember cycling and walking when they were young. People that enjoy having fun.	People out and about in the city. People feeling they want to find out more about reducing air pollution when they travel. People wanting a break from their busy day.	People wanting to change the way they travel. People wanting to try active travel or public transport.	People that enjoy active travel or using public transport. People that care about the environment.
Audience Segment 2 Commuters	People who commute into Portsmouth for work.	People feeling they want to change the way they commute. People out and about on their lunch break. People wanting a break from their busy day.	People wanting to change the way they travel to work. People wanting to remember what it was like to have a relaxing commute.	People that enjoy active travel or using public transport to get to work. People that care about the environment.
Visitors	People visiting Portsmouth. People that remember visits to Portsmouth.	Visitors to Portsmouth considering how to get there. Visitors to Portsmouth that are aware of air pollution issues and want to find out about the best way to travel.	Visitors to Portsmouth wanting to book travel or plan journey now. Visitors to Portsmouth that are aware of air pollution issues and want to book cleaner ways of traveling or planning their journey now.	Visitors that care about the way Portsmouth address air quality.
Children	Children that need to get to a destination in Portsmouth.	Children thinking about the best ways to travel in Portsmouth. Children thinking about the environmental impact of travel in Portsmouth.	Children that want to get involved in fun active travel. Children wanting a fun way to help change behaviours.	Children that care about how they travel and air pollution in Portsmouth.

5.0 Campaign concept

- 5.1 An eye catching brand and strap line will make this campaign stick in people minds. Supported by clear messages that grab attention and are in tune with the things that will encourage a change in behaviour. The following is an outline of how this concept could be developed, however the behaviour change research would guide exactly how this would look.
- 5.2 A simple strap line would be:
- Together we create cleaner air
 - Portsmouth air: Love it, breathe it, respect it
- 5.3 The goal would be to empower people to make healthier greener choices in the way they travel, always reminding people to do what they love and have fun doing it safely.
- 5.4 The messages would be developed to support behavioural change with each audience segment.
- 5.5 The content would focus on clean air heroes of Portsmouth. This would make a striking focus for the campaign supported by a full package of content for each hero, from 30 second videos through to bill boards, and top tips from the hero and guidance. Heroes could include:
- Sam, (first baby born at start of campaign) what we do now will affect him from his first breath, and we follow him from his first breath at the start of the campaign.
 - Jack (90 at start of campaign) he cycled into the dock yard most of his life and a Pompey fan that's lived in the city all his life and seen the changes.
 - Alexa (Asthma sufferer) she needs the air to be clean.
 - Claire (Teacher) scoots to school every day and with the help of Stomper Monsters shares the clean air message with her class.
 - Matt (Radio presenter) trying to get healthy and cycle to work wants to know more and get involved in events in the city.
- 5.6 Over the campaign we would keep up to date with these individuals and develop their story.
- 5.7 A variety of content would be developed to connect with audiences on a variety of levels during the micro moment that they see the content, think about finding the content, when they want to act now or they want to be kept up to date with the latest news.
- 5.8 The content marketing mix has been used to support the consideration of generating the most engaging content types for the audience. That connects with people from an emotional to rational level as well as with the aim of creating awareness to people taking action. Each box represents a different style and approach to content that will entertain, inspire, educate and convince.



5.9 Communications would be targeted at children through the Pompey Monsters, a well-loved and successful channel to encourage change.

5.10 A variety of events targeted at different groups across the city would support people in getting involved and find out more about how they could change their behaviour. Over the past couple of years over a 1000 people have got on their bikes and joined in with the Glow Ride in the autumn. This gives support and advice to people wanting to cycle safely in winter. Events can build on the success of Glow ride.

6.0 Resources and budget

6.1 Detailed in appendix C.

Appendix C Outline budget and resource

1.0 Assumptions

- These costs are based on the implementation of a Class B clean air zone however if a Class C was implemented further costs would be incurred.
- These costs are indicative, and are supplied on the best understanding of the requirements.
- A fully costed proposal will be developed once the exact details of the Clean Air Zone are confirmed.
- The costs for the CAZ consultation are for the support material and promotion only. The survey design, development and analysis are costed within the research budget.
- The resources are only those required for marketing and communications. The customer helpdesk support its detail in their budget and resource requirements.

2.0 Approach

2.1 The budget is split into three sections:

- Section 1 - CAZ consultation marketing and communications
- Section 2 - CAZ and support measures implementation
- Section 3 - Marketing and Communications behaviour change campaign (3 years)

2.2 The full details of activity for each section can be found in the Air Quality budget.

3.0 Budget

Clean Air Zone consultation (marketing and communications)	
Clean Air Zone and support measures implementation	
Marketing and Communications behaviour change campaign (3 years)	
Total cost	

NB: The budget for research and customer helpdesk are outlined separately.

4.0 Resource

4.1 The complete package of work (all 3 sections) would require an increase in resource within Marketing and Communications to deliver successful campaigns and implementation.

4.2 To deliver the air quality communications and engagement plan it will require:

- New post - Full time Band 8 Communications officer
- Band 10 - 14 hours per month
- Band 8 - 28 hours per month