

Southampton City Council and New Forest District Council

Clean Air Zone Draft Outline Business Case

11.06.2018

Introduction

Southampton is a city located on the south coast of England with a population of 254,000 people and covers an area of 52km²⁽¹⁾. The extents of Southampton are bound by the M27, M3 and M271 motorways which link the city to the South East, South West and London. The Southampton City Strategy 2015-25 sets out a vision for the whole of the city as ‘a city of opportunity where everyone thrives’ and is taken forward through the Council Strategy 2016-20 which sets out four outcomes that make up that vision – strong and sustainable growth, people get a good start in life, live safe, happy and independent lives and Southampton is an attractive modern city where people are proud to live and work.

Southampton is home a major international cargo and passenger port, is close to Southampton International Airport and is well served by public transport included buses, coaches and trains. As a result, transportation dominates Southampton’s environmental challenges, and in particular, contributes to air pollution in the city.

In 2015, Southampton City Council was identified in the National Plan for Improving Roadside NO₂ concentrations as one of five cities that will be required to introduce a Clean Air Zone to ensure compliance with the EU Air Quality Directive by 2020.

A subsequent National Plan published in 2017 identified a further 23 Local Authorities, including New Forest District Council, that are required to produce a Local Plan detailing how compliance with the EU Air Quality Directive by 2020 will be assured. The New Forest is a diverse district with a population of 176,800 covered primarily by the New Forest National Park. The National Park draws tourism from across the globe, which alongside local industry and residents generates large volumes of traffic movement. The exceedance identified for the New Forest District Council is an extension to that identified in Southampton in 2015 on the Western Approach and over the Redbridge Causeway onto the A33. As a result, the two Authorities will take approach the development of a plan to bring about compliance in partnership.

This document will present a Draft Outline Business Case for Southampton City Council and New Forest District Councils preferred option for bringing about compliance with the EU Air Quality Directive. The business case will follow the HM Treasury Green Book Five Case Model and will be submitted to the Joint Air Quality Unit (JAQU) for review. The Outline Business Case forms part of the process towards producing a Full Business Case which will be submitted to the Secretary of State by order of Ministerial Direction on or before October 25th 2018.

¹ <https://www.southampton.gov.uk/council-democracy/council-data/statistics/>

Definitions

SCC - Southampton City Council

NFDC – New Forest District Council

JAQU – Joint Air Quality Unit (DEFRA and DfT)

AQD – EU Directive for Ambient Air Quality

CAZ – Clean Air Zone, a geographical area where specific measures are taken to improve local air quality.

National Plan/UK AQ Plan – DEFRA’s plan for tackling roadside concentrations of NO₂ (latest publication July 2017, previous iteration in 2015).

Local Plan – A term to describe the Council’s overall plan to improve local air quality to an extent that reaches compliance with the AQD requirement (this may include a charging CAZ, non-charging CAZ or other measures).

Feasibility Study – Work undertaken to determine what air quality improvement measures (e.g. a charging CAZ) are feasible to deliver and assess the impact they will have.

Option – A scenario or group of measures that undergo air quality modelling to determine impact (e.g. Citywide Class A Charging CAZ)

Preferred Option – The option which meets all objectives of the local plan, i.e. delivers compliance with the AQD within the shortest possible time, increases likelihood of compliance and best meets the strategic, economic, commercial, and financial and management needs of the Local Plan.

PCM – Pollution Climate Mapping Model

Business Case - SCC and NFDC must produce a business case that supports the preferred option using the HM Treasury Green Book Five Case Model. Developing the business case will require consideration of a range of options taking into consideration the feasibility study (AQ and economic modelling) alongside their deliverability (e.g. how possible is the option to implement).

Outline Business Case – The partially developed business case which identifies a preferred option for the Local Plan.

Deposit Full Business Case – The Full Business Case submitted to the Secretary of State.

Full Business Case – The approved Full Business Case.

1. Strategic case

DRAFT

1.1. Local Air Quality

1.1.1. Southampton Local Air Quality

Air pollution in the city has been monitored since levels for nitrogen dioxide (NO₂) for a number of years and in 2008 an Air Quality Action Plan was established which outlined measures that aimed to reduce concentrations of nitrogen dioxide (NO₂) in areas identified as breaching the national objectives, called Air Quality Management Areas (AQMAs). 10 AQMAs are currently established in the city, shown in Figure 1.

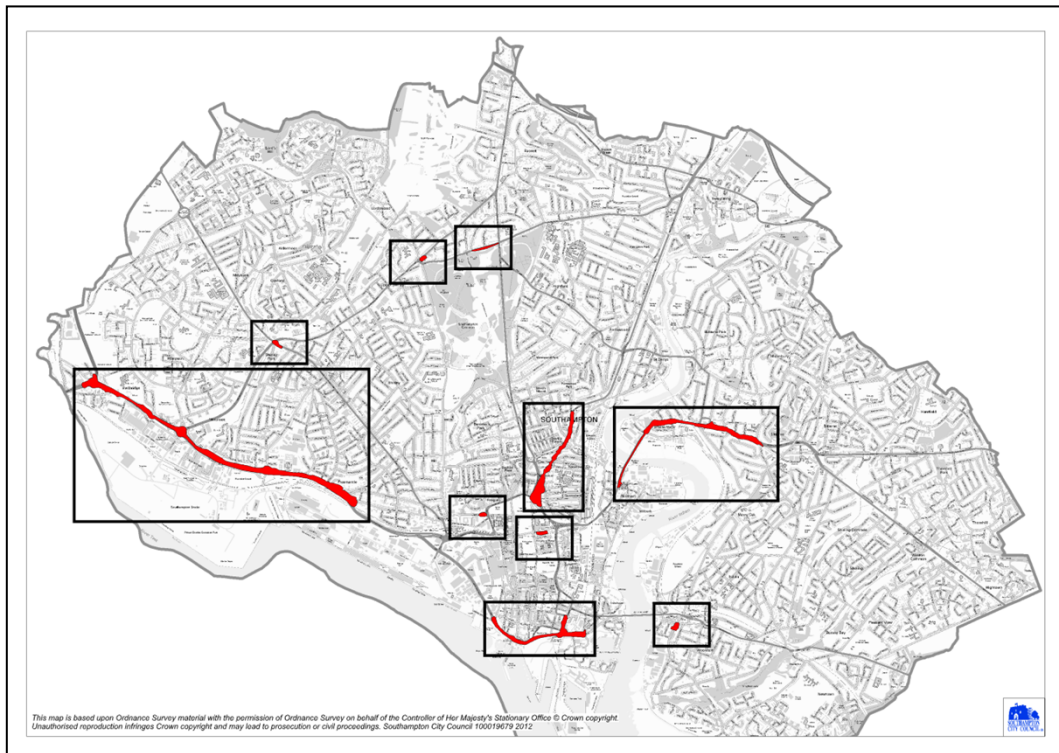


Figure 1 Southampton Air Quality Management Areas for annual mean NO₂

The European Union has commenced infraction proceedings against the UK Government and Devolved Administrations for their failure to meet the EU Ambient Air Quality Directive (EU AAQD) Limit Value for NO₂. In 2015, the Supreme Court ordered the Government to consult on new air pollution plans that had to be submitted to the European Commission no later than 31 December 2015. As such Defra released plans² to improve air quality, specifically tackling NO₂, in December 2015. The Plans identify 5 cities outside London, including Southampton, where the EU AAQD limit value for NO₂ are not expected to be met by 2020. The Plans stated that each of the cities identified will be legally required to introduce a formal Clean Air Zone (CAZ) with access restrictions for specified classes of vehicles and European Vehicle Emission Standards (Euro Standards) by 2020 or sooner. The area identified from the Pollution Climate Mapping Model (PCM)³ as exceeding the EU AAQD beyond 2020 was the A33, a road commonly referred to as the Western Approach.

Since the publication of these plans Southampton City Council has been undertaking a study to determine the environmental, economic and social impact of introducing a charging Clean Air Zone in the city.

² <https://www.gov.uk/government/publications/air-quality-in-the-uk-plan-to-reduce-nitrogen-dioxide-emissions>

³ <https://uk-air.defra.gov.uk/research/air-quality-modelling?view=modelling>

1.1.2. New Forest Local Air Quality

New Forest District Council has been monitoring air pollution across the district since 2004. Three AQMA's were declared in 2005; 2 for breaches of the annual mean objective for NO₂ in Totton and Lyndhurst, shown in Figure 2, and 1 for a breach of the 15 min mean objective for sulphur dioxide in Fawley. Air Quality Action Plans were adopted for each area in 2008 which outlined measures to reduce pollutant concentrations in pursuit of the objectives. The AQMA in Fawley and Totton were subsequently revoked in 2013 and 2016 respectively. The AQMA in Lyndhurst remains and the Action Plan is due to update in 2018.

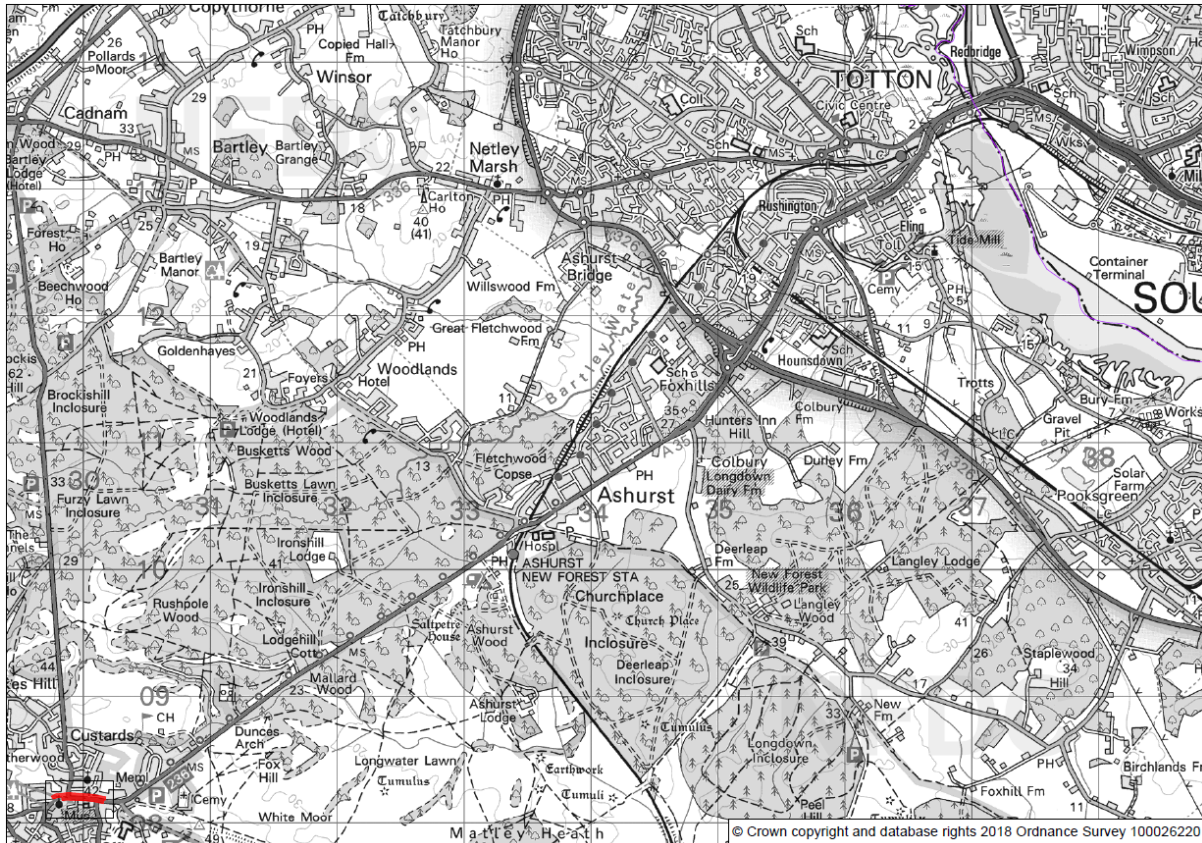


Figure 2 Lyndhurst AQMA (highlighted red) for annual mean NO₂

1.2. EU Air Quality Directive Exceedance

A subsequent iteration of the plans⁴ were published in 2017 and required a further 23 authorities to devise plans for improve air quality, including New Forest District Council (NFDC), where the exceedance is an extension of that identified in Southampton.

⁴ <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>

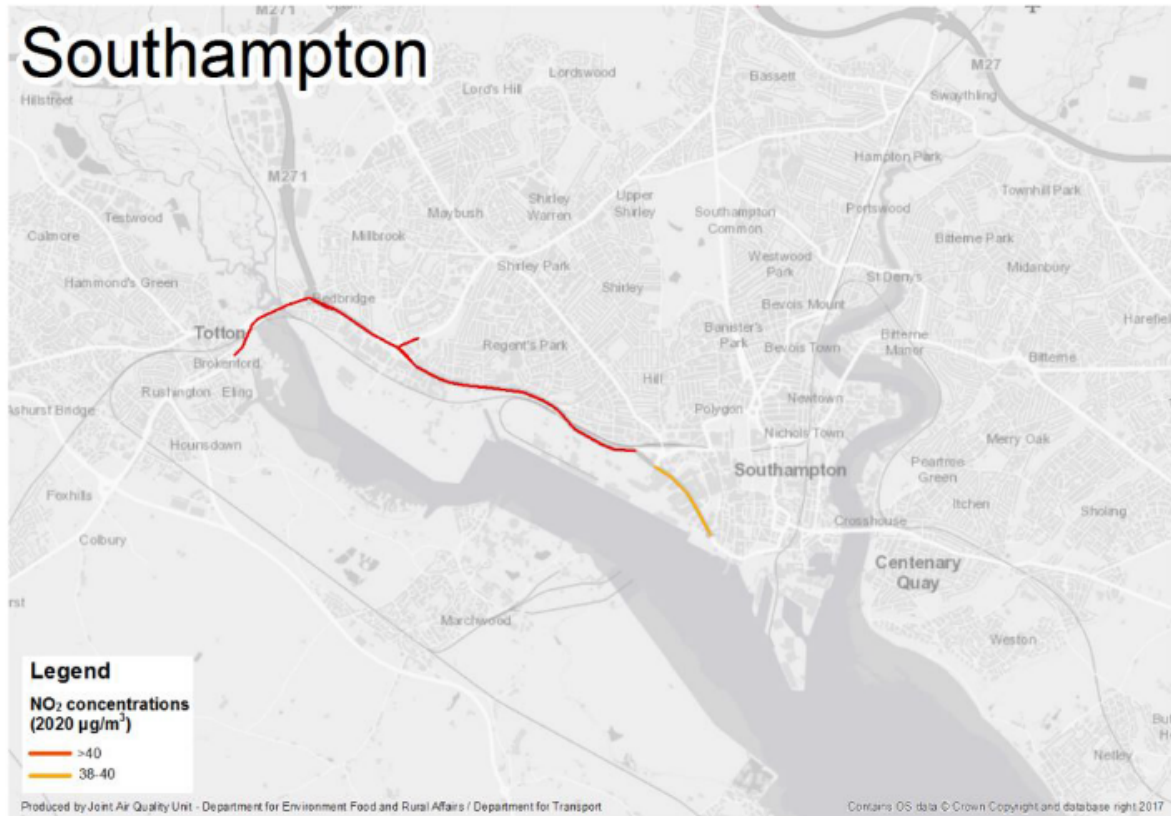


Figure 3 PCM Area of Exceedance (2020) for Southampton and New Forest (Defra 2017 **National Plan**)

1.3. Public Health and Air Quality

There is a growing body of evidence for the detrimental impacts to health from exposure to poor air quality. It is estimated that there are 40,000 deaths attributable to air pollution in the UK each year, with the young, elderly and those with existing conditions most susceptible. Short term exposure to high levels of air pollutants can cause a range of adverse effects such as exacerbations of asthma, effects on lung function and consequent increases in hospital admissions for respiratory and cardiovascular conditions. In the long term, air pollution contributes to an increased risk in heart disease, stroke, asthma, diabetes and cancer with recent evidence also indicating a role in neurological disorders like dementia and on development of the brain. The economic impact of air pollution in the UK is estimated to be £20 billion annually⁵.

⁵ Royal College of Physicians. Every breath we take: the lifelong impact of air pollution. Report of a working party. London: RCP, 2016.

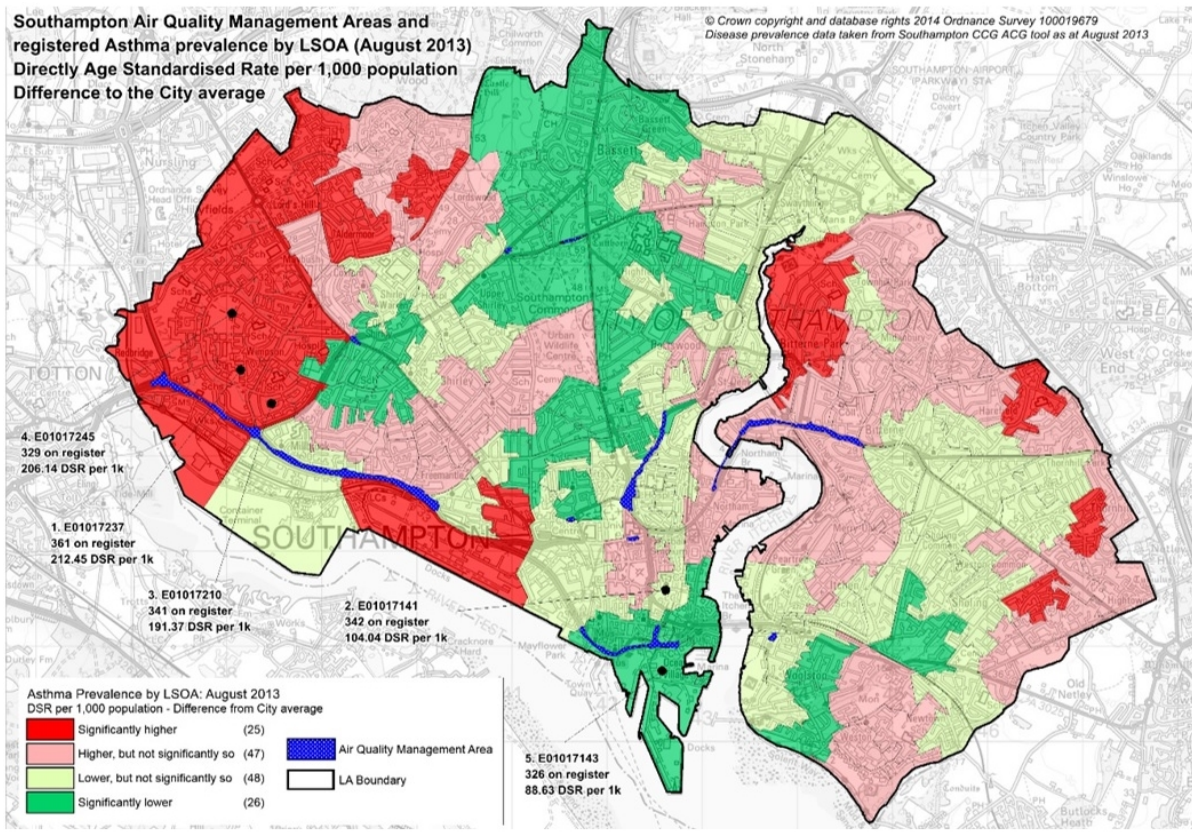


Figure 4 Southampton AQMA and registered asthma prevalence by LSOA (August 2013) Directly Age Standardised Rate per 1,000 population Difference to the City average

In Southampton, the Public Health Outcomes Framework (PHOF) for mortality attributable to particulate air pollution in 2015 is 5.2% which is above the national average of 4.7%. No PHOF is available for NO₂. Mapping asthma prevalence with areas of poor air quality (AQMA) demonstrates a degree of correlation, particularly at the Western Approach A33 AQMA (Figure 4).

In the New Forest, the PHOF more mortality attributable to particulate air pollution in 2015 is 4.0% which is below the national and regional average of 4.7%.

1.4. Air Quality Improvement Measures Review

1.4.1. Southampton Air Quality Review

Table 1 Southampton City Council Air Quality Review and Assessment

Year	Action	Description
2009	Air Quality Action Plan	Plan to reduce levels of NO ₂ in areas where national objectives are exceeded (AQMA).
2014	Western Approach Air Quality Management Area Assessment	Study to determine baseline air quality levels on the Western Approach and impact of measures to reduce road transport emissions.
2014	Air Quality Scrutiny Inquiry	
2015	Southampton Low Emission Strategy	Based on Western Approach AQ Assessment, a strategy to improve air quality across the city.
2015	Defra National Plan for improving roadside NO ₂ concentrations	PCM model identifies EU AAQD Exceedances in Southampton. One of five cities required to introduce a charging Clean Air Zone.

2016	Southampton City Council Clean Air Strategy	Informed by LES work and National Plan requirements, a strategy to improve air quality in the city.
2017	Revised National Plan for improving roadside NO ₂ concentrations	23 more Local Authorities required to produce a "Local Plan" to bring about compliance with EU AAQD within shortest possible time, including New Forest District Council.
2017	Southampton City Council and New Forest District Council Clean Air Zone Partnership	Arrangements made for joint working between the two authorities to produce a Local Plan for improving air quality which assesses the need and extent for a Clean Air Zone.

1.4.2. New Forest Air Quality Review

Table 2 New Forest District Council Air Quality Review and Assessment

Year	Action	Description
2005	Declaration of Air Quality Management Area's (AQMA's)	Totton – NO ₂ (annual mean) Lyndhurst – NO ₂ (annual mean) Fawley – SO ₂ (15 min mean)
2006	Modelling Report (AEA Technology)	For predicted NO ₂ concentrations concerning proposed traffic scenarios within Lyndhurst AQMA
2008	Formal adoption of Action Plans	Totton – NO ₂ Lyndhurst – NO ₂ Fawley – SO ₂
2008	Modelling Report (AEA Technology)	For proposed traffic scenarios within Lyndhurst Air Quality Action Plan – recommendation to forward 2 options
2008	Monitoring Report (AEA Technology)	6 month survey of PM ₁₀ in Totton and Lyndhurst. No requirement for further action.
2010	Feasibility Study (Hampshire County Council)	Assessing transport options for Totton to improve air quality within the Air Quality Management Area – concluded no feasible transport scheme is appropriate.
2011	Modelling Report (AEA Technology)	For proposed traffic scenarios within Lyndhurst Air Quality Action Plan – some reductions in NO ₂ predicted but at the expense of vehicle flow.
2013	Revocation of AQMA	Fawley AQMA (SO ₂ 15 min mean objective) revoked in April 2013
2013	Progress Report	Current AQMA's in Lyndhurst and Totton (NO ₂ annual mean objective) On advice from air quality helpdesk; To consider revoking Totton AQMA (NO ₂ annual mean objective) due to no recent exceedances at monitoring sites
2016	Revocation of AQMA	Totton AQMA (NO ₂ annual mean objective) revoked in June 2016
2017	Revised National Plan for improving roadside NO ₂ concentrations	23 additional Local Authorities required to produce a 'Local Plan' to bring about compliance with EU AAQD within the shortest possible time, including New Forest District Council
2017	Southampton City Council and New Forest District	Arrangements made for joint working between the two authorities to produce a Local Plan for improving

Council Clean Air Zone Partnership	air quality which assesses the need and extent for a Clean Air Zone
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1.5. Southampton City Council Low Emission Strategy (2015-2016)

In 2015, SCC commenced the development of a Low Emission Strategy (LES) aimed at reducing road transport emissions of NO_x and other key vehicle pollutants, including particulate matter (PM) and Carbon Dioxide (CO₂). Building on the Western Approach 2014 study, a city wide based Low Emission Strategy study was commissioned to assess options for reducing emissions from transport across the city. Further updated modelling work in this study suggested that diesel HGVs and cars were the primary source of transport emissions on the Western Approach and other AQMAs. This study also provided the basis for Southampton's approach to developing a Clean Air Zone, based on cost benefit assessment of potential emission reduction measures. The study set out the potential for a Clean Air Zone with access restrictions for specific vehicle types and a range of complementary or supporting measures.

1.6. Southampton City Council's Clean Air Strategy (2016-2025)

In November 2016, Southampton City Council launched a Clean Air Strategy. The strategy provides a high level overview of the key actions and measures the council will look to implement in order to reduce emissions, improve local air quality and achieve sustained improvements in the health of the population of Southampton. This strategy can be found in **Error! Reference source not found.** The strategy outlines a commitment to implement a scheme of measures ahead of implementing a CAZ which include:

- A Clean Air Partnership with city businesses, organisations and neighbouring authorities that will identify and promote good practice and cooperation.
- A Clean Air Recognition Scheme to identify those organisations making a difference, provide technical support and advice and provide a measure to gauge their efforts.
- New advice and requirements to new developments to promote sustainable/active, uptake of low emission vehicles and improve the standard of non-road construction machinery.
- Creation of a dedicated Clean Air website informing vehicle users of the measures they can take to reduce their emissions by travel planning and vehicle choice.
- A Communications campaign to raise awareness about clean travel/vehicle choices amongst businesses and the public.
- Introduce the concept of a CAZ in the city to help raise awareness amongst vehicle users of the measures that can be taken to improve the emissions they produce.
- Update the Quality Bus Partnership (QBP) to renew and establish emission standards amongst the bus fleet.
- Establish a Freight Quality Partnership (FQP) to promote and support a continuous improvement in emission standards in the CAZ.
- Promote businesses and organisations to assess their delivery practices and identify opportunities to introduce cleaner more effective practices including freight consolidation and ultra-low emission vehicles for final stage delivery.
- Investigate opportunities to improve the number of ultra-low emission taxis operating within the city and provide infrastructure to promote and incentivise the uptake of such vehicles.
- Identify a package of incentives for users of ultra-low emission vehicles and work in partnership with parking providers to establish standards for electric vehicle charging and a strategy for their introduction.
- Work with the port owners and operators to identify opportunities to introduce clean technologies amongst their non-road fleet and ships.
- Combining the work of the Sustainable Transport project and its MyJourney branding with the CAZ to provide clarity on transport options and emissions

1.7. Current Air Quality Measures Implemented or Planned

1.7.1. Southampton City Council Measures

Based on Southampton's Clean Air Strategy, the Council have taken forward and implemented a number of measures. These are detailed in Table 3.

Table 3 Existing air quality measures currently implemented in Southampton

Type	Action	Description	Status
Taxis and Private Hire	Low Emission Taxi Incentive Scheme	Offering an incentive to cover vehicle licensing and other related costs for three years to encourage greater uptake of hybrid, plug-in hybrid and electric vehicles.	Active
Taxis and Private Hire	Consulting on extension of age limit for hybrid, plug-in hybrid and electric vehicles	Extension of the age limit for low/zero emission vehicles makes them a more attractive vehicle to operate in the long term.	Consultation
Private Hire	Consulting on permitting electric vehicles capable of carrying three to eight passengers a private hire licence.	The current policy only permits vehicles that can carry four-eight passengers in comfort. Many electric vehicles do not have this capacity. By licensing vehicles that can carry three to eight passengers in comfort, the opportunity for uptake of electric vehicles is increased.	Consultation
Buses	Clean Bus Technology Fund	Retrofitting up to 145 pre-Euro VI buses with emissions reducing technology.	Active
HGVs	Sustainable Distribution Centre	SCC providing a procurement framework for public sector use of the Sustainable Distribution Centre.	Active
HGVs	Delivery and Service Planning	Offering delivery and service plans advising on best practice to reduce emissions and fuel consumption.	Complete – scope for further work
LGVs	Delivery and Service Planning	Offering delivery and service plans advising on best practice to reduce emissions and fuel consumption.	Complete – scope for further work
Private Vehicles	City centre parking season ticket concession	Electric Vehicles are eligible for a 90% discount on an annual city centre parking season ticket.	Active
Private Vehicles	Itchen Bridge toll exemption	Free passage over the Itchen Bridge for EV drivers. Currently undergoing consultation, decision expected in late spring 2018.	Consultation
Council Fleet Emissions	20% Electric by 2020	Procurement of low emission vehicles in Council and partner fleets.	Active
Council Fleet Emissions	Eco-safe driver training for SCC fleet drivers	Provision of eco driving for SCC Council fleet drivers to improve efficiency and reduce emissions.	Under development
Active Travel	SCN1 Cycling Infrastructure	Early Measure funding 2017 awarded to provide enhanced cycle routes along the A33 Western Approach and to install	Active

		virtual messaging signs (VMS) and a green wall.	
Engagement	My Journey	Sustainable travel communication campaign promoting active travel and low emission technology. The brand associated with the 2017-2020 Access Fund to increase sustainable travel in the South Hampshire area.	Active
Engagement	Schools		
Engagement	Travel Planning		
Engagement	Clean Air Network	A network to facilitate and enhance discussion of good air quality practice among local stakeholders.	Active
Engagement	airAlert	Alerts for registered users when air quality is predicted to be poor.	Active
Engagement	Anti-Idling Campaign	Campaign to reduce unnecessary engine idling at key locations around the city. Includes social media a billboard presence.	Active
Planning Policy	Air Quality Supplementary Planning Document	Setting the minimum standard for good air quality practice in new development.	Under development
Council Strategy	Clean Air Strategy	A long term (2016-2025) strategy which outlines the Council's strategy for improving air quality.	Active
Council Strategy	Cycling Strategy	A 10 year strategy for improving cycling infrastructure and encouraging uptake of cycling as a mode of travel.	Active
Council Strategy	Health and Wellbeing Strategy		

1.7.2. New Forest District Council Measures

New Forest District Council are currently implementing a number of measures to improve air quality in the district. These are outlined in Table 4.

Table 4 Air quality measures currently implemented or planned in New Forest District Council

Type	Action	Description	Status
Council Fleet Emissions	Need to obtain figures	Procurement of low emission vehicles in Council fleet	Active
Council Fleet Emissions	Eco-safe driver training for NFDC fleet drivers	Provision of eco driving for NFDC Council fleet drivers to improve efficiency and reduce emissions	Completed
Electric vehicle charge points	Installation of electric charge points in Council owned car parks	Council to engage with Hampshire County Council scheme to review car parks with a view to install electric vehicle charge points by 2020	Active
Hospital bus scheme	Provision of a dedicated bus route between Totton and Southampton Hospital	Scheme under development by local Councillor with support from a local bus company.	Under development
Engagement	Schools	Working in partnership with Hampshire County Council to engage in sustainable transport plans, clean air walking route and local air quality monitoring schemes	Active
Engagement	Anti-idling campaign	Campaign to reduce unnecessary engine idling at key locations around the District – currently active in Totton and Lyndhurst. Banner, signs and media campaign	Active
Engagement	Clean Air Network	To support Southampton City Council in the Clean Air Network scheme for residents and businesses within New Forest	Active
Planning policy	Air quality supplementary planning document	Setting the minimum standard for good air quality practices for new developments	To be developed
Council Strategy	Clean Air Strategy	A long term strategy outlining the Council's strategy for improving air quality across the district	To be developed
Council Strategy	Health and Wellbeing Strategy	A long term strategy outlining the Council's strategy for improving health and wellbeing across the district, to include cycling and walking strategies.	

1.8. Local Model Baseline and Business as Usual Air Quality

1.8.1. Local Model EU Ambient Air Quality Directive

The 2017 National Plan identified exceedance of the EU Ambient Air Quality Directive (EU AAQD) in Southampton and New Forest (Figure 3). The model used to identify this exceedance is the national Pollution Climate Mapping model (PCM)⁶. SCC and NFDC have been instructed to undertake a more localised study. This local study provides finer resolution than is possible with the national PCM model. Input parameters are also more localised including speed assumptions, local emission sources and fleet composition. Details on the methodology used to model air quality locally can be found in the Air Quality Modelling Methodology Report, appendix 2. The full results report is found in appendix 3.

The model will provide results for the annual mean NO₂ concentrations at EU AAQD relevant locations in Southampton and the New Forest. It will also extend to other roads that are the responsibility of Hampshire County Council in Eastleigh and national network roads managed by Highways England including the M271, M27 and M3.

The results will be presented for 2015 and 2020. The 2020 results will represent a Business As Usual (BAU) scenario where only measures currently implemented to improve air quality are modelled (i.e. without a Clean Air Zone). Figure 5 shows a map of the annual mean NO₂ results for Southampton and the surrounding roads including those managed by Highways England and Hampshire County Council.



Figure 5 Southampton and surrounding roads local model annual mean NO₂ concentration results

The 2020 BAU results in the Southampton study area show a total of 9 exceedances of the EU AAQD limit value (shown in Figure 5 as red 40-44 µg/m³, purple 44-50 µg/m³ or dark blue 60-75.6 µg/m³).

⁶ <https://uk-air.defra.gov.uk/research/air-quality-modelling?view=modelling>

Only 1 exceedance is on a road that is the responsibility of Southampton City Council. This is an exceedance on the A33 Millbrook Road West, an area that was also identified as exceeding in the PCM.

There are 8 exceedances of the EU AAQD on roads under the authority of Highways England within the local model. Figure 5 shows that these are predominantly on the M27 north of the city and close to Junction 14 of the M3.

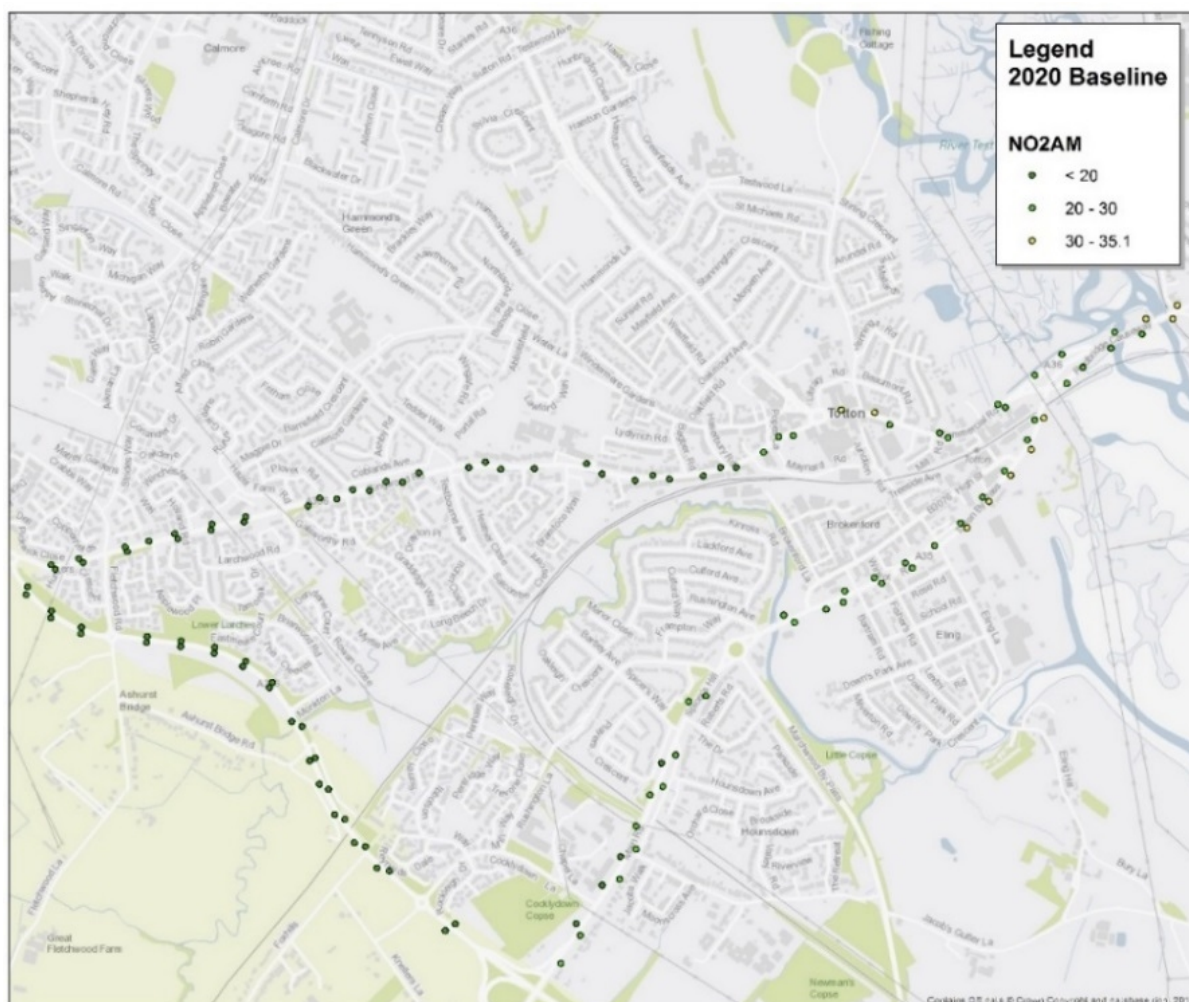


Figure 6 New Forest local model annual mean NO₂ concentration results

There are no exceedances of the EU AAQD limit value on relevant NFDC roads under the BAU scenario (Figure 6). A full summary of the exceedances in 2015 and 2020 are detailed in Table 5.

Table 5 Summary of local model 2020 annual mean NO₂ EU AAQD limit value exceedance under the BAU scenario in SCC, NFDC and surrounding roads managed by Highways England

Responsible Authority	Local Authority Area	Road	NO ₂ Annual Mean (µg/m ³) 2015 Base year	NO ₂ Annual Mean (µg/m ³) 2020 Business As Usual
Southampton City Council	Southampton City Council	Millbrook Road West	52.2	41.1
Highways England	Southampton City Council	M271	47.3	43.5

Highways England	Test Valley Borough Council	M27	54.9	48.7
Highways England	Eastleigh Borough Council	M3	47.3	41.9
Highways England	Test Valley Borough Council	M27	82.1	61.1
Highways England	Test Valley Borough Council	M27	59.7	51.4
Highways England	Eastleigh Borough Council	M27	84.8	75.6
Highways England	Eastleigh Borough Council	M27	69.5	57.2
Highways England	Test Valley Borough Council	M27	78.4	58.0

The results also show a number of roads are within the error of the model (see appendix x for further details of model error and uncertainty). The number of roads within this level of uncertainty under the BAU scenario in 2020 are detailed in table 4.

Table 6 Number of roads within annual mean NO₂ concentration 35-39.9 µg/m³

Responsible Authority	Number of roads with an annual mean NO ₂ concentration 35-39.9 µg/m ³ in 2020 Business As Usual
Southampton City Council	7
New Forest District Council	1
Eastleigh Borough Council (Hampshire County Council)	1
Highways England	0

The local air quality assessment concludes that under the BAU scenario where no additional air quality improvement measures are taken:

1. SCC will not achieve legal compliance by 2020 and therefore is required to take further action to bring about legal compliance within the shortest possible time.
2. NFDC are compliant with EU AAQD levels.
3. 7 roads managed by SCC, 1 road in NFDC and 1 in Eastleigh Borough Council are between 35-39.9 µg/m³ in 2020, by undertaking further action to ensure compliance within the shortest possible time, the likelihood of these roads achieving compliance is increased.

1.8.2. Local Model Air Quality Management Areas

The local model has also assessed local monitoring currently undertaken to fulfil the Council's statutory duty to review and assess local air quality, under the term Local Air Quality Management (LAQM). The model predicts NO₂ concentrations at locations where monitoring is currently undertaken for LAQM and concludes that there will be no monitoring sites that are exceeding the UK Air Quality Objective in 2020 under the BAU scenario.

1.9. Local Model NO₂ Source Apportionment

It is possible to apportion the sources that contribute to modelled NO_x concentrations in Southampton and therefore determine level of contribution to concentrations of NO₂. Figure 7 identifies the monitoring locations in Southampton where the contributions to NO_x emissions have been apportioned. These monitoring locations have been chosen as they represent the road where the exceedance of the EU AAQD limit value for NO₂ has been identified by the local model.

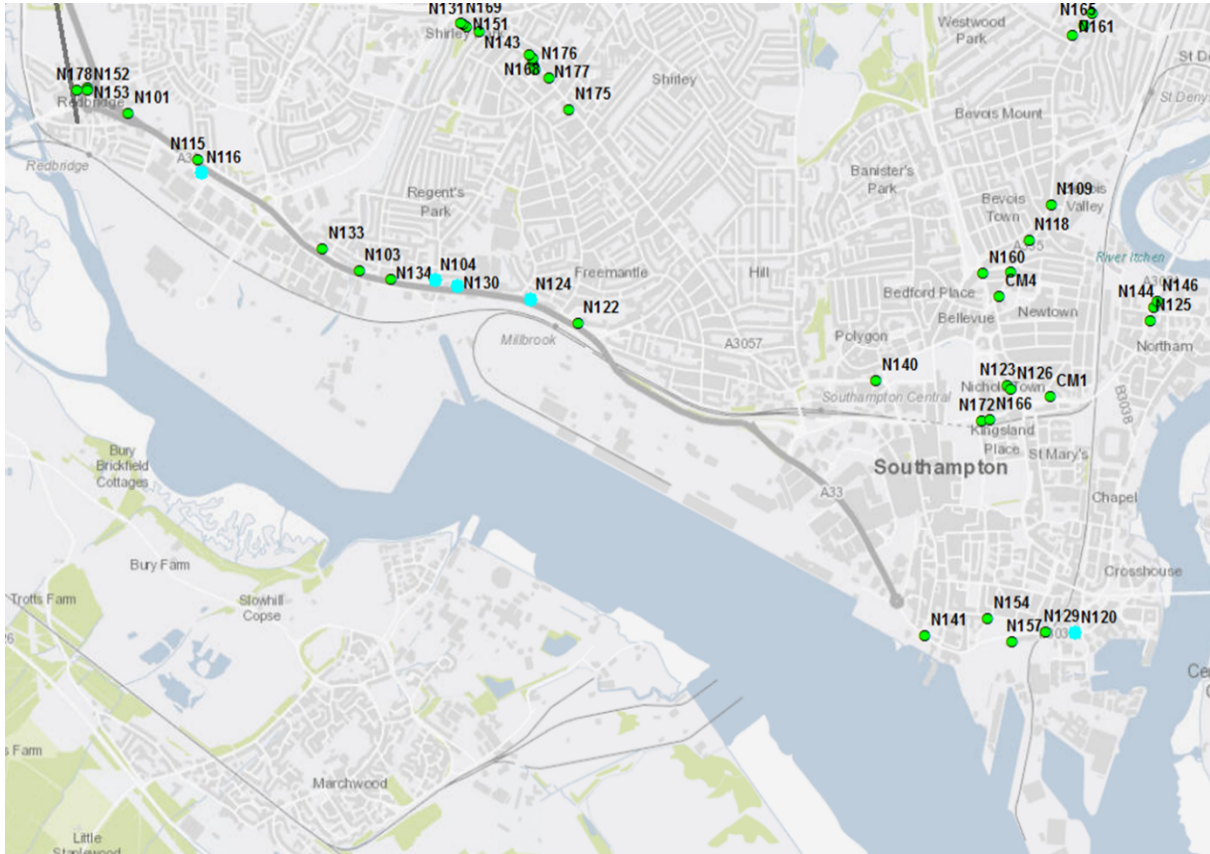


Figure 7 Monitoring locations where source is apportioned in 2015 and 2020 (highlighted blue)

1.9.1. Baseline 2015 Source Apportionment

The source apportionment results for these locations are shown below. The results are shown in terms of NO_x concentrations. These show that the main source of air pollution is road traffic some 60-70%. The majority of the remaining contribution is general background, about 25-30%, comprising commercial and residential emissions. The activity on the port in terms of machinery and rail movements accounts for only about 0.5% of emissions, which is similar to the contribution associated with the emissions from the incinerator and power plant in Marcham. The contribution from ships at dock and accessing the port is somewhat larger at between 2 to 6%.

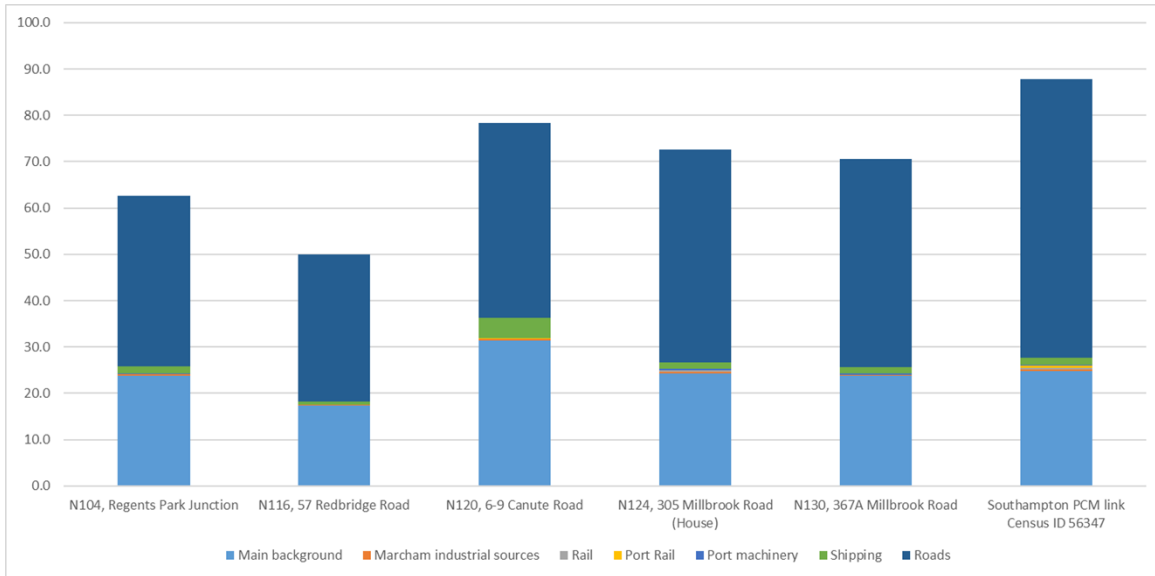


Figure 8 Breakdown of NO_x concentrations by source type - 2015 baseline (µg/m-3)

The road contribution can be broken down further to show the contribution for each main vehicle type as illustrated Figure 8. The break does vary across locations as would be expected. However, overall diesel cars are the main contributor followed by HGV and vans. Buses are only a small proportion along the Western Approaches, but at Canute Road near the city centre are much more significant. Taxis account for between 2% and 4% of the emissions, with the higher contribution again being at the city centre location.

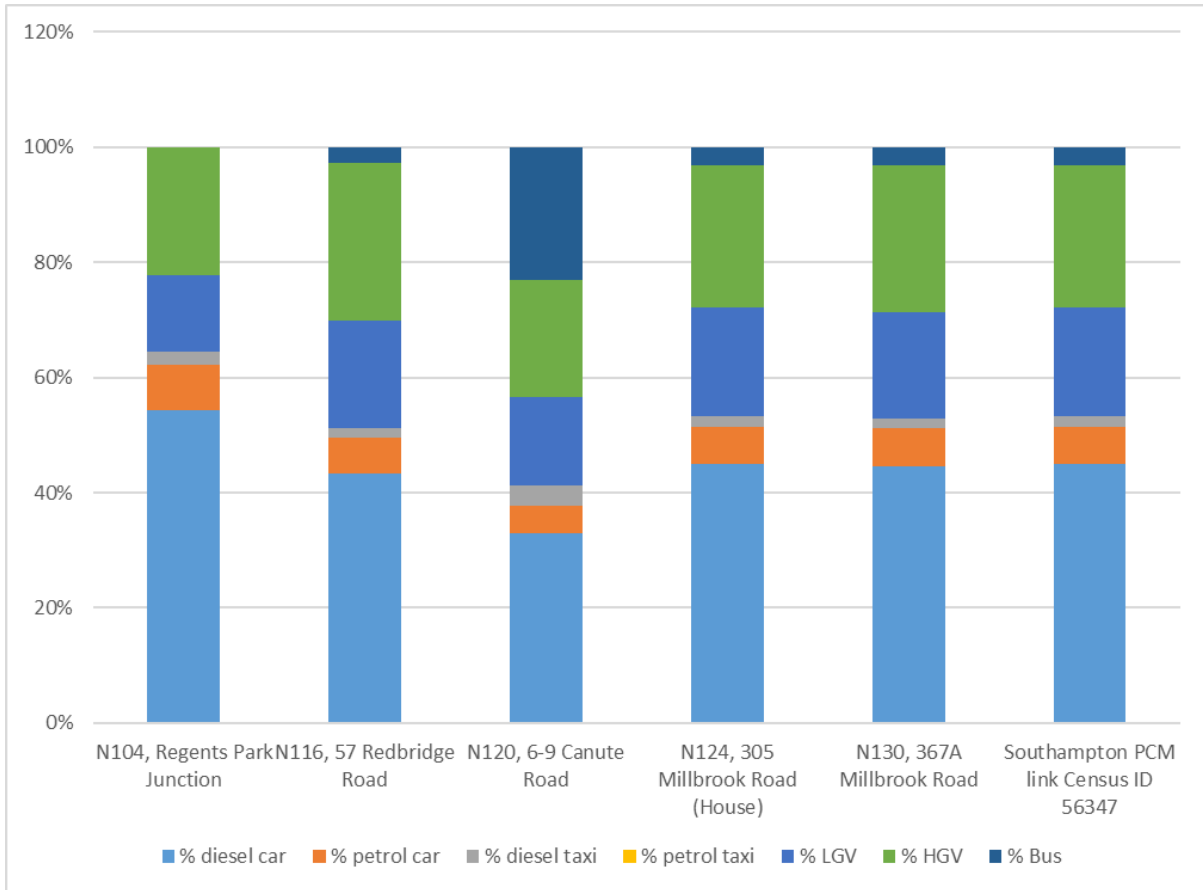


Figure 9 Breakdown of road NO_x contribution by vehicle type

1.9.2. Baseline 2020 Source Apportionment

The 2020 source apportionment results are presented in Figure 10. These results are shown in terms of NO_x concentrations. These show that the main source of air pollution in 2020 is still expected to be road traffic (60-70%). The majority of the remaining contribution will be general background (25-30%), comprising commercial and residential emissions. The activity on the port in terms of machinery and rail movements increases slightly when compared with 2015. The contribution from ships at dock and accessing the port also increases slightly when compared with 2015.

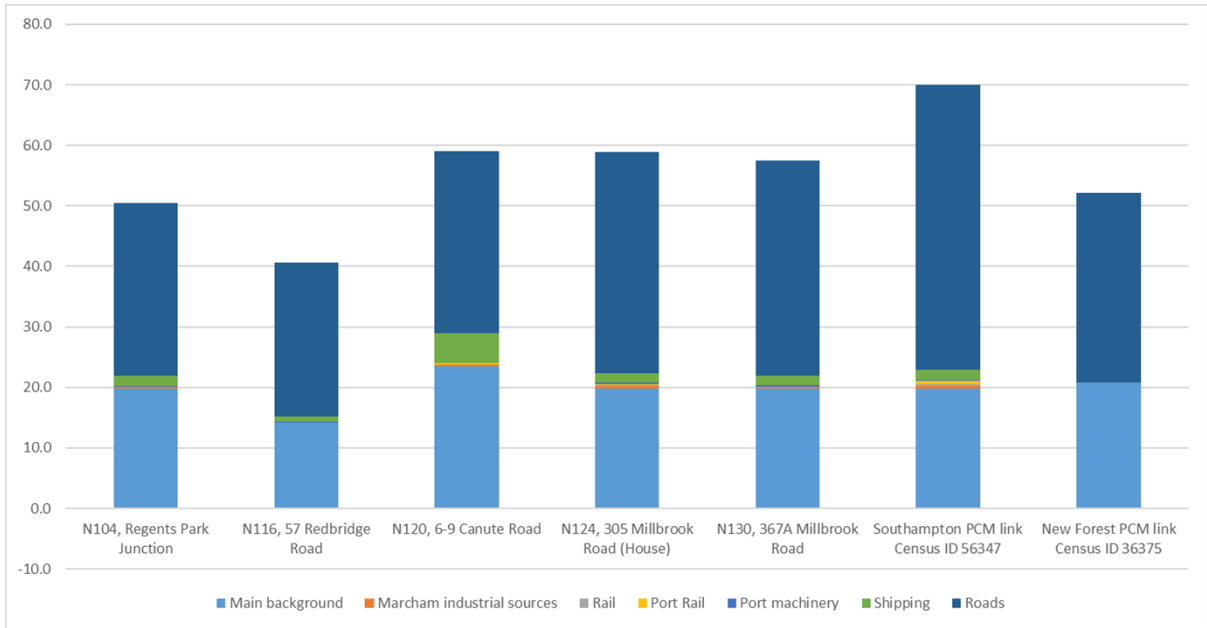


Figure 10 Breakdown of NO_x concentrations by source type – 2020 baseline (µg.m-3)

The breakdown of projected NO_x emissions from various vehicle categories in 2020 is presented in. The 2020 source apportionment analysis shows similar results to 2015; whereby diesel cars are the main contributor followed by LGV. When compared with 2015, HGVs contribute a lower proportion of NO_x emissions, LGV emissions now contribute a greater proportion. Buses still contribute only a small proportion along the Western Approach, but are much more significant in the city centre. The highest proportion of emissions from taxis is also in the city centre.

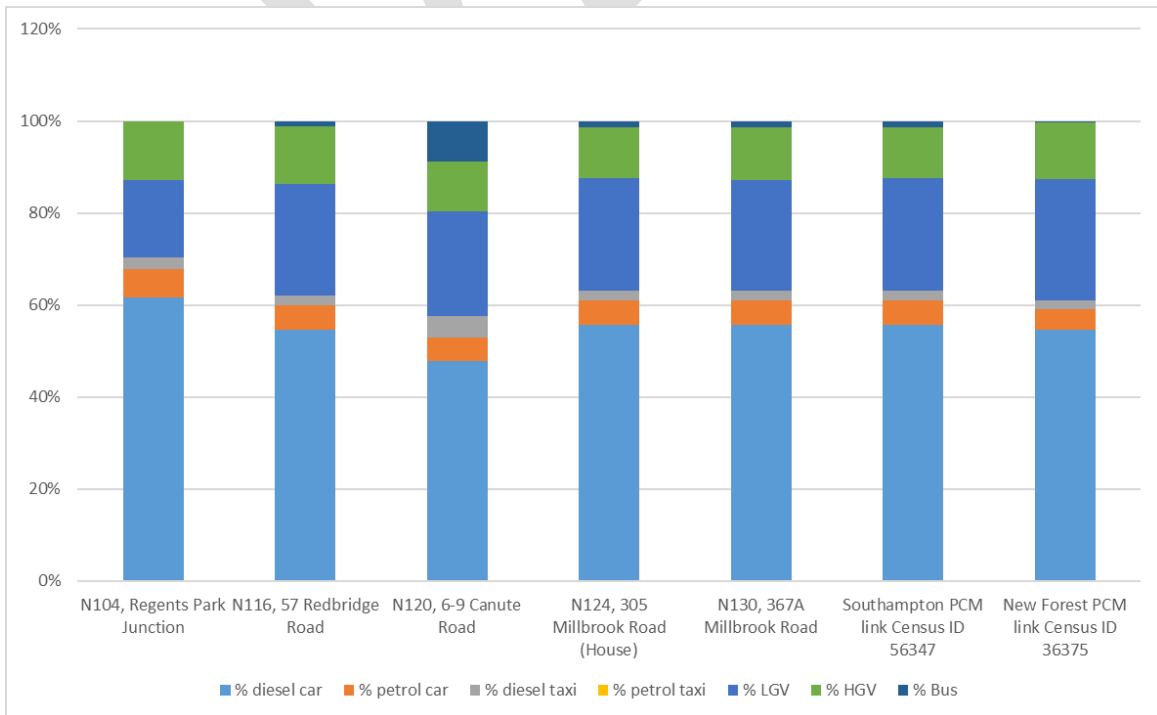


Figure 11 Breakdown of road NO_x contribution (%) by vehicle type

1.10. Key Stakeholders and Engagement

The Source apportionment identifies contributions to the total emissions varies depending on the location, emphasising the need to take a holistic approach to encouraging improvements in air quality across vehicle types and engaging and communicating with a range of stakeholders.

The Public, Local Businesses and Organisations

The Clean Air Zone Framework identifies specific stakeholders that will be impacted by the introduction of a charging Clean Air Zone. The launch of the Clean Air Network in February 2018 provides a foundation for this engagement, acting as a facilitator of sharing best air quality practice, and an opportunity for stakeholders to provide their views directly to the Council's Clean Air Network team who in turn report to the Clean Air Implementation Board. The launch event included representation from bus operators, freight companies, port representatives, local community groups and taxi trade representatives.

Other Council activity include regular Travel Planners Network events at which Officers have presented updates on the Clean Air Zone feasibility work to local organisations. The TPN has grown from 10 members in 2011 to 53 businesses in 2016, and there are ambitions for this to double in size by 2020, therefore providing an effective platform for the continuation of CAZ stakeholder engagement throughout feasibility and implementation. Officers have also attended recent a Port Air Quality Forum, presented at the Hampshire Chamber of Commerce and met with neighbouring local authorities.

The University of Southampton, based on the Northern Corridor, is another key member of the Travel Plan Network. They have reduced their single occupancy car use amongst staff to 37.5%, 9 percentage points below their 2010 baseline of 46.5%. A new focus of the expanded Travel Plan Network will be the Port of Southampton, with ABP, the largest employer within the Port of Southampton, and other key businesses joining the TPN. Together, the Port of Southampton and University of Southampton are worth £1.4bn to the city's economy directly and indirectly, employing almost 8.5% of Southampton T to Work area's workforce.

As a whole across the Southampton Travel to Work area, a number of improvements have been made in rates of active travel amongst students. During the LSTF, 8% of students in Southampton and 12.7% of students in South Hampshire at schools that engaged with Sustrans Officers through the Bike-It programme reported usually cycling to school after engagement. Those schools also reported a decrease in pupils who usually travel to school by car—5.6 percentage point drop in Southampton (23.8% from 28.2% at the start of engagement) and 3.6 percentage points in south Hampshire (26.7% down from 30.3% at baseline). Schools who are part of the wider STARS school travel planning programme have also benefitted from a change in travel. Since 2003, walking at Hampshire schools has risen from 40% to 52%, cycling has risen from 2% to 3%, and driving to school alone has dropped from 44% to 32%. Over a similar period in Southampton, walking has increased from 24.9% to 44.2%, Cycling from 1% to 4.7%, and scooting from 0% to 5.7%. The rise in walking rates is significant as nationally there has been a decline in walking amongst school children.

Buses

Southampton City Council have a designed Public Transport Officer who regularly engages with bus operators in the city. Bus operators are also members of the Clean Air Network. Officers have attended a Freight Transport Association (FTA) meeting to give a presentation updating on the feasibility work for a Clean Air Zone at which bus companies were in attendance.

Taxis

Taxis (private hire and hackney carriages) undertake a large amount of mileage in the city boundary and hence they contribute not insignificantly to air quality issues. However, it is important to recognise that many taxi owners and operators will be classified as small firms, with many drivers simply owning and operating their vehicle on an individual basis. Hence taxi owners may be more restricted in terms of their ability to cover the upfront costs of upgrading their vehicle. This will depend on the individual finances of the taxi owner, and cannot be spread across a wider fleet or company operations.

Southampton City Council has undertaken direct engagement with the taxi trade with respect to the Clean Air Zone. In August 2017 a survey was issued to gauge understanding of the Clean Air Zone proposals in Southampton and Eastleigh. The survey received 52 respondents in total. 35% of these were firm owners/operators while 65% were private hire and hackney carriage drivers. The difference between Southampton and Eastleigh's opinion on significance of air quality as an issue is striking and suggests that the engagement work by Southampton City Council to date has had an influence.

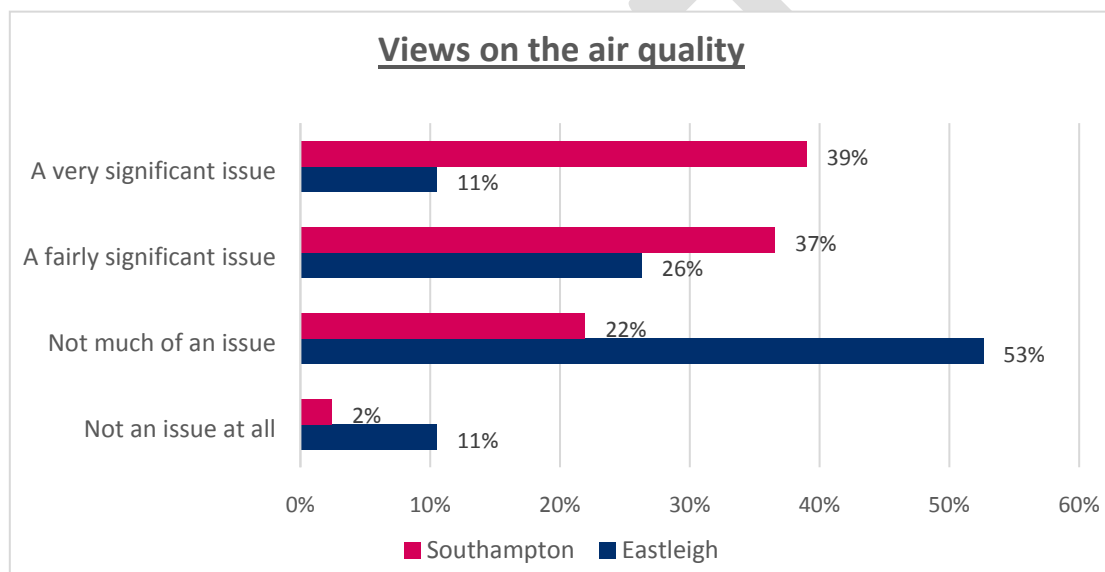


Figure 12 Southampton and Eastleigh taxi trade views on air quality

The Council also sought views on understanding of what a Clean Air Zone means for the area. 65% either agreed or strongly agreed with the statement indicating the majority are aware of the implications of a Clean Air Zone. However, 22% indicated that they disagreed (Figure x). As a result Southampton City Council has sought to undertake further engagement exercises to ensure all of the trade are aware of the proposals.

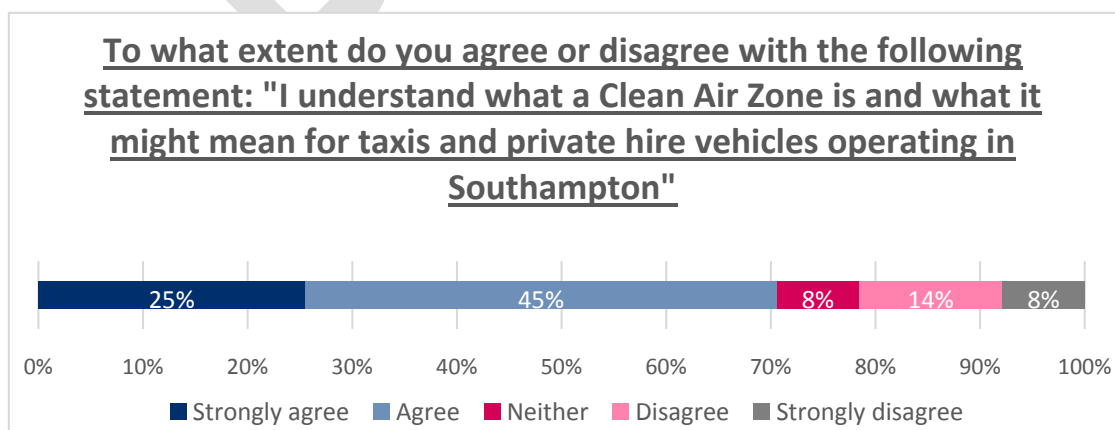


Figure 13 August 2017, seeking to understand the taxi trades understanding of a Clean Air Zone

Furthermore, a focus report from National Clean Air Day 2017, Cabbies for Clean Air⁷, spoke with drivers in Southampton and identified three key themes.

1. Taxi drivers are concerned about air pollution and want to be part of the solution
2. There are some key barriers to a swift transition to cleaner vehicles
3. They are keen to work with local authorities to find transport policies that clean up the air and work well for all road users

Based on this feedback, prior to the launch of the Clean Air Network, the Council piloted a “breakfast briefing” event with the taxi trade. This event invited all taxi drivers, representatives and firms to a morning event where an update on the Clean Air Zone feasibility study was provided, the Low Emission Taxi Incentive Scheme was launched and electric taxi providers gave presentations on the benefits of choosing low emission vehicles. We also had demonstrator vehicles on display and provided a booklet of information. It is hoped this event will be repeated for other stakeholders during the implementation of the Clean Air Zone.

More formally, Officers also attend Licensed Transport Forums in both Southampton and Eastleigh to provide feasibility study updates, hear the opinions of drivers and promote low emission vehicles.

HGVs

The owners of HGVs affected will likely represent a diverse group. This will include large national operators of coach fleets (e.g. Stobart), to small firms operating defined services within Southampton and the local area (perhaps operating just one HGV). This will include HGVs based and operating the majority of their time within Southampton. But there will also be many only visiting Southampton regularly but every so often (e.g. servicing the port), or visiting Southampton as a one off. Officers have attended a Freight Transport Association (FTA) meeting to give a presentation updating on the feasibility work for a Clean Air Zone at freight operators were in attendance. Many freight companies are also members of the Clean Air Network.

Private Vehicles (Promotion of Sustainable and Active Travel)

The primary message delivered to users of private vehicles (i.e. commuters, short trips, visitors and residents in the city) is to choose active and sustainable modes of travel or low emission vehicles. The Access Fund (2017-2020) is used to fund Southampton, Hampshire and Portsmouth’s sustainable and active travel brand and consists of three core elements:

- **Element 1:** Getting into Work and Training - using cycling as a means of getting into employment and training, with a focus on reducing transport barriers for long term unemployed people who are seeking a job or training, and working with employers to enable more staff to cycle and walk to work;
- **Element 2:** The Cool Route to School – delivery of projects which engage with pupils and parents to build awareness, skills and confidence making travel to school by bike and on foot cool.
- **Element 3:** Developing a Cycling and Walking Culture – Increasing cycling and walking through a totally new and much anticipated Legible Cycle Network, a week long Cycle Festival and grass roots support with targeted community groups designed to overcome barriers to physical activity. These activities will add benefit to the planned capital investment in cycle and walking infrastructure.

An infographic which illustrates how people travel to work in Southampton and the neighbouring area is shown in appendix 4.

⁷Cabbies for Clean Air, National Clean Air Day 2017: <https://www.cleanairday.org.uk/Handlers/Download.ashx?IDMF=12503ce8-2148-408c-afbb-014ca819ace7>

The Council also aim to monitor the progress of stakeholder and public engagement. In 2014 and again in 2017, Southampton City Council asked the public through the People’s Panel Questionnaire what their opinion on air quality in the city was. Between the two surveys, there is a clear increase in understanding of the problem of air quality. This is likely due in part to the increased national press but also the comprehensive air quality communication work undertaken by Southampton City Council through Access Fund (My Journey brand).

To what extent do you think air quality is a problem in Southampton?

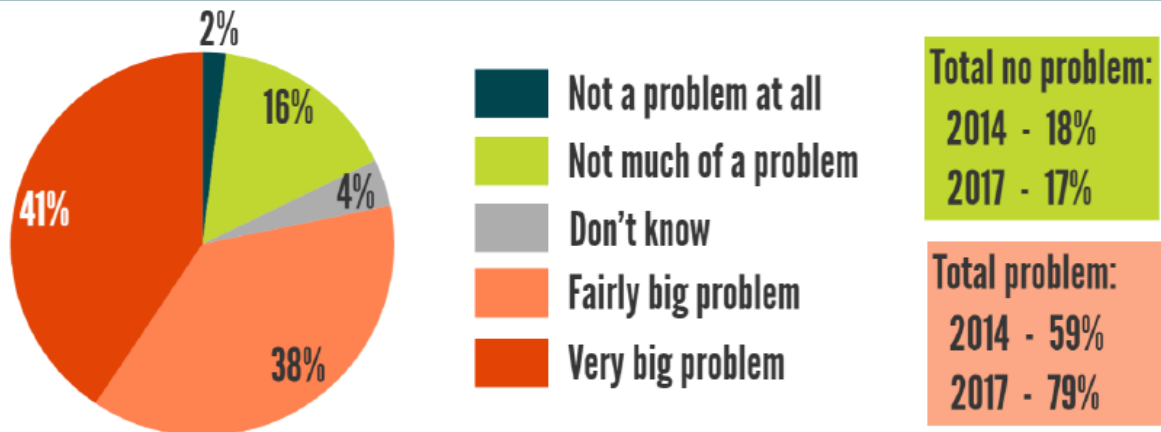


Figure 14 Air Quality in Southampton, Public Opinion 2014-2017

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1.11. Case for Change

1.11.1. Primary Objective

The primary objective of the local plan is to deliver a scheme that leads to compliance with NO₂ concentration limits in the shortest possible time.

1.11.2. Secondary Objectives

The secondary objectives of the plan for NO₂ compliance within the shortest possible time are:

- Likelihood of compliance with EU AAQD NO₂ concentration limits within the shortest possible time
- Compliance with respect to Local Air Quality Management (LAQM)
- Ongoing improvements to public health
- Align with the Council's Strategies

1.11.3. Preferred Option

Appraisal of air quality, economic and deliverability of options have identified a city wide class B clean air zone as the preferred option (Option 1). This is on the following basis:

- Of all the options, Option 1 delivers compliance with the EU AAQD within the shortest possible time, meeting the primary objective of the plan.
- It is more readily deliverable and achievable than option 1a which is reliant on non-charging options with greater uncertainty for compliance.
- It is consistent with the national Clean Air Zone Framework.
- Additional air quality improvements beyond compliance under business as usual are delivered for New Forest District Council (meeting NFDC's primary objective) and at locations relevant to local air quality management in Southampton and New Forest (i.e. sensitive receptors).
- Of the shortlisted options, Option 1 delivers the greatest total NO₂ concentration reductions and wider emission improvements. Therefore option 1 is likely to deliver the greatest benefit to public health.
- The economic assessment indicates there is a net positive economic impact.
- Option 1 is a scheme that has an opportunity to implement mitigation measures to address negative impacts identified in the distributional analysis.

1.11.4. New Forest District Council Preferred Option

Based on the air quality modelling results completed for New Forest District Council, including the four Options being considered, it is evident that compliance with the EU AAQD limit value will be met within Totton, New Forest by 2020 even if none of the Options are implemented and each Option should reduce nitrogen dioxide concentrations further in the Totton area to a similar degree. As such, New Forest District Council is committed to work with Southampton City Council to determine and implement a preferred Option to deliver compliance with the EU AAQD limit value within the Southampton Clean Air Zone in the shortest time possible.

2. Economic case

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2.1. Success Factors

As outlined in the strategic case, there are key gateways that options must pass through to be taken forward for assessment. The primary objective of the plan is to bring about NO₂ compliance within the shortest possible time, and as such options which do not meet this criteria will be eliminated from the assessment process.

Where options are successful in bringing about compliance within the shortest possible time, secondary objectives identified in the strategic case are used to further scrutinise options.

2.2. Long List Options

The long list sifting exercise of a wide range of possible options that span the extent of the Clean Air Zone Framework's classification system and considered a number of geographic boundaries is appended in appendix 6. The long list sifting recommended a City Wide Class B, a City Wide Class C and a Doughnut with City-wide Class B and City Centre Class D Excluding the Inner Ring Road. This was prior to finalising the baseline 2020 modelling which suggested that the exceedance was smaller than anticipated and therefore would likely be addressed by a Class B where any schemes more stringent than a Class B would not offer any benefits in addressing exceedances but increased negative economic impact on the city. The shortlisted options taken forward for further assessment are detailed in section 2.3.

2.3. Shortlist Options

Short list options are those which have been assessed through the initial screening exercise and considered to be those most likely to achieve objectives.

The CAZ options have been developed for Southampton and though they do not cover specific measures in New Forest they will impact on New Forest in terms of changes in traffic flows and vehicle fleet composition. The CAZ options considered cover both formal charging-based CAZ schemes and non-charging measures. The boundaries for the charging CAZ schemes are illustrated in below. For the final options that were assessed only the city-wide boundary and the city centre boundary were considered. Considerations in designing the boundary were ensuring diversionary routes and signage were within Southampton City Council's managed roads.

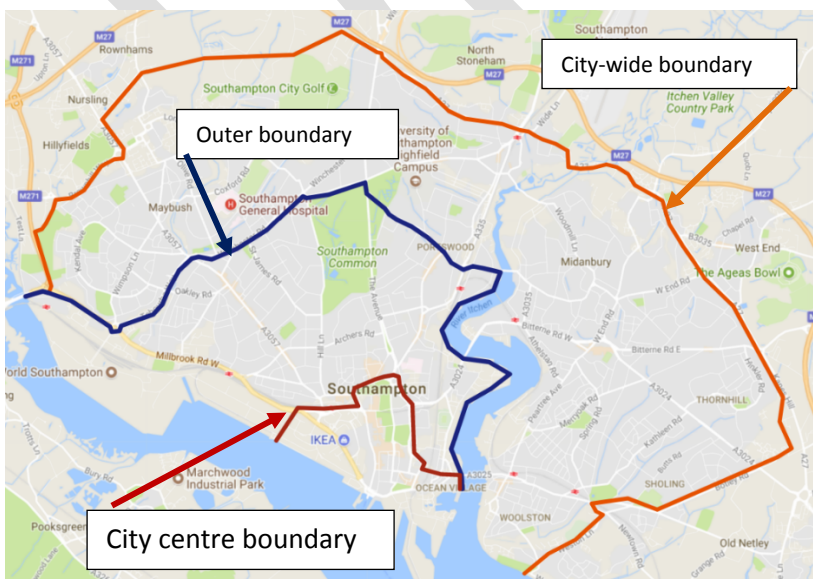


Figure 15 Clean Air Zone geographic boundary

Charge Level

The charge for assessment purposes has been set at the same level as the London ULEZ; £100/day for HGVs and buses and coaches, and £12.50 per day for taxis and private hire vehicles (shown in Table 7). This charge has been used as the modelling uses vehicle upgrade assumptions provided by JAQU and based on the evidence from the London ULEZ. This has been chosen as it firstly offers an established evidence base from which to make assumptions.

Table 7 Clean Air Zone Modelled Charges

Vehicle Type	What vehicles are compliant? (i.e. do not pay charge)	What vehicles are non-compliant? (i.e. do pay charge)	Proposed charges per day	
			Compliant vehicles	Non-compliant vehicles
Heavy Goods Vehicles	Euro VI	Euro I-V	No Charge	£100
Coaches	Euro VI	Euro I-V	No Charge	£100
Buses	Euro VI	Euro I-V	No Charge	£100
Taxis and Private Hire vehicles	Petrol: Euro 4 Diesel: Euro 6	Petrol: Euro 1-3 Diesel: Euro 1-5	No Charge	£12.50
Private cars, minibuses motorcycles and mopeds and light goods vehicles (LGVs)	All	None	No Charge	No Charge

Further sensitivity assessment of charging levels will be undertaken by adjusting the charge/behavioural response to further investigate variation in this charge and its impact.

Option 1: City Wide Class B

The first option considered is a formal Class B charging CAZ with a boundary set covering the whole Southampton city area. The Class B CAZ covers buses (including coaches), taxis and HGVs, where vehicles not meeting the Euro 6/VI standard for diesel (or Euro 4 for Petrol) are charged for entering the city. Vehicles that are passing through the city would have the option of diverting around, which in this case is essentially a diversion around the M27.

This option has been modelled in the transport model to assess potential diversionary or destination shifts as a result of the scheme. Within the transport model buses are fixed and taxis are not directly included (they have been estimated as a proportion of car traffic). As such the traffic response to the CAZ B is largely limited to changes in HGV traffic. However, this may have a knock-on effect to other vehicles classes if journey times change as a result of HGV behaviour and then affect route choices for other vehicle types.

Option 1a: City Wide HGV Charging

This is a variant of the city-wide CAZ B option. In this scheme only HGV's are covered under the formal charging scheme, with buses (excluding coaches) and taxis influenced as follows:

- Buses would be subject to a traffic condition cover the city centre where they would be required to meet a Euro VI standard to operate in the area affected. This is consistent with the bus LEZ approach used in Oxford and Brighton. This traffic condition would be complemented by grants to support bus operators to upgrade their vehicles to meet the Euro VI standard.

Taxis would not have a formal restriction applied to them but would have incentives to encourage them to upgrade including:

- Lower licensing age criteria for CAZ compliant vehicles
- Cash incentives to upgrade vehicles to CAZ standards
- Priority access to CAZ compliant taxis to buses lanes and taxi ranks

This approach is designed to work more collaboratively with the bus and taxi industry. In relation to taxis, this approach is a 'carrot' rather than a 'stick' approach and recognises the difficulty of high cost of upgrading a taxi fleet in response to formal CAZ charges.

For the bus operators the scheme is intended to achieve high level of compliance with the Euro VI standard without having to use charges which could impact on fares and patronage of bus services. In addition, it recognises that there is a major bus depot within the city that serves many regional bus operations not directly operating through the city that could be viewed as being 'unfairly' impacted by a city-wide charging scheme.

Lastly it should be noted that this option would not impact on coach services which would be unaffected by the traffic condition. The impact of this is not considered in the transport and air quality modelling as coaches are not included, as they were not identified separately from any of the traffic count or ANPR data. That said, this was considered an appropriate approach as it is assumed that coaches undertake only a relatively small amount of vehicle km's (vkm) within the CAZ boundaries – hence any option impacting coaches would only have limited effect on emissions in Southampton. However, given the economic impacts move more in line with vehicle than km affected, some consideration of coaches is being taken in the economic modelling comparing data on unique vehicles in the ANPR data with the registered local bus service vehicles.

Charges for HGV's modelled at £100 per day.

Option 2: City Centre Class A

This option focuses on reducing emissions from buses and taxis, while taking forward some additional HGV measures that were considered in Southampton's Low Emission Strategy (LES) study. The components of this scheme are then:

- A city centre charging CAZ A covering buses, coaches and taxis and limited to the city centre boundary
- Complementing the CAZ A scheme with retrofit funding for buses and the upgrade funding for taxis;
- Taking forward the HGV measures from the Southampton LES covering:
 - Increased uptake of the city centre freight consolidation centre;
 - Further development of delivery and servicing plans (DSPs) for organisations in the city;
 - Working with the port, primarily through the HGV arrival booking system, to encourage CAZ compliant HGVs for accessing the port.
 - A city-wide freight accreditation (e.g. ECO Stars) scheme to encourage efficient operation of freight fleets and newer vehicles
 - Relaxing freight regulations to allow 24-hour delivery for CAZ compliant vehicles

The key intention with this scheme option is to influence the majority of buses through a much smaller charging scheme, as most will operate through the city centre. This again recognises the issue of a city-wide scheme targeting all buses and its impact on a regional bus depot. This scheme would also impact on coaches that access the city centre. For the taxis the scheme uses a mixture of ‘carrot’ in terms of the upgrade grant and ‘stick’ in terms of charging those accessing the city centre if non-compliant. With the HGVs, the consolidation centre and DSP’s are primarily designed to reduce HGV traffic movements in the city centre and surrounding area. These schemes will also potentially have an impact on the fleet composition through the use of CAZ compliant vehicles for the last leg of delivery for the consolidation centre and encouraging CAZ compliant vehicles for deliveries via the DSP. The work with the port would aim to increase the proportion of Euro VI compliant HGVs accessing the port, in particular the container port and car transport terminal.

Option 3: Non-Charging Package of Measures

The final option doesn’t include any charging mechanism and is based around a bus-based traffic condition and incentives. The core elements of this option are:

- A bus traffic condition restricting buses operating in the city centre to Euro VI as described in option 1a
- A set of taxi incentives as option 1a
- The HGV measures described in option 2

This group of measures is designed more to encourage the uptake of CAZ compliant and low emission vehicles rather than use any formal regulations or charges. Again, no explicit measure affecting coaches are included.

2.4. Air Quality Options Assessment

2.4.1. Southampton City Council Air Quality – Options Results

A summary of the modelled annual mean NO₂ results for each of the options is shown in Table 8 with details provided in below. The mapped results are shown in appendix 3.

Table 8 SCC Options Results Baseline and Options in 2020

Option	Within SCC Boundary			Beyond SCC Boundary		Average Change in NO ₂ (%) in SCC	Average Change in NO ₂ (%) in NFDC	Compliance Year*
	SCC Managed Roads > 40µg/m ³	All links > 40µg/m ³	All links > 35µg/m ³	All links > 40µg/m ³	All links > 35µg/m ³			
Baseline	1	3	11	6	7	N/a	N/a	Beyond 2020
Option 1	0	2	5	6	6	-6.5%	-1.8%	2020
Option 1a	0	2	5	6	6	-6.5%	-2.0%	2020
Option 2	1	3	7	6	7	-3.8%	-2.5%	Beyond 2020
Option 3	1	3	7	6	7	-3.6%	-2.0%	Beyond 2020

*Options modelled up to 2020

The impact of each option on the Southampton model area can be summarised as follows:

- **Option 1 – City-wide CAZ B:** on average this reduces concentrations of NO₂ by 6.5%, but this varies from link to link ranging from a 2% reduction up to 18% reduction. This is enough to remove the exceedance on the Western Approach, reducing the number of exceedances from 9 to 8. In addition, it reduces the number of PCM at risk of exceedance which were above 35µg/m³ from 18 to 11. This reduces the risk of these links potentially exceeding in the future.
- **Option 1a – City-wide HGV charging:** this option is very similar to Option 1 but using different mechanisms to affect buses and taxis. Its impact is also very similar to option 1 reducing average NO₂ concentrations by 6.5%, which again reduces the number of exceedance from 8 to 9 and reduces the number of links over 35µg/m³ from 18 to 11.

- **Option 2 – city-centre CAZ A:** this option has a similar impact on buses and taxis to option 1a, but has a lower impact on HGVs. Overall this measure reduces NO₂ concentration on average by 3.8%, about half that of Options 1 and 1a. However, this is not enough to reduce the number of exceedance but it does reduce the number of links over 35µg/m³ from 18 to 14, a little less than options 1 and 1a.
- **Option 3 – non-charging CAZ package:** this option has a very similar impact to Option 2 with an average 3.6% reduction in NO₂ concentrations and the number of links over 35µg/m³ from 18 to 14, a little less than options 1 and 1a.

2.4.2. New Forest District Council Air Quality - Options Results

The impact of all the schemes in New Forest is similar with an average reduction in NO₂ concentrations of about 2%. There are no exceedances in the baseline model for New Forest so there is no impact on reducing the number of exceedances from implementing the options.

2.4.3. Local Air Quality Management - Options Results

Modelled NO₂ results have also been extracted from the model for each of the monitoring locations in Southampton and New Forest. These results provide an indication of the impact of the options in relation to areas of concern in relation to local air quality management

In both Southampton and New Forest all of the monitoring locations were below the UK annual mean 40 µg/m³ objective value in the baseline and remain so for all the options modelled. The LAQM results are presented in appendix 3.

2.5. Options Cost Benefit Analysis

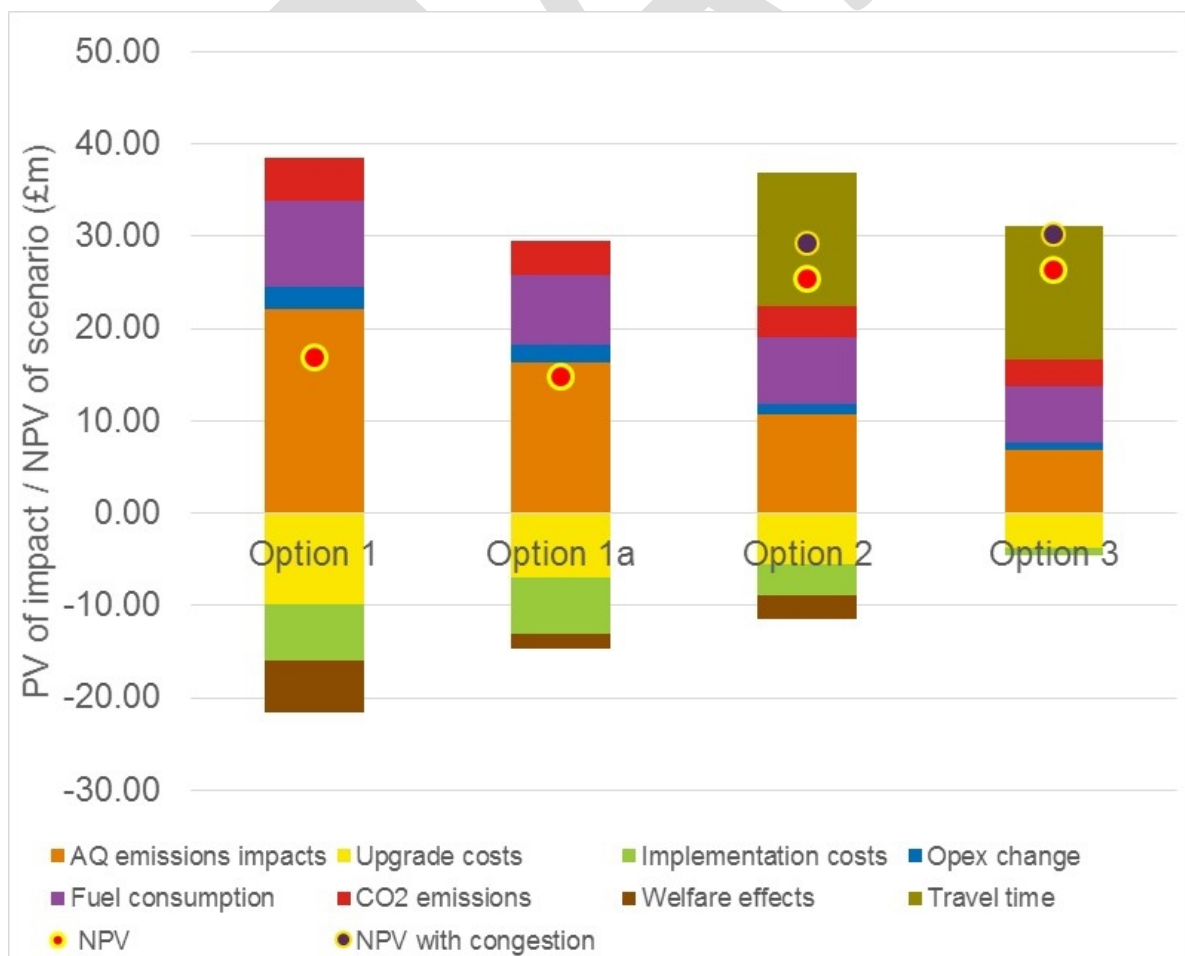


Figure 16 Present Value (PV) and Net Present Value (NPV) of CAZ options.

Note: Bars represent present value (PV) of impacts; dots represent aggregate net present value (NPV) of all impacts associated with CAZ option; all impacts are assessed relative to 'do nothing' baseline; NPV is also presented with congestion costs as a sensitivity to the central NPV estimate; all impacts presented in 2018 prices and impacts discounted to 2020.

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The results of the economic analysis are presented in table x and figure x

Table 9 Monetised impacts associated with CAZ options (cumulative discounted impact (PV) from 2020-30 (£m 2018 prices))

Option	AQ emissions impacts*	Upgrade costs	Implementation costs	Opex costs	Fuel costs	CO ₂ costs	Welfare effects	Travel time	NPV	Sensitivity analysis
Option 1 (CW CAZ B)	22.14	-9.91	-6.08	2.32	9.37	4.62	-5.58	0.00	16.87	0.00
Option 1a (CW CAZ B HGV only)	16.32	-6.99	-6.08	1.99	7.44	3.68	-1.60	0.00	14.76	0.04**
Option 2 (CC CAZ A)	10.78	-5.51	-3.36	1.05	7.14	3.45	-2.56	14.41	25.42	3.86***
Option 3 (non-charging)	6.83	-3.81	-0.83	0.85	6.06	2.92	0.00	14.41	26.43	3.86***

Notes: +ve values denote benefit / -ve values denote costs; all impacts are in 2018 prices; all impacts are discounted to 2020;

(*) Air quality impacts represent reductions in emissions valued using the damage costs. These results are distinct from those presented in the air quality modelling report, which focus on concentrations and comparison to the legal limits, although a key input into this economic work is the underlying air quality modelling used to form compliance assessment.

There is not sufficient confidence around the estimation of the impacts denoted with an (**) or (***) to present these as part of the core CBA; congestion presented as sensitivity given modelling only available for Option 1a; travel time savings for other road users under Options 2 and 3 are valued using unit valuation for removing car not HGV from the road

The CBA results present an assessment of the key monetised costs and benefits associated with the CAZ options and a partial NPV (it has not been possible to quantitatively assess some of the impacts – see **Error! Reference source not found.** below).

Based on the analysis conducted, it appears that all options could deliver a positive NPV on central assumptions: i.e. the benefits of implementing these options would be greater than the costs. Comparing between the options, the result seems to sway depending on whether a charging or non-charging approach is selected for each vehicle type, with the options being critically affected by what approach is taken for HGVs.

Where HGVs are addressed through a charging CAZ (options 1 and 1a), these options affect a greater number of vehicles and hence deliver the greatest air pollutant emission reductions and associated health benefits. They also deliver the largest secondary benefits in terms of operating and fuel cost savings, and GHG emission reductions. However, these options also have higher upgrade costs (also a consequence of affecting a greater number of vehicles) and have higher implementation costs given a larger CAZ area requires a greater level of signage and more cameras (although several costs associated with implementing non-charging measures have not been captured, but these are not considered likely to be significant enough to affect the pattern of results).

However, most important for the overall ranking of options is that the charging CAZ measures do not result in the substantial freight driver time savings and wider congestion benefits associated with freight re-routing through the SDC under the non-charging HGV measures (Options 2 and 3). These benefits are significant, have a value greater than the air quality improvements delivered and critically affect the ranking of NPV across the options.

For taxis and buses, the trade-off between charging and non-charging options remain but has less impact on the overall results. This is because the same effects are anticipated in response to the non-charging as the charging options (i.e. upgrade vehicles), but a greater number of vehicles are assumed upgraded through the charging CAZ. This reflects uncertainty around the funding available to support upgrades through non-charging measures, and also that these incentives rely on an uptake behavioural response from vehicle owners. Given charging options (Options 1 and 2) affect more vehicles, these deliver greater air pollutant emissions and secondary benefits. However they also carry higher upgrade and implementation cost, and a welfare cost associated with ‘alternative’ behavioural responses which do not occur in response to non-charging measures.

One further distinction is that coaches are only affected under the charging options (Options 1 and 2) – no non-charging provision has yet been considered as part of the options. Hence Options 1 and 2 deliver additional benefits and costs associated with upgrading these vehicles, whereas no effects are included in Options 1a and 3.

From the CBA an initial ranking of options can be derived:

- Options 2 and 3 have very similar NPVs – the additional emissions and secondary benefits of Option 2 associated with the city-centre CAZ A are balanced by the additional upgrade, implementation and welfare costs
- Option 1
- Option 1a

2.6. Sensitivity Analysis

Although the sensitivity analysis shows that the NPV assessment of each option is sensitive to the assumptions, and more so those options having greater effect through a charging CAZ (Options 1 and 1a), it demonstrated that uncertainty around the parameters tested does not influence the relative ranking of the options. This suggests that the analysis is robust and provides recommendations which stand up to potential uncertainty in the CBA assumptions and methodology. The full sensitivity analysis is presented in appendix 5.

2.7. Delivery Risk

This CBA was facilitated through the use of several simplifying assumptions. When viewing this analysis, it is important to recognise the uncertainty and caveats around these results and that risks exist which may impact on the ability of the CAZ options to achieve these anticipated effects in practice. Risks exist around both:

1. **CAZ charging:** The analysis assumes the charge levels and behavioural response recommended nationally by JAQU and does not account for local characteristics which may influence these responses. Furthermore, the response assumed is immediate on the date the CAZ comes into force and the analysis does not recognise the potential implementation issue of identifying taxis in the absence of a national database.
2. **Non-charging measures:** The impact of these measures also critically relies on behavioural change from vehicle owners, but in this case on voluntary responses to incentives rather than a CAZ charge. There are several issues which may affect the response in practice:
 - a) vehicle owners do not hold complete information on trade-offs between strategies
 - b) vehicle owners may still not act rationally – e.g. agents are more averse to loss than attracted to benefits of equal amount
 - c) other barriers exist which may prevent take up of non-charging measures, in particular in the short term, e.g. contractual arrangements.

Given these factors, it could be considered that there is greater uncertainty and risk around the ability of non-charging measures to deliver anticipated air pollution emissions reductions than around the CAZ charging options.

Table 10 Delivery risk related to non-charging options

Measure	Barriers
DSP/SDC	<ul style="list-style-type: none"> • Existing delivery contracts / procurement arrangements could last several years and be difficult to change/alter in the short term • Majority of benefits accrue to delivery company, not recipient – but recipient has decision making power • Companies do not have perfect information on the potential costs and benefits to inform a decision – identification of true costs is not always easy as common practice to use standard cost per mile • Fear of loss of control of stock • Limitations around feasibility given type of product • Perception that consolidation is expensive • Delivery costs can be centralised in large organisations, hence savings accrued against central (not store specific) bottom line • Reluctance to take 'non-standard' approach to distribution to one store as opposed to the other stores in a chain.

24 hour delivery	<ul style="list-style-type: none"> • The timing of the deliveries do not only depend on the delivery company, but also convenience for recipient; and feasibility given type of freight and storage options at site • Majority of benefits accrue to delivery company, not recipient, in first instance – driver time, fuel costs, etc. (but more certainty around delivery time / faster unloading...), but client has decision making power • Option less accessible to carriers who have multiple delivery stops (need to co-ordinate with multiple recipients) • Recipients may have to pay staff greater wage out-of-hours to receive delivery; and likewise freight drivers for out-of-hours driving <ul style="list-style-type: none"> • Although 53% businesses in London experienced not change, 38% reported cost increases with out-of-hours deliveries • Companies do not have perfect information on the potential costs and benefits to inform / instigate a decision • Noise concerns for local residents – in particular during arrival / manoeuvring
Port booking	<ul style="list-style-type: none"> • A private company is in charge of the port therefore delivery impact / timing of port charging relies on will / effectiveness of port companies
Fleet recognition scheme	<ul style="list-style-type: none"> • Impacts of driver training tend to reduce over time, so would need to be repeated • Fleet recognition scheme relies on operators taking up efficiency recommendations once made

A wider discussion of delivery risks is appended in appendix 7.

2.8. Qualitative Economic Assessment

The impacts not captured by the quantitative analysis could represent both costs and benefits for the CAZ options, and an impact may switch between being a cost or benefit, depending on the option in question. A full account of impacts qualitatively assessed can be found in appendix 5, in summary:

- All options could deliver additional air quality emissions reductions outside the modelling domain, but these are likely higher for Options 1 and 1a which affect a greater number of HGVs
- Upgrading of vehicles under all options will carry transaction costs, which scale with the number of vehicles upgraded. Hence these will be greatest for Option 1, followed sequentially by 1a, 2 and 3.
- There will be additional implementation costs not captured by the core analysis to design and deliver the non-charging measures, specifically 24-hour delivery, fleet recognition and SDC costs for handling greater freight volumes under Options 2 and 3.
- The non-charging measures under options 2 and 3 will deliver additional fuel, operating cost, GHG savings, congestion and travel time and accident benefits not captured under the core analysis. Some will also reduce noise exposure (e.g. SDC) but some could increase this effect (e.g. 24 hour delivery).

2.9. Economic Assessment Conclusion

The economic analysis conducted on the CAZ options has taken three forms: the focus has been on undertaking CBA of the options and monetisation of impacts. This has been complemented with exploration of some of the delivery risks around the CAZ options, and with distributional analysis exploring how the impacts may fall across different groups in society.

The key focus of the CAZ options is to reduce emissions and help meet legal limits for **air pollutant** concentrations. From the CBA, Option 1 has the greatest impact on emissions, followed by Options 1a, 2 then 3⁸. This is predominantly driven by Option 1 and 1a capturing HGVs within a charging CAZ, which instigates greater improvements in HGVs which are a key source of emissions for Southampton. This result includes the emissions impact of the options on coaches, considering the total mileage driven by the coaches, which is not included in the core air quality modelling. However, it does not capture further emissions reductions for other vehicle types which will occur outside the modelling domain. This air pollution impact is likely to fall to a greater extent on poorer households as emissions reductions are likely to be greatest in and around the city centre, which tend to score lower.

Alongside greater reductions in air pollutant emissions, the higher level of vehicle upgrades under Options 1 and 1a also deliver a higher level of **secondary benefits** – i.e. fuel and operating cost savings, and GHG emission reductions as newer and more efficient vehicles come into the fleet at an earlier stage.

However, Options 1 and 1a also carry with them a higher **cost of upgrading vehicles**. Costs will move in proportion with number of vehicles affected: hence the costs are smaller for Class A, than Class B. Likewise **welfare costs** from avoided trips will be associated with the options containing a CAZ charging area, and are higher the larger the area and greater number of vehicles affected. Given that the CAZ options predominantly target commercial vehicles, these costs (and others associated with CAZ compliance – such as charge payments) will be borne by businesses, raising questions around the affordability of such effects in particular for smaller firms. Options 1 and 2 could also have a more prominent indirect impact on household affordability through costs being passed on by bus and taxi operators, however these impacts are uncertain and likely small.

In addition, Options 1 and 1a also imply a higher **implementation cost** given they propose a much larger CAZ area than Option 2 (and Option 3 does not include a CAZ charging area at all). There will also be implementation costs associated with the non-charging measures, in particular those for HGVs implemented under Options 2 and 3. It has not been possible to capture many of these in the quantitative analysis and many are not deemed likely to be sufficiently large enough to change the ranking of options. That said, the costs of handling additional freight through the SDC could be fairly large (even though many would fall away given the SDC is already established and has spare capacity) and could present an additional barrier to the take up of this option.

Furthermore, there are other effects which influence the balance of benefits and costs. Specifically, the non-charging measures for HGVs under Options 2 and 3 deliver significant benefits in terms of **travel time reduction**. The impacts captured in the analysis represent driver time savings and wider impacts on traffic through use of the SDC which takes HGV vkm off the road. These impacts can be significant: for these options they are greater than the air quality benefits delivered and directly influence the overall ranking of options. Furthermore, these greater impacts on travel time also have secondary benefits of reductions in noise and accidents and improved accessibility which have been explored through the distributional analysis. Assuming that the changes in traffic follow the same pattern as changes in concentration, these changes in noise, accidents and accessibility could also

⁸ As noted, the air quality impact captured in the economics focuses on emissions. This is different to the air quality impact taken directly from the modelling which focuses on concentrations and the achievement of legal limits. Although both are linked (and the air quality modelling is a key input to the economic analysis), the economic analysis also takes into account emissions of coaches and therefore presents a slightly different pattern of results. The results of the economic analysis are consistent with the concentrations modelling - the analyses simply differ in scope and objectives which lead to different metrics being extracted from the same modelling.

predominantly favour poorer households (although attention would have to be paid to the area immediately surrounding the SDC).

Overall, on central assumptions, all options assessed deliver a positive NPV – i.e. the benefits outweigh the costs. In terms of ranking, it appears that the additional benefits gained through having a larger CAZ outweigh the costs under Options 1 and 1a, but the secondary benefits delivered by the alternative non-charging measures for HGVs result in Options 2 and 3 having a higher positive NPV than Options 1 and 1a.

All options will have an impact on businesses through the costs of complying with the CAZ. But who will be affected and to what extent will differ by option and scale with the size and class of CAZ. The greatest effects are likely to be those direct felt by affected vehicle owners – taxi drivers, scheduled bus operators, coach firms and HGV businesses.

Many of the potential negative effects for scheduled bus operators have been mitigated through the confirmation of funding for retrofit of buses operating routes within the city. However other buses using the regional depot would still be captured by Option 1. Owners of vehicles in the other categories affected by a charging CAZ (i.e. taxis and coaches under Options 1 and 2, and HGVs under 1 and 1a) will likely capture to some extent smaller firms and operators, in particular taxi drivers, which may find it more difficult to meet any upfront costs of CAZ compliance. In addition, the air quality benefit to Southampton of including coaches in the charging CAZ may be limited given these vehicles typically do less mileage in the city area.

The key measure for mitigating the impacts of CAZ compliance on businesses is to exclude certain vehicle classes from a charging CAZ and instead incentivise those using non-charging measures. This is illustrated in the construction of the measures.

In fact, many of the non-charging measures could be implemented alongside the charging CAZ as mitigation measures themselves, for example:

- Freight drivers accessing the SDC would directly avoid the CAZ charge as the SDC is located outside the city-wide boundary
- Delivery and service plans (DSPs) can be used to reduce the number of trips entering the CAZ and to incentivise CAZ compliant vehicles for delivery
- 24-hour delivery could be combined with lower CAZ charges outside peak hours to further incentivise take up and mitigate part of the impact of the CAZ charge.

Doing so would also overcome some of the uncertainty associated with non-charging measures in terms of achieving the estimated savings.

Table 11 Economic Assessment Summary Table

Option	Cost-benefit analysis				Delivery risk	Qualitative analysis	Distributional impacts
	Air quality impact	Costs		Other impacts			
		Vehicle upgrade	Implementation costs				
Option 1 (CW CAZ B)	✓✓ Larger reduction in Nox emissions (incl. impact on coaches)	✖✖ Larger upgrade costs (4,500 vehicles upgraded)	✖✖ High implementation costs associated with largest CAZ area	✓ Larger fuel/opex/GHG savings	✓ Lower risk as CAZ provides immediate incentive, although inertia may still delay take up. Plus potential issue identifying taxis	✓ Larger AQ emission reductions outside domain ✖ Larger transaction costs from vehicle upgrades	✖✖ Largest impact on businesses in absence of mitigation measures ✓ Smaller benefits in noise, accidents and congestions
Option 1a (CW CAZ B HGV only)	✓✓ Large reduction in Nox emissions	✖✖ Moderate upgrade costs (3,500 vehicles upgraded)	✖✖ High implementation costs associated with largest CAZ area	✓ Large fuel/opex/GHG savings	✓✓ Lowest risk as CAZ provides immediate incentive for HGVs (but inertia). Taxi / bus incentives could be timed pre 2020	✓ Larger AQ emission reductions outside domain ✖ Larger transaction costs from vehicle upgrades	✖✖ Large impact on businesses, but impacts on taxis and coach operators mitigated (relative to 1) ✓ Smaller benefits in noise, accidents and congestions
Option 2 (CC CAZ A)	✓ Moderate reduction in Nox emissions (incl. impact on coaches)	✖ Moderate upgrade costs (2,000 vehicles upgraded)	✖ Smaller (quantified) implementation costs associated with smaller CAZ area	✓✓ Smaller fuel/opex/GHG savings, but large congestion/time savings from SDC/24 hour delivery	✖✖ Highest delivery risk – uncertainty around uptake / timing of non-charging measures, in particular HGV. CAZ A provides immediate incentive but inertia. Plus potential issue identifying taxis	✓ Smaller AQ emission reductions outside domain, but larger fuel/ opex/ GHG/ noise/ accident benefits through non-charging measures ✖ Smaller transaction costs from vehicle upgrades, but additional costs of non-charging measures and noise through 24-hour delivery	✖✖ Large impacts on businesses, including taxis and coaches. But some benefits for HGV operators ✓✓ Larger benefits in noise, accidents and congestions through HGV non-charging measures

Option 3 (non-charging)	✓ Smallest reduction in Nox emissions	✗ Smallest upgrade costs (1,500 vehicles upgraded)	✗ Smallest (quantified) implementation costs as no CAZ charging area	✓✓ Smaller fuel/opex/GHG savings, but large congestion/time savings from SDC/24 hour delivery	✗ High delivery risk – uncertainty around uptake / timing of non-charging measures, in particular HGV. Taxi / bus incentives could be timed pre 2020	✓ Smaller AQ emission reductions outside domain, but larger fuel/ opex/ GHG/ noise/ accident benefits through non-charging measures ✗ Smaller transaction costs from vehicle upgrades, but additional costs of non-charging measures and noise through 24-hour delivery	✗ Fewer businesses directly affected, with benefits for some HGV operators ✓✓ Larger benefits in noise, accidents and congestions through HGV non-charging measures
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Note: *Compliance and local traffic effects are key considerations in comparison between options. These are not (directly) assessed in economic analysis (air quality impacts are assessed in terms of emissions, rather than concentrations and traffic effects are modelled in aggregate) and will feed in directly from SCC modelling

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2.10. Qualitative Distributional Analysis

Social CBA can provide an aggregate comparison of the overall effects of CAZ options. However, this high-level analysis can mask any underlying distributional effects occurring between different groups, and consideration of any complementary measures to mitigate any issues highlighted.

At this stage it has not been possible to undertake detailed quantitative assessment of the distributional impacts. Instead, an initial qualitative assessment has been undertaken to explore the potential effects of the different CAZ options to inform the selection of a preferred option at this stage. The detail of the assessment is set out in appendix 5 section 3.5. A summary of the results for each CAZ option is presented in **Error! Reference source not found.**ble 12.

The key outcomes of the qualitative assessment are as follows:

- All options will deliver air quality improvements that benefit all households.
- Direct impacts on households are limited as private vehicles are not considered within any of the charging options.
- There is a potential for indirect negative impacts on households reliant on taxi and bus services, which could disproportionately affect poorer households, or households with a disabled member.
- Business will be impacted by both non-charging and charging options. The key impact will be on businesses that operate a vehicle that is required to enter the Clean Air Zone.
- All options will affect all scheduled buses operating on routes within the CAZ, but negative impacts are limited due to provision of grant funding to install accredited retrofit technology making the vehicles compliant (see section x).
- A regional bus depot is located within the CAZ. These vehicles do not have access to the retrofit grant and therefore non-compliant vehicles may pose a cost to the owners and local economy.
- Taxis will be financially impacted by a charging CAZ as they will directly face the cost to comply by purchasing a compliant vehicle or paying a charge.
- Impacts on Heavy Goods Vehicles (HGVs) will be greatest under the charging options. Smaller operators may find it more difficult to upgrade to compliant vehicles. Some non-charging mechanisms proposed in options 2 and 3 could be used to mitigate negative impacts under charging options.
- Coach operators are affected by the charging options. Smaller operators may find it more difficult to upgrade to compliant vehicles. Opportunities to mitigate negative impacts for coaches are limited.
- Marginal improvements in noise and congestion are predicted under the charging schemes.
- Options 2 and 3 are predicted to result in a greater improvement in noise and congestion compared to options 1 and 1a.

Southampton City Council and New Forest District Council will be undertaking an Equality, Safety and Impact Assessment (ESIA) to accompany the Full Business Case. A draft ESIA has been completed based on the qualitative distributional analysis and officer knowledge. This is found in **appendix x.**

Table 12 Qualitative Distributional Analysis Summary

Impact	City wide CAZ B (1)	City Wide HGV only (1a)	City Centre CAZ A (2)	Non-charging (3)
Air quality	✓✓ Air pollutant reductions more disperse than City Centre CAZ, most significant reduction seem to be in M27 junction north of the centre where households generally higher on IMD. In addition, reductions also in city centre where households are generally lower on IMD.	✓✓ Air pollutant reductions more disperse than City Centre CAZ, most significant reduction seem to be in M27 junction north of the centre where households generally higher on IMD. In addition, reductions also in city centre where households are generally lower on IMD.	✓✓ Focus of reductions in air pollution will be in/around city centre, where households are generally lower on IMD.	✓✓ Focus of reductions in air pollution will be in/around city centre, where households are generally lower on IMD.
Affordability (households)	× Potential small, indirect impact likely to disproportionately affect poorer households / households with a disabled member through bus/taxi firms passing on costs, with greater effects through greater number of taxis affected	× Potential small, indirect impact likely to disproportionately affect poorer households / households with a disabled member through bus/taxi firms passing on costs.	× Potential small, indirect impact likely to disproportionately affect poorer households / households with a disabled member through bus/taxi firms passing on costs, with greater effects through greater number of taxis affected	× Potential small, indirect impact likely to disproportionately affect poorer households / households with a disabled member through bus/taxi firms passing on costs.
Affordability (businesses)	×× Largest area so greatest number of businesses potentially affected; places cost on large number of HGV and coach operators; Buses using depot but operating routes outside Soton affected; Taxis affected potentially not covered by incentive.	×× Largest area so greatest number of businesses potentially affected; places cost on large number of HGV operators	×× Smaller CAZ area so lower number of businesses affected; taxis affected potentially not covered by incentive; places cost on some HGV operators (accessing port/24 hour opportunities), but also delivers large benefits; places cost on some coach operators	× No CAZ charge area so fewer firms directly/indirectly affected; places cost on some HGV operators (accessing port/24 hour opportunities) but also delivers large benefits
Traffic impacts - noise, accidents	✓ Reduction in noise and accidents due to less HGVs, coaches and taxis on the road (those cancelling/avoiding).	✓ Reduction in noise and accidents due to less HGVs on the road (those cancelling/avoiding).	✓✓ Non-charging measures will reduce vehicle kilometres and/or shift them to a time when there are less other traffic – this will reduce noise and accidents. There could be a localised increase in noise around the distribution centre but this is expected to be small.	✓✓ Non-charging measures will reduce vehicle kilometres and/or shift them to a time when there are less other traffic – this will reduce noise and accidents. There could be a localised increase in noise around the distribution centre but this is expected to be small.
Traffic impacts - congestion (accessibility)	✓ Small reduction in HGV, coach and taxi traffic improving the accessibility for other road users	✓ Small reduction in HGV traffic improving the accessibility for other road users	✓✓ Improvement in congestion and therefore accessibility through a reduction vehicle kilometres and/or shifting them to a time when there are less other traffic. Some taxis/coaches cancel trips improving congestion for other traffic users but decreasing accessibility for those users who depend on these traffic modes.	✓✓ Improvement in congestion and therefore accessibility through a reduction vehicle kilometres and/or shifting them to a time when there are less other traffic. Some

2.11. Preferred Option

Appraisal of air quality, economic and deliverability of options have identified a city wide class B clean air zone as the preferred option (Option 1). This is on the following basis:

- Of all the options, Option 1 delivers compliance with the EU AAQD within the shortest possible time, meeting the primary objective of the plan. (See section x)
- It is more readily deliverable and achievable than option 1a which is reliant on non-charging options with greater uncertainty for compliance. (See section x)
- It is consistent with the national Clean Air Zone Framework.
- Additional air quality improvements beyond compliance under business as usual are delivered for New Forest District Council (meeting NFDC's primary objective) and at locations relevant to local air quality management in Southampton and New Forest (i.e. sensitive receptors).
- Of the shortlisted options, Option 1 delivers the greatest total NO₂ concentration reductions and wider emission improvements. Therefore option 1 is likely to deliver the greatest benefit to public health.
- The economic assessment indicates there is a net positive economic impact.
- Option 1 is a scheme that has an opportunity to implement mitigation measures to address negative impacts identified in the distributional analysis. (see section 2.13.)

Summary of Alternative Options Considered

- Neither option 2 (city centre class A) nor option 3 (non-charging package of measures) are sufficient to deliver compliance with the EU AAQD within the shortest possible time.
- While option 1a delivers compliance at the same time as the preferred option, compliance is brought forward by a year under option 1 compared to option 1a. (CHECK THIS)
- There is greater risk in delivery of option 1a due to the high uncertainty associated with the non-charging measures and the assumptions made within the air quality and economic model.

2.12. Additional Abatement Measures

2.12.1. Cycling Routes Southampton Cycle Network 11, 12 and 14

The air quality and economic assessment have identified that compliance can be achieved by introducing a city wide Class B Clean Air Zone. To deliver additional benefits to air quality beyond those achieved by the preferred option, and to add robustness to the scheme, SCC are proposing further NO₂ abatement measures. The source apportionment detailed in section x indicates that the contribution to NO_x emissions in 2020 on Millbrook Road West where the EU AAQD persistent exceedance is identified is primarily from road transport. Private vehicles account for 61%, with diesel cars representing 56% petrol vehicles representing 5% of NO_x emissions. By installing cycling infrastructure, there will be greater capacity for cycling as a choice over driving a private vehicle. The routes represent key commuter routes to major employment areas through to the city centre. An overview of the two schemes are outlined:

- 1) Delivery of a significant proportion of SCN14 providing a high grade 'Cityway' for cyclists. West to east link from Redbridge Roundabout through to the General Hospital and beyond to the Common and subsequently the University's Highfield campus.
 - a. Procurement Route: Balfour Beatty Living Places (BBLP) strategic highways partnership
 - b. Cost: approx. £3,000,000
 - c. Delivery timescales: 2019/2020 financial year

- 2) Delivery of improved cycle access from Woolston and Weston along SCN12 with potential for some quietways provision alongside SCN11 providing access from the East of the city to the City Centre for commuters. Both schemes will provide improved cycle access along commuter routes either side of the city with large volumes of daily trips.
 - a. Procurement route: B Balfour Beatty Living Places (BBLP) strategic highways partnership
 - b. Cost: approx. £2,000,000
 - c. Delivery timescales: 2019/2020 financial year



Figure 17 Southampton Cycle Network (SCN) simplified map identifying routes 12 (East, Woolston) and 14 (East-West, across city) highlighted as an additional NO₂ abatement measure

Routes 1, 5, 8 and 10 are currently being delivered through the “Early Measures” Clean Air Implementation Fund to deliver cycle infrastructure along key corridors of the city to promote active, sustainable travel and to improve NO₂ concentrations at locations that are identified within the local model as exceeding the EU AAQD limit. These proposed routes would adjoin the two corridors previously funded Strategic Cycle Network corridors and provide improved cycle access to two major areas of employment generating a significant number of vehicle trips.

2.13. Mitigation

The qualitative distributional analysis undertaken at this stage has identified that A Class B Clean Air Zone which charges Buses, Coaches, Taxis and Private Hire Vehicles will have high costs for businesses that are dependent on these vehicles. To mitigate against these impacts, a suite of mitigation measures are proposed in accordance with JAQU’s Clean Air Fund guidance, i.e. with the objective of supporting individuals and businesses affected by the preferred option without impacting the delivery of NO₂ improvements.

2.13.1. Summary of Distributional Analysis

Qualitative distributional analysis has been undertaken (see section x) and has identified particular groups likely to be impacted by the preferred option. These are outlined Table 13.

Table 13 Summary of Distributional Analysis

Group Impacted	How are they impacted?
Bus	A citywide Class B CAZ will charge non CAZ compliant buses to enter the CAZ.
Bus using depot for service and maintenance	A citywide Class B CAZ will charge non CAZ compliant buses to enter the CAZ. High cost to bus operator using depot in Southampton to service and maintain buses that do not regularly access Southampton.
Coach	A citywide Class B CAZ will charge non CAZ compliant coaches to enter the CAZ.
HGV	A citywide Class B CAZ will charge non CAZ compliant HGVs to enter the CAZ.
Taxi	A citywide Class B CAZ will charge non CAZ compliant taxi and private hire vehicles to enter the CAZ. The technical assessment identifies that x% of taxi and private hire vehicles will be non CAZ compliant in 2019. Distributional analysis has identified that...

2.13.2. Bus Mitigation Plan

a) Clean Bus Technology Fund

Southampton City Council have been awarded £2,677,835 funding from the Clean Bus Technology Fund (CBTF) in March 2018. The scheme was developed in partnership with the main bus operators in Southampton (First Group, Bluestar, Unilink Wheelers and Xelabus). The project will retrofit Clean Vehicle Retrofit Accreditation (CVRAS) Scheme accredited Selective Catalytic Reduction Technology (SCRT) equipment to 145 buses that are Euro III-V standard during 2017/18 and 2018/19. At the time of project inception, there were 56 Euro VI buses operating in Southampton, with a further 52 new Euro VI buses due to be delivered by 2018. Accounting for these, the 145 buses represent all of the remaining non-Euro VI buses that will be operating in March 2019 in Southampton and the wider area via services beyond the city including those to Totton (along the route identified as an EU AAQD exceedance in NFDC), Eastleigh and Winchester, areas that also have air quality management areas (AQMAS). Vehicles accredited with CVRAS retrofit technology are deemed compliant with the Clean Air Zone minimum standards and will therefore not pay a charge.

b) Buses not included within the Clean Bus Technology Fund (if any required)

Project inception in November 2017 surveyed the main bus operators in the city to identify numbers of vehicles that would be eligible for the scheme. Since receiving the funding, more buses have been identified that would be eligible for the scheme and as such the plan requires further financial support to mitigate the impacts of this plan. The subsequent bus retrofits will be undertaken in accordance with the Council's CBTF, i.e. only CVRAS retrofit technology will be subsidised. This ensures that the retrofit technology delivers the quoted emissions improvements and does not impact the effectiveness of the plans anticipated NO₂ concentration reductions.

Local match funding was also identified for the CBTF to deliver driver training, vehicle/engine refurbishments and additional driver green aids. The local contribution totalled £815,680. To ensure the subsequently identified buses are retrofitted to the same standard as CBTF buses, the value of the CBTF local match funding is included within the Clean Air Zone mitigation cost.

Table 14 CBTF Funding Received

Year	2017/18 (£)	2018/19 (£)	Total for 2017/18-2018/19
CBTF capital grant sought	700,000	1,997,835	2,677,835
Local Match Funding	82,840	732,840	815,680
Total	782,840	2,710,675	3,493,515

CBTF Funding Total	£3,493,515
Approximate CBTF Funding Per Bus (Total Funding/145)	£24,093
Approximate Buses Subsequently Identified	x
Approximate Bus Retrofit Clean Air Fund Ask	x

c) Buses Visiting the Depot in Southampton

An annual “free pass” into the Clean Air Zone will be included within the preferred option for all vehicles. This means that buses that visit a depot for a service or MOT annually will not be subject to a charge on their first visit each year.

2.13.3. Taxi Mitigation Plan

Summary

The four proposals will be implemented in combination to encourage uptake of CAZ compliant vehicles (Euro 6 diesel/Euro 4 petrol) within Southampton’s CAZ. The proposal recognises that SCC and NFDC must support local taxi drivers and operators in adapting to the CAZ but encourages accelerated uptake of compliant vehicles to ensure improvements in emissions.

1. Offer the local taxi fleet a discount to the Clean Air Zone charge
2. After 2023, only Euro 6 Diesel or Euro 4 petrol vehicles will be licensed
3. Restrictions for local and national non-compliant access to SCC bus lanes
4. Non-compliant local vehicles offered incentive to upgrade to compliant vehicles

a) Local Taxi Fleet Discount

- The local fleet is defined as vehicles licensed in Southampton or New Forest prior to June 2018, both are included as SCC and NFDC are the authorities with the air quality exceedances.
- Neighbouring authorities will be offered fleet exemptions on the condition that the age policy is refined to meet requirements set out in this proposal.
- The discount of will be substantial ensure only a nominal charge so that taxis operating within Southampton must still recognise that they are driving a non-compliant vehicle within a Clean Air Zone.

b) Incentive Scheme

Vehicles non-compliant prior to June 2018 offered incentive to upgrade to compliant vehicle. Incentive and vehicle age decreases over time to encourage early access. The incentive scheme will operate following the same process as the current Low Emission Taxi Incentive Scheme that provides contributions towards licensing costs over three years in return for replacement of non-compliant vehicles with compliant hybrid, plug-in and electric vehicles. The scheme will be managed by Southampton City Council and will run for three years from 2019.

Table 15 Taxi Discount and Incentive Timeframes

YEAR	CAZ Discount	Incentive Offered*
2019	tbc% Local discount (end 2019)	£1000 (16 reg)
2020	tbc% Local discount	£750 (66 reg)
2021	tbc% Local discount	£500 (17 reg)
2022	No discount	£0
2023	All local vehicles compliant due to age policy	

*Incentive offered and vehicle requirement indicative only at this stage

Incentive Scheme Cost *(provisional)*

Based on the ANPR fleet projections which estimate that in 2020, there will be a total of 1321 non-complaint taxi and private hire vehicles (360 non-compliant hackney carriage and 961 non-compliant private hire vehicles) operating in Southampton from Southampton, New Forest and Eastleigh. Based on the assumption that all vehicles upgrade to complaint vehicles using the incentive scheme in 2019 and that the grant is offered only to SCC and NFDC vehicles at 49% and 24% of the total number of vehicles operating in the city respectively, the indicative cost is £951,120. Further work will be undertaken to establish assumptions for when the incentive will be taken up by the trade and how many vehicles would be eligible for the scheme alongside consideration of neighbouring authority inclusion (such as Eastleigh Borough Council).

c) Age Policy *(provisional)*

The current age policy in Southampton is 12 years for Category A vehicles (including wheel chair adapted, hybrid and electric vehicles) and 9 years for Category B vehicles. In 2022, the licensing policy will be changed to allow only Euro 6 diesel and Euro 4 petrol vehicles to be licensed.

d) Bus Lane Enforcement *(provisional)*

- Local (including NFDC and neighbouring partner authorities) non-compliant vehicles restricted from bus lanes from implementation of the Clean Air Zone.
- National non-compliant vehicles restriction from bus lanes implementation of the Clean Air Zone.

2.13.4. Heavy Goods Vehicle Mitigation Plan

3. Commercial Case

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3.1. Market Assessment

Based on the PESTLE tool, the following gives an overview of the potential for the current market to meet the requirements of the preferred option. Prior to commencement of procurement and to be presented within the Full Business Case it is proposed that market engagement will be undertaken for the appropriate measures to determine the extent to which the preferred option is an attractive proposition.

Political

The UK Governments role is to regulate and ensure local authorities meet the requirement to be compliant with the EU Air Quality Directive in the shortest possible time and is the primary driver behind this business case. Locally there is ambition to deliver significant improvements in air quality (outlined in Southampton City Councils Clean Air Strategy). Current political interventions (discussed below) such as tax breaks, incentives (Plug-in car grant) and other grants make it a more attractive investment proposition for the market.

Economic

As a result of the requirement for delivering NO₂ compliance, the government has announced almost £0.5bn in funding for improving air quality across the country. Incentives, tax breaks and grants currently ensures that investment of time, resource and funding by the private and public sectors into air quality initiatives is an attractive proposition. Our preferred option proposes to support and mitigate against detrimental economic impacts by provision of grant support or otherwise which will be funded either by the Clean Air Fund, Clean Air Implementation Fund or otherwise, it therefore reasonable to anticipate that mitigations such as retrofit will not present a barrier for uptake due to cost.

Social

The cultural trend is currently toward increasing uptake of sustainable practice largely in light the respect of reducing carbon emissions to tackle climate change, but over recent years air quality has become more prominent with a number of campaign and community groups lobby Southampton City Council to deliver improvements to air quality. The market is recognising this shift toward a consciousness in emissions by individuals and organisations and as a result growth in provision for renewable energy, increasing availability for alternative vehicle refuelling infrastructure (e.g. EV charge points) and changing local and national policy indicates that the market for sustainability and air quality initiatives is increasingly becoming a social preference.

Technological

Installation of ANPR cameras is a routine for police enforcement and traffic regulation (e.g. bus lane enforcement, the London congestion charge). It is therefore unlikely that the proposal to install ANPR cameras will present a barrier to the market. However, the back office system will need to adapt to a relatively new concept of identifying emissions standards of vehicles and assigning an appropriate response (either recognise charge paid, don't charge or issue penalty) and interact with a local database where necessary. SCC and NFDC's current understanding is that this will be overseen by Central Government and therefore should not pose a barrier. The market is already seeing a growth in low emission and zero emission vehicles and charging infrastructure and so it is anticipated that the measure proposed in the preferred option relating to technological advancement are reasonable.

Legal

A legal requirement on local authorities to produce a plan for compliance with NO₂ objectives within the shortest possible time has resulted in substantial funding availability from Central Government (see above "economic") providing the market with assurance that the plans will be funded.

Environment

Environment and Environmental Health concerns dominate have resulted in the legal obligation for SCC and NFDC to meet NO₂ compliance (see above “political”). Environmental concern is also influencing a growth in the sustainable and low emission economy.

3.2. Procurement Strategy

Procurement of services and infrastructure required for the preferred option will be undertaken by Southampton City Council (SCC). SCC directly provides some services from in-house staff and resources. Where SCC needs to provide goods, services and works that can't be provided in-house, they are procured from external providers. Procurement is the process used to do this and is administered by Capita, the Councils strategic service partner. SCC is committed to achieving Best Value from the supply chain and recognise that best practice procurement is essential to achieving 'value for money' and improving service quality. However, compliance with NO₂ legal objectives within the shortest time is the primary objective of the preferred option.

The council is a Public Body and must comply with all pertinent EU and UK Procurement Legislation and therefore, staff must, by law, adhere to the same. A number of policies and procedures have been developed to help us achieve these objectives and to ensure that our procurement activities:

- Comply with European Union (EU) and UK procurement legislation
- Conform to the councils Contract Procedure Rules as ratified by Full Council in May 2017, as well as all relevant internal policies, procedures and objectives.
- Achieve evidenced value for money in terms of quality and the price paid
- Test and demonstrate whether social value has been achieved
- Are open and transparent and safeguard against allegations of corruption, fraud or bias
- Are well documented to provide a clear audit trail
- Manage and address risks as well as opportunities

SCC contract procedure rules require:

1. Establish contract value at the start of every procurement.
2. Engage at the earliest opportunity with the Procurement Services Team (PST).
3. Definition of the need of the requirement and ensuring all options for delivery are explored.

Existing Frameworks

Where representing best value for money and on approval of The Service Director: Digital and Business Operations, existing framework agreements can be utilised. The PTS will undertake assessment to ensure best value for money and legal compliance.

Tender Procedure

The Rules and the associated procurement procedures vary according to the value of the contract, with stricter more rigorous procedures for higher value transactions. This is to ensure that the benefits of a more thorough, complex process are not outweighed by the cost relative to the value of goods, services or works in question. This is outlined in **Table x**

Table 16 Contract Procedural Rules

Estimated Contract Value	Procedure to be followed
£181,302* or over for goods and services* £4,551,413* or over for works	The OJEU Procurement Procedure
£100,000 up to £181,301* for goods and services £100,000 up to £4,551,412* for works	The Procedure for High-Value Transactions
£1,000 up to £99,999 for goods, services and works	The Procedure for Intermediate-value Transactions
Up to £999 for goods, services and works	The Procedure for Low-value Transactions
* Please note that these are the OJEU Thresholds (“OJEU Thresholds”) and are correct as at January 2018 but are amended biennially in January ⁹ .	

Procurement Routes

The procurement route for delivery of the preferred option is to be determined, this represents the package of measures that are currently envisaged and will be confirmed in the Outline Business Case with additional/supplementary information included in the Full Business Case.

3.2. Contract Arrangement

A procurement strategy, including contract arrangements will be included for each individual measure and presented in the Outline Business Case.

Contract Type

A range of contracts will be required due to the varying nature of the projects required for the plan, including the use of Frameworks, existing contracts with partner organisations (most notably Balfour Beatty Highways), service level agreements (SLA’s) with internal partners and neighbouring authorities (for example when undertaking joint work for Taxi Licensing), service contracts (for consultancy requirements), works contracts (where works are not covered by existing partnership’s or deliverable by SCC). A procurement strategy, including contract arrangements will be included for each individual measure and presented in the Outline Business Case.

Contract Length

For capital works resulting with an asset requiring ongoing maintenance (e.g. ANPR cameras, signage), an ongoing maintenance contract may be required. Where service contracts, SLA’s or works contracts are required the contract length will be until completion of the initial contract identified in the individual measures procurement strategy. A procurement strategy, including contract arrangements will be included for each individual measure and presented in the Outline Business Case.

Key Contractual Clauses

A wider requirement for successful implementation of the project is compliance with NO₂ concentrations within the shortest possible time, and therefore where appropriate SCC will ensure delivery of service or goods is as quickly as possible. A procurement strategy, including contract arrangements will be included for each individual measure and presented in the Outline Business Case.

Payment Mechanisms

Payment mechanisms will be dependent on the individual contract undertaken and will form part of each individual measures procurement strategy. A procurement strategy, including contract arrangements will be included for each individual measure and presented in the Outline Business Case.

⁹ OJEU Thresholds last accessed 28/03/2018; <https://www.ojeu.eu/thresholds.aspx>

3.3. Risk Allocation and Transfer

Risk and delivery of the plan and the programme of projects supporting it will be held by Southampton City Council and that compliance with NO₂ legal objectives is the responsibility of the local authority.

Contracts issued to the private sector will endeavour to transfer risk where possible to minimise risk for both Southampton City Council and Central Government. Risks will be flagged at and managed by Southampton City Council's Clean Air Implementation Board. Each measure's procurement strategy will discuss the risk allocation and transfer strategy individually.

3.4. Personnel Implications

The preferred option is composed of a programme of projects that will require project management expertise for delivery and resource for staff to enforce proposed measures which does not currently exist within the Council. Therefore revenue costs will be factored into the final cost and presented within the Financial Case.

3.5. Budget Management

The budget management responsibility will fall to the project manager and appointed contract managers (for example cycle infrastructure works carried out by existing partners Balfour Beatty will be managed by the Transport Delivery team whereas Consultancy for HGV mitigation and fleet recognition will likely be contract managed by Scientific Services). Quarterly budget reports at the Clean Air Implementation Board will identify any budgetary issues and mitigate where necessary.

3.6. Procurement Timeline

A full procurement timeline will be produced for the Outline Business Case. This will ensure that delivery will commence as soon as possible with a view to compliance with NO₂ legal objectives within the shortest possible time. An indicative timeline is presented in **appendix x**.

4. Financial Case

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4.1. Funding

The UK Government has committed to funding feasibility studies for plans to bring about compliance with legal NO₂ objectives in the shortest possible time. These feasibility studies recommend a preferred option for implementation that achieves this objective. The implementation of the plan also has a UK Government commitment for funding in both the Implementation Fund (IF, £255m) and the Clean Air Fund (CAF, £220m) totalling £475m.

4.2. Funding and Cost Assumptions

The following are key funding and cost assumptions that will be applied when developing the Full Business Case.

1. The key assumption for this financial case is that the implementation of the preferred option and subsequent monitoring and evaluation is publicly funded upfront.
2. The Economic Case outlines cost assumptions for implementation of the preferred option.
3. Revenue generated from Clean Air Zone implementation is used only for air quality initiatives by the local authority.

4.3. Preferred Option Cost Estimate

Financial model currently being developed

4.4. New Forest District Council Cost Estimates

Funding requirements for New Forest District Council will be based on a measure by measure basis to determine whether any measures require specific work to be undertaken by New Forest or if the work needs to be implemented within their boundary, this assessment will be included within the Full Business Case.

4.5. Contingency

A full estimation of contingency required will be undertaken as part of the Full Outline Business Case.

4.6. Assurance of Cost Estimate

A full determination of assurances will be undertaken as part of the Full Outline Business Case.

4.7. Managing Costs and Risks

Costs will be managed by ensuring all procurement follows the procurement strategy outlined in the Commercial Case. The assessment of tenders through this process will be based on both quality and price to ensure value for money.

The budget management responsibility will fall to the project manager and appointed contract managers (for example cycle infrastructure works carried out by existing partners Balfour Beatty will be managed by the Transport Delivery team whereas Consultancy for HGV mitigation and fleet recognition will likely be contract managed by Scientific Services). Quarterly budget reports at the Clean Air Implementation Board will identify any issues and mitigate where necessary.

4.8. Other Funding Sources

Southampton City Council and New Forest District Council anticipate that funding will be primarily sourced from the Governments Clean Air Fund and Implementation Fund. Other opportunities will be considered as they arise and the Council's will work closely with JAQU to capture any further funding opportunities.

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5. Management Case

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4.1. Preferred Option Implementation Management

4.1.1. Southampton City Council and New Forest District Council Joint Work

The exceedance identified by the PCM and reported in the 2017 national plan for NO₂ extends beyond Southampton's boundary to New Forest District Council. Therefore, a Memorandum of Understanding has been signed by both authorities that outlines the intent for Southampton City Council and New Forest District Council to work in partnership to produce a joint preferred option for compliance with the legal NO₂ objective within the shortest possible time. The Memorandum of Understanding is found in appendix 8.

4.1.2. Timeline for Preferred Option Implementation

A timeline for implementing the preferred option will be included with the Outline Business Case.

4.1.3. Traffic Regulation Order

Exemption Clause for TRO

A similar exemption clause to that within the Itchen Toll Bridge Traffic Regulation Order (TRO) would exclude the exemptions contained in s.31 of the Hampshire Act (vehicle used by any person when on duty in the service of the Crown) or any motor vehicle being used for Police, Fire Brigade or Ambulance purposes on the occasion of an emergency or in respect of a military vehicle being used by the UK Armed Forces on active service.

4.1.4. Project Management

Implementation of the Clean Air Zone will be managed by Southampton City Council. The primary focus of the measures of the preferred option will be implemented within Southampton. New Forest District Council will however sit on the governance board appointed to oversee the delivery of the project to ensure their needs are met. Internally, Southampton City Council uses a corporate project management system with all Project Managers (PMs) trained to deliver projects in a consistent fashion. The system allows for early warning of any potential risk to delivery and ensures all PMs are supported throughout.

4.1.5. Governance Structure (Clean Air Implementation Board)

Governance will be based on the existing structure for delivering air quality related projects consisting of the Clean Air Implementation Board project board. The Clean Air Implementation Board is the responsible project board for the feasibility study, implementation and delivery of the objectives of the preferred option. The Senior Responsible Officer (SRO) is Mitch Sanders and the Project Manager is Steve Guppy. The Project Manager takes direct responsibility for project delivery and reports to the Clean Air Implementation Board quarterly. The SRO chairs the board and reports updates to cabinet members on a monthly.

Table 17 Clean Air Implementation Board

Authority	Role	Project Role	Name
Southampton City Council	Service Director for Universal and Transactional Services	Senior Responsible Officer	Mitch Sanders
Southampton City Council	Service Team Leader	Programme Manager	Steve Guppy
Southampton City Council	Service Manager Strategic Transport	Internal Stakeholder	Pete Boustred
Southampton City Council	Sustainable City Programme Manager	Internal Stakeholder	Neil Tuck

Southampton City Council	Public Health	Internal Stakeholder (Strategic Objective – Health)	Representative
Southampton City Council	Finance	Internal Stakeholder (Budget management and Value for Money)	Representative
Southampton City Council	Marketing Coordination Manager – Sustainable Travel and Air Quality	Internal Stakeholder – Project Communications and Stakeholder Engagement	Vicky Doyle
Southampton City Council	Clean Air Zone Project Officer	Project Officer	Rob Gloyns
New Forest District Council	Environment Service Lead	Partner in Delivery of Preferred Option	Joanne McClay
New Forest District Council	Environmental Protection Team Manager	Partner in Delivery of Preferred Option	Rachel Higgins
Hampshire County Council	Representative	External Stakeholder (Authority responsible for management of roads in NFDC)	Representative

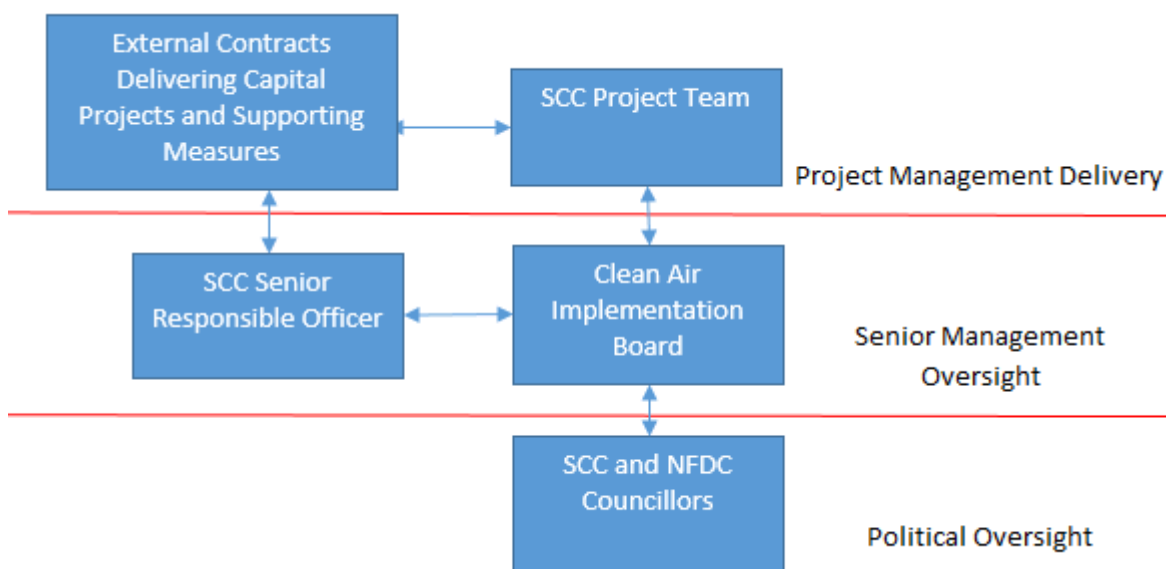


Figure 18 Implementation Phase governance structure

4.1.6. Managing Risk

A risk management is the responsibility of the appointed project manager. A strategy for managing risk is outlined in figure x.

Refine programme objectives and delivery plan	<ul style="list-style-type: none"> • Responsibility of Project Manager
Risk identification and assessment	<ul style="list-style-type: none"> • Responsibility of Project Manager (support from team) • Report initially to SRO
Present risk register and mitigation measures	<ul style="list-style-type: none"> • Present to Clean Air Implementation Board
Update risk register (after each board)	<ul style="list-style-type: none"> • Programme manager revisits risk register and amends
Risk monitoring and mitigation (minor)	<ul style="list-style-type: none"> • Bi-weekly monitoring with Programme Management team meetings
Risk monitoring and mitigation (major)	<ul style="list-style-type: none"> • Bi-weekly monitoring with Programme Management team meetings • Regular monitoring within monthly Clean Air Implementation Board
Report to Board	<ul style="list-style-type: none"> • Report on status of risks every quarter to the Centre for Sustainable Travel Choices Project Board

4.1.7. Stakeholder Management

4.1.8. Project Stakeholder Management

Stakeholder management is undertaken in accordance with RACI principles. Stakeholders are identified according to their role in project delivery and the extent to which they are directly involved into one of four categories.

1. **Responsible** - The Stakeholder is directly involved in delivery of the project
2. **Accountable** - The Stakeholder is accountable for delivery and spend
3. **Consultee** - The Stakeholder has a direct interest in the project and needs to be formally consulted as part of the project delivery
4. **Informed** - The Stakeholder has no direct interest in the project but is informed of progress as part of a regular dialogue on delivery of the overall programme.

Full detail of CAZ Implementation project stakeholders and their RACI category will be outlined within the Outline Business Case.

4.1.9. Stakeholder Consultation

Formal Consultation

Southampton City Council and New Forest District Council will be undertaking a consultation exercise to ensure the public are aware of the proposed scheme and have the opportunity to provide comment. Stakeholders include but are not limited to:

Transport (Southampton City Council and New Forest District Council)

- Southampton and New Forest Internal Stakeholders (e.g. Transport Policy)
- Balfour Beatty (SCC Highways Contractor)
- Highways England
- Hampshire County Council (as the authority responsible for transport in Hampshire)
- Freight Transport Association (FTA)

- Society of Motor Manufacturers and Traders (SMMT)

Local Organisations/Business

- Neighbouring Local Authorities
- National Park Authority
- Forestry Commission
- New Forest Business Partnership
- Hampshire Chamber of Commerce
- Solent LEP
- Solent Transport
- NHS
- Emergency services
- Universities
- Other private and public organisations
- Community Groups/Organisations (e.g. Clean Air Southampton)
- General public (through consultation exercise, Clean Air Network, marketing, social media etc)

Taxi

- Southampton City Council and New Forest District Council Licensing Departments
- Licensing departments of neighbouring authorities (e.g. Winchester, Eastleigh, Test Valley, and Portsmouth).
- Taxi trade representatives and unions.
- Taxi customers (including business and the public).
- SCC and EBC Licensed Transport Forum

HGV

- Freight Transport Association (FTA)
- Local Freight Business and Organisations
- The Port Community (Including in Southampton and NFDC Waterside)

Buses/Coaches

- Local and national bus operators
- Local and national coach operators
- Bus and Coach Business Customers (e.g. Port/Cruise Industry, Theatre, Football Stadium)

Informal CAZ Communications and Awareness Raising

- Clean Air Network
- National Clean Air Day 2018
- Taxi Morning
- Travel Planners Network
- Hampshire Chamber of Commerce
- Port Air Quality Forum
- Other groups to be identified

4.1.10. Current Stakeholder Consultation

Public, Local Business and Organisations

The Strategic Case describes the work currently underway to engage with local stakeholders which is anticipated to continue beyond implementation. Southampton City Councils established Clean Air Network will be used as a mechanism for disseminating information to external stakeholders where

necessary. The Council's other standard communication methods will be utilised (e.g. webpages, social media, email, events) to ensure communication of relevant information. The Clean Air Network also acts as a forum for feedback for any air quality related activity beyond the formal consultation exercise and will provide an opportunity for ongoing incorporation of public comments.

Highways England

The identification of air quality exceedances on Highways England managed roads highlights a requirement to ensure ongoing engagement to ensure Highways England also meet their legal objective for compliance with the NO₂ limits within the shortest possible time. Southampton City Council are in direct contact at Highways England and will ensure sharing of data/information.

Hampshire County Council

Southampton City Council and New Forest District Council will also ensure ongoing engagement with Hampshire County Council. The preferred option is not expected to have detrimental impact on local roads through diversion, noise, air quality or otherwise. This will be monitored and evaluated as part of the proposed monitoring and evaluation plan and communicated to Hampshire County Council and Highways England as the neighbouring road management authorities.

4.2. Managing Exemptions

4.3. Managing Mitigation Measures

4.3.1. Buses

The Clean Bus Technology Fund bid has gone to cabinet and the expenditure approved. (CABINET PAPER)

4.3.2. Coaches

4.3.3. HGVs

4.3.4. Taxis

Current model for the licensing incentive scheme and how this will be adapted to include NFDC

4.4. Monitoring and Evaluation

Evaluation is an objective process of understanding how a policy or other intervention was implemented, what effects it had, for whom, how and why (HMT Magenta Book). The aim of the monitoring and evaluation plan is to produce results that provide accountability and defence, allow adaptive policy-making and identify where future interventions are required. Monitoring and Evaluation will sit on the agenda of future Clean Air Implementation Boards with monitoring information outlined in the Monitoring Plan used as a mechanism for identifying future risks and monitoring progress.

4.4.1. Monitoring Plan

The Clean Air Zone Monitoring Plan will seek to check progress against planned targets and can be defined as the formal reporting and evidencing that spend and outputs are successfully delivered and milestones met. Implementation of the CAZ and supporting measures will produce a range of data throughout the life of the project. Table x provides an example monitoring plan. This will be fully developed for the submission of the Outline Business Case and will include objectives such as:

- Air quality improvements
- Assessment of other impacts (noise, accidents etc.)
- Monitoring economic impact
- Baseline behaviour and behaviour change
- ANPR data capture for CAZ enforcement
- Buses – Current Fleet and yearly fleet report
- Taxis – Locally licensed vehicles emissions report
- HGV's – ECO Stars, use of consolidation centre/logistics options and ANPR enforcement data
- Private Vehicles – Publically accessible EV charging usage, cycle use, car club use, travel to work and school surveys and other existing mechanisms through the Access Fund.
- Cycling – km of infrastructure installed, cycle counters, annual survey
- Public perception – peoples panel questionnaires, public engagement
- Public health – LAQM exceedances
- Roadside emissions testing, vehicles tested

Table 18 Example Monitoring Plan

Objective	Description	Method	Key Performance Indicator (KPI)	Expected Result	Timeframe
EU Directive Air Quality Compliance	To ensure the preferred option is delivering compliance with the EU AQD	Local NO ₂ air quality monitoring and assessment.	Annual mean NO ₂ at relevant locations.	Compliance by x and continued improvements of annual mean NO ₂	Annual Reporting

4.4.2. Evaluation Plan

The evaluation of the Clean Air Zone will assess the policy effectiveness and efficiency during and after implementation. It will seek to measure outcomes and impacts in order to assess whether the anticipated benefits have been realised. An outline evaluation plan will be included in the Outline Business Case. A full evaluation plan will be included in the Full Business Case.

4.4.3. Benefits Realisation

An outline benefits realisation strategy will be included in the Outline Business Case. A benefits realisation strategy will be included in the Full Business Case