

Coventry Local Air Quality Plan

Full Business Case

Coventry City Council

30 October 2020

Draft Final Report



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The preparation of this Report has been co-ordinated by Atkins. Atkins led on the Strategic Case, the Economic Case and the Financial Case with Coventry City Council leading on the Commercial Case and Management Case. The Economic Case was informed by outputs from the CASM Traffic Model held and operated by WSP on behalf of CCC. All Air Quality Modelling Work was undertaken by Atkins. Many of the capital and operating & maintenance cost figures in the Financial Case have been provided by Coventry City Council.

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Executive Summary

This Full Business Case has been prepared in compliance with the Environment Act 1995 (Coventry City Council) Air Quality Direction 2020. It sets out the Council's planned approach to the implementation of the Local Plan Scheme for NO₂ compliance in Coventry, again in accordance with the instructions contained within the Government Direction.

The FBC also sets out the commercial and contractual arrangements, affordability and management arrangements that are in place to ensure the successful delivery of the Local Plan Scheme.

Coventry City Council is proud of the various work programmes that are underway in the city which will improve air quality. These include the introduction of electric taxis, of ten electric buses onto Coventry's bus network, and the installation of around 240 electric vehicle charging points within the city, one of the most comprehensive networks of charging points in the country. The Council is also in the process of procuring 73 electric vehicles for its own fleet, which will also be available for local businesses to trial on a "try before you buy" basis. Allied to the work that is underway to develop a viable, zero-emission mass transit system in the city, in the form of the Very Light Rail programme, and the progressive development of segregated cycle routes within the city, then it is clear that the Local Plan Scheme for NO₂ compliance is only one of many projects being implemented in the city to improve air quality.

The FBC details the work undertaken on developing the Local Plan Scheme since the issue of the Ministerial Direction in February 2020. This includes approval of the Local Plan Scheme by the City Council's Cabinet in July 2020. In the course of this development work, two elements of the Local Plan Scheme have been amended following consultation and further modelling work. The first relates to the type of restriction to be introduced on the easternmost section of Holyhead Road, with a Low Emission Zone being identified as a more effective option that will minimise the diversion of traffic onto less suitable routes whilst still removing the most polluting vehicles. The second change relates to the traffic management proposals for Foleshill Road, with a bus gate being identified as being more effective at removing through traffic from Foleshill Road and diverting it onto the higher standard and more appropriate A444 route instead.

As set out in the Financial Case, more detailed costs for the implementation of the Local Plan Scheme are also now available following the award of the main delivery contracts for the infrastructure elements of the package. This shows that the total delivery cost is estimated at £31.782 million. The budget secured to date includes the £24.5 million Air Quality Implementation Fund grant and £5.8 million Transforming Cities Fund grant from the West Midlands Combined Authority, giving a total secured budget of £30.3 million. Therefore, based on the current cost estimates there is a budget shortfall of £1.482 million, and the Council is therefore seeking additional grant funding support of £1.482 million from Government to ensure that the Local Plan Scheme can be successfully delivered.

The Council feels that the FBC sets out a compelling case for the preferred Local Plan Scheme that has emerged from the significant amount of technical work that has been undertaken throughout the past three years. The issues that have had to be considered throughout this process have been complex, and the nature of the NO₂ emissions within Coventry have meant that a simple solution has not been identified that would successfully achieve compliance as required by the Direction. However, the Council is convinced that the measures outlined in the FBC will collectively successfully achieve compliance to the benefit of Coventry's residents, businesses and visitors.

Finally, our thanks go to colleagues at Government's Joint Air Quality Unit, at Local Partnerships, Transport for West Midlands and Highways England, all of whom have actively contributed to the Air Quality Programme Board that has been responsible for overseeing this work, and particularly those individuals at JAQU who have provided advice and guidance throughout this process.

1. Strategic Case

1.1. Introduction

The Strategic Case presented in this Report illustrates a case for change, providing context for the rationale that supports options for the reduction of annual mean Nitrogen Dioxide (NO₂) concentrations in Coventry.

The Government has set out its plans to deliver a cleaner, healthier environment that benefits people and the economy. Although UK air quality has improved significantly over recent decades, it is recognised that there is still more to do, though action must be proportionate, with the interests of local people being the main driver for improving air quality.

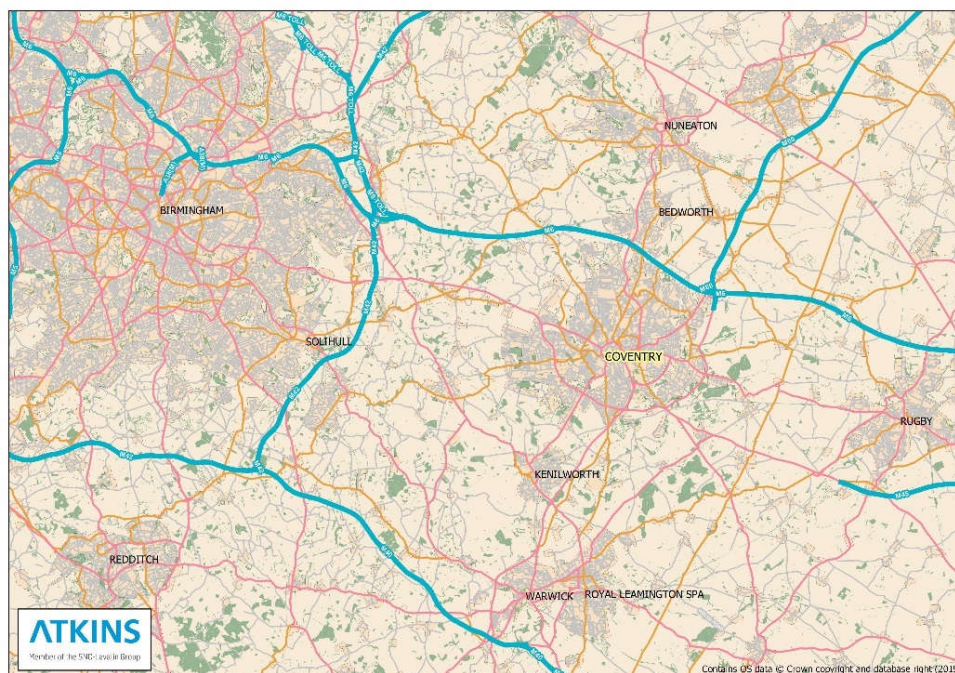
Coventry City Council (CCC) is committed to transforming Coventry into a cleaner and healthier city, supporting economic growth, improving health and providing a wider choice of travel options. Improvements in air quality underpin this vision. Coventry has been awarded the UK City of Culture for 2021 and making improvements to improve air quality within the city fully aligns with the City of Culture themes of Being Human, Reinvention and Moving, and the vision of reimagining the place of culture in a diverse, modern Britain. Coventry therefore has an opportunity to adopt a solution which delivers a lasting improvement in air quality and to showcase this solution to a wider audience.

Coventry is renowned for its rich tradition in innovation, and CCC is keen to support innovative solutions involving emerging technology. The city is also a leader in the automotive industry and has a vision for a future that incorporates integration of systems and technology such as Ultra Low Emission Vehicles (ULEV), connected and autonomous vehicles, digital data / communications and energy generation, storage and distribution. The city is home to the factory manufacturing the world leader in electric powered taxis, as well as being selected as the site for the UK's Battery Industrialisation Centre, which is currently under construction. Electric vehicles are therefore at the heart of this vision and will play a key part in reducing emissions from road transport.

Coventry is well connected to other major towns and cities in the UK due to its good access to the strategic road network and the national rail network. The city forms part of the West Midlands Combined Authority (WMCA), which is the strategic transport authority for the area, but also has a strong functional relationship with Warwickshire County Council (WCC), with significant cross-boundary travel between the city and neighbouring settlements including Kenilworth, Warwick, Leamington, Nuneaton and Bedworth. **Error! Reference source not found.** shows the location of Coventry along with some of the key neighbours, including Birmingham, Warwick, Leamington, Solihull and Leicester.

The City Council works closely with both the WMCA and with WCC on strategic transport, economic and environmental issues, through local bodies such as the Coventry and Warwickshire Air Quality Alliance and the Coventry and Warwickshire Local Enterprise Partnership. Meeting the challenge of reducing NO₂ levels in the city through the implementation of the strategy outlined in this Business Case will require the continuation of this joint working to ensure the effectiveness of the Local Air Quality Action Plan.

Figure 1-1 – Geographic location of Coventry



1.2. Business strategy

The High Court has instructed the Government to put in place a strategy to achieve the legal limits for air quality, in the shortest possible time. Accordingly, in July 2017 the Government published a revised plan to tackle roadside NO₂ concentrations across the UK. Based on Defra Pollution Climate Mapping (PCM) model outputs, 22 towns and cities¹, including Coventry, were forecast to exceed legal NO₂ limits in 2021.

To help achieve compliance, the Government has formed the Joint Air Quality Unit (JAQU), which comprises officers from the Department for Transport (DfT) and the Department for Environment, Farming and Rural Affairs (Defra), with a remit to work with the relevant local authorities to produce action plans to reduce the roadside NO₂ concentrations in those 22 towns and cities to below the legal limit. JAQU has produced an evidence package to assist officers in local authorities to develop feasibility studies for their local plan, and has provided support throughout the development of each local plan.

In accordance with Government requirements, CCC is required to produce a Business Case that assesses a number of options and identifies a preferred option to help the city achieve compliance with the legal NO₂ limits in the shortest possible time. The detailed option identification undertaken (and referenced in the OBC) identified a preferred option. This Full Business Case (FBC) presents an assessment of the preferred option, DS13p, which was approved by the Council's Cabinet on 20th July 2020.

A charging Clean Air Zone (CAZ) was required, by Government, to be one of the options assessed, due to modelling by the Government showing that, at a national level, this will achieve compliance with air quality targets in the shortest possible time. This option was used as a benchmark for other options but, as shown in the Outline Business Case submission, the wider social and economic disbenefits associated with a CAZ meant that this option was discounted by the Council in favour of the package of measures outlined in this FBC submission.

The overall objective, as set out in this FBC, is to fully build up the package of measures that will achieve compliance with the legal NO₂ limits in the most efficient and effective manner whilst also supporting the wider vision of the CCC for achieving sustainable economic growth and fitter, healthier, more prosperous communities within Coventry.

¹ Later increased to 33 local authorities

1.3. Policies and strategies

1.3.1. UK Government policy and strategy

In July 2017 the UK Government (Defra and DfT) published a plan² for tackling roadside NO₂ concentrations. In this report the UK Government set out its commitment to achieving a cleaner and healthier environment, with the aim of benefitting both people and the economy. The Government aims to improve air quality for people living and working in the UK, based on the understanding that poor air quality can also be harmful to the natural environment and to the economy.

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

UK research has shown that NO₂ may increase the prevalence of respiratory infections in children. The European Commission believes that, in the UK alone, poor air quality is still responsible for more than 32,000 premature deaths every year.

Defra has made initial estimates that NO₂ contributes to shortening lives by an average of 5 months, which range from healthy individuals experiencing negligible effects to susceptible individuals whose poor health is seriously exacerbated by NO₂ pollution. The overall population burden is estimated to be equivalent to 23,500 deaths in the UK per year³.

Furthermore, data from the Public Health Outcomes Framework⁴ indicates that the 'under 75 mortality rates from respiratory disease', between 2014 and 2016, was 43.3 per 100,000 for Coventry and 33.8 per 100,000 for England. It is likely that the negative impacts of poor air quality in Coventry is likely to be a factor in the city having higher mortality rates than the national average for England.

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

Although nitrogen oxides fell by almost 70% between 1970 and 2015, poor air quality continues to be the largest environmental risk to public health in the UK⁵. Consequently, the Government has adopted legally binding national emission limits for air pollutants, with the aim of improving air quality. The Government's top priority is to reduce the NO₂ concentrations on and near roads, where higher NO₂ levels result from emissions from motor vehicles. Due to elevated levels of traffic and exposure on roads in urban areas, reducing air pollution in towns and cities is an important focus.

The Government aims to achieve the air pollution reduction in towns and cities through encouraging innovative vehicle solutions, such as electric vehicles, alongside ending the sale of conventional petrol and diesel cars and vans by 2040, as well as targeting behaviour change amongst communities, employers, education establishments and policy makers. The Government is currently committed to investing over £2.7 billion for air quality improvements and cleaner transport. Coventry has a good record in attracting Government funding for initiatives aimed at encouraging the increased use of low emission vehicles, as evidenced with the current programmes to install electric vehicle charging points across the city centre and within surrounding residential areas, as well as the joint project with National Express to upgrade engines on their older buses to achieve Euro V1 standard alongside the procurement of ten electric buses to operate within the city from August 2020. Funding has also been secured in partnership with Highways England to procure a fleet of electric vehicles (mainly vans) which will be made available as part of a try before you buy scheme to encourage local

² UK plan for tackling roadside nitrogen dioxide concentrations – July 2017

³ Air Quality, A Briefing for Directors of Public Health, March 2017, Defra and Public Health England

⁴ <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework>

⁵ Air Quality, A Briefing for Directors of Public Health, March 2017, Defra and Public Health England

businesses to upgrade their fleet. The first tranche of these vehicles has been ordered and will come into operation in 2021.

1.3.2. Coventry City Council Local Plan

CCC's Local Plan (2017)⁶ states that the whole of Coventry is designated as an Air Quality Management Area and has been since 2009. A primary cause of the poor air quality in the Coventry urban area are emissions from road transport. The Local Plan sets out Coventry's vision to help re-establish itself as one of the country's top 10 cities.

The Local Plan identifies many issues, risks, strengths and benefits that Coventry is likely to face, which have been developed and considered through a range of evidence and consultation responses. The Local Plan therefore provides a range of policies that seek to build upon strengths and opportunities whilst reducing the risks and issues. One of the risks Coventry currently has is the need to improve air quality across the city and help combat climate change.

CCC is a partner of the Low Emissions Towns and Cities Programme (LETCP) and is working together with other West Midlands authorities to improve air quality and reduce emissions from road transport. This is alongside the emerging 'West Midlands Metropolitan Transport Emissions Framework' which sets out transport's role in tackling air quality issues and has proposed a range of policies. The intention is to do this by promoting the uptake of low emission fuels and technologies, establishing and sharing best practice policies, and developing various tools and resources. The objectives of the programme are to investigate and produce various regional strategies designed to improve air quality, with a view to meeting national air quality objectives.

Funded through the Defra Air Quality Grant, the aims of the LETCP and West Midlands Transport Emissions framework are to:

- Improve air quality through reducing road transport emissions, and simultaneously reducing carbon emissions;
- Establish best practice policies and measures for the West Midlands, creating transferable models for other towns and cities;
- Improve health; and
- Maximise opportunities for economic development through the transition to a green economy.

To support the improvement in the city's air quality, the Local Plan includes a policy for air quality. This states that major development schemes should promote a shift to the use of sustainable low emission transport (electric vehicles and vehicles that use biofuels) to minimise the impact of vehicle emissions on air quality. These development sites will be located to maximise accessibility by sustainable modes of transport, specifically public transport, walking and cycling. All major development proposals should be suitably planned to design out any adverse impacts on air quality and be in accordance with the West Midlands Transport Emissions Framework and associated policies.

Additionally, the policy sets out that major development proposals will require the submission of an air quality assessment, as they may lead to a significant deterioration in local air quality resulting in unacceptable effects on human health, local amenity or the natural environment.

1.3.3. Coventry City Council Area Action Plan

CCC has prepared an Area Action Plan⁷ (AAP) to help guide, inform and consider development proposals within Coventry City Centre.

The AAP sits alongside the Council's Local Plan, providing greater detail around the policies set out in the Local Plan. The AAP provides a framework, which has been produced to support how the city centre will develop over 15-20 years, through setting out a number of strategic principles to follow. It identifies areas of regeneration, heritage assets and areas for development opportunities.

⁶ Coventry City Council, Local Plan (adopted on the 6th December 2017)

⁷ Coventry City Council Area Action Plan (adopted by the City Council on the 6th December 2017)

The Local Plan identifies a specific policy area associated with promoting the health and wellbeing of Coventry people. In order to achieve this the policy sets out several aims, one of which is to combat poor air quality and other pollutants. The AAP also highlights the importance of air quality on the natural environment, and states that the city-wide AQMA will support this with a view to making the city centre a more pleasant and healthier environment within which to live and travel. It is noted that issues such as poor air quality can be amplified in city centres, due to higher density development, higher concentrations of vehicles and less greenspace.

The source of NO₂ is primarily from the burning of fossil fuels, with vehicle emissions and traffic congestion having significant impacts. CCC is aware that attention needs to be paid to new developments adjacent to the Ring Road or alongside concentrations of public transport stops, which if not designed in an appropriate way could have significant impacts on public health.

In addition to committing to reduce its current NO₂ levels, Coventry is also entering a period of significant redevelopment within its city centre, and therefore it is crucial that the creation of excessive dust and dirt during the construction processes are mitigated. Adhering to construction environmental management plans (CEMP) will help to moderate adverse impacts from development processes. CCC is also identifying opportunities for sustainable energy sources for city centre buildings, this will reduce the reliance on fossil fuels. A further priority for CCC is providing investment in low emission vehicles and infrastructure, whilst also increasing active travel.

1.4. History of Air Quality in Coventry

Coventry City covers 100 square kilometres and has a population of approximately 330,000 residents. The city is near several strategic road network links, including the M6, M69, M45 and M42 motorways and the A45 and A46 dual carriageways. Pollution from road traffic is a significant contributor to the overall air pollution within Coventry. Other emissions come from commercial, domestic and industrial processes. Coventry is a smoke control area, and it regulates 85 industrial processes under the Environmental Permitting regime (such as petrol stations and dry cleaners).

In 2009, CCC produced the first screening assessment, a review of the air quality monitoring carried out within the city area, which was updated every year up to and including 2015 to comply with local air quality management obligations under Part IV of the Environment Act 1995. This report showed that within the Coventry AQMA there are several areas where air quality standards are exceeded. It should also be noted that significant developments within the city are having direct and indirect impacts on air quality, due to the resulting fluctuations of traffic flows. Therefore, CCC have reviewed monitoring locations and have relocated diffusion tubes as required.

The 2015 Updating and Screening Assessment (USA) for CCC summarises the history of NO₂ concentrations between 1998 and 2014, and reports on how annual mean NO₂ concentrations compare to the national air quality objective. The key stages of the assessment include the following:

- In 1998, the main sources of air pollution were identified within CCC area. Following on from this base level information, CCC undertook monitoring of pollutant concentrations and provided a review and assessment of the monitoring data.
- An USA was undertaken, which identified two locations within Coventry that were assessed to be unlikely to achieve the annual mean air quality objective for NO₂, and in 2003 these areas were designated AQMAs.
- In addition to the USA, a Detailed Assessment was produced that predicted a further location was also unlikely to meet the NO₂ annual mean air quality objective. This was also designated as an AQMA in 2004.
- In 2005 local authorities had a deadline for achieving the annual mean air quality objective. However, in 2006 CCC produced another USA, which found that although the majority of pollutant levels in Coventry remained below the UK objectives, for NO₂, six more areas were found to be exceeding the UK annual mean air quality objective and needed Detailed Assessment.
- The Detailed Assessment was carried out and in 2007 and found that all six areas identified by the USA were exceeding the UK objective for annual mean NO₂. Consequently, Defra suggested aggregating the areas into a single AQMA. Following this, CCC consulted and determined to designate the whole of Coventry as an AQMA for annual mean NO₂. This was formally declared, becoming effective in late 2009.
- A Progress Report in 2010 indicated that there were still areas exceeding the NO₂ annual mean air quality objective.

- The Further Assessment produced in 2014 concluded that NO₂ levels in the city have not reduced and continued to exceed the national air quality objective, with exceedances primarily attributable to road traffic emissions.
- The Annual Status Report (2016, 2017 and 2018/9) indicate that NO₂ levels are generally on a downward trend, but in some locations, still in exceedance.

1.4.1. Air Quality Management Area

As outlined above, the whole of the Coventry urban area has been declared as an Air Quality Management Area (AQMA) for annual mean NO₂ since 2009. The reasoning behind declaring the entirety of Coventry is to avoid a situation where targeted action in one geographic area simply shifts the problem somewhere else.

There has been a significant amount of work in Coventry aimed at continuing to reduce traffic congestion, improving low emission vehicle infrastructure and encouraging more sustainable methods of transport, all of which will have a beneficial impact on air quality.

NO₂ is a significant air pollutant and a key issue within Coventry. This pollutant is primarily associated with road traffic emissions, particularly on busy roads or areas with significant congestion. The pollutant risk arises when people spend time near high levels of these pollutants. Such locations can include where people live, work or where they spend their leisure time, however CCC are most concerned with the air pollution experienced by people residing in housing near major arterial routes, where there are high traffic flows and queuing traffic (such as at junctions).

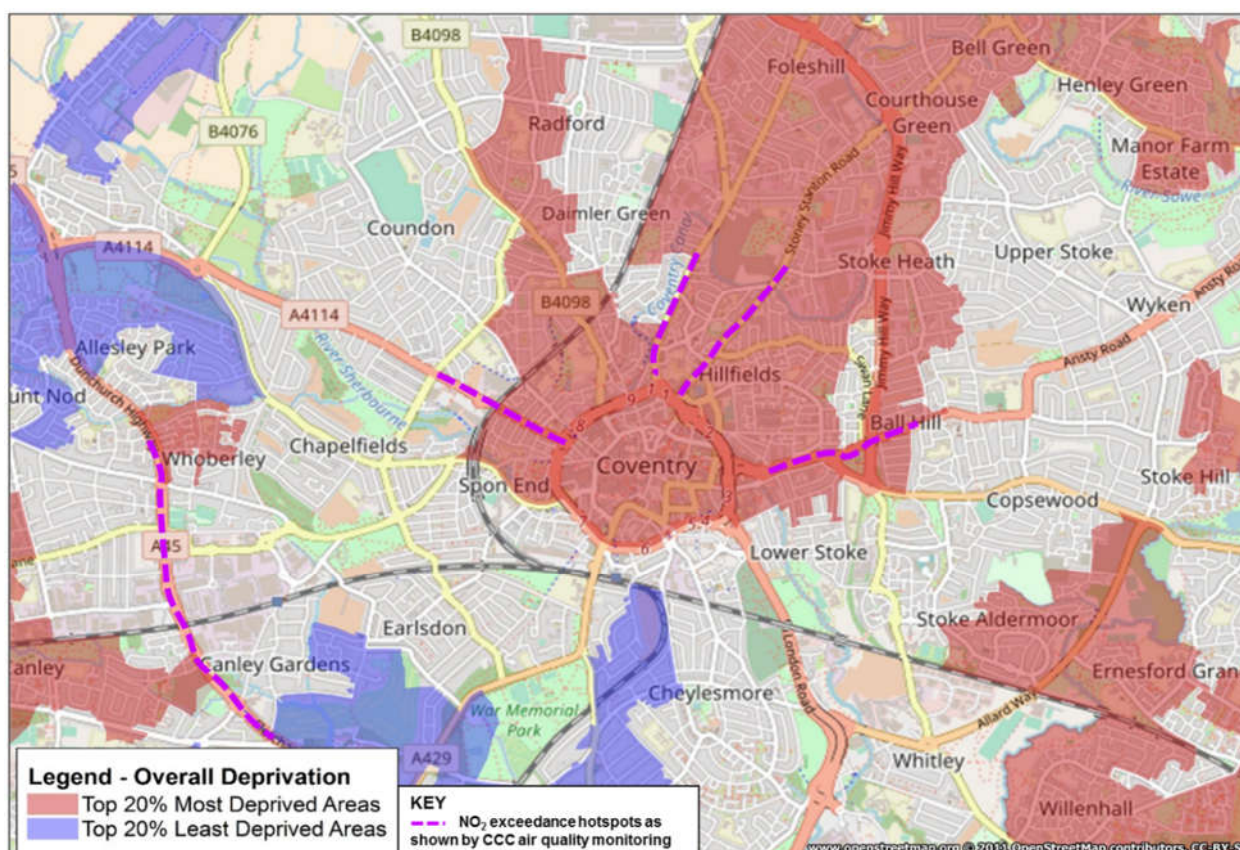
CCC has taken forward a number of measures in recent years in pursuit of reducing congestion, improving pedestrian/cycle routes to key destinations and improving local air quality. These measures include a broad range of initiatives, including car share schemes, promoting low emission vehicles through a variety of schemes including the installation of one of the most extensive networks of electric vehicle charging points outside London, promoting travel alternatives, improving public information, traffic management, cycle network infrastructure, cycle hire schemes, major investment in the improvement of city centre public realm, enhancement of the railway station, and improving vehicle fleet efficiency.

1.5. Key facts and figures (relevant to transport and air quality)

In Coventry, the main air quality issues identified to-date through the Local Air Quality Management (LAQM) process relate to residential properties that are located in close proximity to major arterial routes in the city, which experience high levels of congestion. Currently identified hotspots include sections of Holyhead Road, Walsgrave Road, Foleshill/Longford Road, Stoney Stanton Road and at certain junctions along the A45, as shown in Figure 1-3 **Error! Reference source not found.** These hotspots have been identified using air quality monitoring data in Coventry, including NO₂ diffusion tube monitoring as well as two continuous monitoring sites in Coventry, which form part of the Automatic Urban and Rural Network (AURN) operated by Defra; Coventry Allesley (an urban background site) and Coventry Binley Road (an urban traffic site).

The correlation between poor air quality and poor health is exacerbated, in the above-mentioned locations, as these locations are deprived parts of Coventry and people living in deprived areas are more susceptible to adverse impacts of poor air quality and poor health. **Error! Reference source not found.** shows that a significant percentage of the Coventry urban area is within the top 20% most deprived areas. Many of the NO₂ exceedance locations fall within the top 20% most deprived areas. Statistics on unemployment also show a similar story and a significant percentage of the Coventry urban area is within the top 20% for unemployed.

Figure 1-2 - Deprivation statistics for Coventry



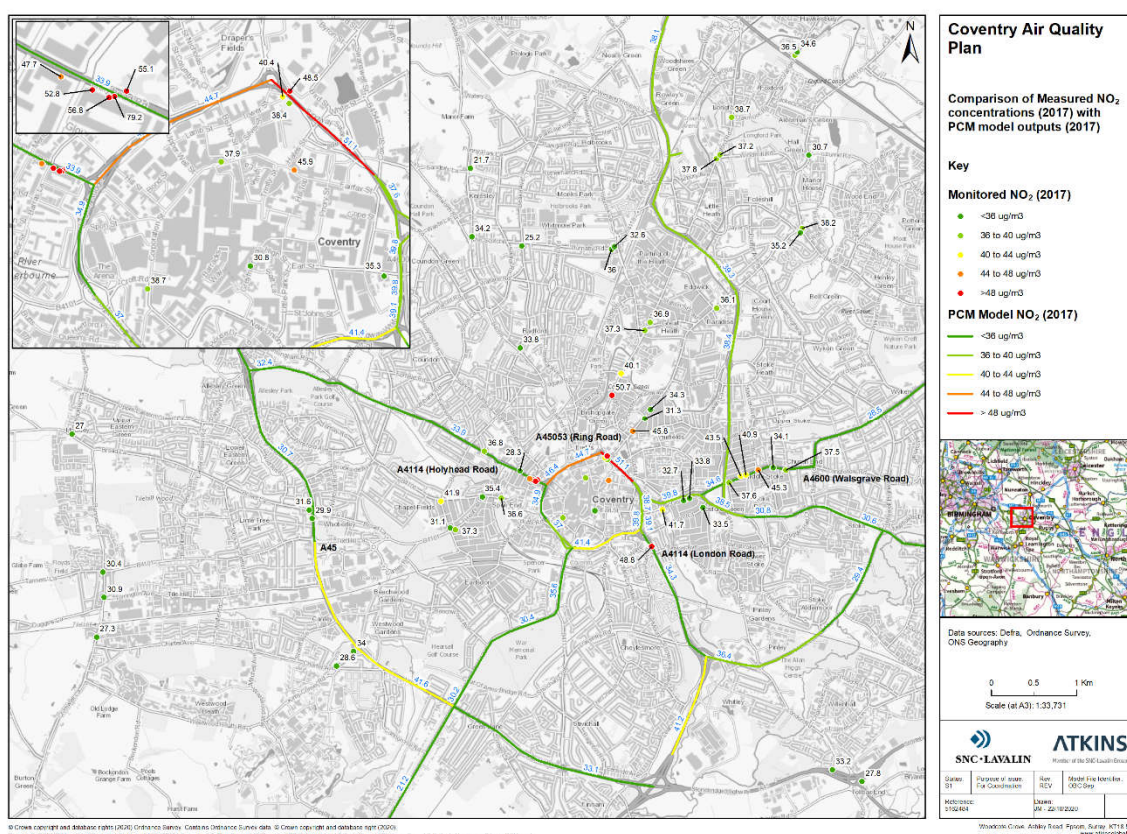
Source: gov.uk (2015 deprivation statistics)

Furthermore, Defra has estimated annual mean NO₂ roadside concentrations, in 2017, using the Pollution Climate Mapping (PCM) model. The PCM model assesses national compliance with EU limit values and the baseline projections represent the projected concentrations of NO₂ assuming no further action beyond the air quality measures that were committed by the reference year (2015). Projections for concentrations of NO₂ and oxides of nitrogen (NO_x) across the UK in the years 2017 - 2030 inclusive, have been calculated as part of a PCM model for approximately 9,000 modelled road links. Measured annual mean NO₂ concentrations in 2017 from CCC monitoring, are shown in Figure 1-3 alongside estimated annual mean NO₂ roadside concentrations in 2017 from Defra’s PCM model. This simple comparison suggests that:

- Along the section of Holyhead Road (A4114) immediately west of the ring road (A4053), measured annual mean NO₂ concentrations in 2017 (47.7 – 79.2 µg/m³) are substantially higher than the estimated annual mean roadside concentration from the PCM model (33.9 µg/m³). This section of road is heavily congested during peak hours and has a significant uphill gradient. Furthermore, the dispersion of pollutant emissions is (agreed with JAQU) thought likely to be inhibited by the presence of nearby buildings. These factors, which significantly influence both pollutant emissions and dispersion at this location, are not accounted for within the PCM model.
- Monitoring adjacent to the northern section of the ring road (A4053) began in 2017. The monitoring measured an annual mean NO₂ concentration of 48.5 µg/m³ to the northwest of the ring road, which is similar to PCM model projections.

- Monitoring at a single site adjacent to London Road (A4114), to the southeast of the city centre, suggests that measured annual mean NO₂ concentrations (48.8 µg/m³) are higher than the estimated annual mean roadside concentration from the PCM model (34.3 µg/m³). Monitoring is located on the approach to a complicated interchange with the ring road which is congested during peak hours. The PCM model does not account for locations close to junctions nor does it account directly for congestion effects.
- Along the section of the Walsgrave Road (A4600) immediately east of the A444, measured annual mean NO₂ concentrations in 2017 (40.9 – 45.3 µg/m³) are higher than the estimated annual mean roadside concentration from the PCM model (34.6 µg/m³). This section of road is heavily congested during peak hours. Furthermore, the dispersion of pollutant emissions is inhibited by the presence of nearby buildings on both sides of the road (i.e. a street canyon). These factors, which significantly influence both pollutant emissions and dispersion at this location, are not accounted for with the PCM model.
- There were measured exceedances of the annual mean NO₂ air quality objective at locations adjacent to Foleshill Road (40.1 – 50.7 µg/m³), Stoney Stanton Road (45.8 µg/m³), Queensland Avenue (41.9 µg/m³), as well as within the city centre (45.9 µg/m³) in 2017. None of these locations are however represented within the PCM model, hence, cannot be compared.
- No monitoring was undertaken in 2016, or in previous years, near the sections of the ring road (A4053) where the PCM model estimates the highest annual mean roadside NO₂ concentrations within Coventry, as there is no relevant exposure (e.g. residential properties) in this area. A number of monitoring sites were therefore installed in this area in September 2017, the results from which informed the Initial Evidence Submission, Outline Business Case and this Final Business Case.

Figure 1-3 - Comparison of measured NO₂ concentrations (2017) with PCM model outputs (2017)



1.6. Wider policy benefits

Improving air quality can have direct and indirect impacts, which can benefit wider policies.

Air pollution particularly affects the most vulnerable in society, it is known to have more serious effects on vulnerable groups, for example the elderly, children and people already suffering from pre-existing health conditions such as respiratory and cardiovascular conditions. Studies have suggested that the most deprived areas of Britain bear a disproportionate share of poor air quality.

Air pollution also results in damage to the natural environment. NO₂ contributes to acidification and eutrophication of soil and watercourses, which impacts on animal and plant life and biodiversity. It also contributes to local ozone production which has public health impacts and damages agricultural crops, forests and plants. Air pollution has social costs and risks the potential for economic growth. It also impacts upon people of working age which can have economic effects, for instance if they have to take days off work due to air pollution-related health problems. Poor air quality in the UK is estimated to have had a total cost of up to £2.7 billion, nationally, through its impact on productivity in 2012⁸.

Reducing the use of petrol and diesel vehicles through innovative transport technologies and increasing active travel uptake, will not only improve air quality but will also positively impact on other policies. For example, some estimates suggest that physical inactivity is associated with higher mortality rate than smoking.

This will also help reduce traffic congestion as more people walk, cycle or use public transport, and will improve the health of the public as people become more active, relieving pressure on the healthcare sector.

1.7. Spending objectives

The quality of air is important for public wellbeing and the environment. The impact of public exposure to particulate matter alone has been estimated to reduce average life expectancy by around 6 months, in the UK, which imposes a cost to public health of over £16 billion a year⁹. There is a considerable amount of work being undertaken by CCC that has the potential to improve air quality whether directly or indirectly.

1.7.1. UK Government spending commitments

The UK Government is committed to taking action against poor air quality in urban areas, and the Government is determined to be at the forefront of vehicle innovation by making motoring cleaner. The link between improving air quality and reducing carbon emissions is particularly important and the UK Government will continue to develop solutions which reduce NO₂ and carbon. The Government is already committed to investing over £2.7 billion overall in air quality and cleaner transport, including:

- £1 billion – Investing nearly £100 million in the UK's charging infrastructure and funding the Plug In Car and Plug In Van Grant Schemes.
- £290 million – National Productivity Investment Fund. In the Autumn Statement 2016, a further £290 million was committed for reducing transport emissions, which includes £60 million for new buses and £40 million for bus retrofits, £50 million for a Plug In Taxi programme and £80 million for ULEV charging infrastructure.
- £11 million – Air Quality Grant. The Government has awarded over £11 million under the Air Quality Grant scheme to help local authorities improve air quality.
- £89 million – Green Bus Fund. The UK Government has invested a total of almost £89 million via the Green Bus Fund to help bus companies and local authorities in England to put over 1,200 new low carbon buses on the roads.
- £27 million – Clean Bus Technology Fund and Clean Vehicle Technology Fund. Since 2013, Government has awarded over £27 million to retrofit almost 3,000 of the oldest vehicles (mainly buses) including through the Clean Bus Technology Fund and the Clean Vehicle Technology Fund.
- £1.2 billion – Cycling and walking. In April 2017, the UK Government published its Cycling and Walking Investment Strategy which identifies £1.2 billion which may be invested in cycling and walking from 2016-2021.
- £100 million – National road network. Through the Road Investment Strategy, the UK Government has allocated a ring-fenced £100 million for an Air Quality Fund available through to 2021 for Highways England to help improve air quality on its network.

In the 2016 Autumn Statement, the UK Government also committed an additional £4.7 billion to 2020-2021 for research and development. This includes a new Industrial Strategy Challenge Fund to support the development of innovative technologies.

In July 2018, the Government published The Road to Zero Strategy which set its ambition to see at least half of new cars to be ultra-low emission by 2030. The proposals are outlined in the Strategy which also sets out plans to enable a massive expansion of green infrastructure across the country, reduce emissions from the vehicles already on the UK's roads, and drive the uptake of zero emission cars, vans and trucks. The aims of

⁸ Improving air quality in the UK: tackling nitrogen dioxides in our towns and cities, May 2017, Defra and DfT

⁹ Valuing impacts on air quality, DEFRA, September 2015

this strategy will be met primarily through the design and manufacturing of zero emission vehicles and ending the sale of new conventional petrol and diesel cars and vans by 2040. The outcome is for all cars and vans to be effectively zero emission by 2040.

The recent Clean Air Strategy documents how the sources of air pollution will be tackled and provides a more coherent framework to confront air pollution than currently exists. This strategy will be underpinned by nationwide powers to control major sources of air pollution, and new local powers. In addition, it has been to public consultation allowing all interested parties to help shape the final strategy output.

1.7.2. Coventry City Council spending

Similar to some of the Government's investment priorities, CCC is working towards improving air quality and reducing road traffic emissions, through promoting uptake of low emission fuels and technologies, establishing and sharing best practice policies and developing various tools and resources.

Road schemes that commenced construction in 2013/14 ensured controls were put in place through the planning and construction process to limit and control emissions of dust and fumes. The schemes were designed to deliver improvements in terms of traffic flows, reducing congestion and improving air quality.

CCC is also improving walking and cycling accessibility, through ensuring these are considered in city developments. As part of the Coventry Station master plan, for example, a pedestrian tunnel has been incorporated into the design, this will create additional capacity in future and encourage more people to walk and use train services than drive. Improvements at the adjacent Ring Road junction have improved accessibility between the station and the city centre making it easier for pedestrians and cyclists to travel between the two.

Furthermore, CCC has continued the development of the Heatline District Energy System, which is an energy network that uses waste heat from the municipal waste incinerator to heat eight major buildings within the city centre, one of which is Coventry Cathedral. The scheme eliminates the need for gas boilers at these premises and makes full use of the waste heat using a 650m³ thermal store. Carbon savings are around 1,300 tonnes per year with NO_x and particulate matter emissions from connected premises being reduced to zero.

In addition, CCC has secured funding from the Government sources listed above to implement a number of initiatives aimed at future-proofing the local transport network to accommodate low emission vehicles. This includes the installation of 39 rapid charging points for electric vehicles across the city, focussed on locations where taxis are going to require top-up charging. This project was completed during 2020 and is intended to provide the charging infrastructure to make it easier for local taxi drivers to operate electric vehicles as well as providing visitors to the city with the opportunity to top-up vehicle charge whilst shopping, working, or making a leisure trip into the city. This work has been supplemented by CCC securing, to date, £1,038,362 grant funding from OLEV for the installation of around 292 electric vehicle charging points in on-street locations in residential areas around the city (190 have been installed with the remaining 102 due to be in place by March 2021). These areas are predominantly inner-city areas with limited off-street parking, and the charging points will remove one barrier to electric vehicle ownership for local residents.

The third specific strand of work relates to the upgrading of the engines of the main local bus fleet operated by National Express, Stagecoach and other companies, meaning that all buses operating within the city centre will be Euro VI or better by March 2021. In addition, a further £2.37 million in grant funding has been secured, with National Express, for the purchase of ten electric buses, which came into operation in the city in August 2020. These are complemented by the installation of solar panels on the bus depot roof to generate the electricity and of battery storage within the depot to feed the charge points. The buses, therefore, run on electricity that is generated on site. The Council has also submitted a joint bid with Warwickshire and the WMCA for All Electric Bus Town funding. If successful, this would see all buses operating in the city, including on key cross-boundary routes, be electric by 2024/25.

1.8. Evidence of the problems

The results of baseline air quality modelling undertaken to inform the OBC are summarised in Figure 1-4 and show the PCM links and key non-PCM link locations where an exceedance of the annual mean NO₂ EU limit value is modelled to occur in 2021, in the absence of any action. Furthermore, these results suggest that, in the absence of any action, the annual mean NO₂ EU limit value has the potential to continue to be exceeded going further forward into the future at certain locations, as shown in Appendix A.

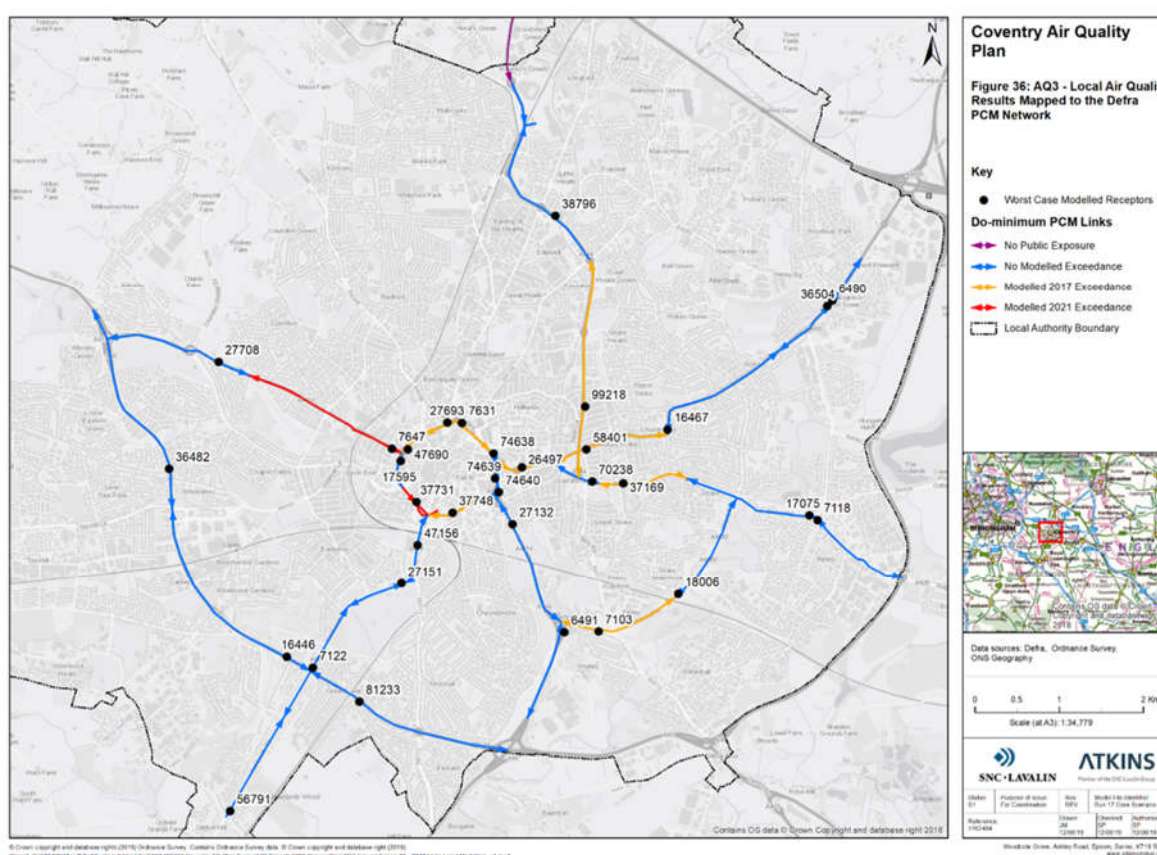
These locations can be summarised as follows:

- PCM Link locations:
- 7647 (Holyhead Road), with compliance projected to be achieved in 2028; and

- 37731 (southwest section of A4053 Ring Road), with compliance projected to be achieved in 2022.
- Non-PCM link locations:
- Little Park Street¹⁰ with compliance projected to be achieved in 2022; and
- Foleshill Road¹¹ with compliance projected to be achieved in 2024.

A simple source apportionment exercise was undertaken for each of the PCM and non-PCM links described above based on the estimated contribution to NOx emissions on the nearest modelled road link, the results of which are shown in Appendix B. This indicative analysis suggests that road traffic emission sources contribute 49 to 66% of modelled annual mean NO₂ concentrations at those locations with modelled exceedances. Of this road traffic contribution, diesel cars typically make the largest contribution (26 to 60% depending on the location). There is variation across each of the exceedance locations however, indicating differing vehicle classes contribute differently to each problem e.g. buses account for over 50% of the road traffic contribution at Little Hill Street.

Figure 1-4 – Baseline modelling results showing locations of exceedances in the year 2021



¹⁰ Little Park Street to the north east of New Union Street off of Junction 5 of the Inner Ring Road (where tall buildings result in a substantial canyon effect)

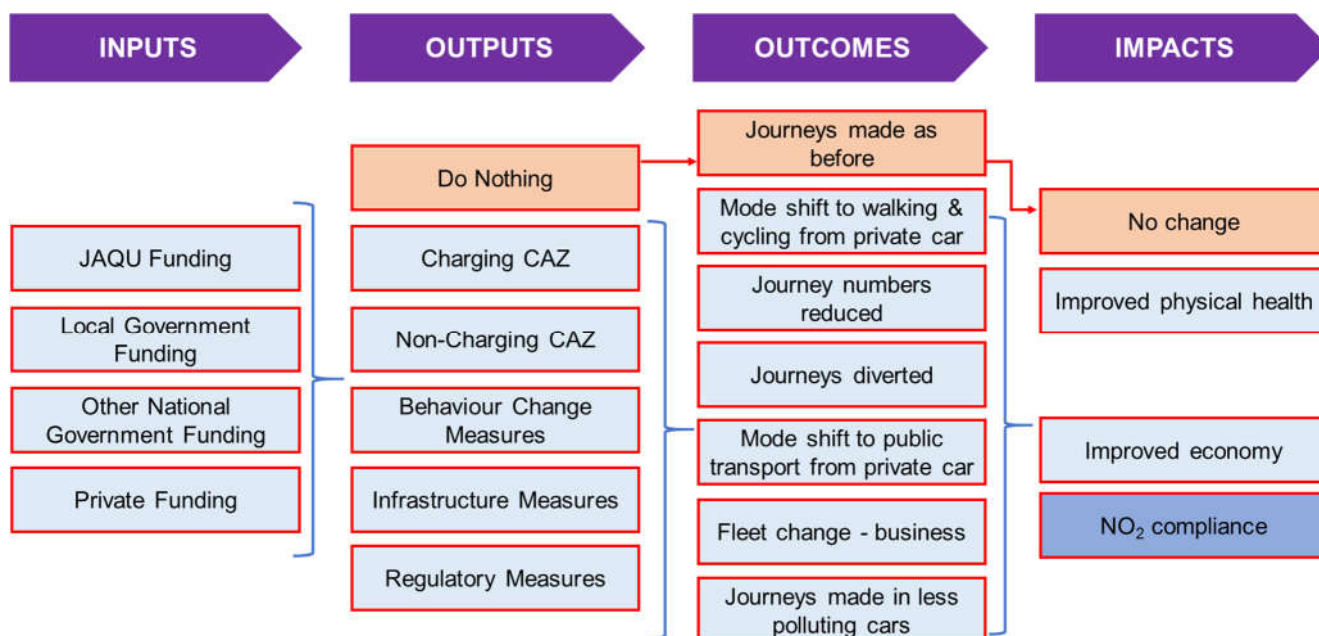
¹¹ two locations a) junction of Foleshill Road and George Elliot Road, and b) stretch of road immediately heading north from the Inner Ring Road

1.9. Theory of change and logic mapping for options

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

Figure 1-5 represents CCC’s overall vision for change and the likely outcomes and impacts as a result.

Figure 1-5 - Logic map to represent Coventry City Council's overarching vision of change



1.10. Engagement

1.10.1. Stakeholder Engagement

Engagement with stakeholders and the public has been a key part of developing the LAQAP for Coventry. Appendix C shows the stakeholder plan, and the main interactions with stakeholders throughout the various stages of business case development.

Consultation on the preferred option was undertaken in Spring 2020. This began on 16th March 2020 with an initial stakeholder meeting, with a number of further meetings and drop-in sessions planned throughout April as well as online engagement. Unfortunately, following the introduction of restrictions on face-to-face meetings resulting from the COVID-19 pandemic, these meetings and events were cancelled. Following advice from JAQU, the consultation continued as an on-line engagement and the consultation period was extended until the end of May 2020. A number of on-line events were also held which were well attended, whilst consultation responses were also received through an on-line questionnaire (LetsTalk). A detailed summary of the consultation process and the responses received is included in the Consultation Report Appendix D

302 people completed the online questionnaire and 28 emails were received with comments on the Action Plan.

People told us that they:

- Strongly believe that air quality in the city needs to be improved as quickly as possible
- Can see the health implications that poor air quality has on individuals
- Are keen to see pollution reduced and not moved from one area to another
- Believe that with the support of Coventry City Council, that behavioural change can be possible where residents move away from use of cars, and adopt active travel methods

1.10.1.1. Post FBC Engagement

As the preferred package of measures are taken through to delivery, there will be further engagement with key stakeholders and the local community on these individual measures. This will include statutory consultation (for example, on the Traffic Regulation Orders that will be required for changes to road layouts, parking restrictions and so on) and consultation on the detailed design of the individual schemes that comprise the package. The remaining phases of engagement are:

- Implementation
 - Formal consultation on individual measures through Traffic Order Regulations (TRO). Detailed consultation has already been undertaken in June / July 2020 for the Coundon cycleway, which was reported to the CCC Cabinet Member on 7th September 2020. Consultation on other schemes will commence as detailed designs are progressed, with indicative timescales for this shown in the detailed programme included elsewhere in the FBC.
 - Liaison with schools, residents and businesses through the works phases to minimise disruption.
 - Continued awareness raising of the works being planned, and any changes being made.
- Operational
 - Engagement package, encouraging people to find alternative ways to travel around the city, limiting the use of single occupancy car trips.

At this stage, the opportunity for the public and stakeholders to influence the package is limited, and relates to specific details identified through detailed design, rather than wholesale elements being changed/removed. Any substantive changes to scheme design or the package of measures that comprise the Local Plan Scheme arising from the detailed design consultations will, of course, be reported through the governance arrangements as set out elsewhere in the FBC.

1.11. The Case for Change

1.11.1. Primary Objective

The primary objective is to deliver a scheme that leads to compliance with NO₂ concentration legal limits in the shortest possible time, considering:

- Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³ for both primary and secondary receptors?
- In which year is compliance achieved?

1.11.2. Secondary Objective

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

- How does this option align with and support the strategic and wider air quality fit?
 - Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community
 - How does this option affect overall exposure and to what extent does it reduce overall exposure?
 - Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?
- Is there a well-developed supply side, who have the capacity and capability to deliver this option?
- Is this option affordable both in the short and long run?
- How achievable is this option given the existing market limitations and constraints?
- What is the overall distributional Impact of this option?
 - Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?
 - Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?
 - Is there a potential to insure some groups against the detrimental impacts of the option?
 - Does this option have an impact on health inequalities?
- Does this option improve the overall economy and job prospects within Coventry?
- Does this option provide value for money?

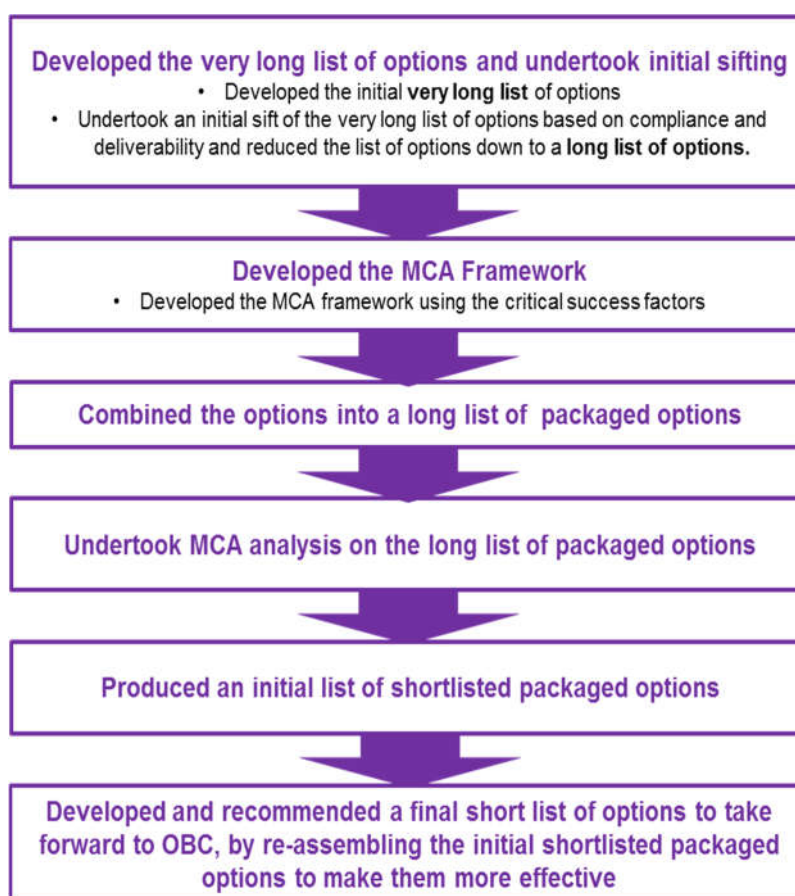
1.11.3. Identification of the Preferred Option

1.11.3.1. Shortlisting (SOC)

An initial option selection process was undertaken in the Strategic Outline Case (SOC), submitted to JAQU in March 2018, which identified a shortlist of measures including both charging and non-charging measures. The shortlist was developed assessing each of the potential options against a list of Critical Success Factors (CSFs) defined in accordance with guidance issued by JAQU.

The optioneering process took a long list of options at SOC stage and sifted them down to a shortlist to be taken forward for more detailed appraisal (described in detail in the Strategic Outline Case, March 2018). A multi-criteria framework (MCA, Appendix E) was applied to enable an assessment of the longlist of options against a range of key success factors and scheme requirements. Figure 1-6 shows an overview of the sifting process undertaken.

Figure 1-6 - Overview of the sifting process



1.11.3.2. Steps taken to determine final shortlisted options:

1. A MCA framework was developed using the primary and secondary critical success factors as guided by the Joint Air Quality Unit (JAQU) as well as key objectives as identified within the Coventry Local Plan. At SOC, each of the packaged options were scored against the MCA framework, with clearly recorded rationale and a shortlist of options was recommended to take forward to OBC stage. As part of this process, some of the options were re-packaged and combined to make them more effective at delivering reductions in annual mean NO₂ concentrations below the EU limit value. A detailed description of the MCA framework and methodology used through the SOC and OBC can be found in Appendix F.

1.11.3.3. Refinement from SOC to OBC:

1. The SOC assessment was based on interim air quality and traffic modelling. Updated observed information relating to fleet composition, traffic volumes and air quality were incorporated into the models for the OBC. The effectiveness of the interim shortlisted options was then tested through traffic and air quality modelling to determine the effectiveness in terms of achieving air quality improvements. The Clean Air Zone (CAZ D) charging option was shown to be the most effective charging mechanism in reducing NO₂ concentrations below the EU limit value in the shortest possible time. This option (DS2) was taken forward for detailed cost-benefit analysis as the benchmark option.
2. The challenge for CCC at the OBC stage was to identify a package of non charging measures that would perform as well, or better than the CAZ D option. An iterative process was adopted to develop the OBC preferred option that consisted of a package of measures – active travel interventions, taxi upgrade and bus retrofitting support, and road infrastructure improvements – that performed at least as well as the CAZ D option in achieving compliance in the shortest possible time.

1.11.3.4. Additional analysis undertaken between OBC and FBC

Following submission of the OBC, JAQU asked for further work to be undertaken to further refine the preferred option. This included scaling down some elements, reducing the area of the city that would benefit from AQ improvements. JAQU also confirmed that both PCM and secondary receptor exceedances needed to be resolved for compliance.

The links identified through the modelling as being in exceedance in 2021 (the Do Minimum scenario) are primarily the main radial routes leading into the city centre, and the ring road connecting these around the central area.

1.11.4. Ministerial Preferred Option

The revised preferred option submitted in September 2019, and approved in February 2020 comprised the package of measures described below.

- **Cycle infrastructure** - Construction of a high quality segregated cycle route to Coundon to encourage cycling in the city, remove local car journeys off the network, and ease pressure on air quality hotspots such as Holyhead Road;
- **Traffic management:** implementation of Dynamic Traffic Management through the use of pollution monitors and Variable Message Signing (VMS) to reroute traffic away from air quality hotspots and onto more suitable routes when required. The upgrade of all remaining outdated traffic signals along Allesley Old Road and Holyhead Road will enable partial network control and coordination. This will enable 'green wave' opportunities as well as ramp metering of traffic on a route. A right turn ban was also included for Cash's Lane where it meets Foleshill Road, to resolve the exceedance on Foleshill Road.
- **Mode shift:** A comprehensive package of travel planning initiatives for schools, businesses and communities close to Allesley Old Road and Holyhead Road to support a mode shift away from single person private car trips. This is an extension of the work already undertaken as part of the Early Measures programme;
- **Marketing and communications:** A comprehensive package of information and campaigns to underpin the mode shift opportunities and reinforce awareness of air quality issues and impacts focused on area impacted by mode shift.
- **Holyhead Road specific abatement**¹² - As previously noted, Holyhead Road has the largest current exceedance and therefore required specific treatment. This is mainly focused on the relocation of traffic and queuing away from the air quality hotspot, and comprised the following traffic management and infrastructure projects:
 - Peak time restrictions for Holyhead Road at J8;
 - Removal of the traffic signalled junction of Holyhead Road and Barras Lane;
 - Closure of Barras Lane which enables signals and right turn filter lane on Holyhead Road to be removed.
 - Opening up of Upper Hill Street onto the ring road slip road, retaining local access to Coundon.
 - Capacity improvements on the B4106 through Spon End (to allow for traffic transfer from Holyhead Road onto the Allesley Old Road route into the city from the west as part of the dynamic traffic management approach);
 - Upgrade of ring road J7 to further support additional traffic rerouting on the B4106 through J7 rather than J8 (Holyhead Road), and to enhance the walking and cycling routes from Spon End into the city centre, providing the capability to encourage more local journeys to be made on foot or by bike. This again is fundamental to supporting the dynamic traffic management approach on the western approaches to the city centre.

¹² It should be noted that alternative sources of funding are being sought for these infrastructure improvements, including an allocation of £5.8 million towards the Spon End scheme from the Transforming Cities Fund, which has been secured from the West Midlands Combined Authority.

1.11.4.1. Further refinement for FBC

Of all the elements in the preferred option, the restrictions on Holyhead Road at peak times had a large negative impact on the wider road network, as relatively few vehicles could use the route at peak times.

Further work has been undertaken that has identified that by replacing the peak time restrictions with a Low Emission Zone/street at the lower end of Holyhead Road would enable compliance to be achieved in the same timescales, but would have a reduced impact on traffic rerouting onto potentially unsuitable routes. As the LEZ prioritises cleaner vehicles, more traffic can remain on Holyhead Road whilst still achieving compliance.

Additional work also identified an alternative to the right turn ban at the Cash's Lane / Foleshill Road junction. A bus gate was modelled on Foleshill Road, just south of the A444 junction. This was found to deliver the desired outcome of encouraging through traffic on Foleshill Road to travel on the A444, but also had less impact on residential streets (in terms of rat running traffic).

This option was presented to, and approved by, the City Council's Cabinet on 20th July 2020 and forms the basis of this FBC submission. The preferred option is therefore Option DS13p, and the interventions are shown in Figure 1-7.

1.11.5. Option DS13p

The option has been developed to reduce the volume and flow of traffic at exceedance hot-spots by a combination of mitigation measures along Holyhead Rd, Spon End and Junction 7 on the inner ring road. Additionally, the package has been developed to promote active travel and mode shift to reduce the number of car trips in the city through intensive travel planning and with the provision of new high-quality cycling infrastructure. The flow of traffic is further improved through signal optimisation on Foleshill Road to reduce congestion and to lower emissions. The current evidence suggests that CCC can achieve compliance by 2021 by implementing this option.

Table 1-1 - Package of measures included in Option DS13p

Preferred option DS13p	Package of abatement measures
Road infrastructure improvements and Holyhead Road mitigation measure	Capacity improvements at B4101 Spon End/Hearsall Lane
	Redesign of Ring Road J7 (A4503 / B4101)
	Closure of Barras Lane between Coundon Road and A4114 Holyhead Road, allowing for removal of traffic signals (and allowing lane reduction due to removal of right turn filter lane on Holyhead Road)
	Low emission street/zone on the easternmost section of A4114 Holyhead Road
	Opening of Upper Hill Street allowing a left in / left out movement with the Inner Ring Road clockwise
	Bus gate on B4113 Foleshill Road south of the A444 and signal optimisation of Foleshill Road junction with the ring road (prioritising traffic flow on the ring road) encouraging through traffic onto the A444
Cycling Infrastructure	High quality cycle infrastructure along Coundon Road
Travel Planning	Personal Travel Planning: intensive engagement with households within the western part of the city generating travel demand along the Holyhead Road corridor
	Workplace Travel Planning: intensive engagement with employers generating significant travel movements along the Holyhead Road corridor
	School Travel Planning: intensive engagement with schools within the western part of the city generating travel demand in the Holyhead Road corridor
Traffic performance measures	Traffic signal optimisation and traffic signal technology upgrade
Marketing and Communications	Implementation of a targeted marketing and communications strategy

1.11.5.1. Road infrastructure improvements

Implement infrastructure and traffic management measures to significantly reduce vehicle trips and congestion along key exceedance hot-spot areas, notably on the A4114 Holyhead Road. As the forecast exceedances on Holyhead Road are not mitigated even by a CAZ D option, the strategy is to reduce traffic levels through a package of infrastructure improvements that will enable the diversion of traffic onto other more suitable routes, through the application of dynamic traffic management responded to traffic and air quality conditions, complemented by modal shift away from the car anticipated to be achieved through travel planning and cycle infrastructure which make up part of this option.

1.11.5.2. A4114 Holyhead Road mitigation measures

The proposed Low Emission Zone (LEZ) would be introduced on a short section of Holyhead Road, covering as a minimum the easternmost section between Barras Lane and the ring road at Junction 8. For the purposes of modelling, it is assumed that all non-compliant vehicles would re-route away from Holyhead Road due to the availability of alternative routes close by. Compliant vehicles are assumed to be Euro 4 or above for petrol vehicles, and Euro VI or above for diesel vehicles. Very limited exemptions will be included, mainly due to access arrangements or the lack of availability of a cleaner vehicle to upgrade to (e.g. rubbish collection wagons).

The legal basis for the LEZ is the Road Traffic Regulations Act 1984 and the 1995 Environment Act which allow for access restrictions in respect to the management of air quality. The responsible transport authority is Coventry City Council. A Traffic Regulation Order (TRO) is a direct access restriction that could be used to ban vehicles not meeting specific criteria (in this case exhaust emissions) from given streets. They can be set up like any other access restrictions to apply either 24 hours a day or at certain times of the day. In most cases TROs are enforced as stationary vehicle offences (e.g. contraventions of parking restrictions) by the local authority.

The current enforcement of TROs as a moving vehicle offence is only permissible by the police. However, there is provision in the Traffic Management Act 2004 (Part 6) for civil enforcement of traffic contraventions including moving vehicle offences. That said, these powers have not been fully enacted to allow local authorities outside London to enforce using ANPR. This is something the Department for Transport (part of JAQU) has the power to enable this on behalf of CCC.

The placing a TRO on the eastern section of the A4114 Holyhead Road prohibiting use of the road by vehicles not meeting the required emissions standards (essentially, Euro VI for diesel vehicles and Euro 4 for petrol vehicles) could therefore be implemented by the Council subject to securing the necessary approvals from the DfT.

1.11.5.3. Traffic performance measures

Take a more strategic approach to road works/improvements as well as the installation and updating of traffic control systems to facilitate the use of more intelligent programming, including the use of MOVA systems (using the STRATOS system developed by Siemens). This will include the introduction of traffic signal technology that links directly with traffic and air quality data on a real-time basis, and to Variable Message Sign (VMS) systems that will direct traffic onto the most suitable route into or out of the city depending on traffic and air quality conditions. Evidence detailed in CCC's 'Early Measures' bid indicates that more intelligent programming of traffic systems can reduce congestion by up to 4%. This measure would therefore have the potential to reduce NO₂ exceedances along key hotspot routes as current evidence indicates congestion issues along key routes.

1.11.5.4. Travel Planning

Implement intensive personal, workplace and school travel planning across the western side of the city. As we are aware private car trips are significant contributors on the ring road. Evidence from 'Early Measures' work indicates that effective travel planning can reduce a significant percentage of the car trips including 2.9% school trips, 4% of commuter trips and a further 4% of community car trips. Therefore, the potential positive impact of travel plans can be substantial as the existing mode share of car is large.

The measure would focus on encouraging mode shift from car to public transport, walk and cycle modes as well as encourage the use of low emission vehicles through car clubs and use of mobile technology.

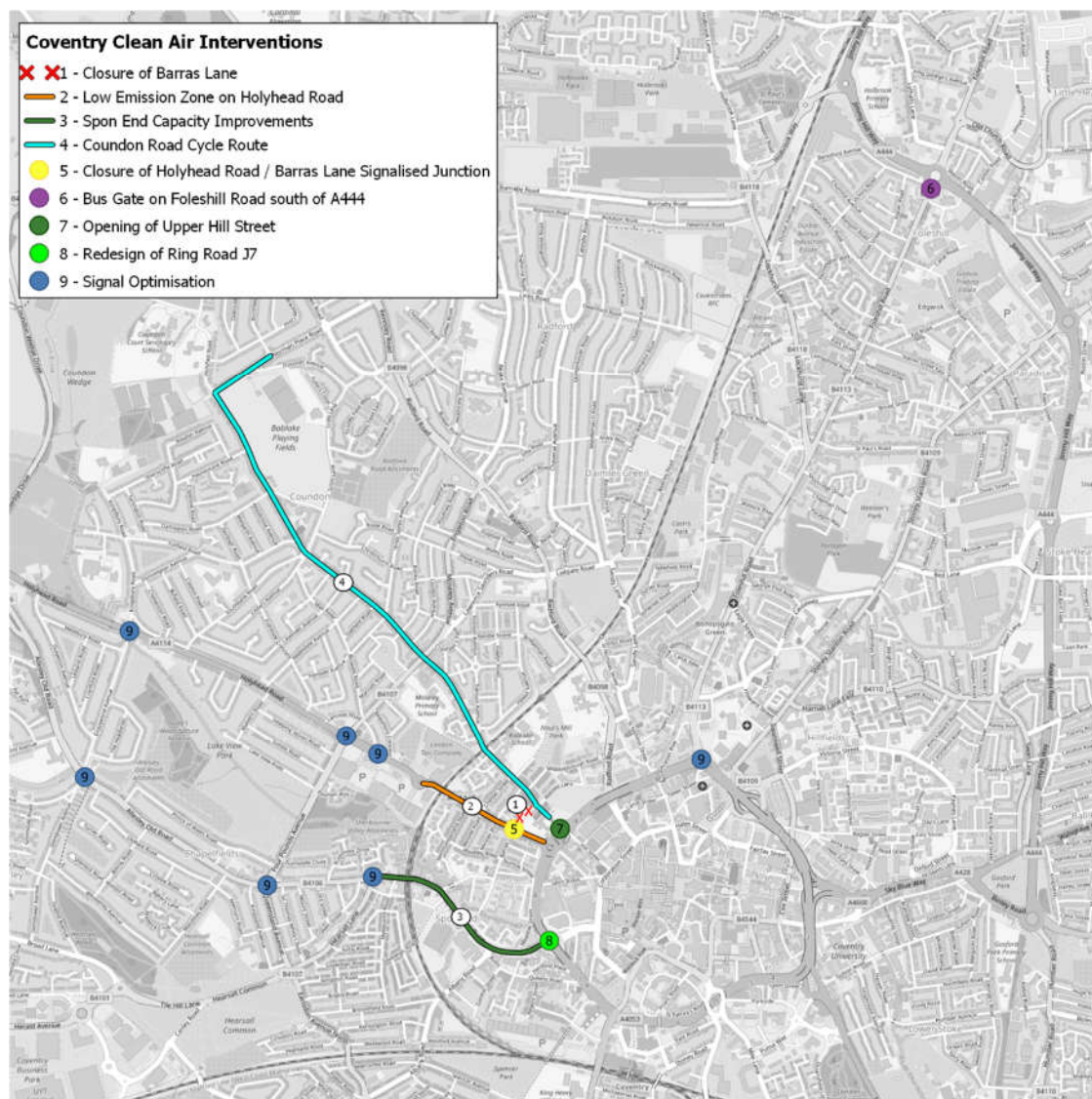
1.11.5.5. Cycling infrastructure

Implement a 'first class' cycling facility along Coundon Road, a fully segregated cycleway, including priority at junctions.

1.11.5.6. Marketing and communication

Implement a targeted marketing and communications strategy across the Coventry area, with a focus on the area affected by these measures, particularly during construction. This would include travel behaviour change and promote active travel modes, hence, complementing the other measures within this option. This measure would improve the effectiveness of all the measures in this option.

Figure 1-7 - Plan of Option DS13p Interventions



2. Economic Case

2.1. Introduction

The purpose of the Economic Case of the Full Business Case (FBC) is to present the economic appraisal the preferred option which optimises the value for money by considering the Net Present Value (NPV) of the scheme. The costs and benefits of the preferred option are assessed in detail. These are considered together with distributional analysis to assess the overall value for money of the preferred option.

Coventry City Council (CCC) is required to implement a Local Air Quality Action Plan (LAQAP) to deliver improvements to air quality in Coventry within the shortest time possible and to ensure that the city is compliant with national and international air quality targets. The LAQAP brings together local measures to deliver immediate action to improve air quality and health, with support for cities to grow, while delivering sustained reductions in pollution and a transition to a low emission economy. Where there are the most persistent pollution problems, this could be supported by targeted restrictions to encourage only the cleanest vehicles to operate in the city.

This Economic Case evaluates the preferred solution. Option DS13p, developed by CCC to reduce air pollution in Coventry, as approved by the Council's Cabinet on 20th July 2020.

2.2. Option Identification

The optioneering process took a long list of options at SOC stage and sifted them down to a shortlist to taken forward for more detailed appraisal (as described in s.1.11 of the Strategic Case chapter). As the primary objective is to achieve air quality compliance in the shortest possible time, only options that performed at least as well as the benchmark option (CAZ D) were taken forward for cost-benefit analysis at OBC stage. An iterative process was undertaken to develop a package of measures that was at least as effective as the CAZ D option in terms of compliance timescales. The final shortlisted options taken forward for detailed economic appraisal in the OBC consisted of a charging CAZ D option and an alternative option which comprises a package of non-charging measures. The package of non-charging measures was identified as the preferred option, which received approval (Option DS12a).

Since OBC approval the preferred option has been further refined and optimised in terms of air quality and traffic impacts. The refinement of the preferred option has been documented in the OBC Addendum (issued to JAQU in September 2019) and is explained in more detail in the Strategic Case. Therefore, this FBC presents the economic appraisal of the optimised preferred option, Option DS13p.

Do-Nothing

As per JAQU guidance, CCC are required to take forward a Do-Nothing option as part of the business case process and to measure the Do Something against. We have, therefore, used the current available information to understand the impacts of the Do-Nothing option on the NO₂ exceedances in Coventry. A Do-Nothing option will result in a number of locations not being compliant with NO₂ exceedance levels in the shortest possible time.

2.3. Economic Appraisal Methodology

2.3.1. Overview of approach and assumptions

This section provides an overview of our approach to the economic analysis. JAQU's Option Appraisal Guidance states that only shortlisted options that pass the Critical Success Factor and are likely to lead to compliance in the shortest possible time will be accepted. In this stage, the preferred option is taken forward for a detailed assessment of the costs and benefits, and determination of its economic value for money (VfM) and Distributional Impacts. Therefore, the appraisal below discusses net present value (NPV) figure for the preferred Option DS13p, consisting of a package of non-charging measures and road infrastructure improvements. The air quality modelling results show that Option DS13p achieves compliance in the shortest possible time.

JAQU have provided guidance regarding the economic appraisal of options to implement a Clean Air Plan. This provides a steer for many of the key data inputs and assumptions that have framed the analysis undertaken. The key documents that have provided this guidance include:

- Options Appraisal – Guidance (2017) (and preceding versions of this guidance)
- National data inputs for Local Economic Models (2017)

The analysis is also underpinned by the following general assumptions:

- Each impact associated with the option is assessed relative to a ‘do nothing’ baseline
- All impacts are presented in real terms with a Price Year of 2018
- A lifetime approach has been adopted (rather than an annualised approach) and all impacts are assessed over a 10-year appraisal period from 2021-30
- All impacts are discounted to 2018 applying Green Book discount factor of 3.5%

The methodology developed has been designed to be consistent with the JAQU guidance. However, in some cases we have sought additional steps and assumptions where the study team felt that additional approaches were warranted. The results of the economic appraisal are presented in the following sections.

2.3.2. Scope of economic impacts assessed

The economic analysis seeks to quantify and value as many of these impacts as possible given the time, resource and modelling methodologies available. The scope of impacts considered in this analysis are:

- Air quality emissions
- Greenhouse gas impacts
- Traffic flow and other impacts on transport users
- Fuel and operating cost impacts – indirect tax effect
- Cycling and active travel impacts
- Implementation costs

The general approach to calculating economic impacts is as follows:

$$\text{Total Economic Impact} = \text{Volume} \times \text{Unit Economic Value}$$

For example, in the case of air pollutant emissions, volume can be tonnes of NOx and associated economic values are damage costs per tonne of NOx. In the case of traffic impacts, values of time are applied to changes in journey times. This framework allows us to present our calculations in the format given in Table 2-1.

Table 2-1 - Key calculations and data sources

Impact.	Volume	Unit of economic value
Air Quality Emissions	Output of air quality modelling for each option, utilising the Emission factor Toolkit	PM2.5 and NOx damage costs provided by JAQU
GHG Emissions	Combining numbers of vehicles upgraded, average vkm travelled per annum with average emissions factors per km travelled	BEIS ¹³ Carbon Prices
Traffic flow and other transport user impacts	Outputs from transport models for each option	Values of time and operating costs provided by WebTAG databook (July 2020 v1.13.1)
Fuel and operating cost impacts – indirect tax impacts	Traffic flow related changes – outputs from transport model for each option	Vehicle operating costs, fuel prices and indirect taxation rates from WebTAG Fuel consumption rates from JAQU CO2 emissions rates. Fuel prices provided by BEIS and indirect taxation rates from WebTAG

¹³ Dept. for Business, Energy and Industrial Strategy

Cycling and active travel	Estimates of the number of additional cycling trips and the number of existing trips experiencing improved journey quality	DfT Active Mode Toolkit valuations of health, absenteeism and journey quality benefits of increased and improved cycling
Implementation Costs	Labour and equipment required	Unit costs for labour, monitoring equipment etc

2.4. Results of Cost Benefit Analysis

The results of the economic analysis are presented below.

2.4.1. Air Quality Impacts

The impact on affected populations by a change in NOx and PM emissions as a result of the implementing the options. Calculating the economic impact is dependent on the output of air quality and transport models which provide air quality outputs for the baseline and the two options for NOx and PM2.5. The marginal impact on air pollution of each option has been calculated (in tonnes of pollutant) and combined with the air pollution damage costs provided by JAQU, which convert emissions into monetised health impacts to estimate the total benefit (in damage costs saved) for each option.

The monetised impact of the change in air quality is presented in Table 2-2. It is estimated that the Option DS13p will generate a benefit of £2.8million over the ten year appraisal period.

Table 2-2 - Monetised Air Quality Impacts

Impact	Option DS13p
Cumulative difference in NOx emissions 2021-2030 (tonnes)	-268
NOx damage costs 2021-2030 (£/tonne)	£7,321 - £8,749
NOx change (£000s)	1,655
Cumulative difference in PM emissions 2021-2030 (tonnes)	-10.35
PM damage costs (£/tonne)	£131,275 - £156,886
PM change (£000s)	£1,145
Aggregate PV of air quality impacts (£000s)	£2,799

(Cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018, £000s)

2.4.2. Greenhouse Gas Impacts

The non-charging measures and select road infrastructure improvements to improve traffic flows and change travel behaviours will have an impact of Greenhouse Gas emissions, particularly CO2. Option DS13p will affect the number of vehicle journeys by encouraging mode shift to active modes and smooth the flow of traffic in key exceedance hotspots. This will have an impact on fuel consumption and in turn on the emissions of GHG's. The marginal impact of each option has been calculated for upgraded vehicles and for the resulting number of vehicle kilometres and then valued using BEIS carbon prices as specified by JAQU.

The monetised impact of the change in GHGs presented in Table 2-3. It is estimated that the Option DS13p will generate a benefit of £205,000 over the ten year appraisal period.

Table 2-3 - Monetised GHG Impacts

Impact	Option DS13p
Cumulative difference in CO2 emissions 2021-2030 (tonnes)	-3,628
BEIS Carbon Prices 2021-2030 (£/tonne)	£70 - £81
GHG impacts (£000s)	£205

(Cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018, £000s)

2.4.3. Traffic Flow Impacts and Other Transport User Benefits

Road infrastructure improvements can lead to changes in traffic flows and congestion within and around the key exceedance hotspot areas. Travel times and vehicle operating costs will be affected by the changes in traffic flows. Trip and trip time data was provided from the transport model. DfT's WebTAG guidance has been applied to monetise the impact on journey times and vehicle operating costs. These impacts are reflected in journey times and vehicle operating costs to the user. DfT's Transport User Benefits Assessment (TUBA) software has been used to assess the impact on transport economic efficiency (TEE).

The monetised impacts of the options on traffic flows and the subsequent costs and benefits experienced by transport users is presented in Table 2-4. Option DS13p generates a benefit of £12million.

Table 2-4 - Transport User Benefits (TUBA) ¹⁴

Impact	Option DS13p (£000)
Transport User Impacts (£000s)	£12,063

Notes: +ve values denote a benefit; -ve values denote a dis-benefit; (Cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018, £000s)

2.4.4. Fuel and Operating Cost Impacts – Indirect Tax

Option DS13p will cause changes to the fuel and operating costs experienced by drivers in Coventry as a result of changes in traffic volumes and conditions resulting from the measures. The impact of changes in traffic conditions and rerouting on fuel and operating costs for transport users are captured in the TUBA assessments of traffic flow and other transport user impacts for each option, as reported in the previous section.

In addition to the implications for transport users, changes in fuel expenditure impact on the indirect tax revenue received by government, particularly due to change in fuel duty receipts. The indirect tax impacts of fuel and operating cost changes associated with changes in traffic conditions and rerouting were estimated through the TUBA assessment for each option.

The indirect tax impacts of Option DS13p are presented in Table 2-5. It is estimated that Option DS13p will result in a net tax loss of £1.8million to the exchequer.

Table 2-5 - Fuel Change and Operating Cost Impacts

Impact	Option DS13p (£000)
Indirect tax loss due to changes in traffic volumes and conditions	-£1,843

(Cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018, £000s)

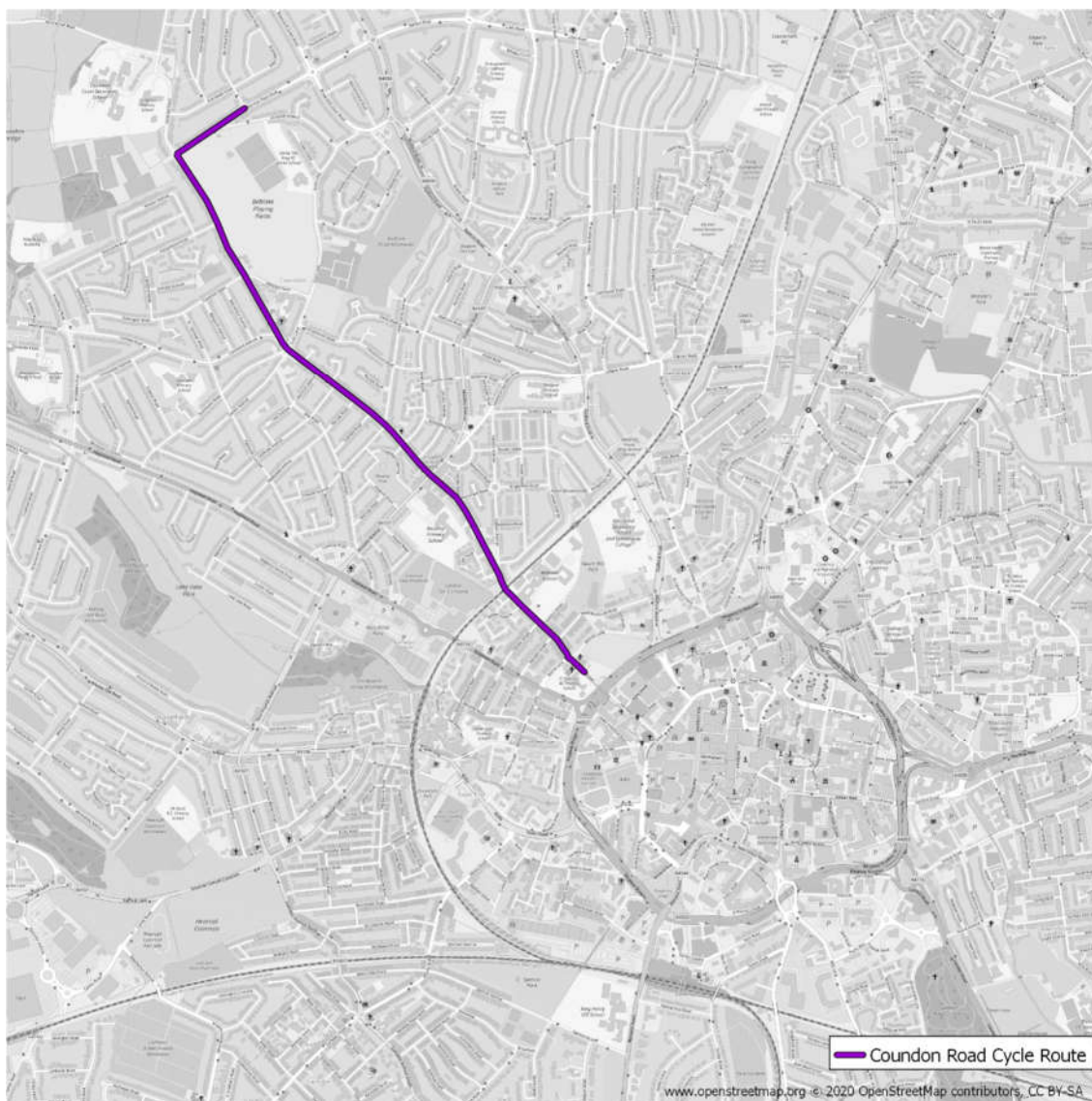
¹⁴ These results are based on traffic modelling outputs and use data generated from the CASM Transport Model as inputs to assess the economic impacts.

2.4.5. Cycling Impacts

As part of Option DS13p, significant improvements will be made to the cycling infrastructure along Coundon Road where a new high quality cycle route will be implemented to encourage mode shift to more sustainable modes. Extensive personal, workplace and school travel planning will be rolled out across the Coventry area. This will provide support for active travel and aim to reduce the number of car trips by promoting alternatives such as car sharing and public transport. Travel planning will complement the provision of cycling infrastructure enhancing the take up by new cyclists.

The proposed cycling route (purple route from Coundon, approximately 3.7km in length) is indicated in Figure 2-1.

Figure 2-1 – Proposed Coundon Road Cycling Route



It is forecast that Option DS13p will increase the number of new cyclists and reduce the number of vehicle trips as a result of the construction of the Coundon Cycle Route, and the resulting economic impact of reducing vehicle trips has been estimated from the traffic modelling. Benefits arising from the reduction in car trips are captured within the TUBA assessment (as described above). To avoid double counting, only the additional impacts on health, absenteeism, fewer accidents and enhanced journey quality are included here. The DfT's Active Travel toolkit, incorporating assumptions from the Health Economic Assessment Tool (HEAT), was used to estimate these impacts.

The economic impact for cyclists of implementing the Coundon Cycle Route is presented in Table 2-6. It is estimated that the cycling component of Option DS13p will result in a benefit of £1million, with the majority of these benefits resulting from health impacts (c£670 thousand).

Table 2-6 - Cycling Impacts

Impact	Option DS13p (£000)
Journey Quality	£201
Physical Activity	£670
Absenteeism	£170
Accidents	£4
PV of cycling benefits (£000s)	£1,045

(Cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018, £000s)

2.4.6. Implementation and Operating Costs

For Option DS13p, costs are associated with implementing the road and cycling infrastructure improvements, travel planning, the traffic signal technology upgrade and traffic management measures. These costs are drawn from estimates developed for the Financial Case, which presents the costs in more detail. Capital and operating costs for Option DS13p are £24.8million (PVC)¹⁵ in appraisal terms over the ten year appraisal period.

Table 2-7 - Capital and Operating Costs

Cost component	Option DS13p (£000)
Total cost (PVC)	£24,776

(Cumulative discounted impact (PV) from 2021-30, 2018 market prices, discounted to 2018, £000s)

2.4.7. Net Present Value

By combining the costs and benefits we have the overall net present value (NPV) of the option. The NPV of Option DS13p is -£10.5million (Table 2-8). The costs and benefits of each option are shown in more detail graphically in Figure 2-2 and Table 2-8.

The costs outweigh the benefits, which is not surprising given the focus of the scheme is to improve air quality. Improvements to the road layout, traffic management and specific interventions designed to target high exceedance areas make up a large part of the costs for Option DS13p. The cycling infrastructure is also a sizeable component. It should be noted that there are also 'hidden' costs to the NHS of poor health due to AQ that are not captured here.

Positive transport user benefits and additional health benefits resulting from mode shift to active modes combine to give an overall positive economic benefit for Option DS13p.

Table 2-8 - Option DS13p Net Present Value

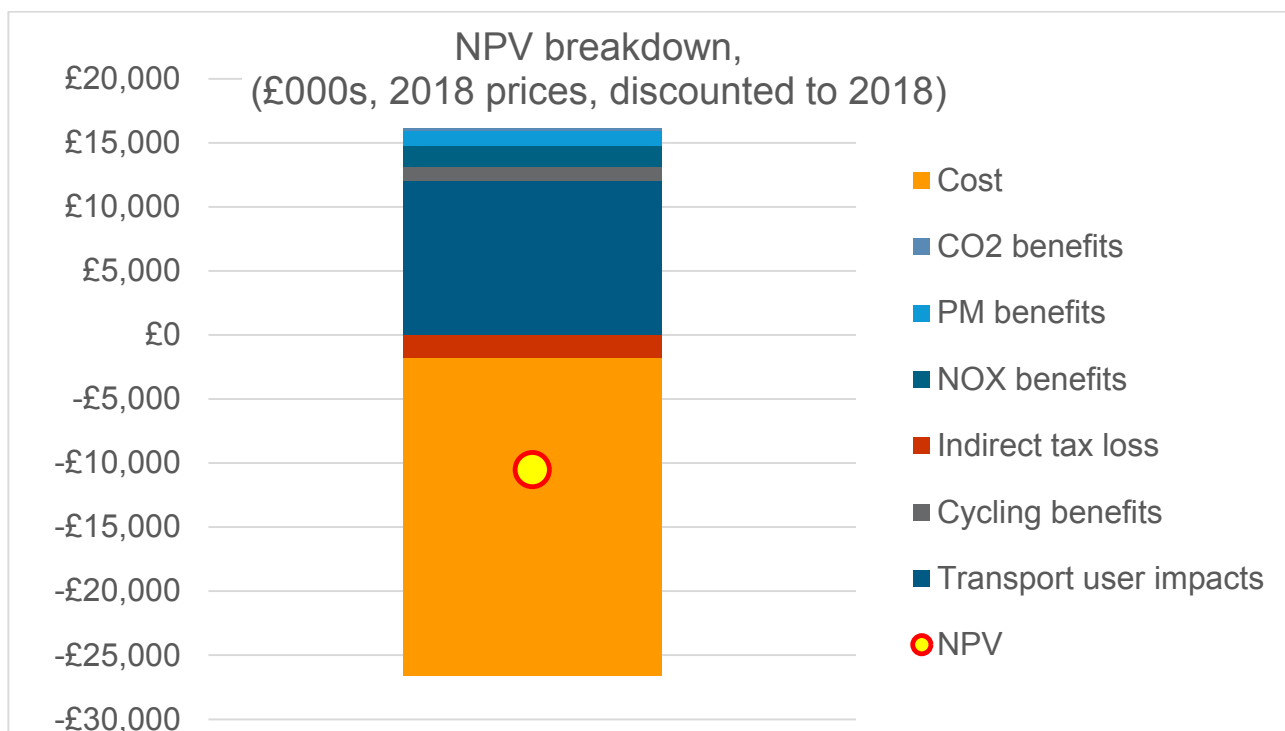
Impact	Option DS13p (£000)
Impacts on transport users (<i>including traffic impacts and associated indirect tax impacts</i>)	£10,220
Benefits from increased cycling	£1,045
Air quality and CO2 benefits	£3,004

¹⁵ The difference from the costs presented in the Financial Case are because of discounting, rebasing and are in market values.

Implementation Costs	-£24,776
NPV (£000s)	-£10,506

Notes: +ve values denote a benefit; -ve values denote a dis-benefit (£000s, cumulative discounted impact (PV) from 2021-30, 2018 prices, discounted to 2018)

Figure 2-2 - Option DS13p Net Present Value by Component



2.5. Distributional Analysis

Distributional impacts (DIs) consider the variance of transport intervention impacts across different social groups. The analysis of DIs is mandatory in the appraisal process and undertaken in accordance with WebTAG guidance Unit A4.2 and JAQU guidance for Distributional and Equalities Impact Analysis. Both beneficial and /or adverse DIs of transport interventions are considered, along with the identification of social groups likely to be affected.

The DI process involves three stages: Screening; DI Assessment; and Appraisal of Impacts, as outlined in Table 2-9.

Table 2-9 - Distributional Impact Assessment process

Stage		Description	Output
Screening	1	Identification of likely impacts for each indicator	Screening Proforma
Full appraisal	2	Assessment: <ul style="list-style-type: none"> Confirmation of the area impacted by the transport intervention (impact area) Identification of social groups in the impact area (such as transport users, people living in those areas affected by the scheme) Identification of amenities in the impact area 	DIs social groups statistics and amenities affected within the impact area
	3	Appraisal of impacts: <ul style="list-style-type: none"> Core analysis of the impacts (including providing an assessment score for each 	Appraisal tables

		<p>indicator based on a seven-point scale – large beneficial to large adverse)</p> <ul style="list-style-type: none"> • large beneficial (✓✓✓) • moderate beneficial (✓✓) • slight beneficial (✓) • neutral (0) • slight adverse (*) • moderate adverse (**) • large adverse (***) 	
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Step 1 consists on a screening exercise that should be undertaken in order to identify whether a full appraisal is required. In order to ensure a proportionate approach, the analysis is carried out for each of the following eight distributional impact indicators:

- User Benefits;
- Air Quality;
- Noise;
- Personal Security;
- Severance;
- Accessibility;
- Personal Affordability; and
- Accidents.

The three stages have been undertaken in full as part of the DI assessment. The screening determined that each of the eight indicators were likely to be impacted as a result of Option DS13p and therefore require a full appraisal.

The appraisal considered the effect of each of the measures set out in Option DS13p, which are listed earlier in this report.

The assessment stage of the DI report used socio-demographic mapping to determine areas with high proportions of vulnerable groups and amenities in the impact area. This mapping is included in Distributional Impacts Report.

2.5.1. Appraisal – Air quality

Air quality modelling was undertaken for an agreed core area to determine the change in NO_x emissions for road links as a result of Option DS13p¹⁶. Analysis of the air quality modelling results was undertaken for the scheme to determine the distribution of benefits for each income quintile and for children. Links with greater than 10% change in NO_x emissions, income quintiles, schools and locations with high proportions of children are shown in Figure 2-3 and Figure 2-4.

¹⁶ The Air Quality Monitoring Reports provide a detailed explanation of the modelling methods.

Figure 2-3 - Links with greater than 10% change in NOx emissions and income quintiles by LSOA

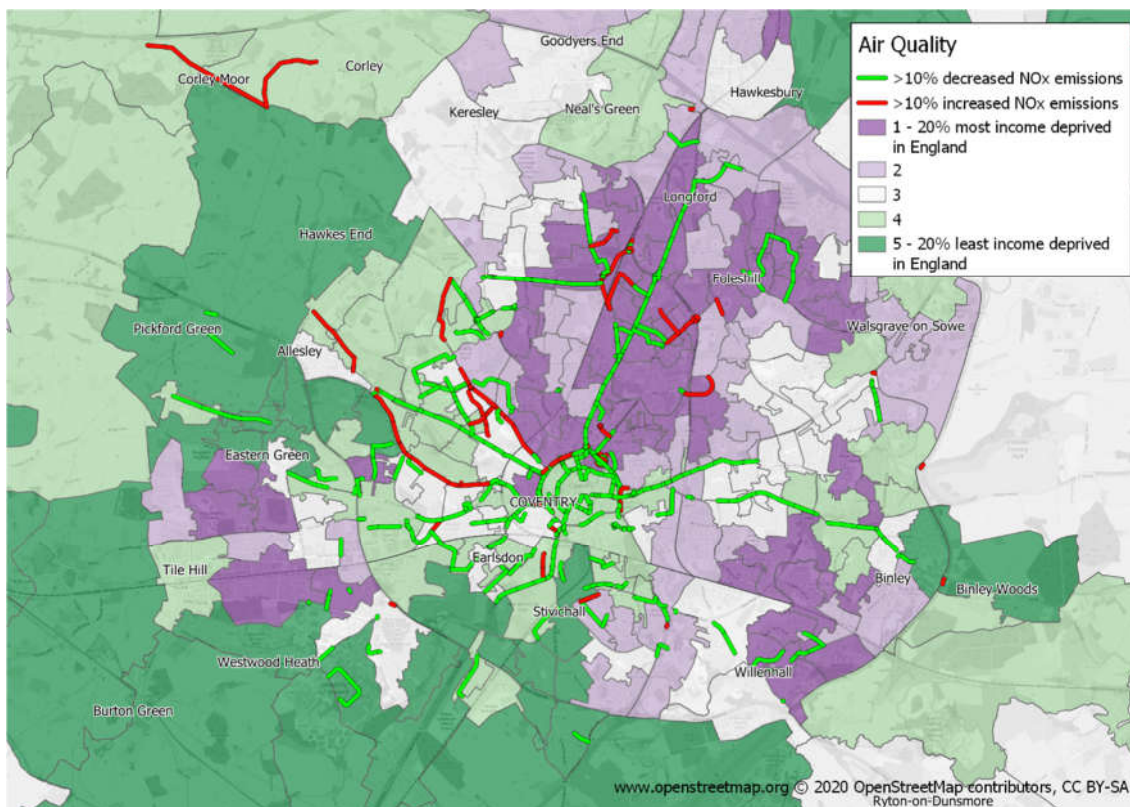
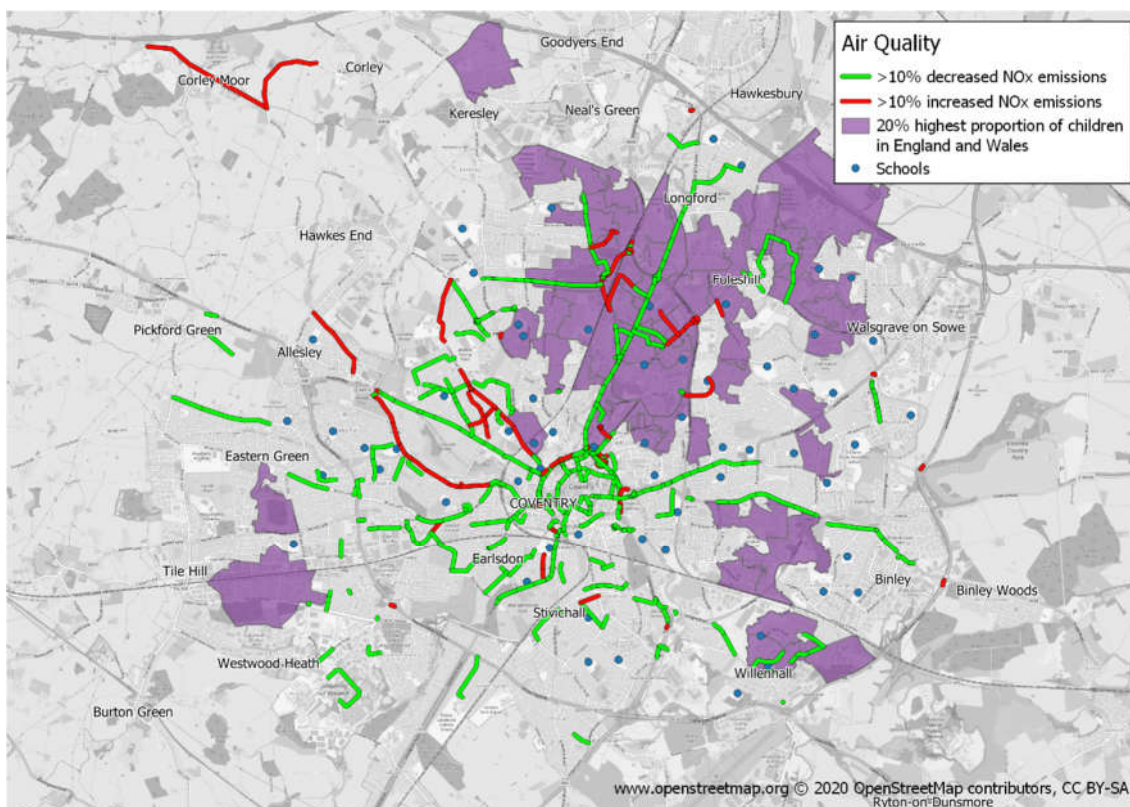


Figure 2-4 - Links with greater than 10% change in NOx emissions, LSOAs with high proportions of children and locations of schools



There are more links with greater than 10% decreased NOx emissions than links with greater than 10% increased NOx emissions caused by the scheme. The DI analysis considered the locations of these links as well as the income quintiles of LSOAs in the impact area and areas with high proportions of children and the locations of schools. This analysis showed that for each income quintile and in areas with schools and high proportions of children there are a greater number of links with greater than 10% decreased NOx emissions than greater than 10% increased NOx emissions. Therefore, there are beneficial impacts to air quality for each income quintile and children overall. Within income quintiles 1 and 4 and LSOAs with high proportions of children there are also several links with greater than 50% decreased NOx emissions. There are also several schools within the impact area with expected beneficial impacts to air quality. Therefore, there is a large beneficial air quality impact for children and income quintiles 1 and 4.

There are more links with decreased NOx emissions than increased NOx emissions within income quintiles 2 and 3. However, there are few links with greater than 50% change in NOx emissions within these income quintiles. Therefore, there is a moderate beneficial impact to air quality for income quintiles 2 and 3. There are also more links with decreased NOx emissions than increased NOx emissions within income quintile 5. However, there is below average proportion of this income group within the impact area and few links with greater than 10% change in NOx emissions within income quintile 5. Therefore, there is a slight beneficial impact to air quality for income quintile 5.

2.5.1.1. Summary assessment

The distribution of benefits across each income quintile and for children is shown in Table 2-10.

Table 2-10 - Summary assessment for air quality

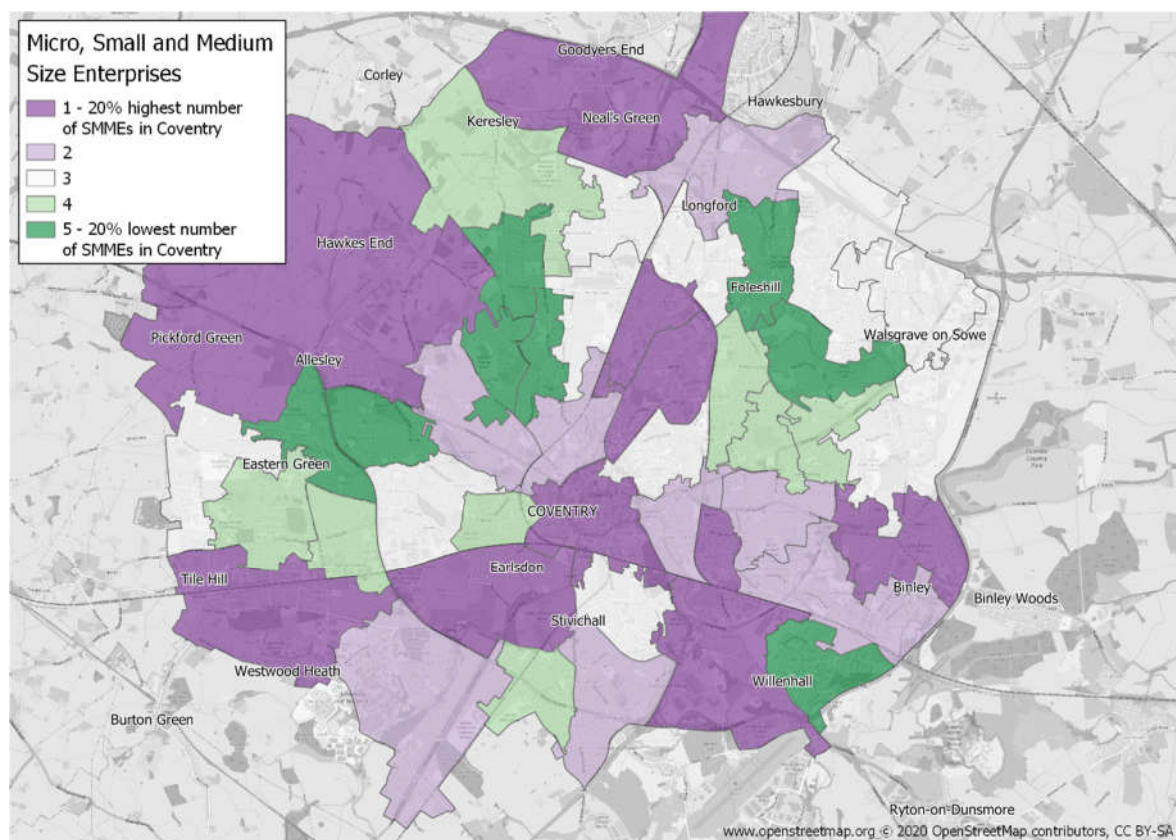
Option	Income Quintile 1	Income Quintile 2	Income Quintile 3	Income Quintile 4	Income Quintile 5	Children	Are impacts evenly distributed?	Key impacts
DS13p	✓✓✓	✓✓	✓✓	✓✓✓	✓	✓✓✓	No	While there are beneficial impacts to air quality for all income quintiles and for children the magnitude of benefit ranges from slight to large, based on the location of links with change in NO _x emissions.

2.5.2. Appraisal – Affordability for businesses

This affordability assessment for businesses has been carried out qualitatively based on the knowledge of the distribution of businesses within the area and where there are a high number of micro, small and medium enterprises (SMMEs).

Figure 2-5 shows the distribution of SMMEs within Coventry. There is a high number of SMMEs around Tile Hill, within Coventry City Centre and to the south of Coventry City Centre. The TUBA assessment showed an overall affordability impact for LGV and HGV business trips within Coventry of over £1.1 million disbenefit. Over 65% of the disbenefits occur within LSOAs with the 20% highest number of SMMEs within Coventry. Therefore, there is an adverse impact for SMMEs within Coventry caused by an increase in the cost of travel for LGV and HGV business trips (cost of travel due to slightly longer journeys due to restrictions on Holyhead Road and Foleshill Road).

Figure 2-5 - Quintiles showing the distribution of micro, small and medium businesses within Coventry



2.5.2.1. Summary assessment

The business affordability disbenefits outweigh the affordability benefits across Coventry. Therefore, there are adverse impacts to SMMEs expected as a result of option DS13p. Within areas with the 20% highest number of SMMEs in Coventry (over 5,000 SMMEs) there are over 65% of the business affordability disbenefits. Therefore, there are large adverse impacts to affordability for businesses in these areas. Overall, there are expected adverse impacts to affordability for SMMEs within Coventry. Since the majority of disbenefits occur within areas with the highest number of SMMEs, the overall affordability impact is considered **large adverse**.

2.5.3. Appraisal – Affordability for households

The affordability impacts take into account vehicle operating costs, public transport costs, parking charges, and toll charges. The assessment assumes that non-compliant vehicles will avoid the Holyhead Road restriction. The assessment for households considered all modelled modes and has been carried out for home-based commuting and other trips. Only trips within, to or from a 'core' assessment area which covers Coventry and the wider area are calculated using 10-year appraisal TUBA outputs, which in turn take data from the CASM model.

Table 2-11 shows the overall impacts as a result of Option DS13p based on the 10-year TUBA outputs. An overall assessment has been calculated by understanding whether there are overall benefits or disbenefits and then comparing the proportion of benefits/disbenefits to the overall proportion of the population in that income quintile¹⁷, quintile 1 being the 20% most income deprived residents and quintile 5 the 20% least deprived.

The scheme shows overall beneficial impacts as a result of the scheme, as shown in Section 2.8 of the Distributional Impact Assessment. However, the affordability disbenefits outweigh the beneficial impacts within income quintile 1 (most income deprived). This may be caused by vehicles rerouting due to the bus gate on Foleshill Road, to avoid the restriction on Holyhead Road or due to the closure of Barras Lane. This may lead to increased travel distances and hence increased vehicle operating costs. Furthermore, increased vehicle

¹⁷ A component of the Index of Multiple Deprivation (DCLG, English Indices of Deprivation 2019) specific to income deprivation was used to determine the average income deprivation of each LSOA in England and Wales. These were split into quintiles, quintile 1 having the 20% most income deprived LSOAs and quintile 5 the 20% least income deprived LSOAs.

speeds may occur due to capacity improvements in several locations. In some instances, increased vehicle speeds can increase fuel consumption and hence increase vehicle operating costs. Almost 45% of the disbenefits occur within income quintile 1, which is greater than 5% of the proportion of the population in this income quintile. There are overall beneficial impacts to affordability for income quintiles 2-5 that range from slight to large.

Table 2-11 - Total affordability impacts across all income quintiles

	Income Quintile				
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Assessment	Large Adverse	Moderate Beneficial	Large Beneficial	Moderate Beneficial	Slight Beneficial

2.5.3.1. Summary Assessment

Option DS13p has beneficial affordability impacts for income quintiles 2-5, but a large adverse impact for income quintile 1. Since there is a large adverse impact for the most income deprived residents, but beneficial impacts otherwise, the overall affordability impact for households is **slight adverse**.

The main affordability disbenefits are expected as a result of vehicles rerouting to avoid the Low Emission Zone on Holyhead Road and the closure of Barras Lane. This may result in increased trip distances and hence increased fuel consumption. In addition, increased capacity in some locations may decrease congestion and hence increase vehicle speeds, leading to increased fuel consumption in some instances.

2.5.4. Appraisal – Traffic impacts: Noise

Changes in traffic flow have been used as a proxy for changes in noise levels within Coventry. A qualitative assessment was undertaken based on AADT data showing the changes in traffic flow with greater than 25% increase or 20% decrease on a link by link basis within the study area. The noise assessment considered the impact to each income quintile and children.

Links with a significant change in traffic flow for the noise assessment as well as the income quintiles of LSOAs and areas with high proportions of children and schools are shown in Figure 2-6 and Figure 2-7. Analysis of the traffic flow data showed that there are several links with increased traffic flow greater than 25% and decreased traffic flow greater than 20%. Within income quintile 3 there are a greater number of links with increased traffic flow than decreased traffic flow and hence there is an adverse impact to noise for these income quintiles. Conversely, within income quintile 4, there is a greater overall decreased traffic flow than increased traffic flow. Within income quintiles 1, 2 and 5 and areas within high proportions of children and schools the impacts are expected to be largely similar.

Figure 2-6 - Changes in traffic flow for the noise assessment and the income quintiles of LSOAs

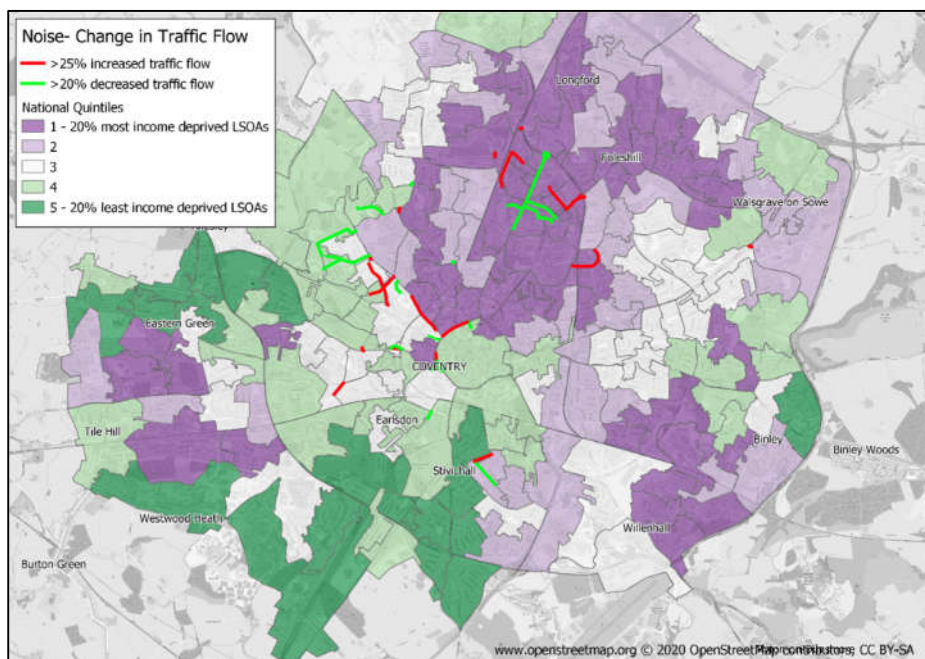
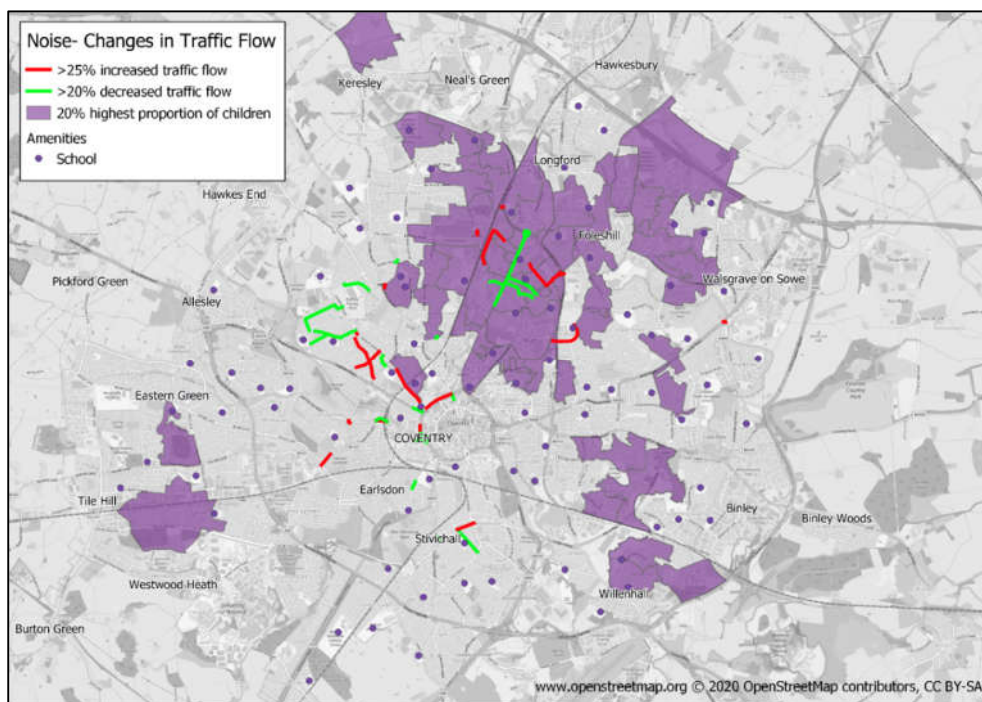


Figure 2-7 - Changes in traffic flow for the noise assessment and LSOAs with highest proportion of children and schools



2.5.4.1. Summary assessment

For the noise assessment, the location of the changes in traffic flow were compared with LSOAs belonging to each income quintile and LSOAs with high proportions of children to determine if there is a significant change in traffic flow in any of these areas. This qualitative analysis showed that there is a slight beneficial impact for income quintile 4, a slight adverse impact for income quintile 3 and a neutral impact for income quintiles 1, 2 and 5.

The distribution of benefits across each income quintile and for children is shown in Table 2-12, following the qualitative analysis of the flow data for the scheme.

Table 2-12 - Summary Assessment for Noise

Option	Income Quintile 1	Income Quintile 2	Income Quintile 3	Income Quintile 4	Income Quintile 5	Children	Are impacts evenly distributed?	Key impacts
DS13p	0	0	x	✓	0	0	No	Changes in traffic flow are distributed across all LSOAs, with some accruing increases and others decreases.

2.5.5. Appraisal – Traffic impacts: Accidents

Changes in traffic flow have been used as a proxy for changes in accidents levels within Coventry. A qualitative assessment was undertaken based on historical casualties between 2014 and 2018 on links with greater than 10% change in AADT. The accidents assessment considered the impact of the scheme to the following vulnerable groups:

- Pedestrians
- Cyclists
- Motorcyclists
- Male drivers aged 16-25
- Children
- Elderly
- Income deprived residents

Within the 5-year period, the analysis showed a greater proportion of casualties involving motorcyclists, young male drivers, and those from income quintile 1 (20% most income deprived) on links with a decrease in traffic flow, than those with an increase in traffic flow. The accident assessment assumes that a decreased traffic flow greater than 10% may lead to decreased accidents and an increased traffic flow greater than 10% leads to increased accident rates. Therefore, there is an expected beneficial impact to accidents for motorcyclists, young male drivers, and those from income quintile 1 as accidents for these groups may become less likely to occur overall.

The proportion of casualties involving pedestrians, cyclists and children are similar across all links with an increase or decrease in traffic flow. Therefore, the prevalence of accidents involving these users across the whole of the impact area will be similar with DS13p implemented. However, the additional cycle infrastructure along Coundon Road is expected to make cyclists safer. In the five-year period, there were four cyclist casualties along the section of Coundon Road. The cycle route on Coundon Road is expected to make cyclists safer and may reduce the number of cyclist casualties in this area.

Within the analysis period, there was a greater proportion of casualties involving the elderly on links with an increase in traffic flow, than those with a decrease in traffic flow. Therefore, there may be an adverse impact to accidents across the whole impact area for this vulnerable group as accidents become more likely to occur overall for the elderly.

2.5.5.1. Summary assessment

The analysis of accidents showed few historical casualties within the five-year period on links with greater than 10% change in traffic flow. This qualitative analysis showed that there is a slight beneficial impact for cyclists, motorcyclists, young male drivers and income deprived residents, but a slight adverse impact for elderly residents.

The distribution of benefits across each vulnerable group is shown in Table 2-13.

Table 2-13 - Summary Assessment for Noise

Option	Pedestrians	Cyclists	Motorcyclists	Young Male Drivers	Children	Elderly	Income Deprived Residents	Are impacts evenly distributed?	Key impacts
DS13p	0	✓	✓	✓	0	*	✓	No	The scheme is expected to decrease the number of accidents involving some vulnerable users and increase the number of elderly casualties.

2.5.6. Appraisal – Traffic impacts: Accessibility

Within Coventry there may be small adverse and beneficial impacts to accessibility for each considered vulnerable group. The low emission zone on Holyhead Road may cause non-compliant vehicles to reroute, which may increase travel times for some users. However, changes in travel times for private car users are assessed within the User Benefits assessment of the Distributional Impact Assessment. This may include some community transport and private hire services, which vulnerable groups such as disabled people and elderly residents may be more likely to use, if they have reduced mobility. However, this intervention isn't expected to change the availability of these services, so any impact to accessibility will be slight.

There are also small beneficial impacts to accessibility for each vulnerable group, caused by improved reliability of public transport services. The capacity improvements on Spon End, the redesign of Ring Road J7, signal optimisation at several locations and the bus gate on Foleshill Road are all expected to improve journey times and may also improve reliability of public transport services in the vicinity. However, these interventions won't change the routings or frequency of public transport services, so minimal impacts to accessibility are expected.

2.5.6.1. Summary assessment

The distribution of accessibility impacts for each vulnerable group determined from the qualitative assessment is shown in Table 2-14.

Table 2-14 - Accessibility summary table

Option	Elderly (over 65)	Children (under 16)	No car households	Disabled people	Women	Black and minority ethnic	Income quintile 1	Are impacts evenly distributed?	Key impacts
DS13p	0	0	0	0	0	0	0	Yes	There are minimal impacts to accessibility.

2.5.7. Appraisal – Traffic impacts: Security

The scheme is expected to have minimal impacts to personal security. This is as the majority of interventions are capacity improvements on roads/junctions, so are expected to impact private car users. However, the provision of high-quality cycle infrastructure along Coundon Road is expected to increase the number of cyclists along the route and thus improved informal surveillance in the area. This is because people may perceive higher levels of security in a busier area. Since the relative importance of informal surveillance is considered low, any impact to informal surveillance is expected to be slight.

There are above average proportions of BAME and disabled residents within the impact area. In addition, there are MSOAs/LSOAs with high proportions of BAME, disabled, children and female residents within the security impact area. Therefore, these vulnerable groups may travel along Coundon Road in order to access

surrounding amenities and have improved perceptions of personal security due to an increase of people in the area. Therefore, the impact to security for BAME, disabled, children and female residents is slight beneficial.

There are below average proportions of elderly residents and no LSOAs with the 20% highest proportion of elderly people within the impact area. Therefore, it is anticipated that few elderly people will travel along Coundon Road and hence benefit from increased informal surveillance. Hence, any security impact for this vulnerable group is considered negligible and the overall impact for elderly residents is neutral.

2.5.7.1. Summary assessment

The distribution of security impacts for each vulnerable group determined from the qualitative assessment is shown in Table 2-15.

Table 2-15 - Security summary table

Option	Elderly (over 65)	Children (under 16)	Women	Black and minority ethnic	Disabled people	Are impacts evenly distributed?	Key impacts
DS13p	0	✓	✓	✓	✓	Yes	There are beneficial impacts to levels of informal surveillance, which are expected to have a negligible impact to elderly people due to their low presence within the impact area.

2.5.8. Summary appraisal of distributional impacts

Table 2-16 shows how the impacts of Options DS13p are distributed amongst the income deprivation quintiles. Only the accessibility impacts are distributed evenly across income quintiles, with neutral impacts expected. There are beneficial air quality impacts for all income quintiles, with a disproportionately large benefit expected for income quintiles 1 and 4. However, there are adverse user benefit, affordability and noise impacts for the most income deprived residents (income quintile 1).

Table 2-16 - Option DS13p Distribution of measures across income quintiles

	Distributional impact of income deprivation					Are the impacts evenly distributed?	Key impacts – Qualitative statements
	0-20%	20-40%	40-60%	60-80%	80-100%		
Accessibility	0	0	0	0	0	Yes	There are not expected to be any significant impacts on accessibility.
Air Quality	✓✓✓	✓✓	✓✓	✓✓✓	✓	No	There are positive reductions in air quality emissions across all areas and income deprivations, ranging in magnitude from slight to large.
Noise	0	0	x	✓	0	No	There is a beneficial noise impact for income quintile 4, but an adverse impact for income quintile 3.
User Benefits	xxx	✓✓	✓✓✓	✓✓	✓	No	There are beneficial user benefits for income quintiles 2-5 and adverse impacts for income quintile 1.
Affordability	xxx	✓✓	✓✓✓	✓✓	✓	No	There is an adverse affordability impact for the 20% most income deprived residents. The affordability impact for income quintiles 2-5 are beneficial and range from slight to large.

Table 2-17 shows the overall distributional impacts of each of the indicators. Option DS13p has beneficial impacts for air quality, security and accidents. Whereas, there are adverse impacts for noise, user benefits and affordability. The overall impacts are considered neutral for accessibility and severance.

Table 2-17 - Overall impact for each indicator for Option DS13p

Indicator	Overall Impact
Accessibility	0
Severance	0
Security	✓
Accidents	✓
Noise	✗
Air Quality	✓✓✓
User Benefits	✗
Affordability	✗✗

2.6. Preferred Option Summary

Under Option DS13p transport users do not directly incur additional costs; they benefit from reduced congestion and smoother traffic flows resulting in journey time improvements leading to positive transport user benefits. Additionally, the cycling and active travel measures may encourage a shift to more sustainable modes and generate longer term behaviour change that has lasting benefits for Coventry in addition to achieving positive health impacts. Overall, the NPV is negative due to implementation costs outweighing benefits, however there are significant benefits in terms of air quality improvements. Option DS13p achieves compliance in the shortest possible time, by 2021

The Distributional analysis shows that the air quality impacts will be largely beneficial. The impact of the infrastructure works and restrictions on Holyhead Road mean that this is traded off against a slight adverse impact on user benefits and affordability.

3. Financial Case

3.1. Introduction

The Financial Case assesses the potential financial impacts to CCC of the preferred option, DS13p. This includes the costs associated with planning and implementing the preferred option. As outlined in the Strategic Case, the results of the traffic and air quality modelling that have been undertaken indicate that Option DS13p assumes a range of measures including a low emission street/zone along Holyhead Road.

The purpose of this Financial Case is to assess the costs involved in developing and implementing Option DS13p and to support the application for drawdown from the DEFRA Implementation Fund. In summary, the Financial Case focuses on:

- Capital and operational expenditure for Option DS13p;
- The funding source for DS13p's expenditure and the funding bid that has been prepared to allow delivery and operation of the intervention and affordability of the preferred option; and
- The net operational position of the scheme.

3.2. Option DS13p

The costs for implementing and maintaining the Option DS13p are split into two categories:

- Implementation costs (capital costs); and
- Operating and maintenance costs.

The implementation costs are largely derived from the tendered costs provided via the Scape framework contractor, Balfour Beatty. Other costs (e.g. costs of signs), were derived by using benchmark costs per item and estimating the number of assets required and the associated likely infrastructure that would be required. Other scheme specific costs relating to development and management were developed by CCC. Details on how each cost was developed are summarised in Table 3-1.

It has been assumed that CCC will be eligible to reclaim any Value Added Tax (VAT) that it is subject to, therefore all costs presented here are exclusive of VAT.

3.3. Treatment of Risk

A quantified cost risk assessment (QCRA) was undertaken by Balfour Beatty as part of the development of the Feasibility Cost Report. This included a Monte Carlo (P80) analysis using Primavera Risk Analysis software.

The QRA calculated the risks and made an initial allocation of ownership. The value of risk that was assigned to the Council was £2,023,660, which have been included in the assessment of costs.

3.4. Option DS13p Implementation Costs

Implementation costs are the expenses required for the initial design and set-up of the scheme, as well as the infrastructure works associated with each of the individual measures. The majority of the infrastructure works have been procured via the Scape Framework, detailed within the Commercial Case, and tendered costs have been provided by Balfour Beatty.

Part of the Coundon cycle infrastructure is being delivered internally by CCC, along with the implementation of signage and cameras for the low emission street along Holyhead Road. Table 3-1 sets out the costing method, and where appropriate the assumptions used to development the implementation costs for Option DS13p.

Table 3-1 - Option DS13p: Development of the Implementation Costs

Cost Item	Costing Method	Key Assumptions
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Design - design and implementation costs associated with the scheme development, including FBC	Costs incurred by CCC and supporting services in developing the scheme	This has increased from the OBC estimate of £200K due to the additional costs incurred for Atkins/WSP/CCC for the development between OBC and FBC, including air quality assessments of Covid-19
Low emission zone – Holyhead Road	Procured via Scape Framework	Costs included within Upper Hill Street works in bill of quantities
Holyhead Road northbound lane reduction	Procured via Scape Framework	Costs included within Upper Hill Street works in bill of quantities
High quality cycle infrastructure along Coundon	The section north of the railway is being delivered internally by CCC. The southern section of the cycleway from the railway tunnel to the Hill Street Bridge procured via Scape Framework	Costs developed by CCC Southern section costs included within Upper Hill Street works in bill of quantities
Capacity improvements on the B4101 through Spon End	Procured via Scape Framework	-
Spon End/ Old Allesley Road Signal Optimisation	Procured via Scape Framework – costs included within Spon End works	-
Upgrade of ring road J7	Procured via Scape Framework	-
Opening of Upper Hill Street	Procured via Scape Framework	-
Bus gate on Foleshill Road south of the A444 - this includes cameras, signing, lining, small scale public realm changes and support for enforcement of bus gates. This also includes signal optimisation of Foleshill Road with the ring road	Delivered by CCC	Costs developed by CCC
Travel planning/ behaviour change package	Delivered by CCC, largely school and employer focussed travel planning but it also includes a low traffic neighbourhoods project in Spon End.	Costs developed by CCC, with delivery up to 2023 Includes inflation at 2.5% per annum

Table 3-2 summarises the costs for each of the implementation cost item categories. These are presented as nominal costs, with the inflation added to reflect the year of proposed expenditure in line with the Building Cost Information Service (BCIS) indices.

Table 3-2 - Option DS13p: Summary of the Implementation Costs

Cost Item	Total Cost (nominal, £000s)
Design	
Sub-Total of Scheme Set up Costs	
Low emission street – Holyhead Road	
Holyhead Road northbound lane reduction	
Opening of Upper Hill Street	

High quality cycle infrastructure along Coundon (section north of the railway)	██████████
Capacity improvements on the B4101 through Spon End	██████████
Spon End/ Old Allesley Road Signal Optimisation	██
Upgrade of ring road J7	██████████
Bus gate on Foleshill Road south of the A444	██████████
Travel planning/ behaviour change package	██████████
TOTAL COSTS	£21,442

The total capital (outturn cost, excluding risk, is estimated to be **£21,441,964** for Option DS13p.

3.5. Decommissioning

It is assumed that the infrastructure associated with Option DS13p will remain and continue to be operational at the end of the ten year scheme period, in 2030. Whilst travel planning packages may cease to be operational, this will not incur a cost. Therefore, no decommissioning costs have been added to the cost of Option DS13p.

3.6. Option DS13p Operating and Maintenance Costs

Operating and maintenance costs are the on-going costs required to maintain Option DS13p on an annual basis. This includes the scheme monitoring costs.

The key assumptions that have been utilised in developing the operating and maintenance cost estimates are summarised in Table 3-3.

Table 3-3 - Option DS13p: Development of the Operating and Maintenance Costs

Cost Item	Costing Method	Key Assumptions
O&M of Transport Schemes	A profile of <u>incremental</u> O&M costs was developed i.e. the additional maintenance costs that will be incurred due to the scheme works. These were based on the area/length of works and existing CCC maintenance rates.	Maintenance costs will be incurred over the 10yr duration of the scheme. Costs assumes inflation at 2.5% per annum.
Communications & marketing	Includes an air quality campaign, including travel demand management associated with the disruption caused by the infrastructure works and a package of residential travel planning.	CCC costs, with travel demand management costs based on TfWM study. Costs assumes inflation at 2.5% per annum.
AQ Monitoring	Monitoring runs from 2021 - 2025. ██████████ ██ ██	Includes 6 real time AQ monitors. Over the 5yr monitoring programme, it includes the collection of traffic data at 16 sites every quarter, a FTE, collection of cycling data in 2022 and 2024, collection of ANPR data from 2021–2023. Costs assumes inflation at 2.5% per annum.

Table 3-4 summarises the estimated (nominal) costs for each of the operating and maintenance cost item categories. This includes an allowance for a sinking fund, whereby any unforeseen risks that are realised during the operation of the scheme can be mitigated.

Table 3-4 - Option DS13p Operating and Maintenance Costs

Cost Item Category	Total (nominal, £000s)
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O&M of Transport Schemes	
Communications & marketing	
AQ Monitoring	
Sinking fund	
TOTAL COSTS	£2,516

The total operating and maintenance (nominal) cost, is estimated to be **£2,516,191** for Option DS13p. This assumes that the costs associated with the air quality monitoring will be incurred up to (and including) 2025, beyond scheme compliance.

3.6.1. Sinking Fund

A sinking fund will be established to provide mitigation against any unforeseen risks that are realised throughout the operation of the scheme. It is assumed that the target of the fund is 10% of the operating costs.

The sinking fund will be protected within accounts at Coventry to ensure that it is available as a contingency fund for any risks that are realised throughout the operation of the scheme.

3.7. Option DS13p Cost Summary

The total costs, including both capital and operating and maintenance costs, and risk for Option DS13p are estimated to be **£25,981,815** inclusive of both inflation as per the BCIS indices, or at 2.5% per annum (added as per the proposed expenditure profile). These are summarised in Table 3-5. This assumes that the costs associated with the monitoring of air quality will be incurred up to and including 2025, even though air quality compliance is envisaged by 2021.

Table 3-5 - Option DS13p Total Costs (Expressed as 10yr totals, £000s)

Cost Item Category	Total (nominal, £000s)
Capital Costs (Implementation, including set up)	£21,442
Risk	£2,024
Operating & Maintenance Cost (includes sinking fund)	£2,516
TOTAL COSTS	£25,982

The profile of this expenditure is summarised in Table 3-6. This assumes that the majority of the infrastructure works will be delivered in 2021. The exception to this is the Coundon Cycleway works (north of the railway, delivered internally by CCC), which assume that 60% of expenditure is incurred in 2020 and the remaining 40% in 2021. The travel planning and behavioural change package of measures is assumed to continue until 2023.

Table 3-6 - Option DS13p Financial Profile (nominal prices, £000's)

All Costs in £'000s	Year of Option DS13P Operation											Total
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Capital Costs	-£2,259	-£18,576	-£324	-£283	£0	£0	£0	£0	£0	£0	£0	-£21,442
Operating & Maintenance Costs	-£69	-£452	-£480	-£365	-£195	-£171	-£107	-£109	-£112	-£115	-£118	-£2,294
Risk		-£2,024										-£2,024
Sinking Fund		-£45	-£48	-£36	-£19	-£17	-£11	-£11	-£11	-£12	-£12	-£222
Net Cash Flow	-£2,328	-£21,097	-£853	-£684	-£214	-£188	-£117	-£120	-£123	-£127	-£130	-£25,982

The Accounting Statement (Table 3-7) assumes that all of the scheme costs will be covered by the Implementation Fund.

Table 3-7 - Option DS13p Accounting Statement

All Costs in £'000s	Year of Option DS13P Operation											Total
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Capital Costs	-£2,259	-£18,576	-£324	-£283	£0	£0	£0	£0	£0	£0	£0	-£21,442
Operating & Maintenance Costs	-£69	-£452	-£480	-£365	-£195	-£171	-£107	-£109	-£112	-£115	-£118	-£2,294
Risk		-£2,024										-£2,024
Implementation Fund	£2,328	£21,097	£853	£684	£214	£188	£117	£120	£123	£127	£130	£26,982
Sinking Fund		-£45	-£48	-£36	-£19	-£17	-£11	-£11	-£11	-£12	-£12	-£222
Net Cash Flow	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0

3.7.1. Funding Shortfall

To date, JAQU have provided £24.5 million in funding from the Implementation Fund towards delivering the preferred option¹⁸. The work undertaken for this FBC to refine the costs has identified that there is a funding shortfall of £1.482 million which is needed to ensure all measures can be implemented as required to ensure compliance in the shortest possible time.

CCC therefore require grant funding from the JAQU Implementation Fund, to a maximum of £1.482m, or an increase of 6% in addition to already secured funding.

¹⁸ Note, £5.8 million Transforming Cities Fund grant from the West Midlands Combined Authority for the Spon End Arches (linked within the wider Spon End/J7 AQ measures), giving a total secured budget of £30.3 million

4. Commercial Case

4.1. Procurement Process Outcomes

In order to meet the very challenging timescales associated with this project, procurement has needed to take account of any additional grant award conditions required by JAQU as well as any lead in times for local governance processes.

There were a wide range of OJEU compliant regional and national frameworks available for CCC to access, e.g. Shared Professional Services Framework Contract (PSF), Eastern Shires Purchasing Organisation (ESPO), Crown Commercial Services (CCS) framework, PAGABO Framework, Midlands Highways Alliance Contract (MHA), Scape Procure Civil Engineering and Infrastructure Framework (Scape) as well as access to CCC's Direct Labour Organisation (DLO).

All procurement has been subject to the CCC's robust Procurement and Commissioning governance process, which requires that all procurement commissions greater than £1 million per annum be approved by the Council's Cabinet, and all Contract values less than this sum be reviewed by the Council's Procurement Panel and Board as appropriate. The Council's Rules for Contracts have been followed as well as full OJEU rules where thresholds are met. Provider partners have now been appointed to deliver the package of measures.

Table 4-1 summarises the procurement route used for each component of the measures that comprise the Environmental Act 1995 (Coventry City Council) Air Quality Direction 2020. Procurement for the design and construction of the Coundon Cycleway is complete. Procurement of Junction 7 improvements, Spon End improvements and Upper Hill Street (including Barras Lane, Holyhead Road and the section of Coundon Cycleway south of the railway) is progressing through the Scape Framework.

The Scape Framework is a multi-stage framework:

- Stage 1 – Inception; set up and agreement to use Scape
- Stage 2 – Feasibility; includes concepts and budgets
- Stage 3 – Pre-Construction; includes detailed design and supply chain set up
- Stage 4 – Construction
- Stage 5 – Post-Construction

Table 4-1 - Summary of Procurement Tasks

Measure	Procurement Route Chosen	Supplier [Value]
High quality cycle lane along Coundon	North of Coundon Road railway crossing – detailed design through Shared Professional Services Contract (SPSC) & construction by DLO South of Coundon Road railway crossing – design through SPSC and build through Scape Framework	WSP for detailed design [REDACTED] DLO for construction of northern section [REDACTED] Balfour Beatty for construction of southern section [included in Upper Hill Street package]
Capacity improvements along B4106 through Spon End	Scape Framework	Balfour Beatty for design and build [REDACTED]
Upgrade of Ring Road Junction 7	Scape Framework	Balfour Beatty for design and build [REDACTED]

Opening up of Upper Hill Street (inc Barras Lane, Holyhead Road & southern section of Coundon Cycleway)	Scape Framework	Balfour Beatty for design and build [REDACTED]
Bus gate on Foleshill Road	Existing OJEU compliant framework	TBC [REDACTED]
Focussed travel planning work	Existing OJEU compliant framework such as SPSC	TBC [REDACTED]

Note 1: Siemens are engaged by CCC under the Traffic Signals and Intelligent Transport Maintenance contract and will provide services to direct to CCC under this contract in relation to Coundon Cycleway. Siemens will be engaged by Balfour Beatty as a sub-contractor to support delivery under the Scape contract.

Note 2: Detailed design of Coundon Cycleway is complete and construction is due to start in Mid-November. For measures to be delivered under Scape, the Feasibility Stage has been completed.

4.2. Proposed Measures

A range of works and services are required to deliver the Preferred Option. When considering implementation and operation of the Preferred Option, the following specific activities required procurement:

- traffic management;
- professional services;
- design and build civils works;
- traffic technology upgrade;
- roadside technology (ANPR cameras, Variable Message Signs, Pollution sensors);
- operations (staffing, provision of control room facilities)

In addition, the Preferred Option will require procurement of the following works and services:

- Cycle parking and infrastructure;
- Travel planning advice and initiatives; and

In the first instance, the capability and capacity of our in-house teams was considered to deliver elements, however, some aspects required access to specialist skills from external partners and stakeholders and/or additional delivery capacity.

The principal delivery vehicles for the measures will be the Scape Framework and the DLO. Within the Scape Framework there are KPIs regarding both local spend and local labour. These KPIs are a key part of ensuring that social value is maximised for the communities in which Scape projects operate.

4.3. Strategic Procurement Options Considered

The measures set out are subject to the EU procurement principles and the Council's Rules for Contracts.

In compliance with the principles, the procurements have been managed so that the full Public Contract Regulations 2015 have been adhered to.

A summary of the contract value procedural rules can be found in Table 4-2.

Table 4-2 - Contract value procedural rules

Estimated Contract Value	Procedure To Be Followed
£4,773,252+ (Works)*	OJEU procurement procedure
£189,330+ (Goods & Services)*	OJEU procurement procedure
£50,000 - OJEU thresholds	Council's Rules for Contracts – competitive tenders
£10,000 - £49,999	Council's Rules for Contracts – competitive quotations
<£10,000	Council's Rules for Contracts – no competitive quotations required
*OJEU thresholds correct at January 2020	

Appropriate frameworks that were available and offer CCC value for money, were considered to expedite timescales for delivery across all Contracts. To that end, there were four key procurement routes available to deliver the works and services required under the Preferred Option;

- Council's Rules for Contracts
- 3. Subject to the estimated value of the contract, sub-OJEU threshold requirements can be procured through competitive tendering, competitive negotiation or direct order. Due to the value of the works involved, this route was not appropriate for the major works.
- Internal Frameworks
- 4. The Shared Professional Services Framework – established in collaboration with Warwickshire County Council – provides access to a range of professional service solutions. Early Measures Smarter Travel Advice services were procured through this Framework and the detailed design of the Coundon Cycleway has been procured through this route. A mini-tender process was held for the Coundon Cycleway design during May and June 2020 and WSP were appointed early in July 2020.
- 5. The Council's Direct Labour Organisation (DLO) is able to deliver required construction works. Where capacity or capability inhibits the use of the DLO, the DLO is able to run competitive tenders on behalf of CCC through the Civils Engineering Framework. The DLO will deliver the construction of the Coundon Cycleway north of the railway crossing at Coundon Road.
- External Frameworks
- 6. A number of external frameworks are in place for goods and/or services and the standard, tailorable, terms and conditions and contract documents greatly reduce the procurement timescales. Examples of available external frameworks include a range of Crown Commercial Services (CCS) frameworks, the Eastern Shires Purchasing Organisation (ESPO) frameworks, PAGABO Framework, the Midlands Highways Alliance Contract (MHA) and Scape Procure Civil Engineering and Infrastructure Contract (Scape).
- 7. CCC carried out a review of all routes to market from mid-May 2020 until late July. This included engagement with potential suppliers to gauge appetite and views of potential procurement routes. Following an initial sift of these options a detailed review was carried out to assess the use of either the MHA or Scape. Based on this detailed assessment, CCC has decided to use Scape to deliver the improvements to Junction 7, Spon End and at Upper Hill Street, Barras Lane, Holyhead Road and the southern section of the Coundon Cycleway from the rail crossing to Hill Street Bridge. This section of the Coundon Cycleway is linked to the Upper Hill Street works because it requires displacement of parking on Coundon Road between Meriden Street and Barras Lane, which can only occur when Barras Lane has been closed.
- 8. Balfour Beatty carried out the Scape Feasibility Stage works on the project between early August and 15th October 2020. Through a series of workshops held jointly with Balfour Beatty and Council officers, Balfour Beatty developed the understanding of the requirements to develop a Feasibility Stage price and associated risk register. Under the Scape framework, the Feasibility pricing is generally an upper bound price, assuming no subsequent changes to work scope.
- Open tender via the Official Journal of the European Union (OJEU)
- 9. Competitive tenders in line with Public Contract Regulations 2015 are required for works, goods and services contracts valued above the thresholds. Contracts in the form of Deeds must be prepared in Legal Services and sealed formally for the Council and witnessed by an authorised signatory. CCC considered

that the use of discrete tendering for the measures would be overly time consuming. Additionally, market intelligence suggested that such tenders might not be viewed positively due to the expense of such tendering, particularly when there is a buoyant pipeline for infrastructure works. A number of major potential suppliers, who are on existing frameworks, stated that their policy was to work through such frameworks and maximise the value from the major expenditure expended in bidding for such tenders. In one case, CCC were informed that it was a Board directive not to bid for discrete contracts.

4.3.1. Contract Type

A range of Contracts was considered due to the varying nature of the projects required for the plan.

Professional services

A number of professional services frameworks exist that can be used for a wide variety of requirements. The Shared Professional Services Framework was awarded in June 2017 and expires in May 2021. The Crown Commercial Services (CCS) RM3745 Management Consultancy framework was awarded in September 2017 and runs through to September 2021. Similarly, the ESPO 664 Consultancy Services framework was awarded in April 2017. This framework expires in April 2019 but ESPO have confirmed that a 2-year extension will be enacted, taking the framework through to April 2021. CCC can also use the Highways England Specialist Professional and Technical Services (SPATS2) framework which was awarded in June 2020.

In delivering the measures, the Council considered that the service providers available through the Shared Professional Services Contract were most appropriate to the range of AQ measures required. CCC can direct award through the framework to the Tier 1 supplier up to a limit of £50k (or higher in certain specific circumstances) and use a mini-tender process to procure services above this limit. CCC carried out a mini-tender process for the detailed design of the Coundon Cycleway and appointed WSP at the end of June 2020 to carry out the design. That detailed design is now substantially complete.

The detailed design of the works to Spon End, Junction 7, Upper Hill Street, Barras Lane and Holyhead Road will be carried out by Balfour Beatty using design services procured competitively under the Scape framework. The Feasibility Stage price has been based on the work of Balfour Beatty's inhouse designers and the knowledge and experience of the Balfour Beatty team on similar projects.

Traffic signal upgrade technology/VMS

Siemens are the long term technology partner of CCC and Traffic signal and technology works will be delivered by Siemens to support the DLO works on Coundon Cycleway and Balfour Beatty on measures delivered through the Scape framework. Siemens will provide services to CCC under their current competitively tendered Contract for Traffic Signals and Intelligent Transport Systems Maintenance for the single signal installation for Coundon Cycleway and as a sub-contractor to Balfour Beatty under the Scape framework.

Highway works

The first port of call for Highway Works is the Council's Direct Labour Organisation (DLO). The in-house DLO provide a level of flexibility to the City, with a 50 plus strong, fully operational team based in the City with unparalleled local knowledge, saving time and therefore reducing cost. The ability to provide resources at short notice, deal with scope changes without expensive compensation events and keep preliminary and set up costs to a minimum are good examples of the value that the DLO provides. Where capacity or capability inhibits the use of the DLO, the DLO is able to run competitive tenders on behalf of the Council through the Civil Engineering Framework. This framework was renewed in October 2020 and will expire in September 2024; this framework provides additional resource for the DLO if required.

The DLO will deliver the construction of the Coundon Cycleway north of the railway crossing at Coundon Road. Preliminary site investigation works have already commenced and the main site works are due to commence in mid-November 2020.

The Midlands Highway Alliance covers the 4 years period from 2018 to 2022, this contract has been used by CCC to deliver major works in the City centre in preparation for the City of Culture. The Scape Procure Civil Engineering and Infrastructure Contract commenced in January 2019 and runs for a period of 4 years. This framework is available to all public sector organisations in England, Northern Ireland and Wales. CCC evaluated in detail the use of either MHA or Scape (or a combination) to deliver the measures.

Both frameworks are based on NEC4 and therefore have broadly similar contract conditions. However, Scape offers a more onerous suite of KPIs (to be monitored by both CCC and Scape), far greater social value commitments and better commercial terms, with a significantly lower Fee applicable. Additionally, only 2 of the 4 potential MHA contractors expressed an interest when approached. Of the other two, one is already heavily committed to works in the City centre and CCC had concerns regarding capacity. The other contractor that expressed an interest is also the Scape framework contractor (Balfour Beatty).

A direct comparison of MHA and Scape indicated that Scape is the better option and hence CCC appointed Balfour Beatty through this framework. While the Scape framework is a single provider framework (Balfour Beatty), all prices have been competitively tendered during the procurement of the nationwide Scape framework valued at approximately £1.9bn. All works not directly delivered by Balfour Beatty must be competitively tendered to the supply chain to obtain three prices. There is an onus within Scape to engage local suppliers and SMEs so that the framework supports the local economy. All costs are provided on an open book basis and subject to checking by both CCC and Scape.

4.3.2. Contract Length

The maximum length of any given framework under the Public Contracts Regulations 2016 is 4 years. With regards to Call Off Contract length, the maximum length of a Call Off Contract under a framework is equal to the maximum length of the framework, regardless of when the Call Off is awarded. I.e. a 4 year contract can be awarded under a framework (assuming the framework was 4 years in length), a day prior to framework expiry if need be. Works procured through the Scape Procure Civil Engineering and Infrastructure Contract have a maximum duration of four years from the commencement of the Framework in January 2019, i.e. completion by January 2023. This duration fully encompasses the delivery period for the measures within Coventry.

Construction works carried out under Scape will include a defects liability period of one year. After this assets will be maintained as part of CCC’s annual maintenance regime.

There are no time limitations on works carried out by the CCC DLO.

4.3.3. Payment Mechanisms

For the key contracts that will deliver the measures the payment mechanisms are as shown in Table 3.

Table 4-3 - Contract Payment Mechanisms

Works	Contract vehicle	Supplier	Payment Mechanism
Coundon Cycleway Detailed Design	Shared Professional Services Framework	WSP	NEC Option A
Coundon Cycleway Construction	DLO	DLO	Schedule of Rates
Junction 7, Spon End, UHS, Barras Lane, Holyhead Road	Scape Framework	Balfour Beatty	NEC Option C

For the detailed design of Coundon Cycleway the use of NEC Option A means that payment to WSP has been made on the completion of programme milestones. For the DLO under Schedule of Rates, payment will be made monthly in arrears based on measured works; while for the Scape Framework there will be a monthly assessment of works done and Balfour Beatty will be paid the project manager’s assessment of price of works done, plus a fee. Discussions are currently nearing conclusion with Balfour Beatty regarding the detailed contract clauses for an NEC X22 contract. It is not intended to include a requirement for retention, but Balfour Beatty will be required to provide a Parent Company Guarantee related to the defect period for the works.

The Scape Procure Frameworks have very strict prompt payment criteria, monitored by KPIs, which will form part of the payment mechanism for the works carried out under that framework. The Scape framework has 21-day payment terms from the assessment date for the Balfour Beatty payment, 26 days for Balfour Beatty sub-contractors and 30 days for sub-contractors of sub-contractors. This ensures all in the supply chain are paid promptly, which helps ensure financial stability for the supply chain and make Scape an attractive opportunity for suppliers.

4.3.4. Risk Allocation and Transfer

With regards to the delivery of the plan and the programme of projects supporting it, the risk that compliance with NO₂ legal objectives is achieved will be held by CCC.

The contracts that have been or are being used to deliver the measures endeavour to transfer risk where possible and minimise risk to CCC. The largest proportion of works will be carried out by Balfour Beatty under the Scape framework and using an NEC Option C form. Under Option C should risks impact on the cost of the works, there is effectively a cost sharing mechanism through the pain/gain mechanism (see section 1.3.6 below). During the design and procurement phases risk analysis has been carried out, using established risk assessment tools such as Primavera Risk Analysis software. Evaluated risks have been included in the input to the Financial Case. A risk allowance of £2m has been included within the Financial Case costings; £1.6m estimated against the works to be carried out through the Scape contract and £400k against the works to be carried out by the DLO.

Initial risk registers have been developed for the delivery of both the Coundon Cycleway works that will be constructed by the DLO and for the other infrastructure measures that will be implemented by the Scape contractor.

The Table 4-4 following table outlines an extract of some of the key risks to the delivery of the Air Quality Programme.

Table 4-4 - Key Delivery Risks

Risk ID	Type	Title	Pre-mitigation				Cause	Description	Effect	Category	Sub Category	Status	User Defined	
			Probability	Schedule	Cost	Score							Work Area / Location	Risk Opened Date
F-T-022	Threat	Land Purchase - Blackhorse - Heritage Approval to demolish	2	5	0	5	The Heritage team delay their approval of the demolition method	Delay in Heritage Approval	Delays to demolition of pub	Related Bodies	Approvals	Open	Spoon End to Windsor Street	09 Sep 2020
F-T-023	Threat	Subway Closures - 12 week notice - Not secured	3	4	1	7.5	Delays to subway closures	Delays to closures impacts the works	Unable to proceed with certain works	Related Bodies	Approvals	Open	All Areas	09 Sep 2020
F-T-024	Threat	River parallel to Butts Lane - Far enough away - EA approval	1	4	0	2	The EA need to approve the works due to the proximity	There is a river parallel to Butts Lane - potentially far enough away	Delays in sourcing approval as not considered	Related Bodies	Approvals	Open	Windsor Street to Junction 7	09 Sep 2020
F-T-025	Threat	Delayed planning at Blackhorse pub	3	4	1	7.5	Planning may be delayed to demolish Blackhorse		Delays in getting access to the area	Related Bodies	Approvals	Open	Spoon End to Windsor Street	09 Sep 2020
F-T-026	Threat	Additional Budget to cover financial loss due to removal of Moat street car park	3	1	3	6	May need additional budget to cover for financial loss		Approvals process for removal of Moat Street car park taking longer	Related Bodies	Approvals	Open	Windsor Street to Junction 7	09 Sep 2020
F-T-027	Threat	Network Rail Approvals	2	4	3	7	Network Rail not following the Standards and change approach to their consent / approval		Delays in getting APA in place and start works on / around NR structure / land	Related Bodies	Approvals	Open	All Areas	09 Sep 2020
F-T-028	Threat	Consents / approvals for accommodation works at petrol station	4	2	1	6	Delays in getting approvals for the accommodation works at Petrol Station		Delays in completing Design	Client	Approvals	Open	Spoon End to Windsor Street	09 Sep 2020
F-T-029	Threat	Late Introduction of Technical Approvals	4	4	2	12	Late introduction of technical approvals associated with the demolition of subways		Delays to complete design	Design	Approvals and Consents	Open	Windsor Street to Junction 7	09 Sep 2020
F-T-030	Threat	Delayed pier impact assessment at UH footbridge	4	3	2	10	Impact Assessment to assess the impact on the Bridge Pier may get delayed and/or protection measures required		Delayed TA and increased scope	Design	Approvals and Consents	Open	Upper Hill Street	09 Sep 2020
F-T-031	Threat	DFS may not get approved for Exit slip road	4	2	2	8	DFS anticipated for the Slip roads due to vertical alignment - TAK may not accept the DFS considering physical site constraints		Scope change to meet scheme objectives	Design	Approvals and Consents	Open	Upper Hill Street	09 Sep 2020
F-T-032	Threat	Delays in getting technical approval for Steel bridge modifications	3	3	2	7.5	Delays in getting technical approval for Steel bridge modifications		Delays in design completion	Design	Approvals and Consents	Open	Upper Hill Street	09 Sep 2020

During the Scape Pre-Construction Stage, a range of pre-construction work items will be delivered. These will include pre-construction site surveys to determine site conditions, environmental conditions and constraints, archaeology, UXO, structural conditions, drainage condition, pavement condition etc. Additionally, work will progress with statutory undertakers to agree diversions and other protection works required. These surveys and SU designs will also inform the detailed design process and provide additional clarity and quantification regarding risks. All of this pre-construction work will mitigate the impact of risks on the construction phase and avoid costs over-runs or delays. This work will also permit informed discussions between CCC and our construction parties regarding the most appropriate allocation of ownership of risks. Currently an assumption has been made in relation to risk ownership which is reflected in the costings included in the Financial Case.

During construction all projects will be managed using CEMAR (Contract Event Management & Reporting) with live risk registers reviewed and reported through project meetings and significant risks being reported at AQ Board.

4.3.5. Human Resources Issues

No relevant personnel, people management or trade union implications – including the Transfer of Undertakings (Protection of Employment Regulations 2006 (TUPE) – have been identified for this project.

The Preferred Option is composed of a programme of projects that requires project management expertise for delivery and resource for staff to enforce proposed measures which does not currently exist within CCC. Therefore, revenue costs have been factored into the final cost and presented within the Financial Case.

CCC has recruited an experienced team to manage the implementation of the measures. This team has wide experience of delivering infrastructure projects to time and budget using a range of contract forms, but in particular NEC. The team will be involved at all stages of delivery from detailed design through to the final account process for the measures.

4.3.6. Contract and Budget Management

Key to the successful delivery of the Council’s contracts are high-quality project management skills, with cost control expertise and sufficient support services. These are required from project conception through to tender, award and post-award contract management. As stated, above CCC have built a team that has wide experience of contract delivery and administration, including NEC form of Contract.

It is intended that NEC4 Option C will be used for the works to be delivered under the Scape contract. Value Engineering methods will be used to develop the most appropriate and cost-effective solution and the agreement of the Target Cost for the works. The Scape contract has set ranges of pain/gain share which maximises the incentive for collaboration to achieve the best solution. The Scape contract also includes a KPI commitment to 100% delivery on time and budget; this provides surety that when the Target Cost and programme has been agreed, the supplier will deliver to that cost and programme.

The Scape pain/gain thresholds are shown in Table 4-5.

Table 4-5 – Scape framework pain/gain thresholds

The Contractor’s share percentages and the share ranges are

<i>share range</i>				<i>Contractor’s share percentage</i>		
Less than	95				10	%
from	95	% to	100		40	%
from	100	% to	102.5		40	%
greater than	102.5				100	%

DLO works are based on a schedule of rates. This schedule of rates has been developed over many years of working within the City and is benchmarked against prices obtained through the supporting civil engineering framework. The DLO has been involved in the development of the delivery solution to make best use of ECI. The DLO team and CCC construction supervisory teams will continue to review works throughout delivery to seek value engineered solutions, e.g. ensure that construction minimises impact on statutory undertakers’ plant and thus reduce cost and delivery greater surety of delivery programme.

CCC will use the CEMAR (Construction Event Monitoring and Reporting) system to manage all projects, whether delivered by the DLO or by external contractors. This provides an effective and very visible tool to manage contract communications, commercial matters and risks and has proved very effective in managing complex works within the City Centre. Both the DLO and Balfour Beatty are also experienced in the use of CEMAR. The CCC project manager for each scheme will determine monthly payments based on the DLO or Balfour Beatty applications and will determine due payment based on works completed.

CCC have built a budget tracker which will be used to monitor spend against budget. The tracker will clearly show spend against budget and provide an early flag if budget is being exceeded. This will be managed by the CCC Commercial team, with input on spend to date from the Financial Team. This tracker will be a key tool in providing financial updates both internally to CCC management and at regular Air Quality Programme Boards. The tracker has been used successfully to monitor and control spend on the major improvement programme in the City Centre.

5. Management Case

5.1. Introduction

This Management Case sets out the framework that CCC will use to deliver the programme of measures to achieve compliance. Effective delivery will rely on accurate and achievable programme plans with clear stage boundaries. This will enable timescales and delivery to be managed effectively by setting key milestones and evaluating progress against baseline targets. This is an approach established through existing programme delivery across a range of transport programmes. In line with JAQU guidance, the Management Case builds on the OBC by making recommendations about the optimal solution to the following issues:

- Governance structure during the implementation and operational phases, including key management roles/responsibilities.
- Evaluation and monitoring processes with associated benefits realisation.
- Risk management and mitigation (including risk register).
- Realistic and achievable project plan with appropriate level of detail.

5.2. Strategic Roles/Key Stakeholders

There are a number of organisations who have strategic roles in the delivery of the Air Quality Local Plan and these are set out in Table 5-1:

Table 5-1 - Strategic Roles

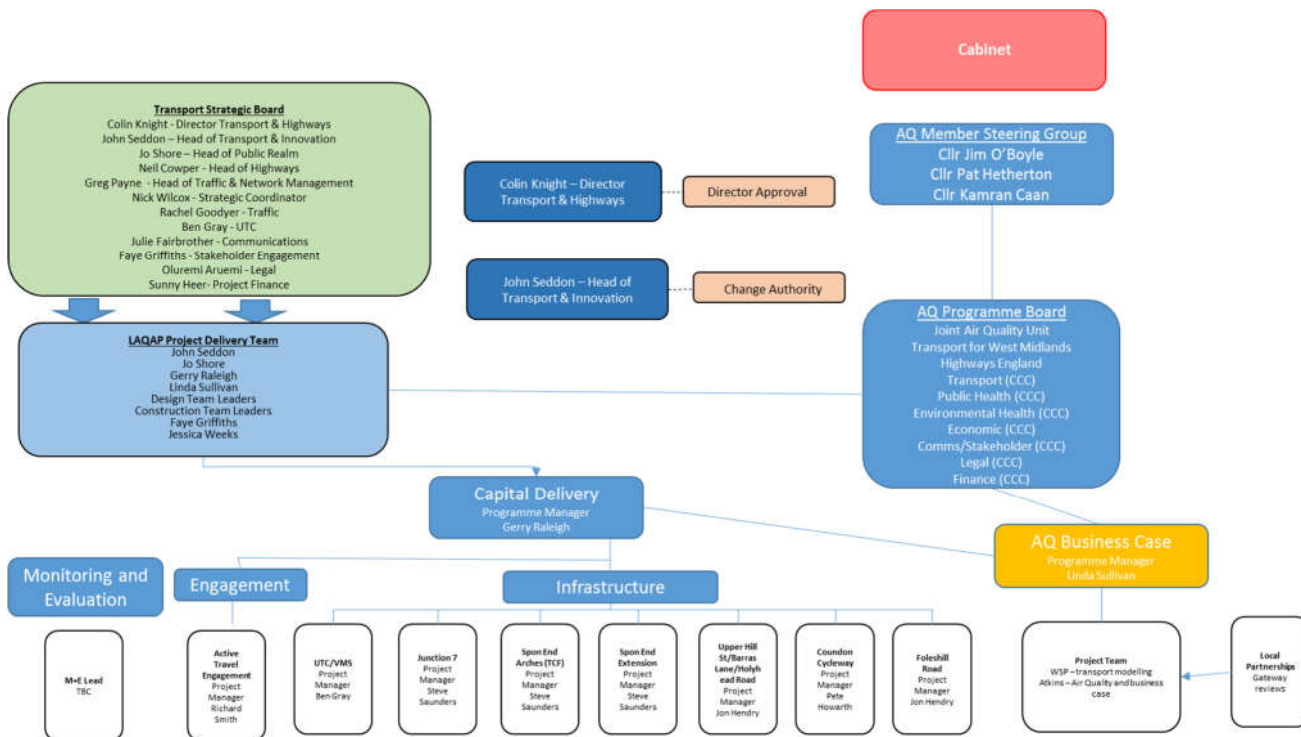
Organisation	Strategic Roles
JAQU	Overall management of the Local Air Quality Management (LAQM) process. Delivering the UK Plan to for Tackling Roadside Nitrogen Dioxide Concentrations. Provision of funding for local authorities to deliver their Local Plans. Development and implementation of national initiatives to improve air quality.
CCC	Legally responsible for improving air quality in Coventry under the Environment Act 1995. Delivery of measures to tackle exceedances of air pollutant levels within the Coventry Air Quality Management Area (AQMA). Delivering the LAQAP – in particular demonstrating local leadership in tackling air quality issues in Coventry.
Transport for West Midlands (TfWM)	Provision of advice, support and funding in relation to pan-West Midlands initiatives which will contribute towards improved air quality – including public transport services, bus fleet, Connected and Autonomous Vehicles and walking / cycling. Co-ordination and sharing of best practice and experience in relation to air quality issues across the conurbation.
Technical consultants	Provision of project management support. Assisting with specific technical tasks for the delivery

5.3. Governance Structure

The proposed governance structure builds on that used for the feasibility study. As the Local Air Quality Action Plan moves into the implementation stage, the focus moves into sub programme/projects.

Sub groups will be formed as and when required to focus on particular areas, address specific issues or adhoc tasks.

Oversight of the project is via regular reports to the Council’s Transport Strategic Board, Air Quality Member Steering Group, Cabinet and Scrutiny board.



5.4. Governance Structure Roles and Responsibilities

The governance structure roles and responsibilities are presented in Table 5-2.

Table 5-2 - Governance Structure Roles and Responsibilities

Governance level	Roles and Responsibilities
Senior Responsible Officer (SRO) Colin Knight	Overall responsibility for ensuring that the agreed plan meets its objective of improved air quality within the time and cost parameters agreed in the final business case. The SRO is the Director of Transportation and Highways for the Council, providing a suitably senior leadership to the programme.
AQ Member Steering Group (MSG) Cllr O'Boyle Cllr Hetherton Cllr K Caan	Provision of strategic direction and advice in relation to the key Cabinet portfolios impacted by air quality issues, namely: <ul style="list-style-type: none"> Economic Regeneration; Highways and Transport; Environmental Health; and Public Health.

<p>AQ Programme Board (PB)</p>	<p>Receiving advice (from JAQU and PM) and making decisions on the direction of the Local Plan work, including:</p> <ul style="list-style-type: none"> • Monitoring objectives for the Local Plan; • Overview and co-ordination of all project activities to ensure project undertaken within the agreed scope; • Monitoring progress against activities and milestones; • Reviewing risk register and approve any issues, risks or additional requirements that have resulted/may result in major deviation from the agreed plan, and, if appropriate, any mitigation measures. • Providing advice on key technical and policy issues in relation to air quality.
<p>Programme Manager (Feasibility) Linda Sullivan (FPM)</p>	<p>Responsible for the day to day management of the feasibility stage on behalf of the PB:</p> <ul style="list-style-type: none"> • Being main liaison with JAQU; • Producing, monitoring and updating all of the Project documents (alongside project team); • Commissioning the necessary technical work identified in the plan; • Monitoring progress of technical work streams • Drafting all reports for consideration and approval by Programme Board and CCC Cabinet; • Monitoring spend against agreed budgets; • Working with stakeholders; and • Ensuring that all legal, financial and procurement processes are followed.
<p>CCC Support Advisors</p>	<p>Consists of CCC officers covering a range of specialties including transport and infrastructure, parking, economic development, public health and planning. Provision of advice and support to the PM and PB in relation to:</p> <ul style="list-style-type: none"> • Legal issues; • Finance; • Procurement; • Communications.
<p>Programme Manager – Delivery Gerry Raleigh (DPM)</p>	<p>Responsible for the day to day management of the delivery of measures on behalf of the Council.</p> <ul style="list-style-type: none"> • Drafting all delivery reports for consideration and approval by Programme Board and CCC Cabinet; • Monitoring spend against agreed budgets; • Working with stakeholders; and • Ensuring that all legal, financial and procurement processes are followed.
<p>LAQAP Project Delivery Team</p>	<p>In order to deliver the various elements of the preferred option, a series of sub programmes will be delivered by experienced technical project managers. These projects will feed into the AQ programme board process via the Delivery Programme Manager as appropriate for the individual project.</p>

5.5. Project Management

The Programme Board will meet monthly in 2020 and is chaired by the SRO. The LAQAP Delivery Team will meet weekly (aligned to feed into the board meeting) chaired by the Delivery Programme Manager and a monthly highlight report produced by the DPM for the PB. Programme Board meetings are proposed to move to quarterly later in 2021 due to the nature of projects and timeframes for delivery.

5.6. Programme

Progress will be regularly reviewed through the use of the programme, which is a live document which is updated as the scheme progresses. This sets out the key events of the project and when they are expected to happen. The overall programme for the LAQAP implementation is shown in Appendix G.

The programme is also a useful tool in terms of change control. Any significant changes to the project impacting scope, timescales, cost etc. will be reported to the relevant authority level for sign off to ensure that appropriate actions are taken to minimise the impacts/accept the change of scope.

The implementation phase commenced in April 2020, with construction starting on the cycleway in November 2020.

Contractors are already engaged in the works planning process to ensure various work packages are coordinated and streamlined.

5.7. Financial Management

5.7.1. Financial Reporting

Financial reporting is critical to ensuring that the SRO, AQ Programme Board (PMB) and Project Team are able to track progress. The DPM will be responsible for undertaking regular financial reporting to inform the PB of progress, via monthly/quarterly highlight reports.

Oversight of the financial management will be provided by CCC accountants under the guidance of the Council's S151 officer.

5.7.2. Change Control

Change is likely to occur during the implementation of the scheme, and there may be a need to move funds between tasks in a work package, or adjust the durations of particular tasks.

All requests to move funds and/or alter delivery timescales will be submitted by the DPM for delivery via a change request, and reported to the AQ Programme Board/Transport Strategic Board as appropriate.

A scheme of delegation will apply to requests for additional time or funds¹⁹. The authorisation levels are shown in Table 5-3. Change requests exceeding the SROs threshold will be accompanied by an exception report.

Table 5-3 - Authorisation levels

Authority level	Threshold	Other approvals
Project managers	Authorised to move a maximum of 10% between individual tasks within a work package up to a value of £50,000. Authorised to change the start or finish date of tasks by up to two weeks.	n/a
Programme Manager - Delivery	Authorised to move a maximum of 25% between individual tasks within a work package up to a value of £75,000. Authorised to change the start or finish date of tasks by up to one month.	n/a
Senior Responsible Officer	Authorised to move a maximum of 30% between tasks within a work package up to a value of £100,000. Authorised to change the start or finish date of tasks by up to two months.	n/a
Strategic Transport Board	Authorised to move a maximum of 40% between tasks within a work package up to a value of £250,000. Authorised to change the start or finish date of tasks by up to three months.	Impact on delivery programme of more than two months must be agreed in consultation with JAQU.

¹⁹ May be subject to change, awaiting Cabinet sign off.

Corporate Director and Cabinet Member	<p>Authorised to move a maximum of 50% between tasks within a work package up to a value of £500,000.</p> <p>Authorised to change the start or finish date of tasks by up to six months.</p>	
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There may be a need to move funds from the change budget (risk allocation) to a work package. All requests must follow the authorisation levels as set out for the changes within a work package above.

During the implementation of the project, there may need to be a transfer of funds between work packages. Surplus funds held within in a work package will need to be transferred to the change budget before being reallocated, and be supported by a change request.

Where works are delivered under an NEC contract there are specified periods of reply which need to be achieved. These response periods have been built into the contract to drive good practice and ensure that changes are agreed and valued as they occur and avoid storing up problems for the end of a contract. The process in summary is as follows:

Action by	Response by	Period
Contractor submits Compensation Event	CCC Project Manager; rejects giving reasons or accepts and instructs quotations	1 week
If PM does not respond, contractor may notify lack of response		
	No response from PM is deemed to be acceptance of CE	2 weeks
Contractor to submit quotations when instructed by PM		3 weeks
	PM to respond to quotations	2 weeks
If PM does not respond, contractor may notify lack of response		
	No response from PM is deemed to be acceptance of quotation	2 weeks

Should changes occur, either as a result of a change notified by the contractor or a change identified by the project manager, the PM will seek the appropriate level of authority for the change in a timely fashion to ensure compliance with the NEC periods.

5.7.3. Changes in Scope

During implementation, the scope of some elements may change, particularly those which are still undergoing development in design. Any significant changes from those set out in the business case are likely to impact outcomes.

Scope changes will be classed as minor or major. Minor changes will require a change request and approval following the change process detailed in the table above.

Requests to make a major scope change will need to be submitted to the Project Board for authorisation, accompanied by an Exception Report.

CCC recognise the requirement to consult JAQU on any significant change to the scope of the project. If the change is likely to result in a significant change of scope then this will be raised at the AQ Programme Board with JAQU for their guidance prior to submitting the change request to JAQU for authorisation.

For the purposes of this project, a major change is considered to be:

- A request to move funds or delivery timescales within a work package that exceeds Cabinet approval.
- A request to move funds from the change (risk allocation) budget to a work package that exceeds Cabinet Member approval levels.
- A request to stop or remove a task order, or to add a new task order.

5.8. Risk Management Strategy

A risk register has been maintained throughout the business case development, and the latest is included in Appendix H.

The risk register is a live document that is continually revisited and updated throughout the life of the project, ensuring that risks can be minimised through on-going monitoring and mitigated through effective programme management and partnership working across the wider stakeholders. The risk register is a standing agenda

item for PB meetings, with any substantive changes to risk ratings, or to the risks identified, being brought to the PB for discussion. The key risks all relate to the following three areas: deliverability of the preferred option, political acceptance of required option and cost uncertainties of preferred option.

In order to support the infrastructure costings as presented in the financial case, a Quantified Risk Assessment has been undertaken as part of procurement works for the infrastructure elements of the project. More detail is included within the Commercial Case, and risk allowance has been included in the Financial Case.

5.9. Benefits Realisation Strategy and Monitoring and Evaluation Plan

Evaluation and monitoring throughout the delivery of the programme is crucial to ensure benefits are realised. The implementation and operational phases of the programme will be the subject of a Monitoring and Evaluation Plan. A monitoring framework needs to be in place to enable evaluation. The Monitoring and Evaluation note provided by JAQU makes clear that the primary focus for Local Authorities is monitoring of measures rather than evaluation.

Given the importance of compliance, monitoring is planned to commence during construction of the measures and continue through to after compliance is achieved. The proposed approach is included in Appendix I. The costs relating to the monitoring requirements are detailed in the Financial Case of this FBC. Where possible, permanent traffic count loops will be installed to allow continuous/more flexible monitoring. This would be a comparable cost to the assumed costs in the financial case (temporary counts four times a year for the duration).

The proposed approach is designed to assess whether the outputs and impacts of the scheme deliver the desired benefits (outcomes) and overarching objectives. The evaluation element will include covering a range of process and impact evaluation.

Appendix A. Modelled exceedances of EU limit values in 2021

This appendix presents the forecast exceedances at various hot spot locations around the Coventry urban area. This information is taken from the baseline local air quality modelling.

Table A-1 - PCM Exceedance Locations in 2021 Air Quality Modelling Results – Do-Minimum Scenario

Census ID	Modelled Roadside Annual Mean NO ₂ Concentration (µg/m ³)													
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
7647	67.44	65.02	62.44	59.62	56.74	54.23	51.79	49.36	46.96	44.62	42.28	39.98	37.70	35.42
37731	44.19	43.39	42.60	41.74	41.13	39.53	38.03	36.56	35.12	33.77	32.45	31.17	29.95	28.76

Note: Values in **bold** denote exceedances of annual mean NO₂ EU limit value

Table A-2 - Non-PCM Exceedance Locations in 2021 Air Quality Modelling Results – Do-Minimum Scenario

Street Name	Modelled Roadside Annual Mean NO ₂ Concentration (µg/m ³)													
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Little Park Street	49.10	47.30	45.34	43.11	40.95	39.21	37.53	35.87	34.20	32.60	31.01	29.44	27.89	26.35
Foleshill Road	56.86	54.42	51.76	48.82	45.75	43.72	41.74	39.81	37.86	35.98	34.12	32.28	30.47	28.68

Note: Values in **bold** denote exceedances of annual mean NO₂ EU limit value

Appendix B. Indicative source apportionment

Table B-1 - Indicative Source Apportionment at PCM link exceedance locations in 2021

PCM Census ID	Total NO ₂	Road NO ₂	Background NO ₂	Estimated Contribution to Annual Mean NO ₂ (µg/m ³)								
				Petrol cars	Diesel cars	Black cab taxis	Petrol LGVs	Diesel LGVs	Rigid HGVs	Artic HGVs	Buses	Coaches
7647	56.7	37.3	19.4	2.3	18.9	2.9	0.0	6.6	1.5	0.6	2.4	2.1
37731	41.1	20.2	20.9	1.6	12.0	1.8	0.1	3.3	0.5	0.2	0.0	0.7

Table B-2 - Indicative Source Apportionment at non-PCM link exceedance locations in 2021

Street Name	Total NO ₂	Road NO ₂	Background NO ₂	Estimated Contribution to Annual Mean NO ₂ (µg/m ³)								
				Petrol cars	Diesel cars	Black cab taxis	Petrol LGVs	Diesel LGVs	Rigid HGVs	Artic HGVs	Buses	Coaches
Foleshill Road	45.8	27.2	18.6	1.4	11.9	1.7	0.2	2.9	1.5	0.6	4.9	2.2
Little Park Street	41	20.1	20.9	0.6	5.2	0.7	0.1	0.7	0.5	0.2	11.3	0.8

Appendix C. Stakeholder Plan

Appendix D. Consultation Report

Appendix E. MCA Framework

This appendix presents the MCA framework, which was developed using the primary and secondary critical factors. This framework was used to further refine the long list of packaged options into a short list of options to take forward to OBC stage.

CRITICAL FACTORS	SUCCESS	CONSIDERATIONS
(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)		<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³?</i>
		<i>In which year is compliance achieved?</i>
		<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m², if combined with another option? [Answer to this question should not be used for the pass/fail scoring]</i>
		<i>Is the option compliant?</i>
(A) Does this option improve the overall economy and job prospects, within Coventry?		<i>Does this option improve the overall economy within Coventry?</i>
		<i>Does this option improve job prospects and create jobs within Coventry?</i>
		<i>Overall economy</i>
(B) How does this option align with and support the strategic and wider air quality fit?		<i>Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community</i>
		<i>How does this option affect overall exposure and to what extent does it reduce overall exposure?</i>
		<i>Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?</i>
		<i>Overall strategic and wider air quality fit</i>
(C) Is there a well-developed supply side, who have the capacity and capability to deliver this option?		<i>Who will deliver the solution (LA, external party or both)?</i>
		<i>Who will be the lead organisation for the delivery of this option?</i>
		<i>Are there capable contractors available to deliver this option?</i>
		<i>Is there a sufficiently well-developed market to support the efficient delivery of this option?</i>
		<i>Overall supply side and capability score</i>
(D) Is this option affordable both in the short and long run?		<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>
		<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>
		<i>How will this option be funded (public, private or a mix of funding sources)?</i>
		<i>Are there any other potential funding sources, for this option?</i>
		<i>Overall affordability score</i>

(E) How achievable is this option given the existing market limitations and constraints?	<i>Can this option be delivered at a local scale?</i>
	<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>
	<i>Is this option based on proven/existing technology?</i>
	<i>Overall achievability score</i>
(F) What is the overall distributional impact of this option?	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>
	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>
	<i>Does this option have an impact on health inequalities?</i>
	<i>Overall distributional impact score</i>
(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>
	<i>Has the option been designed effectively while maximising benefits?</i>
	<i>Overall value for money score</i>

Appendix F. MCA Methodology and results (as of OBC)

MCA methodology

This appendix provides further details on the sifting methodology and can be read in conjunction with the Economic Case if further detail is required on the methodology.

1. Sifting methodology and workshop

Each of the long list of packaged options were given final scores, with clearly recorded rationale during a workshop on the 20th February 2018 at CCC offices. However, prior to the workshop, the study team scored each of the options, providing rationale. This was done to ensure that the workshop ran smoothly by smoothing out any potential problems in the MCA. Furthermore, the prior scoring allowed the project team to firm up on the advantages and disadvantages for each option, which enabled discussion and challenge during the workshop.

While, scoring the options, each option was compared against the criteria set out in the MCA and equal weightings were applied to each of the secondary CSF, with a view on agreeing/changing the weightings for the secondary CSF during the workshop.

The workshop was attended by various specialists within the study team and represented by a number of departments within CCC.

2. Outcomes from the sifting workshop

During the workshop, there were a few recommendations provided by the attendees, to develop more rounded and complete options, which were taken on board by the study team to develop an initial shortlist of options which passed the primary CSF and scored well against the secondary CSFs. The following recommendations were provided by the attendees:

1. The weightings recommended for each secondary CSF were discussed and it was agreed that these should remain equally weighted.
2. Packaged option 13 (introducing a workplace parking levy in Coventry) would be undeliverable in the timescales. As such, this package was adjusted to a fail but it was agreed that other elements of the packaged option (option 38 - work with employers to improve their travel plans) should still be included within another package.
3. An option based around the use of low emission LGVs for last mile delivery should be added to the long list of options, which was added and scored following the workshop taking account of the discussions during the workshop.
4. It was agreed that the cycling options fail, as part of other options, as they were currently packaged and presented at the workshop. However, it was recommended that they should be combined with travel planning to make them more effective. Furthermore, a more focussed and more deliverable cycling package was added and scored taking account of discussions with CCC during and following the workshop.
5. It was recommended that packaged option (P9 – Improve bus transport) should be designed to be more effective by including within it, the following:
 - a. Integrated public transport ticketing and cross border ticketing
 - b. A faster and more direct bus service between Coventry and Solihull/Warwickshire
6. Packaged option (P7 – better marketing and campaigning) should remain as an overall strategy for all options to make each option more effective.
7. Packaged option (P10 - Implement measures to make certain roads(routes) traffic free including infrastructure changes) should remain in the final shortlist, whatever the score may be as the NO₂ exceedances on Holyhead Road are very high and this option may be the only way forward at the location.

The initial shortlisted packaged options have come out of the sifting process as options which are likely to help CCC achieve NO₂ compliance in the shortest possible time. However, it was also recommended that these packaged options can and should be re-assembled and re-packaged to make them more effective at reducing NO₂ emissions in the Coventry urban area.

Table 4 - Initial shortlisted packaged options

PACKAGED OPTION	DESCRIPTION	COMPLIANCE	SECONDARY CSF SCORE
P9	3 - Improve public transport connectivity to the Ricoh Arena 4 - A more frequent and better-quality bus service along key routes 35 - Integrated PT ticketing and cross border ticketing 5 - A faster and more direct bus service between Coventry and Solihull/Warwickshire 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	10.00
P26	49 - Low emission LGV vehicles for last mile delivery. 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	10.00
P14	38 - Work with employers to improve their travel plans 39 - Develop and provide a mobile application to improve travel planning (early MaaS) 45 - Provide driver behaviour training 17 - Promote and increase the use of car clubs and car hire schemes 7 - Implement measures to incentivise behaviour change 18 - Promote and implement measures to increase car sharing 15 - Implement measures to increase office sharing to increase car sharing 48 - Improve wayfinding for walking 19 - Improve cycle security 28 - Improve cycling and pedestrian facilities 42 - Develop a strategic cycle network 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	8.00
P15	40 - Work with schools to improve their travel plans 45 - Provide driver behaviour training 17 - Promote and increase the use of car clubs and car hire schemes 7 - Implement measures to incentivise behaviour change 19 - Improve cycle security 28 - Improve cycling and pedestrian facilities 42 - Develop a strategic cycle network 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	7.00
P24	25 - Increasing the number of electric taxi charging points 32 - Incentivise the uptake of low emission taxis 36 - Review and update existing taxi licensing policies 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	7.00
P18	8 - Take a more strategic approach to road improvements 37 - Install and update traffic control systems using more intelligent programming 50 - Implement better traffic management measures at issue roads (routes) 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	6.00
P21	16 - Promote and implement the use of additional low emission buses 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	5.00

P27	28 - Improve cycling and pedestrian facilities 42 - Develop a strategic cycle network 19 - Improve cycle security 20 - Increase cycle hire 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	5.00
P10	9 - Implement measures to significantly reduce traffic on certain roads (routes), including infrastructure changes. 21 - Capture and use data to influence route choice 12 - Enhance the CCC marketing, incentivising and campaign strategy	PASS	-5.00

The long list of packaged options, which failed on compliance and or scored poorly against the secondary CSFs are shown in Table 5 and are not recommended to be taken any further. The 'Action Taken' column suggests any actions which have been taken following on from recommendations during the workshop. Full details of the scores for each of the long list of packaged options, along with rationale can be found below.

Table 5 - Failed packaged options

PACKAGE	DESCRIPTION	COMPLIANCE	SECONDARY CSF SCORE	ACTION TAKEN
P8	1 - Develop and implement priority lanes	FAIL	-4.00	
P6	27 - MaaS (Mobility as a Service) 35 - Integrated PT ticketing and cross border ticketing	Fail	-3.00	Option 35 has been added to Package 9. Option 39 includes early Maas measures as full MaaS is not possible.
P16	10 - Integrated online shopping delivery 33 - Integrate and restrict the delivery of goods to business	FAIL	-2.00	
P1	19 - Improve cycle security	FAIL	1.00	New package added (P27) and this option has also been added to travel planning measures
P2	11 - Improve facilities along Coventry Canal to increase canal side walking and cycling activity. 28 - Improve cycling and pedestrian facilities 46 - Improve and increase green space 48 - Improve wayfinding for walking	FAIL	1.00	New package added (P27) and Option 28. added to travel planning measures
P13	26 - Introduce a workplace parking levy in Coventry 38 - Work with employers to improve their travel plans	FAIL	1.00	Option 38 is included within travel planning measures
P19	13 - Promote and support businesses to encourage more agile working 14 - Improve broadband coverage, speed and quality	FAIL	1.00	
P3	42 - Develop a strategic cycle network 43 - Implement cycle superhighways within Coventry	FAIL	2.00	New package added (P27) and Option 42. added to travel planning measures
P5	6 - Promote and incentivise the use electric cycles for long distance commuting.	FAIL	2.00	
P23	2 - Retro-fit existing cars with low emission engines 24 - Improve electric vehicle charging infrastructure available to private car users	FAIL	2.00	

P11	29 - Implement more Park and Ride 47 - Increase parking charges	FAIL	3.00	
P20	41 - Schools to implement and provide school buses	FAIL	3.00	
P25	31 - Increase rail service frequency between Coventry and Warwickshire.	FAIL	6.00	
P4	20 - Increase cycle hire	FAIL	9.00	New cycling package added (P27) which includes cycle hire.
P12	5 - A faster and more direct bus service between Coventry and Solihull/Warwickshire	FAIL	9.00	Option 5 has been added to Package 9

3.1. MCA Scores/Rationale for Each Packaged Option

This appendix provides the full details of the scores given in the MCA sifting process and the rationale.

		P21	P22	P23	P24	
CRITICAL SUCCESS FACTORS	CONSIDERATIONS	16 - Promote and implement the use of additional low emission buses	23 - Promote and support the uptake of low emission private vehicles 24 - Improve electric vehicle charging infrastructure available to private car users 44 - Incentivise and provide funding for electric cars	2 - Retro-fit existing cars with low emission engines 24 - Improve electric vehicle charging infrastructure available to private car users	25 - Increasing the number of electric taxi charging points 32 - Incentivise the uptake of low emission taxis 36 - Review and update existing taxi licensing policies	
		Targets the level of emissions from buses	Targets the level of emissions from new cars	Targets the level of emissions from cars by targeting existing cars	Targets the level of emissions from taxis	
(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ ?	Yes, this option is likely to reduce the NO ₂ emission levels in the issue areas as buses operate along these routes or nearby these routes. Furthermore, petrol/diesel buses are large contributors towards NO ₂ emissions and Coventry has an extensive bus network.	Yes, this option is likely to reduce the NO ₂ emission levels in the issue areas as cars operate along these routes or nearby these routes. Furthermore, petrol/diesel cars are large contributors towards NO ₂ emissions. There is a high uptake of new cars in the UK.	Yes, this option is likely to reduce the NO ₂ emission levels in the issue areas as existing cars operate along these routes or nearby these routes. Furthermore, petrol/diesel cars are large contributors towards NO ₂ emissions. There is a large number of high polluting existing cars in the Coventry urban area.	Yes, this option is likely to reduce the NO ₂ emission levels in the issue areas as existing taxis operate along these routes or nearby these routes. Furthermore, petrol/diesel taxis are large contributors towards NO ₂ emissions. There is a large number of high polluting taxis in the Coventry urban area.	
	In which year is compliance achieved?		As there are only around 200 electric vehicles in the city, the shift required from diesel / petrol to electric needs to be significant to have a large enough impact. This is a good long-term strategy; however, the option is unlikely to achieve the shift required in the timescales.	However, currently it is not technically possible to retrofit cars.		
	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ , if combined with another option? <i>[Answer to this question should not be used for the pass/fail scoring]</i>					
	Is the option compliant?	PASS	PASS	FAIL	PASS	
(A) Does this option	Does this option improve the overall economy within Coventry?	Neutral	Yes, as JLR is a big contributor to the Coventry economy and the company may provide some of the low emission cars.			

improve the overall economy and job prospects, within Coventry?	<i>Does this option improve job prospects and create jobs within Coventry?</i>	This option has the potential to create a small number of jobs to retro-fit and maintain the low emission buses. A new £80 million electric vehicle battery development facility will be built in Coventry, Warwickshire, aiming to make the UK "a world leader" in electric vehicle battery technology.	Yes, as JLR is a large provider of jobs in Coventry and the company may provide some of the low emission cars. A new £80 million electric vehicle battery development facility will be built in Coventry, Warwickshire, aiming to make the UK "a world leader" in electric vehicle battery technology.	This option has the potential to create a number of jobs to retro-fit and maintain the low emission cars. A new £80 million electric vehicle battery development facility will be built in Coventry, Warwickshire, aiming to make the UK "a world leader" in electric vehicle battery technology.	Yes, as The London Taxi Company is a large provider of jobs in Coventry and the company may provide some of the low emission Taxis. A new £80 million electric vehicle battery development facility will be built in Coventry, Warwickshire, aiming to make the UK "a world leader" in electric vehicle battery technology.
	<i>Overall economy</i>	1	1	1	2
(B) How does this option align with and support the strategic and wider air quality fit?	<i>Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community</i>	Using low emission buses throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city	Using low emission cars and having the charging infrastructure throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city	Using low emission cars and having the charging infrastructure throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city	Using low emission Taxis and having the charging infrastructure throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city
	<i>How does this option affect overall exposure and to what extent does it reduce overall exposure?</i>	This option will reduce overall exposure along bus routes, which are hotspots in the Coventry urban area.	This option will reduce overall exposure along busy routes, some of which are hotspots in the Coventry urban area.	This option will reduce overall exposure along busy routes, some of which are hotspots in the Coventry urban area.	This option will reduce overall exposure along busy routes, some of which are hotspots in the Coventry urban area.
	<i>Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?</i>	Yes, it is likely to reduce NO ₂ emissions but only by a minimal amount.	Yes, it is likely to reduce NO ₂ emissions, significantly due to the large number of car trips.	Yes, it is likely to reduce NO ₂ emissions, significantly due to the large number of car trips.	Yes, it is likely to reduce NO ₂ emissions, significantly due to the large number of taxi trips.
	<i>Overall strategic and wider air quality fit</i>	0	2	2	2
(C) Is there a well developed supply side, who have the capacity and capability to deliver this option?	<i>Who will deliver the solution (LA, external party or both)?</i>	This solution is likely to be delivered between both CCC and the bus operators and relies upon commitment from bus operators.	This solution is likely to be delivered between both CCC and technical contractors to design and deliver the charging infrastructure.	This solution is likely to be delivered between both CCC and technical contractors to design and deliver the charging infrastructure.	This solution is likely to be delivered between both CCC and technical contractors to design and deliver the charging infrastructure and the taxi drivers.
	<i>Who will be the lead organisation for the delivery of this option?</i>	Lead organisation is likely to be the bus operator	Lead organisation is likely to be CCC, who will act as client and programme manager.	Lead organisation is likely to be CCC, who will act as client and programme manager.	Lead organisation is likely to be CCC, who will act as client and programme manager.
	<i>Are there capable contractors available to deliver this option?</i>	Yes there are, as retro-fitting of buses with low emission is currently under way in Coventry and other parts of the UK.	Yes there are, many car manufacturers who sell low emission cars and companies who can supply and fit the charging infrastructure. However, there is likely to be a power supply issues if the shift from petrol/diesel to electric vehicles is achieved.	Yes there are, many car manufacturers who sell low emission cars and companies who can supply and fit the charging infrastructure. However, there is likely to be a power supply issues if the shift from petrol/diesel to electric vehicles is achieved.	Yes, taxi manufacturers sell low emission taxis and companies who can supply and fit the charging infrastructure. This is currently underway in Coventry, with 39 charging points for taxis, already.

	<i>Is there a sufficiently well-developed market to support the efficient delivery of this option?</i>	Yes, there are, as retro-fitting of buses with low emission is currently under way in Coventry and other parts of the UK.	Yes, the market for low emission cars and associated infrastructure is well developed and buoyant.	Yes, the market for retro-fitting low emission cars is proven technology, although difficult to implement in some cars, and associated infrastructure is well developed and buoyant.	Yes, the market for retro-fitting and selling low emission taxis is proven technology, although difficult to implement in some cars, and associated infrastructure is well developed and buoyant.
	<i>Overall supply side and capability score</i>	1	-1	-1	1
(D) Is this option affordable both in the short and long run?	<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>	This is a relatively cheap option as the initial cost of buses can be outweighed against lower operating costs during the operating life of the bus.	This is likely to be an expensive solution, although some costs will be outweighed by lower vehicle operating costs. However, this will be a benefit to private users.	This is likely to be an expensive solution, although some costs will be outweighed by lower vehicle operating costs. However, this will be a benefit to private users.	This is likely to be an expensive solution, although some costs will be outweighed by lower vehicle operating costs. However, this will be a benefit to taxi drivers.
	<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>	Lower operating and maintenance costs as low emission buses do not require as much petrol/diesel.	Lower operating and maintenance costs as low emission cars do not require as much petrol/diesel.	Lower operating and maintenance costs as low emission cars do not require as much petrol/diesel.	Lower operating and maintenance costs as low emission taxis do not require as much petrol/diesel.
	<i>How will this option be funded (public, private or a mix of funding sources)?</i>	This option is likely to be funded by public sector funding with some potential match funding from bus operators.	This option is likely to be funded by public sector funding as well as owners of the vehicles.	This option is likely to be funded by public sector funding as well as owners of the vehicles.	This option is likely to be funded by public sector funding as well as owners of the vehicles.
	<i>Are there any other potential funding sources, for this option?</i>	Match funding from bus operators.	Potential low emission funding sources need to be investigated.	Potential low emission funding sources need to be investigated.	Potential low emission funding sources need to be investigated.
	<i>Overall affordability score</i>	2	-1	-1	-1
(E) How achievable is this option given the existing market limitations and constraints?	<i>Can this option be delivered at a local scale?</i>	Yes, this is already underway in Coventry	Yes, this is already underway in Coventry	This has not yet been tested, however, potential is there. However, many owners may be reluctant to change due to costs.	Implementing taxi charging infrastructure is already underway in Coventry. 6 charging points to be delivered by end of 2018 and 39 by the end of 2019. It may be difficult to change policy.
	<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>	Potential that there are not enough resources in the market place if there are a significant number of orders around the rest of the UK	Potential that there are not enough resources in the market place if there are a significant number of orders around the rest of the UK	Potential that there are not enough resources in the market place if there are a significant number of orders around the rest of the UK	Potential that there are not enough resources in the market place if there are a significant number of orders around the rest of the UK
	<i>Is this option based on proven/existing technology?</i>	Yes, this is proven technology and in use throughout the UK	Yes, this is proven technology and in use throughout the UK	Proven technology and in use	Proven technology and in use.
	<i>Overall achievability score</i>	1	-2	-1	1
(F) What is the	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>	Neutral	Poorer communities are unlikely to be able to afford this option	Poorer communities are unlikely to be able to afford this option	Poorer taxi drivers are unlikely to be able to afford this option

overall distributional Impact of this option?	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>	No, as it reduces the amount of emissions from buses.	No, as it reduces the amount of emissions from new cars.	No, as it reduces the amount of emissions from existing cars.	No, as it reduces the amount of emissions from existing taxis.
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>	N/A	N/A		Taxis drivers required to uptake low emission taxis due to policy change can be provided with additional funding, if they can demonstrate that they are not able to afford the option.
	<i>Does this option have an impact on health inequalities?</i>	Yes, many of the buses operate in more deprived parts of Coventry. Hence, low emission buses are likely to improve health inequalities in these parts of Coventry.	Yes, many of the cars operate in more deprived parts of Coventry. Hence, low emission new cars are likely to improve health inequalities in these parts of Coventry.	Yes, many of the cars operate in more deprived parts of Coventry. Hence, low emission existing cars are likely to improve health inequalities in these parts of Coventry.	Neutral
	<i>Overall distributional impact score</i>	1	1	2	1

(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>	This option is likely to improve health and the option may attract a higher patronage on the bus network. However, as 75% of the buses are already funded for and are to be completed by 2021. The remaining 25% of buses are unlikely to have a big enough impact and may not be along the problem routes.	This option is likely to improve improved health and reduce vehicle operating costs. However, the initial high capital costs are like to be very high. Furthermore, as there are only around 200 electric vehicles in the city, the shift required from diesel / petrol to electric needs to be significant to have a large enough impact. This is a good long-term strategy, however, the option is unlikely to achieve the shift required in the timescales.	The benefits of this option are likely to be extensive due to improved health and lower vehicle operating costs. However, the initial high capital costs are like to be very high.	The benefits of this option are likely to be extensive due to improved health and lower vehicle operating costs. However, the initial high capital costs are like to be high.
	<i>Has the option been designed effectively while maximising benefits?</i>				
	<i>Overall value for money score</i>	-1	-2	0	1
	<i>Overall Score</i>	5.00	-2.00	2.00	7.00

		P12	P25	P13	P19	P20
CRITICAL SUCCESS FACTORS	CONSIDERATIONS	5 - A faster and more direct bus service between Coventry and Solihull/Warwickshire	31 - Increase rail service frequency between Coventry and Warwickshire.	26 - Introduce a workplace parking levy in Coventry 38 - Work with employers to improve their travel plans	13 - Promote and support businesses to encourage more agile working 14 - Improve broadband coverage, speed and quality	41 - Schools to implement and provide school buses
		Targets commuter car trips by improving public transport	Targets commuter car trips by improving public transport	Targets commuter car trips by focussing on business	Targets peak hour car trips by changing time of travel	Targets peak hour car trips by reducing the number of trips
(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ ?	Yes, this option is likely to reduce the annual mean NO ₂ concentration levels for a number of reasons: - currently a significant number of commuters between Coventry and Warwick and Coventry and Solihull for work. However, the public transport service is poor. Furthermore, 80-90% of commuters between these origin and destinations travel as car drivers or passengers (as shown in the Coventry City Council report 2015, "Coventry and Warwickshire Commuter Movements"). - Therefore, reducing the mode share from car to public transport can significantly reduce car trips.	Currently a significant number of commuters between Coventry and Warwick and Coventry and Solihull for work. However, the public transport service is poor. Furthermore, 80-90% of commuters between these origin and destinations travel as car drivers or passengers (as shown in the Coventry City Council report 2015, "Coventry and Warwickshire Commuter Movements"). Therefore, reducing the mode share from car to public transport can significantly reduce car trips.	The 2011 Census data showed that there are approximately 150,000 commuters who commuted within Coventry or into Coventry and the overall mode share of the car (including passenger) is approximately 67%. Hence, implementing this option is likely to impact on a large number of trips if delivered effectively.	Working from home risen from 1.44% in 1981 to 7.35% in 2011 as shown in the 2011 Census data. If more can be done to increase this percentage further than commuter trips would reduce vehicle commuter journeys (particularly the car). Many jobs in Coventry require people at the location of business (as a high percentage of jobs in Coventry is in manufacturing, retail, education and health).	Statistics from the 'Education Data Team Key Statistics Report', Coventry City Council, February 2017 shows that there were approximately 55,000 (33,000 - primary and 22,000 - secondary) children in education in the Coventry area in 2015/16. The 'National Travel Survey 2014' from the DfT suggests that approximately 46% of 5-10 year olds and 23% of 11-16 year olds travel to school by car. The use of the car is the second most popular mode of travel after walking. Hence, providing school buses is likely to impact on a large number of car trips (max 40,000 car trips per school day) and reduce the mode share for the car.
	In which year is compliance achieved?		However, this option is unlikely to achieve the required reductions in NO ₂ in the timeframe as a doubling of the rail service is already planned for by the end of 2019 and any further increase to the rail service is unlikely to occur in the shortest possible time.	However, changing driver behaviour and implementing a workplace levy is likely to take a long time (due to legal framework etc) and achieving NO ₂ emission targets in the shortest possible time may not be possible.	The slow increase in 'working from home' from 1981 to 2011 is a sign that we are unlikely to achieve NO ₂ emission targets in the shortest possible time.	Difficult plan and timetable effectively and will have limited impact.
	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ , if combined with another option? [Answer to this question should not be used for the pass/fail scoring]	This option combined with another option is likely to achieve a greater reduction in the NO ₂ in the shortest possible timeframe.			Option 'No. 38 - Work with employers to improve their travel plans', should be combined with another option to make it effective.	

	Is the option compliant?	PASS	FAIL	FAIL	FAIL	FAIL
(A) Does this option improve the overall economy and job prospects, within Coventry?	Does this option improve the overall economy within Coventry?	Yes, improving public transport frequency can allow more people to access jobs in Coventry, which they were not able to otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.	Yes, improving public transport frequency can allow more people to access jobs in Coventry, which they were not able to otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.	A workplace parking levy may result in some employers relocating elsewhere to retain or attract staff, therefore impacting on the local economy. However, this may be minimal.	More people may start working as they can balance their lifestyle around more easily, hence improving the local economy. Faster broadband makes people more effective.	Providing school buses will allow some parents, who otherwise worked reduced hours or zero hours, to work more and or take up employment. This will have a positive impact on the local economy.
	Does this option improve job prospects and create jobs within Coventry?			A workplace parking levy may result in some employers relocating elsewhere to retain or attract staff, hence reducing the overall number of jobs.	Neutral	Additional school buses will create a small number of new jobs for drivers and alike.
	Overall economy	1	1	-1	1	1
(B) How does this option align with and support the strategic and wider air quality fit?	Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.	Some commuters may choose not to work as they cannot afford the levy. This is more likely to impact on the poorer community.	Improves accessibility to jobs for a wider community.	Improves accessibility as certain families will have improved access to public transport. This option improved community safety as children have access to a safe transport mode to school.
	How does this option affect overall exposure and to what extent does it reduce overall exposure?	This can significantly impact overall exposure, in a positive way, due to the large number of existing commuter movements between the destinations	This can significantly impact overall exposure, in a positive way, due to the large number of existing commuter movements between the destinations	This solution can reduce overall exposure significantly, especially along busy commuter routes as fewer people may use the car for commuting.	This solution can reduce overall exposure, especially along busy commuter routes as fewer people may use the car for commuting.	This solution can reduce overall exposure, especially along busy commuter routes as fewer people may use the car for travelling to school.
	Does it improve health and wellbeing of residents and visitors, by reducing NO ₂ emissions?	Yes, reducing NO ₂ exposure is beneficial to health and reducing these commuter movements is likely to alleviate the pressure on some the hotspots including Holyhead and the A429	Yes, reducing NO ₂ exposure is beneficial to health and reducing these commuter movements is likely to alleviate the pressure on some the hotspots including Holyhead and the A429	This solution can reduce overall exposure significantly, especially along busy commuter routes as fewer people may use the car for commuting. This will improve health inequalities as the more deprived communities are located along these routes.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these commuter movements is likely to alleviate the pressure on some the hotspots.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these school car trips is likely to alleviate the pressure on some the hotspots.
	Overall strategic and wider air quality fit	2	2	0	1	1
(C) Is there a well developed supply side, who have	Who will deliver the solution (LA, external party or both)?	CCC with co-operation from bus operators.	CCC with co-operation from bus train operators and Network Rail.	CCC in liaison with local business	CCC in liaison with local business and National Government and contractors for broadband infrastructure.	CCC in liaison with schools and bus operators.
	Who will be the lead organisation for the delivery of this option?	CCC	CCC	CCC for the levy and the businesses will deliver a more effective travel plan.	CCC in liaison with local business and National Government and contractors for broadband infrastructure.	CCC
	Are there capable contractors available to deliver this option?	Yes, as not much new infrastructure is required. Many of the changes required include timetabling changes etc.	Yes, as not much new infrastructure is required. Many of the changes required include timetabling changes etc.	Yes	Yes	Yes

the capacity and capability to deliver this option?	<i>Is there a sufficiently well developed market to support the efficient delivery of this option?</i>	Yes	Yes	Yes	Yes	Yes, providing school buses is common practice across parts of the UK.
	<i>Overall supply side and capability score</i>	1	1	1	1	1
(D) Is this option affordable both in the short and long run?	<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>	This is relatively cheap option as not new infrastructure is required.	This is relatively cheap option as not new infrastructure is required.	Relatively cheap option to implement as it is policy and behaviour change, largely. However, additional staff may be require to administer the levy.	Implementing a better broadband coverage will require significant cost. However, this may already be happening and has happened.	Initial costs are likely to be high due to capital costs of the buses.
	<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>	Long run operating costs can be met by additional public transport revenue. Fewer car trips can result in less maintenance on the road network.	Long run operating costs can be met by additional public transport revenue. Fewer car trips can result in less maintenance on the road network.	Costs to employ administration staff will not be funded in the long run.	Relatively cheap option as broadband is likely to be funded by national Government.	Operating costs can be met by revenue from bus operation.
	<i>How will this option be funded (public, private or a mix of funding sources)?</i>	Public funding to implement the changes with revenue to cover longer term operating costs.	Public funding to implement the changes with revenue to cover longer term operating costs.	Public sector funding initially with levy revenue in the long run.	Public and some private investment from telecommunications companies	Initial investment will be public.
	<i>Are there any other potential funding sources, for this option?</i>				National Government for Broadband	Potential match funding from bus operators.
	<i>Overall affordability score</i>	1	1	2	1	-1
(E) How achievable is this option given the existing market limitations and constraints?	<i>Can this option be delivered at a local scale?</i>	Yes, but will require liaison with bus operators.	Yes, but will require liaison with train operators and Network Rail. However, this is unlikely to achieved in the timescales as long lead times are required for rail timetable changes.	It can de delivered however, it will be difficult to implement a levy politically and it will also be difficult to impact on behaviour change. However, it has running in Nottingham for 3 years now and generating revenue	It can de delivered however, it will be difficult to impact on behaviour change and many jobs require people at the location of business (as a high percentage of jobs in Coventry is in manufacturing, retail, education and health). Broadband improvements will require liaison with national Government.	Yes, but will require liaison with bus operators and schools.
	<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>	Running additional services on the rail network may be restricted by existing timetabling constraints.	Running additional services on the rail network may be restricted by existing timetabling constraints.			Yes, there are many bus operators and schools across Coventry who can be approached.
	<i>Is this option based on proven/existing technology?</i>	N/A	N/A		Yes high speed broadband is a proven technology	Yes, this is common practice across other parts of the UK.
	<i>Overall achievability score</i>	1	-2	-1	-2	1
(F) What is the overall	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>	Will make certain jobs and locations accessible to a wider community (specifically the deprived as public transport is cheaper than private car)	Will make certain jobs and locations accessible to a wider community (specifically the deprived as public transport is cheaper than private car)	It may result in some poorer workers not working as they cannot afford the levy.	Will make certain jobs and locations accessible to a wider community.	Will make certain schools and locations accessible to a wider community (specifically the deprived as public transport is cheaper than private car), who otherwise were not

distributional Impact of this option?						able to travel to these locations for education.
	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>	No, it reduces overall emissions.	No, it reduces overall emissions.	If commuters, work elsewhere and continue to travel by car then the issue is displaced elsewhere.	No, as it will reduce overall levels of emissions rather than displace.	No, it reduces overall emissions.
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>			Can excuse certain commuters from having to pay the levy for example if they have no other reasonable method for travelling into work.		
	<i>Does this option have an impact on health inequalities?</i>	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Will improve health inequalities as commuter trips reduced in the deprived areas.	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)
	<i>Overall distributional impact score</i>	2	2	-1	1	1
(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>	Cheap solution to implement and bus revenue will be generated. However, rail changes are expensive.	Cheap solution to implement and bus revenue will be generated. However, rail changes are expensive.	Cheap solution to implement and levy revenue will be generated. However, option may have negative impact on business and jobs.	Broadband is expensive to implement, although it may already be funded and the impacts of this overall option is likely to be minimal.	Initial capital costs for the purchase of buses are high, however, operational costs can be met by bus revenue. However, impact may be minimal.
	<i>Has the option been designed effectively while maximising benefits?</i>					
	<i>Overall value for money score</i>	1	1	1	-2	-1
	<i>Overall Score</i>	9.00	6.00	1.00	1.00	3.00

		P16	P26	P17
CRITICAL SUCCESS FACTORS	CONSIDERATIONS	10 - Integrated online shopping delivery 33 - Integrate and restrict the delivery of goods to business	49 - Low emission LGV vehicles for last mile delivery.	30 - Incentivise large suppliers/retailers/manufacturers to transport more goods by rail. 34 - Plan and develop freight consolidation centres 33 - Integrate and restrict the delivery of goods to business
		Targets LGV trips	Targets LGV trips	Targets HGV trips
PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ ?	Yes, it will reduce the NO ₂ emissions. However, the impact is likely to be small.	Yes, it will reduce the NO ₂ emissions and the impact is likely to be large as initial local modelling suggest that a large contributor of the NO ₂ emissions in Coventry is the diesel LGV.	Yes the impact is likely to be large as HGVs are large contributors to NO ₂ emissions in the Coventry area.
	In which year is compliance achieved?	Minimal impact, hence it is unlikely to meet targets by the compliance year	This option is likely to meet targets by the compliance year as electric vehicles are fairly cheap (comparable to diesel LGVs) and re common.	It will be possible to deliver freight consolidation centres in the timeframe, if the land is available.
	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ , if combined with another option? <i>[Answer to this question should not be used for the pass/fail scoring]</i>			
	Is the option compliant?	FAIL	PASS	PASS
(A) Does this option improve the overall economy and job prospects, within Coventry?	Does this option improve the overall economy within Coventry?	This is likely to impact negatively on businesses, which rely on timely delivery of goods including retailers.		This is likely to impact negatively on businesses, which rely on timely delivery of goods including retailers.
	Does this option improve job prospects and create jobs within Coventry?	Integrating deliveries may mean fewer delivery jobs available. Furthermore, restricting delivery times may mean fewer delivery drivers willing to work.	A new £80 million electric vehicle battery development facility will be built in Coventry, Warwickshire, aiming to make the UK "a world leader" in electric vehicle battery technology.	Can create jobs in the rail freight delivery sector and within the consolidation centres. However, fewer HGV drivers may be required.
	Overall economy	-2	1	-1
(B) How does this option align	Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community	Integrating online delivery will require an innovative approach.	Using low emission LGVs throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city	Fewer HGVs will result in a safer community as HGVs are contributors towards road accidents. Fewer HGVs will improve the image of Coventry.

with support strategic and wider quality fit?	and the air	<i>How does this option affect overall exposure and to what extent does it reduce overall exposure?</i>	It will reduce exposure, although it is likely to be minimal.	This option will reduce overall exposure along busy routes, which are hotspots in the Coventry urban area.	It will reduce exposure significantly, although it will be in the long run.
		<i>Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?</i>	Yes, but impact is likely to be minimal.	Yes, it is likely to reduce NO ₂ emissions, significantly	Yes, in the long run.
		Overall strategic and wider air quality fit	1	2	1
(C) Is there a well developed supply side, who have the capacity and capability to deliver this option?		<i>Who will deliver the solution (LA, external party or both)?</i>	This will need to be delivered mainly by business (who rely on large volumes of delivery)	This solution is likely to be delivered between both CCC and businesses.	CCC can act as programme manager. However, there will be reliance on Network Rail, Freight Operating Companies, road hauliers and technical consultants and contractors to design and deliver the consolidation centres.
		<i>Who will be the lead organisation for the delivery of this option?</i>	CCC can act as programme manager and implement policy change.	Lead organisation is likely to be Coventry to co-ordinate and manage	CCC can act as programme manager and implement policy change.
		<i>Are there capable contractors available to deliver this option?</i>	Yes, there are many delivery companies, hauliers and retailers who can work together to implement. However, co-operation will be difficult to implement.	Yes there are already some businesses using low emission LGVs for delivery.	Yes, there are many delivery companies, hauliers and retailers who can work together to implement. The transport of freight by rail is well developed in the UK.
		<i>Is there a sufficiently well-developed market to support the efficient delivery of this option?</i>	Yes, there are many delivery companies, hauliers and retailers who can work together to implement. However, co-operation will be difficult to implement.	Low emission LGVs are already in use in Coventry.	Yes, there are many delivery companies, hauliers and retailers who can work together to implement. The transport of freight by rail is well developed in the UK.
		Overall supply side and capability score	0	2	1
(D) Is this option affordable both in the short and long run?		<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>	It is relatively cheap option to implement in the short run, however, there may be large negative impacts on business in the long run.	This is a relatively cheap option as the initial cost of LGVs can be outweighed against lower operating costs during the operating life of the bus.	Freight consolidation centres will be expensive to implement and restricting delivery times may impact on business in the long run. However, transporting bulk freight by rail is cheaper in the long run.
		<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>	There may be large negative impacts on business in the long run due to lower business as customers may not get products as early as planned.	Lower operating and maintenance costs as low emission LGVs do not require as much petrol/diesel.	Restricting delivery times may impact on business in the long run. Transporting bulk freight by rail is cheaper in the long run.
		<i>How will this option be funded (public, private or a mix of funding sources)?</i>	There could be some funding for business to co-operate, however, private business are likely to foot the bill.	This option is likely to be funded by some public sector funding with private funding from businesses.	Both public and private funding will be required as it is an expensive option.
		<i>Are there any other potential funding sources, for this option?</i>		Businesses funding the LGVs	
		Overall affordability score	1	2	-1
(E) How achievable is this option given the existing market		<i>Can this option be delivered at a local scale?</i>	Co-operation between business may be difficult to obtain as they are in the business of making a profit by providing a good service/product.	Yes, this is already underway in Coventry	Co-operation between business may be difficult to obtain as they are in the business of making a profit by providing a good service/product. Getting delivery slots by rail from exact origin to destination points are difficult due to fixed rail infrastructure.
		<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>		Potential that there are not enough resources in the market place if there are a significant number of orders around the rest of the UK	

limitations and constraints?	<i>Is this option based on proven/existing technology?</i>	Certain places around the world do take a more integrated approach, however, a lot of co-operation and government intervention is required.	Yes, this is proven technology and in use throughout the UK	Certain places around the world do take a more integrated approach, however, a lot of co-operation and government intervention is required.
	<i>Overall achievability score</i>	-1	1	-1
(F) What is the overall distributional impact of this option?	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>		Neutral	
	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>	Restriction of delivery times may displace the air quality issue during another time of the day.	No, as it reduces the amount of emissions from buses.	Restriction of delivery times may displace the air quality issue during another time of the day. However, using rail freight will help reduce overall NO ₂ emissions.
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>		N/A	
	<i>Does this option have an impact on health inequalities?</i>		Yes, many of the diesel LGVs operate in more deprived parts of Coventry. Hence, low emission buses are likely to improve health inequalities in these parts of Coventry.	
	<i>Overall distributional impact score</i>	0	1	0
(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>	Both benefits and costs in the short run are minimal. However, the impact business in the long run is likely to be negative.	The benefits of this option are likely to be extensive due to improved health and lower vehicle operating costs. The initial capital costs are like to be high, but can be funded by businesses	The costs of developing consolidation centres are likely to large. However, the impact business in the long run is likely to be negative.
	<i>Has the option been designed effectively while maximising benefits?</i>			
	<i>Overall value for money score</i>	-1	1	-1
	<i>Overall Score</i>	-2.00	10.00	-2.00

		P1	P2	P3	P27	P4	P5
CRITICAL SUCCESS FACTORS	CONSIDERATIONS	19 - Improve cycle security	11 - Improve facilities along Coventry Canal to increase canal side walking and cycling activity. 28 - Improve cycling and pedestrian facilities 46 - Improve and increase green space 48 - Improve wayfinding for walking	42 - Develop a strategic cycle network 43 - Implement cycle superhighways within Coventry	28 - Improve cycling and pedestrian facilities 42 - Develop a strategic cycle network 19 - Improve cycle security 20 - Increase cycle hire	20 - Increase cycle hire	6 - Promote and incentivise the use of electric cycles for long distance commuting.
		Encourages walking and cycling mode share, hence, reducing vehicle trips	Encourages walking and cycling mode share, hence, reducing vehicle trips	Encourages walking and cycling mode share, hence, reducing vehicle trips	Encourages walking and cycling mode share, hence, reducing vehicle trips	Increasing access to cycles, hence increasing mode share.	Encourages walking and cycling mode share, hence, reducing vehicle trips
(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³?</i>	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Hence, trying to increase the declining cycling culture via a minor intervention will be difficult. Hence, the positive impact on NO ₂ emissions will be minimal.	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Hence, trying to increase the declining cycling culture via a minor intervention will be difficult. Hence, the positive impact on NO ₂ emissions will be minimal.	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Trying to increase the declining cycling culture via this major intervention will be more likely than a minor intervention. Success of such schemes can be seen in London.	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Trying to increase the cycling culture via this combined intervention is likely in the shortest possible time due to the broad range of cycling measures. Success of such schemes can be seen in London.	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Trying to increase the declining cycling culture via this major intervention will be more likely than a minor intervention. Success of such schemes can be seen in London.	As a percentage of all the commuter movements in Coventry the cycling mode share in 2011 Census data is only 2.84%. This is a decline from the 1981 percentage of 4.63%. Hence, trying to increase the declining cycling culture via a minor intervention will be difficult. Hence, the positive impact on NO ₂ emissions will be minimal. Furthermore, although we are seeing an increase the length of distances travelled by cyclists, the majority of trips are shorter trips i.e. commuting movements within Coventry.

	<i>In which year is compliance achieved?</i>	Unlikely to achieve compliance in the shortest possible time.	Unlikely to achieve compliance in the shortest possible time.	Has the potential to achieve compliance, however, this will be difficult in the shortest possible time as implementing cycling superhighways takes a long time. This can be observed from places like London. However, getting a high mode share is difficult.	Has the potential to achieve compliance in the shortest possible time as a combined option of various cycling and walking measures.	Has the potential to achieve compliance. However, getting the large mode shift from car to cycling is difficult.	Unlikely to achieve compliance in the shortest possible time.
	<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³, if combined with another option? [Answer to this question should not be used for the pass/fail scoring]</i>	Fails on its own, but can be combined with travel planning measures to make it more effective or possibly as one larger cycling package	No 28. fails on its own, but can be combined with travel planning measures to make it more effective or possibly as one larger cycling package	Fails on its own, but can be combined with travel planning measures to make it more effective or possibly as one larger cycling package			
	<i>Is the option compliant?</i>	FAIL	FAIL	FAIL	PASS	FAIL	FAIL
(A) Does this option improve the overall economy and job prospects, within Coventry?	<i>Does this option improve the overall economy within Coventry?</i>	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	<i>Does this option improve job prospects and create jobs within Coventry?</i>	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work.	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work.	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work.	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work.	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work. The cycle hire scheme will need to manage and maintain, therefore creating some jobs.	Some deprived members of the community may take up employment as cycling may their only affordable method of travel to work.
	<i>Overall economy</i>	0	0	0	0	1	0
(B) How does this option align with and support the strategic and wider air quality fit?	<i>Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community</i>	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.	Improves accessibility to jobs for a wider community.
	<i>How does this option affect overall exposure and to what extent does it reduce overall exposure?</i>	Can reduce overall exposure, although this is likely to minimal as the increase in cycling will be small.	Can reduce overall exposure, although this is likely to minimal as the increase in cycling will be small.	Can reduce overall exposure.	Can reduce overall exposure.	Can reduce overall exposure.	Can reduce overall exposure.

	<i>Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?</i>	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots. Increased physical activity will be a health benefit to the community.
	<i>Overall strategic and wider air quality fit</i>	1	1	2	2	2	1
(C) Is there a well developed supply side, who have the capacity and capability to deliver this option?	<i>Who will deliver the solution (LA, external party or both)?</i>	CCC with contractors and engineering consultants to deliver the required infrastructure	CCC with contractors and engineering consultants to deliver the required infrastructure. CCC already have a well-developed cycling infrastructure plan, with costs, to deliver.	CCC with contractors and engineering consultants to deliver the required infrastructure. CCC already have a well-developed cycling infrastructure plan, with costs, to deliver.	CCC with contractors and engineering consultants to deliver the required infrastructure. CCC already have a well-developed cycling infrastructure plan, with costs, to deliver.	CCC with contractors and engineering consultants to deliver the required infrastructure and new cycles	CCC.
	<i>Who will be the lead organisation for the delivery of this option?</i>	CCC	CCC	CCC	CCC	CCC	CCC
	<i>Are there capable contractors available to deliver this option?</i>	Yes	Yes	Yes	Yes	Yes	Yes
	<i>Is there a sufficiently well-developed market to support the efficient delivery of this option?</i>	Yes, as best practices from places like Cambridge can be used.	Yes, as best practices from places like Cambridge can be used.	Yes, as best practices from places like London can be used.	Yes, as best practices from places like London can be used.	Yes, as best practices from places like London can be used.	Yes, plenty of cycle retailers who sell electric cycles.
	<i>Overall supply side and capability score</i>	1	1	1	1	1	2
(D) Is this option affordable both in the short and long run?	<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>	This option is likely to be expensive in the short run due to the required infrastructure changes and equipment required (to provide free of charge to cyclists)	This option is likely to be expensive in the short run due to the required infrastructure changes.	This option is likely to be very expensive in the short run due to the required infrastructure changes.	This option is likely to be expensive in the short run due to the required infrastructure changes.	This option is likely to be very expensive in the short run due to the required infrastructure changes.	This option is likely to be expensive in the short run as electric cycles may need to be funded or at least part funded.
	<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>	Additional cycling infrastructure will incur additional maintenance costs.	Additional cycling infrastructure will incur additional maintenance costs.	Additional cycling infrastructure will incur additional maintenance costs.	Additional cycling infrastructure will incur additional maintenance costs.	Additional cycling infrastructure will incur additional maintenance costs, but can be managed from the revenue generated through the cycle hire.	
	<i>How will this option be funded (public, private or a mix of funding sources)?</i>	Public sector	Public sector	Public sector	Public sector	Public sector	Public sector

	<i>Are there any other potential funding sources, for this option?</i>	Potential sources will need to be investigated.	Potential sources will need to be investigated.	Potential sources will need to be investigated.	Potential sources will need to be investigated.	Potential sources will need to be investigated.	Potential sources will need to be investigated.
	Overall affordability score	-1	-1	-2	-1	1	-1
(E) How achievable is this option given the existing market limitations and constraints?	<i>Can this option be delivered at a local scale?</i>	Yes, as the new infrastructure and equipment is available easily.	Yes, as the new infrastructure and equipment is available easily.	Yes, as the new infrastructure and equipment is available easily.	Yes, as the new infrastructure and equipment is available easily. CCC already have a well-developed cycling infrastructure plan, with costs, to deliver.	Yes, as the new infrastructure and equipment is available easily. A cycle hire scheme is in development in Coventry and due to open in Summer 2018 and this scheme can be expanded upon.	Yes, plenty of cycle retailers who sell electric cycles.
	<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>						
	<i>Is this option based on proven/existing technology?</i>	Yes, this is proven equipment and in use throughout the UK	Yes, this is proven equipment and in use throughout the UK	Yes, this is proven equipment and in use throughout the UK	Yes, this is proven equipment and in use throughout the UK	Yes, this is proven equipment and in use in London and will shortly be in use in Coventry.	
	Overall achievability score	1	1	1	1	2	1
(F) What is the overall distributional Impact of this option?	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>	Will make certain jobs and locations accessible to a wider community.	Will make certain jobs and locations accessible to a wider community.	Will make certain jobs and locations accessible to a wider community.	Will make certain jobs and locations accessible to a wider community.	Will make certain jobs and locations accessible to a wider community.	Will make certain jobs and locations accessible to a wider community.
	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>	No, it reduces overall emissions.	No, it reduces overall emissions.	No, it reduces overall emissions.	No, it reduces overall emissions.	No, it reduces overall emissions.	No, it reduces overall emissions.
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>						
	<i>Does this option have an impact on health inequalities?</i>	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)
	Overall distributional impact score	1	1	1	1	1	1

(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>	This option is likely to be expensive in the short run due to the required infrastructure changes and equipment required (to provide free of charge to cyclists). Furthermore, the positive impact of this option is likely to be minimal.	This option is likely to be expensive in the short run due to the required infrastructure changes. Furthermore, the positive impact of this option is likely to be minimal.	This option is likely to be expensive in the short run due to the required infrastructure changes.	This option is likely to be expensive in the short run due to the required infrastructure changes. However, it is likely to achieve the mode shift from car trips to reduce NO ₂ emissions as well as improve physical health.	This option is likely to be expensive in the short run due to the required infrastructure and cycles. However, revenue generated through the cycle hire could be lucrative, making it profitable.	This option is likely to be expensive in the short run due to the funding required of the cycles. Furthermore, the positive impact of this option is likely to be minimal.
	<i>Has the option been designed effectively while maximising benefits?</i>						
	<i>Overall value for money score</i>	-2	-2	-1	1	1	-2
	Overall Score	1.00	1.00	2.00	5.00	9.00	2.00

		P8	P9	P10	P11
CRITICAL SUCCESS FACTORS	CONSIDERATIONS	1 - Develop and implement priority lanes	3 - Improve public transport connectivity to the Ricoh Arena 4 - A more frequent and better-quality bus service along key routes.	9 - Implement measures to significantly reduce traffic on certain roads (routes), including infrastructure changes. 21 - Capture and use data to influence route choice.	29 - Implement more Park and Ride 47 - Increase parking charges
		Targets car trips along hotspots	Reduces car trips along hotspots by improving bus transport	Reduces car trips along hotspots by removing traffic	Targets car trips along hotspots

(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ ?	This option can impact positively as some people will start sharing cars, therefore, reducing car trips along hotspots. However, many may choose a different route and displace the problem elsewhere. Bus operators and private car owners are likely to start using LEV to use the priority lanes and improve journey times.	Rugby team Wasps play their 12 home games at the Ricoh with an average attendance of 19,530 and League One football team Coventry City play their 23 home games with an average attendance of 9,118. Majority will travel by car as the train service to the Ricoh is not extensive. However, this is proving to be difficult at the moment as the line is diesel only and there is a shortage of available diesel rolling stock in the market. The line is due to be electrified as part of the electric spine scheme (which is experiencing delays at the moment due to lack of funding). The 2011 Census data showed that a majority of the commuter movements in Coventry (approx. 55%) is by car and only 11% is by bus, minibus or coach. Hence, improvements to reduce car trips and increase bus trips can have significant impact.	Although, this is likely to reduce issues at certain times in the hotspot areas it will only displace the issue elsewhere.	This option can impact positively as some people will start using the park and ride, therefore, reducing car trips along hotspots.
	In which year is compliance achieved?	This option is unlikely to achieve NO ₂ emission targets in the shortest possible time as planning and implement priority in the issue areas will be difficult as these routes are heavily constrained physically.	Although, we are unlikely to increase rail service to the Ricoh Arena in the shortest possible time, it will be possible to make improvements to bus service to reduce car trips and increase mode share.	Making certain routes traffic free will be difficult to implement in the shortest possible time. This may be the only option on Holyhead Road.	This option is unlikely to achieve the required reductions in NO ₂ emissions in the shortest possible time as the current availability of park and ride facility is minimal and the potential to grow this is minimal. Increasing parking charges in the timeframe, politically, would be difficult and the potential impact on the leisure offer.
	Is this option likely to reduce the annual mean NO ₂ concentration levels below 40µg/m ³ , if combined with another option? [Answer to this question should not be used for the pass/fail scoring]			This may be the only option on Holyhead Road.	
	Is the option compliant?	FAIL	PASS	PASS	FAIL
(A) Does this option improve the overall economy and job prospects, within Coventry?	Does this option improve the overall economy within Coventry?	Unlikely to improve the economy as many users of the road are likely to experience longer journey time due to reduced road space for a majority. Although, who are able to use the priority lanes will see improved journey times.	Yes, improving public transport frequency can allow more people to access jobs in Coventry, which they were not able to otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.	Unlikely to improve the economy as many users of the road are likely to experience longer journey time due to the restrictions and re-routing.	
	Does this option improve job prospects and create jobs within Coventry?	Neutral		Neutral	Yes, implementing park and ride can allow more people to access jobs in Coventry, which they were not able to otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.
	Overall economy	-1	1	-1	1

(B) How does this option align with and support the strategic and wider air quality fit?	Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community	Developing priority lanes can seen as innovative by other local authorities.	Improves accessibility to jobs for a wider community.	Implementing traffic free routes and using data and technology can be seen as innovative by other local authorities. Can improve safety in the traffic roads but issues elsewhere.	Improves accessibility to jobs for a wider community. Developing park and ride can be seen as innovative by other local authorities.
	How does this option affect overall exposure and to what extent does it reduce overall exposure?	Although, this option may reduce overall emission slightly due to increased car sharing and uptake of LEV and travel on public transport etc. It is more likely to displace the issue elsewhere (as many car users will re-route) and increased congestion due to reduced road space	This can significantly impact overall exposure, in a positive way, due to the large number of existing car trips along the hotspots.	This option is more likely to displace the issue elsewhere (as many car users will re-route) and increased congestion due to reduced road space for use at certain times.	This can significantly impact overall exposure, in a positive way, due to the large number of existing car trips along the hotspots.
	Does it improve health and wellbeing of residents and visitors, by reducing NO ₂ emissions?	Yes, slightly in hotspot areas. But can make it worse elsewhere due to displacement.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these car trips is likely to alleviate the pressure on some the hotspots.	Yes, slightly in hotspot areas. But can make it worse elsewhere due to displacement.	Yes, reducing NO ₂ exposure is beneficial to health and reducing these commuter movements is likely to alleviate the pressure on some the hotspots.
	Overall strategic and wider air quality fit	-1	2	-1	1
(C) Is there a well developed supply side, who have the capacity and capability to deliver this option?	Who will deliver the solution (LA, external party or both)?	CCC with contractors and engineering consultants delivery the required infrastructure	CCC with co-operation from bus operators.	CCC with contractors and engineering consultants delivery the required infrastructure	CCC with contractors and engineering consultants delivery the required infrastructure. Liaison with bus operators and car park owners will be required.
	Who will be the lead organisation for the delivery of this option?	CCC	CCC	CCC	CCC
	Are there capable contractors available to deliver this option?	Yes	Yes, as not much new infrastructure is required. Many of the changes required include timetabling changes etc.	Yes	Yes
	Is there a sufficiently well developed market to support the efficient delivery of this option?	Yes, currently it is in practice in other cities.	Yes	Yes, as best practices from places like Barcelona can be used.	Yes, as best practices from other places across the UK such as Cambridge. It is already in place in Coventry.
	Overall supply side and capability score	1	1	1	1
(D) Is this option affordable both in	How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.	This option is likely to be relatively cheap.	This is relatively cheap option as no new infrastructure is required, but additional LEV buses will be required.	This is relatively cheap option as no new infrastructure is required, but funding for data capture and app development will be required.	This option is likely to be expensive in the short run due to the required infrastructure to implement park and ride.
	What is the affordability of this option in the long run taking account of operating and maintenance costs?	Additional operating and maintenance costs is likely to be minimal due to some new road infrastructure.	Long run operating costs can be met by additional public transport revenue.	Additional operating and maintenance costs is likely to be minimal due to some new road infrastructure.	Long run operating costs can be met by additional public transport revenue.

the short and long run?			Fewer car trips can result in less maintenance on the road network.		Fewer car trips can result in less maintenance on the road network.
	How will this option be funded (public, private or a mix of funding sources)?	Public funding	Public funding to implement the changes with revenue to cover longer term operating costs.	Public funding	Public funding to implement the changes with revenue to cover longer term operating costs.
	Are there any other potential funding sources, for this option?	Unlikely		Unlikely	Bus operators can match fund.
	Overall affordability score	1	1	1	1
(E) How achievable is this option given the existing market limitations and constraints?	Can this option be delivered at a local scale?	Unlikely due to the lack of road space and constrained infrastructure and the political will.	Yes, but will require liaison with bus and train operators and Network Rail.	Unlikely due to the lack of road space and constrained infrastructure.	Not likely to be achievable in the required timescales due to the lack of potential for park and ride growth and political support for parking charge increases.
	Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?		Running additional services on the rail network may be restricted due to lack diesel trains in the marketplace.		
	Is this option based on proven/existing technology?	Yes, currently it is in practice in other cities.	N/A	Yes, currently it is in practice in Barcelona.	Yes, currently it is in practice across the UK.
	Overall achievability score	-2	1	-2	-2
(F) What is the overall distributional Impact of this option?	Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?	People who are unable to car share due to their origin/destination points or buy LEV may experience journey times. However, public transport may become better as a result.	Will make certain jobs and locations accessible to a wider community (specifically the deprived as public transport is cheaper than private car)		Will make certain jobs and locations accessible to a wider community.
	Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?	Very likely to displace the air quality elsewhere.	No, it reduces overall emissions.	Very likely to displace the air quality elsewhere. (poorer areas)	No, it reduces overall emissions.
	Is there a potential to insure some groups against the detrimental impacts of the option?				
	Does this option have an impact on health inequalities?	May improve health inequalities in hotspot areas, but will impact on health inequalities, negatively, elsewhere due to displacement.	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)	May improve health inequalities in hotspot areas, but will impact on health inequalities, negatively, elsewhere due to displacement.	Yes, can improve due to fewer car trips in the hotspots areas (which are more deprived)
	Overall distributional impact score	0	2	-2	2

(G) Does this option provide value for money	Do the likely benefits of this option exceed the costs?	Relatively cheap to implement and the benefits may not be as high. Furthermore, many are likely to experience increased journey times, hence negatively impacting the economy.	Cheap solution to implement and bus revenue will be generated.	Cheap solution to implement but the benefits are likely to be minimal. It could raise issues elsewhere.	Costs to implement is relatively cheap and generates revenue. Also need for centre city centre parking may not be required any longer. However, potential impact on the leisure offer is likely to be negative.
	Has the option been designed effectively while maximising benefits?				
	Overall value for money score	-2	2	-1	-1
	Overall Score	-4.00	10.00	-5.00	3.00

		P6	P7	P14	P15	P18
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CRITICAL SUCCESS FACTORS	CONSIDERATIONS	27 - MaaS (Mobility as a Service) 35 - Integrated PT ticketing and cross border ticketing	12 - Enhance the CCC marketing and campaign strategy. 22 - Public display of air quality data, issues and impacts.	38 - Work with employers to improve their travel plans 39 - Develop and provide a mobile application to improve travel planning (early MaaS) 45 - Provide driver behaviour training 17 - Promote and increase the use of car clubs and car hire schemes 7 - Implement measures to incentivise behaviour change 18 - Promote and implement measures to increase car sharing 15 - Implement measures to increase office sharing to increase car sharing 48 - Improve wayfinding for walking	40 - Work with schools to improve their travel plans 45 - Provide driver behaviour training 17 - Promote and increase the use of car clubs and car hire schemes 7 - Implement measures to incentivise behaviour change	8 - Take a more strategic approach to road improvements 37 - Install and update traffic control systems using more intelligent programming 50 - Implement better traffic management measures at issue roads (routes)
		Increase public transport patronage	Marketing and campaigning	Targets driver behaviour for business	Targets driver behaviour for schools	Targets journey efficiency
(PRIMARY) Compliance (Meeting the NO ₂ Levels in the shortest possible time)	<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³?</i>	This option can impact positively as the option is likely to increase public transport patronage and reduce mode share from the car.	This option is likely to have a positive impact; however, the impact is likely to be minimal as soft measures rely upon behaviour change.	This package is made up of a number of ideas targeting behaviour change and increasing more sustainable transport modes. As a package this is likely to be effective in reducing NO ₂ emissions by targeting business activity and commuters.	This package is made up of a number of ideas targeting behaviour change and increasing more sustainable transport modes. As a package this is likely to be effective in reducing NO ₂ emissions by targeting travel to and from schools.	Using SCOOT traffic systems is part of the early measures work and it is anticipated that this type of technology can reduce NO ₂ emissions, which result from inefficient journeys. Take a more strategic road works can result in more efficient journeys throughout and fewer construction traffic.
	<i>In which year is compliance achieved?</i>	However, this option is unlikely to achieve NO ₂ emission targets in the shortest possible time as planning and implementing MaaS and more integrating ticketing is gradual and requires large investment into infrastructure and technology.	For this option to work, co-operation and behaviour change from the community is required. However, this is likely to be slow and minimal.	As the package includes a number of options, it is likely to have sufficient impact to reduce the NO ₂ emissions below the threshold levels.	As the package includes a number of options, it is likely to have sufficient impact to reduce the NO ₂ emissions below the threshold levels. However, the potential is smaller	

					than it is for commuter and business activity.	
	<i>Is this option likely to reduce the annual mean NO₂ concentration levels below 40µg/m³, if combined with another option? [Answer to this question should not be used for the pass/fail scoring]</i>	Option No. 35 should be combined with P9. Combine Option No. 27 into Option No.39	Option No. 12 is a supporting strategy for all successful packages.			
	<i>Is the option compliant?</i>	FAIL	FAIL	PASS	PASS	PASS
(A) Does this option improve the overall economy and job prospects, within Coventry?	<i>Does this option improve the overall economy within Coventry?</i>	Yes, improving public transport connectivity can allow more people to access jobs in Coventry, which they were not able to, otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.	Neutral	Yes, promoting and incentivising sustainable transport modes and providing additional resources and training to the community can allow more people to access jobs in Coventry, which they were not able to, otherwise. Hence, improving the economy by attracting a higher and more skilled labour pool.	Yes, promoting and incentivising sustainable transport modes and providing additional resources and training to the community can allow more people to access jobs and better education in Coventry, which they were not able to, otherwise.	This option has the potential to reduce journey times and congestion. This will impact positively to the local economy as people can be more productive.
	<i>Does this option improve job prospects and create jobs within Coventry?</i>		Neutral			
	<i>Overall economy</i>	1	0	1	1	1
(B) How does this option align with and support the strategic and wider air quality fit?	<i>Does this option fit and or compliment other existing, Council wide, planned policies, particularly within the Local Plan? Including: - public realm, accessibility, culture, innovation and safer community</i>	Implementing MaaS and integrated ticketing throughout Coventry, will portray Coventry as an innovative city and give a clean and green image of the city. It will improve accessibly for some members of the community.	Can use the marketing and campaigning to send out strong messages about policies and improve the image of Coventry.	Implementing all of these measures, will portray Coventry as an innovative city and give a clean and green image of the city. It will improve accessibly for some members of the community.	Implementing all of these measures, will portray Coventry as an innovative city and give a clean and green image of the city. It will improve accessibly for some members of the community.	Implementing this option, will portray Coventry as an innovative city and give a clean and green image of the city.
	<i>How does this option affect overall exposure and to what extent does it reduce overall exposure?</i>	This option will reduce overall exposure, if there is an increase in mode share for public transport.	Can have a small positive impact.	This option will reduce overall exposure, if there is an decrease in car trips.	This option will reduce overall exposure, if there is an decrease in car trips.	This option will reduce overall exposure, due to more efficient journeys.
	<i>Does it improve health and wellbeing of residents and visitors, by reducing NO₂ emissions?</i>	Yes, it is likely to reduce NO ₂ emissions, significantly	Can have a small positive impact.	Yes, it is likely to reduce NO ₂ emissions, significantly	Yes, it is likely to reduce NO ₂ emissions, significantly	Yes, it is likely to reduce NO ₂ emissions.
	<i>Overall strategic and wider air quality fit</i>	2	1	1	1	1

(C) Is there a well-developed supply side, who have the capacity and capability to deliver this option?	<i>Who will deliver the solution (LA, external party or both)?</i>	CCC with co-operation from bus operators, train operators, other local authorities and Network Rail.	CCC with the help of marketing organisations.	CCC in liaison with local business and possibly DVLA for driver training.	CCC in liaison with schools and possibly DVLA for driver training.	CCC with contractors and engineering consultants delivery the required traffic infrastructure
	<i>Who will be the lead organisation for the delivery of this option?</i>	CCC	CCC	CCC	CCC	CCC
	<i>Are there capable contractors available to deliver this option?</i>	MaaS is in research and trial phase at the moment and is a while before it becomes common practice.	Not much additional infrastructure is required and currently Coventry already collect air quality data.	Yes	Yes	Yes
	<i>Is there a sufficiently well-developed market to support the efficient delivery of this option?</i>	Not yet to deliver MaaS	N/A	Yes, this type of campaigning and travel planning activity is currently undertaken by some business in Coventry.	Yes, this type of campaigning and travel planning activity is currently undertaken by some business in Coventry.	Yes, currently SCOOT is in practice in other cities and can be delivered effectively.
	<i>Overall supply side and capability score</i>	-2	1	1	1	1
(D) Is this option affordable both in the short and long run?	<i>How affordable is this option in the short run taking account of capital costs? I.e. JAQU would prefer cheaper options over more expensive solutions.</i>	This will require large scale infrastructure and technology investment.	Well-developed and effective marketing and campaigning can be costly.	Relatively cheap option to implement as it is policy and behaviour change, largely. However, additional capital will be required to provide driver training and develop travel planning module application.	Relatively cheap option to implement as it is policy and behaviour change, largely. However, additional capital will be required to provide driver training.	This option is likely to be expensive in the short run due to the required infrastructure and traffic equipment.
	<i>What is the affordability of this option in the long run taking account of operating and maintenance costs?</i>	Operation and maintenance costs will increase to manage the infrastructure and the technology. However, additional revenue from increased public transport usage may compensate.				Long run additional operating costs and maintenance costs due to the additional equipment.
	<i>How will this option be funded (public, private or a mix of funding sources)?</i>	This will require public funding with some possibility of funding from Network Rail, other local authorities and bus and train operators.	Public sector	Public sector funding with possible support from local business.	Public sector funding with possible support from local schools.	Public funding
	<i>Are there any other potential funding sources, for this option?</i>					
	<i>Overall affordability score</i>	-2	-1	1	1	-1
(E) How achievable is this option given the existing market	<i>Can this option be delivered at a local scale?</i>	This requires co-operation between local authorities, bus and train operators, Network Rail and possibly national Government to be delivered effectively.	Can largely be delivered by CCC with possible assistance from marketing agencies.	Yes, with the help of local business.	Yes, with the help of local schools.	Yes, with the help of technical consultants and contractors to deliver the infrastructure
	<i>Given the market limitations, are there adequate resources available to manage and implement such a solution successfully?</i>	Not yet to deliver MaaS		Yes, sufficient level of expertise exist within CCC and local businesses.	Yes, sufficient level of expertise exist within CCC and local schools.	This type of infrastructure is common and readily available.

limitations and constraints?	<i>Is this option based on proven/existing technology?</i>	Integrating ticket is common place, such as the London Oyster card. However, MaaS is in research and development phase.		Yes, good travel planning, driver training and behaviour change campaigns are common practice	Yes, good travel planning, driver training and behaviour change campaigns are common practice	
	Overall achievability score	-2	1	1	1	1
(F) What is the overall distributional impact of this option?	<i>Does this option significantly affect one or more of particular groups of stakeholders, particularly vulnerable groups?</i>	Will make certain jobs and locations accessible to a wider community (specifically the deprived as public transport is cheaper than private car)				
	<i>Does the option displace the air quality issues elsewhere, and particularly impact deprived areas and communities?</i>	No, it reduces overall emissions.		No, it reduces overall emissions.	No, it reduces overall emissions.	No, it reduces overall emissions.
	<i>Is there a potential to insure some groups against the detrimental impacts of the option?</i>					
	<i>Does this option have an impact on health inequalities?</i>	Yes, can improve due to fewer car trips.	Yes, can improve due to fewer car trips along hotspot areas as well as behaviour change	Yes, can improve due to fewer car trips.	Yes, can improve due to fewer car trips.	Yes, will improve due to lower emissions overall
	Overall distributional impact score	2	1	1	1	1
(G) Does this option provide value for money	<i>Do the likely benefits of this option exceed the costs?</i>	Costs to implement are high and uptake is likely to be slow.	The benefits of the scheme are likely to be minimal.	Relatively cheap option with potential for a good amount of benefits.	Relatively cheap option with potential for a good amount of benefits.	Although, the required infrastructure may be expensive, this option is likely to provide good value for money, due to reduced congestion and NO ₂ emissions.
	<i>Has the option been designed effectively while maximising benefits?</i>					
	Overall value for money score	-2	-2	2	1	2
Overall Score	-3.00	1.00	8.00	7.00	6.00	

Appendix G. Delivery Programme

Appendix H. Risk Register

Appendix I. Monitoring and Evaluation Plan



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