MAY 2020

NORTH STAFFORDSHIRE LOCAL AIR QUALITY PLAN

UNAPPROVED OUTLINE BUSINESS CASE

Executive Summary

Staffordshire County Council

NEWCASTLE UNDER LYME BOROUGH COUNCIL

City of Stoke-on-Trent

Table of contents

1 Executive Summary

1.1 Overview

This Executive Summary and supporting documents form an unapproved Outline Business Case (OBC) for the North Staffordshire Local Air Quality Plan (NSLAQP). It has been prepared on behalf of the three authorities, Stoke-on-Trent City Council (SoTCC), Newcastle-under-Lyme Borough Council (NuLBC) and Staffordshire County Council (SCC) for consideration by the Joint Air Quality Unit (JAQU) at the Department for Transport (DfT) and Department for Environment, Food and Rural Affairs (Defra).

It is submitted to JAQU as a politically unapproved document on 15 May 2020. The OBC is written in accordance with the requirements of a Ministerial Direction and subsequent correspondence from the Parliamentary Under Secretary of State. This sets out the requirement for SoTCC and NuLBC to identify measures that could bring forward compliance with NO_2 limits as soon as possible.

The structure of the business case, and the appraisal described in it, follows published guidance including HM Treasury Green Book – Central Government Guidance on Appraisal and Evaluation (2018).

The OBC explains why the scheme should receive support and provides a clear audit trail for the purposes of public accountability. The OBC is more than just a bid for financial support. It also explains how and why the councils have decided to put the scheme forward in its current form. It shows that the proposals are based on a realistic analysis of the current situation, a clear vision of how things should be in the future, a careful consideration of options, a robust appraisal of costs and benefits, and a clear plan for delivering the scheme.

It must be noted that the work undertaken is based on the appraisal of initial evidence that was completed by October 2019, before the onset of the current coronavirus pandemic. The implications of coronavirus on public health, the local economy and on people's attitudes to travel, is unknown and will remain uncertain for some months to come. These implications will need to be considered by the Government in determining the requirements for the next stage of this project.

1.2 Introduction

The three authorities are committed to working together to transform the urban area of North Staffordshire into a cleaner and healthier area.

In October 2018, SoTCC and NuLBC were issued a Ministerial Direction to produce a local air quality plan to address their respective nitrogen dioxide (NO_2) problems related to roadside traffic pollution. Given their proximity to one another and nature of the urban area, they were tasked with producing a joint plan.

As the highway authority for the Borough of Newcastle-under-Lyme, SCC has been assisting the authorities and together the three authorities have developed a plan to tackle NO_2 exceedances at the roadside – known as the North Staffordshire Local Air Quality Plan.

The Plan will help to protect and promote the health of the local population by improving air quality and reducing the impact of air pollution on the environment. In so doing, the local authorities are complying with the UK Air Quality Plan and bringing NO_2 concentrations within statutory limits in the shortest possible time.

1.3 Why is this plan needed?

It is widely recognised that air pollution poses the largest environmental public health risk in the UK, and it continues to threaten the lives of more vulnerable members of the population. In England, the annual number of deaths attributed to air pollution is roughly 25,000 and there is extensive evidence that details the correlation between poor air quality and increased prevalence of respiratory and cardiovascular diseases. The impacts of pollution usually surface in the long-term and the problems caused by it are experienced disproportionately by the elderly, infants and those with existing chronic ailments. The impacts are greater on those who reside, work or are educated in more deprived areas. Areas within North Staffordshire suffer deprivation[1], based on domains such as income, employment, education and health – this increases the need to address air pollution and health problems in this area.

Air pollution affects the health of people living, working and travelling in North Staffordshire. Pollutants such as nitrogen dioxide (NO_2) which is the harmful oxide of nitrogen (NO_X), and particulate matter ($PM_{2.5}$ and PM_{10}) that are not visible to the naked eye are found at dangerous levels in many urban areas and on busy roads. Road transport causes two-thirds of NO_X emissions and nearly 80% of PM emissions at the roadside. The main sources of road-based NO_X emissions are diesel vehicles with older vehicles typically more polluting than newer vehicles. Breathing in polluted air contributes to the equivalent of approximately 200 deaths a year in North Staffordshire.

Although air quality in the UK has improved significantly over recent decades, it is recognised that there is still plenty of room for improvement, whilst meeting the objective of supporting economic growth. This is especially important, given the correlation between poor air quality and health-related diseases. To deliver change, the problem needs to be targeted at source. However, action must be geographically relevant, ensuring that any interventions must align with the interests of local people, given that people are the main driver for improving air quality.

1.3.1 Ministerial Direction

In the air quality directive (2008/EC/50) the EU set two limit values for nitrogen dioxide (NO_2) for the protection of human health: the NO_2 hourly mean value may not exceed 200 micrograms per cubic metre (µg/m3) more than 18 times in a year and the NO_2 annual mean value may not exceed 40 micrograms per cubic metre ($\mu g/m^3$).

In December 2015, the UK Government published the plan for 'Tackling nitrogen dioxide in our towns and cities – UK overview document' naming the first wave of five cities, Birmingham, Leeds, Southampton, Nottingham and Derby, to implement Clean Air Zones and bring NO_2 to within the limit values.

In July 2017, the UK Government published the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations – An Overview,[2] which set out Government's plan to achieve a cleaner and healthier environment along with actions to lower NO_2 air pollution to levels that comply with established EU limits in the shortest possible time. As a result, the Government initially identified 28 local authorities with the worst NO_2 problems in the country and directed them to produce local air quality plans. These plans aim to detail how each authority will attempt to reduce its NO_2 concentrations to compliant levels in the shortest time.

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[1] Ministry of Housing, Communities & Local Government – The English Indices of Deprivation 2019

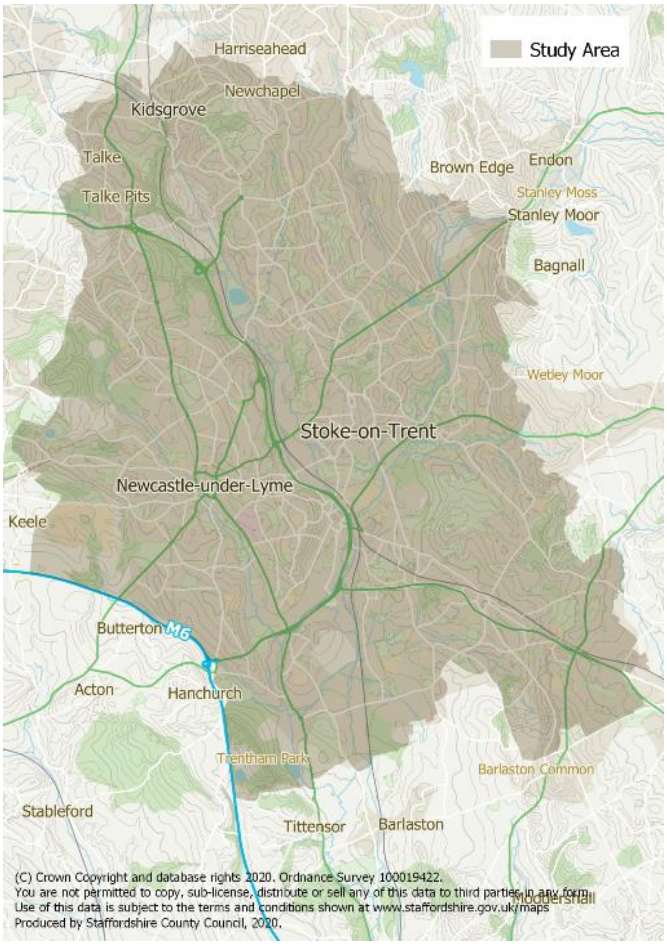
[2] UK plan for tackling nitrogen dioxide concentrations, Detailed plan, Defra, July 2017

In March 2018, the Government continued pursuing the Ministerial Direction to further advise more authorities to address their NO_2 issues. A further 33 local authorities were required to produce plans on potential pollution mitigation measures to be implemented in their areas.

In October 2018, another supplement to the NO_2 plan was issued in which a further eight local authorities were directed to produce a local air quality plan to address their respective NO_2 problems. These 'third wave' authorities included both Stoke-on-Trent and Newcastle-under-Lyme; owing to their proximity to one another, they were tasked with producing a joint plan pertaining to their pollution issues. SCC is assisting the authorities in its role as highway authority for the Borough of Newcastle-under-Lyme.

The October 2018 Ministerial Direction required the authorities to assess other areas of the city and borough where local modelling identified predicted exceedances in NO_2 concentrations, and to consider the displacement effects of any measures that may be implemented to tackle these exceedances. The study area is shown in Figure 1-1 and covers the central urban areas and the surrounding communities in both Newcastle-under-Lyme and Stoke-on-Trent. Together these areas form part of the North Staffordshire conurbation which is identified in the Midlands Connect Strategy as one of four Strategic Economic Hubs.

Figure 1-1: Study area



1.3.2 NO_2 exceedances

The Strategic Outline Case (SOC) was submitted in line with the requirements of the 2018 Direction in January 2019. The SOC set out the existing problems, the work to be undertaken to develop robust evidence and identified potential options to be explored.

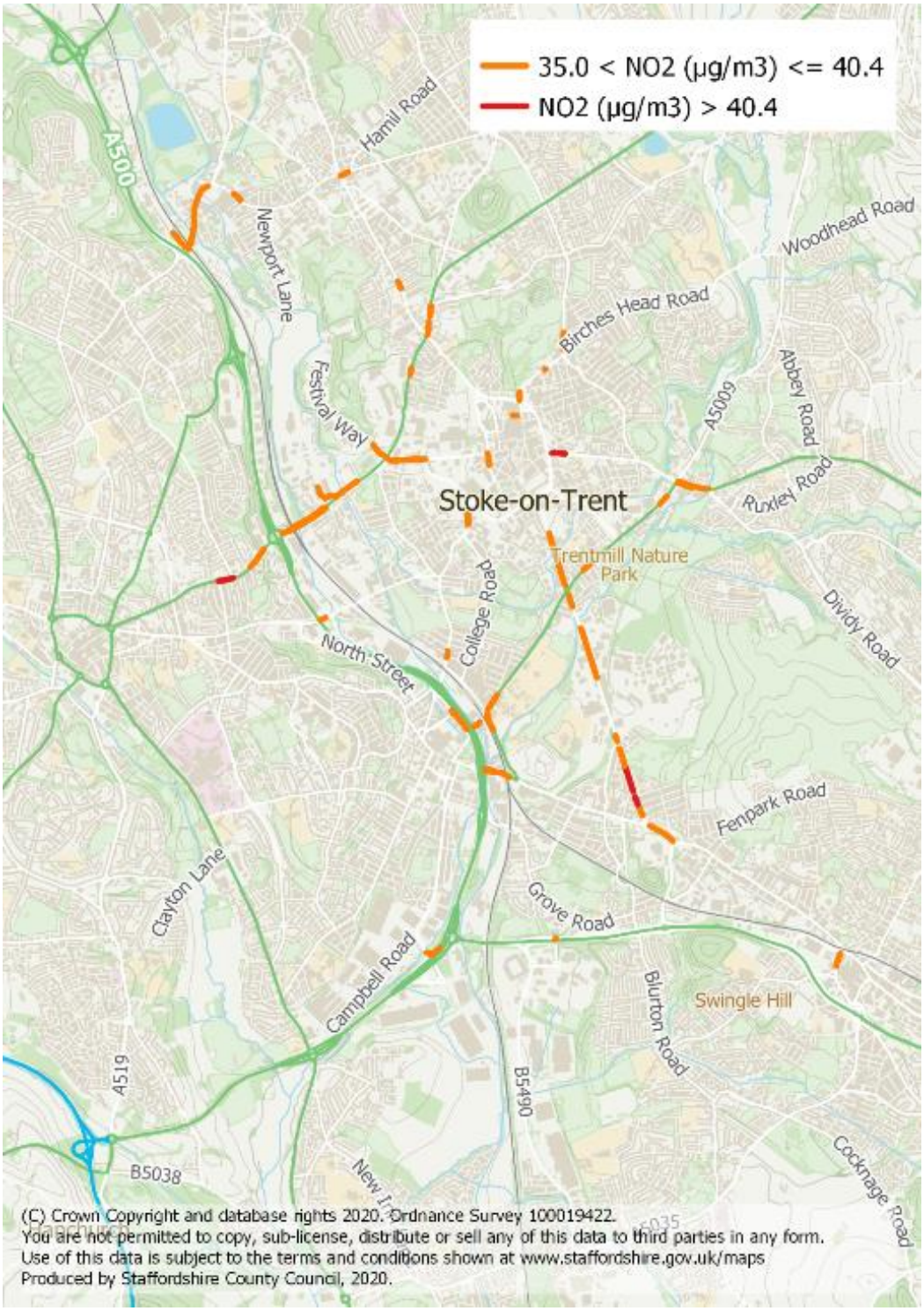
Following the SOC, work progressed to refine the evidence which culminated in the completion of the Initial Evidence Submission (IES) in October 2019. The suite of reports that form the IES conclude that in 2022, the study area will contain three links on the local road network where NO_2 concentrations are predicted to exceed the legal limits. The work undertaken also highlighted that within the study area there are sections of the Strategic Road Network (SRN) where NO_2 concentrations are predicted to exceed the legal limits. It is important to note that the SRN is outside the scope of this project.

The three predicted NO_2 exceedance locations on the local road network, based on the local model are shown in Figure 2 and comprise:

- The A53 (Etruria Road) between Victoria Street and Basford Park Road.
- The A5008 (Bucknall New Road) between Potteries Way and Lindop Street.
- The section of the A50 (Victoria Road) between Maud Street and Hitchman Street.

Figure 1-2 also shows road links which are within 5 ug/m^3 of the limit value, this is important as the NSLAQP cannot create additional exceedances, therefore it has been necessary to ensure no significant traffic displacement or increase in pollution levels on these roads.

Figure 1-2: NO_2 exceedance locations on local road network in 2022 from local modelling



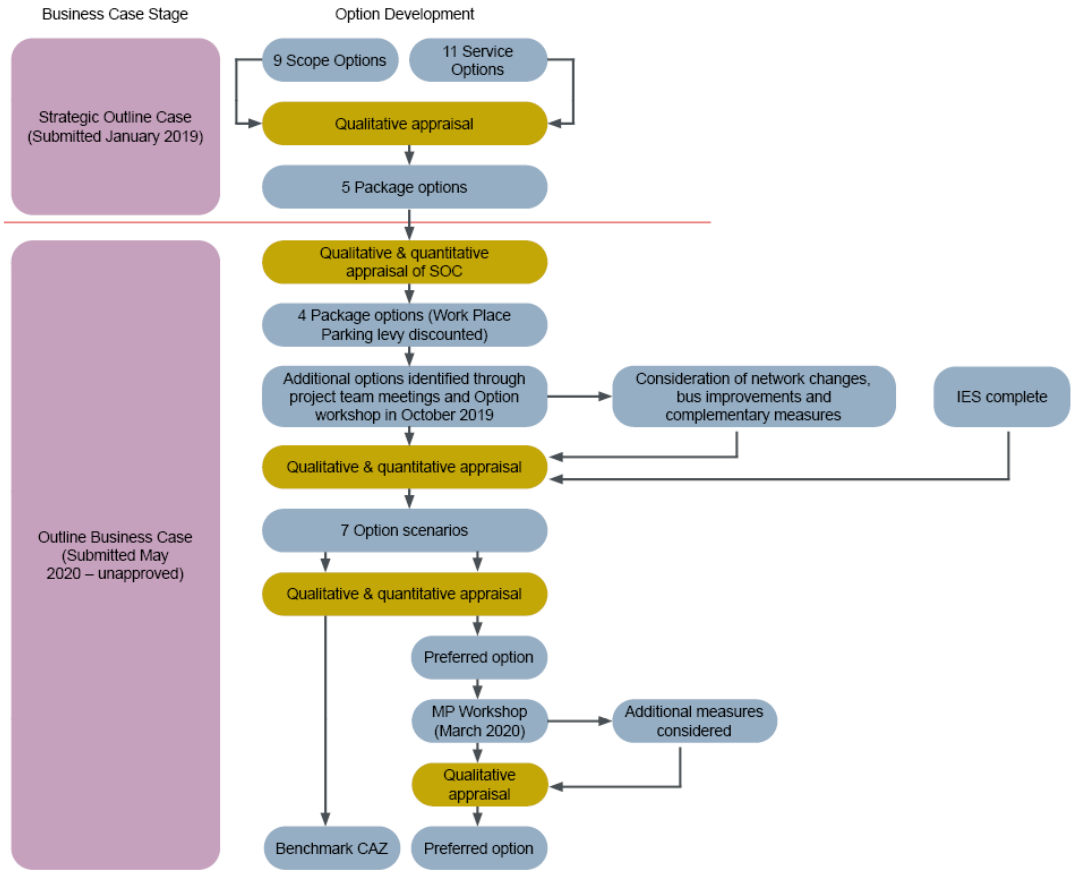
1.4 The proposal

By working together and with relevant consultants with expertise in transport and air quality assessments, SoTCC, NuLBC and SCC have sought to develop a package of measures that will reduce NO_2 concentrations at exceedance locations to below the EU Limit in the shortest time possible. In addition to achieving this, the Councils have sought to ensure the NSLAQP supports the wider strategic goals of the region to minimise any risk of unintended negative consequences.

This joint approach has been necessary because it is recognised that air pollution does not respect local authority boundaries and therefore a consistent and co-ordinated approach is required to maximise air quality benefits for all people living and working in North Staffordshire. By working together, the authorities can also help to ensure, as far as possible, alignment between the NSLAQP and wider authority strategies.

The identification of the Preferred Option has built on the work undertaken in the preparation of the SOC and has been supplemented by further option development and appraisal as summarised in Figure 1-3. This approach has involved additional option identification workshops, the qualitative and quantitative testing of options to ensure the best package has been selected to address the exceedance locations and promote ongoing improvements in air quality.

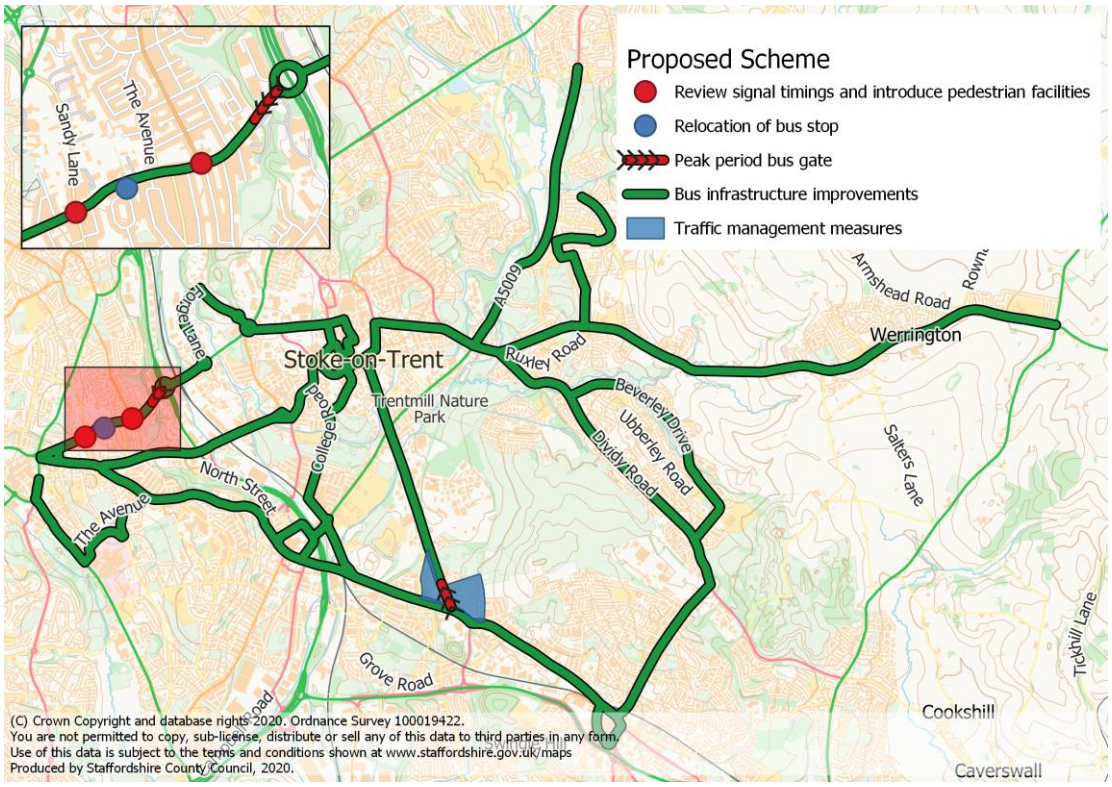
Figure 1-3: Summary of option appraisal



The outcome of this work has identified that the Preferred Option for the NSLAQP is not a CAZ (although a Benchmark CAZ D has been identified) but a range of transportation improvements. These improvements include traffic management measures, junction improvements, bus emission reductions and bus network enhancements. This option achieves compliance in the shortest possible time and helps to deliver wider objectives.

The NSLAQP is summarised in Figure 1-4 and comprises a package of transport and travel related proposals, described below:

Figure 1-4: Visual summary of the NSLAQP



1.4.1 A50 Victoria Road bus gate

A bus gate will be installed on the A50 Victoria Road exit of the King Street/City Road/Victoria Road junction. Traffic will be restricted to buses, cycle users and taxis between Monday and Friday from 7am to 10am and 4pm to 7pm. An Ultra-Low Emission Vehicle (ULEV) exemption, allowing ULEVs to drive through the bus gate will be assessed and if considered deliverable will be added to the scheme in the Full Business Case (FBC).

The splitter island will be widened and the kerbs re-aligned to provide a single lane bus gate on the exit to A50 Victoria Road. An ANPR camera will be located at the bus gate to monitor compliance and two rotating prism signs will be installed at the entrance to the bus gate. The prism signs will enable the display of multiple messages and will be blank when the bus gate is not in use. Bus gate advanced direction signing will be provided on the local highway network on approaches to the Victoria Road/City Road and A50/King Street junctions, including Prism and Variable Message Signs (VMS).

1.4.2 A53 Etruria Road bus gate

A two-lane bus gate will be installed on the A53 Etruria Road westbound exit of the A53/A500 roundabout, with appropriate amendments to the existing road markings at the bus gate and on the circulatory carriageway. Traffic will be restricted to buses, cycle users and taxis between Monday and Friday from 7am to 10am and 4pm to 7pm. An ULEV exemption, allowing ultra-low emission vehicles to drive through the bus gate will be assessed and if considered deliverable will be added to the scheme in the FBC.

Two rotating prism signs will be installed at the entrance to the bus gate to enable the display of multiple messages and will be blank when the bus gate is not in use. Two ANPR cameras will be installed to manage compliance. Advanced direction signing will include prism signs on all approaches to the A500/A53 Etruria Road roundabout. Changes to destination signs on the A500 mainline carriageway in both directions are also proposed. This will include appropriate re-routing to the hospital and will also include VMS.

1.4.3 Traffic management east and west of Victoria Road

Traffic management measures will be required on roads to the east and west of Victoria Road in order to ensure that the adjacent local communities are not adversely impacted by traffic re-routing through these areas when the bus gates are in operation. This includes a range of interventions in specific locations including:

- Replacing existing worn and ineffective road humps
- Providing additional humps and carriageway re-surfacing
- Introduce one-way operation (direction of travel west to east) in Wileman Street (part) and Stanier Street (part)
- Two raised tables to improve safety at Christ Church C of E Primary School.
- Providing an environmental weight restriction on the traffic calmed routes to prevent inappropriate large vehicles travelling through the area
- Extending 20 mph zone to cover the whole traffic calmed area
- Enhancing signage to improve the enforcement of the existing environmental weight restriction in Manor Street
- Closure of Hitchman Street at its junction with Victoria Road, maintaining access for pedestrians and cycle users
- Existing the western footway along Victoria Road at Hitchman Street to enhance the pedestrian environment.

1.4.4 Transport improvements along A53 Etruria Road

The bus gate on A53 Etruria Road will significantly reduce traffic flows in the peak periods along this corridor and improve bus reliability. This will necessitate the review of signal timings at junctions along the corridor in order to maximise air quality benefits. The increase in spare capacity along the corridor will create the opportunity for the provision of signalised pedestrian crossing facilities on all arms of the A53/Gladstone Street/Basford Park Road junction and the A53/Albert Street/Sandy Lane junction.

An existing bus stop along the A53 Etruria Road is located on the hill where it is observed that traffic can queue behind buses serving the stop. It is recommended that the bus stop is relocated to the east of Kingsfield Oval, opposite the New Vic Theatre where it is likely to have a

reduced impact on air quality. Real Time Bus Passenger Information will also be provided along the A53 corridor.

1.4.5 Bus retrofit programme

To deliver compliance on Bucknall New Road and Victoria Road the buses that use these routes will be retrofitted with exhaust technology to achieve Euro VI emission standards. This involves the installation of the appropriate exhaust modification depending on vehicle type and age and associated e-cooling fan to minimise ongoing maintenance. This will be an expansion of the existing bus retrofit programme being delivered on the A53 as part of the separate Newcastle-under-Lyme Borough Council Ministerial Direction.

A total of 75% of buses that travel along the Bucknall New Road corridor and all buses travelling along Victoria Road require this improvement to ensure that compliance is achieved. Funding will be required for the retrofitting of 50 buses to ensure that the appropriate number of scheduled services can continue to operate on Bucknall New Road and Victoria Road. The two main operators are First Bus and D&G, with a number of smaller operators including Scraggs and Stantons of Stoke.

To market the cleaner bus fleet, enhance their visibility and encourage greater bus use, it is recommended that all buses that have been retrofitted are provided with a new branding in the form of a partial bus wrap. To monitor bus operator use of retrofit vehicles, ANPR cameras will be installed on Victoria Road, Bucknall New Road, at the junction with St Ann Street, and on the A53 to the east of the junction with Albert Street/Sandy Lane.

1.4.6 Bus infrastructure improvements

Enhanced bus infrastructure will be installed on routes that pass through or are parallel to the exceedance locations. This includes bus routes:

- To Abbey Hulton, Milton, Bentilee and Longton that converge at Bucknall New Road
- Along Victoria Road and parallel routes along College Road and A5007 City Road
- Along A53 Etruria Road between Newcastle town centre and Hanley City Centre, and parallel routes along the A52 and Shelton New Road.

The improvements are required to ensure that bus patronage is maximised along corridors that are at risk of air quality exceedances and where traffic modelling suggests that traffic flows and journey times may increase as traffic re-routes to avoid the bus gates. The package includes:

- 89 real time bus passenger information (RTPI) screens
- 17 new bus shelters of which 8 are replacement and 9 are new facilities
- 27 accessible kerbs at bus stops
- Installation of CCTV at 71 bus stops

1.5 The five cases

The business case has been prepared in line with guidance by HM Treasury for business cases and is commensurate with the scale of the problem and scale of the proposed strategy to tackle the problem. It sets out the supporting evidence necessary for justification of the Preferred Option. It includes potential delivery timescales to achieve the primary aim of delivering compliance with statutory limits on roadside NO_2 concentrations across the study area in the shortest possible time.

The business case comprises five separate cases, as prescribed by the HM Treasury guidance:

- **The Strategic Case** which shows that there is a robust 'case for change', closely aligned to wider strategic and public policy objectives
- **The Economic Case** which demonstrates the proposals optimise value for money, by determining the net value to society of the Preferred Option, compared with other options
- **The Financial Case** which explains how much the scheme will cost and how it will be paid for, showing that it is affordable
- **The Commercial Case** which demonstrates the proposals are commercially viable and sets out the risks and strategy for risk management
- **The Management Case** which shows that the scheme is achievable in practical terms and explains how the project will be managed to ensure it achieves its objectives.

1.6 Summary of the Strategic Case

The Strategic Case sets out the reasons why the NSLAQP is needed. It shows how the proposed investment achieves the critical success factors and fits into a wider strategy for the region to further the strategic objectives of SoTCC, NuLBC and SCC.

1.6.1 Policy and strategic fit

The policy and strategic context are determined by national, sub-national and local plans and investment programmes including:

- UK Air Quality Plan (2017)
- Clean Growth Strategy (2017)
- CAZ Framework (2017)
- Supplement to UK Air Quality Plan (2018)
- 25 Year Environment Plan (2018)
- Clean Air Strategy (2019)
- Stoke-on-Trent and Newcastle-under-Lyme Core Spatial Strategy (2006-2026)
- Joint Local Plan (2013-2033)
- Stoke-on-Trent Local Transport Plan (2011/12 – 2025/26)
- Newcastle-under-Lyme Borough Integrated Transport Strategy (2015-2026)
- Council Strategic Plans (2020-2024 and 2018-2022)
- Etruria Valley Link Road Project
- Transforming Cities Fund
- Town and Future High Streets

There are common themes in these policies and programmes:

- To improve air quality and reduce pollution
- To enhance public health and well-being

- To encourage a shift to sustainable transport and cleaner transportation
- To support local residents and businesses
- To tackle congestion and issues of social inclusion
- To assist in future economic growth

The NSLAQP has a strong strategic fit with national, regional and local policy and shows how investment in the proposed package will further the aims of each local authority and the Government.

1.6.2 Problems

The predicted NO_2 concentration exceedance locations as shown in Figure 1-2 are on the key road corridors that connect key commercial and residential areas together and provide connectivity to the strategic road network. As a result, these corridors are heavily trafficked and therefore suffer congestion, especially during peak periods. Targeted interventions have been identified and developed on a corridor-basis to address the problem and minimise displacement.

The table below summarises predicted NO_2 concentration data at locations on the local road network (Table 1-1) that are close to (above 39) or exceed the limit value (of 40.4) in the 2022 Reference Case.

Table 1-1: NO_2 concentration levels on local road network (2022 baseline)

Location (local road network)	NO_2 concentration ($\mu g/m^3$)	Exceeds limit value
Victoria Road at the south end near City Rd / King St junction	**45.6**	**Y**
A53 between Basford Park Rd and Victoria Street	**42.7**	**Y**
Bucknall New Road close to the junction with the A50	**42.2**	**Y**
Quadrant Road / Town Road	40.4	N
A5272 Chell Street between Eldon St and Acton St	40.0	N
A527 Porthill Road	39.8	N
Lichfield Street	39.5	N

1.6.3 Objectives and outcomes

The three councils – Stoke-on-Trent City Council, Newcastle-under-Lyme Borough Council and Staffordshire County Council have defined objectives to shape a clear way forward and outcomes that are measurable. Further detail is provided within the logic map in the Strategic case.

The primary spending objective and primary outcome for the NSLAQP is:

- To achieve the statutory limit values for roadside NO_2 concentration limits at the exceedance locations in the shortest possible time.

The secondary outcomes are:

- Traffic redistribution across the network without creating new sites of NO_2 exceedance
- Lower exhaust emissions of NO_X released from buses
- Local buses more attractive, encouraging greater use
- Increased awareness of air quality problems.

The associated secondary spending objectives for the NSLAQP include:

- Demonstrating that for Central Government and the councils the scheme delivers the best option in terms of value for money.
- Minimising the impacts on local residents and businesses, including disadvantaged groups
- Enabling and aligning with local objectives including improving health and encouraging a shift to sustainable transport
- Minimising the impacts on economic growth and development across North Staffordshire

The NSLAQP has been developed to achieve all of these objectives and contribute to the desired outcomes.

1.6.4 Options

A very comprehensive set of strategies, options, and scenarios has been considered and subject to detailed appraisal as summarised in section 1.4. The proposed scheme which forms the NSLAQP is the one which is best able to deliver NO_2 compliance in the shortest possible time and deliver wider objectives.

1.6.5 Stakeholders

Stakeholder engagement is a key activity in successfully delivering the NSLAQP. During the OBC development process early engagement has taken place with key stakeholders to discuss and understand their attitudes towards the proposed scheme to help inform options and manage potential conflict. This engagement will continue as the project progressed.

A stakeholder management and communications plan has been developed to support the scheme through its development, implementation and delivery stages. The aim of the Plan, is to engage stakeholders, raise awareness and understanding of the NSLAQP, and to minimise impacts of the scheme.

To support the development of the OBC and find out how poor air quality affects the local community and measure awareness of the simple actions that can help improve air quality the three Councils launched an online air quality survey in February 2020. The survey was open until 30th April and anyone aged 16 or over who lives in, or travels to, Stoke-on-Trent or Newcastle-under-Lyme was invited to complete it. The response rate was badly affected by the impact of the onset of the COVID-19 pandemic, with a total of 459 responses received. Once the situation regarding COVID-19 is resolved the Councils intend to re-run the survey later in 2020, at a more appropriate time.

The results from early engagement and the survey have helped to understand stakeholder awareness, the perceptions about air quality and improvement methods, and have been used to inform the development of the communications plan.

1.6.6 Impacts

With the NSLAQP in place the results of the NO_2 concentration modelling in 2022 on the local road network demonstrate that compliance will be achieved. As illustrated in Table 1-2.

Table 1-2: NO_2 concentrations on local road network (2022)

Location (local road network)	NO_2 concentration baseline ($\mu g/m^3$)	NO_2 concentration with NSLAQP ($\mu g/m^3$)
Victoria Road	45.6	39.3
A53	42.7	38.9
Bucknall New Road	42.2	39.4
Quadrant Road / Town Road	40.4	39.7
A5272 Chell Street	40.0	38.8
A527 Porthill Road	39.8	39.8
Lichfield St	39.5	38.3

In summary, there is a clear case for change and the NSLAQP is expected to deliver on all of the spending objectives and critical success factors to bring NO_2 concentrations with EU limits in the shortest possible timeframe whilst minimising the social and economic impacts on local communities and residents.

1.7 Summary of the Economic Case

The Economic Case outlines the work undertaken to assess and identify the proposed solution by considering value for money. It takes account of the costs of developing, building, operating and maintaining the scheme, and a full range of its impacts, including those impacts which can be monetised.

1.7.1 Present value of costs and benefits

The monetised costs, benefits and Net Present Value (NPV) assessed are set out in Table 1-3 which demonstrates both the Preferred Option and Benchmark CAZ D deliver a net cost, but from an economic perspective, the Preferred Option performs better than the Benchmark CAZ D, where the Preferred Option has a significantly less NPV.

Table 1-3: Present value of impacts and costs in 2018 prices, discounted to 2019, £000s

Costs & Benefits/Impacts	NSLAQP	Benchmark CAZ D
IMPACT TO THE USER		
Air quality	2,341	18,868
Greenhouse gases	-518	8,449
Travel time	-48,261	32,989
Fuel and non-fuel VOC	-8,366	31,593

Costs & Benefits/Impacts	NSLAQP	Benchmark CAZ D
Indirect tax	-2,270	23,399
Welfare	0	-27,047
Vehicle upgrade	0	-26,399
Bus improvements	34,071	0
Bus gate cost to user	-404	0
CAZ charge cost to user	0	-206,641
IMPACT TO THE GOVERNMENT		
Indirect tax (wider public finances)	2,270	-23,399
Bus gate revenue to government	404	203,191
Implementation costs	-14,482	-198,561
NPV	**-35,215**	**-163,557**

1.7.2 Non-monetised impacts

Other wider economic impacts including air quality impacts outside modelling domain, active travel benefits, severance, accessibility, noise and accidents. These effects have been assessed qualitatively due to limitations in data or methodologies available.

Specifically, the qualitatively assessed impacts can be summarised as follows:

- Active travel impacts are expected to be insignificant in both options
- Vehicle upgrades associated with the CAZ D option will carry transaction costs
- The implementation of CAZ D option is expected to reduce the traffic volume within the bounded area and generate an increase in traffic volumes outside of it.

1.7.3 Risks, bias, sensitivities and uncertainties

The risk register is set out in Appendix 18. The financial impact of a range of risks has been considered in a Quantified Risk Assessment (QRA) and the costs included in the calculation of the Present Value of Costs (PVC) have been adjusted for risk. Optimism Bias (OB) has been applied following TAG guidance, using 15% OB for tor the road infrastructure elements and 105% OB for other equipment and development aspects.

Sensitivity tests have been undertaken to test the impact of altering assumptions underpinning the economic appraisal. The analysis involves developing lower and upper bounds for significant assumptions and input values used in the economic appraisal. The following key inputs have been considered for the sensitivity analysis:

- Behavioural responses to charging zone
- Damage costs
- Carbon prices
- Scrappage costs
- Welfare impacts
- Optimism bias

The sensitivity analysis undertaken has shown that there are not further unquantifiable impacts affecting the economic analysis. In addition, it has shown that the NPVs of each option are sensitive to the assumptions but the uncertainty around parameters does not influence the relative ranking of the options in terms of NPV.

1.7.4 Social and distributional impacts

The analysis of social and distributional impacts has considered the impacts of each option in relation to the following key indicators:

- Air quality
- Affordability for businesses
- User benefits
- Personal affordability
- Accidents
- Noise
- Accessibility
- Severance
- Security

The overall impact to vulnerable groups is found to be more beneficial in the Preferred Option. The Preferred Option only notes disbenefits in both affordability areas and user benefits. The Benchmark CAZ D also notes disbenefits in these areas, but to a greater extent.

1.8 Summary of the Financial Case

The Financial Case presents evidence of a robust estimation of the package costs (for both implementation and operation), the key funding risks, sources, and forecast revenue generation.

The NSLAQP will seek to address the identified air quality exceedances in the shortest possible time. The measures will be delivered by 2022 and include capital and operating costs as described below.

Capital costs will be incurred on the following elements:

- Installation of the bus gate on the A50 Victoria Road which includes ANPR cameras and new signage, as well as the traffic regulation order (TRO)
- Installation of the bus gate on the A53 Etruria Road, ANPR cameras, new signage and road resurfacing, as well as the TRO
- Traffic management to the east and west of the A50 Victoria Road which includes road resurfacing, replacement of road humps and new signage
- Transport improvements along the A53 Etruria Road which includes signalised pedestrian crossing facilities, relocation of a bus stop, new kerbing and levelled footways
- Bus retrofitting programme which includes the installation of exhaust modification and e-cooling fans to 50 buses
- Bus infrastructure improvements which includes real time passenger information (RTPI) screens, new bus shelters, accessible kerbs at bus stops and CCTV cameras
- Monitoring and evaluation costs which includes diffusion tubes to measure air quality, ANPR cameras to monitor the use of the bus retrofit, traffic counts and the costs associated with analysing relevant data

Operating costs will be incurred on the following elements:

- Operation and maintenance associated with the ANPR system
- Maintenance associated with the bus gate, signals, signage, traffic management and bus network enhancements
- Other operating costs associated with overheads, staffing and customer service
- Monitoring and evaluation costs
- Communications and publicity
- Project management costs

The costs in the OBC have been developed by the local authorities and early contractor involvement and have been calculated using bottom-up estimates where a per-item cost is applied to the estimated required quantity. The indicative item costs are taken from similar schemes, initial estimates from possible service providers and market intelligence. A risk register and Quantified Risk Assessment has been developed to identify and cost the risks to delivering the project.

The three councils do not have funding available for implementation of the preferred package of measures coming out of the modelling and appraisal process. These are measures that are additional to current spending commitments. The councils will therefore be seeking all funding from the government's Implementation Fund to help achieve NO_2 compliance in the shortest possible time. A Clean Air Fund bid has not been costed for at this OBC stage but will be included at FBC stage as the authorities look to mitigate against the negative impacts of the measures proposed in the Preferred Option.

The indicative cost of delivering the NSLAQP including allowances for inflation, contingencies and risk is estimated to be £12.966 million. This comprises:

- £7.842m for capital expenditure
- £5.124m for operational expenditure over ten years

By comparison the indicative cost of delivering the Benchmark CAZ D including allowances for inflation, contingencies and risk is estimated to be £96.469 million. This comprises:

- £36.577m for capital expenditure
- £59.892m for operational expenditure over ten years

Whilst the Benchmark CAZ D would generate revenue, the overall implementation and operating costs of the Preferred Option are considerably less and therefore offering a more affordable and better value for money solution. It should also be noted that the Preferred Option meets the primary critical success factor of achieving air quality compliance in the shortest timeframe possible, unlike the Benchmark CAZ which cannot be delivered until 2023.

Confirmation will be sought from the Section 151 Officers that as the responsible financial officers they are comfortable with the financial position regarding the Preferred Option, including its affordability. Approval to bid for implementation funding will be sought in consultation with the relevant cabinet members and the Section 151 officers. A letter of support from each of the Section 151 officers will be included in the approved OBC and FBC submissions.

1.9 Summary of the Commercial Case

The Commercial Case provides evidence of the commercial viability of the proposed scheme. It explains the procurement options available and describes the preferred procurement route that is expected be used to implement the key services and deliverables This will be reviewed by JAQU and Local Partnerships and once the FBC is approved the contracts with the selected contractors will be signed.

Where possible, the local authorities plan to utilise existing contracts and undertake appropriate tendering processes using existing frameworks This will help to reduce the time taken in the procurement process, so to adhere to the Ministerial Direction of delivering the scheme in the shortest possible timeframe.

The outcomes which the preferred procurement strategy and contracts based on are:

- Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints
- Minimise further preparation costs with respect to scheme design by ensuring best value, and appropriate quality
- Obtain contractor experience and input to the construction programme to ensure the implementation programme is robust and achievable
- Obtain contractor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk and improve out-turn certainty thereby reducing risks to a level that is 'As Low as Reasonably Practicable'

1.9.1 Procurement management

Procurement decisions will be made through the governance process that has been set up for the project. Key procurement routes will also need to be approved by the Cabinets and Chief Officers of the three authorities. The procurement sub-group will provide the opportunity for the procurement managers to oversee and deal with any issues that arise to ensure that timescales and budgets are met.

The lead contracting authority/organisation has been identified for each key service and they will be responsible for individual procurement requirements. The details will be set out in the local authority Delivery Agreement and a legal agreement with the bus operators.

1.9.2 Risk allocation

It is considered that the risks identified in the risk register are currently owned by the three authorities or JAQU as the Implementation Funding agreement has not been finalised and delivery timescales have not been approved. Once the individual contracts have been approved, risks will be apportioned appropriately between the contractors and the local authorities. During implementation it is expected that risks will be allocated to the party that is best placed to manage them.

1.9.3 Contract management

The contracts procured will fall under the local authorities' responsibility to ensure that the contract scopes and budgets are adhered to. The three councils will work together through the governance process identified in the Management Case in the management and monitoring of the contracts.

To date, the NEC3 suite of contracts have been used to procure the relevant consultants, and the Councils plan to continue using the NEC3 suite of contracts to develop and deliver the Preferred Option. This form of contract is well understood through the supply chain and relies on a pre-defined risk register to allocate and manage anticipated risk.

A turnkey solution for the back-office function, cameras and civil works would need to be procured for the Benchmark CAZ. This would take up to 17 months from starting the design and specification to awarding the contract. Initial work demonstrates that the Benchmark CAZ D option would require a complex legal agreement adding to the length of the programme. The preferred option has a simpler procurement route which can be delivered quicker.

1.10 Summary of the Management Case

The Management Case demonstrates that the NSLAQP is capable of being delivered successfully in line with recognised best practice. It describes the processes that are being put in place to ensure that the project is effectively delivered, and properly evaluated.

1.10.1 Governance

A robust governance arrangement has been developed to ensure that the project is managed effectively; taking into consideration any potential risks that might arise, whilst continuing to adhere to the project timeline. To ensure successful delivery of the scheme, the councils have established and will continue to resource the following bodies:

- Joint Advisory Group (JAG) – comprises of key members and senior officers of all three local authorities, chaired by a senior member of one of the three authorities
- Joint Officer Group (JOG) – comprises of key officers and consultants involved in the project, chaired by the project SRO
- Delivery sub-groups including: Procurement, Finance, Legal, Risk and Communications and Engagement

Recommendations are taken to the Cabinets of the three authorities for key decisions. Prior to key decisions, being considered by Cabinet they will be reviewed by the relevant cross-party Scrutiny or Select Committee at each authority. The Management case describes the membership, responsibilities and accountability of these groups, and the relationship between them. The Management case also outlines the project organogram for the implementation stage of the project.

1.10.2 Programme

The scheme is programmed to be fully constructed and operational by May 2022. The project programme is included in Appendix 14 of the OBC. Compared to the Preferred Option, the design and delivery phase of the Benchmark CAZ D option is a considerably lengthier process and would not adhere to the primary Critical Success Factors of deliverance in the shortest timeframe possible as the CAZ scheme would not be operational until June 2023.

1.10.3 Risk management

A Risk Register and Quantified Risk Assessment (QRA) has been developed to identify any possible risks to the project, for both the Preferred Option and the Benchmark CAZ D. The full risk registers and QRAs can be found in Appendices 17-20 of the OBC.

The most significant risks at the time of this submission are regarding the uncertainty associated with the COVID 19 pandemic, and the risk linked to Highways England support of the scheme. These risks are both owned by JAQU / DfT. The Management case details the risk

management strategy in place to minimise the impact of risks whilst ensuring potential opportunities are maximised.

1.10.4 Benefits realisation, monitoring and evaluation

The Management case details the approach to benefits realisation and plans for post-opening monitoring and evaluation to examine the benefits realised, compare actual costs to forecast costs, identify lessons learned and capture opportunities to increase benefits through further works. The Benefits Realisation Plan is included in Appendix 21, and the Monitoring and Evaluation Plan is included in Appendix 22.

1.11 Conclusion

The OBC for the proposed NSLAQP demonstrates a robust case for investment – the Preferred Option has been identified through a comprehensive development process to achieve compliance in the shortest possible time whilst also supporting wider council objectives.

The scheme offers a better value for money and more affordable option when compared to the Benchmark CAZ D option, and the OBC demonstrates the thorough approach to cost identification and appraisal.

The NSLAQP also presents a more straightforward commercial procurement as the authorities propose to utilise existing contracts and frameworks, and bring the scheme through design, development and implementation to be operational in 2022. By comparison, the Benchmark CAZ D option would present a more complex and lengthy procurement and would ultimately result in approximately an additional year before the scheme could be operational, hence delaying compliance with the requirements of the Ministerial Direction.

Therefore, the NSLAQP demonstrates the optimum solution to addressing NO_2 exceedance in Newcastle-under-Lyme and Stoke-on-Trent. It must be noted the OBC has not been formally approved by the three authorities. The Preferred Option, whilst clearly demonstrated to achieve the primary aim, does not constitute a formal approval of the Preferred Option by the authorities.

The OBC does not take account of the impacts of the current global emergency, linked to the outbreak of COVID-19. The impact on public health, the local economy and on people's attitudes to travel, is unknown and will remain uncertain for some months to come.

Whilst the authorities welcome the opportunity to complete this OBC and submit it to Government, they also urge the Government to review the requirements to progress and complete the FBC this year. It is highly likely that the initial evidence submission (IES), upon which the Preferred Option is based and designed to tackle, will be unsound as we emerge from the coronavirus pandemic.

The authorities therefore believe that the work on finalising the business case and submission of the FBC should be suspended, whilst a review is undertaken at national and local levels to ensure that any revised plans for tackling roadside NO_2 are value for money and proportionate to the nature of any problems that exist in the future.

If Government requires the authorities to progress the submission of an FBC, without review of the programme due to the coronavirus situation, then the Preferred Option will be reviewed by the authorities' Scrutiny and Select Committees, and then submitted to the authorities' Cabinets for approval, during the summer/autumn of 2020. The FBC will then be submitted to Government.