Supplementary Agenda

7.00 pm
Wednesday, 12 December 2018
The Council Chamber, Millmead House, Millmead, Guildford, Surrey GU2 4BE

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7 PETITIONS (Pages 1 - 4)

To receive any petitions in accordance with Standing Order 65. An officer response will be provided to each petition.

Two petitions have been received:

The first petition is from Mr Kibble requesting the installation of 'Double Yellow Lines', around the junction of Spoil Lane and Manor Road, into Spoil Lane and The Gardens, Tongham

The second petition is from Mr Mark Payne 'Deathly Junction', requesting that the junction between the A3 and Beechcroft Drive be removed and a safe alternative access be provided

8 PUBLIC QUESTIONS (Pages 5 - 8)

To receive any questions from Surrey County Council electors within the area in accordance with Standing Order 66.

Two public questions have been received. The first public question is from Joanna McGowan:

How are GBC and SCC planning to ensure that mobility and accessibility issues are first and foremost when planning new and redevelopments in Guildford town centre?

The second public question is from Doug Scott:

My question is with regard to the failure of Utility Companies to re-instate the Setts, following digging up the Guildford High Street.

What is being done to ensure that the non-standard Setts outside Clarks Shoe shop, are replaced by Setts of the matching size, colour and texture, as specified?

What is being done to ensure that the Tarmac is removed from outside NEOM Organics and the Setts replaced?

The Setts are valuable and extremely difficult to replace. What is being done to ensure that, in future, Setts are reused and the High Street

repaired to the Surrey Highways standard, as required by the New Roads and Street Works Act 1991?

10 NATIONAL AIR QUALITY PLAN - APPROVAL OF OUTLINE BUSINESS CASE (A331) (EXECUTIVE FUNCTION FOR DECISION) (Pages 9 - 108)

The report seeks approval of the Outline Business Case to implement measures to improve air quality on the A331 (Blackwater Valley Relief Road) and comply with the accompanying Ministerial Direction and the preferred option of a 50mph speed limit from 70mph on a section of the A331 shown in Appendix 2 of the report.

The Blackwater Valley partnership of Guildford Borough Council, Surrey Heath Borough Council, Rushmoor Borough Council, Surrey County Council and Hampshire County Council have jointly prepared the Outline Business Case as they all have an interest in the A331.

Annex 1 of the report is attached to the supplementary agenda.

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GUILDFORD BOROUGH COUNCIL AND SURREY COUNTY COUNCIL

GUILDFORD JOINT COMMITTEE

DATE: **12 DECEMBER 2018**

SUBJECT: **DOUBLE YELLLOW LINES PETITION**

DIVISION/ WARD(S) AFFECTED: **Shalford, Ash South & Tongham,**

PETITION DETAILS:

We the undersigned from, The Gardens, Pawley Close and Spoil Lane request that a double yellow line be adopted around and into the junction of Spoil Lane and Manor Road and also Spoil Lane into The Gardens, Tongham.

The road into, and out of Spoil Lane continues to be badly congested throughout the day due to cars being parked in this area causing a hazard to other road users along manor road and spoil lane.

There is also a bus stop near to this junction in Manor Road. The parked cars are predominantly either staff or pet owners visiting the veterinary practice, which is located on this corner.

The practice does have a car park. The junction of Spoil Lane and The Gardens, is a tight junction at best, when double yellow lines are adopted in Spoil Lane at its junction with Manor Road, vehicles may then attempt to park in The Gardens just exasperating the parking issue we have.

During the mornings and afternoons there are a large number of pedestrians crossing these junctions, mainly school children heading to and from Ash Manor School.

72 signatures from 48 addresses

RESPONSE:

An individual request for such measures to be considered was first received by Parking Services in June 2016.

As a result of this, the request was considered by the Guildford Local Committee as part of the parking review that began in December 2016 and which was completed during summer 2018.

Notwithstanding, the issue was included within the scoping report presented to the September 2018 meeting of the Joint Committee, and remains on the list of issues being considered by the Parking and Air Quality Working Group. The Working Group will present a list of priority issues that it recommends should be

progressed, as part of the current review, to the next meeting of the Joint Committee, to be held in March 2019. It will take into account the receipt of this petition as part of its assessment and prioritisation process.
RECOMMENDATION
The Joint Committee is asked to: *(i) Note the officer's comment.*

Contact Officer: Andy Harkin, Parking Manager, Tel: 01483 444535

GUILDFORD BOROUGH COUNCIL AND SURREY COUNTY COUNCIL

GUILDFORD JOINT COMMITTEE

DATE: **12 DECEMBER 2018**

SUBJECT: **DEATHLY JUNCTION PETITION**

DIVISION/ WARD(S) AFFECTED: **GUILDFORD WEST, ONSLOW**

PETITION DETAILS:

We the undersigned petition Guildford Borough Council to remove the dangerous junction between A3 and Beechcroft Drive and provide a safe alternative access

Justification:
1.The dangerous A3/Beechcroft Drive junction slows the A3 and congests our town.

2.The authorities have wasted public money on: warning signs, red road surface, cutting hedgerows and numerous studies.

3.Only a new access will solve this problem

4.The authorities have failed to deal with this for over 40 years.

RESPONSE:

The Committee would like to thank the lead petitioner (Mark Payne) for presenting the petition on behalf of the local residents of Beechcroft Drive.

The petition focuses on closing the A3 and Beechcroft Drive junction and providing an alternative access route to Beechcroft Drive. Highways England (HE) is responsible for any changes or closure of the junction as the A3 is a trunk road and the junction does not come under Surrey County Council (SCC) jurisdiction.

However, the safety issue of entering and exiting Beechcroft Drive onto the A3 is well known to SCC and Guildford Borough Council (GBC). GBC has been looking into this issue and has been trying to come up with an effective solution that could work for all parties. To this end, in granting planning permission for the University of Surrey to expand into Manor Park (back in 2004) the Borough Council safeguarded a route for an alternative access road to serve Beechcroft Drive, which would thereby enable HE to close the existing A3 access should a suitable scheme for doing so come forward. More recently, earlier this year, GBC commissioned a feasibility study with an initial design, specification and outline

costing for an alternative access road through the Manor Park campus. This has been shared with HE. Unfortunately, HE have not been able to secure sufficient funding from the Department for Transport to deliver and maintain this alternative access road for residents, in addition to the works that are necessary to permanently close the existing junction and associated gap in the central reservation.

There has already been a great deal of consultation from HE, the University of Surrey, SCC and GBC with people living in Beechcroft Drive through their Residents' Association, who are well aware of the current situation.

SCC, GBC and HE will continue to work closely together to identify a feasible solution within the current financial constraints.

RECOMMENDATION

The Joint Committee is asked to:

(i) Note the officer's comment.

Contact Officer: Frank Apicella, Area Highways Manager, Tel: 03456 009 009

GUILDFORD BOROUGH COUNCIL AND SURREY COUNTY COUNCIL

GUILDFORD JOINT COMMITTEE

DATE: **12 DECEMBER 2018**

SUBJECT: **PUBLIC QUESTION**

DIVISION/ WARD(S) AFFECTED: **GUILDFORD TOWN CENTRE**

To receive any written questions from the public under Standing Order 66.

One Public question has been received from Joanna McGowan:

"How are GBC and SCC planning to ensure that mobility and accessibility issues are first and foremost when planning new and redevelopments in Guildford town centre?"

RESPONSE:

The National Planning Policy Framework (NPPF) requires policies and decisions that ensure developments create places that are safe, inclusive and accessible (paragraph 127). The submitted Local Plan Policy S3: Delivery of Development and Regeneration within Guildford Town Centre requires schemes to contribute to legible routes that are easy to understand and move through, and give priority to pedestrians and cyclists over motor vehicles. Paragraph 4.1.25 suggests a range of interventions such as improving surfacing of public space and more generous pedestrian environments. Policy D1: Place shaping requires new development to be designed to create safe and accessible places and meet the needs of all users (part 8 & 11). Policy ID3: Sustainable transport for new developments requires new development to maximise opportunities for people to access all modes of transport.

Part M of the Building Regulations 2010 as amended, Access to and use of buildings, requires compliance with work carried out.

The County Highway Authority assesses applications, which they are consulted on and provide a recommendation to the case officer at the Borough Council. When assessing an application, road safety is their primary concern but they also take into account the wider transportation policy issues. The Highway Authority focuses on access to sustainable transport for all future occupiers and ensure that all users have the opportunity to access them. They look at the key facilities and amenities within walking and cycling distance of the proposed development and where required, secure improvements to these routes so that all users can access these facilities safely and securely. Paragraph 110, points a and b, of the NPPF are relevant to this question raised. They state that applications should ‘give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas’ and ‘address the needs of people with disabilities and reduced mobility in relation to all modes of transport’. The Highway Authority ensures proposals are in accordance with the NPPF.

In Development Management, officers are guided by planning policy and consultation responses when formulating a recommendation. Sometimes changes are required to a scheme for it to become acceptable and more often than not these are secured prior to decision or by the use of suitably worded planning conditions.
RECOMMENDATION
The Joint Committee is asked to: *(i) Note the officer's comment.*

Contact Officer: Tim Dawes Planning Development Manager, GBC, Kirsty Wilkinson, Snr Transport Development Planning Officer, SCC

GUILDFORD BOROUGH COUNCIL AND SURREY COUNTY COUNCIL

GUILDFORD JOINT COMMITTEE

DATE: **12 DECEMBER 2018**

SUBJECT: **PUBLIC QUESTION**

DIVISION/ WARD(S) AFFECTED: **GUILDFORD SE, HOLY TRINITY**

To receive any written questions from the public under Standing Order 66.

The second Public question has been received from Doug Scott:

My question is with regard to the failure of Utility Companies to re-instate the Setts, following digging up the Guildford High Street.

What is being done to ensure that the non-standard Setts outside Clarks Shoe shop, are replaced by Setts of the matching size, colour and texture, as specified?

What is being done to ensure that the Tarmac is removed from outside NEOM Organics and the Setts replaced?

The Setts are valuable and extremely difficult to replace. What is being done to ensure that, in future, Setts are reused and the High Street repaired to the Surrey Highways standard, as required by the New Roads and Street Works Act 1991?

RESPONSE:

The Committee would like to thank Mr Scott for presenting the question with regard to the reinstatement of the Guildford High Street setts.

The SCC Streetworks team have contacted Thames Water with regard to this issue. To ensure that the works will be carried out to a high standard and match the existing setts, it was agreed that the SCC contractor will carry out the repair works and Thames Water will bear the cost. The SCC Streetworks team are in contact with Thames Water to ensure that the reinstatements are carried out soon.

An agreement has been reached between the SCC Streetworks team and Thames Water that for any future reinstatements, the SCC contractor will carry out the works and Thames Water will bear the costs.

RECOMMENDATION
The Joint Committee is asked to: *(i) Note the officer's comment.*

Contact Officer: Frank Apicella, Area Highways Manager SCC Tel: 03456 009 009

Please note that this document will be finalised and subject to minor revisions during the course of the period leading up to the Joint Committee meeting on 12th December. This is due to the requirement placed on the Council by the Ministerial Direction to carry out this work in the quickest possible time and the document requiring approval before it is formally submitted to Defra's Joint Air Quality Unit (JAQU) by 31st December 2018, while some of the evidence and legal agreements are still being finalised.

2018

Blackwater Valley Outline Business Case

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Blackwater Valley Group

Guildford Borough Council

Rushmoor Borough Council

Surrey Heath Borough Council

Surrey County Council

Hampshire County Council

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Appendices

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Executive Summary

Air pollution is a significant public health concern. High levels of nitrogen dioxide can cause respiratory irritation to even the fittest of individuals, but can particularly affect those with existing respiratory problems such as asthma or chronic obstructive pulmonary disease. One of the main sources of nitrogen dioxide is emissions from road transport, meaning meeting European air quality standards alongside roads in cities and towns is challenging.

To address this, the UK government published the UK plan for tackling roadside nitrogen dioxide concentrations in July 2017. This identified 28 local authorities as having predicted exceedances of the statutory annual mean EU limit value for Nitrogen Dioxide (NO2) within their areas, and who were therefore required to take urgent action. Guildford, Rushmoor and Surrey Heath borough councils have been directed by the Secretary for State to develop a Plan aimed at achieving air quality improvements along the A331 and to bring about compliance with legal limits in the shortest possible time.

This report sets out the Outline Business Case (OBC) for implementation of measures to improve air quality along a section of the A331 (Blackwater Valley Relief Road). It has been developed by the Blackwater Valley Group of local authorities, Guildford, Rushmoor and Surrey Heath Borough Councils, in collaboration with the respective highway authorities of Hampshire and Surrey County Councils. The OBC sets out the process by which a preferred option has been identified that will bring about compliance with air quality limits within the shortest possible time and outlines the rationale and justification for securing funding from Central Government to allow delivery of the preferred measure.

The results of detailed transport and air quality modelling has shown that, in the absence of any additional measures, a 2.5km section of the A331 will not be compliant with the annual mean NO2 EU limit value until at least 2022. Following a detailed options appraisal process, it has been determined that a speed restriction of 50mph, along this section of the A331, between a point just south of the Coleford Bridge Junction and the Frimley Road junction, will be sufficient to bring about compliance by 2021.

The total cost of this preferred option will be approximately £437,055. Hampshire County Council as Highway Authority will deliver the speed restriction and are seeking to secure Central Government funding of £103,258 for its implementation. Rushmoor Borough Council, on behalf of the Blackwater Valley Group is seeking to secure £333,797 to monitor and evaluate the implementation of the speed restriction measure over a period of six years.

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Introduction

Background to this local plan

The UK Plan for tackling roadside nitrogen dioxide concentrations (2017)[1], identified 28 Local Authorities[2] that are required to take urgent action and develop local plans aimed at bringing their local air quality into compliance with legal limits.

Guildford Borough Council, Rushmoor Borough Council and Surrey Heath Borough Council were identified due to a predicted exceedance of the statutory annual mean EU limit value for Nitrogen Dioxide (NO_2) along the A331, Blackwater Valley Relief Road.

The three named local authorities, working collaboratively with the respective highway authorities of Hampshire and Surrey county councils as the Blackwater Valley Group, have been directed to undertake a local assessment (Feasibility Study) to consider the best options to achieve compliance within the shortest possible time. Under the terms of the Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017, there are two key deadlines:

- **An Initial Plan** (the Strategic Outline Case), required as soon as possible by 31 March 2018, set out the case for change and was the first stage in identifying, exploring, analysing and developing options for measures to deliver compliance in the shortest time possible[3].
- **The final plan** (Outline Business Case) is due as soon as possible and by 31 December 2018 at the latest, and will identify the preferred option for delivering compliance in the shortest possible time. The Full Business Case will be submitted following a period of statutory consultation.

The Government have set up a national £255m Implementation Fund to fully support local authorities in preparing their plans and for delivering targeted action to improve air quality. There are three possible tranches of central government funding available:

[1] https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

[2] On 23 March 2018, a further 33 English local authorities with shorter-term NO_2 problems were directed to carry out studies to find out whether there were measures they can take to reduce NO_2 air pollution in their areas in the shortest possible time.

[3] This was submitted to Government on 29 March 2018.

- **Early Measures Fund** - to support small, ambitious, value for money measures that deliver air quality improvements that will start to reduce concentrations on the path to compliance.
- **Implementation Fund** - Following a Full Business Case submission and subsequent sign off on the project, local authorities will be awarded funding for implementation
- **Clean Air Fund** – designed to minimise any impact local compliance plans might have on motorists, residents or businesses.

The Blackwater Valley Group have already been successful under the Early Measures Fund in securing monies to deliver junction improvements at the Bradford Roundabout in the borough of Rushmoor.

Purpose and Structure of this Report

This Outline Business Case (OBC) has been developed in accordance with guidance provided by the Joint Air Quality Unit[4] (JAQU), which is itself based on the HM Treasury Green Book. This OBC sets out the process by which a preferred option has been identified that will bring about compliance with air quality limits within the shortest possible time. It also provides the rationale and justification for securing funding under the Implementation Fund to allow delivery of the local plan.

This OBC is structured around the five business case approach[5] that JAQU use for assessing local plans and for releasing funds for implementation:

- **Strategic Case** – sets out the reasoning behind the course of action proposed within the Outline Business Case. It provides an overview of the regulatory and strategic context and presents the outputs from new air quality assessments that show further work is required to improve air quality. It presents the case for change for undertaking additional action.
- **Economic Case** – provides an economic assessment of the main costs and benefits of the options shortlisted for further consideration. It provides an overview of why the options were identified and the main assumptions on which modelling of these options is based. Economic modelling is used in considering the impacts of each option, along

[4] Department for Transport and Defra joint unit

[5] Based on HM Treasury Green Book

with an assessment of any uncertainties and distributional impacts associated with them.

- **Commercial Case** – details the service needs, supplier capability and capacity, and the procurement route for the preferred option
- **Financial Case** – details the funding needs, sources of finance, and financial model.
- **Management Case** - details the governance and management arrangements to deliver the plan and how the scheme will be monitored and evaluated.

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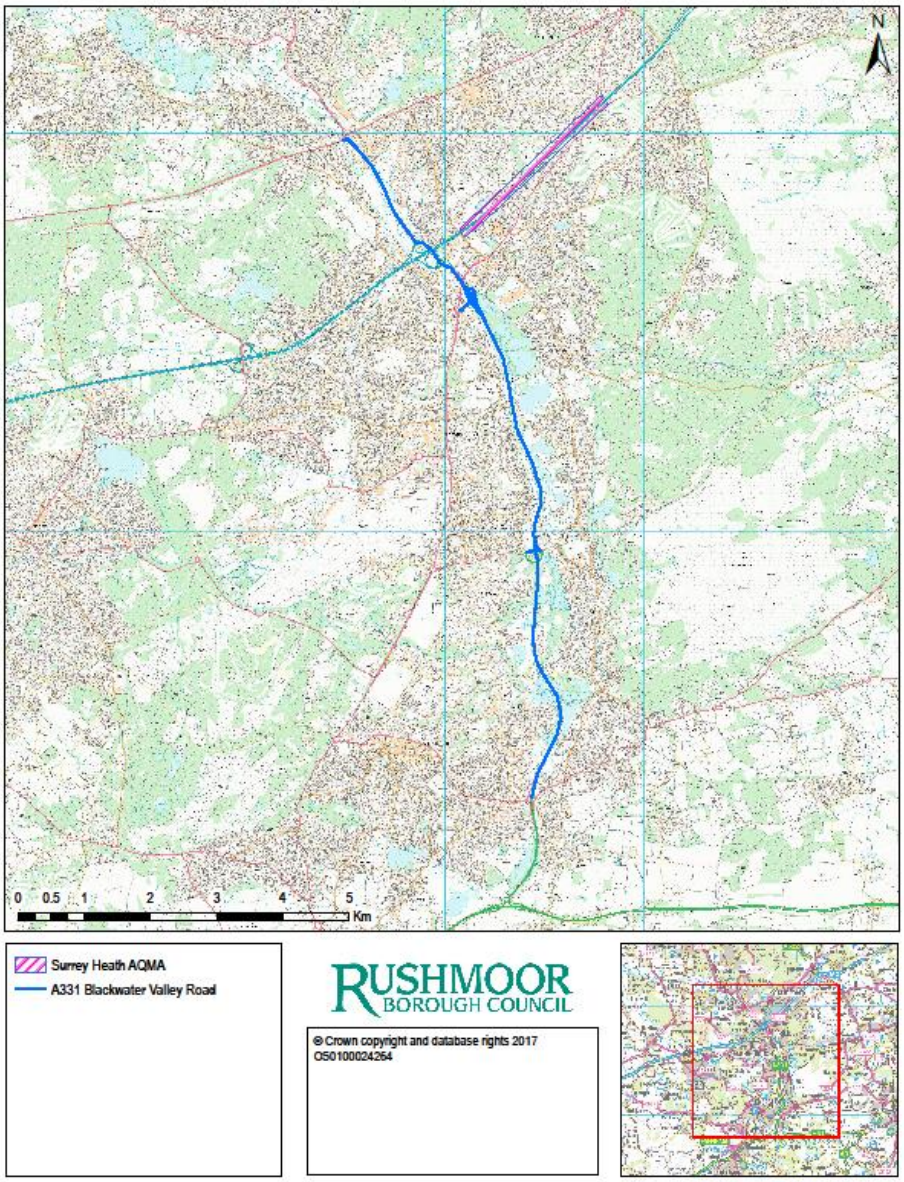
1 Strategic Case

1.1 A331 - Blackwater Valley Relief Road

The A331 is a dual carriageway linking the A30 and the M3 (at Junction 4) to the north with the A31 to the south, bypassing the urban areas of Farnborough, Aldershot, Ash, Frimley and Farnham. It was opened in 1996, as a joint project between Hampshire County Council and Surrey County Council to provide a link between the A31 to the south and the strategic route network to the north and to relieve local town centre congestion. Figure 1 shows the A331 in the context of the wider strategic road network.

Figure 1 The A331 in the context of the wider strategic road network.



1.2 Air Quality and Public Health

Air pollution is recognised as a serious public health issue. Public Health England (PHE) regard poor air quality as the largest environmental risk to public health in the UK[6].

There is growing evidence that air pollution is a significant contributor to preventable ill health and early death.[7] [8] The Chief Medical Officer's (CMO) most recent annual report '*Health Impacts of All Pollution - what do we know?*[9] (2018), discusses the threat to health posed by air pollution to people living in England and makes some specific recommendations for local government action. These health impacts impose a significant cost on the national and local economy.

It is not easy to isolate the health impacts of NO_2 from the impact of other pollutants emitted by the same sources. High concentrations of NO_2 over a short period of time are known to lead to respiratory irritation that can cause coughing, mucus production and shortness of breath. People with existing breathing problems such as asthma or chronic obstructive pulmonary disease (COPD) can be severely affected. Studies have shown associations of NO_2 in outside air with reduced lung development and respiratory infections in early childhood and negative effects on adult lung function.

It is estimated that the effects of NO_2 on mortality are equivalent to 23,500 deaths annually in the UK. Many of the sources of NO_x (NO and NO_2) are also sources of particulate matter, and indeed levels of NO_2 can act as a proxy for levels of particulates. The combined impact of these two pollutants may be as much as 40,000 early deaths per year. This represents a significant public health challenge. The largest source of such emissions is from road vehicles.

The Public Health Outcome Framework[10] (PHOF) for England recognises the burden of ill health resulting from poor air quality. PHOF Indicator 3.01 reports that 5.8% of deaths in Rushmoor; 5.7%, in Surrey Heath; 5.5% in Guildford during 2016 were attributable to fine

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[6] Public Health England. 'Estimating local mortality burdens associated with particulate air pollution', 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf

[7] 2017 Air Quality A Briefing for Directors of Public Health DEFRA Air quality: a briefing for directors of public health | Local Government Association

[8] Royal College of Physicians' report Every breath we take: the lifelong impact of air pollution https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution

[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/684962/CMO_Annual_Report_2017__Health_Impacts_of_All_Pollution_what_do_we_know.pdf

[10] https://fingertips.phe.org.uk/profile/public-health-outcomes-framework

particulates (PM2.5). The figures for Surrey and Hampshire respectively are 5.6 % and 5.3%[11]. Air pollution affects mortality from cardiovascular and respiratory condition, including lung cancer, so measures to reduce exposure to air pollution will therefore also deliver benefits to those other indicators that reflect premature mortality.

1.3 Legislative Context

EU Legislation

The 2008 Ambient Air Quality Directive (2008/50/EC), enshrined in law in England through the Air Quality Standards Regulations 2010, mandates action to manage and improve air quality and sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2). In keeping with many EU member states, the UK meets European air quality standards for all pollutants except NO_2 alongside roads in cities and towns.

The limits set in the Ambient Air Quality Directive (Table 1) are closely aligned to the UK air quality objectives. These limit values reflect World Health Organization (WHO) air quality guidelines.

Table 1 EU Limit values for Nitrogen dioxide

Averaging period	*Limit value*
One hour	200 µg/m^3 not to be exceeded more than 18 times a calendar year
Calendar year	40 µg/m^3

UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations

On 26th July 2017, the government published the UK plan for tackling roadside nitrogen dioxide concentrations (henceforth referred to as “the UK Plan”). The UK Plan set out actions to bring NO_2 air pollution within statutory limits in the shortest possible time. It identified 28 local authorities who are required to take urgent action and to develop plans aimed at bringing

[11] For England it is 4.7%

their local air quality into compliance with legal limits in the shortest possible time. The Blackwater Valley Group of Local Authorities were among this number.

The UK Plan assessed compliance with the EU Directive using Defra's Pollution Climate Mapping (PCM) model. The PCM model calculated projections for annual concentrations of nitrogen dioxide (NO_2) and oxides of nitrogen (NOx) across the UK in the years 2017 - 2030 inclusive, with baseline projections representing the projected concentrations assuming no further action beyond the air quality measures that were committed by the reference year (2015). Guildford, Rushmoor and Surrey Heath Borough Councils were directed to develop a Local Plan to achieve compliance with the legal limit in the shortest possible time. This Ministerial Direction requires the authorities to submit to the Secretary of State a full business case in connection to the council's duties in respect of air quality under Part IV of the Environment Act 1995 and as part of the UK Plan for tackling roadside nitrogen dioxide concentrations 2017.

Figure 2 shows the PCM modelled NO_2 exceedances along the A331. Further details can be found on the Defra website at https://uk-air.defra.gov.uk/library/no2ten/2017-no2-projections-from-2015-data

Local Air Quality Management

Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and requires local authorities to review air quality in their area and act were necessary. The National Air Quality Strategy 2007 sets out how air quality should be addressed and details the objectives to be achieved, and the measures to be considered further to help reach them.

Under the Local Air Quality Management (LAQM) regime, and in accordance with this statutory guidance, local authorities assess and monitor levels of NO_2 across their respective areas. Where an exceedance of air quality objectives is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

Local Authorities are required to report annually on the status of air quality in their areas and show the strategies employed to improve air quality if necessary and the progress made. These Annual Status Reports are submitted to DEFRA each year for approval. Further details can be found in Table 2.

Local Policy and Strategic Context

The drive to tackle local air quality issues is already enshrined in the local policy frameworks of all authorities that make up the Blackwater Valley Group. Furthermore, each council has developed a strong policy context precisely to address the issue of transport related air quality emissions.

Air pollution does not respect administrative boundaries. It is vital, therefore, that policies to address poor air quality and improve public health are aligned and express synergies across all five authorities that represent the Blackwater Valley Group. Rushmoor, Guildford and Surrey Heath borough councils are the respective planning and environmental health authorities, whilst Hampshire and Surrey county councils are the public health and transport authorities for the area.

This acknowledgement of the problem and determination to tackle it is enshrined within the respective council's overall strategic plans, down to individual authority policies and strategies. These approaches provide robust local mechanisms, based on established best practice and national guidance. Table 2 contains further details of relevant local plans and strategies.

Local boroughs are working with partners, such as the Department for Transport, the Enterprise M3 local enterprise partnership and rail operators to improve transport infrastructure across the region, with the support of Hampshire and Surrey county councils as highway authorities. There is significant work taking place among neighboring authorities, at both district/borough and county level, to understand issues and to promote outcomes in order to address the cross-boundary nature of transport problems and solutions.

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Table 2 Summary of relevant local plans and strategies.

Policy	Summary
Sub-regional Policy	
Enterprise M3 Local Enterprise Partnership (LEP) Strategic Economic Plan (2014)	Paragraph 1.8 identifies the vision for the Enterprise M3 area as 'the premier location in the country for enterprise and economic growth, balanced with an excellent environment and quality of life'. There are specific transport aims to deliver and improve connectivity through transport investment across the Enterprise M3 area to increase journey-time reliability, increase the capacity of the transport network and unlock new housing and business sites. The LEP states it is committed to investing in sustainable transport and maximising the economic benefits associated with this. Improving local transport networks is the key to unlocking growth and delivering legacy improvements that support long term sustainable economic activity. Further details can be found at: https://www.enterprisem3.org.uk/map/
Guildford Borough Council	
Guildford's Submission Local Plan: strategy and sites (2017)	Sets out the vision for the borough and Guildford Borough Council's approach to development between 2015 and 2034. When adopted, the plan will play an important role in shaping Guildford's future; addressing housing, employment, retail and leisure requirements, whilst protecting and enhancing the natural environment, developing the local economy, improving leisure and visitor facilities, and supporting more sustainable forms of travel. Policy ID3; Sustainable Transport for new development, addresses adverse material impacts on communities and the environment, including on amenity and health, noise and air pollution. The Local Plan was submitted for examination in December 2017 and public hearings were held in June 2018. Further details can be found at: https://www.guildford.gov.uk/newlocalplan/16116
Guildford Borough Transport Strategy 2017	Sets out schemes to tackle the historic infrastructure deficit, facilitate a modest modal shift and mitigate the impacts of future proposed planned growth in the borough on transport. Some committed schemes, which will help in air quality improvement are: • Road Investment Strategy schemes to tackle congestion on Strategic Road Network

	• Guildford Town Centre Transport Package improvements for buses and active modes • Great Western Railway increased service frequency on North Downs Line The following planned or aspirational transport improvement schemes are either within or in proximity to the Blackwater Valley study area: 1. A323 Ash Road, Ash Street and Guildford Road (Ash) traffic management and environmental improvement scheme; 2. A323 Aldershot Road/A331 Blackwater Valley Route (Ash) junction improvement scheme; 3. A331 Blackwater Valley Route with A31 Hog's Back (Tongham) junction improvement scheme). Further details can be found at: https://www.guildford.gov.uk/newlocalplan/CHttpHandler.ashx?id=24636&p=0
Guildford's Air Quality Strategy 2017 – 2022	This strategy identifies the key air quality issues within Guildford and the Council's approach to maintaining and improving air quality. It sets out actions to be taken between 2017 and 2022 to reduce concentrations of air pollutants and exposure to air pollution.
Guildford's Local Air Quality Management	Guildford undertook NO_2 monitoring at 30 diffusion tube sites in 2017. There were four monitoring sites where NO_2 concentrations were measured in excess of the annual mean air quality objective for 2015 and 2016. All these exceedances were in Compton Village, which is located approximately 8km southeast of the A331 and therefore well outside the A331 study area. In 2017, Guildford Borough Council commissioned a Detailed Assessment in the area which involved AQ dispersion modelling and detailed source apportionment of vehicle types to identify the extent of exceedance and declared its first Air Quality Management Area in Compton. The Guildford BC AQMA Order (No.1) 2018 came into effect on 1 February 2018 and covers a small section of B3000 in Compton. The Council is currently consulting on a draft Air Quality Action Plan aimed at improving the air quality in the AQMA. Further details can be found at: https://www.guildford.gov.uk/article/19807/Air-quality-monitoring
Rushmoor Borough Council	
Rushmoor's draft submission Local Plan	Guides the location, scale and type of future development within Rushmoor up to 2032, as well as providing detailed development management policies. Policy DE10 addresses the potential impacts of proposed development by providing a policy mechanism to ensure air quality is considered appropriately. Details of adequate mitigation will be required to demonstrate acceptable development can be achieved and emissions

	controlled or minimised. Proposals for development that risks non-compliance of EU Limit values or the Council having to designate an AQMA will be refused. The Draft Submission Rushmoor Local Plan 2017 was submitted for examination in February 2018 with public hearings taking place in May 2018. The Inspector's report is expected shortly. Further details can be found at: https://www.rushmoor.gov.uk/rushmoorplan
The Rushmoor Borough Transport Statement (2012)	The Rushmoor Borough Transport Statement sets out the transport objectives and delivery priorities for the Rushmoor area. It highlights the main transport challenges facing the Borough as: • Managing existing and forecast road congestion especially on the main A road routes and accessing the M3 particularly during peak periods, affected by complex travel and commuting patterns; • Planning for, and mitigation of travel impacts arising from new developments, most notably the Aldershot Urban Extension; • Continuing to provide for transport access to the main employment locations; • Improving transport accessibility, particularly to the town centres, and local services and facilities; • Helping to facilitate lower-carbon transport choices The priorities and proposals outlined within the Transport Statement look to facilitate a number of policy objectives, one of which is to: Reduce carbon emissions and minimise the impacts of transport on the environment. http://documents.hants.gov.uk/transport/RBCTransportStatementDecember2013.pdf
Rushmoor's Local Air Quality Management	Rushmoor currently has no AQMAs but one was in place along the M3 corridor due to exceedances of the air quality objective for NO_2 but this was revoked in 2011 due to monitoring showing continual on-going improvements. NO_2 levels now are well within the NO_2 annual mean objective and the overall trend is one of improvement. Rushmoor continues to monitor NO_2 concentrations at 28 sites across the borough using diffusion tubes in predominantly residential areas and where, historically, air quality problems have been identified. Rushmoor Borough Council and Hampshire County Council have taken forward a number of direct measures in pursuit of improving local air quality, details of which can be found in the Council's Annual Status Report. http://www.rushmoor.gov.uk/article/3927/Air-quality
Surrey Heath Borough Council	

Surrey Heath Draft Local Plan 2016-2032	Surrey Heath Borough Council is in the process of preparing a new Local Plan that will provide a framework to guide development in the Borough up to 2032. The Issues and Options/Preferred Options draft of the Local Plan set out the Council's preferred approach to addressing the development needs of the Borough, covering housing, employment, retail, infrastructure, Green Belt and countryside, heritage and design and local area policies, along with possible alternative approaches. Strategic Objective F of the draft Local Plan aims to ensure that new development considers the impact on air quality. A pre-submission version of the Draft Local Plan will be published in summer 2019. Further details can be found at: https://www.surreyheath.gov.uk/residents/planning/planning-policy/draft-local-plan-2016-2032
Surrey Heath's Local Air Quality Management	Surrey Heath currently has an AQMA along the M3 corridor, between the Frimley flyover and just north of the Ravenswood Roundabout (A325). Latest monitoring, as presented within the 2017 Annual Status Report, indicates that NO_2 and PM_{10} levels in the AQMA are now compliant with national air quality objectives. However, the situation is complicated by abnormal traffic movements throughout the region in recent years due to conversion of the M3 to SMART motorway status. Work on the M3 smart motorway project, which added an extra lane in both directions along a 13 mile stretch of the motorway, commenced in January 2015 and 'officially' finished in June 2017. These works involved frequent motorway and lane closures that resulted in significant traffic disruption and diversions onto the local road network. Surrey Heath is to retain the AQMA and continue the current monitoring regime to determine whether the recent improvements in air quality are part of an ongoing long-term trend or a consequence of the recent M3 works. Surrey Heath currently has an automatic (continuous) monitoring site within the AQMA. http://www.surreyheath.gov.uk/residents/environmental-services/noise-nuisance-pollution/air-quality
Hampshire County Council	
Hampshire Local Transport Plan (2011-2031)	The Plan seeks to improve accessibility through the three initiatives of reduce, manage and invest. Hampshire County Council will 'support district councils with respect to carrying out air quality reviews, the assessment of air quality management areas and the preparation of air quality action plans'; whilst addressing 'the effects of inequalities that arise from social or economic disadvantage, as well as from gender, race, disability, sexual orientation and belief'. The LTP recognises that air quality is a major environmental factor that can affect human health, as well as significantly influence and alter local ecosystems. It seeks to address poor air quality locations and the overall health of the population with measures to reduce the need

	to travel, widen travel choice and reduce dependence on the private car, alongside investment in low-carbon vehicle technologies all play an important part of helping to meet local and national targets for air quality and carbon. Cleaner, greener travel will help improve quality of life and health for residents near busy roads and for the people travelling. Increasing the proportion of journeys made on foot and by bicycle has the potential to deliver improved air quality, carbon reduction and healthier communities. Investment in walking and cycling infrastructure will be primarily focused on urban areas, where it has the potential to provide a healthy alternative to the car for local short journeys to work, local services and schools at relatively low cost. The range of approaches outlined above are specifically summarised in two LTP policy objectives: • Policy Objective 10: Contribute to achieving local targets for improving air quality and national carbon targets through transport measures, where possible and affordable; • Policy Objective 12: Invest in sustainable transport measures, including walking and cycling infrastructure, principally in urban areas, to provide a healthy alternative to the car for local short journeys to work, local services or schools; and work with health authorities to ensure that transport policy supports local ambitions for health and well-being. Taken together, these objectives play an important part in helping address those 'hotspots' of poor air quality that are traffic-related and helping to de-carbonise transport. Further details can be found at: https://www.hants.gov.uk/transport/strategies/transportstrategies
Surrey County Council	
Surrey Transport Plan, Strategy Summary, January 2017	Surrey's Local Transport Plan includes an Air Quality Strategy[12] which sets out the county's statutory duties in relation to air quality. The strategy is currently being reviewed and updated to be combined with the Climate Change Strategy, to form a new Low Emissions Strategy which will set out how Surrey will work in partnership with districts and boroughs to reduce emissions. The main forum for partnership working and delivery of schemes / bidding for funding to develop and deliver schemes is the Surrey Air Alliance, an officer group represented by district and borough environmental health colleagues, Surrey transport teams and public health.

[12] https://www.surreycc.gov.uk/roads-and-transport/policies-plans-consultations/surrey-transport-plan/surrey-transport-plan-strategies/air-quality-strategy

	Surrey County Council currently has local transport strategies for each borough / district, including for Guildford and Surrey Heath, and is in a process of updating these for the relevant district/borough. In addition, it also has an Air Quality and Climate Change Strategy which is in the process of being updated and amalgamated as a Low Emissions Strategy.[13] The local transport strategies include a forward programme detailing transport schemes needed in each area; these include schemes which will help address air quality issues. https://www.surreycc.gov.uk/_data/assets/pdf_file/0003/109758/STP-Strategy-Summary-Jan17.pdf
Update to the Surrey Transport Plan: Strategies and associated developer guidance regarding emissions reduction.	The Council's approach to reducing transport-related air pollution and greenhouse gas emissions through the addition of two new strategies to the Surrey Transport Plan: the Low Emissions Transport Strategy and Electric Vehicle Strategy.

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[13] www.surreycc.gov.uk/localtransportstrategies

1.4 The Problem Identified by the National PCM Model

Modelling undertaken at a national level, to inform the UK Plan, assessed compliance of the EU Limit value along roads where there is public access within 15m, such as a footpath or cycle track running parallel to it. Where there was no public access the road link was excluded.

The A331 has been identified due to the presence of the Blackwater Valley path that runs along it. The precise distance of this path from the A331 is shaped by the presence of the Blackwater River and the Reading to Guildford railway line. Whereas a footpath would not be considered a relevant receptor under the LAQM process when assessing an annual mean air quality standard[14], the UK Plan considers it as representing public access, no matter what the length of time someone may be present for at that location.

Under the UK Plan, projections for concentrations of nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x) across the UK in the years 2017 - 2030 inclusive were calculated as part of the PCM model. These concentrations were calculated at a distance of 4m from the running lane along specific road links with public access within 15m, and assume no further action than that already committed by the reference year (2015). Table 3 shows the predicted concentrations by year at the non-complaint links along the A331 and the year by which each link would be compliant with no further intervention.

Table 3 NO_2 concentrations along PCM modelled road links

Local Authority	Road Name	Census ID	Base year	Baseline Roadside NO_2 Concentration for Projected Years (μgm^3) 2017	2018	2019	2020	2021	2022	2023
Guildford	A331	73595	**55**	**52**	**50**	**47**	**45**	**42**	40	38
Rushmoor	A331	73598	**53**	**50**	**47**	**45**	**43**	**40**	38	36
Rushmoor	A331	73600	**55**	**53**	**50**	**48**	**46**	**43**	**41**	38
Rushmoor	A331	99252	**51**	**48**	**46**	**44**	**42**	39	37	35
Surrey Health	A331	36961	**52**	**50**	**47**	**45**	**43**	**41**	38	37
Surrey Health	A331	73596	**53**	**50**	**48**	**46**	**43**	**41**	38	36
Surrey Health	A331	73597	**53**	**50**	**47**	**45**	**43**	**40**	38	36
Surrey Health	A331	73599	**53**	**50**	**47**	**45**	**43**	**40**	38	36
Surrey Health	A331	8007	**53**	**48**	**45**	**43**	**41**	38	36	34
Surrey Health	A331	99249	**51**	**48**	**46**	**44**	**42**	39	37	35

[14] Should be assessed at locations where the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the standard

Note: Values in bold denote exceedances of annual mean NO_2 EU limit value

Figure 2 showed these road links in context. In summary, the modelling indicated that certain road links within each authority area would not be complaint by

- 2023 in Rushmoor (Census ID 73600)
- 2022 in Guildford (Census ID 73595) and
- 2022 in Surrey Heath (Census ID 73596)

These concentrations are the basis on which Rushmoor, Guildford and Surrey Heath Borough Councils were named within the UK Plan and the reason for the issuing of the Ministerial Direction to each local authority. They have not been used to inform the options appraisal going forward.

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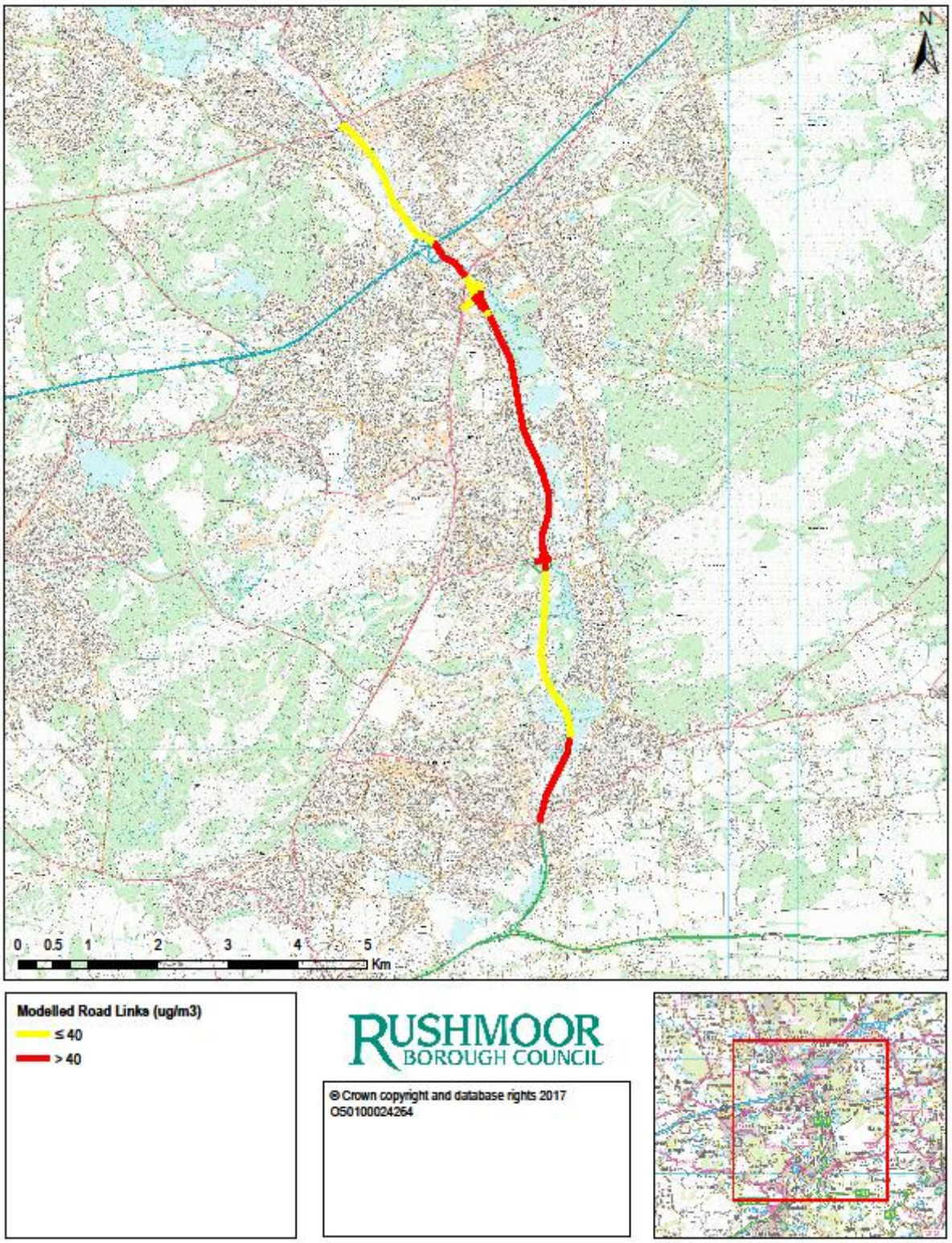
Figure 2 PCM projected roadside NO_2 exceedances within the Blackwater Valley area.



Local Data Acquisition and Detailed Modelling Methodology

The PCM modelling is based on national assumptions and unlikely to be representative of conditions locally. This OBC needed to be informed by detailed traffic and air quality modelling to account for local conditions, that reflected actual fleet composition, traffic flows, speeds and other local source emissions. Significant work has been undertaken to understand these local conditions.

Surrey County Council's in-house transport model; SINTRAM v7.2, was used to assess potential traffic effects and to quantify possible impacts. Atkins was commissioned to undertake detailed air quality dispersion modelling using ADMS-Roads (Version 4.1.1). The approach taken to the modelling was outlined in a letter to JAQU, dated 1st May and contained in Appendix 1a, which was considered to be a reasonable approach by JAQU (the response from JAQU, dated 18th May, is also contained in Appendix 1b. The modelling was informed by automatic number plate recognition (ANPR) and traffic surveys carried out during November 2017. The location of the ANPR cameras and traffic count sites can be seen in Annex Figure A-2. The results have been used to assist model validation and for ascertaining fleet composition on the local road network. Further data sources to inform the modelling were TemPRO v7.2 growth factor data to estimate future traffic flow and Teletrac-Navman TrafficMaster data to derive observed journey times and average speeds along road links.

Atkins was commissioned to provide support for this Outline Business Case submission. This included undertaking detailed air quality dispersion modelling to assess existing and future air pollutant concentrations and the impacts of potential mitigation measures, and providing support to the economic appraisal and business case development process. ADMS-Roads (version 4.1.1) has been used to estimate the contribution from road traffic emission sources to annual mean NO_x concentrations at selected receptor locations. Contributions from other sources were estimated using Defra background maps. The Emissions Factor Toolkit (EFT) v8.0.1a was used to inform source emission modelling and the future fleet projections. Detailed modelling was undertaken for the base year 2017 and the compliance assessment year of 2021, with intervening years being extrapolated.

To validate the air quality modelling, 23 new NO_2 diffusion tube locations were installed in November 2017 along the A331 corridor, with an additional new triplicate site co-located with the existing continuous monitoring station at Castle Rd in Frimley. The locations of these are shown in Annex Figure A-4 and results to date in Table A-1. This is in addition to the existing

monitoring network deployed by each of the three Local Authorities with respect their duties under the LAQM regime.

All transport and air quality modelling methodologies have been reviewed by JAQU and the respective Transport and Air Quality Modelling Methodology Reports will be submitted as part of this OBC for final approval. These are presented in the Technical Annex.

Local Baseline Results

The ADMS-Roads dispersion model was used to estimate the contribution from road traffic sources to annual mean NO_x concentrations at worse case receptor locations along each non-complaint link. Figure 3 shows those road links exceeding the NO_2 EU limit value in the base year 2017 and in 2021. The results of modelling are summarised in Table 4. The outputs indicate that, in the absence of any additional measures (business as usual), compliance with the annual mean NO_2 EU limit value will be achieved:

- in 2019, for those road links fully within Surrey Heath;
- in 2020, for those road links within Guildford; and
- in 2022, for a road link (census id 73600) within the area Rushmoor. (See Figure A-3)

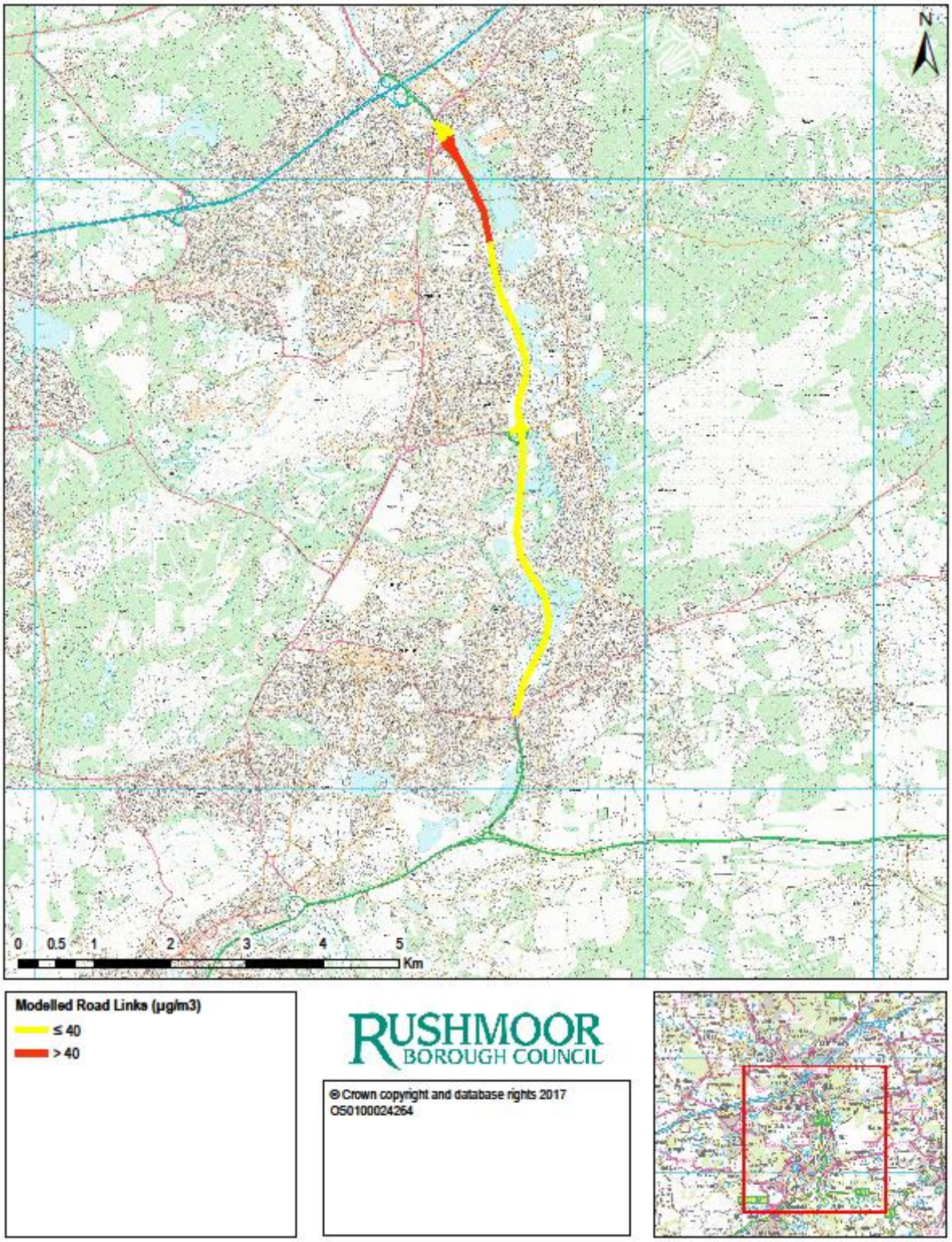
Table 4 NO_2 concentrations along locally modelled road links

Census ID	Local Authority	Modelled Roadside Annual Mean NO_2 Concentration ($\mu g/m^3$)							
		2017	2018	2019	2020	2021	2022	2023	2024
73595	Guildford	**44.5**	**42.9**	**41.2**	39.5	37.8	36.1	34.5	32.8
73596	Surrey Heath	**41.5**	39.9	38.3	36.6	34.9	33.3	31.7	30.1
73597	Surrey Heath	**43.3**	**41.6**	39.9	38.2	36.4	34.7	33.0	31.4
73598	Rushmoor	**43.3**	**41.6**	39.9	38.1	36.4	34.7	33.0	31.3
73599	Surrey Heath	40.4	38.8	37.2	35.5	34.0	32.4	30.8	29.3
73600	Rushmoor	**49.5**	**47.6**	**45.6**	**43.7**	**41.8**	39.9	38.1	36.2
99252	Rushmoor	**43.9**	**42.2**	**40.6**	38.8	37.1	35.4	33.7	32.0
99249	Surrey Heath	**41.9**	40.3	38.6	36.9	35.2	33.6	31.9	30.3

Note: Values in bold denote exceedances of annual mean NO_2 EU limit value

The concentrations presented in Table 4 are the base year modelling outputs for 2017 and projections for 2021 and beyond. These are the concentrations that will be used to inform the options appraisal in the Economics Case.

Figure 3 Road links exceeding the NO2 EU limit value in 2017 and 2021



Local Model Source Apportionment

Table 5 shows the Annual Average Daily Flow (AADF) along the A331[15] in 2017, with predictions for 2021.

Table 5 Traffic count for 2017 and forecast for 2021

Census link 73600	AADT - 2017	AADT - 2021
A331 Northbound	37416	39736
A331 Southbound	37992	40343
Total	**75409**	**80079**

Registration data from the ANPR survey has been cross-referenced with DVLA records to provide the following fleet composition information for these movements:

- Vehicle split (e.g. car / LGV / HGV / bus);
- Fuel type, e.g. petrol, diesel, bi-fuel, electric / hybrid and
- Euro composition (pre-Euro, Euro 1 / 2 / 3 / 4 / 5 / 6).

Table 6 presents this fleet composition for the impacted link and shows that cars represent 84% of total movements, LGVs 13% and HGVs only 3%. Relatively few buses and coaches were identified as using the A331.

Table 6 Fleet composition site of the A331 (census link 73600)

	Car		*LGV*	*HGV*	*Bus*
	Petrol	*Diesel*			
Euro 1	0%	0%	0%	0%	1%
Euro 2	1%	0%	0%	0%	3%
Euro 3	9%	4%	3%	4%	10%
Euro 4	15%	10%	24%	12%	29%
Euro 5	14%	20%	52%	28%	27%
Euro 6	12%	15%	20%	54%	30%
Fleet Split	44%	40%	13%	3%	0%

This information has been used to apportion the source of NO_x emissions between vehicle types for the non-complaint road link 73600. The results show that 72% of emissions can be attributable to local road traffic, with 28% to general background sources[16]. Figure 4 shows

[15] Census link 73600 derived from traffic survey data

[16] Includes domestic, commercial and industrial sources, and regional traffic sources (not local).

the contribution by each main vehicle type. Diesel cars and LGVs, account for 44% and 38% respectively of vehicle NO_x emissions. Petrol cars only contribute 7% of NO_x emissions and HGVs 10%, with other vehicles only minor contributors to the air quality problems along that link.

Figure 4 NOx source apportionments on non-complaint road link in 2017.

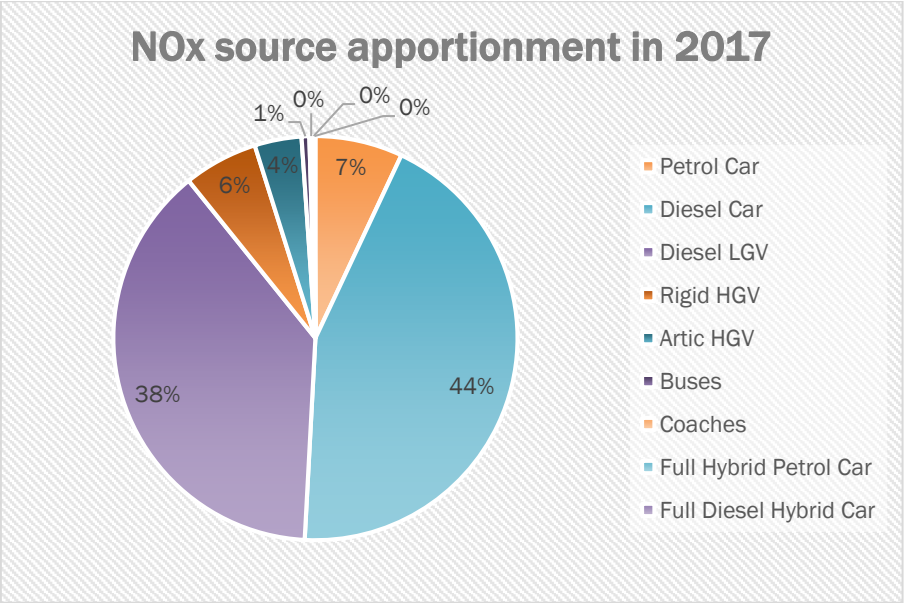
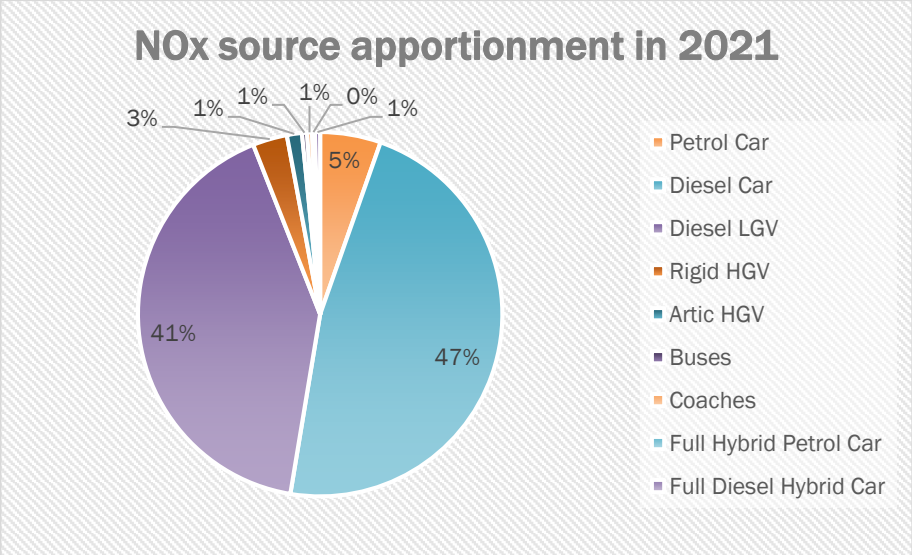


Figure 5 shows the baseline year of 2021 under a business as usual scenario. Diesel cars and LGVs will account for a slightly higher percentage of vehicle NO_x emissions, 47% and 41% respectively, with the relative contributions from other vehicle types reducing. Petrol cars only contribute 5% and HGVs only 4%. The proportion of NO_x attributable to diesel cars and LGVs is significantly higher than that reported by the PCM modelling.

Figure 5 NO_x source apportionments on non-complaint road link in 2021.



1.5 The Case for Change

Modelling undertaken nationally to inform the UK Plan identified exceedances of the annual mean EU limit value for NO_2, and that these exceedances would remain in place until 2023 if further action was not taken. Local detailed modelling has confirmed that there are currently exceedances along the A331 but that only one section of the road will remain non-compliant beyond 2020. The exceedance along this particular link of the A331, immediately to the south of the Farnborough Gate/Frimley junction, will persist up to 2021. It is shared between Rushmoor and Surrey Heath and both local authorities are legally obliged to act under the Ministerial Direction.

Section 1.2 highlighted the risks to public health associated with elevated levels of NO_2 and other pollutants from vehicle emissions. Detailed local modelling shows a section of the A331 exceeds the health based limit value for NO_2, so there is an obvious risk to path users and to drivers, in terms of adverse health consequences. It is therefore necessary to take appropriate action quickly in the interests of public health to reduce these pollutant levels. In so doing, the Blackwater Valley group of local authorities will be complying with the legal obligation placed upon them by the Ministerial Direction, and will achieve compliance of the NO_2 EU limit value in the shortest possible time.

Detailed local modelling demonstrates that Guildford Borough will be compliant by 2021.

Whilst the primary focus of any actions considered will be on reducing emissions and improving public health in the shortest possible time, such measures should be proportionate to the level of exceedance identified and appropriate within the context of the local area. However, the legal backdrop cannot be ignored.

In addition to the Ministerial Direction, a number of High Court judgements have clarified what is expected from Local Plans. These judgements gave detailed and definitive rulings on the proper interpretation of the obligations that flow from the EU Directive. In his 2016 ruling[17], Mr Justice Garnham set out a three-part test for assessing air quality plans. They must:

- Aim to achieve compliance as soon as possible;
- Choose a route to compliance which reduces human exposure as quickly as possible; and

[17] https://www.judiciary.uk/wp-content/uploads/2016/11/clientearth-v-ssenviron-food-rural-affairs-judgment-021116.pdf

- Ensure that compliance with the limit values is not just possible but likely.

The adoption of local air quality plans that do not meet these tests may be vulnerable to legal challenge. The shortlisting of options and the identification of a preferred measure have needed to have regard to this legal context.

A robust case for change requires a thorough understanding of what the Local Plan is seeking to achieve. All options under consideration need to be assessed against the spending objectives of the project and the evaluation of the chosen intervention will consider how well it delivers on these objectives.

1.6 Spending Objectives

The overall spending objective of the local plan is to deliver a scheme that leads to compliance with NO2 concentration limits in the shortest possible time. The UK has a legal requirement to comply with air quality limits18, so this has driven the selection of measures. Options that meet this primary objective are further assessed against secondary spending objectives19. These have been used to determine which option would be a better fit locally relative to other considerations;

- **Achieve value for money**: ensuring the lowest cost options that will achieve compliance in the shortest possible time are taken forward, having consideration of the full range of costs to society and business
- **Distributional impacts:** ensuring particular groups of people are not disadvantaged;
- **Strategic and wider air quality fit:** ensuring options do not have unintended consequences in terms of addressing air quality issues in the wider area including CO_2 reduction, NO_2 emissions and nitrogen deposits, and particulates
- **Supply side capacity and capability:** Can the market deliver the interventions successfully
- **Affordability**: All other factors being equal, cheaper options score more favourably
- **Achievability:** Ensuring adequate resources is available to carry out the project.

[18] annual mean NO2 concentration of 40µg/m^3

[19] designed to be SMART – specific, measurable, achievable, relevant, and time-constrained

The primary and secondary objectives provide the foundation for post-implementation review and evaluation.

1.7 The Preferred Option

The completion of detailed transport and air quality modelling has provided clarity on what options will achieve the required improvements in air quality and public health. Further detail on the option appraisal process can be found in the Economics Case.

Under a business as usual scenario, a link of the A331 that passes through Rushmoor and Surrey Heath will not achieve compliance until 2022. Following a revised options appraisal process, it has been determined that a speed restriction of 50mph, along this section of the A331, will be sufficient to bring about compliance by 2021. Other options have been discounted as not meeting the primary spending objective of bringing compliance in the shortest possible time or for having unintended adverse consequences with regards air quality and traffic redistribution. The reasons for discounting a charged Clean Air Zone are further discussed in Section 2.2

It was initially hoped that a 50mph speed restriction could be enforced by use of average speed cameras. This would have provided a degree of confidence that the required behavioural change, a lowering of the average speeds along that road link, would be achieved and deliver compliance of the EU limit value in the shortest possible time. However, the Blackwater Valley Group was informed that neither Hampshire nor Surrey Police would be able to support the use of average speed camera enforcement for the reasons set out in Section 1.9.

As set out in Table 10 and Section 2.4 the current average weekday speeds are between 61.8 and 63.6 mph depending on direction (99-101 kph).

Hampshire County Council consider that, based on officer experience, only a 3-mph average speed reduction can be expected with the introduction of a 50mph speed restriction without camera enforcement. Surrey County Council's view, based on their own policy and DfT guidance, is that a greater reduction in average speeds can be expected. Atkins has modelled a range of different average speeds along this link to assess the various scenarios. Their modelling indicates that for the average speeds assessed, all would be predicted to achieve compliance in 2021.

Table 7 Range of average speed scenarios modelled

Census ID	Max. Speed	Modelled Roadside Annual Mean NO_2 Concentration (µg/m^3)
		2021
73600	Do-Nothing	41.78
	95 kph (59 mph)	40.49
	90 kph (56 mph)	39.60
	93 kph[20] / 97 kph[21]	40.38
	85 kph (53 mph)	38.13
	80 kph (50 mph)	37.60

Modelling of speed restrictions to both 60mph and 50mph are shown to achieve compliance but due to uncertainties over air quality dispersion modelling, behaviour change and Hampshire County Council's assumption that there would be no impact from a signed-only reduction to 60mph, the 50ph speed limit gives greater assurance that compliance will be achieved. Whilst it would have been preferable to be able to introduce average speed cameras to be assured of realising a greater reduction in average speeds, (therefore increasing likelihood of compliance being achieved in the shortest possible time), without police support this is not possible. Only a high-level intervention would change the police's position.

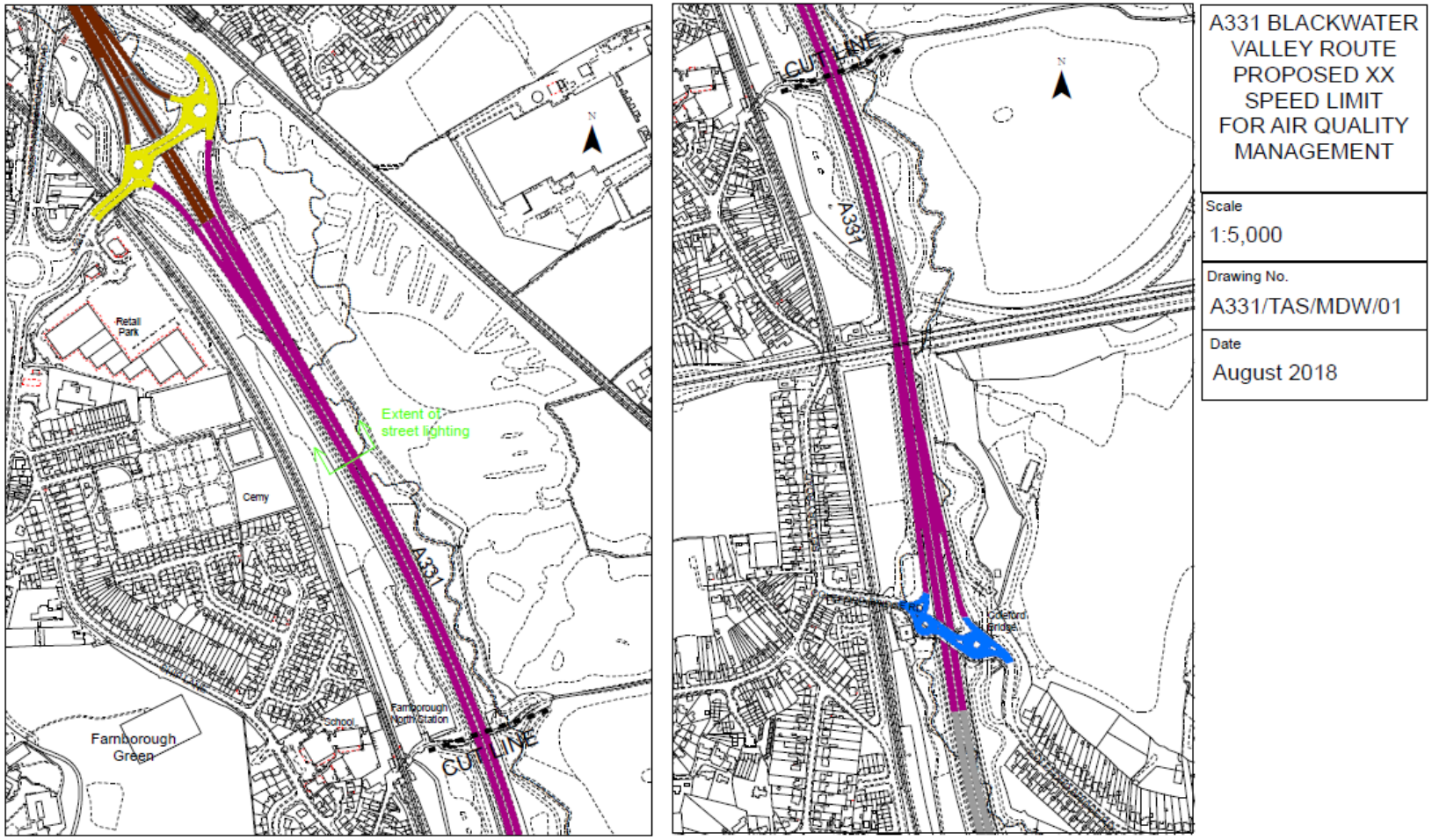
The preferred option therefore is to proceed with a signed-only 50mph speed restriction with additional signage signifying the air quality purpose of the limit. Modelling predicts that even with a relatively minor reduction in average speeds, compliance of the EU limit value will be achieved by 2021. Should a greater average speed reduction by realised then compliance could be achieved sooner.

This option will have a limited impact on the surrounding road network and is an extension of a 50mph speed restriction already in place on the northern section of the A331 (see figure 6). In addition, once compliance has been achieved, such an intervention can be easily reversed if it can be demonstrated that compliance with the EU limit value will be maintained.

[20] AM peak 07:00-10:00, Inter-peak 10:00-16:00PM peak 16:00 – 19:00

[21] Off-peak flows 19:00 -07:00

Figure 6 Proposed speed limit extent, showing existing speed restrictions in place



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KEY

- Existing 30 mph limit
- Existing 40 mph limit
- Existing 50 mph limit
- Existing National speed limit
- Proposed XX mph limit (Existing National speed limit)

Hampshire County Council

1.8 Benefits, Risks, Constraints and Dependencies.

To be able to fully inform the selection and evaluation of options that will deliver compliance with NO_2 concentration limits in the shortest possible time, it is necessary to understand the general benefits and risks of this Local Plan, as well as the likely constraints and dependencies that may be associated with any preferred scheme. These will require consideration as part of the design and implementation of measures. The selection of measures will aim to maximise benefits and mitigate risks wherever possible. Further details can be found within the Management case.

Table 8 Benefits, Risks, Constraints and Dependencies.

Main benefits	• Improved public health along the Blackwater Valley path • Reduction in vehicle emissions along impacted road links, not just NO_2 but particulate matter. • Improving the environment and encouraging greater uptake in path usage by pedestrians and bicycles • Making the path more attractive for walkers and cyclists • Linking up to a larger cycling and walking network that people will want to use • Noise reduction along the path • Contribution to delivery of existing local and regional strategies. • Reduced contribution to climate change with reduction in NOx • Reduced impact on local ecosystems
Main risks	• Limited timescale for the implementation of the proposed intervention • A lack of political and public support for the proposed measure • Increased exposure to poor air quality of the greater population if vehicles divert on to local roads, including an increase in particulate emissions and exposure • Worsening of air quality in other areas • Vehicles diverting onto local roads contributing to a road safety risk • Availability of funding and resource to implement, manage, monitor and enforce the required initiative. • Pressure on supply market as Local Plans across the UK being implemented at the same time • Any measures implemented may have unintended consequences, such as increased carbon emissions or congestion • Not achieving required behavioural change due to lack of average speed camera enforcement
Constraints	• Time constraints for implementation of measures – not only design and development work but also procurement of services • Physical constraints of the current road and its surroundings, and location of infrastructure. • Funding constraints in maintaining initiatives over the longer term • Highways England support for any measures that may conceivably impact on their strategic network. • Legal constraint in terms of requirement to achieve compliance in shortest possible time • Need for Traffic Regulation Order (SLO)
Dependencies	• LAs named within the UK Plan but CC are the highways authorities so LAs are totally reliant on County to implement any measures along the A331 • Engagement with all major stakeholders and landowners in the study area is required • Delivery of funding required to implement initiatives within short timescales • Dependency on third parties to deliver proposed initiatives • Need approval to proceed with SLO

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1.9 Stakeholder Engagement.

Highways England

Highways England was identified early as a key partner in this project and were invited to attend the Blackwater Valley Strategic Group and the Technical Officers Group. They were signatories to the Memorandum of Understanding that was signed by the five authorities.

The initial shortlist of options presented within the initial Local Plan did contain measures that could be implemented at and around junction 4 of the M3 motorway.

In a letter dated 13 April 2018, Highways England confirmed that, based on Highways England policy, they would not be in a position at this time to support any interventions that encompass the strategic road network and associated junctions to effect traffic movements along the A331 sorely for the mitigation of NO_2 concentrations at the adjoining public access. Nor would HE support any measures on the A331 that had the potential to affect traffic movements on the strategic road network, in particular the M3, to determinant of existing properties alongside the M3.

Highways England own policy in relation to public access states:

"As a general guide we do not consider mitigation is required for public access (footpaths) because there would be no relevant exposure for the annual mean averaging period. Where there was evidence of NO2 concentrations above 200µg/m3 (1 hour mean), then it would need to be established whether there is a continuous footpath of 2 miles or more (assumed an average walking speed of 2 to 3mph) or a café or other facility where individuals would be likely to reside for an hour or more, so there would be continued exposure for the hour".

Speed Limit Order (SLO)

A statutory consultation forms part of the SLO process. The procedure for both Surrey and Hampshire County Councils is outlined below;

1. Hampshire County Council will act as the lead authority, with Surrey County Council obtaining agreement that the lead authority can act on their behalf.
2. Both authorities to seek the necessary police and councillor authority as normal.
   - Within Hampshire, preliminary approval is via Hampshire County Councils Local Area Traffic Manager, the local County Councillor and Hampshire Police.
   - Within Surrey permission to advertise a SLO is delegated to the Local Committees / Joint Committees. A report has been presented to the

relevant committees giving the following details: a description of the road in the context of Surrey's Strategic Priority Network;

- a summary of recent speed survey results;
- a summary of collision and casualty data;
- predicted speeds following a change in speed limit;
- recommendations for a new speed limit and supporting measures;
- estimated costs;
- views of Surrey Police and Surrey County Council's Traffic Management Team

3. The lead authority prepares the paperwork which includes normal deposit points for both authorities.
4. Once approved by the relevant committees / stakeholders the SLO must be advertised for 21 days. This involves informing other relevant stakeholders, placing a notice in the relevant newspapers, on relevant websites and advertising on site.
5. After the objection period both authorities seek to obtain permission to implement.
   - It is proposed that consultation responses will be considered jointly at a meeting of Hampshire's County Council Executive Member and the Chair and Vice Chair of the Surrey Heath Local Committee attended by relevant officers.
6. If the decision is made to proceed then the SLO can be made. A further period of notice commences (usually 21 days and, again, presented in the local press) stating that the SLO has been made and when it will come into force. Each authority seals the order, with the other authority doing so a week before the lead, both agree the implementation date.

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The Police

Surrey Police were consulted regarding the proposal to lower the speed limit along the A331. While they acknowledged the rationale behind the speed limit change, their concerns include:

- inappropriate speed limits increasing the risk of drivers not complying, and bringing into disrepute all other speed limits;
- the need for compliance to be understood by drivers;
- concerns surrounding average speed camera introduction in terms of cost, resource and the capacity to process offences, the lack of court slots and the availability of Driver Improvement courses.

However, due to these concerns, Surrey Police have reserved the right to object to the proposal in response to the formal consultation on the SLO.

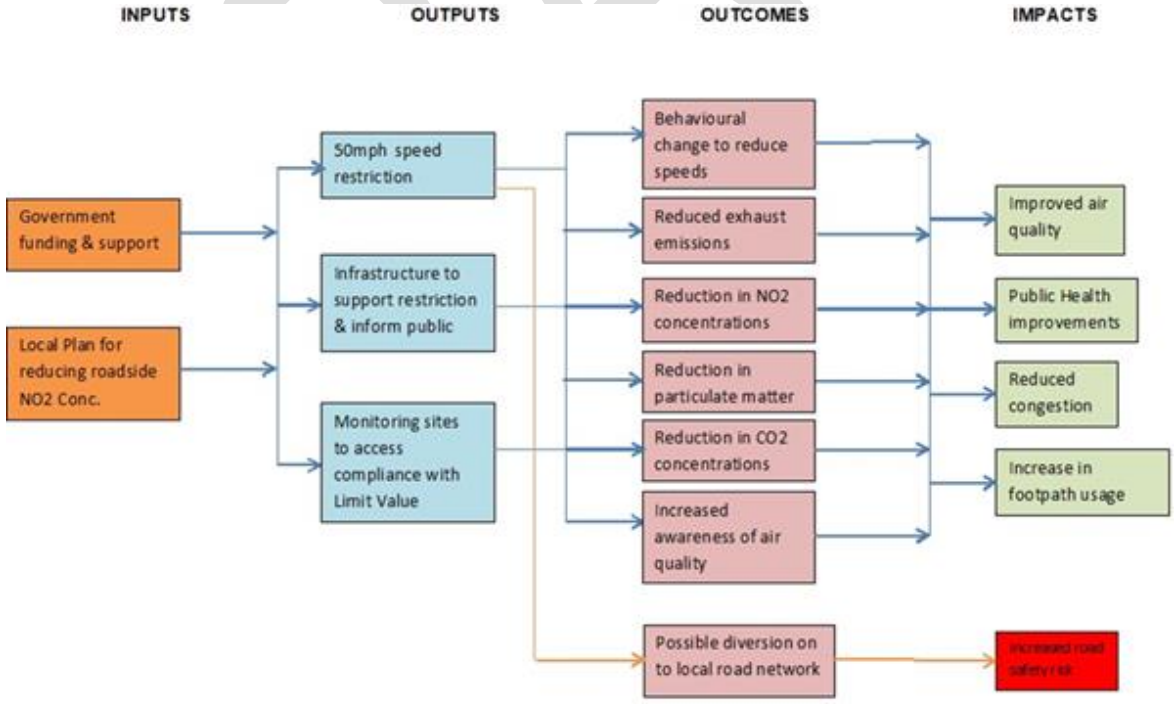
Hampshire Police's advised that they would not be able to support the use of average speed camera enforcement for the following reasons:

- there are concerns around normal business as usual offences and constraints at their offices. (Limited capacity both in terms of staffing and building space for those additional staff to work)
- the proposal not meeting or supporting Hampshire Constabulary Road Safety Priorities in causality reduction.
- them having to focus and prioritise their work around killed and serious injury reduction and deaths on local roads.

1.10 Logic Map

The logic map in Figure 7 highlights the theory of change underpinning the OBC. It demonstrates how inputs generate outputs, driving outcomes that lead to impacts, with the overall objective being to achieve compliance in the shortest possible time.

Figure 7: Theory of Change Logic Map



2 Economic Case

2.1 Update from Initial Plan

Initial Shortlisting of Measures

The Strategic Outline Case[22] set out the initial approach to identifying and considering policy options for delivering improvements in NO_2 concentrations along the A331.

Over the course of several workshops held in January and February 2018, transport and environmental officers from the Blackwater Valley Group, along with consultants, met to consider all conceivable measures to improve air quality. A longlist of possible options was produced and these were assessed against the primary Critical Success Factor (CSF), reflecting the overall spending objective of the local plan to deliver a scheme that leads to compliance with NO_2 concentration limits in the shortest possible time. This high-level qualitative assessment, based on officer experience and knowledge of the local strategic road network, enabled a longlist of imaginable options to be whittled down to a manageable short list of feasible options to be explored further.

Table 9 sets out all the possible measures considered at this time. Options that fulfilled the primary CSF were taken forward for further assessment against the secondary objectives identified in Section 1.6. All measures were assessed and scored according to the following scale:

Primary		Secondary	
P	Pass	2	Excellent
F	Fail	1	Good
		-1	Poor
		-2	Very Poor

A Pass score meant that the measure could make a significant contribution to achieving compliance and is deliverable within the required timescale. A Fail score meant that either the measure would not assist with achieving compliance or not be deliverable in the timescale. If measures that failed were subjectively assessed to be worthy of consideration as a part of a possible package of measures then these too were added to the shortlist to be further assessed.

[22] Submitted to Government on 29th March 2018

Table 9 All measures considered and the process of short-listing potential options

No.	Measure	Primary CSF			Secondary CSF							2nd CSF score	Add to Shortlist
		Estimated delivery date	Shortest possible time	As part of a package	Distributional impacts	Strategic and wider air quality fit	VfM	Supply side	Affordability	Achievability	Encourage mode shift		
1	Do nothing		Fail	✗									
	Infrastructure Interventions												
2	Tunnel from A31 to A30 for through traffic	Post 2021	Fail	✗	2	1	-2	-2	-2	-2	-1	-6	NO
3	Electrification of North Downs line. Woking to Ash and Shalford to Reigate.	Post 2021	Fail	✗	2	2	-2	-2	-2	-2	2	-2	NO
4	Light rail scheme conversion – Ascot to Ash Vale/Aldershot – introduce more stops in residential areas.	Post 2021	Fail	✗	2	2	-2	-2	-2	-2	-1	-5	NO
5	Ramp metering – every slip road along A331	Post 2021	Fail	✗	1	1	-1	2	2	2	-1	6	YES
6a.	Speed limit decrease to 60 mph	By 2021	Pass	✓	2	2	2	1	1	2	-1	9	YES
6b.	Speed limit decrease to 50 mph	By 2021	Pass	✓	2	2	2	1	1	2	-1	9	YES
7a.	Speed limit decrease to 60 mph with enforcement cameras	By 2021	Pass	✓	1	1	2	1	1	2	-1	7	YES
7a.	Speed limit decrease to 50 mph with enforcement cameras	By 2021	Pass	✓	1	1	2	1	1	2	-1	7	YES
8a.	Variable speed limit depending on time of day.	Post 2021	Fail	✗	1	1	1	2	-1	-2	-1	1	NO
8b.	Variable speed limit depending on time of day with enforcement cameras	Post 2021	Fail	✗	1	1	1	2	-1	-2	-1	1	NO
9	Re-phasing of signals at A331 M3 junction 4.	By 2021	Pass	✓	2	2	1	2	-1	2	-1	7	YES

No.	Measure	Primary CSF			Secondary CSF							2nd CSF score	Add to Shortlist
		Estimated delivery date	Shortest possible time	As part of a package	Distributional impacts	Strategic and wider air quality fit	VfM	Supply side	Affordability	Achievability	Encourage mode shift		
10	New signals at A331/M3 junction 4 to limit queuing under motorway	By 2021	Pass	✓	2	1	1	2	-1	1	-1	5	YES
11	Clean Air Zone – A331	By 2021	Fail	✓	2	1	2	2	2	1	-1	9	YES
12	Charging Clean Air Zone – A331	By 2021	Fail	✓	2	1	2	2	2	1	-1	9	NO
13	Clean Air Zone – wider area	Post 2021	Fail	✗	-1	-1	1	2	2	2	-1	4	YES
14	Charging Clean Air Zone – wider	Post 2021	Fail	✗	-2	-2	2	2	-1	1	-1	-1	NO
15	Clean Air Zone – HGV, taxis and buses A331	By 2021	Fail	✓	1	2	1	2	2	2	-1	9	YES
16	Charging Clean Air Zone – HGV, taxis and buses A331	By 2021	Fail	✓	-1	2	-1	2	-1	-2	-1	-2	NO
17	Free high occupancy vehicle lane with traffic enforcement	By 2021	Fail	✗	-1	-1	1	2	2	2	-1	4	NO
18	Low emission vehicle lane with traffic enforcement lane	By 2021	Fail	✗	-1	-2	2	2	-1	1	-1	0	NO
19	Private and Non-residential parking charges - Differential parking charges	By 2021	Fail	✗	-2	-1	-1	2	2	1	-1	0	NO
20	Closing one or more of the M3 slips at junction 4.	Post 2021	Fail	✗	-2	-1	1	2	-1	1	-1	-1	NO
*	Environmental weight limit on A331	By 2021	Fail	✓	-1	-1	-1	2	2	1	-1	1	NO
	Demand Management												
21	Travel demand management Blackwater Valley	By 2021	Fail	1	1	1	2	-1	-2	1	3	5	YES
22	Travel demand Farnborough Air Show and convention centre at airport	By 2021	Fail	1	1	-1	2	-1	-2	1	1	1	NO
23	Travel plan for MOD and supporting industry	By 2021	Fail	✓	1	1	-1	2	1	-1	1	4	YES

No.	Measure	Primary CSF			Secondary CSF							2nd CSF score	Add to Shortlist
		Estimated delivery date	Shortest possible time	As part of a package	Distributional impacts	Strategic and wider air quality fit	VfM	Supply side	Affordability	Achievability	Encourage mode shift		
24	Schools and colleges campaign – Farnborough College	By 2021	Fail	✓	1	1	-1	2	1	1	1	6	YES
	Vehicle related interventions												
25	Retrofitting of buses on roads adjacent and crossing to A331.	By 2021	Fail	1	1	-1	-1	1	-1	1	1	1	NO
26	Fleet renewal of buses on roads adjacent and crossing to A331.	By 2021	Fail	1	1	-1	1	1	-1	1	3	5	YES
27	Taxis grants to encourage of uptake of electric vehicles. Need to offer to wide network	By 2021	Fail	1	1	-1	2	1	-1	-1	2	3	YES
28	Expansion of rapid charging points network.	By 2021	Fail	1	1	-1	2	1	-1	-1	2	3	YES
29	HCC and SCC on highways GBC, RBC, SHBC waste/recycling retrofitting vehicles euro 6	By 2021	Fail	1	1	-1	-1	1	-1	-1	-1	-3	NO
30.	HCC and SCC on highways GBC, RBC, SHBC waste/recycling new electric vehicles	By 2021	Fail	1	1	-1	1	1	-1	-1	1	1	NO
31	Infrastructure of electric rapid charging points scheme for LA and CC vehicles	By 2021	Fail	1	1	-1	2	1	-1	-1	2	3	YES
32	NHS and emergency services and police	By 2021	Fail	1	1	-1	1	1	-1	-1	1	1	NO
	Footpath etc.												
33	Fencing adjacent to A331- cladding with pollution absorbing material / vegetation	By 2021	Pass	✓	2	1	1	2	1	1	-1	7	YES
34	Green Screen	Post 2021	Fail	✓	2	1	1	2	-1	-1	-1	3	YES
35	Covering path	Post 2021	Fail	✗	2	-2	1	1	1	-2	-1	0	NO
36	Tunnelling of footpath	Post 2021	Fail	✗	2	1	-1	-1	-2	-2	-1	-4	NO
37	Close footpaths adjacent A331	By 2021	Fail	✗	-2	-2	1	2	1	-2	-1	-3	NO

No.	Measure	Primary CSF			Secondary CSF							2nd CSF score	Add to Shortlist
		Estimated delivery date	Shortest possible time	As part of a package	Distributional impacts	Strategic and wider air quality fit	VfM	Supply side	Affordability	Achievability	Encourage mode shift		
38	Re-routing A331 path away from areas of exceedance.	Post 2021	Fail	✗	1	1	1	1	1	-2	-1	2	YES
	Sustainable Transport												
39	Cycle hubs – linked to rail stations	By 2021	Fail	✓	2	1	1	2	1	1	1	9	YES
40	Cycle hire	By 2021	Fail	✗	-1	1	1	1	-1	1	1	3	YES
41	Blackwater sustainable transport project			✗	1	2	-1	1	-1	1	1	4	YES
42	Real time bus information for bus corridors in area	By 2021	Fail	✓	2	1	-1	2	-1	1	1	5	YES
43	Bus infrastructure	By 2021	Fail	✓	2	1	-1	1	1	-1	1	4	YES
44	Bus interchange	Post 2021	Fail	✗	1	1	-2	1	-1	-2	1	-1	NO
45	Frimley Park Hospital accessibility improvements	By 2021	Fail	✗	1	1	-1	1	-1	-1	1	1	NO
46	New bridge over railway line adjacent to Frimley station for cycle and pedestrian.	Post 2021	Fail	✗	1	1	-2	-1	-2	-2	1	-4	NO
47	Park and Ride	Post 2021	Fail	✗	-1	-1	-2	-1	-2	-2	-1	-10	NO
48	New train station at Frimley on the North Downs line accompanied with a shuttle bus service	Post 2021	Fail	✗	1	1	-2	-1	-2	-2	1	-4	NO
	Freight												
49	Freight consolidation	Post 2021	Fail	✗	1	1	-1	-2	-2	-2	-1	-6	NO
50	Electric Supermarket deliveries	Post 2021	Fail	✗	1	1	-1	1	1	-1	-1	1	NO

2.2 Options Evaluation

The shortlisting process outlined in Section 2.1 took place prior to local ANPR data being analysed, and before local transport and air quality modelling could be undertaken. An analysis of new data, outputs of detailed local modelling, and consultation with stakeholders has necessitated a re-evaluation of the underlying assumptions presented within the Strategic Outline Case. The extent of the modelled non-compliance only extends to one link of the A331 (census ID link: 73600) and not the whole Blackwater Valley corridor as initially thought, and compliance will be achieved sooner than the national PCM modelling indicated. Measures that would not bring about compliance on the link in question in the shortest possible time have therefore been discounted.

Charged Clean Air Zone

The starting assumption of any Local Plan according to Government guidance is that the benchmark option should be a charging Clean Air Zone (CAZ) of a high enough class to bring about compliance the year after implementation. However, the available guidance also stipulates that an alternative benchmark can be used, provided that it can be demonstrated a charging CAZ would not solve the exceedance in the area and would also be unsuitable and significantly detrimental in other aspects.

Modelling undertaken by Surrey County Council demonstrated that whilst a charging CAZ D would be effective at dissuading diesel cars and LGVs from travelling along the A331, these vehicles would be displaced and cause sizable increases in traffic flow on neighbouring corridors. In the majority of cases, these adversely affected roads pass though areas of greater population residency and activity which are already impacted by traffic related issues.

The diversion of the most polluting vehicles onto the local road network would inevitably lead to increased exposure to poor air quality across the wider population, deterioration in air quality within existing AQMAs and potentially the triggering of new exceedances of air quality objectives requiring the establishment of new AQMAs. Implementing a charged CAZ in the shortest possible time was considered unlikely and, in any event, it was considered that other options could be implemented quicker and achieve compliance sooner.

Sustainable Transport Measures

Measures such as travel demand management, school and colleges campaigns or bus related infrastructure or provision of real-time bus information, have been discounted as such measures would take too long to deliver real world improvements in emissions. Other options bring about improvements sooner.

Measures which Impact on the Strategic Road Network

Measures that could adversely impact on traffic flows on the M3 motorway have been discounted following engagement with Highways England, see Section 1.9 Highways England strongly indicated that they would not be supportive of any measure that affected their strategic network, if that measure was intended to meet an annual EU limit value along a footpath. It was also considered that measures that impacted the strategic road network would also make air quality worse within Surrey Heath's AQMA.

Fleet Improvements

Measures to improve the local bus or taxi fleet, or to tackle emissions HGVs, have not been taken forward as the source apportionment data shows these sources make no significant contribution to the NO_2 problem along the A331. Similarly, there is no reason to consider measures that would impact on local bus emissions as the A331 is not a bus route and neither buses nor coaches contribute to NOx emissions.

Diverting or Closing the Footpath

The footpath along the non-complaint link is a significant distance from the running lane of the A331 for much of its length. Only at two locations does the path come within 15m of the road (Figure 8); as the path goes under the bridge that connects the Hatches bridle path with Farnborough Street, near North Farnborough Railway station, and where the path is forced under the Farnborough – Woking line railway bridge, located further south.

Diverting the path at these two locations was considered but deemed impractical or unfeasible in the timescales required. Where the path passes under the Farnborough – Woking line Railway Bridge, there is no possible alternative route around this physical barrier. The only option would be a bridge or a tunnel and neither of these is considered feasibility in the timescale required.

Where the path passes under the footbridge by North Farnborough Station there is a possible diversionary route. However, this alternative route is not under local authority ownership or control. Negotiating access onto private land to re-route the path past existing private fishing lakes, and then constructing a footbridge over the Blackwater River to reconnect with the path at a location away from the A331, would take considerable time. Even if this could be achieved in the timescale required, it would still be necessary to identify additional options to reduce exposure on the path that passes under the railway bridge. One cannot be done without the other.

Finally, closure of the footpath was another consideration but this too was discounted. All authorities are actively encouraging communities to adopt sustainable forms of travel such as walking and cycling. The Blackwater Valley path is an important strategic element of the regional walking and cycling infrastructure. It provides sustainable access to local town centres, employment areas and the local rail network, thereby providing an alternative, reliable transport choice to the private car, encouraging modal shift, reducing carbon and other harmful emissions and tackling congestion. Closure of the path would risk all these benefits and send conflicting messages at a time when active travel is encouraged due to the health benefits it can deliver. In addition, Advice obtained from countryside officers suggested that any proposal to close the path would be likely to result in a call from users and walking groups to add the path to the definitive rights of way map. Should the path be considered a Right of Way, the ultimate decision to close a path rests with the Secretary of State for the Environment, and so a closure is outside the gift of local authorities to deliver.

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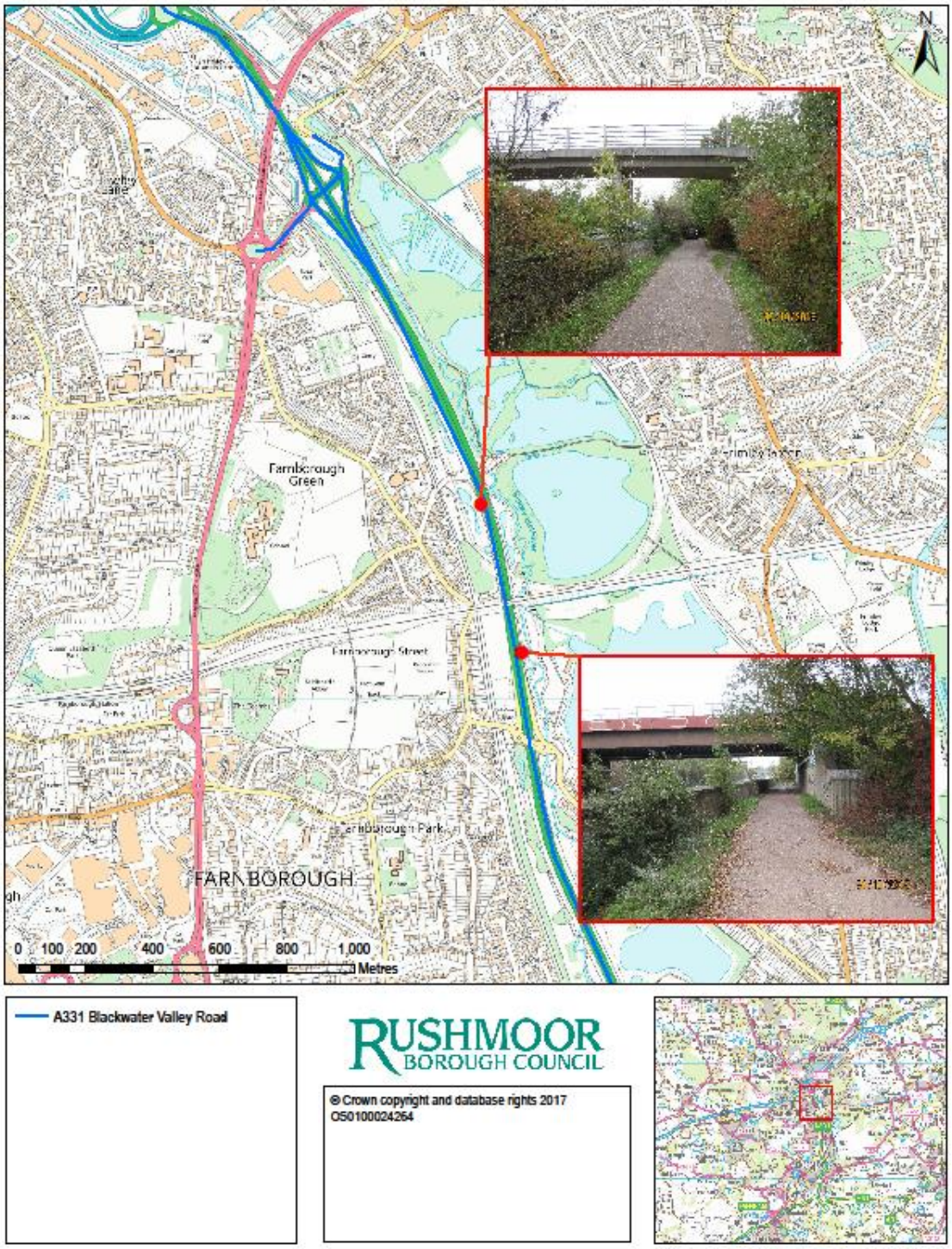
Figure 8 Locations of Public Access Along the A331 Within 15m of the Road



Green Screen or Vegetative Barrier.

Measures such as vegetative barriers or green screens would not reduce emissions emanating from the A331, but it was important to explore if evidence existed to demonstrate they could act to reduce exposure, either as a pollution sink or by reducing or disrupting the transport of pollutants from nearby traffic sources.

A feasibility study was commissioned to investigate the use of vegetative barriers and green screens to improve roadside nitrogen dioxide levels and reduce footpath user exposure along the A331. This study was undertaken on behalf of the Blackwater valley Group by Johns Associates Ltd and included an academic literature review of the available evidence to determine the effectiveness of such interventions in reducing NO_2 levels. Unfortunately, much of the available research to date focuses on the removal of particulate matter in the air. There was limited evidence demonstrating actual improvements in NO_2 levels and contrary evidence to suggest such barriers could act as obstacles to air flow, reducing ventilation and leading to higher on-road concentrations of airborne pollutants. The feasibility study concluded that the limited scale of research and lack of conclusive findings into the effectiveness of vegetated green screens limited the optimum selection, design and layout of such screens. Whilst there is significant promise for such interventions to reduce roadside exposure to poor air quality, the data necessary to model the effectiveness of such options is not available and therefore it was reluctantly excluded from further consideration. This project is constrained by having to meet EU Limit Values in the shortest possible time, so the luxury of investigating how much of an improvement can be achieved is not available. The recent High Court judgement stipulates that reductions in NO_2 should be likely and not just possible, and the evidence is not yet there to demonstrate this.

2.3 The Baseline Scenario (business as usual)

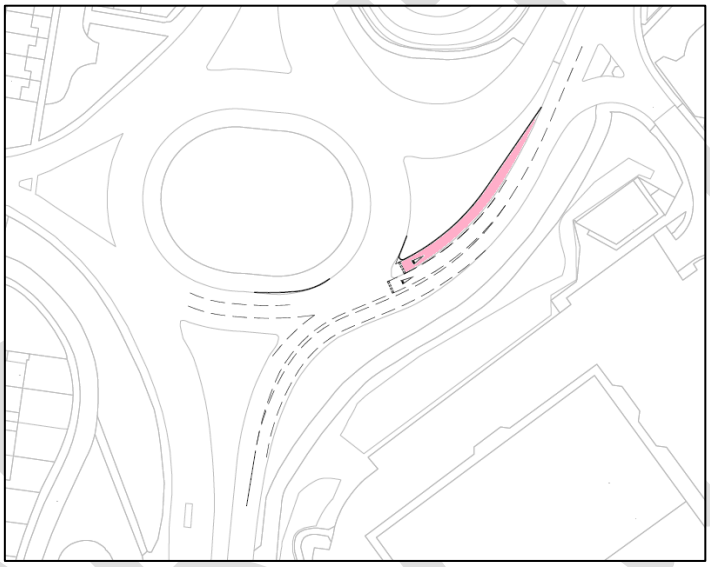
The baseline scenario sets out what the situation would be in the absence of a policy intervention, and includes the effects of any policies that are already committed and funded.

Section xx presented the results of base year modelling for 2017 and projections for 2021. These forward projections were based on the assumption that no additional measures[23] would be implemented along the A331. However, in recognition of the pressing need for urgent action, a successful bid for capital funding was submitted under the Early Measures Fund, to support the early implementation of a key measure to deliver air quality improvements. This was for a scheme at Bradford's Roundabout to improve egress capacity around the A331/A325 junction. Bradford's Roundabout is immediately to the east of the northbound A331 off-slip at Frimley, providing a link between the A331and the A325 as well as access to Farnborough and the Farnborough Gate retail park. Currently, vehicles exiting the A331 are caught in congestion at the south eastern arm of Bradford's roundabout. The scheme would

[23] other than those already identified or proposed as a result of other policy decisions, and not as a result of the UK Plan

create a new lane on the northern side of the eastern approach arm of Bradford's roundabout, within the existing grass verge, see Figure 9. This will reduce congestion and queuing, and result in less constrained flows on the part of the A331 identified within the local baseline modelling as not being complaint with the EU Limit value post 2020. It has been calculated that the proposed scheme would remove an additional 4.4 tonnes of NO_X emissions over 10 years, even accounting for the generally assumed background improvement in fleet emissions that would occur anyway.

Figure 9 Proposed new lane at Bradford's roundabout



Now that this scheme has been approved, it will be implemented and delivering improvements by the end of 2019. It has therefore been necessary to account for the assumed NO_x reductions this would bring about by in the year 2021. Atkins has modelled this so that an appropriate base line can be established against which to assess the impacts of implementing either of the two shortlisted options. Table 4 presented in Section 1.4 and all data considered as part of the options appraisal process is based on the assumption that this scheme is operational.

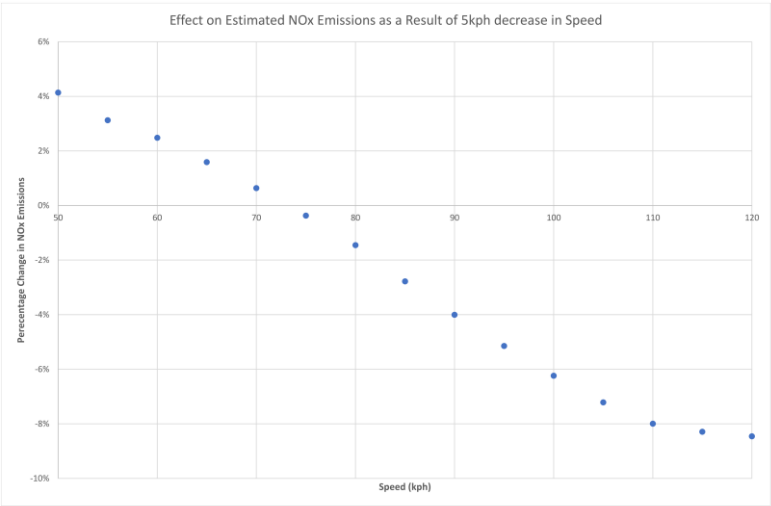
2.4 Shortlisted Options

Impact of Speed on NO_x Emissions

Annex H of the UK Plan for tackling roadside nitrogen dioxide concentrations: Technical Report (July 2017)[24] provides some information on research into the impact of reducing speeds on NO_x emissions. Vehicle testing typically found that drive cycles with lower average speeds produce lower NO_x emissions. In 2011, the European Environment Agency (EEA) published a report[25] that documented a detailed simulation into the effects of dropping motorway speed limits from 120 to 110km/h (74.5 to 68.4mph) for Euro 4-compliant petrol and diesel cars with engines between 1.4 and 2.0 litres in capacity. With smooth driving and complete compliance with speed limits, there was a reduction in nearly all pollutant emissions, and especially NO_x and PM for the diesel; NO_x by more than 20% and PM by around 10%.

Figure 10 illustrates the estimated effect on NO_x emissions of a 5 km/h reduction in speed at a given speed (derived using the EFT using DfT traffic data for A331). This suggests at higher speeds (i.e. above 75 km/h), a reduction in speed results in a reduction in NO_x emissions.

Figure 10 Effect on NO_x emissions of a 5 km/h reduction in speed for a given speed[26]



Impact of reducing speeds along the A331

[24] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/632916/air-quality-plan-technical-report.pdf

[25] https://www.eea.europa.eu/themes/transport/speed-limits

[26] Atkins, 2018. Estimate based on calculations undertaken using the Emission Factors Toolkit v8.0.1

The existing speed limit for much of the A331 from the A31 junction is 70mph, this being the design speed of the road. However, the stretch between the M3 and the Frimley Road junction has been reduced to 50mph. This is the northern point of the non-compliant link of the A331.

TrafficMaster observed journey time data for all vehicle types, during different periods for an average day, has been used to derive average observed speeds along the non-compliant road link. This is shown in Table 10.

Table 10 Average vehicle speeds along the A331 in 2017

	Average traffic speeds mph (kph)			
A331	AM peak 07:00-10:00	Inter-peak 10:00-16:00	PM peak 16:00 – 19:00	Off-peak flows 19:00 -07:00
Northbound	47.6 (76.1)	60.4 (96.7)	41.4 (66.2)	63.6 (101.8)
Southbound	59.3 (94.8)	61.8 (98.8)	55.3 (88.5)	62.5 (100)

The average weekday speeds along the non-compliant link (ID 73600) are:

- Northbound: 61.8 mph (98.9kph)
- Southbound: 63.4 mph (101.4kph)

Given the existing speed limit along this link, there are two possible options to consider; one reducing the speed limit from 70mph to 60mph and the second reducing it to 50mph. No other measures have been identified which are considered to have the potential to achieve compliance with the EU Limit Value sooner, given the scale of the modelled exceedance and the likely timescales for implementation and resulting impact of any measure.

Atkins has undertaken an assessment to estimate the likely improvements in NO_2 concentrations in 2021 adjacent to the A331 (link 73600) that could be realised with various restrictions placed on the maximum average speed possible along the road.

Given uncertainties regarding the impact of a speed restriction on average vehicle speeds, a number of scenarios have been modelled, each based on different assumed changes in average vehicle speed on the affected road links. These scenarios can be summarised as follows:

For the 50 mph speed restriction:

- Average vehicle speeds limited to a maximum of 80 kph (to reflect the assumed impact if average speed cameras were installed);
- Average vehicle speeds limited to a maximum of 85 kph (to reflect the maximum possible impact of such a speed restriction with static signs only (i.e. in the absence of average speed cameras); and

- Average vehicle speeds limited to a maximum of 93 kph during AM, Inter and PM peak periods and 97 kph during OP periods (to reflect the more likely impact of such a speed restriction with static signs only (i.e. in the absence of average speed cameras).

For the 60 mph speed restriction:

- Average vehicle speeds limited to a maximum of 90 kph (to reflect the maximum possible impact of such a speed restriction with static signs only); and
- Average vehicle speeds limited to a maximum of 95 kph (to reflect the more likely impact of such a speed restriction with static signs only).

Table 11 summarises the modelled annual mean NO_2 concentrations in 2021 with speeds limited as above.

Table 11 Range of average speed scenarios modelled

Measure	Census ID	Average Speed modelled	Modelled Roadside Annual Mean NO_2 Concentration (µg/m³)
			2021
	73600	Do-Nothing	41.78
60 mph restriction		95 kph (59 mph)	40.49
		90 kph (56 mph)	39.60
50 mph restriction		93 kph[27] / 97 kph[28]	40.38
		85 kph (53 mph)	38.13
		80 kph (50 mph)	37.60

These results indicate that compliance with the EU Limit Value is achieved in 2021 under all scenarios, to varying degrees.

Reducing road traffic speeds has therefore been taken forward as a cost-effective mechanism to influence driver behaviour, smooth traffic flows and to reduce vehicle emissions of NO_2. It is considered that such measures could be implemented relatively quickly. Any additional speed restriction would be an extension of the speed restriction already in force between the A325 Frimley south-facing slips and the A331 / M3 J4 signalled roundabout and this only needs to extend further south by an approximate 1.8km, to a point just past the Coleford Road Bridge junction. Such an option would require a Speed Regulation Order.

[27] AM peak 07:00-10:00, Inter-peak 10:00-16:00PM peak 16:00 – 19:00

[28] Off-peak flows 19:00 -07:00

A revised short list is set out in Table 12, and these options are now considered the most likely to achieve the primary spending objective in the shortest time possible.

Table 12 The revised short list for further consideration within the OBC

Package	Scenario	Assumed year of compliance
Base line	Do nothing - Business as usual	2022 for Census link 73600 2020 for other links in Guildford and Surrey Heath
A – Benchmark Option	50mph speed restriction	2021
B	60mph speed restriction	2021

Both options involve a speed restriction and whilst both are considered likely to lead to achieving compliance by 2021, only Option A, a 50mph speed restriction, provides the confidence necessary to satisfy the legal tests set out in Section 1.5. This is therefore the preferred option and is the benchmark against which all other scenarios are compared against within further economic assessments.

2.5 Justification for the Speed Reduction Scenarios Modelled.

There are two potential measures that are forecast to achieve compliance: a speed reduction to 60mph and a speed reduction to 50mph. Without average speed camera enforcement, technical advice on the effectiveness of a 'signs only' measure is not definitive, but at the lower end of the range (robust assumption), AQ modelling demonstrates it is still likely to bring forward compliance from 2022, (although only marginally under the 40.49µg/m³ legal compliance threshold at 40.38µg/m³ in 2021). Higher end assumptions, if manifested will deliver compliance more quickly.

Nationally, mean speeds are used as the basis for determining local speed limits as these reflect what the majority of drivers perceive as an appropriate speed for the road. The aim is for the existing mean speed driven on the road to be at or below a proposed speed limit. Additional measures to influence the speed distribution so that mean speeds align to the speed limit may be required so that the speed limit will be well respected by the majority of drivers and be largely self-enforcing. This is very difficult to achieve on a dual carriageway, such as the A331, which has been built to modern design standards and can accommodate higher traffic speeds safely.

Setting a speed limit artificially lower than the mean speed may not bring about compliance alone. It may be disrespected and could also bring other limits into disrepute. Under normal

circumstances where existing mean speeds are considerably higher than the proposed limit and there are no suitable measures to reduce speeds, such a lower speed limit would not be recommended. There is little guidance available on this matter or case studies to refer to.

To account for the view that a 60mph limit would not influence existing mean speeds to any great extent, Atkins have modelled a scenario whereby a 50 mph restriction results in only a 3mph reduction in existing traffic speeds.. This assumption has been applied to the average speeds across each traffic period (AM-Peak, PM-Peak, Inter-peak and Off-Peak), so as to make it as robust as possible.

This scenario is based in part on officer experience and existing speed data put through an old Speed Management Assessment Framework developed by the Department for Transport circa 2006 which is used to assess the impact of lower speed limits.

A more optimistic scenario has also been modelled whereby a 50mph restriction results in an average speed of around 55mph. This assumption is based on other roads locally that have experienced similar speed limit changes. The A24 south of Dorking, between North Holmwood and Beare Green (shown in Figure 11), was built to rural dual carriageway national speed limit (70mph) standards. Since it was built, the speed limit has been reduced to 50mph. Average speeds for the average inter-peak hour are shown below in Table 13.

Figure 11: A24 Horsham Road, between North Holmwood and Beare Green

Table 13 Average speeds (mph) recorded on the A31 Hog's Back, 2017[29]

	Average Speed (mph)	
	NB	SB
AM Peak (0700 - 1000)	48.5	47.9
Inter-Peak (1000 - 1600)	48.4	48.1
PM Peak (1600 - 1900)	50.7	45.7

The combination of the data indicates that a speed limit reduction to 50mph should be able to achieve average speeds of around 55mph or lower on a road with similar characteristics, although it will be affected by factors such as initial average speeds, traffic flow, etc. A slightly lower average speed could be expected with additional signing, including signing warning drivers of potential mobile speed camera enforcement and the possible use of Variable Message Signs.

For a scenario with a 60mph restriction, an average speed of 90kph (55.9mph) be used. This is based on what average speeds are likely to be achieved using the Department for Transport guidance circular 01/13 'Setting Local Speed Limits'. Tables resulting from the Department's speed limit appraisal tool are reproduced in Surrey County Council's policy document 'Setting Local Speed Limits' (SCC, July 2014).

These tables indicate that for a rural dual carriageway with a 70mph speed limit and an existing average speed of 64mph, a revised average speed of 55.4 mph should be achieved with a signed-only reduction in the speed limit to 60mph.

This is supported by Surrey Police's view that a signed-only 60mph speed limit on this section of the A331 BVR "would be largely self-enforcing.[30] In addition, average speeds observed on the A31 Hog's Back, a rural dual carriageway with a 60mph limit, are shown in Table 14.

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[29] Data sources:

ATC data: Surrey County Council. 24 hour average speed data (over all days of the week)

Eastbound: site CA013, January-September, 2017

Westbound: site CA014, January-May, 2017

Teletrac-Navman data, supplied by the Department for Transport

Median average Inter-Peak hour (10:00-16:00), weekdays (Tuesday-Thursday), January-December 2017, excluding school holidays

[30] Response from Surrey Police's Traffic Management & Safety Team, 2nd October 2018

Table 14 Average speeds (mph) recorded on the A31 Hog's Back, 2017[31]

	ATC data	T-N GPS data
Eastbound	55.7	55.0
Westbound	58.6	52.4

The A31 Hog's Back 60mph speed limit is supported by mobile speed camera enforcement. The A331 national speed limit between Coleford Bridge Road and the A325 at Frimley is also supported by mobile speed camera enforcement.

A less optimistic scenario for a 60mph limit has been modelled whereby average speeds of 95 kph (59.4 mph) are achieved.

The range of views expressed above are reflected within the range of speeds modelled by Atkins in Table 10.

2.6 Option A. (benchmark) 50mph Speed Restriction

The benchmark option is the implementation of a 50mph speed restriction between a point just south of the Coleford Bridge Junction and the Frimley Road junction. This stretch of road consists of census ID links 73600 and 73599. This will be accompanied by additional signing, including signing warning drivers of potential mobile speed camera enforcement.

There are some risks attached to such a measure. Infrastructure works could lead to delay on the local road network if installation works take place during daytime hours, as any such works will require a lane closure. In addition, there could be significant public opposition to such a speed restriction

To address some of these concerns, as part of the procurement process, there will be a stipulation that all works will be undertaken at night where possible to minimise traffic disruption during the day.

There will also be a commitment to reinstate a 70mph speed limit once compliance of the EU limit value has been assured (subject to a future SLO). This is included in the Financial Case as funding will be required for decommissioning.

[31] Data sources: ATC data: Surrey County Council. 24 hour average speed data (over all days of the week)
Eastbound: site CA013, January-September, 2017
Westbound: site CA014, January-May, 2017

Teletrac-Navman data, supplied by the Department for Transport
Median average Inter-Peak hour (10:00-16:00), weekdays (Tuesday-Thursday), January-December 2017, excluding school holidays

2.7 Option B. Speed Reduction to 60mph

Option B is the implementation of a 60mph speed restriction covering the same road link to a point just south of the Coleford Bridge Junction. This will be accompanied by additional signing, including signing warning drivers of potential mobile speed camera enforcement.

The modelling undertaken by Atkins shows that with a 60mph speed restriction, compliance in 2021 is just achievable, but this is dependent on the assumptions that underlie the DfT guidance being justified and applicable to this particular road. There is also a risk with regards the uncertainty over the accuracy of air quality dispersion modelling.

2.8 Options Appraisal

Economic Impacts Assessed

It is necessary to further assess each shortlisted option so that their overall costs, benefits and distribution impacts can be determined. This allows for options to be considered in terms of who may be affected by a policy and what they might do in response to that policy being implemented.

Figure 6 showed the proposed extent of the speed restriction. Two variants are being considered, one reducing the speed limit from 70mph to 60mph and the second reducing it to 50mph.

Either speed restriction option would add less than 30 seconds to an average journey[32] and therefore it is expected that vehicles would either continue to make the same journey and accommodate the increase in time or reroute if an option is available that is perceived to be quicker. The change in travel time is not anticipated to be sufficient to cause mode shift or cancellation of trips.

On this basis, the main impacts of either option are anticipated to be:

- Air quality improvements (NOx and PM_{10}) - due to the reduction in vehicle speed and potential changes in route (and distance).
- Greenhouse gas reductions – due to the reduction in vehicle speed and potential changes in route (and distance).

[32] The speed restriction applies to a section of just under 1.75km long. Without restriction (at 70mph or 113 kph) the length would take 56 seconds to travel (at the speed limit). At 60 mph (97 kph) it would take 9 seconds more at 65 seconds and at 50 mph (80 kph) it would take 22 seconds more at a total of 78 seconds to travel the link.

- User impacts for drivers and passengers using the route and potentially rerouting to avoid it. The net impact will be a balance of time losses and fuel savings (with associated indirect tax losses to government)
- Accident impacts – due to rerouting to avoid the speed restriction causing vehicles to route onto roads of different accident standards.

The options may also have a minor impact on journey quality (due to the frustration of a speed restriction) and landscape (due to additional signage and potentially cameras).

The options' impact is assumed to be negligible or non-existent for all other potential impacts as identified in Table xx.

Quantification of Economic impacts

The approach to assessing the economic impacts identified above was developed to be in line with the guidance from JAQU and DfT's WebTAG[33] and to provide a proportionate approach assessment.

The impacts identified were quantified through three main analytical approaches:

- A spreadsheet based assessment of air quality and greenhouse gas emissions (based on output from the air quality model)
- A TUBA assessment of user impacts and indirect tax effects
- A COBA-LT assessment of accident impacts

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[33] DfT's transport analysis guidance - https://www.gov.uk/guidance/transport-analysis-guidance-webtag

Table 15 provides a summary of the key features of each approach and further detail is provided in E1: Economic Appraisal Methodology.

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Table 15 – Summary of economic impact appraisal approach

Approach	Key inputs	Outputs produced	Main assumptions	Comments
Air quality spread-sheet	- Observed traffic flow (with growth factors from NTEM v7.2 and adjustments for the options) - Damage costs for pollutants and CO_2	Monetary value of NOx, PM_{10} and CO_2 impacts	- Local pollutant damage costs - the average marginal impact of each extra tonne of emissions of NOx & PM_{10} emitted (£/tonne) - from JAQU; - Carbon non-traded emissions damage costs (£/tonne) as provided in the WebTAG databook (May 2018).	The use of emissions based damage costs, rather than population weighted concentrations, to quantify local air quality impacts was agreed with JAQU to be proportionate due to: • The relatively unpopulated nature of the area; • The limited number of options for comparison; and • The relatively small overall impact of the options.
TUBA	- Time, distance and trip matrices from a cordoned version of Surrey County Council's SINTRAM model (v7.2) - Standard economic parameters from TUBA v11	Transport user time and vehicle operating cost impacts and indirect tax impacts for government	Annualisation = AM and PM peak hour * 3 * 253 weekdays. Inter peak * 6 * 253 weekdays. Off-peak 1900 – 0700 ignored Estimate is therefore of the impact across 12-hour weekdays only. The full impact of the scheme will be larger as the speed restrictions will apply throughout the week. Core estimate is therefore of the impact for 12-hour weekdays only. Sensitivity test: factor user impacts by 1.67 to account for the rest of the week. 0.25 to account for weekday off peak and 0.42 to account for 112 weekend days/bank holidays (based on 2017 local traffic count data on levels at different times of day/week).	SINTRAM has some limitations as a tool for representing the study area as it has not been recently updated and validated in the area. Nonetheless it should provide a good understanding of the likely response to the speed restrictions on the road network and the scale of overall impact, accounting for rerouting. A cordoned version of SINTRAM model was used to avoid potential model noise from the full, large model, given the small scale of the options being tested. Future year matrices were developed specifically for the TUBA and COBALT assessments using NTEM v7.2 factors and the base. Core annualisation factors are based on DfT guidance to expand modelled time periods only. This is meant to provide a conservative estimate for transport schemes bringing benefits. However, in this instance it underestimates dis-benefits. A sensitivity test was therefore undertaken to provide an indication of the full weekly scale of impacts.
COBALT	-Traffic flow information from SINTRAM -COBA-LT default link and junction combined accident rates and values	Monetary value of accident impacts	Annualisation = (AM + PM) * 5.73 * 365 Surrey County Council's 2014 AADT conversion factor	Comments above about limitations of SINTRAM. The COBA-LT assessment picks up the impact of any rerouting away from the A331 (through changes in travel distance and the standard or road used). However, it will not pick up any benefits associated with reduced speed. COBA-LT only differentiates accident rates between two categories, below or above 40 mph.

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Scheme Costs

Scheme costs are identical for either speed restriction and were provided by Hampshire County Council, as summarised in Table 16.

Two implementation options are presented. The central cost assumes no cameras are installed for enforcement as part of the scheme, with the restriction implemented using traffic regulations and signage only. The second, sensitivity cost option assumes cameras are implemented.

Table 16 – Costs (implementation and operating) of speed restriction (£, 2018 resource prices, undiscounted)

	2019	2020	2021	2022	2023
Central cost – without cameras	21,600	1,652	1,652	1,652	19,652
Sensitivity Test – with cameras	375,000	11,000	11,000	11,000	14,000

For appraisal purposes, the costs were converted to real prices using the BCIS Tender Price Index of Public Sector Building Non-Housing index for non-staff costs and an optimism bias allowance of 15% was included.[34]

Conversion of Estimated Economic Impacts and Scheme Costs to Appraisal Format

Estimates of each of the economic impacts and the costs were combined to ensure they were considered in consistent terms, accounting for the following key parameters:

- Price base (2018, real prices);
- Discount base year (2018);
- Discount rate (3.5%, WebTAG);
- Appraisal period (10 years, noting that all costs and impacts are anticipated in the 4 years from 2020 to 2023, the intended years of operation of the restriction);
- Expression in real prices (allowing for real growth above standard inflation e.g. for costs and values of time);

[34] in line with road schemes, Stage 2 in WebTAG

- Expression in market prices (converting resource prices using the 1.19 market prices uplift, where relevant to convert from resource to market prices).

Once on a consistent basis the cost and benefits were combined and compared to understand the economic performance of the options, through the NPV and BCR indicators.

2.9 Economic Appraisal Results

Core results

Table 17 summarises the results for the two options, presented in present value terms for the appraisal period in a standard WebTAG Analysis of Monetised Cost and Benefits table.

In line with DfT guidance, it has been assumed that a 60mph limit would achieve speeds of 55mph on the link and the 50mph limit would achieve 50mph.

Table 17 – Summary results (£000, 2018 prices, present value, 10-year appraisal period, 4 years of operation, 2018 discount base)

	50mph limit (50mph speed)	60 mph limit (55mph speed)	
Noise			*(12)*
Local Air Quality	118	53	*(13)*
Greenhouse Gases	258	108	*(14)*
Journey Quality			*(15)*
Accidents	777	744	*(17)*
Economic Efficiency: Consumer Users (Commuting)	-978	-618	*(1a)*
Economic Efficiency: Consumer Users (Other)	-1,479	-958	*(1b)*
Economic Efficiency: Business Users and Providers	-1,392	-930	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-100	-67	*- (11)*
Present Value of Benefits (PVB)	-2,795	-1,668	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	61	61	*(10)*
Present Value of Costs (PVC)	61	61	*(PVC) = (10)*
OVERALL IMPACTS			
Net Present Value (NPV)	-2,857	-1,729	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	-46	-27	BCR=PVB/PVC

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The results show that both options bring air quality improvements and greenhouse gas emissions savings as anticipated. This primarily reflects the reduction in speed on the A331 with larger speed reductions lead to a larger saving in emissions.

Both options also bring accident savings, suggesting that those vehicles that route away from the A331 route onto roads with lower accident rates.

Transport user disbenefits are also evident for both options. These are the net impact of vehicle operating cost savings (representing fuel savings due to reduced speed) and time losses due to the increased journey times for those using the A331.

The user disbenefits outweigh the benefits of emissions and accident savings and, combined with scheme costs, lead to a negative NPV for both options based on the monetised impacts included in the assessment. Each option may have further non-monetised impacts related on landscape and journey quality. These would be likely to be slightly negative in each case, reflecting the impact of signs and any cameras associated with the scheme on view and potential traveller stress associated with an additional speed restriction.

Sensitivity Tests

Additional tests have been undertaken to understand the sensitivity of the results to vehicle speed and scheme cost.

Vehicle Speed

The core results assume that a 60 mph limit results in a speed on the restricted link of 55 mph and 50 mph limit achieves a 50 mph speed.

The impact of the restriction on speeds is clearly a key area of uncertainty in appraising the options. To gain an understanding of the implications of different assumed level of speed reductions, Table 18 presents additional results assuming that the restrictions achieve less reduction in speed, to 60 mph and 65 mph (from the current 70 mph limit).

The air quality and greenhouse gas impacts included for the 60mph and 65 mph options were interpolated from the 55 mph option impacts. The user and accident impacts have been modelled in SINTRAM and assessed directly.

Table 18 – Summary results (£000, 2018 prices, present value, 10-year appraisal period, 4 years of operation, 2018 discount base) for different A331 speeds

	50mph speed	55mph speed	60mph speed	65mph speed
Noise				
Local Air Quality	118	53	35	18
Greenhouse Gases	258	108	72	36
Journey Quality				

Accidents	777	744	674	720
Economic Efficiency: Consumer Users (Commuting)	-978	-618	-252	-145
Economic Efficiency: Consumer Users (Other)	-1,479	-958	-447	-189
Economic Efficiency: Business Users and Providers	-1,392	-930	-481	-396
Wider Public Finances (Indirect Taxation Revenues)	-100	-67	-52	-4
Present Value of Benefits (PVB)	-2,795	-1,668	-451	39
Broad Transport Budget	61	61	61	61
Present Value of Costs (PVC)	61	61	61	61
OVERALL IMPACTS				
Net Present Value (NPV)	-2,857	-1,729	-513	-23
Benefit to Cost Ratio (BCR)	-46	-27	-7	1

Representation of user impacts

The assessments summarised above use estimates of transport user impacts (time losses and fuel savings) that have been calculated based on the default DfT guidance that annualised impacts should be based on modelled time periods only.

As the modelled time periods available from SINTRAM were the morning peak, interpeak and evening peak of an average weekday, the user impacts estimated represented a 12-hour weekday only. The results therefore underestimate the user dis-benefits as the impacts of the speed restriction will be experienced throughout the day and week.

Table 19 presents sensitivity test results calculated using an estimate of user impacts factored by 1.67 to account for impacts during the rest of the week, based on:

- Local traffic count data on relative levels of traffic at different times of the day and week[35];

[35] 0.25 to account for weekday off peak and 0.42 to account for 112 weekend days/bank holidays with 24-hour daily traffic levels estimated at on average 77% of weekday 24-hour levels (based on 2017 local traffic count data on levels at different times of day/week)

- The assumption that the average impact per trip would be similar in each time period.

The air quality, greenhouse gas and accident impacts presented represent full weekly and annual impacts in the core assessment and therefore do not vary with the sensitivity test.

Table 19 – User impact sensitivity test, 12 hour weekday and full week coverage (£000, 2018 prices, present value, 10-year appraisal period, 4 year operation period, 2018 discount base)

	Traffic speed on restricted section of A331			
Coverage of user impacts	**50mph**	**55mph**	**60mph**	**65mph**
12 hour weekdays	-2,857	-1,729	-513	-23
Full week	-5,508	-3,458	-1,340	-516

The results show that the expansion of user impacts to provide a representation of impacts across the full week increases the extent to which the monetised dis-benefits of the options exceed the benefits. The scale of the negative NPV therefore increases in each case. However, the impact is consistent across the options and does not alter their relative performance.

Scheme Costs

The core result costs assume no implementation of cameras. Table 20 shows the impact on NPV of including the additional costs of camera implementation, considerably increasing the scale of the negative NPVs in each case.

Table 20 – Cost sensitivity test, costs without and with cameras (£000, 2018 prices, present value, 10-year appraisal period, 4 year operation period, 2018 discount base)

	Traffic speed on restricted section of A331			
	50mph	**55mph**	**60mph**	**65mph**
User impacts coverage: 12 hour weekdays				
Without cameras (core)	-2,857	-1,729	-513	-23
With cameras	-3,360	-2,232	-1,016	-526
User impacts coverage: Full week				
Without cameras (core)	-5,508	-3,458	-1,340	-516
With cameras	-6,011	-3,960	-1,843	-1,019

User Impacts by Purpose and Type

As outlined above, transport user disbenefits are evident for each option and are the net impact of vehicle operating cost savings (representing fuel savings due to reduced speed) and time losses due to the increased journey times for those using the A331

Table 21 provides further information the distribution of the impacts between time losses and fuel savings and between travel for different purposes.

Table 21 – Disaggregate results by purpose and user cost (£000, 2018 prices, present value, 10-year appraisal period, 4 years of operation, 2018 discount base)

		Benefits (PV, 2018 prices/values)				%age of total benefits for purpose			
		Average speed on restricted section of A331				Average speed on restricted section of A331			
Purpose	Benefit Type	50mph	55mph	60mph	65mph	50mph	55mph	60mph	65mph
Commute	*Total*	*-978*	*-618*	*-252*	*-145*	*100%*	*100%*	*100%*	*100%*
Commute	Time	-1,083	-693	-292	-216	111%	112%	116%	148%
Commute	VOC	105	75	42	72	-11%	-12%	-17%	-49%
Other	*Total*	*-1,479*	*-958*	*-447*	*-189*	*100%*	*100%*	*100%*	*100%*
Other	Time	-1,630	-1,053	-516	-253	110%	110%	115%	134%
Other	VOC	151	94	69	64	-10%	-10%	-15%	-34%
Business	*Total*	*-1,392*	*-930*	*-481*	*-396*	*100%*	*100%*	*100%*	*100%*
Business	Time	-1,449	-958	-507	-253	104%	103%	105%	64%
Business	VOC	57	28	24	-142	-4%	-3%	-5%	36%

A number of key points can be drawn from the results:

- Fuel savings offset between a few percent of time savings (for the largest speed reductions for business users) up to nearly half (in the most limited speed reduction for commuters)
- The overall disbenefits increase with the reduction in speed limit and are particularly focussed on the inter peak period, as lower congestion levels mean that the speed restriction has more impact.
- Business trips experience between 35% (55mph) and 55% (65mph) of the user disbenefits.

Appraisal Summary Table

Table 22 provides an overview of all anticipated impacts of the speed restrictions options in qualitative form within a standard Appraisal Summary Table.

The same entries apply for both options and the main impacts identified are the air quality, greenhouse gas, user impact and accident impacts discussed above. Additional potential slight adverse impacts are identified for journey quality and landscape.

Table 22 – Appraisal Summary Table for A331 options

Category	Impact	Summary of key inputs	Qualitative assessment
Economy	Business users & transport providers	Speed changes and rerouting influence user travel times and operation costs	Slight adverse
	Reliability impact on Business users	Negligible - small changes in traffic speed and flow will have very limited impact on reliability	Neutral
	Regeneration	No impact on regeneration areas	Neutral
	Wider Impacts	Negligible - impacts on travel cost are very limited and occur outside urban areas which are most susceptible to wider impacts	Neutral
Environment	Noise	Negligible - changes in traffic speed and flow too small to have a significant impact on noise and there are no noise sensitive properties located in close proximity to the affected road links.	Neutral
	Air Quality	Speed changes and rerouting will alter emissions levels	Slight positive
	Greenhouse gases	Speed changes and rerouting will alter emissions levels	Slight positive
	Landscape	Additional signage and potentially cameras may have some impact on views.	Slight adverse
	Townscape	No impact - not affecting an urban area	Neutral
	Historic Environment	No impact - not affecting a historic area	Neutral
	Biodiversity	No impact- no impact outside the road boundary	Neutral
	Water Environment	No impact - no impact on water courses or drainage	Neutral
Social	Commuting and Other users	Speed changes and rerouting will influence user travel times and operation costs	Slight adverse
	Reliability impact on Commuting and Other users	Negligible - small changes in traffic speed and flow will have very limited impact on reliability	Neutral
	Physical activity	No impact - no impact on walking/cycling levels	Neutral
	Journey quality	Possible slight impact on journey quality due to frustration and lack of familiarity. .	Slight adverse
	Accidents	Possible impact through rerouting and change of seed	Slight positive
	Security	No impact - no impact on characteristics of network influencing security	Neutral
	Access to services	No impact - no bus services on the A331	Neutral
	Affordability	Possible slight impact – although only monetary costs affected are fuel and vehicle operating costs for a change in speed of < 2km	Slight positive
	Severance	Negligible impact - speed and flow changes too low to alter severing effect of the A331 and surrounding roads	Neutral
	Option and non-use values	No impact - no impact on options available for travel	Neutral

2.10 Distributional impacts

The Distributional Impact assessment of the speed restriction is presented in detail in Deliverable E3: Distributional Impact Assessment, focussing on a 55 mph speed option.

Following the screening process, the assessment focussed on:

- Air quality
- User benefits
- Affordability

More detailed assessment considered how the impacts in each of these categories were distributed between different population groupings.

The results are summarised in Table 23. It is important to note that the overall impacts of the options are modest and therefore the impacts being distributed will be small for each individual affected. The Distributional Impact assessment is made in terms of the proportion of total impacts accrued by each group and does not account for their absolute scale. The results and scoring presented should be interpreted in that context

Table 23 – Summary of distributional impact assessment for A331 options

Impact	Score	Contributing factors
Air quality	Slight beneficial	Due to a neutral impact on children and slight beneficial impact on the elderly
User benefits	Moderate adverse	Due to the location of disbenefits and their tendency to be distributed towards more deprived areas
Affordability	Slight beneficial	Due to the location of benefits and their tendency to be distributed towards more deprived areas

2.11 Preferred Option

The preferred option remains a speed restriction of 50 mph along the non-compliant link of the A331 because it is the only identified option that will bring about compliance in the shortest possible time.

3 Commercial Case

3.1 Introduction

The preferred option is a signed-only reduction to 50mph along approximately 2.5km of the A331, in both north and southbound directions, between Coleford Bridge and Frimley, where the speed limit currently changes from 50mph to 70mph.

Hampshire County Council will be the lead authority responsible for implementing the preferred measure. Rushmoor Borough Council will lead the monitoring and evaluation of the implementation of the measure to compliance and beyond.

There are two grants being requested, one to Hampshire County Council for the implementation of the measure, to also include installation and maintenance of the traffic count loops for monitoring, the other to Rushmoor Borough Council to cover all other activity, such as monitoring and evaluation and other support which Rushmoor Borough Council will distribute as required to the other participating local authorities. Surrey County Council will procure the ANPR survey in accordance with their standard procurement process as they did for the initial ANPR survey undertaken in November 2017 to inform this OBC. Surry County Council will write up the specification of works and seek at least three quotes from appropriate providers. Rushmoor be invoiced for the contract.

3.2 Required Services / Outputs

The preferred measure of a 50mph speed limit will be delivered and maintained by Hampshire County Council. The principal output to achieve this is the necessary infrastructure asset (speed limit signs) and an approved Speed Limit Order (SLO), which will be progressed and approved via a standard process.

Once the SLO has been consulted on and approved the required infrastructure will be ordered with the labour to implement.

Monitoring and evaluation of the implemented measure will be delivered by Rushmoor Borough Council, Hampshire County Council and Surrey County Council.

The following activities will require procurement:

Table 24 Activities requiring procurement

Hampshire CC	○ Traffic management infrastructure - appropriate signage (and highway works) to implement 50mph speed limit ○ Installation of Automatic Traffic Count sites (volume / speed / class) 4 x speed surveys, to be installed as early as possible to monitor measure effectiveness with before & after data ○ Decommissioning of the traffic management infrastructure, that is, removal of signage to revert the road back to 70mph once compliance is achieved.
Rushmoor BC	○ Maintenance of diffusion tube network ○ Installation of continuous monitoring and subsequent maintenance/servicing/calibration and analysis
Surrey CC	○ Additional ANPR survey following implementation of the measure & analysis / comparison

3.3 The Procurement Routes

The primary spending objective is to bring local NO_2 levels to within legal limits within the shortest possible time. The procurement route will therefore seek to utilise the most time-efficient option available to bring forward likely legal compliance.

Hampshire County Council

The preferred option is a Business As Usual scheme for a local highway authority in infrastructure design, commercial specification and delivery method, (although not in application). As such, the full extent of the speed-limit reduction measure is deliverable under an existing Hampshire County Council contract, which is already optimised for operational efficiency in undertaking core responsibilities.

The length of the A331 that will be subject to the speed reduction is jointly managed by Hampshire County Council & Surrey County Council. Therefore, the Traffic Regulation Order consultation and approval process will have to be jointly administrated and will need to consult both Hampshire & Surrey Police forces.

By agreement of Surrey County Council and Hampshire County Council as the responsible highway authorities, the length of highway in question is maintained by Hampshire County Council.

Two previous speed reductions have been put in place on the A331, the most recent of which was a 50-mph permanent speed limit between Junction 4 of the M3 and the A30, Meadows Gyratory, approximately 1.9km to the north. The speed limit reduction was implemented by Surrey County Council in consultation with Hampshire County Council. The other 50-mph speed limit was imposed south of Junction 4 of the M3.

For the current proposal, most of the stretch of highway for which the speed limit change is being progressed falls within Hampshire County Councils administrative area as highway authority and therefore it has been jointly agreed by Surrey County Council and Hampshire County Council that Hampshire County Council will lead on implementation.

Rushmoor Borough Council

Procurement undertaken by Rushmoor on behalf of this project will abide by Rushmoor's Contract Standing Orders. The Procurement Officer at Rushmoor will ensure compliance and best value in line with the requirement to be timely.

If the value of the contract is between £2,500 - £49,999, then three quotes or a formal request for quotation will be sought. If above £49,999 then the procurement needs further consideration but is unlikely to impact on timescales significantly.

Any contract for goods or services will not be issued until all Local Authorities contributing to the payment of the invoice have reached agreement on order and percentage split of invoice.

3.4 Procurement Route

The air quality abatement measure and associated management, monitoring and communications requirements for which funding is being sought will need to utilise several different contractual arrangements and approaches, which are set out in this section.

Procurement will be subject to the respective authority's standard procurement procedures, split along lines of responsibility. Separate measures will be procured differently or separately, utilising existing contract and frameworks where possible for maximum efficiency.

Hampshire Country Council

The preferred measure of a 50mph speed limit will be delivered and maintained by Hampshire County Council. Implementing speed limits is a standard activity undertaken by Hampshire County Council as the local highway authority and as such there is a large contract already in

place which enables the full extent of the feasible NO_2 abatement measure to be delivered via existing mechanisms.

Highway infrastructure (signing / lining / traffic management) will be purchased and delivered under Hampshire County Council's existing Highway Services Contract (HHSC) with Skanska. This contract has tendered, competitive rates and is for seven years up to 2024, extendable by a further five.

HHSC covers the whole range of highways and structures maintenance and has an estimated turnover of £45m p.a. By using the HHSC it enables reduced time for procurement and mobilisation therefore provides better phasing of design and implementation.

This existing framework complies with Public Contract Regulation(s), in line with Green Book requirements.

- The current total value of the works to implement the speed limit reduction is approximately £18,000 including contingency, which falls below the any contractual threshold for triggering any further competitive process.
- HHSC offers the County Council the shortest route to implementation and implementation of speed limits is one of the core activities covered by this contract.
- The County Council proposes to finalise design and begin implementation of the measure subject to approval and funding award.
- HHSC offers the County Council the flexibility to procure the works as and when the designs are completed, and funding is available.

Advertising, issuing and management of the Traffic Regulation Order (SLO) will be carried out jointly by Hampshire County Council and Surrey County Council as additional activity within existing teams.

Specification

Hampshire County Council has a standard specification that it uses on all of its highway projects. The Highways Framework Model Contract Specification (which follows DMRB standard specification, contained in the Manual of Contract Documents for Highway Works (MCHW), published by Highways England in February 2016) will be used for the proposed works. If required, additional items will be added to the standard specification.

The procurement timescale for the preferred measure is included in the overall measure implementation programme provided below:

Table 25 Procurement Timeline

Stage	18	2019											
	Q4	Q1			Q2			Q3			Q4		
	December	January	February	March	April	May	June	July	August	September	October	November	December
TRO preliminary consultation													
Submission of Outline Business Case													
JAQU Review													
Finalise scheme design													
SoS approval													
TRO statutory consultation													
TRO decision process													
Submission of Full Business Case													
JAQU Review													
SoS approval													
Review													
Funding award													
Place order													
Install Signage													

Rushmoor Borough Council

This project will not generate transactions of a value that would trigger the requirement to follow EU procurement procedures.

The preferred process will be to deliver this via a Framework if this is determined at the time to be to most expedient and suitable approach. The frameworks will be tested against traditional procurement routes.

Continuous Monitoring

It is proposed to install a continuous monitoring site for a period of 60 months along the A331, by the Hatches footbridge. The preferred option is to hire this equipment for a 60 month period, with all services including installation, servicing, calibration, data management, UKAS accredited auditing and data reporting provided and supplied by the contractor. Purchasing of the equipment and its ongoing management would have significant resource implications for the local authority which is why this approach has been discounted. Initial costs have been obtained for the hire of this equipment but given the potential value of this contract the intention is to procure either via a Framework agreement of via a tender process in line with Rushmoor Borough Council's procurement rules.

ANPR Survey

Surrey County Council arranged for the original ANPR survey in November 2017, obtaining a number of quotes in accordance with Surrey County Council procurement procedures. It is intended that Surrey County Council undertake a similar process to procure ANPR survey. As the scope of the proposed survey will be much reduced, it is anticipated that the value of the proposed ANPR survey will be below the £50,000 threshold triggering a full tender process. A minimum of three quotes will be sought from appropriate suppliers.

Diffusion Tube Survey

There is already a network of diffusion tubes along the A331 corridor that each authority manages within their respective areas. These diffusion tubes are currently supplied by Gradko, and as results are to be used to validate existing modelling outputs it is considered necessary to use the same laboratory to ensure consistency and rigor across monitoring results. It is intended to remain with this supplier for quality control proposes (to minimise bias/ systematic errors being introduced to any results). Each borough will procure their own tubes for their respective areas over a 5 year (60-month) period.

Estimated costs include on-going management of survey. Costs minimised as monthly change-overs aligned with existing diffusion tube surveys, and done in-house by LA officers. Expected value over a 5 year period will be approximately £1300 per authority so only one quotation required each year to continue the existing arrangements.

Market Capability

It is assumed that Skanska have flexible capacity to facilitate works, based on previous work carried out for Hampshire County Council under the HHSC and access to a scalable resource via their sub-contractors to fulfil contract obligations and cover additional Business As Usual activity. Given the nature of the activities to be procured by Rushmoor, it is considered that there will be no problems with the market delivering the required contracts/services.

3.5 Procurement Plan and Timeline

Resourcing of the procurement plan is presented in the Management Case. A draft Procurement Plan is presented in the Table below:

Table 26 Procurement Plan

Scope	Measure – 50mph limit

	• Hampshire County Council will provide a scope of works to implement a speed limit of 50mph in both directions, northbound and southbound, on the A331 between Coleford Bridge Road and the A325 **Monitoring - Automatic Traffic Counts** • TBC **Continuous Monitoring station** • Rushmoor, Surrey Heath, Guildford Borough Council's to provide a scope of requirements over a 5 year period **ANPR Survey** • Surrey County Council to provide scope
Service requirements / specification	**Measure – 50mph limit** • HHSC appropriate work will conform to Traffic Signs Regulations and General Directions legislation **Monitoring - Automatic Traffic Counts** • TBC **Continuous Monitoring station** Specification will be for a real time automatic continuous monitoring station, using the reference method for NO2 monitoring; chemiluminescence. All monitoring will be in accordance with Defra requirements as specified in Technical Guidance (TG16). **ANPR Survey** • To inform monitoring and evaluation needs
Contract	**Measure – 50mph limit** • HHSC **Monitoring - Automatic Traffic Counts** • TBC Continuous Monitoring station • TBC ANPR Survey • TBC

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ITT documents, including evaluation criteria	**Measure – 50mph limit** • A copy of the framework contract can be provided / is appended (?) **Monitoring - Automatic Traffic Counts** • TBC
Timeframe for delivery **And other steps??**	**Measure – 50mph limit** • **Delivery October 2019** **Monitoring - Automatic Traffic Counts** • TBC Continuous Monitoring station • TBC ANPR Survey • TBC

3.6 Personnel Implication

Infrastructure works will be managed by Hampshire County Council Officers. Ongoing monitoring and evaluation will be undertaken by the relevant Borough Council Officers. There are no TUPE implications.

3.7 Implementation timescales

This section outlines key milestones for delivery of the service and outputs by the service provider and should therefore focus on the 'deal' – the proposed measure, and not on the procurement and project plan.

Hampshire County Council Key milestones are (to be agreed):

- Lead county council to consult with other County Council & respective Police forces
- Legal Agreement to be finalised (on receipt of funds) Is this still a requirement?
- Initial design
- Surrey County Council to take speed reduction proposal to Local Committees & Hampshire County Council to consult local members
- Finalise Design
- SLO team preparation

- SLO advertisement / objection period (28 days)
- Resolve objections
- Make Order (2 weeks after approval)
- Book road space/resources/mobilise
- Implementation
- Monitor/Maintain (using 5yr Commuted Sum)
- Remove - dependent on Road Safety considerations, AQ issue resolved

Rushmoor Borough Council Key milestones are (to be agreed):

- Specification to be drafted
- Consultation and sign-off by Procurement
- Contract terms and conditions issued with companion documents
- Specification and evaluation criteria to be agreed
- Seek quotes or go out to tender
- Evaluate, moderate and award contracts
- Order and pay (subject to grant allocation)
- Contract signing

3.8 Potential Risk Apportionment

HHSC is managed by Hampshire Highways, whilst the County Council's Traffic & Safety team would design the works and produce the specification for the contractors to work to. The Traffic & Safety team take the role of Principal Designer under CDM regulations and support the Client in meeting the requirements of their role under CDM.

Appointed contractors will need to provide relevant construction information and method statements, etc. to demonstrate that the works themselves will be completed safely. As principal designer, the risk of the design not being fit for purpose in safety terms lies with the County. This will be picked up in the procurement documentation.

The HHSC element of this project is considered low risk as it is relatively straightforward in comparison to other schemes completed by Hampshire County Council at numerous sites. Therefore, the majority of measure implementation risk will remain with Hampshire County Council with certain construction and delivery risk transferred to Skanska, in line with the standard pre-agreed contract terms.

Table 26 Risk Apportionment

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Risk	Authority	Contractor	Shared	Mitigation
Design Risk				
Developing the option	BVR Strategic Group			BVR Technical Group of LA Officers and appointed AQ consultants have followed JAQU prescribed process and agreed the preferred option for respective LA & Strategic Group approval, based on evidence & technical assessment.
Designing the measure	Hampshire County Council			HCC Traffic Management processes ensure design is competent & meets HCC and other design standards as required
Construction & development risk				
Construction period on-site		Skanska		Risk minimised by contract stipulations & contractor process: safe working practices, competent workforce, site supervision and reporting
Transition & implementation risk				
Scheme is fit for purpose on completion of works			Hampshire County Council & Skanska	Scheme subject to acceptance process
Availability & performance risk				

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Contractor has capacity to deliver the works in time to be effective			Hampshire County Council & Skanska	Scheme will be prioritised (notwithstanding emergency works arising) in forward programme once funded. Large contract with Skanska is set up to minimise capacity risk and task is BAU in scope.
Operating risk				
No central government national policy framework to give parity of enforcement to air quality speed limits	JAQU			None
Termination risk				
	N/A			**N/A**
Technology & obsolescence risk				
	N/A			**N/A**
Finance risk				
Funding inadequate or not available	JAQU			Covered by business case submission process and appropriate assurances
Costs increase	JAQU			Infrastructure costs have been sourced from a list of contract rates and revenue activity is based on similar BAU activity. Both elements have had 20% contingency added. Regular reporting of Local Authority project spend will flag issues with JAQU as soon as they are known
Legislative risk				

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SLO not approved	JAQU			TBC

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The preferred measure is the only feasible technical solution and has been jointly developed in partnership by the BVR Technical Group based on the best available evidence at the time. Atkins have provided technical assistance, modelling and advice within the parameters of JAQU specified methodology & guidance, underpinned by data provided by JAQU.

Therefore, beyond the key dependency related to the rate of predicted fleet emissions improvement, the remaining risk of the project not achieving the objective of meeting compliance following implementation will be co-owned by the local authorities, their consultants and JAQU.

The implementation of measures which Hampshire are responsible for delivering as the lead highway authority will be considerably sped up by awarding funding directly to the County Council, thereby avoiding the need for additional complex legal agreements between local authorities and removing what both authorities finance officers consider an unnecessary step in the process. This request has been made to JAQU for consideration prior to submission of the OBC and agreed.

The associated management, monitoring and communications required to support the preferred measure and help ensure its success will need to utilise several different contractual arrangements and approaches, which are set out in this section.

For the management and reporting activity to support the measure and the project.

Hampshire County Council (for implementation of the measure) and Rushmoor Borough Council (for project management, monitoring and evaluation) will be the recipient and holders of respective grant funding applicable to allocated areas of the project. (See Appendix 4C of Finance Case) Each authority will track spending to ensure there is no overspend and contingencies have been accounted for should any risks be realised during the project.

The nature of the preferred measure and the degree of certainty to which the modelling, including sensitivity testing, has been completed means that risks are minimal. Any overspend on project management, monitoring and evaluation will need to be met equally between Guildford Borough Council, Rushmoor Borough Council and Surrey Heath Borough Council, while overspend on the implementation stage will be met by Hampshire County Council.

It is the intention that the infrastructure will belong to the respective maintaining highway authority (Hampshire County Council). Refer to agreement between Hampshire County Council and Surrey County Council about lead authority, responsibilities, implementation, maintenance, decommissioning, asset ownership, etc. Not yet drafted as far as I'm aware.

3.9 The Payment Approach

Payment Mechanisms

As stated previously Hampshire and Surrey County Councils have an excellent and proven track record in delivering transport infrastructure schemes funded by the DfT and Local Enterprise Partnerships. As part of the funding and payment process there is an established process of quarterly claims based on outputs and work completed.

Funding for the preferred option will be allocated and managed by Hampshire County Council.

With regard to payments to contractors, the HHSC is a well-established contract, used by Hampshire County Council for maintenance and highways works. The contract runs until 2024, with a potential extension for another 5 years. The ongoing client/contractor relationship means that payments are made on an output basis on delivery of key elements of the infrastructure without any need for performance management outside the already established monthly KPI monitoring and performance meetings which the delivery team complete for the contract as a whole which are used to ensure that the contractor delivers to time, specification and cost. The nature of these works would mean that there is likely to be a single payment on completion of the works.

Both County Councils have robust internal governance and project delivery arrangements already in place within their own systems and processes, for implementation of highway and transport measures. Reporting to their own Transport Boards, a gateway review process ensures good governance of schemes from feasibility study stage through to detailed design & delivery, supported by a dedicated capital programme management team providing regular reporting.

Rushmoor Borough Council Payment Mechanisms

Notwithstanding the fact that a contract may have been awarded, official orders will still be placed on suppliers in accordance with the Council's Financial Procedure Rules. No pre-payment for supplies, services or works will be made without the prior written consent of the Head of Finance.

3.10 Key Contractual issues

The works would represent a very small element of the contract which has an estimated turnover of £45m p.a. to 2024. This contract has tendered, competitive rates and is for seven

years up to 2024, extendable by a further five. HHSC covers the whole range of highways and structures maintenance.

This contract will therefore have sufficient scope and indemnities to complete the works and the payment and management of this contract would be treated as Business as Usual for Hampshire County Council as the contracting authority.

A summary of the contract terms is provided below info to be updated

Contract management arrangements and key contractual issues should be considered and recorded in the Outline Business Case.

- The duration of the contract with Skanska and any break clauses
- The service provider's and procuring authority's respective roles & responsibilities in relation to the proposed deal
- The payment – or charging – mechanism, including prices, tariffs, incentive payments etc;
- Change control (for new requirement and updated services);
- The organisation's remedies in the event of failure on the part of the service provider to deliver the contracted services – on time, to specification and price etc
- The treatment of intellectual property rights;
- Compliance with appropriate regulations, etc
- The operational and contract administration elements of the terms and conditions of service;
- Arrangements for the resolution of disputes and disagreements between the parties;
- The agreed allocation of risk;
- Any options at the end of the contract (what are we contracting for, are we taking it down as part of the government-funded scheme; ensure no residual liability).

3.11 Accountancy Treatment

The Measure – 50mph Speed Limit

All of the highway infrastructure asset from the project will remain in public sector ownership and will be maintained and subsequently decommissioned by the responsible Highway Authority. Hampshire County Council has been identified as the lead authority and will be recipient of funding to design, implement and decommission where agreed and subject to approval.

3.12 Budget Management

The budget management responsibility will rest with Hampshire County Council and Rushmoor Borough Council. The Project Manager will oversee production of regular

(Quarterly) budget reports and these will identify any budgetary issues and appropriate mitigation will take place where necessary in consultation with JAQU.

4 Financial Case

4.1 Introduction

The UK Government has committed to grant funding feasibility studies for plans and effective measures to bring about compliance with legal NO_2 objectives in the shortest possible time.

The purpose of this section is to ascertain the expenditure and funding requirements for the preferred option, and to demonstrate that the recommended measure is affordable. This section sets out the forecast financial implications of the preferred option – a speed limit reduction from 70 mph to 50mph, as set out in the economic case section, and the proposed deal, as described in the commercial case, for the Blackwater Valley A331.

In summary, this section thus focuses on outlining;

- Capital and operational expenditure for implementing the preferred option, and funding sources.
- Funding required for monitoring and evaluating compliance.
- Costs of decommissioning the implemented measure once compliance is achieved.

The key assumption for this financial case is that the implementation of the preferred option and subsequent monitoring and evaluation is government funded upfront via the Implementation Fund.

4.2 Financial Model and Methodology

The estimated costs for the preferred option of a speed limit reduction to 50 mph with fixed signage on a straight line road exceedance have been quoted by Hampshire County Council who have based their figures on previous experience in implementing similar measures, and where applicable, a schedule of rates under the Hampshire Highways Services Contract.

Estimated funding requirements for project management, officer input, AQ monitoring and evaluation have been based on officer hourly rates and also provided by the contractor for the CMS, TRL.

Traffic monitoring and evaluation costs have been provided by Surrey County Council, who has based figures on previous experience and standard rates.

A contingency cost of 20% has been accounted for which is the standard application applied by Hampshire County Council and Surrey County Council and represents a medium risk scenario. This is to cover risks identified within the risk register (Appendix 5D) and is to cover unforeseen engineering issues or constraints that arise during the implementation, operation and decommission stages which could cause cost increases or a delay to any stage of the project. This contingency value is considered sufficient to cover potential capital cost overruns within the project budget.

A contingency cost of 20% has been added for the Monitoring and Evaluation phase to cover potential increases in officer time required to be spent on the project including meetings . A 20% contingency cost has also been added for the supplier costs contained within the Monitoring and Evaluation phase to cover potential increases in supplier contract costs.

The financial figures quoted exclude VAT. Inflation has been added to the Monitoring and Evaluation phase to cover pay inflation for officer time. The value of assets is not expected to depreciate through the project duration.

All costs are considered reasonable and value for money. They are to be covered entirely by the Implementation Fund and as such there will be no expected short-fall between funding and expenditure. All figures have been scrutinised by s151 Officers for Rushmoor Borough Council and Hampshire County Council as confirmed in the Commissioner Letter (see Appendix 4D).

4.3 Budget and Funding Statement

See tables attached (Appendix 4A and 4B).

This table shows the elements included in the capital spend, as well as revenue, decommissioning, monitoring and evaluation costs. It also shows the spend profile through the duration of the project, including implementation of the measure and the operation and monitoring of the measure.

Decommissioning has been estimated at £20,000 which covers advertising of the SLO by Hampshire County Council and Surrey County Council required to remove the speed reduction measure and revert it back to 70 mph, removal of all equipment and officer time required.

Justification of officer time and costs and monitoring and evaluation are detailed in the Management Case, see Appendix 5E.

There will be no income returned to the Local Authorities as a result of implementing a speed limit reduction.

There will be no remaining assets once compliance has been achieved and the speed limit reduction measures removed.

It is proposed that grant funding is split, with part awarded to Hampshire County Council for the implementation of the measure and decommissioning once compliance is achieved. Whilst the rest is awarded to Rushmoor Borough Council to cover all other costs such as officer time, AQ monitoring, traffic counts, evaluation, etc. See table attached at Appendix 4B for Implementation Fund allocation details.

All costs as shown in the table are expected to be covered by the Implementation Fund, and there will therefore be no net impact on the Council's budgets.

See table attached (Appendix 4A).

4.4 Capital and Revenue Statement

See table attached (Appendix 4C).

This table provides a financial summary of capital and revenue costs required to implement the preferred option of a 50 mph speed limit reduction with signage. It also shows a summary of the funding required to meet the costs identified.

4.5 Overall Affordability

The proposed total cost of the project is £437,055 over the 6 years of the expected lifespan of the project. The speed limit reduction will be removed and decommissioned once compliance without the speed reduction measure can be achieved.

Our commissioners, s151 Officers from Rushmoor Borough Council and Hampshire County Council have signified their agreement to the required level of funding as set out in this Financial Case. See letter attached (Appendix 4D).

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5 Management Case

5.1 The Blackwater Valley Group

The three boroughs of Guildford, Rushmoor and Surrey Heath are working collaboratively with Hampshire and Surrey County Councils, the Highway Authorities as the Blackwater Valley Group to deliver measures that will achieve compliance in the shortest possible time on the A331.

As the A331 meets Junction 4 of the M3, Highways England is a key partner along with the JAQU who provide advice, support and finance.

A Memorandum of Understanding has been signed by the five authorities, which outlines how the Blackwater Valley Group will work in partnership to produce a feasibility study to achieve compliance with the Ministerial Direction served on the three Borough Council's.

Strategic Group

The Blackwater Valley Strategic Group, chaired by Adrian Gray, the Senior Responsible Officer (SRO), has defined terms of reference within the Memorandum of Understanding that include;

- Support of the Technical Officer Group,
- Approval of the Outline (OBC) and Full Business Case (FBC),
- Budget monitoring,
- Review the risk register and project timeline

The terms of reference also give the Strategic Group specific decision-making responsibilities including approval of the OBC and FBC, which include the package of measures before formal submission to JAQU.

The Membership of the Strategic Group includes both the Director and Lead Councillor for air quality from the five Councils plus Highways England and JAQU. Representatives from the Technical Group also attend the Strategic Group to report on progress and receive instruction.

The Strategic Group meet every 2-3 months with the minutes circulated and uploaded onto the 'huddle' shared working environment so they are available to all partners. A strategic and technical group tour of the areas of predicted exceedance on the A331 was also completed in June 2018.

The SRO regularly communicates with Senior Officers in JAQU by way of the monthly telephone call and they have met separately when required.

Technical Group

The Technical Officer group, reporting directly to the Strategic Group, is tasked with producing the feasibility study to meet the Ministerial Direction and delivering the preferred measure subject to JAQU approval and funding. The membership mirrors the Strategic Group with representatives from the five Councils plus JAQU and Highways England.

The key deliverables of the Technical Group are:

- Drafting the long and shortlist of measures
- Proposing the benchmark option
- Proposing the measures to achieve compliance in the shortest possible time.
- Drafting the OBC and FBC for approval

The Technical Group formally meets once a month with the minutes circulated and uploaded on to 'huddle' a shared working environment. In addition, the Technical Group meet as required to complete and plan certain tasks. JAQU arrange a weekly telephone call with the Technical Group to monitor progress with the programme and discuss any current issues.

5.2 Council Oversight

Each of the five local authorities provides progress updates to their respective corporate leadership teams and Councillors this will continue during the implementation and evaluation stage.

Some partners such as Surrey Heath BC have submitted reports to Cabinet to seek approval for the overall approach to be taken and to secure the necessary expenditure permissions. Guildford and Rushmoor have used delegated authority to authorise spending of the grant money.

All five Local Authorities require committee approval of the OBC including the package of measures. The recommendation to Councils when seeking approval of the OBC will be:

- Support of the OBC including the preferred option
- Support the implementation of the measures subject to the receipt of a grant for the full cost of the measures from JAQU.

- Delegation for the Senior Officer in consultation with the Lead Member to approve the Final Business Case if there are only minor changes from the OBC.
- Where necessary the delegation to spend funding secured under the Implementation Fund awarded by central government to deliver the approved measure.

5.3 Project Management Arrangements

A project officer, who reports to the Technical Working Group, has been engaged to assist with completion and coordination of Outline and Full Business case plus the delivery of the approved measures. PRINCE2 project methodology is used by the project officer.

The key day-to-day responsibilities of the Project Officer are budget monitoring, reviewing the project plan, maintaining the action log and risk register. The current versions of all these key documents are available on 'huddle' for all partners.

The project officer regularly updates the technical group during the weekly telephone call with JAQU and at both the Technical and Strategic Group meetings.

Microsoft Project, the software being used to manage the project, ensures all tasks are allocated and a timeframe for delivery is set. The system allows for early warning of any potential risk to delivery, which the project officer can then highlight to the group for appropriate action to be taken.

5.4 Project Reporting Structure

The reporting structure up to FBC approval constitutes the Technical Working Group who are tasked with drafting the OBC and FBC with the purpose of identifying a preferred option for achieving compliance in the shortest possible time and an implementation plan for this option. The Technical Working Group reports to the SRO and Strategic Working Group who are responsible for project oversight and recommending the OBC and FBC for JAQU and Council approval.

The Strategic Working Group receives regular progress reports from the Technical Working group. These updates include progress with the project plan timescales, budget monitoring and review of the risk register.

The appropriate Committee for each individual Council will approve the OBC, FBC and the measures within it. The Committees are:

Council	Committee Name	Date
Guildford Borough Council and Surrey County Council	Guildford Joint Committee	12 December 2018
Rushmoor Borough Council	Cabinet	11 December 2018
Surrey Heath Borough Council	Executive	11 December 2018
Hampshire County Council	Cabinet	14 December 2018

Surrey County Council does not need Cabinet Approval for the OBC and FBC.

The Strategic and Technical Group organograms are set out in Figures 12 and 13 respectively.

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Figure 12 Blackwater Valley Air Quality Strategic Group

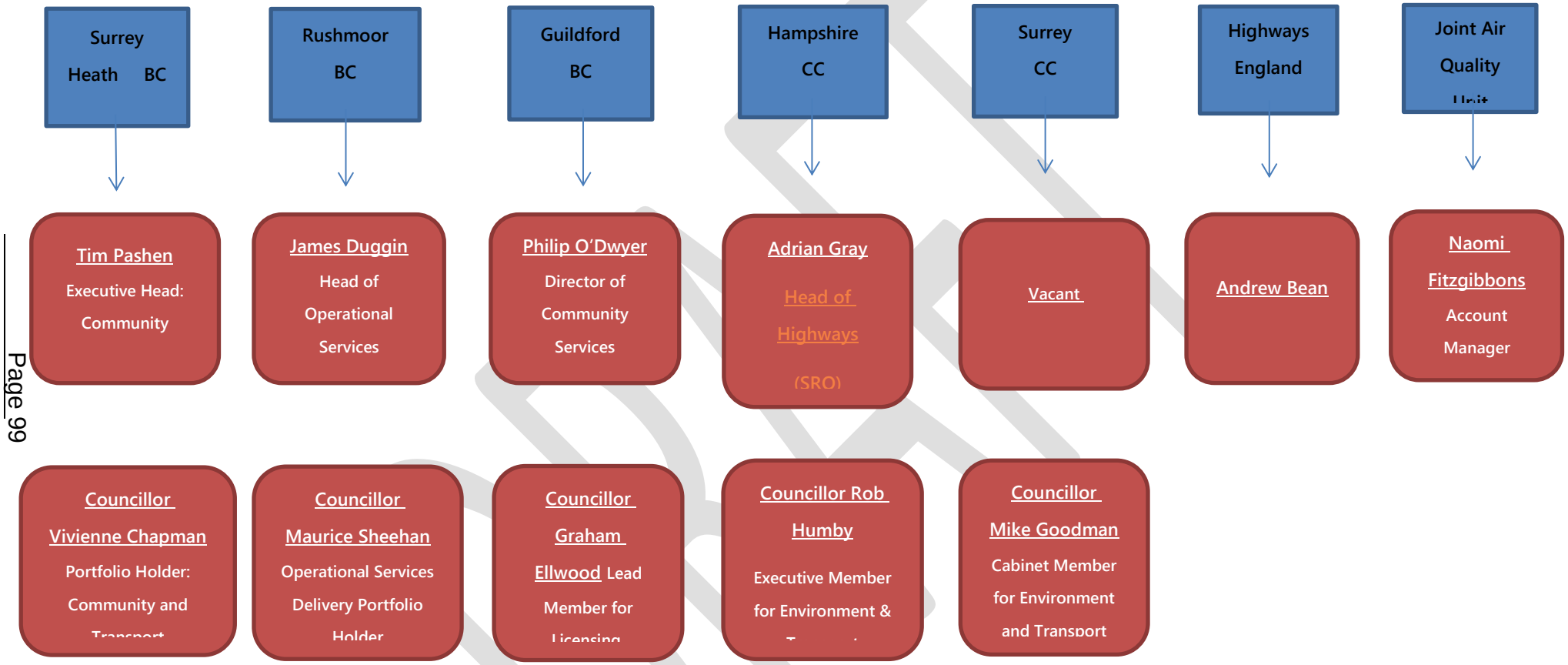

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Figure 13 Blackwater Valley Technical Officers Group

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After FBC approval when the project moves to the implementation phase, the Technical Working Group will become the Delivery group. The organisations attending the Delivery Group will remain the same as the Technical Working Group with two changes. Guildford Borough Council will no longer be required to attend the group as the non-complaint road link is only within Rushmoor and Surrey Heath's area and no measures are therefore implemented within Guildford. , Detailed modelling demonstrates that all links within Guildford will be compliant by 2020. Secondly, any contractors involved with delivery of the measures will attend the Delivery Group. The number of officers from each organisation will reduce to those involved in the delivery of the project.

The Delivery Group will meet quarterly and be responsible for monitoring implementation including contractor progress against the project plan, maintaining the risk register and the grant spend against budget. The group will provide a regular update report to the Strategic Group.

On behalf of the Delivery Group, the Project Officer will continue to oversee the project through the Delivery phase. Key tasks will include budget monitoring, reviewing and updating the project plan and risk register and coordinating communication.

As required by each authority, Hampshire and Surrey County Council are both undertaking consultation on the proposed speed reduction. Hampshire County Council are implementing the measures and will be required to provide monthly progress reports against the budget, project plan and risk register to the Delivery Group for scrutiny.

The Strategic Group will be responsible for oversight of the Delivery Group during the implementation phase and post implementation review. Focus of the Strategic Group will be on monitoring delivery and performance against the project plan and budget monitoring of the grant spend. Membership of the group will remain the same and the group will continue to meet quarterly, subject to review as the implementation phase progresses.

As set out within the Commercial and Financial Cases, upon approval of the Full Business Case, the Blackwater Valley Group will require the Capital element of the grant award to be paid directly to Hampshire County Council to deliver the works to implement the speed reduction. The remaining grant for monitoring and evaluation is required to be paid to Rushmoor Borough Council. The division of grant award and payment should be noted by JAQU to prevent a delay in implementation. Regular grant spend updates via the Delivery Group will require close scrutiny to ensure that the project is within budget and on target.

After the group has demonstrated that compliance of the NO_2 EU Limit value has been achieved and the post project evaluation has been completed, the Delivery Group and Strategic Group will conclude. The Blackwater Valley Group will seek confirmation from JAQU before disbanding..

5.5 Contingency Planning

In addition to budget monitoring during the implementation phase, early monitoring of the measures is critical to ensure that the speed restriction measure is achieving the desired reduction in average speeds.to ensure a successful outcome..

To determine if the speed limit reduction has been successful, further speed surveys will be needed and the results compared against the assumed average speeds used during the options appraisal process. These results will give an early indication if the predicted improvements in nitrogen dioxide levels will be achieved.

Should it be that the speed limit is not achieving the modelled improvements, the Strategic Group will have to consider what additional measures could be implemented to encourage compliance with the reduced speed limit.. If it appears that the preferred option is not performing in accordance with expectations then it is possible that the measure will be subject to rapid assessment, undertaken by the Evaluation Team at JAQU. The Blackwater Valley Group will assist with this assessment and fully engage with JAQU on what additional action may be required. It is understood that that should this additional element of work be deemed necessary, additional funding will forthcoming from Central Government.

The Officer representing each Local Authority on the Strategic Group has the delegation in consultation with the Lead Councillor to make minor amendments to both the OBC and FBC up to final submission, and to submit the final version of FBC. These approval delegations are to prevent a delay in the implementation phase and ensure compliance with the Ministerial Direction.

5.6 Project Roles and Responsibilities

During the production of the Final Plan, Surrey Heath BC has led on procurement and finance whilst Guildford BC has provided coordination support by Chairing the technical meetings and liaison with the SRO and Highways England.

Each partner liaises separately with their internal finance, legal and procurement teams to ensure internal approvals and governance standards are met.

Key Decisions

The Table 28 details the key approvals required by each member authority of the Blackwater Valley Group.

Table 28 Key approvals required by authority

Approval	Local Authority
OBC - Approval from Guildford Joint Committee. In advance of Joint Committee approval: legal, finance, communications, human resources, Management Team, Executive and Joint Committee Chairman's briefing.	Guildford Borough Council
OBC – Approval from? **In advance of Joint Committee approval:**	**Hampshire County Council**
OBC - 151 Officer OBC – Cabinet Approval. In advance of Cabinet approval: Corporate Leadership Team	Rushmoor Borough Council
OBC – Executive approval. In advance of Executive approval: Corporate Management Team and Executive Committee Chairman's briefing. OBC – Approval from Local Committee. In advance of Local Committee approval: Corporate Management Team and Local Committee Chairman's briefing.	Surrey Heath Borough Council
OBC – Approval from? **In advance of Joint Committee approval:**	**Surrey County Council**
OBC	**Minister/Secretary of State**
SLO consultation	**Surrey Heath and Surrey County Council Local Committee** **Hampshire County Council**
SLO post consultation	**Surrey Heath and Surrey County Council Local Committee** **Hampshire County Council** **Surrey County Council Investment Panel**
FBC Approval	**Rushmoor Borough Council** **Guildford Borough Council** **Surrey Heath Borough Council** **Surrey County Council** **Hampshire County Council**

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	Secretary of State
Communications Plan	**JAQU**
Compliance with EU limit values for nitrogen dioxide on the A331	**JAQU**
Procurement?	
Issue Tender?	
Approve contract?	

5.7 Project Plan

The full project plan (as at the date of submission) which can be seen in Appendix 5A, shows that compliance will be achieved by 2021. The project plan has multiple interlinked work streams to speed progress to ensure compliance is achieved in the shortest possible time. Actions have been identified to evaluate the benefits of the measures very early on and will identify if additional measures may be required to achieve compliance.

The project plan is a live document listing all the tasks through to implementation and evaluation of the measures, with responsible officers identified for each action. Many of the tasks have dependent predecessors and successor actions, which are monitored by the project officer to ensure the project timetable is achieved. Resources are identified and monitored in the plan with regular review under a red/amber/green rating. Risks are also identified in the plan and are regularly reviewed under a red/amber/green rating.

A formal regular review of the project plan will take place during the Technical Working Group meetings and outside of this, the project officer will liaise with members of the Delivery Group to ensure that sufficient progress is being made and to identify issues affecting delivery. The project plan is subject to change as the project progresses.

The key milestones for the project are summarised in Table 29

Table 29 Key activity milestones

Project Plan Milestone Activity	Date
Surrey Heath Local Committee	6 Dec 18
Rushmoor Cabinet & Surrey Heath Executive	11 Dec 18
Guildford Joint Committee	12 Dec 18
Submit OBC to JAQU	17 Dec 18
JAQU OBC review	17 Dec 18 – 25 Feb 19
Review OBC feedback from JAQU	25 – 27 Feb 19
Consultation on speed reduction	27 Feb – 8 Apr 19

Project Plan Milestone Activity	Date
Delegated decision on speed reduction	6/3/2019
Submit FBC	22 Apr 19
JAQU FBC review	22 Apr – 17 Jun 19
Funding received	15 July 19
Review FBC feedback from JAQU	14/5/2019
Delivery Phase (Implementation) (subject to Grant award from JAQU)	15 Jul – 14 Oct 19
Compliance (demonstrated on a full year)	2021
Evaluation and monitoring	2019-2024
Decommission measures	2023

5.8 Use of Special Advisers

Special advisers have been used in a timely and cost-effective manner in accordance with the Treasury Guidance: Use of Special Advisers and are detailed in Table 30 below.

Table 30 Special Advisors

Specialist Area	Adviser
Technical – Air Quality	WS Atkins
Technical – Green Screen	Johns Associates Ltd

5.9 Communications

Stakeholder consultation required for the Speed Limit Order to implement the speed reduction will be managed through a joint (all five authorities) Project Communications Plan, approved by JAQU. The consultees are:

- local residents
- road users
- transport operators
- local businesses

- Highways England
- Environment Agency
- relevant landowners
- utility companies
- Hampshire and Surrey Police.

In additional to the statutory consultation a dedicated webpage will be developed for this project to enable the public to be kept updated on the reasons for and progress with implementation of the measures. There will be further communication during the post implementation review to confirm that the measures have successfully achieved their objectives.

The current draft of the communications plan can be seen in Appendix 5B

5.10 Benefits Realisation

The overall spending objective is to deliver compliance with NO_2 concentration limits in the shortest possible time along the A331.

The communication strategy on the reasons for the speed reduction will also give an additional benefit of increasing general public awareness about air quality, which in turn may encourage members of the public to take the positive steps to improve air quality.

As detailed in Section 5.5, to determine if the speed limit restriction is achieving the desired reduction in average speeds, further speed surveys will be needed and the results compared against the assumed average speeds used during the options appraisal process. These results will give an early indication if the predicted improvements in nitrogen dioxide levels will be achieved..

Continuous air quality monitoring will accompany the speed survey and air quality modelling to verify if the preferred option is being effective in achieving compliance in accordance with the model predictions . The continuous air quality monitoring will compare nitrogen dioxide levels, before, during and post implementation at the points of exceedance.

Evaluation has been included as part of the Bradford's Roundabout Early Measures funded scheme. Monitoring will be undertaken via traffic surveys, supplemented by additional diffusion tube monitoring. A queue length survey has been completed in this location as part of the Farnborough Growth package work. This now forms the scheme baseline. Once the scheme is constructed, a repeated survey will be commissioned, providing data to enable 'before' and 'after' comparison to take place.

The benefit register can be seen in Appendix 5C.

5.11 Risk Management

The Blackwater Valley Group holds the risk for delivery of the plan and the programme of projects supporting it. Compliance with the Ministerial Direction to produce the Final Plan to achieve compliance with NO_2 EU limt value in the shortest possible time by the 31 December 2018 is the responsibility of the three local authorities. It is anticipated that a further Ministerial Direction will be served in relation to the Implementation Phase.

A copy of the project risk register is attached in Appendix 5D. Obtaining Committee approval from all five Councils is the key risk of failing to meet the timescales identified in the project plan. If one of the five Councils does not approve the recommendations, which includes support of the OBC plus the preferred option, then the OBC cannot be submitted to JAQU for approval, as JAQU expect cabinet sign-off of the OBC. The OBC would need to be reviewed by the Strategic Group and resubmitted for approval by the five Councils at a later date.

The register provides detail of who is responsible for the management of risks and the required counter measures, as required. The project officer will be responsible for managing the risk register and reviewing the register regularly with the Technical Working Group (which becomes the Delivery Group) to identify any new risks and additional action that may be required.

The Strategic Working Group will receive a regular update on the risk register to critically review and identify if actions are required over and above those of the Technical Working Group. The review of the risk register will align with budget monitoring for the project.

The risk register will be a standing item on both the Delivery and Strategic Working Group meetings.

The identified key issues for the delivery phase are considered to be as follows:

- Securing sufficient grant funding from JAQU to award the contracts and implement the preferred option.
- Securing the grant funding from JAQU within sufficient time to award contracts.
- An overspend on the project could prevent delivery if there is insufficient grant.
- Delays in approvals, awarding of contracts, completion of works resulting in late delivery of the project.
- Delays resulting in increased costs
- Not having sufficient grant funding to implement additional measures should the preferred option not deliver the air quality improvements expected.

5.12 Post Project Evaluation

The plan for monitoring and evaluation can be seen in Appendix 5E.

5.13 Gateway Review Arrangements

The Commercial case provides details of the gateway review process for the implementation of the measures.

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