

Cabinet Meeting	
Meeting Date	16 December 2020
Report Title	Clean Air Zone Feasibility Study
Cabinet Member	Cllr Tim Valentine, Cabinet Member for Environment
SMT Lead	Nick Vickers, Chief Financial Officer
Head of Service	Tracey Beattie, Mid Kent Environmental Health Manager
Lead Officer	Julie Oates, Environment Protection Team Leader
Key Decision	Non-Key
Classification	Open
Recommendations	<ol style="list-style-type: none"> 1. To note the contents of the Clean Air Feasibility (CAZ) study report and its conclusions and recommendations 2. To pursue the recommended option from the CAZ Feasibility Study of working in partnership with KCC to review the measures explored and develop in more detail a package of measures to reduce traffic, improve flow and improve the vehicle fleet along the A2. This could be promoted as a local Low Emission Zone or similar. 3. To report back to Cabinet at a later date following engagement and discussion with KCC on any options or measures that are supported by KCC to be taken forwards.

1 Purpose of Report and Executive Summary

- 1.1 The priorities in the Swale Borough Council Strategic Air Quality Action Plan (AQAP) are to identify and develop measures which will deliver compliance with Air Quality Objectives (AQO) through a combination of strategic and local focused Air Quality Management Area measures. One of the key strategic measures is the introduction of a Clean Air Zone (CAZ) along the length of the A2 in the borough. A feasibility study to assess the costs and air quality benefits of a CAZ has been undertaken by independent consultants Ricardo. The purpose of this report is to present the findings and recommendations of the CAZ Feasibility Study which is provided as Appendix A to this report.
- 1.2 The feasibility study followed Defra's Joint Air Quality Unit (JAQU) guidance and included baseline air quality modelling, the development of potential mitigation options and appraisal of these options using an indicative cost benefit analysis. Six key mitigation options plus two packages of options were shortlisted for cost benefit analysis appraisal. Of these, two were a charging CAZ and four were non-charging measures. The first packaged option was a group of non charging

measures and the second was a combination of a charging CAZ plus non charging measures

- 1.3 The air quality modelling was undertaken for an 'end' year of 2022. This year was chosen as it aligns with most CAZ studies in England in terms of compliance with Regulations etc. To extend further into the future could result in potential large modelling inaccuracies. The option giving the highest air quality improvement across all monitoring sites (18%) was a chargeable CAZ (CAZ D which covers all vehicle types). The second chargeable CAZ (CAZ B which covers HGVs, buses and taxis) only provided a 1.7% reduction. Both chargeable CAZ have high implementation costs of about £2.2 million. Key costs of setting up and installing a CAZ include signs/advance warning, road markings, and cameras – hence costs are the same for both types of CAZ. Costs could be reduced by utilising mobile cameras. There are other economic or compliance costs which also need to be taken into consideration. The most significant of these is the cost to businesses and the public in changing or upgrading their vehicles to be compliant, for CAZ B this is estimated at £17 million and CAZ D at £142 million.
- 1.4 Of the non-charging measures (mode shift package, freight package (delivery/servicing plans and a freight consolidation centre), support for electric vehicles and removal of pinch point parking), the mode shift package which includes school and business travel plans, investments in walking/cycling infrastructure and cycle parking, pilots with e-bikes/scooters and establishing car clubs in Faversham and Sittingbourne offered the highest air quality improvement of 2.1%. This was also the most expensive as significant investment in walking and cycling infrastructure along the A2 would be required (an estimate of £15 million).
- 1.5 However, with all measures, the wider costs to the community and businesses are very important and need to be considered alongside the implementation costs. All costs and offsetting air quality benefits (which were given a monetary value calculated by the reduction in emissions) were reviewed in the Feasibility Study by looking at the total Net Present Value (NPV). This takes into account all costs (implementation and wider costs) and the monetary value of the air quality benefit associated with the measure, to provide an overall NPV for that measure. Those measures having a negative NPV being less attractive in terms of cost benefit analysis to those with a positive NPV. The highest negative NPV was CAZ D - £118 million, with the highest positive being Pinch Point Parking at +£0.4million. However, although far less costly, this measure also offers up the least benefit in terms of air quality improvements.
- 1.6 The air quality along the A2 is expected to improve by 2022 in a normal 'business as usual' situation due to lower emissions as new vehicles replace older models. However, due to modelling uncertainty and the economic impact of the Covid-19 pandemic, there is a risk that improvements will not be as high as anticipated and exceedances of the AQOs will still occur. In this respect, the risk needs to be addressed so traffic emission reduction measures are likely to still be needed.

- 1.7 However, the introduction of a charging CAZ may be a disproportionate and expensive response to dealing with the situation along the A2 and non-charging measures may be more appropriate for the Swale Borough.
- 1.8 The introduction of any formal charging Class of CAZ must adhere to legislation (Transport Act 2000 Part III) which provides a legal framework and basis for the introduction of a charging CAZ in order to promote consistency across the country. This is inline with the Ultra Low Emission Zone ULEZ in London. However, a form of CAZ can be considered on a local case by case basis by the Government and there can be flexibility on charges, compliance levels and criteria. In these circumstances, the area can't be called a CAZ, but can be called something similar – Low Emission Area, Zero Emission Area, Clean Car Road etc. This option could be feasible for SBC – incorporating a lower level of compliance in terms of Euro Standards, flexibility in terms of enforcement (mobile cameras instead of fixed) and wider notification of the scheme through signage. The additional non-charging measures such as mode shift could also be incorporated into this.
- 1.9 Kent County Council as the Highways Authority would be responsible for the implementations of the majority of either a charging CAZ (or similar) or the non-charging measures. The Feasibility Study recommends that SBC work with KCC to develop in more detail a package of measures which will reduce traffic, improve flow and improve the vehicle fleet along the A2. This will work towards an overall improvement in air quality along the A2 and compliance with the Air Quality Objectives.

2 Background

- 2.1 Under the Environment Act 1995 and the Local Air Quality Management framework, Swale Borough Council has a statutory duty to review and assess air quality within its borough and take the necessary actions to improve areas of poor air quality. If Air Quality Objectives (AQO) for key pollutants are exceeded, an Air Quality Management Area (AQMA) must be declared. To date Swale Borough Council has declared six AQMA's for exceedances of the annual average AQO for nitrogen dioxide (NO₂) and one AQMA has recently been amended to include particulate matter (PM₁₀):

AQMA 1: Newington, (A2/High St) declared 2009;

AQMA 2: Ospringe Street, Faversham (A2/Ospringe) declared in June 2011 and revised (as AQMA 6) to the Mount in May 2016. AQMA 2 has now been revoked and renamed and consolidated into one as AQMA 6;

AQMA 3: East Street, Sittingbourne (A2/Canterbury Road) declared January 2013;

AQMA 4: St Pauls Street, Milton, Sittingbourne (B2006) declared January 2013; amended 22nd October 2020 to include Particulate Matter (PM₁₀)

AQMA 5: Teynham (A2 /London Rd) declared December 2015;

AQMA 6: See details in AQMA 2 above.

AQMA 7: Keycol Hill declared 22nd October 2020.

2.2 The 2019 Strategic AQAP outlines actions and measures that will be delivered in order to improve air quality particularly within the declared AQMA areas which, apart from one, are all located on the A2. The A2 suffers very heavy traffic loading through these AQMA areas and also at other points along the road. A key priority for consideration in the AQAP is investigating the feasibility of a CAZ – either a charging CAZ or non-charging measures.

2.3 Ricardo was commissioned earlier this year to undertake the CAZ Feasibility study on behalf of SBC. The approach taken follows the guidance provided by the Government's Joint Air Quality Unit (JAQU) for Clean Air Zone feasibility studies and followed these steps:

- Baseline air quality modelling – this covered the whole of the A2 and AQMA and some connecting roads (including St Paul's Street AQMA). The main focus was NO₂ concentrations as until very recently this has been our main pollutant of concern. The modelling was carried out for the baseline year of 2019 and a future year of 2022. This year was chosen as it aligns with most CAZ studies in England in terms of compliance with Regulations etc. To extend further into the future could result in potential large modelling inaccuracies. The modelling results provided an estimation of the improvement in NO₂ levels needed to achieve compliance with the annual NO₂ Air Quality Objective.
- Development of potential mitigation options - existing plans and policies were reviewed and through liaison with officers and local stakeholders (including KCC), a long list of potential CAZ options was drawn up. Two stakeholder engagement workshops took place in the summer and following discussion and feedback from these, the list was reduced.
- Appraisal of the mitigation options – The short-listed options were then assessed further in terms of air quality benefits and indicative cost. Using the baseline air quality model, each of the options was assessed in relation to 2022 to estimate its air quality impact. Indicative cost benefit analysis (CBA) was also undertaken to allow a comparison of the measures on both an air quality and cost effectiveness basis.

2.4 In terms of air quality modelling, a recognised and appropriate dispersion model was used and the results verified and adjusted against the actual 2019 monitoring data. The baseline modelled results for 2019 compared well to the actual measured results for 2019, with exceedances being found at Keycol Hill and in the St Paul's Street and East Street AQMAs. In the future modelled year of 2022, compliance with the AQO was generally seen in most parts of the A2. However, St Paul's Street, Keycol Hill and possibly East Street are still predicted to be at risk of exceeding the AQO. As a result of the Covid-19 pandemic, a sensitivity test was undertaken. The pandemic is likely to result in a number of economic impacts which could lead to a slower replacement of the vehicle fleet with the less polluting Euro standard vehicles. This could result in there still being exceedances of the AQO in St Pauls St and East Street AQMA's.

2.5 Initially a long list of 25 potential measures grouped into 4 themes was drawn up:

- Options based on a formal charging CAZ
- Low emission vehicle measures
- Promoting mode shift and free flow of vehicles through traffic and travel management measures
- Longer term development policy.

2.6 Following two stakeholder engagement workshops, this long list was reduced to a shortlist of six key mitigation options plus two combined packages to be taken forwards for an appraisal on their impact on air quality and an indicative cost benefit analysis:

Option	Description
Charging CAZ B (A2 from A249 to A299, including St Paul's AQMA)	Covers HGV's, Buses and Taxis. Vehicles not meeting a Euro 6/VI standard for diesel vehicles or Euro 4 for petrol vehicles will be charged. Proposed exemption for 3 years for buses and taxis – support upgrade to compliant vehicles
Charging CAZ D (A2 from A249 to A299, including St Paul's AQMA)	Covers HGV's, Buses, Taxis, LGVs and cars. Vehicles not meeting a Euro 6/VI standard for diesel or Euro 4 for petrol vehicles will be charged. Proposed exemption for 3 years for buses and taxis – support upgrade to compliant vehicles
Mode shift package (Targeting whole SBC area but focus on A2)	Package including : <ul style="list-style-type: none"> - Travel plans – schools and businesses - Work with KCC in investment in walking and cycling infrastructure - Invest in secure cycle parking - Pilots/loans/trials with e-bikes/scooters - Car club in Sittingbourne and Faversham
Freight package (covering the main swale towns but with focus along A2)	Package focused on freight including: <ul style="list-style-type: none"> - Delivery and servicing plans, link to travel plans - Consolidation centre servicing Sittingbourne and Faversham
Electric vehicle support package	Package to promote electric cars and vans across Swale including: <ul style="list-style-type: none"> - Parking charge incentives - Charging infrastructure in Council car parks also working with businesses - Promotion – link to travel plans - E-car clubs linked to car clubs
Pinch point parking removal	Remove pinch point parking on the A2 to allow better vehicle flow
Non charging Package	Bundle of mode shift, freight, electric vehicles and pinch point removal
CAZ B plus non charging package	Looking at the benefits of the CAZ B and the non-charging package combined.

2.7 The table below shows the results of the options appraisal on the impact on air quality and also an indicative cost benefit analysis. The cost benefit analysis has been summarised as a Net Present Value (NPV). As mentioned previously, this quantifies the costs (implementation and wider costs) and the monetary value of the air quality benefit to provide an overall NPV for that measure. In terms of costs, indicative implementation costs have been shown separately to the Net Present Value (NPV).

Category	Ref Case	CAZ B	CAZ D	EV	Freight	Mode Shift	Pinch Point	All non-charging	CAZ B + non-charging
Average reduction concentration across all monitoring sites %									
Reduction	0	1.7	18.4	1.2	0.6	2.1	0.3	3.0	4.7
Number of monitoring sites exceeding or at risk (global adjustment)									
Exceeding	0	0	0	0	0	0	0	0	0
At risk	2	2	0	2	2	2	2	2	2
Number of monitoring sites exceeding or at risk (site specific adjustment)									
Exceeding	1	1	0	1	1	1	1	0	0
At risk	1	1	0	1	1	1	1	2	2
Summary cost benefit analysis results (Million £)									
Total NPV	N/A	-15.0	-118.1	-1.9	0.3	- 13.3	0.4	-15.6	-30.6
Implement-action only	N/A	2.26	2.26	0.14	0.29	15.17	<0.01	15.61	17.86

2.8 In terms of air quality improvements, the CAZ D (all vehicles) provides the greatest benefit giving an 18% improvement which will result in no sites exceeding or at risk of exceeding the Air Quality Objective (AQO). CAZ B (targeting HGVs) provides a far lower improvement at only a 1.7% reduction in concentrations. In terms of cost, both CAZ options have similar implementation costs (£2.26 million), but the NPV is far greater at £118 million over 10 years for CAZ D compared to £15 million for CAZ B. These costs include the compliance costs to local businesses and residents in upgrading their vehicles which is significant.

2.9 Two measures present a positive NPV (freight and pinch point parking), but these offer a very small overall impact in terms of air quality benefit. In addition, it has been impossible to estimate the costs involved with providing additional residential parking for those no longer able to park on street. Of the non-charging options, Mode Shift offers the highest reduction (2.1%) which is a higher reduction than CAZ B. The lowest air quality impact was the removal of the pinch point parking at 0.3%. As this measure would only be applicable to certain areas of the A2 rather than the entire length, this is to be expected. As specific details of these non-charging measures were not available, the costs were estimated. Mode shift being the costliest with likely implementation costs of c £15 million to cover cycle and walking infrastructure. However, this estimation does cover the introduction of new cycle way along the entire length of the A2 though the borough and it is unlikely that level of investment will be possible. In terms of NPV, this option does perform better than both CAZs with an NPV of £13.3 million.

2.10 As a non-charging package, the 4 measures together generate a 3% improvement to air quality which is higher than CAZ B alone. This will result in no areas exceeding the AQO, with 2 areas at risk of exceedance (which is no different to most of the other options). In terms of overall costs, it is about the same as a CAZ B at £15 million but the air quality improvements are far greater. A package of CAZ B combined with all the non-charging options was also examined by combining the individual costs and benefits. As expected, the combination of the CAZ B and non-charging measures, gives a higher air quality improvement (4.7%) than the options alone and will result in no exceedances of the AQO. Costs are estimated at £17million for implementation and £30 million overall. This combination package is obviously far less in terms of overall cost than the CAZ D option. It should be noted that this combination option was simply estimated by summing the costs and benefits of the CAZ B and non charging measures package.

2.11 As CAZ D (all vehicles) provides the greatest benefit in terms of air quality and enables compliance with the AQO in all AQMAs by 2022, a Low Emission Zone (LEZ) requiring lower levels of Euro standard compliance (such as Euro 4) will still provide sufficient air quality benefits, if a form of charging CAZ is a preferred option. This would deal with the older, more polluting vehicles but have a lesser impact on the wider community and businesses in terms of the cost of vehicle replacements. Residents and businesses will still have the ability to drive vehicles up to 14 years old and still be compliant with a Euro 4/IV based LEZ scheme.

This form of LEZ would provide more flexibility to implement the zone and any other supporting measures in a more cost effective manner. For example, mobile ANPR cameras could be used along the A2 as an alternative to fixed cameras which are expensive to purchase and maintain. Our consultants have estimated that set up and running costs for a mobile ANPR system would be in the region of £1-1.5 million. Of this approximately 75% are upfront capital expenditure costs with the rest being operational expenditure (estimated over a 10 year period). In comparison, the implementation costs for a formal CAZ D have been estimated at £2.26 million on the assumption that eight sets of fixed cameras will be installed. Again, a similar 75% to 25% split for upfront and operational expenditure applies. It must be remembered that with any charging scheme there will also be back office costs in setting up the system to collect information, issue and process any fines.

2.11 Modelling has shown that by 2022, air quality along the A2 is expected to improve as vehicle fleets are renewed and the number of vehicles with higher Euro emission standards increases. However, there is always uncertainty in modelling and with the economic impact of the Covid-19 pandemic, there is a risk that vehicle fleet turnover will be slower than anticipated and improvements will not be as high. This could result in continued exceedances of the AQOs. In this respect, measures are likely to still be needed to reduce traffic related emission along the A2 to address this risk.

- 2.12 Although there is a risk of exceedances of the AQOs in some of the AQMAs in 2022, the exceedances are not significant in comparison to other areas or cites such as London, Birmingham etc. As a result, a charging CAZ may therefore be considered to be a disproportionate and expensive response to dealing with the situation along the A2. A package of non-charging measures may be more appropriate for the Swale Borough. In addition with a package or measures, these could be implemented using a phased approach across the district as financial resources allow. This process could be implemented over a number of years with the initial focus or priority being given to supporting schemes and measures in the areas of the AQMAs and the A2 (as these areas are the most polluted).
- 2.13 Kent County Council as the Highways Authority for this area would be responsible for the implementation of the majority of either a charging CAZ or the non-charging measures. The Feasibility Study recommends that SBC work in partnership with KCC to develop in more detail, a package of measures which will reduce traffic, improve flow and improve the vehicle fleet along the A2. This will work towards an overall improvement in air quality along the A2 and compliance with the AQOs. As the Highways Authority, KCC would be also primarily be responsible for funding these non-charging measures. However, there are a number of additional funding options open to SBC that could be utilised to finance measure or provide match funding:
- Section 106 contributions arising from Air Quality Damage Costs Assessments or other traffic and transport assessment. Work is currently under way looking at the option of pooled developer contributions in the form of a Sustainable Transport, Facilities and Incentives contribution. These pooled contributions could be used to fund larger schemes that would benefit a wider population and areas in terms of air quality benefits than a measure focussed on a particular development.
 - Defra Air Quality Grants – applications for grant monies can be made to Defra on an annual basis. Applications are submitted in the autumn with determination in the following spring. If a scheme of measures is drawn up for SBC and approved, funding could be sought via this route.
 - Housing Infrastructure Fund (HIF) – monies from the Swale Transport Infrastructure scheme set up to support infrastructure improvements linked to long term housing delivery in northwest Sittingbourne, could be utilised for some measures or schemes.
- 2.14 KCC Highways have been involved in the Feasibility Study process so are aware of the options that have been considered and modelled. It is also anticipated that mode shift measures in particular will be an important aspect in the emerging SBC Local Transport Plan. In this respect, it is hoped that the CAZ Feasibility Study will be well received by KCC.

3 Proposals

- 3.1 To note the contents and recommendations of the CAZ Feasibility Study.
- 3.2 To pursue the recommended option from the CAZ Feasibility Study of working in partnership with KCC to review the measures explored and develop in more detail a package of measures to reduce traffic, improve flow and improve the vehicle fleet along the A2. This could be promoted as a local Low Emission Zone or similar.
- 3.3 To report back to Cabinet at a later date following engagement and discussion with KCC on any options or measures that are supported by KCC to be taken forwards.

4 Alternative Options

- 4.1 Not to act on the recommendation of the CAZ Feasibility Study to liaise with KCC to develop further measures to reduce pollution along the A2. This would be on the basis that the modelling indicates that there will be a natural downward trend in pollution levels by 2022, with no exceedances of the AQO, so no additional measures to improve air quality are required. This could result in continued exceedances of the AQOs if the anticipated vehicle fleet improvements do not happen.

5 Consultation Undertaken or Proposed

- 5.1 Public consultation has not been undertaken at this stage. However, two stakeholder engagement workshops involving SBC members and officers, relevant KCC departments, parish councils and public transport sectors were held to discuss a shortlist of measures to be assessed further.
- 5.2 Public consultation was undertaken as part of the AQAP process and feedback indicated there was an appetite for a CAZ locally. It may be considered appropriate that further public consultation be undertake exercise to ascertain more up to date public opinion regarding the possible options.

6 Implications

Issue	Implications
Corporate Plan	The proposals support Priority 2: Investing in our environment and responding positively to global challenges in the emerging Corporate Plan 2020-2023 'Working together for a better borough'.
Financial, Resource and Property	The Feasibility Study was funded from the Special Project Fund. The Council has limited funding available to fund the implementation of specific projects identified so we need to explore other funding sources from KCC, Central Government and S106 contributions.

Legal, Statutory and Procurement	The Transport Act 2000 Part III provided a legal framework and basis for the introduction of charging CAZ. Any form of CAZ will require approval by Defra. The SBC Strategic AQAP approved by Defra contains a key strategic measure to reduce emission and smooth traffic flows on the A2 and also encourages alternative modes of transport to reduce congestion and pollution by the introduction of a CAZ. We are required to report annually to Defra on progress with AQAP measures.
Crime and Disorder	None identified
Environment and Sustainability	The CAZ feasibility study is a key action in the Strategic Air Quality Action Plan and also forms part of the Climate and Ecological Emergency Action Plan drawn up in fulfilment of the declaration by Council of a Climate and Ecological Emergency.
Health and Wellbeing	Actions or measures resulting in reductions in vehicle emissions and improvements to air quality are beneficial to the health of residents, especially vulnerable people who suffer from respiratory conditions, and young children
Risk Management and Health and Safety	None identified.
Equality and Diversity	None identified at this time. Equalities Impact Assessment not required at this time.
Privacy and Data Protection	None identified

7 Appendices

7.1 The following documents are to be published with this report and form part of the report:

- Appendix I: Clean Air Zone (CAZ) Feasibility Study – Final Report

8 Background Papers

Swale Borough Council Strategic Air Quality Action Plan –
https://services.swale.gov.uk/assets/Air-Quality/AQAP_SwaleBC_2018%20final.pdf