Dover District Council
Air Quality Action Plan

April 2024

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Dover District Council

Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995, as amended by the Environment Act 2021

Local Air Quality Management

April 2024

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Report Reference Number	Dover District Council AQAP
Date	April 2024

Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the actions we will take to improve air quality in Dover District Council between 2024 - 2028. The AQAP sets out how the local authority will exercise its functions in order to secure the achievement of the air quality objectives.

This action plan is a final version and will be formally adopted at full Council meeting on 22nd May 2024. Implementation of the outlined measures will result in the relevant objectives being attained by 2025.

The relevant Air Quality Management Areas (AQMAs) addressed by this action plan are outlined below, both of which are declared for exceedances of the NO_2 annual mean Air Quality Strategy (AQS) objective:

- A20 AQMA –An area following the A20 from just west of the Limekiln Roundabout at the western end to a point c.140m from the Eastern Docks in Dover. The AQMA was declared in 2004 and amended in 2007 and 2009; and
- High St / Ladywell AQMA – An area encompassing roads and properties between the junction of Effingham Crescent/High Street, and Priory Hill/High Street. The AQMA was declared in 2007.

This action plan replaces the previous action plan which ran from 2007. Projects delivered through the past action plan include:

- Improved traffic management through junction improvements along the A20 Townwall Street to reduce stop/start movements of HGVs heading for the Port. Including the removal of traffic lights and the introduction of strategic barriers;
- Improvements to Eastern Docks layout via the Traffic Management Improvement (TMI) project;
- New Dover Eastern Docks Exit Road to A20 Townwall Street; and
- Supplementary Air Quality Planning Guidance published.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, pregnant women, and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3]. Dover District Council is committed to reducing the exposure of people in Dover to poor air quality in order to improve health.

This Action Plan aims to tackle the main causes of poor air quality within Dover District, namely emissions from road traffic, particularly cars, LGVs and buses. We have developed actions that can be considered under 22 broad topics:

- Alternatives to private vehicle use
- Environmental permits
- Freight and delivery management on trunk routes into Dover
- Policy guidance and development control
- Promoting low emission transport
- Promoting travel alternatives
- Public information
- Transport planning and infrastructure
- Traffic management
- Vehicle fleet efficiency

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010

[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Our priorities are based on identifying measures that can lead to improvement in air pollution levels, raising the profile of air pollution issues within the district and working with partners and stakeholders to identify further measures.

In this AQAP, we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Dover's direct influence.

Responsibilities and Commitment

This AQAP was prepared by the Bureau Veritas and the Environmental Health Department of Dover District Council with the support and agreement of the following officers and departments:

- Environmental Protection
- Climate Change and Energy Conservation
- Community Services & Development
- Community Safety, CCTV and Emergency Planning
- Licensing
- Parking Services
- Property Services and Grounds Maintenance
- Waste Services
- Building Control
- Procurement
- Planning and Development Control
- Press & Media
- Dover Harbour Authority
- Kent County Council Highways

In preparing the draft of this AQAP, consultation has been carried out with:

- Louise May- Strategic Director (Corporate & Regulatory)
- Councillor Martin Bates- (previous) Portfolio Holder for Transport, Licensing and Regulatory Services.
- Councillor Jamie Pout (current) Portfolio Holder for Transport, Licensing and Environmental Services.

This AQAP has been approved by:

Lucy Manzano – Head of Port Health & Public Protection

This AQAP has been signed off by Kent Director of Public Health.

Dr. Anjan Ghosh - Kent County Council

The following Air Quality Partners / stakeholders have contributed to the development of the AQAP and will be committed to delivery of actions:

- National Highways
- The Environment Agency
- Kent County Council
- Thanet District Council
- Folkestone & Hythe District Council
- Canterbury City Council
- Kent & Medway Air Quality Partnership
- Dover Harbour Board (Port of Dover)
- Stagecoach
- Dover Council Development Control, Licensing, Procurement, Climate Change and Energy Conservation Officer

This AQAP has been signed off by the Director of Public Health for Kent with the recognition of its limitations due to the resources Local Authorities have to enforce

restrictions and reduce pollution as highlighted by the Association of Directors of Public Health Consultation Response to the National Air Quality Strategy.

This AQAP will be subject to an annual review, appraisal of progress and reporting to Management Team Progress. Progress each year will be reported in the Annual Status Reports (ASRs) produced by Dover District Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP, please send them to Senior Environmental Protection Officer Brian Gibson at:

Address: The Environmental Protection Team, Dover District Council, White Cliffs Business Park, Honeywood Close, Whitfield, Kent, CT16 3PJ

Telephone: 01304 872428

Email: envprotection@dover.gov.uk

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1 Introduction

This report outlines the actions that Dover District Council (DDC) will deliver between 2024 -2028 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to Dover. The purpose of the report is to set out how the local authority will exercise its functions in order to achieve the relevant air quality objectives. This action plan is a final version and will be adopted at full Council meeting on 22nd May 2024.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995, as amended by the Environment Act (2021), and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Dover's air quality ASR.

This action plan focuses on actions to improve air quality across the entire district, with a specific focus on the two areas currently designated as Air Quality Management Areas (AQMAs), both of which are declared for exceedances of the NO_2 annual mean Air Quality Strategy (AQS) objective:

- A20 AQMA –An area following the A20 from just west of the Limekiln Roundabout at the western end to a point c.140m from the Eastern Docks in Dover. The AQMA was declared in 2004 and amended in 2007 and 2009; and
- High St / Ladywell AQMA – An area encompassing roads and properties between the junction of Effingham Crescent/High Street, and Priory Hill/High Street. The AQMA was declared in 2007.

The Port of Dover town is a major hub of transport-related activity and is strategically important for the UK. Large volumes of road traffic utilise the A2 and A20 entering and leaving the town, which predominantly represents the main source of air pollution in the area. DDC has limited control over the emission standards of vehicles entering the Port from Continental fleet operators, and this should be recognised as a major limitation of the actions that DDC can directly take on some of the contributing

vehicles. As such, DDC will continue to lobby and work with Central Government and Highways England on this issue. This Plan therefore focusses on actions more directly under the control of DDC, and the local partnerships that are in place, or need to be strengthened.

2 Summary of Current Air Quality in Dover District Council

2.1 Air Quality Management Areas

The relevant Air Quality Management Areas (AQMAs) addressed by this AQAP are outlined below.

Table 2.1 – Relevant Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective
A20 AQMA	2004 (amended in 2007 and 2009)	NO_2 Annual Mean	An area following the A20 from just west of the Limekiln Roundabout at the western end to a point c.140m from the Eastern Docks in Dover. No longer includes properties in Marine Parade and East Cliff to the east	YES	49.8	30.8	4 years
High Street/Lady-well AQMA	2007	NO_2 Annual Mean	An area encompassing roads and properties between the junction of Effingham Crescent/High Street, and Priory Hill/High Street.	NO	50.5	35.5	2 years

2.1.1 A20 AQMA

The A20 AQMA was declared in 2004 due to exceedances of the NO_2 annual mean AQS Objective and was subsequently amended in 2007 and 2009. The NO_2 annual mean concentration of 49.8 µg/m^3 was recorded within the A20 AQMA at declaration, which exceeded the 40 µg/m^3 AQS Objective by 9.8 µg/m^3. The A20 AQMA encompasses an area following the A20 from just west of the Limekiln Roundabout at the western end to approximately 120m from the Eastern Docks roundabout in Dover. The Amendments in 2007 and 2009 amended the boundary to no longer include the properties in Marine Parade and East Cliff to the east due to improvements in NO_2 concentrations as a result of the measures implemented within the 2007 AQAP.

National Highways is the relevant transport authority for the A20/M20 corridor, encompassing the roads within the A20 AQMA. Kent County Council (KCC) is the relevant highway and transport authority for roads on the local network (e.g. Woolcomber Street, which joins the A20 Townwall Street in the AQMA). Both organisations are key stakeholders in the success of this Plan and DDC will continue to work closely with them.

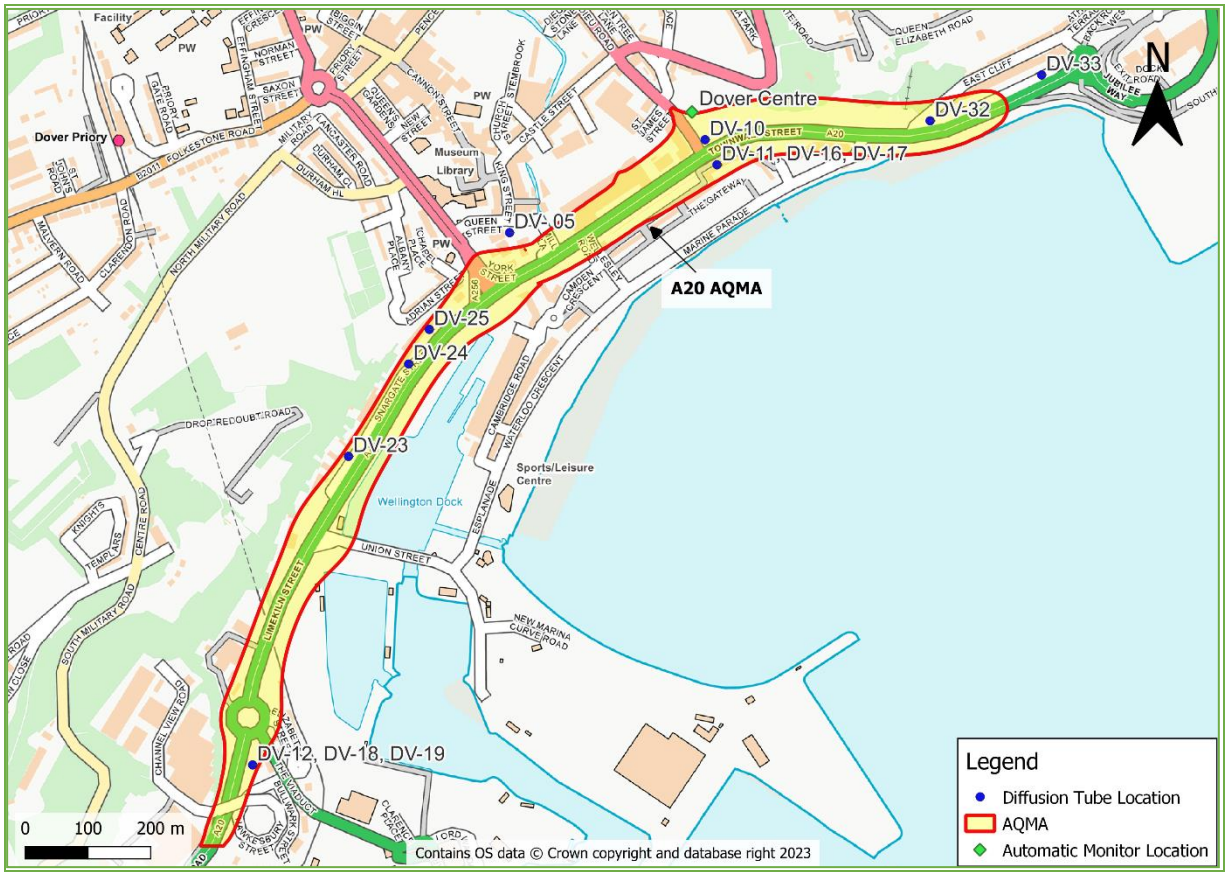
There are eight diffusion tube sites within this AQMA, including two triplicate sites. There is one continuous monitor with the AQMA, which is co-located with the diffusion tube DV10. Annual mean NO_2 concentrations from these sites are presented in Table 2.2. Concentrations within 10% of the AQS Objective was reported in 2018 at DV10 and DV24. Annual mean NO_2 concentrations at all locations within the AQMA has achieved compliance since 2019 for four consecutive years. The locations of these monitoring sites are illustrated in Figure 2.1.

Table 2.2 - A20 AQMA Annual Mean NO_2 Concentrations

Site ID	X OS Grid Ref.	Y OS Grid Ref.	Site Type	Annual mean NO_2 concentration (µg/m^3)				
				2018	2019	2020	2021	2022
Dover Centre (continuous monitor)	632302	141465	Roadside	26.0	22.0	22.7	20.8	22.0

DV05	631986	141321	Urban Centre	28.8	24.4	20.3	22.1	23.6
DV10	632298	141469	Roadside	38.3	35.9	26.4	28.3	30.6
DV11, DV16, DV17	632317	141429	Roadside	29.9	28.1	23.1	22.1	24.7
DV12, DV18, DV19	631576	140474	Roadside	34.5	31.5	26.5	27.2	26.5
DV23	631729	140965	Roadside	34.3	31.2	25.3	27.7	28.2
DV24	631825	141112	Roadside	39.0	33.7	26.1	27.6	27.4
DV25	631858	141167	Roadside	32.6	29.3	28.9	30.2	30.8
DV32	632657	141499	Roadside	35.4	31.7	26.7	28.5	29.8
Note: Exceedances of the NO_2 annual mean AQS objective are in **bold**								

Figure 2.1 - Location of Monitoring Sites within A20 AQMA



Detailed dispersion modelling of the air quality within the A20 AQMA area reflected the monitoring results and highlighted one sensitive receptor location where the NO_2 concentration was predicted to be within 10% of the AQS Objective within the AQMA (37.5µg/m^3), based on 2019 baseline year data. All other modelled receptors within

the A20 AQMA have modelled concentrations below 36µg/m^3 (not within 10% of the AQS Objective). Source apportionment (analysis of the contributing emissions sources to the overall pollutant burden at a location) was also undertaken showing the contribution of specific vehicle classes and background levels of pollution towards overall NO_x concentrations. Section 0 details the findings of the source apportionment assessment.

It should be noted that the impact of Covid 19 has resulted in the unusual monitoring data since 2020, as the Covid restrictions greatly reduced traffic flows, thus leading to a decrease in pollutant concentration. In this case, DDC plans to review the 2023 monitoring data within the A20 AQMA. If 2023 annual mean NO_2 concentrations at all locations within the AQMA remain below 36 µg/m^3 (not within 10% of the AQS Objective), DDC will start the revocation process for the A20 AQMA, which has achieved five consecutive years of compliance.

2.1.2 High Street / Ladywell AQMA

In 2007 DDC declared an AQMA for an area encompassing roads and properties between the junction of Effingham Crescent/High Street and Priory Hill/High Street. The AQMA was declared due to congestion at the junction as a result of a high number of vehicle movements travelling through a relatively narrow area consisting of closely packed buildings creating a canyon effect along the High Street. NO_2 annual mean concentration of 50.5µg/m^3 was recorded within the High Street / Ladywell AQMA at declaration, which exceeded the 40µg/m^3 AQS Objective by 10.5µg/m^3.

There is one triplicate diffusion tube site within this AQMA (DV06/ DV07/ DV08), and a further two diffusion tubes sites located close to the AQMA boundary (DV30 and DV31). Annual mean NO_2 concentrations from these sites are presented in Table 2.3. Exceedances were reported in 2018 at DV06/DV07/DV08 and in 2018 and 2019 at DV30, which is just outside the AQMA boundary. Diffusion tube DV30 is sited in a location where there has been on-going construction activity which led to low data capture in 2019 and 2020 and inconsistency with the height of the tube throughout the year. In 2022, DV30 recorded an annual mean NO_2 concentration of 36.5µg/m^3 which is within 10% of the AQS Objective. However, it should be noted that the concentration at DV30 might have been impacted by the construction activities

nearby and is therefore not a reliable measurement point. The locations of these monitoring sites are illustrated in Figure 2.2.

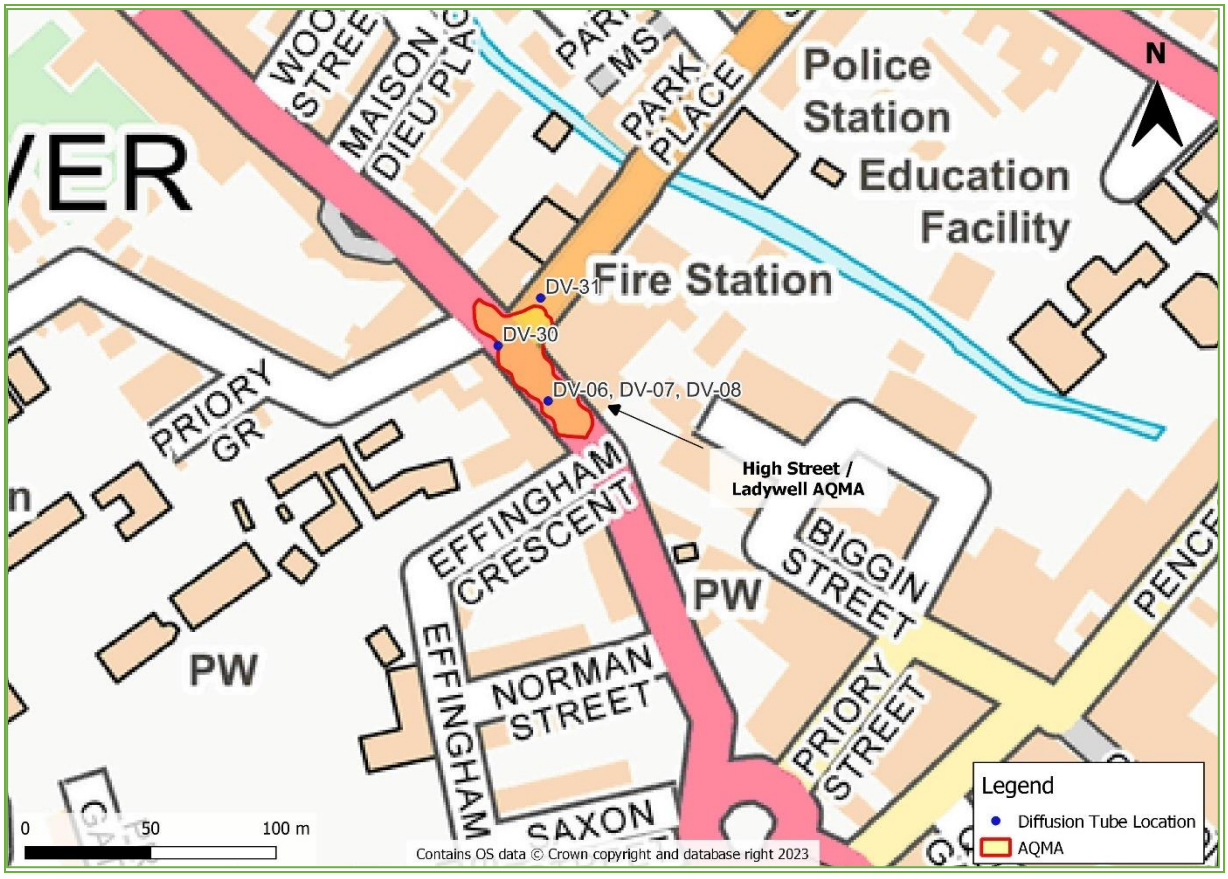
Table 2.3 – High Street / Ladywell AQMA Annual Mean NO_2 Concentrations

Site ID	X OS Grid Ref.	Y OS Grid Ref.	Site Type	Annual mean NO_2 concentration ($\mu g/m^3$)				
				2018	2019	2020	2021	2022
DV06 /DV07 / DV08	631601	141722	Roadside	**40.4**	39.8	33.7	35.2	35.5
DV30	631581	141744	Kerbside	**40.5**	**40.4**	35.7	33.9	36.5
DV31	631598	141763	Kerbside	31.2	31.5	23.5	26.5	29.6

Note: Table 3.3

Exceedances of the NO_2 annual mean AQS objective are in **bold**

Figure 2.2 - Location of Monitoring Sites within High St / Ladywell AQMA



Detailed dispersion modelling of the air quality within the High Street / Ladywell AQMA area reflected the monitoring results and highlighted one sensitive receptor location where the NO_2 concentration was predicted to exceed the AQS Objective of 40µg/m^3 within the AQMA (40.4µg/m^3), based on 2019 baseline year data. Source apportionment was also undertaken showing the contribution of specific vehicle classes and background levels of pollution make towards overall NO_x concentrations. Section 0 details the findings of the source apportionment assessment.

2.2 Public Exposure

To understand the population exposed to poor air quality, a review of the estimated population of each AQMA has been undertaken. This has been completed using the Office for National Statistics 'Lower Super Output Area' (LSOA) information. Information from the Indices of Multiple Deprivation (IMD) are also included. The number for the IMD are based on deciles of multiple factors of deprivation. The larger the score, the more deprived the area.

Table 2.4 below shows that the A20 AQMA has higher population than the High Street / Ladywell AQMA. This could suggest a potentially greater exposure to air pollution in the A20 AQMA. Compared with the High Street / Ladywell AQMA, the slightly higher IMD score in the A20 AQMA may indicate increased vulnerability to the effects of air pollution due to higher levels of deprivation.

The median age is 46 for the whole Dover area and 42 for England. Both AQMAs have slightly younger populations than the regional population and older than the national population. This age distribution can influence the susceptibility of these populations to the impact of air quality, with older age groups potentially being more vulnerable.

Table 2.4 - Population

AQMA	Estimated Population in AQMA	Average IMD within AQMA	Median Age
A20 AQMA	195	2	44
High Street / Ladywell AQMA	7	1	36

3 Dover District Council's Air Quality Priorities

3.1 Public Health Context

Mounting scientific evidence shows the scale of the impact of poor ambient air quality on health. Research shows that the most common air pollutants of concern, NO_2, PM_{10} and $PM_{2.5}$ (particulate matter in the fractions of less than 10 microns and 2.5 microns in diameter), are linked to various health complications, impacting the cardiovascular and respiratory systems. Exposure to these pollutants can bring about symptoms such as nose and throat irritation, followed by bronchoconstriction and dyspnoea, alongside increasing reactivity to natural allergens, increasing the risk of respiratory infections through the pollutants interaction with the immune system[4], and may lead to reduced lung function.

Alongside this, there is increasing interest and pressure from members of public for Local Authorities to actively tackle and reduce air pollution in their areas. Previously, there had been no deaths officially linked to air pollution, however in 2020 the first person in the UK had 'air pollution' listed as a cause of death. Although currently there are no legislative outcomes as a result of this, this further increases the pressure and duty of care that Local Authorities have in order to protect their residents. Poor air quality is considered to be a significant contributory factor to the loss of life, shortening lives by an average of 5 months. In 2010, the Department of Health's Committee on the Medical Effects of Air Pollutants (COMEAP) reported that long-term exposure to outdoor air pollution contributes to the equivalent of 29,000 deaths in 2008 in the UK, and an associated loss to the population of 340,000 life-years. A further report by the Royal College of Physicians reported in 2016 that it contributed to the equivalent of 40,000 deaths in 2015.

Local authorities have a range of powers which can effectively help to improve air quality. However, the involvement of public health officials is crucial in playing a role to assess the public health impacts and providing advice and guidance on taking

[4] Marilena Kampa and Elias Castanas, Human Health Effects of Air Pollution, June 2007

appropriate action to reduce exposure and improve the health of everyone within Dover District Council.

The Air Quality Indicator in the Public Health Outcomes Framework (England) provides further impetus to join up action between the various local authority departments which impact on the delivery of air quality improvements. The "Air Quality – A Briefing for Directors of Public Health" document published in March 2017 provides a one-stop guide to the latest evidence on air pollution, guiding local authorities to use existing tools to appraise the scale of the air pollution issue in its area. It also advises local authorities how to appropriately prioritise air quality alongside other public health priorities to ensure it is on the local agenda.

The document comprises the following key guides:

- Getting to grips with air pollution – the latest evidence and techniques;
- Understanding air pollution in your area;
- Engaging local decision-makers about air pollution;
- Communicating with the public during air pollution episodes;
- Communicating with the public on the long-term impacts of air pollution; and
- Air Pollution: an emerging public health issue: Briefing for elected members.

The Guidance on improving outdoor air pollution and health: review of interventions[5] published in March 2019 provides a review of interventions and in-depth evidence for a range of practical interventions to reduce harm from outdoor air pollution.

Besides NO_2, there is an increasing focus on fine particulate matter. $PM_{2.5}$ is a pollutant of concern meaning particulate matter which is 2.5 microns or less in diameter. Neither AQMA has been declared for $PM_{2.5}$ and the modelling as part of the detailed assessment has shown predicted levels below the annual mean objective of 25µg/m³. Whilst there are legal limits in place to protect human health it is recognised that there are no absolutely safe levels of $PM_{2.5}$. Negative health

[5] Guidance on improving outdoor air quality and health: review of interventions. Published March 2019. Available online at https://www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions

impacts associated with $PM_{2.5}$ exposure have been found well below current EU and UK limits.

The Public Health Outcomes Framework data tool[6] compiled by Public Heath England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2022 fraction of mortality attributable to $PM_{2.5}$ pollution in Dover is 4.8%, which is below South East region's average of 5.7% and the national average of 5.8%.

It should be noted that this figure only accounts for one pollutant ($PM_{2.5}$) for which stronger scientific evidence on links with mortality exist, and not NO_2, for which the AQMAs are declared, so the true figure is possibly even higher. NO_2 has also been associated with adverse health effects at concentrations that were at or below current EU and UK limit values. Furthermore, following on from a review of research into the death burden associated with the air pollution mixture rather than single pollutants acting independently, COMEAP are currently reviewing the ability to link deaths to one specific pollutant.

It is expected that some of the measures implemented within this action plan for the achievement of reductions in NO_2 will have co-benefits in additionally reducing concentrations of PM_{10} and $PM_{2.5}$.

This action plan is aimed at improving air quality and achieving compliance within the AQMAs in Dover. However, it is important to highlight that if there is not an AQMA in place, it does not mean there is not a public health concern around air quality.

3.2 Planning and Policy Context

There are a number of related policies and strategies at the local and regional level that can be tied in directly with the aims of the AQAP. The majority of these policies and strategies are focused on transportation issues and are therefore likely to help contribute to overall improvements in air quality across the DDC area. The review of these strategies and policies also assists in preventing duplication of work within the

[6] Public Health Outcomes Framework, Public Health England. data tool available online at https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/0/gid/1000043/pat/6/par/E12000008/ati/202/are/E06000036/cid/4/page-options/ovw-do-0

AQAP but can instead work in concordance for mutual benefit whilst also focusing on direct measures outside those considered within the already developed strategies and policies. This section outlines the strategies and policies that have the most significant potential to impact on pollutant concentrations within DDC.

The most relevant policies and strategic documents are detailed below.

3.2.1 Clean Air Strategy 2019

The Clean Air Strategy[7] has been published to set out the case for action at a national level, identifying a number of sources of air pollution within the UK including road transportation (relevant in terms of the AQMAs currently present within Dover) and sets out the actions required to reduce the impact upon air quality from these sources. It has been developed in conjunction with three other UK Government Strategies; the Industrial Strategy, the Clean Growth Strategy, and the 25 Year Environment Plan.

Key actions that are detailed within the strategy aimed at reducing emissions from transportation sources include the following:

- The publication of the Road to Zero strategy, which sets out plans to end the sale of new conventional petrol and diesel cars and vans by 2040;
- New legislation to compel vehicle manufacturers to recall vehicles and non-road mobile machinery for any failures in emission control systems, and to take effective action against tampering with vehicle emissions control systems;
- Develop new standards for tyres and brakes to reduce toxic non-exhaust particulate emissions from vehicles. This action would not necessarily target reduction in NO_2 for which both AQMAs within Dover has been declared;
- The encouragement of the cleanest modes of transport for freight and passengers; and
- Permitting approaches for the reduction of emissions from non-road mobile

[7] Department for Environment, Food and Rural Affairs (2019), Clean Air Strategy

machinery, especially in urban areas.

3.2.2 Air Quality Strategy 2023

In April 2023 the UK Government published a document, Air quality strategy: framework for local authority delivery[8], which supersedes the 2007 Strategy in respect of England only.

The strategy plans to set out a framework to enable local authorities to deliver for their communities and contribute to the governments long term air quality goals, this includes the new targets for $PM_{2.5}$.

The Air Quality Strategy is designed for local authorities in England with the focus on three main pollutants, $PM_{2.5}$, NO_x and NH_3.

One of the key plans the Air Quality Strategy looks to implement is the focus on air quality being a public health issue, with Directors of Public Health being involved and collaboration with plans and strategies with other departments and strategies such as climate change.

3.2.3 UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations

Published in July 2017, the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)[9] is the UK governments plan for bringing concentrations of NO_2 within statutory limits within the shortest possible time. It is identified that the most immediate air quality challenge within the UK is tackling the issue of NO_2 concentrations close to roads, especially within towns and cities. The plan identifies a number of local authorities that were required to complete feasibility studies to define NO_2 concentrations on road links identified by the national Pollutant Climate Mapping (PCM) model as being in exceedance of the NO_2 annual mean

[8] Department for Environment, Food and Rural Affairs (2023), The air quality strategy for England. Available at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england

[9] Department for Environment, Food and Rural Affairs, Department for Transport (2017), UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)

AQS objective.

Dover District Council were not one of the authorities identified, regardless, the UK Plan provides a high level of detail on possible solutions, and their implementation, to reduce NO_x emissions from vehicles, and therefore lower NO_2 concentrations. The actions detailed within the UK Plan include the following:

- Implementation of Clean Air Zones (CAZs);
- New real-world driving emissions requirements for light passenger and commercial vehicles;
- Additional funding to accelerate the uptake of low emissions buses and also for the retrofitting of older buses;.
- Additional funding to accelerate the uptake of hydrogen vehicles and associated infrastructure;
- New mandatory emissions standards for non-road mobile machinery; and
- Local cycling and walking investment plans.

3.2.4 Dover District Corporate Plan (2020 – 2024)

The Corporate Plan outlines a four-year programme which sets out the key priorities and focus for all activities and services carried out by DDC. The plan is designed to give context for all other strategies and plans that are produced. It is therefore an important document to consider when developing the AQAP. The Corporate Plan is designed to "*encourage, facilitate and deliver a stronger local economy, with opportunities for everyone to reach their ambitions*." This philosophy is implemented through four priority themes. With regards to air quality the following priority is relevant:

Priority Theme Three: CLIMATE CHANGE, ENVIRONMENT & ASSETS

Of which one of the focuses is on raising awareness, reducing emissions from our own activities and developing plans to reduce emissions across the District. This priority theme will be achieved through, amongst other things:

- Developing electric vehicle charging points
- Developing cycling and walking infrastructure and promoting cycling and

walking routes

- Continuing with our Kearsney and Parks projects and encouraging/ supporting development of ‘great places’
- Continuing to reduce the incidence and effects of environmental crimes and pollution to air, land and water, through enforcement and educational activities
- Improve and protect the health, safety and welfare of people working in, living in and visiting the District through our environmental health and licensing activities;
- Developing a strategy, within the Local Plan, Air Quality Review and Air Quality Action Plan, for improving air quality, through cleaner greener transport, more trees planted for carbon emissions and potential new wooded areas.

3.2.5 The Core Strategy (2010 - 2026)

The Dover Core Strategy is the District’s key plan in the local development framework up to 2026. It identifies the issues facing the District, the aims and objectives and considers the options for addressing the issues. The core policies within the plan specifically address air quality are as follows:

- **Policy CP7** – Green Infrastructure Network – protecting and enhancing the existing network of green infrastructure. Proposals that would introduce additional pressure on the existing and proposed green infrastructure network are only permitted if they incorporate quantitative and qualitative measures, as appropriate, sufficient to address that pressure. Air quality monitoring will be used to help assess the need for mitigation measures and, if required, establish the nature of those measures.
- **Policy CP8** – Dover Waterfront – Planning permission only granted along the waterfront provided the proposals incorporate avoidance and mitigation measures to address impact on air quality issues associated with the A20 trunk road and the Port operations.

3.2.6 Dover District Local Plan – Draft

Dover District Council's existing Local Plan consists of the Core Strategy 2010, the Land Allocations Plan 2015, and saved policies from the 2002 Local Plan. The new Dover District Local Plan has been published in draft form, which will replace the previous plan. The Dover District Local Plan was submitted for Examination on Friday 31st of March 2023. It is anticipated that the Local Plan will be adopted in 2024, following the appropriate consultations and approvals. The Development Management Policy relating to air quality is DM Policy 41:

"All development should be designed to encourage an increase in the use of sustainable modes of transport. In addition, major development proposals will be required to demonstrate a shift to the use of sustainable low emission transport in order to minimise the impact of vehicle emissions on air quality.

Development proposals that might lead to a significant deterioration in air quality or national air quality objectives being exceeded, either alone, or in combination with other committed development, will be required to submit an Air Quality Assessment, carried out in accordance with the relevant guidance, to be agreed with the Local Planning Authority as part of planning applications. Such an Assessment should address:

a) The cumulative effect of further emissions arising from the proposals; and

b) The proposed mitigation measures, including appropriate design and offsetting measures, which would prevent National Air Quality Objectives being exceeded or would reduce the extent of any air quality deterioration.

Proposals which will result in National Air Quality Objectives being exceeded will not be permitted."

3.2.7 Other Policies of Relevance

In a broader sense, there are a number of Kent focussed policies that have been developed by KCC which are of relevance to Dover. For example, the Kent Environment Strategy (2016) sets out the following target in relation to air quality in the County:

- Decrease the number of days of moderate of higher air pollution and the concentration of pollutants to align with the Kent and Medway Air Quality Partnership and national monitoring standards.

The Kent Freight Action Plan also includes some direction which will help support the freight focussed measures that are to be implemented as a result of the AQAP. The Freight Action Plan emphasises the need for a collaborative approach to manage the freight network which impacts all local authorities within Kent. In particular the focus is on actions to:

- Tackle overnight lorry parking
- Find a long-term solution to Operation Stack
- Effectively manage the routeing of HGV traffic
- Take steps to address freight traffic problems associated with communities
- Ensure KCC make effective use of planning and development control powers to reduce the impact of freight traffic

These measures will likely have a knock-on effect on local air quality in Dover and will act as a base to build on with more localised freight controlling measures.

In addition to the above, the Local Transport Plan 4: Delivering Growth without Gridlock 2016–2031 published by Kent County Council highlights Bifurcation of Port Traffic whereby improvements to A20/A2 access routes are examined. The Plan also identifies that The Port of Dover is forecasting a 40% increase in roll on – roll off ferry traffic by 2030 (HGVs and LGVs driving on and off ferries).

KCC also published the Kent & Medway Energy and Low Emissions Strategy in June 2020. The strategy is designed to develop a multi-agency approach to improving air quality, reducing carbon emissions and creating a more sustainable energy infrastructure across Kent and Medway. In recognition of the UK environment and climate emergency, all 14 local authorities in Kent and Medway have committed to ambitious targets to reduce greenhouse gas emissions to net-zero by 2050 at the latest. The document focusses on emissions in the wider sense and addresses the

estimated growth across the region. It has been estimated that by 2031 there will be 178,000 additional homes (24% growth) and 396,300 additional people (23% growth). It is likely that this will create a higher demand for energy, and domestic gas and electricity sales will rise by 23% and 19% respectively from 2014/15 to 2030/31.

Therefore, although the main source of pollution within the two declared AQMAs is associated with road vehicle emissions, it is important to have an understanding and appreciation of other potential sources which could become more prevalent in the coming years. Therefore, measures proposed in the AQAP will need to also address air quality as a whole within DDC rather than to specifically focus on road vehicle emissions.

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within Dover District Council's area. Where road transport is identified as the principal source of emissions, the relative contributions from different vehicle types (e.g. cars, Heavy Good Vehicles (HGVs), Light Goods Vehicles (LGVs), and buses) can be determined to identify which vehicle type represents the most significant source of pollution.

A source apportionment exercise was carried out in 2020 using an air dispersion model to assess the overall emissions profile of vehicles moving through the AQMAs. Source apportionment was carried out for each AQMA separately.

Emission sources of NO_2 are dominated by a combination of direct NO_2 (f-NO_2) and oxides of nitrogen (NO_x), the latter of which is chemically unstable and rapidly oxidised upon release to form NO_2. Reducing levels of NO_x emissions therefore reduces levels of NO_2. As a consequence, the source apportionment study has considered the emissions of NO_x which are assumed to be representative of the main sources of NO_2.

The methodology to achieve this involves dispersion modelling of road traffic emissions. Traffic data inputs were supplied by the appointed transport consultants and supplemented by DfT road traffic statistics. The Emissions Factors Toolkit (EFT)

version 10.1 developed by Defra[10] was used, selecting the "Detailed Option 1" that allowed the percentage fleet input by: Car; Taxi; LGV; HGV; Bus and Coach; and Motorcycle. Road-NO_x contributions for each source type at receptor locations were then modelled using Cambridge Environmental Research Consultants ADMS-Roads™ dispersion model (version 5.0).

Background pollutant concentrations, as derived for the area from UK-Air, have been added to the ADMS-Roads modelled road source output to calculate predicted total annual mean concentrations of NO_x and NO_2. For each location the total NO_x from all vehicle classes as well as the percentage attributable to background sources has been predicted. Figure 3.1 illustrates the general breakdown of NO_x concentrations averaged across all modelled locations, providing information regarding:

- The regional background, which the Council is unable to influence;
- The local background, which the Council should have some influence over; and
- Other local sources (explicitly modelled), which the Council should be able to directly influence with policy intervention.

[10] Defra, Emission Factors Toolkit (2020). http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

Figure 3.1 - Average NO_x Contribution Across All Modelled Receptors – General Breakdown

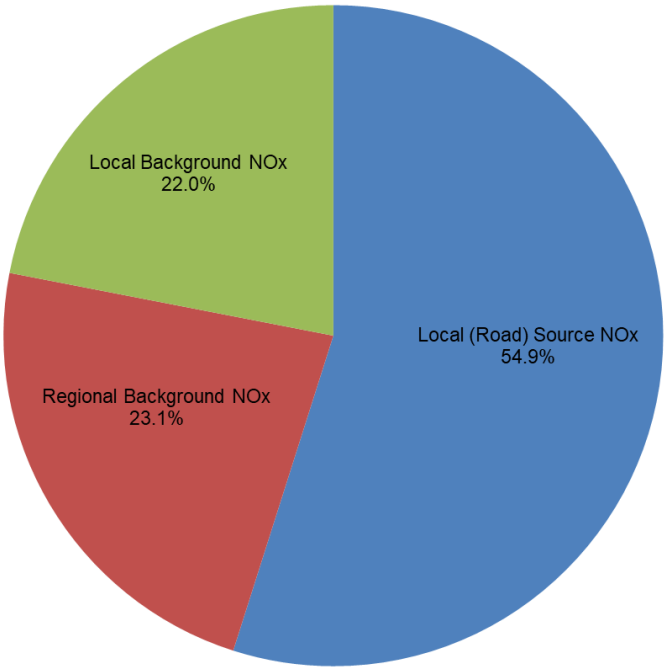


Figure 3.2, Figure 3.3 and Figure 3.4 provide detailed breakdowns of the local source contributions to NO_x concentrations, based on:

- The average across all modelled receptors (Figure 3.2). This provides useful information when considering possible action measures to test and adopt. It will however understate road NOx concentrations in problem areas;

- The receptor where the maximum road NOx concentration has been predicted (Figure 3.3). This is likely to be in the area of most concern and so a good place to test and adopt action plan measures. This location is within the High St / Ladywell AQMA. Any gains predicted by action plan measures are likely to be greatest at this location but would not represent gains across the whole modelled area.

- The receptor where the second highest road NOx concentration has been predicted (Figure 3.4), which represents the maximum concentration within the A20 AQMA. This is a good place to assess the main sources of concern in the worst-case receptor location within the A20 AQMA, as the sources differ from

the model-wide worst-case receptor location that is located in the High Street / Ladywell AQMA.

Figure 3.2 - Source Apportionment of NO_x Averaged Across All Modelled Receptors

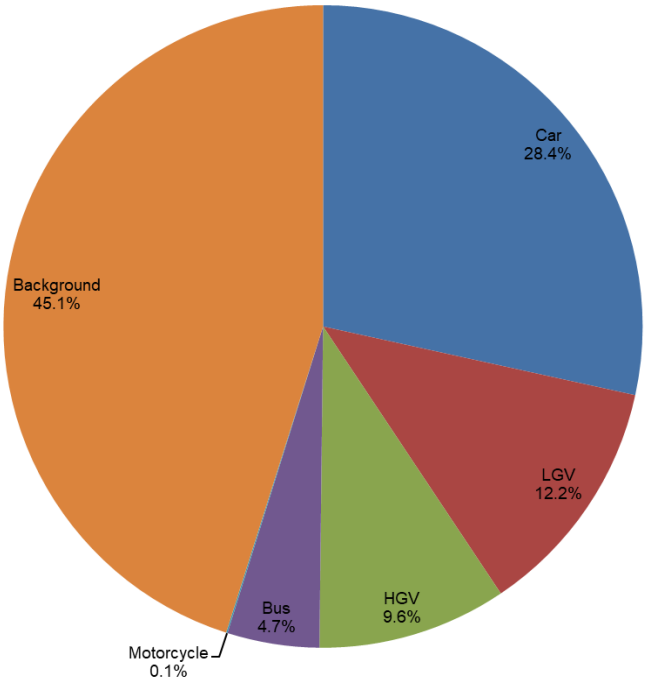


Figure 3.3 - Source Apportionment of NO_x at Receptor with the Maximum Road NO_x Concentration (R58) within the High St / Ladywell AQMA

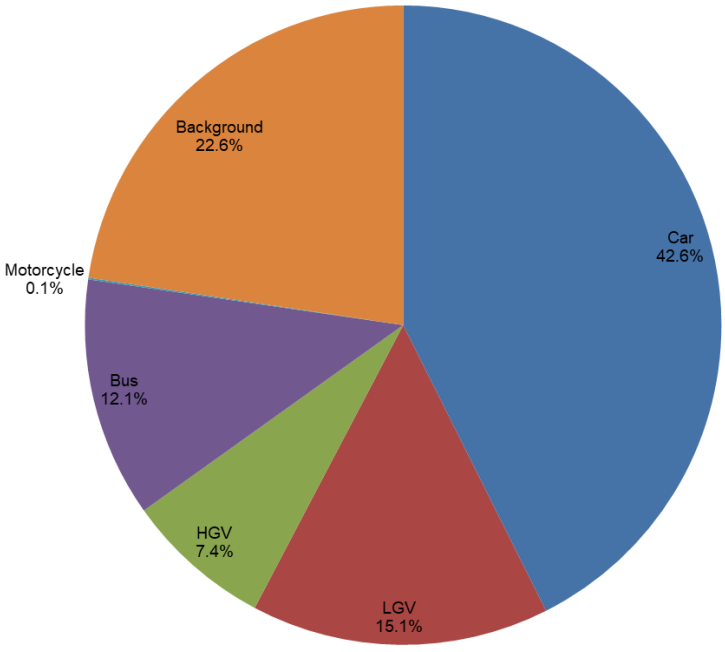


Figure 3.4 - Source Apportionment of NO_x at Receptor with the Maximum Road NO_x Concentration (R54) within the A20 AQMA

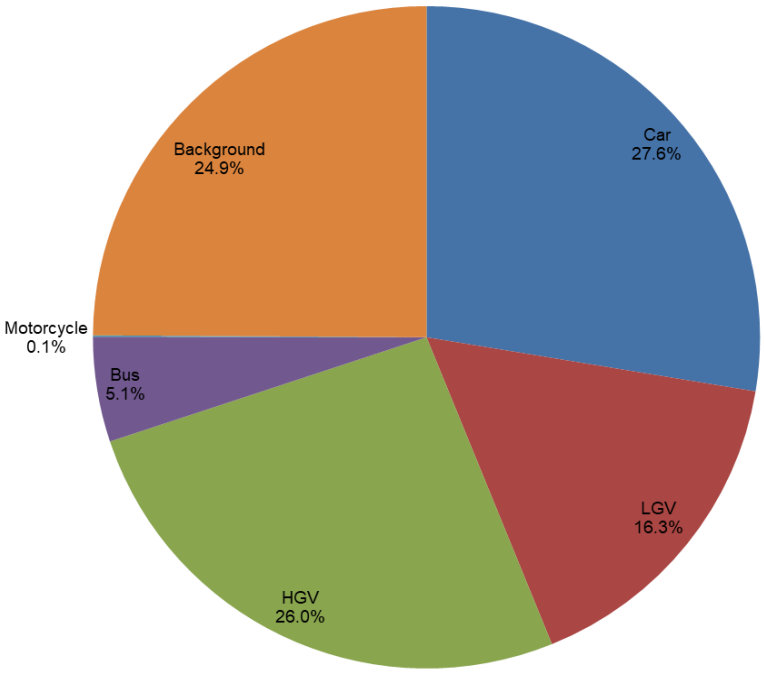


Table 3.1 and Table 3.2 provide more detailed breakdowns of source apportionment in relation to NO_x concentrations and NO_2 concentrations for the following criteria:

- Contributions based on average NO_x and NO_2 levels across all modelled locations;
- Contributions based on NO_x and NO_2 levels at the highest NO_2 concentration in the High St / Ladywell AQMA; and
- Contributions based on NO_x and NO_2 levels at the highest NO_2 concentration in the A20 AQMA.

Table 3.1 - Source Apportionment of NO_x

Results	All Vehicles	Car	LGV	HGV	Bus	Moto	Background
Average across all modelled receptors							
NO_x Concentration ($\mu g/m^3$)	19.0	9.8	4.2	3.3	1.6	0.0	15.6
Percentage of Total NO_x	54.9%	28.4%	12.2%	9.6%	4.7%	0.1%	45.1%
Percentage Road Contribution	100.0%	51.8%	22.2%	17.4%	8.5%	0.1%	-

Results	All Vehicles	Car	LGV	HGV	Bus	Moto	Background
Receptor R58 within High St / Ladywell AQMA – exceeding the AQS Objective and reporting the maximum road NO_x Concentration							
NO_x Concentration ($\mu g/m^3$)	57.5	31.6	11.2	5.5	9.0	0.1	16.8
Percentage of Total NO_x	77.4%	42.6%	15.1%	7.4%	12.1%	0.1%	22.6%
Percentage Road Contribution	100.0%	55.0%	19.6%	9.6%	15.7%	0.1%	-
Receptor R54 within A20 AQMA – reporting within 10% of AQS Objective							
NO_x Concentration ($\mu g/m^3$)	50.7	18.6	11.0	17.6	3.5	0.0	16.8
Percentage of Total NO_x	75.1%	27.6%	16.3%	26.0%	5.1%	0.1%	24.9%
Percentage Road Contribution	100.0%	36.8%	21.6%	34.7%	6.8%	0.1%	-

Table 3.2 - Source Apportionment of NO_2

Results	All Vehicles	Car	LGV	HGV	Bus	Moto	Background
Average across all modelled receptors							
NO_2 Concentration ($\mu g/m^3$)	9.9	5.2	2.2	1.7	0.8	0.0	11.6
Percentage of Total NO_2	46.1%	23.9%	10.2%	8.0%	3.9%	0.1%	53.9%
Percentage Road Contribution	100.0%	51.9%	22.2%	17.3%	8.4%	0.1%	-
Receptor R58 within High St / Ladywell AQMA – exceeding the AQS Objective and reporting the maximum road NO_2 Concentration							
NO_2 Concentration ($\mu g/m^3$)	28.0	15.4	5.5	2.7	4.4	0.0	12.4
Percentage of Total NO_2	69.2%	38.1%	13.5%	6.6%	10.9%	0.1%	30.8%
Percentage Road Contribution	100.0%	55.0%	19.6%	9.6%	15.7%	0.1%	-
Receptor R54 within A20 AQMA – reporting within 10% of AQS Objective							
NO_2 Concentration ($\mu g/m^3$)	25.0	9.2	5.4	8.7	1.7	0.0	12.4
Percentage of Total NO_2	66.8%	24.6%	14.5%	23.2%	4.6%	0.1%	33.2%
Percentage Road Contribution	100.0%	36.8%	21.6%	34.7%	6.8%	0.1%	49.7%

Of the contributors to total NO_x concentrations, local (road) sources are the largest at 54.9%, followed by regional background at 23.1%, then local background at 22.0%. This means that the Council should be able to influence 76.9% of total NO_x concentrations with intervention policies.

Of the contributors to total NO_2 concentrations, local (road) sources are also the largest at 46.1%, followed by regional background at 27.7%, then local background at 26.3%. This means that the Council should be able to influence 72.3% of total NO_2 concentrations with intervention policies.

When considering the average breakdown of NO_x concentration across all modelled receptors in more detail, road traffic accounts for 19.0µg/m^3 (46.1%) of total NO_2 (34.6µg/m^3). Of this total average NO_x, Cars account for the most (28.4%) of any of the vehicle types on average, followed by LGVs (12.2%).

When considering the average breakdown of NO_2 concentration across all modelled receptors in more detail, road traffic accounts for 9.9µg/m^3 (54.9%) of total NO_2 (21.6µg/m^3). Of this total average NO_2, Cars account for the most (23.9%) of any of the vehicle types on average, followed by LGVs (10.2%).

At the receptor where the maximum road NO_x and NO_2 concentration has been predicted in the High St / Ladywell AQMA (NO_x –57.5µg/m^3 and NO_2 –28.0 µg/m^3, predicted at receptor R58), road traffic accounts for 77.4% of the overall NO_x and accounts for 69.2% of the overall NO_2. Of the total NO_x at this receptor, Cars account for the most (42.6%) of any of the vehicle types, followed by LGVs (15.1%) and Buses (12.1%). Of the total NO_2 at this receptor, Cars account for the most (38.1%) of any of the vehicle types, followed by LGVs (13.5%) and Buses (10.9%). This indicates that **Cars, LGVs and Buses are largely responsible for the exceedances in the High St / Ladywell AQMA**.

However, the receptor where the highest road NO_x and NO_2 concentration was predicted within the A20 AQMA, shows that different localised effects are influencing the NO_x and NO_2 concentrations. At R54, although Cars are the highest contributors to road NO_x (27.6%), this is closely followed by HGVs (26.0%) and then LGVs (16.3%). Of the total NO_2 at this receptor, Cars account for the most (24.6%) of any of the vehicle types, followed closely by HGVs (23.2%) and then LGV (14.5%). This

confirms that this is a common route for HGVs to take in order to access the port, and indicates that **Cars, HGVs and LGVs are largely responsible for the worst air quality within the A20 AQMA**. Understanding the key routes into the town and towards the port, including how different vehicle types are using the surrounding roads will help focus measures.

Given that Cars contribute the highest levels of NO_x and NO_2 within both AQMAs, DDC aims to promote sustainable travel by encourage Council Travel Plan and School Travel Plan to reduce car journeys.

To reduce the emission from LGVs and HGVs, DDC is in the process of procuring low emission vehicles for the LGV and HGV fleet, council-owned fleet and refuse fleet. DDC Environmental Crime team currently operates three Electric Low Emission Vehicles (ELVs). DDC Grounds Maintenance is exploring the potential use of ELVs for supervisors. Additionally, DDC Parking Services and Community Safety Unit are considering the transition to ELVs upon contract renewal.

To reduce the emission from Buses, DDC has collaborated with bus operators to integrate Ultra-Low Emission Vehicles (ULEVs) into the fleets. The Dover Fastrack, transitioning into a zero-emission bus service with a fleet of electric buses, is developing a new route. In addition, Stagecoach, the provider of the district's bus service, has set a net zero target for its fleet by 2035.

3.4 Required Reduction in Emissions

In line with the methodology presented in Box 7-6 of LAQM.TG(22), the necessary reduction in Road NO_x emissions required to bring the High Street / Ladywell AQMA into compliance is calculated below. This is done at the worst-case exposure location for the declared AQMA. When considering the A20 AQMA, no exceedances of the 40 $\mu g/m^3$ AQS objective were modelled, the required reduction has therefore not been calculated. With four consecutive years of compliance within the A20 AQMA, DDC intends to revoke the AQMA in 2024 if no exceedance is identified upon reviewing the 2023 monitoring data.

Table 3.3 provides the details on the calculations of the NO_x emission reduction at the worst-case exposure location, R58 in the High Street / Ladywell AQMA. The

reduction in NO_x required to achieve compliance with the annual mean NO_2 objective of 40µg/m^3 at the worst-case location of R58 is **2.0%**. This reduction would achieve the compliance needed at the worst-case location, within the High Street / Ladywell AQMA.

Table 3.3 - Required NO_x emission reduction at the worst-case receptor location: High Street / Ladywell AQMA

Metric	Value (Concentrations as µg/m^3)
Worst-Case Relevant Exposure NO_2 Concentration	40.4
Equivalent NO_x Concentration	74.3
Background NO_x	16.8
Background NO_2	12.4
Road NO_x - Current	57.5
Road NO_x - Required (to achieve NO_2 concentration of 39.9µg/m^3)	56.3
Required Road NO_x Reduction	1.2
Required % Reduction	2.0%

3.5 Key Priorities

Based on the above information, the AQAP measures should be divided into five targeted categories, although there is often some overlap between some of the categories:

- **Priority 1 – Transport** – Provision of additional transport infrastructure; changes to road layout or operation; formulation of traffic plans with the aim being to encourage the use of greener modes of transport, and/or reduce congestion and associated vehicle emissions
- **Priority 2 – Behavioural Change** – Encouragement of wider behavioural changes in local population with respect to their travel choices, raise awareness and educate members of the public on the impact of air pollution
- **Priority 3 - Strategies and Policy Guidance** – Working with partners and stakeholders to direct the use of legislation and targeted enforcement to control air pollution

- **Priority 4 – Planning and Infrastructure** – Mitigate potential air quality impacts effectively by being involved in decision making early on for future developments required to support the growth of DDC.
- **Priority 5 – Air Quality Monitoring (Evidence for Improvement)** – Ensure satisfactory air quality monitoring data is available to track outcomes of the implemented AQAP measures.

3.5.1 Priority 1: Transport

The main source of air pollution within DDC is associated with road transport emissions. Therefore, reducing transport emissions through the measures contained within the action plan is a key priority. The approach focusses on areas where the Council has direct control (e.g. planning and procurement of outsourced functions), or areas where measures can be implemented via a partnership e.g. with National Highways and/or Kent County Council.

The annual forecast for growth at the Port of Dover was between 2% and 4% based on Dover Transport Study Forecasting Report 2007. However, the port has reported a continuous decrease in traffic since 2015 (except for 2018, where a marginal increase of 0.08% was reported). Since 2020, the impact of Covid 19 further reduced the annual traffic towards the port. Since the restrictions associated with Covid 19 have now been lifted, it can be predicted that the traffic will return to normal levels in the following years. Among all traffic to and from the port, road haulage vehicles accounted for approximately 53% of all vehicles from 2016 to 2019. The number of road haulage vehicles reached a peak in 2017 of 2,601,162 and then began to decrease year on year to 2,149,595 in 2021. However, road haulage vehicles still accounted for 86% of all traffic to the port due to the decrease in tourist cars and coaches as a consequence of the Covid 19 travel restrictions.

The primary route for HGV traffic to and from the port is the M20/A20.The proposed redevelopment of the Western Docks, to help alleviate the capacity requirements, will increase pressure on the A20 route. The A20 is partially covered by the declared AQMA as a result of reported exceedances of the annual mean NO_2 objective. Therefore, measures within this AQMA need to focus on freight management and transport improvements. The Port of Dover have issued a Port Air Quality Strategy,

as part of this, they have issued a Statement of Intent which shows their commitment to delivering a sustainable port operation in order to help improve local air quality. It is therefore important that the Port of Dover are involved in the development and implementation of measures associated with managing port traffic.

In addition to the above the Local Transport Plan 4: Delivering Growth without Gridlock 2016–2031 published by Kent County Council highlights Bifurcation of Port Traffic whereby improvements to A20/A2 access routes are examined. The Plan also identifies that The Port of Dover is forecasting a 40% increase in roll on – roll off ferry traffic by 2030 (HGVs and LGVs driving on and off ferries).

There are indications from recent monitoring data that the removal of roundabouts on the A20 approach road through Dover has had a beneficial effect on local air quality. The introduction of 'A20 Dover TAP' provides for port traffic to be held on the left lane of A20 outside Dover and then 'trickled' through the AQMA area of the A20 to the port. This has resulted in some significant improvements to nitrogen dioxide levels around Snargate Street: https://www.doverport.co.uk/administrator/tinymce/source/Environment/Port%20of%20Dover%20Air%20Quality%20Strategy.pdf

The High Street/Ladywell AQMA has also been declared as a result of road transport emissions. However, unlike the A20 AQMA, the congestion is not associated with the port traffic. The one-way nature of the road system around Dover has created inefficiencies regarding the flow of traffic through the town centre. The Transport Strategy has considered improving the bus routes to counteract the issues associated with the one-way system. With regards to air quality, measures are required to ensure that the buses using this route are sustainable, low emission buses and that overall traffic flows are being managed to reduce congestion at the junction. The overarching objective to increase employment within the town centre will inevitably encourage an increase in traffic into the centre of Dover. Promoting sustainable modes of transport will be of great importance to ensure traffic flows do not continue to increase. Modal shift away from private vehicle use, a move to tighter emissions standards of buses, and the promotion and enhancement of cycling and walking as healthy alternatives to car journeys form important aspects of this Plan. Moreover, densification of electric vehicle charging infrastructure and employer and

school travel plans further aid the aspiration to reduce emissions from vehicles within the AQMAs.

3.5.2 Priority 2: Behavioural Change

As discussed in further detail in Section 3.1 the impact of air pollution on public health via behavioural change is a major driver for improving air quality. Within Dover a key priority is to ensure the health and wellbeing of the community is maintained. To achieve this, the intervention with highest potential to improve air quality is associated with combining behavioural interventions with other policy or infrastructure-based interventions. The Council is responsible for encouraging and facilitating these changes through education and awareness as well as through schemes which incentivise change. Improving air pollution for the benefit of public requires a wide-reaching perspective and will therefore not be specific to the AQMAs but instead be aimed at the whole of the district.

3.5.3 Priority 3: Strategies and Policy Guidance

DDC is part of the Kent and Medway Air Quality Partnership (KMAQP). Continued involvement within this partnership is crucial to allow for successful working with partners and stakeholders to embed air quality in all associated strategies and policies. The KMAQP allows for collaboration between neighbouring authorities to create consistency with regards to how air quality is managed across Kent. Of relevance to reducing the regional background contributions of pollution to overall pollutant concentrations in the AQMAs are the Kent Freight Action Plan (targeting HGVs to ensure an efficient use of the road network in the goods distribution sector) and the Kent Low Emissions and Energy Strategy. This Strategy will seek to target a more efficient use of energy and an overall strategic direction for energy demands across Kent, whilst additionally seeking to promote access to low emissions alternatives (for both energy and transport sectors).

3.5.4 Priority 4: Planning and Infrastructure

The Core Strategy identified the overall economic, social, and environmental objectives for the district and evaluated the amount, type and broad location of

development that is required to fulfil the objectives. The Land Allocation Plan (2016 – 2026) identified the specific sites within the district that are suitable for development.

The New District Local Plan has also been published in draft format and is anticipated to be adopted in 2023, covering the period up to 2040. The Local Plan will shape the future development of the district's towns and villages and builds upon the already published Land Allocation Plan. A number of new sites were identified for housing development during the plan period up to 2040, these are outlined within the Local Plan Site Allocations Policy 1 Non Strategic Housing Allocations.

In terms of air quality, promotion of electric charging points to be integrated into the development plans in the early stages will help to support the drive towards low emission vehicles. Encouraging public transport routes to and from the allocated development sites will also help facilitate a move towards modal shift, away from cars towards active travel and use of public transport. This will specifically be beneficial for the Ladywell/High Street AQMA whilst also likely to give rise to benefits in the A20 AQMA.

3.5.5 Priority 5: Air Quality Monitoring (Evidence for Air Quality Improvement)

Air quality monitoring is a useful way to fully appreciate the extent of the air pollution problem in Dover. It can also assist in quantifying the improvements that have materialised as a consequence of implementing measures to reduce emissions. Currently, DDC monitor NO_2 extensively within Dover town centre using passive diffusion tubes. Historically continuous NO_2 monitoring stations have measured concentrations at town centre and Eastern Dock sites, however at present there are no continuous monitoring stations reporting NO_2 concentrations in the district. It is likely that Dover Council will be in a position to revoke the A20 AQMA during 2024/25 and the Ladywell AQMA sometime in 2025/26 if the trend in lower monitoring results continues. Diffusion tube monitoring at sites will continue post revocation and consideration given to installing real-time monitoring equipment if there is a substantial increase in traffic flows into the district.

4 Development and Implementation of Dover District Council AQAP

4.1 Consultation and Stakeholder Engagement

In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995, as amended by the Environment Act (2021), requires local authorities to consult the bodies listed in Table 4.1. We have conducted a public consultation including contacting National Highways, Kent Highways, Kent County Council, neighbouring local authorities (Thanet/ Canterbury/ Ashford/ Shepway etc.), KMAQP and local businesses for their views and comments on this action plan.

- Website – Public Consultation 15th of June and the 27th of July 2023

The response to our consultation stakeholder engagement is given in Appendix A: Response to Consultation.

From the consultation, relative measures identified by internal and external stakeholders to reduce air pollution have been incorporated into the comments and barriers in Table 5.1. Actions proposed by the Air Quality Partners have been listed in Section 5.2. The barriers identified by the relevant department and team have been considered when assessing the feasibility of measures in Cost Benefit Analysis in Section 6.2.

Table 4.1 – Consultation Undertaken

Consultee	Consultation Undertaken
The Secretary of State	Yes
The Environment Agency	Yes
National Highways	Yes
All neighbouring local authorities	Yes

Consultee	Consultation Undertaken
Any National Park authority as appropriate	No
The County Councils (if a District Council)	Yes
Other public authorities as appropriate, such as Public Health officials	Yes
Bodies representing local business interests and other organisations as appropriate	Yes

The results of public consultation were largely positive, with the general feeling of those who responded (75%) being that air quality issues within Dover are very important. Only 11% of those surveyed did not believe air quality was an important issue. Furthermore, there was agreement (77%) that traffic emissions are the main cause of air quality issues within DDC. The confidence in the AQAP measures was mostly positive, however, the comments from the public consultation highlighted the key areas of interest from the public's perspective. A summary of public consultation comments and DDC's response is provided in Appendix A: Response to Consultation.

4.2 Steering Group

A steering group was established at the start of the update process to drive forward the development of the new AQAP. The core aim of the steering group was to identify measures for inclusion within the AQAP that would be effective both in terms of reducing NO_2 concentrations and also feasible in terms of implementation and delivery.

AQAP stakeholder meetings/consultation were held between April – June 2023 and a public consultation exercise between 27th June – 9th August 2022. Measures identified in Table 5.1 (AQAP Measures) were discussed and examined. See Appendix A for abridged meeting notes. A steering group, to include representation from other Dover DC departments as identified in table A.1 (Appendix A) and other

identified stakeholders has been set up and progress meetings planned for 2024 once the AQAP is adopted on 22nd May 2024.

5 AQAP Measures

Table 5.1 shows the Dover District Council AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- estimated cost of implementing each action (overall cost and cost to the local authority)
- expected benefit in terms of pollutant emission and/or concentration reduction
- the timescale for implementation
- how progress will be monitored

NB: Please see future ASRs for regular annual updates on implementation of these measures.

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
1	Encourage Council Travel Plan opportunities and seek to facilitate uptake of sustainable modes of transport;	Promoting Travel Alternatives	Workplace Travel Planning	2023	2025-2027	DDC	DDC	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	% increase in amount of usage in schemes identified in comments column	Ongoing	Cycle to work scheme Electric Staff Vehicle Pool Car trial Electric Vehicle Staff Salary scheme ·Flexible and remote working
2	Work together with KCC to encourage the uptake of Employer and School Travel Plans within the District; including School start time variations and walking to school incentives/ encouragement	Promoting Travel Alternatives	School Travel Plans	2022	tbc	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	. No. of travel plans in place . Reduction in school vehicle drop-offs / pick-ups	On-going	Approximately 73% of primary and 89% of secondary schools in Dover District have approved school travel plans
3	Work with KCC to improve the facilities for cycling and walking within Dover district; promote cycle-to-work scheme and bike rental scheme	Promoting Travel Alternatives	Promotion of cycling	Ongoing	2025-2027	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	. %modal shift to cycling/walking, No. miles new cycle lanes/routes . Number of bikes available and rentals	On-going	. Includes Dover District Cycling Plan. 2019 Updated DDC website published local cycle routes and introduced Betteshanger cycle tracks. DDC introduced Cycling to Work scheme in Oct 2021. . Introduction of: - E cycle training scheme - Kent Connected App - Clearing of NCN paths - Explore Kent website
4	Work together with developers to improve sustainable transport links serving new developments.	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2025-2027	DDC	DDC	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	No. planning applications where improvements secured	Planning conditions included in all major developments to install ELV charging points	Change in building regulations requiring some new developments to have electric vehicle charging infrastructure.

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
5	Work with KCC to improve public transport services and encourage the use of more sustainable transport modes	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2022	2035	DDC/KCC	DDC/KCC	No	Funded	£1 million - £10 million	Planning	Below annual mean AQS objectives	% modal shift to public transport	On-going	. New Fast Track Bus Service (ELV) from Whitfield to Dover Town underway. Stagecoach commitment to invest in low emission technology and have a zero emission fleet by 2035. . KCC offering travel plans for new developments.
6	Local air quality monitoring within the District to ensure a high standard of data is achieved	Public Information	Other	1995 onwards	ongoing	DDC	DDC	No	Not Funded	£10k - 50k	Planning	Below annual mean AQS objectives	Recorded Concentration	Completed Annually, renewed in 2018. Two automatic sites decommissioned, but more diffusion tubes added to compensate	General trend of reduction in concentrations monitored (LAQMTG16)
7	Make details of the Action Plan measures and annual progress reports available on the Website	Public Information	Via the Internet	Annually	Annually	DDC	DDC	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	Availability of recently published reports on the Website	On-going	ASR documents freely available. Part of general and continual efforts of DDC Environmental Protection..
8	Work with KMAQP on promotional activities to raise the profile of air quality in Dover	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	2022	Ongoing	DDC/KMAQP	DDC/KMAQP	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	% improvement in energy efficiency, SAP rating	On-going	Dover DC as member of K&MAQP worked with KCC on Kent and Medway Energy and Low Emissions Strategy (ELES)
9	Local Plan policy and guidance	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	2024	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Implementation	Below annual mean AQS objectives	Implementation of policy	Local Plan timetable: Regulation 18 draft since November 2021; Local Plan dated to 2040	. The DDC draft local plan already includes sustainable travel initiatives. . AQ Assessments for all planning applications where AQ is an issue . Developers are advised to make reference to K&MAQP Guidance for AQ and IAQM/EPUK Guidance

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
10	District wide promotion of active travel	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Ongoing	2025-2027	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Planning	NO_2 Measure to increase public awareness	Number of promotion events	National campaigns promoted on social media platforms	DDC webpages can link to active travel - KCC looking to update Local Transport Plan -. DDC run Wellbeing at Work initiatives.
11	Behaviour change campaigns to reduce single occupancy car trips	Public Information	Other	Ongoing	2025-2027	DDC	DDC	No	Not Funded	< £10k	Implementation	NO_2 Measure to increase public awareness	Number of campaigns	Electric pool cars available and DDC staff mileage scheme reviewed	Officers are encouraged to car share where site visits permit. Social media posts to encourage the public to follow DDCs example.
12	Flexible working and home working encouraged	Promoting Travel Alternatives	Encourage / Facilitate home-working	2023	2025-2027	DDC	DDC	No	Not Funded	< £10k	Implementation	NO_2 Measure to increase public awareness	Number of campaigns	New Flexible working policy being viewed at DDC	Flexible working and home working policy has already been in place.
13	Educational campaigns for schools	Public Information	Other	2022	2025-2027	DDC	DEFRA and LA contributions	Yes	Partially funded	<£10k	Planning	NO_2 Measure to increase public awareness	Number of school sign ups to pollution patrol	Reviewed in early 2023 to evaluate school participation	As part of a 'Schools Group' DDC partner in a successful Defra bid for a 'Digital Schools Resource' led by Canterbury CC called “Pollution Patrol”
14	District wide Clean Air Days	Public Information	Other	2023	2023-2027	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Implementation	NO_2 Measure to increase public awareness	Number of campaigns	part of Kent initiative 2022	DDC to promote national clean air days.
15	Taxi/Private Hire Vehicle Policy license fees	Promoting Low Emission Transport	Taxi Licensing conditions	2022	2023	DDC	DDC	No	Not Funded	£1,500	Implementation	NO_2 Measure to increase public awareness	Implementation of policy	Part of DDC Licensing Policy	DDC new Licensing Policy. 4.3.3: Vehicle Specifications enable Electric, Hybrid or LPG converted vehicles to be licensed. This Authority offers a reduction in the licence fee for any vehicle that is electric, hybrid or LPG converted of 25%.

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
16	Engage with bus operators to introduce ultra-low emission vehicles into the fleets	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport	2022	2022	DDC	DDC	No	Not Funded	< £10k	Implementation	NO_2 To be confirmed if considered for further assessment. NO_x emission reduction will be able to be calculated annually depending on the change in fleet composition	Fleet composition	Part of Construction of Dover Fastrack 2022	Dover Fastrack which will become a zero-emission bus service with a fleet of electric buses – has a new route under construction. In addition Stagecoach have a net zero target for their fleet of 2035
17	Procuring low emission vehicles for the LGV and HGV fleet, council-owned fleets and refuse fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	Ongoing	2029	DDC	DDC	No	Not Funded	£50k - £100k	Implementation	NO_2 To be confirmed if considered for further assessment. NO_x emission reduction will be able to be calculated annually depending on the change in fleet composition	Fleet composition	4 Electric Vehicles current utilised by DDC.	DDC Environmental Crime team currently runs three ELVs. DDC Grounds Maintenance exploring use of ELVs for supervisors. DDC Parking Services and Community Safety Unit looking at move to ELVs upon contract renewal.
18	Alternative fuel (EV) infrastructure development	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2023	DDC	Office for zero Emission Vehicles	No	Funded	£320,529 (Total Project Costs)	Planning	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m^3 based upon a low to medium uptake.	Number of EV charging points	29 public electric vehicle charging posts installed across the district	DDC succeed in OLEV funding bid for 19 sites, 42 units to be completed 2022. Additional 7 ELV chargers have been installed at Council office car park and there are plans to increase numbers for public use.
19	On and off-street parking charges linked to vehicle emissions standards	Promoting Low Emission Transport	Priority parking for LEV's	2022	2022	DDC	DDC	No	Not Funded	< £10k	Implementation	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m^3 based upon a low to medium uptake.	Number of discounted permits	Parking permits discounted for low emission vehicles	On and off street parking charges for low emission vehicles explored.

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
20	Port of Dover improvements	Freight and Delivery Management	Other	2022	2025-2027	Port of Dover	Port of Dover	No	Not Funded	£50k - £100k	Planning	NO_2 Small impact upon NO_2 concentrations from measure individually, estimated to be less than 1µg/m^3 based upon a low to medium uptake.	Reduction in NO2 concentrations	Port of Dover have published an Air Quality Action Plan	· P&O have 2 new hybrid vessels that use electric power when in port to reduce emissions. · POD exploring use of further anti-idling signage along port "buffer zone". · Feasibility Study undertaken regarding use of electric vehicles
21	Provision of high quality, bespoke and accessible information on sustainable travel	Public Information	Other	2022	2022	DDC/KCC	DDC/KCC	No	Not Funded	< £10k	Planning	NO_2 Measure to increase public awareness	Number of campaigns	DDC officers' input in to KCC Low Emission Strategy.	DDC officers' input in to KCC Low Emission Strategy.
22	Work with Kent Energy Centre to promote and implement energy efficiency measures in Dover	Promoting Low Emission Plant	Shift to installations using low emission fuels for stationary and mobile sources	2019	2022	DDC/Kent Energy Centre	DDC/Kent Energy Centre	No	Not Funded	< £10k	Planning	Below annual mean AQS objectives	% improvement in energy efficiency, SAP rating	On-going	Dover DC as member of K&MAQP worked with KCC on Kent and Medway Energy and Low Emissions Strategy (ELES)

Note: Measures are colour-coded from green to red based on the cost-benefit analysis. Further details are presented in Section 6.2.

5.1 Timescales of the AQAP Measures

Several measures outlined in Table 5.1 were implemented between 2022 and 2023, with six out of the proposed 22 measures successfully completed by 2023. The target for the first stage of measure completion is 2025. For the measures which remain incomplete by this date, examination of implementation barriers will be conducted, and necessary resolutions will be undertaken to ensure most measures are successfully completed by 2027.

5.2 Air Quality Partners

DDC is collaborating with KCC on the below actions:

- Encouraging the uptake of Employer and School Travel Plans within the District, including School start time variations and walking to school incentives/ encouragement.
- Improving the facilities for cycling and walking within Dover district and promoting cycle-to-work scheme and bike rental scheme.
- Improving public transport services and encourage the use of more sustainable transport modes.
- Local Plan policy and guidance.
- District wide promotion of active travel.
- District wide Clean Air Days.
- Provision of high quality, bespoke and accessible information on sustainable travel.

DDC is working with KMAQP on the below actions:

- Promotional activities to raise the profile of air quality in Dover.

DDC is working with Kent Energy Centre to the below actions:

- Promote and implement energy efficiency measures in Dover.

DDC is working with Kent Highways on the below actions:

- Introduction of Dover FAST TRACK (Electric bus).

- Improvements to EV charge point network in Kent including rural areas.
- Travel plans for new developments.
- Active travel plans offered to all schools.

DDC is working with Port of Dover (POD) on the below actions:

- POD air quality action plan.
- Improvement of no idling signage
- Feasibility study being undertaken regarding electric vehicles with partners.

DDC is also working with external company Stagecoach, which provides the district's bus service, on the below actions:

- Commitment to investing in low emission technology, zero emission bus fleet target by 2035.
- Reconnect scheme through KCC providing free bus travel.
- New Euro 6 Engine vehicles have automatic engine switch off when stationary.

Further details of the actions identified by Air Quality Partner can be found in Appendix A: Response to Consultation.

DDC will continue to work closely with these Air Quality Partner to improve the air quality within Dover.

5.3 Future Measures to Maintain the Objective

DDC will persist in monitoring local air quality and providing analyses within the ASRs to ensure the objectives are maintained in the future. An Air Quality Strategy (AQS) will be produced and implemented upon the revocation of both AQMAs within Dover in the future. Collaboration with air quality partners on the long-term projects, particularly those focused on public information and regional policies, will continue to be integral to the local Air Quality Strategy, ensuring sustained success after the objectives have been achieved.

Dover DC confirm that monitoring will continue within the district to ensure any substantial uplift in traffic numbers approaching the Port that may increase NO_2

levels will be captured in monitoring results. Furthermore, any AQS put in place will be regularly re3viewed and updated as necessary.

6 Quantification of Measures

6.1 Assumptions

Most of the action plan measures set out in Table 5.1 are very difficult to quantify. No detailed studies have been completed for any measure to reliably inform the likely effect in terms of change in traffic or fleet composition as a result of the measures. Some measures do allow for a high-level analysis of reductions in emissions. A summary consideration of the measures and whether they can be quantified is contained in below. The table also details the AQMA most affected by the measures.

Table 6.1 – Assumptions around Quantification of Measures

Measure No.	Measure	Assumptions for Quantification	Assumed Reduction in AQMA	
			A20 AQMA	High St / Ladywell AQMA
1	Encourage Council Travel Plan opportunities and seek to facilitate uptake of sustainable modes of transport;	Insufficient detail to quantify this measure. Reduction based on literature review and professional judgement. According to a British case study on Travel Plan[11], an average reduction of 18% in car journeys was achieved among surveyed British organisations.	>0.5µg/m³	>0.5µg/m³
2	Work together with KCC to encourage the uptake of Employer and School Travel Plans within the District; including School start time variations and walking to school incentives/ encouragement	Insufficient detail to quantify this measure. Reduction based on literature review and professional judgement. According to a British case study on Travel Plan[11], an average reduction of 18% in car journeys was achieved among surveyed British organisations.	>0.5µg/m³	>0.5µg/m³
3	Work with KCC to improve the facilities for cycling and walking within Dover district; promote cycle-to-work scheme and bike rental scheme	Insufficient detail to quantify this measure. Reduction based on professional judgement	>0.5µg/m³	>0.5µg/m³
4	Work together with developers to improve sustainable transport links serving new developments.	Change in building regulations requiring some new developments to have electric vehicle charging infrastructure. Effectiveness of measure in isolation is likely to be negligible, but it will help to push the drive towards normalising EV use.	>0.5µg/m³	>0.5µg/m³
5	Work with KCC to improve public transport services and encourage the use of more sustainable transport modes	New Fast Track Bus Service (ELV) from Whitfield to Dover Town underway. Stagecoach commitment to invest in low emission technology and have a zero-emission fleet by 2035.	0.5-1 µg/m³	0.5-1 µg/m³

[11] Newson, C., Cairns, S. & Davis, A. (2002). Making travel plans work: Lessons from UK case studies.

Measure No.	Measure	Assumptions for Quantification	Assumed Reduction in AQMA	
			A20 AQMA	High St / Ladywell AQMA
6	Local air quality monitoring within the District to ensure a high standard of data is achieved	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
7	Make details of the Action Plan measures and annual progress reports available on the Website	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
8	Work with KMAQP on promotional activities to raise the profile of air quality in Dover	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
9	Local Plan policy and guidance	While this policy measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
10	District wide promotion of active travel	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
11	Behaviour change campaigns to reduce single occupancy car trips	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
12	Flexible working and home working encouraged	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
13	Educational campaigns for schools	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
14	District wide Clean Air Days	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
15	Taxi/Private Hire Vehicle Policy license fees	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
16	Engage with bus operators to introduce ultra-low emission vehicles into the fleet	Dover Fastrack which will become a zero-emission bus service with a fleet of electric buses – has a new route under construction. In addition Stagecoach have a net zero target for their fleet of 2035. Assuming that 50% of the total bus fleet upgrade to ELV by 2025 – **Measure is Quantified for NO_x emissions reduction below.**	<0.5 µg/m³	0.5-1 µg/m³

Measure No.	Measure	Assumptions for Quantification	Assumed Reduction in AQMA	
			A20 AQMA	High St / Ladywell AQMA
17	Procuring low emission vehicles for the LGV and HGV fleet, council-owned fleets and refuse fleet	DDC Environmental Crime team currently runs three ELVs. DDC Grounds Maintenance exploring use of ELVs for supervisors. DDC Parking Services and Community Safety Unit looking at move to ELVs upon contract renewal. Effectiveness of measure in isolation is likely to be negligible, but it will help to push the drive towards normalising ELV use.	<0.5µg/m³	<0.5µg/m³
18	Alternative fuel (EV) infrastructure development	DDC succeed in OLEV funding bid for 19 sites, 42 units to be completed 2022. Additional 7 ELV chargers have been installed at Council office car park and there are plans to increase numbers for public use. Assuming the units and chargers are used at least twice per day, which results in around 100 more OLEV/ELV car journey, replacing cars with combustion engines, **Measure is Quantified for NO_x emissions reduction below.**	<0.5µg/m³	<0.5µg/m³
19	On and off-street parking charges linked to vehicle emissions standards	Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
20	Port of Dover improvements	Port of Dover have 2 new hybrid vessels that use electric power when in port to reduce emissions. Port of Dover is exploring use of further anti-idling signage along port “buffer zone”. Feasibility Study is undertaken regarding use of electric vehicles. Insufficient detail to quantify this measure. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
21	Provision of high quality, bespoke and accessible information on sustainable travel	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³
22	Work with Kent Energy Centre to promote and implement energy efficiency measures in Dover	While this measure will improve air quality, it is not considered possible to quantify its overall effect. Reduction based on professional judgement	<0.5µg/m³	<0.5µg/m³

6.1.1 Detailed Quantitative Calculation

Two measures are quantified by using Emissions Factors Toolkit (EFT)[12] to estimate the reduction in Road NO_x emission. While the NO_2 concentrations are not directly predicted, the reduction in Road NO_x emission can help indicate the impact of this measure.

Measure 16: Engage with bus operators to introduce ULEVs into the fleet

To meet the ULEVs standard, the buses need to be Euro VI standard[13]. Therefore, it has been assumed that this measure will result in 50% of the total bus fleet shifting to at least Euro VI by 2025. The latest version of the EFT allows for the user to make changes to the fleet composition for change in Euro classes within the fleet along a given road.

Using the 'Bespoke Euro Fleet' Advanced Option, the bus and coach fleet along the roads with the greatest emissions within the A20 AQMA and High Street / Ladywell AQMA was amended to account for this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.2 – Detailed Quantitative Calculation – Engage with bus operators to introduce ULEVs into the fleet

A20 AQMA	
Annual Link NO_x Emissions – A20 without measure (kg/year)	2,977
Annual Link NO_x Emissions – A20 with measure – Buses shifting to 100% Euro VI (kg/year)	2,928
Reduction in Road NO_x (%)	-1.6%
High St / Ladywell AQMA	
Annual Link NO_x Emissions – High Street without measure (kg/year)	590
Annual Link NO_x Emissions - High Street with measure – Buses shifting to 100% Euro VI (kg/year)	574
Reduction in Road NO_x (%)	-2.7%

[12] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/

[13] https://tfl.gov.uk/modes/driving/ultra-low-emission-zone/ways-to-meet-the-standard

Table 6.2 shows that this measure can result in 1.6% NO_x emission reduction within A20 AQMA and 2.7% NO_x emission reduction within the High Street / Ladywell AQMA.

As presented in Section 3.4, the High Street / Ladywell AQMA requires at least 2% reduction of Road NO_x to achieve compliance. By implementing this measure an 2.7% NO_x emission reduction by 2025 has been estimated. It is therefore likely to result in the compliance of AQS objective within High Street / Ladywell AQMA.

Measure 18: Alternative fuel (EV) infrastructure development

DDC succeed in an OLEV funding bid for 19 sites, 42 units to be completed in 2022. Additional, seven ELV chargers have been installed at the Council office car park and there are plans to increase number for public use. It is assumed that the units and chargers will be used at least twice per day by 2023 (projection completion year), which results in around 100 more OLEV/ELV car journey, replacing cars with combustion engines within both AQMA. The latest version of the EFT allows for the user to make changes to the default NAEI base fleet composition along a given road.

Using the 'Bespoke Base Fleet - NAEI' Advanced Option, the car fleet along the roads with the greatest emissions within the A20 AQMA and High Street / Ladywell AQMA was amended to account for this measure. The table below shows the calculations undertaken and potential reductions.

Table 6.3 – Detailed Quantitative Calculation – Alternative fuel (EV) infrastructure development

A20 AQMA	
Annual Link NO_x Emissions – A20 without measure (kg/year)	3,918
Annual Link NO_x Emissions – A20 with measure – Buses shifting to 100% Euro VI (kg/year)	3,905
Reduction in Road NO_x (%)	-0.3%
High St / Ladywell AQMA	
Annual Link NO_x Emissions – High Street without measure (kg/year)	751
Annual Link NO_x Emissions - High Street with measure – Buses shifting to 100% Euro VI (kg/year)	745
Reduction in Road NO_x (%)	-0.8%

Table 6.3 shows that this measure can result in 0.3% NO_x emission reduction within A20 AQMA and 0.8% NO_x emission reduction within High Street / Ladywell AQMA.

6.2 Cost Benefit Analysis of Measures

6.2.1 Methodology

Using the above assumptions around the quantitative pollution reduction and assumed costs, each measure was given a score as set out below.

Table 6.4 – Cost Score

Estimated Cost of Measure	Score
< £10k	7
£10k - £50k	6
£50k - £100k	5
£100k - £500k	4
£500k - £1m	3
£1m - £10m	2
> £10m	1

Table 6.5 – Benefit Score

Estimated Reduction in Pollutant Concentrations	Score
<0.5µg/m³	1
0.5-1 µg/m³	2
1-2 µg/m³	3
2-3 µg/m³	4
3-4 µg/m³	5
4-5 µg/m³	6
>5 µg/m³	7

Using the scores above, the below matrix was implemented to work out the cost-benefit. Higher scores are awarded for those measures which are cheapest with the greatest effect, with the lowest scores awarded for those which will be costly with limited reduction in pollution.

Table 6.6 – Cost Benefit Scoring Matrix

		Estimated Reduction in Pollutant Concentrations						
		>0.5µg/m³	0.5-1 µg/m³	1-2 µg/m³	1-2 µg/m³	2-3 µg/m³	3-4 µg/m³	>4 µg/m³
Cost of Measure	< £10k	7	14	21	28	35	42	49
	£10k - £50k	6	12	18	24	30	36	42
	£50k - £100k	5	10	15	20	25	30	35
	£100k - £500k	4	8	12	16	20	24	28
	£500k - £1m	3	6	9	12	15	18	21
	£1m - £10m	2	4	6	8	10	12	14
	> £10m	1	2	3	4	5	6	7

The analysis should also account for the feasibility of implementing the measures, with those likely to progress given a higher priority than those which are acknowledged to be a challenge to implement. The feasibility score factors in local influences such as political backing, accessibility to funding options and resources available. As such, each measure was assigned a 'Feasibility score based on the table below. The score from the matrix was multiplied by this score.

Table 6.7- Feasibility Scores

Feasibility Score	Score
Measure has already been started and just requires progressing	7
Very easy to implement, and political good will towards this, sufficient resources	6
Relatively easy to implement, resources available	5
Possible to implement but may require some learning/campaigning, moderately time intensive	4
Challenging but still feasible, may require additional support and resources	3
Difficult to implement, no political appetite, time and resource intensive	2
Very difficult to implement, no political appetite, time and resource intensive	1

6.2.2 Cost-Benefit Analysis

Following the above assessment, it has been possible to rank the measures by cost, benefit and feasibility, this is shown in

Table 6.8 below. With the feasibility weighting meaning that measures which are the easiest to progress are scored higher, these are prioritised. The feasibility is accessed by referencing the cost of each measure and barriers identified in internal consultations detailed in Appendix A: Response to Consultation. For instance, the Grounds Maintenance team and Waste Services team have identified the cost might be an issue for procuring low emission vehicles (Measure 17) and need to consider later upon contract renewal. Therefore, Measure 17 presents a low feasibility score of 3.

Table 6.8 – Cost Benefit Analysis of Measures

Measure No.	Measure	Cost Score	Air Quality Effect Score	Feasibility Score	Overall Score
7	Make details of the Action Plan measures and annual progress reports available on the Website	7	1	6	42
8	Work with KMAQP on promotional activities to raise the profile of air quality in Dover	7	1	6	42
16	Engage with bus operators to introduce ultra-low emission vehicles into the fleets	7	2	3	42
12	Flexible working and home working encouraged	7	1	5	35
15	Taxi/Private Hire Vehicle Policy license fees	7	1	5	35
21	Provision of high quality, bespoke and accessible information on sustainable travel	7	1	5	35
6	Local air quality monitoring within the District to ensure a high standard of data is achieved	6	1	5	30
1	Encourage Council Travel Plan opportunities and seek to facilitate uptake of sustainable modes of transport;	7	1	4	28
2	Work together with KCC to encourage the uptake of Employer and School Travel Plans within the District; including School start time variations and walking to school incentives/ encouragement	7	1	4	28
3	Work with KCC to improve the facilities for cycling and walking within Dover	7	1	4	28

Measure No.	Measure	Cost Score	Air Quality Effect Score	Feasibility Score	Overall Score
	district; promote cycle-to-work scheme and bike rental scheme				
4	Work together with developers to improve sustainable transport links serving new developments.	7	1	4	28
22	Work with Kent Energy Centre to promote and implement energy efficiency measures in Dover	7	1	4	28
9	Local Plan policy and guidance	7	1	4	28
11	Behaviour change campaigns to reduce single occupancy car trips	7	1	4	28
13	Educational campaigns for schools	7	1	4	28
14	District wide Clean Air Days	7	1	4	28
10	District wide promotion of active travel	7	1	3	21
19	On and off-street parking charges linked to vehicle emissions standards	7	1	3	21
20	Port of Dover improvements	5	1	4	20
5	Work with KCC to improve public transport services and encourage the use of more sustainable transport modes	2	2	4	16
17	Procuring low emission vehicles for the LGV and HGV fleet, council-owned fleets and refuse fleet	5	1	3	15
18	Alternative fuel (EV) infrastructure development	4	1	3	12

6.3 Year of Objective Compliance

For the A20 AQMA, the modelling results predict that the receptor with highest concentration within the AQMA has a modelled NO_2 result of 37.5µg/m^3 in 2019, which is within 10% of the AQS objective. However, the modelling results are based on 2019 baseline data, and the circumstances have changed post the period of Covid 19. All NO_2 monitoring results within the A20 AQMA have reported below 36µg/m^3 (not within 10% of the AQS objective) since 2019. This indicates that the A20 AQMA has achieved compliance of the declared air quality objective for four consecutive years. However, considering that the impact of Covid 19 has resulted in the unusual decreasing trend of monitoring data since 2020, as the Covid restrictions greatly reduced traffic flows, DDC intends to further review the 2023 monitoring data. and revoke the A20 AQMA if no exceedance was recorded within the A20 AQMA during 2023.

In regard to the High Street / Ladywell AQMA, the modelled receptor with highest concentration within the AQMA reported a NO_2 result of 40.4µg/m^3 in 2019,

exceeding the AQS objective. Meanwhile, the highest reported monitoring site in the High Street / Ladywell AQMA recorded an annual mean NO_2 concentration of 39.8µg/m^3 in 2019, within 10% of the AQS Objective. The monitoring results within the AQMA have been below 36µg/m^3 since 2020. However, considering that the impact of Covid 19 has resulted in a decreasing trend in annual mean NO_2 concentrations since 2020, as the Covid restrictions greatly reduced traffic flows, continued monitoring and review are necessary for the High Street / Ladywell AQMA.

Dover District Council aims that the implementation of the outlined measures will result in the relevant objectives being attained by:

- 2024 within A20 AQMA;
- 2025 within High Street / Ladywell AQMA.

7 Appendix A: Response to Consultation

Air Quality Action Plan

Consultation Meetings Summary

The Environmental Protection Team conducted meetings/corresponded with relevant stakeholders between the 27/06/2022 and the 09/08/2022 to help form its air quality action plan.

The below tables detail key points from this consultation:

Table A.1 – Summary of Internal Stakeholders Engagement on the AQAP (Dover District Council)

Department/Team	Measures identified to reduce air pollution
Grounds Maintenance	• GM team have explored market for electric alternatives to current fleet (11 vehicles) however not currently deemed viable due to cost. Will check the market again upon contract renewal • Exploring the two supervisors' vehicles becoming electric and together with wider use of electric hand tools
Waste Services	• DDC refuse and recycling waste collection vehicles are all diesel and tied into contract until 2029 will consider electric vehicles following contract expiry. • Collection route optimisation • Contractor (Veolia) have issued electric vehicles to their supervisors in our district.
Procurement	• Procurement Team to suggest to all project managers that a social value question be added to all new contract tender questionnaires.
Community Safety & Development	• Community development team offered to promote air quality at local events their team attends.

Department/Team	Measures identified to reduce air pollution
	• Explore promotion of educational online resource “Pollution Patrol” at Youth conference(s) • Will consider electric vehicles upon vehicle contract renewals
Press office/communications	• Continue to post air pollution messages on social media, e.g., anti-idling campaigns and clean air day • Link messaging to infrastructure projects such as Dover FAST TRACK • Work with Environmental Protection Team to promote online resource “Pollution Patrol”
Planning	• Building regulations recently changed requiring provision of electric vehicle charging points for applications relating to single dwelling(s) upwards. • Commercial developments steer to seek up to 10% be electric charging facilities with new applications
Licencing	• Reduction in licencing fees for taxi’s which are electric/hybrid
Planning Policy	• Copy of current local plan shared with Environmental Protection to consider adoption of the Kent & Medway Air Quality guidance document
Climate Change	• Hybrid working has seen reduction in staff travel • Climate Change Strategy
Parking Services	• Exploring idea of cycle parking in new car parks • Exploring replacing three diesel vehicles with electric ones • Parking permits currently linked to emissions
Human Resources	• Cycle to work scheme • New business milage policy • Exploring electric staff pool car scheme (for work duties) • Promotion of active travel • Electric vehicle car salary scheme • Flexible working policy

Table A.2 – Summary of External Stakeholders Engagement on the AQAP

Stakeholder	Measures identified to reduce air pollution

Kent Highways	• Introduction of Dover FAST TRACK (Electric bus)
	• Improvements to EV charge point network in Kent including rural areas
	• Travel plans for new developments
	• Refurbishment works conducted at Ladywell lights in Dover in 2021
	• Active travel plans offered to all schools
	• Support for active travel schemes e.g.:
	  ○ E cycle training scheme,
	  ○ town cycle audits,
	  ○ Kent connected app
	  ○ Clearing NCN paths
	  ○ “Explore Kent”
	• National bus strategy formed
	• Promotion and support of campaigns e.g., road safety week, national walking month, walk to school or work initiatives, etc via website, social media, and other methods

Stagecoach	• Commitment to investing in low emission technology, zero emission bus fleet target by 2035. • Reconnect scheme through KCC providing free bus travel • New Euro 6 Engine vehicles have automatic engine switch off when stationary • Advertising campaigns to promote using public transport planned following reduction in passenger numbers post Covid
Port of Dover	• POD have air quality action plan • Exploring improvement of no idling signage along “buffer zone” • Two new P&O vessels will be hybrid meaning that vessels would be electric powered when entering and leaving ports. • Feasibility study being undertaken regarding electric vehicles with partners • POD requested additional investment in to increase amount of electricity coming into the port via the power network to enable reduction in use of fuels that create air pollution on site.

Air Quality Action Plan

General Public Consultation Summary

Table A.3 – Summary of Responses to Consultation on the AQAP

Measures / Concerns identified	DDC Response
Anti-idling campaigns and policies	Resource to provide enforcement not available. AQMAs are located in areas with high flows of traffic where idling is not a major issue. Any type of enforcement in these areas is likely to cause traffic delays. However, the Press office/communications within the council will continue to promote anti-idling campaigns
Alleviation of traffic congestion	DDC will continue to work with KCC to explore traffic management options within Dover.
Management of freight vehicles and alternative route for HGVs	DDC will consider this action and discuss with KKC and Kent highway for the feasibility of relative measures.
Affordability of public transport	DDC will work with KCC to improve public transport services. This has been included in the AQAP measures.

Incentives to reduce car use and to increase use of electric cars and public transport	DDC continue to work together with KCC to encourage the uptake of Employer and School Travel Plans within the District; including School start time variations and walking to school incentives/ encouragement. This has been included in the AQAP measures.
Banning of bornfire and burning	Please note this AQAP is specific to address the NO_2 exceedance within AQMA, while the burning mostly contributes to Particulate Matter emission. However, DDC will discuss the actions regarding regulating bonfire and burning within Dover.
Speed limits	Currently the speed limit is 20mph in a school zone and 30 mph in a thickly settled district, and 40 mph outside the thickly settled. Another further need to revise speed limit will be discussed.
Expansion of monitoring network	DCC will undertake a review on monitoring locations and add in new monitoring location if there are new area of concerns identified in Annual Status Reports. It has been noticed that Whitfield roundabout area has been mentioned multiple times in the consultation responses. Therefore, DDC will discuss the possibility to add new monitoring locations in this area.

Restriction on building development/ construction	Air Quality Assessments are required for all planning applications where air quality is an issue. Developers are advised to make reference to K&MAQP Guidance and IAQM/EPUK Guidance to ensure new developments are appropriately assessed against air quality criteria.

8 Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Promoting Travel Alternatives	Cycle-to-work schemes	Cycle-to-work schemes have been included in the measure No.1 Encourage Council Travel Plan opportunities and seek to facilitate uptake of sustainable modes of transport within this AQAP.
Traffic Management	Reducing vehicle idling	Resource to provide enforcement not available. AQMAs are located in areas with high flows of traffic where idling is not a major issue. Any type of enforcement in these areas is likely to cause traffic delays. However, the Press office/communications within the council will continue to promote anti-idling campaigns.
Promoting Low Emission Transport	Retrofitting or upgrade of private hire vehicles / taxis to LPG/retrofitting subsidies for local cab owners	No appetite following consultation with licensing team

9 Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
CAZs	Clean Air Zones
Defra	Department for Environment, Food and Rural Affairs
DDC	Dover District Council
EFT	Emissions Factors Toolkit
ELVs	Electric Low Emission Vehicles
EU	European Union
HGVs	Heavy Good Vehicles
IMD	Indices of Multiple Deprivation
KCC	Kent County Council
KMAQP	Kent and Medway Air Quality Partnership
LAQM	Local Air Quality Management
LGVs	Light Goods Vehicles
LSOA	Lower Super Output Area
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PCM	Pollutant Climate Mapping
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
POD	Port of Dover
TMI	Traffic Management Improvement
ULEVs	Ultra-Low Emission Vehicles

10 References

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