



Dartford Borough Council

Air Quality Action Plan

In fulfilment of Part IV of the
Environment Act 1995

Local Air Quality Management
2023 - 2028

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Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management (LAQM) framework. It outlines the action we will take to improve air quality in Dartford Borough Council between 2023 and 2028.

The LAQM process places an obligation on all Local Authorities to regularly review and assess air quality in their areas, and to determine whether specific Air Quality Objectives are likely to be achieved. With regard to LAQM, the main pollutants of concern with Air Quality Objectives across the UK are nitrogen dioxide (NO₂) and particulate matter with a diameter of 10 microns or less (PM₁₀). Currently within LAQM there is no concentration objective for particulate matter with a diameter of 2.5 microns or less (PM_{2.5}). The Environment Act 2021 established a legally binding duty on government to bring forward at least two new PM_{2.5} targets in secondary legislation by 31 October 2022. At the time of writing the new targets have not been adopted. Following adoption and subsequent updates to LAQM legislations Dartford Borough Council would work towards achieving any new requirements of the statute. Consultation was completed in 2022 on two proposed targets:

- Annual mean concentration target of 10µg/m³ to be met across England by 2040; and
- Population Exposure Reduction Target (PERT), a 35% reduction in population exposure by 2040 based upon a base year of 2018.

Where an exceedance of a UK Air Quality Objective is recorded, a Local Authority is required to declare an Air Quality Management Area (AQMA) to focus efforts into reducing pollutant concentrations and ensure compliance with the objective(s). This AQAP has been adopted for the following AQMAs declared by Dartford Borough Council:

- **AQMA 1: A282 Tunnel Approach**, declared for annual mean NO₂ and 24-hour PM₁₀ mean – covering the approach road to the Dartford Crossing which is flanked at several points by residential properties;

- **AQMA 2: London Road AQMA**, declared for annual mean NO₂ – covering the length of London Road (A226) which runs from Swanscombe at the borough boundary to where London Road crosses the A282; and
- **AQMA 3: Dartford Town Centre and Approach Roads**, declared for annual mean NO₂ – covering the arterial road links leading into, and surrounding Dartford Town Centre.

This action plan replaces two previous AQAPs which ran from 2002 and 2009. A number of projects delivered through the previous AQAP are detailed below:

- Replacement of buses servicing the Fastrack rapid transit system; 21 EURO VI buses introduced in 2015 and EV trials completed on Route A in 2018;
- Opposition to the expansion of the existing Dartford crossing and lobbying Central Government for national action on the A282. Progress towards the delivery of a Lower Thames Crossing located to the east of Gravesend, outside of Dartford Borough;
- The installation of Electric Vehicle (EV) charging points within a number of locations; Westgate car park, the Civic Centre and town centre retail areas, and at the Bluewater shopping complex. The expansion of EV infrastructure within Dartford aligns with UK Government aims to end the sale of new petrol and diesel cars/vans by 2030;
- St Clements Way Greenhithe improvement scheme that has helped to reduce traffic congestion, increase junction capacity and assist with the planned expansion of the Fastrack bus service; and
- Improvements to Bean Interchange and the revoking of AQMA 4: Bean Interchange through compulsory purchase of residential properties as part of the upgrade works.

Long-term trend analysis of annual mean NO₂ concentrations within the three AQMAs has been completed for all monitoring locations that have been in operation between 2009 and 2021. The reduction in average NO₂ annual mean concentration for all available sites within each AQMA has been 35% within AQMA 1 and AQMA 3, and 27% within AQMA 2.

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, the elderly, and those with heart and lung conditions. There is also often a strong correlation with disparity due to areas with poor air quality often being less affluent areas^{1,2}.

The UK's annual health cost to society of the impacts of particulate matter alone is estimated to be around £16 billion³. Dartford Borough Council is committed to reducing the exposure of people in Dartford to poor air quality in order to improve health.

We have developed actions within this AQAP that can be considered under five broad topics:

- Priority 1: Public Health and Wellbeing;
- Priority 2: Transport;
- Priority 3: Air Quality Partnerships;
- Priority 4: Planning and Infrastructure;
- Priority 5: Policy

The primary focus of the AQAP is to implement measures that will ensure concentrations of NO₂ and PM₁₀ across the borough, and specifically within the existing AQMAs, are reduced to, and remain below all UK Air Quality Objectives as defined within LAQM. A suite of action plan measures that are based upon differing geographical reaches have been included within the AQAP. With a combination of borough-wide actions / 'soft' measures, such as educational events, combined with AQMA / area-specific 'hard' measures, such as improvements in vehicle fleets. This combination of approaches ensures that the benefits from the measures outlined in the AQAP are experienced across the entire borough rather than being centrally targeted within the AQMAs.

A priority of this AQAP is to aid behavioural shift within the population to promote more sustainable, and less polluting methods of transport, reducing pollutant

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

concentrations and thus the risks of impacting health. This will improve wellbeing within the borough. In addition, where transport remains a majority source of air pollution, measures will continue to be scoped and implemented where possible, aiming to reduce congestion and overall vehicle emissions in areas of relevant exposure.

This AQAP outlines a plan to effectively tackle air quality issues within the Council's control, and to work co-operatively with air quality partners that impact upon air quality within the borough. It should be noted that there are a large number of air quality policy areas that are outside of the Council's influence (such as vehicle emissions standards), but for which the Council is able to provide useful evidence. The Council will therefore work to create holistic working relationships with a number of partners on policies and issues beyond the direct influence of Dartford Borough Council. These air quality partners include neighbouring Local Authorities, Kent County Council, National Highways and central government

Responsibilities and Commitment

This AQAP was prepared by the Environmental Health department within Dartford Borough Council with support provided by Bureau Veritas. A number of departments, both within Dartford Borough Council and Kent County Council have, and continue to provide, support and agreement to the AQAP:

This AQAP has been approved by the Cabinet of Dartford Borough Council in January 2023.

The measures contained within this AQAP will be subject to an annual review, appraisal of progress and reporting to the relevant Council Committee and Defra. Progress of measures, and the development of additional measures will be reported to Defra each year within the Annual Status Report (ASR). The ASR is due for completion in June each year and is produced by Dartford Borough Council, as part of our statutory LAQM duties. Current Defra guidance states that an AQAP should be updated every five years therefore the formal process to update this AQAP shall be commenced in 2028 with a view to adopt a new AQAP, if required, within 2029.

If you have any comments on this AQAP, please send them to the Environmental Health department at Dartford Borough Council at:

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1 Introduction

This Air Quality Action Plan (AQAP) outlines the actions that Dartford Borough Council (Dartford) will deliver between 2023 and 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 the borough.

It has been developed in recognition of the legal requirement on the Local Authority to work towards compliance with the Air Quality Objectives (AQOs) as defined within the Local Air Quality Management (LAQM) statutory process. Specific LAQM guidance⁴⁵ has been followed to develop this AQAP.

The measures contained within the AQAP are to be reviewed and reported on annually within the Annual Status Report (ASR), and the AQAP document will be reviewed every five years at the latest. This AQAP focuses on actions to improve air quality across Dartford, with a specific focus on the three AQMAs currently declared within the borough:

- **AQMA 1: A282 Tunnel Approach** – The approach road to the Dartford Crossing which is flanked at several points by residential properties;
- **AQMA 2: London Road AQMA** – The length of London Road (A226) which runs from Swanscombe at the borough boundary to where London Road crosses the A282; and
- **AQMA 3: Dartford Town Centre and Approach Roads** – The arterial road links leading into, and surrounding Dartford Town Centre.

The three current AQMAs have all been declared for exceedances of the nitrogen dioxide (NO₂) annual mean Air Quality Objective (AQO) of 40µg/m³. Additionally, AQMA 1 has also been declared due to exceedances of the PM₁₀ (particulate matter with a diameter of 10 microns or less) 24-hour PM₁₀ AQO. For reference the UK LAQM AQOs relevant to English Local Authorities are presented in Table 1.1

Within Dartford the primary source of air pollution is from vehicle emissions derived from the numerous roads located throughout the borough. There are a number of

⁴ Local Air Quality Management Technical Guidance LAQM.TG(22), August 2022, published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland

⁵ Local Air Quality Management Policy Guidance LAQM.PG(22), August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

roads that are part of the Strategic Road Network (SRN) and therefore are managed centrally by National Highways (NH); A282, A2, M20, M25. The boundary of AQMA 1 is set against the A282, and vehicle emissions from all SRN roads within the borough influence, to a varying degree, the pollutant concentrations reported throughout the borough.

The inclusion of NH managed roads within Dartford has introduced further challenge when developing this AQAP. Dartford is a two-tiered Local Authority therefore Kent County Council (KCC) are responsible for the highways within Dartford, and in addition there are SRN roads within the borough. Therefore, there are a number of ‘air quality partners’ that are responsible for sources of air pollution within the designated AQMAs. It is the objective of this AQAP that these, and other, air quality partners are able to work together to reduce pollutant concentrations.

The locations of the three AQMAs within Dartford are provided within Appendix A.

Table 1.1: UK (England) Air Quality Objectives – LAQM

Pollutant	LAQM Air Quality Objective	Averaging Period
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40µg/m ³	Annual mean
Particulate Matter (PM _{2.5})	Work towards reducing emissions/concentrations of fine particulate matter (PM _{2.5})	Annual mean

2 Summary of Current Air Quality in Dartford Borough Council

Air quality monitoring is carried out across the borough largely via a network of passive NO₂ diffusion tubes; there were 52 monitoring locations within 2021. In addition, there are currently two automatic monitoring sites that monitor both NO₂ and PM₁₀.

To supplement the monitoring undertaken, a detailed modelling assessment has been completed to review the status of the three existing AQMAs and help inform this AQAP. Using 2018 baseline data, the assessment predicts pollutant concentrations at relevant locations over a wider spatial scale.

During the 2020 and 2021 national lockdowns, travel restrictions associated with COVID-19 impacted existing traffic volumes and subsequently air pollutant concentrations. Currently there is high-level of uncertainty with regard to whether recent monitoring data will be considered an outlier until long-term monitoring trends are better understood. Therefore, monitoring data for the past five years is presented so that the trends and the frequency of any exceedances can be considered, with a focus on any exceedances reported during 2019 or previous years.

A summary of both monitoring and dispersion modelling results relevant to each AQMA is provided below.

Full details of the monitoring network within Dartford and ongoing monitoring results are presented within the most recent ASR⁶.

2.1 AQMA 1: A282 Tunnel Approach

AQMA 1 incorporates the residential dwellings that are located close to the A282, with the AQMA boundary stretching between Junctions 2 and 1a. The A282 is part of the SRN and therefore is managed centrally by NH.

The AQMA was declared in 2001 due to exceedances of the annual mean AQO for both NO₂ and PM₁₀. Monitoring of NO₂ within or close to the AQMA boundary, as presented in Table 2.1, shows that there has been an overall downward trend in

⁶ Dartford Borough Council, Air Quality, available at <https://www.dartford.gov.uk/by-category/environment-and-planning2/Environmental-Health-Homepage/pollution/air-quality>

annual mean concentration over the past five years. There were exceedances of the annual mean NO₂ AQO at three monitoring locations within 2019. When distance correction⁷ is applied to these three sites, two remain in exceedance; DA22 and DA97. The latest annual mean results, from 2021, show a number of sites remain significantly close to the AQO, but all sites are below the annual mean AQO. The variability of 2021 concentrations due to COVID-19 impacts should be taken into account within the annual mean results.

Currently there is no PM₁₀ monitoring completed by Dartford within AQMA 1.

Table 2.1: AQMA 1 Annual Mean NO₂ Concentrations (µg/m³)

Site ID	X OS Grid Ref.	Y OS Grid Ref.	Site Type	Distance to Relevant Exposure	2017	2018	2019	2020	2021
DA20	555661	174865	Roadside	9.4	38.1	43.3	36.1	32.3	33.8
DA21	555497	174025	Roadside	10.3	32.5	34.5	32.2	27.6	29.1
DA22	555605	174023	Roadside	7.2	51.0	47.7	44.0	41.3	39.3
DA24	555634	173558	Roadside	0	33.5	36.3	32.3	30.2	29.6
DA25	555801	173194	Urban Background	0	33.7	35.1	30.8	23.2	27.6
DA44	555653	174047	Roadside	0	39.4	38.6	37.3	36.3	32.4
DA62	555796	173902	Roadside	5	43.8	41.1	39.4	30.2	35.6
DA84	555574	174068	Roadside	16	49.0	45.2	43.7	42.8	37.5
DA97	555495	174436	Roadside	9.65	35.3	46.4	44.3	41.0	37.2
Note: Exceedances of the NO ₂ annual mean AQO are in bold									

The dispersion modelling completed across the borough predicted NO₂ annual mean concentrations at 14 receptor locations within and close to AQMA 1. It was predicted that 13 out of the 14 locations were to exceed the annual mean AQO, with the remaining location having an annual mean concentration within 10% of the annual mean AQO (36µg/m³). Additionally, PM₁₀ 24-hour mean concentrations were predicted to exceed the allowable 35 exceedances of 50µg/m³ per year at 13 of the 14 modelled receptor locations, therefore exceeding the 24-hour mean AQO. The 24-hour exceedances have been calculated using the empirical relationship presented in LAQM.TG(16).

⁷ As per LAQM.TG(16) paragraphs 7.77 to 7.79: *Wherever possible, Local Authorities should ensure that monitoring locations are representative of exposure. Where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated, using the NO₂ fall-off with distance calculator.*

A comparison of NO₂ monitoring locations and modelled receptor locations is presented in Figure A.1 and Figure A.2.

2.2 AQMA 2: London Road

AQMA 2 surrounds London Road (A226) for its entire length, stretching from the A282 flyover through Stone and Greenhithe to the borough boundary with Gravesham Borough Council. The AQMA was declared in 2006 due to exceedances of the annual mean AQO for NO₂.

Monitoring of NO₂ within or close to the AQMA boundary, as presented in Table 2.2, shows that for the majority of monitoring sites there has been a downward trend in annual mean concentration over the past five years. The automatic monitoring station ZR4, since installation, has shown a consistent annual mean concentration of between 35-37µg/m³. There has not been an exceedance of the annual mean AQO at an existing monitoring location since 2018. Following the application of distance correction there has not been an exceedance for the past five years. A new site, DA99, was introduced for 2021 following the detailed modelling completed as part of the AQAP update. This site reported the highest annual mean concentration within the AQMA in 2021, 43.5µg/m³ at the point of monitoring and 38.0µg/m³ with distance correction to the closest point of relevant exposure.

Table 2.2: AQMA 2 Annual Mean NO₂ Concentrations

Site ID	X OS Grid Ref.	Y OS Grid Ref.	Site Type	Distance to Relevant Exposure	2017	2018	2019	2020	2021
ZR4	558488	174671	Roadside	8.5	-	-	37	37	35
DA10	559120	174854	Roadside	2.5	35.1	35.6	31.8	25.5	34.0
DA38	558289	174580	Roadside	3.2	37.2	35.4	33.4	29.7	30.6
DA92	560534	174877	Roadside	9.5	41.6	42.5	35.2	33.7	37.1
DA93	561201	174906	Roadside	3.3	40.3	41.0	38.2	33.5	28.7
DA99	559207	174877	Roadside	2.0	-	-	-	-	43.5
Note: Exceedances of the NO ₂ annual mean AQO are in bold									

With regard to the dispersion modelling completed, NO₂ annual mean concentrations were predicted at 26 relevant receptor locations within and close to AQMA 2.

Although no exceedances were predicted, four out of the 26 receptor locations had an annual mean concentration within 10% of the annual mean AQO. LAQM guidance states that where NO₂ monitoring is completed using diffusion tubes an AQMA

should only be revoked following three consecutive years of annual mean concentrations being lower than $36\mu\text{g}/\text{m}^3$. Therefore this proxy is utilised when assessing predicted concentrations at modelled receptor locations.

A comparison of the NO_2 monitoring locations and modelled receptor locations is presented in Figure A.3 and Figure A.4.

2.3 AQMA 3: Dartford Town Centre and Approach Roads

AQMA 3 follows the path of the inner ring road that encompasses Dartford Town Centre and continues along four adjoining road links; A225, A226, A2018 and A2026. The AQMA was declared in 2006 due to exceedances of the annual mean AQO for NO_2 .

Monitoring of NO_2 within or close to the AQMA boundary, as presented in Figure A.5, shows that there has been a downward trend in annual mean NO_2 concentration at monitoring sites within or close to the AQMA over the past five years. There have been exceedances of the annual mean AQO recorded at monitoring locations in each of the past five years. The monitoring sites DA43 and DA61 are located at, or extremely close to, points of relevant exposure. Both of these sites have exceeded, or have been close to exceeding, the annual mean AQO for the past five years.

Of the 71 modelled receptor locations utilised within the dispersion modelling, exceedances of the annual mean NO_2 AQO were predicted at 17 locations. In addition, eight modelled receptor locations reported a predicted concentration within 10% of the annual mean AQO.

A comparison of the NO_2 monitoring locations and modelled receptor locations are presented in Figure A.5 and Figure A.6.

Table 2.3: AQMA 3 Annual Mean NO₂ Concentrations

Site ID	X OS Grid Ref.	Y OS Grid Ref.	Site Type	Distance to Relevant Exposure	2017	2018	2019	2020	2021
ZR1	554117	173852	Roadside	N/A	34	36	32	24	26
DA01	554190	173985	Roadside	1.1	33.7	37.7	34.3	32.1	-
DA16	554108	173318	Roadside	15.7	43.1	41.4	41.1	34.5	36.5
DA17	552988	173922	Roadside	11	30.4	33.7	30.0	27.5	28.3
DA34	555373	173763	Roadside	6	39.0	42.2	37.6	34.0	34.0
DA35	553848	173994	Roadside	4.6	35.3	37.5	34.0	31.5	29.2
DA36	553283	175288	Roadside	14.2	34.3	37.8	34.9	30.4	31.2
DA39	555129	173802	Roadside	6	36.6	40.2	36.8	28.9	33.9
DA43	554581	173987	Roadside	0.8	53.0	57.9	54.6	45.6	48.1
DA47	553922	174325	Roadside	2.8	34.8	37.0	34.8	34.4	31.5
DA49	554903	173893	Roadside	0	36.3	36.8	37.0	32.6	33.2
DA60	553895	174678	Roadside	4.6	33.8	36.9	32.9	28.9	31.9
DA61	553578	174175	Roadside	0	40.9	45.7	45.2	43.5	37.8
DA78	553686	174905	Roadside	5.3	33.9	39.1	35.4	30.7	33.5
DA85	554556	174034	Roadside	N/A	30.2	32.8	30.8	26.8	30.8

Note:
Exceedances of the NO₂ annual mean AQO are in **bold**

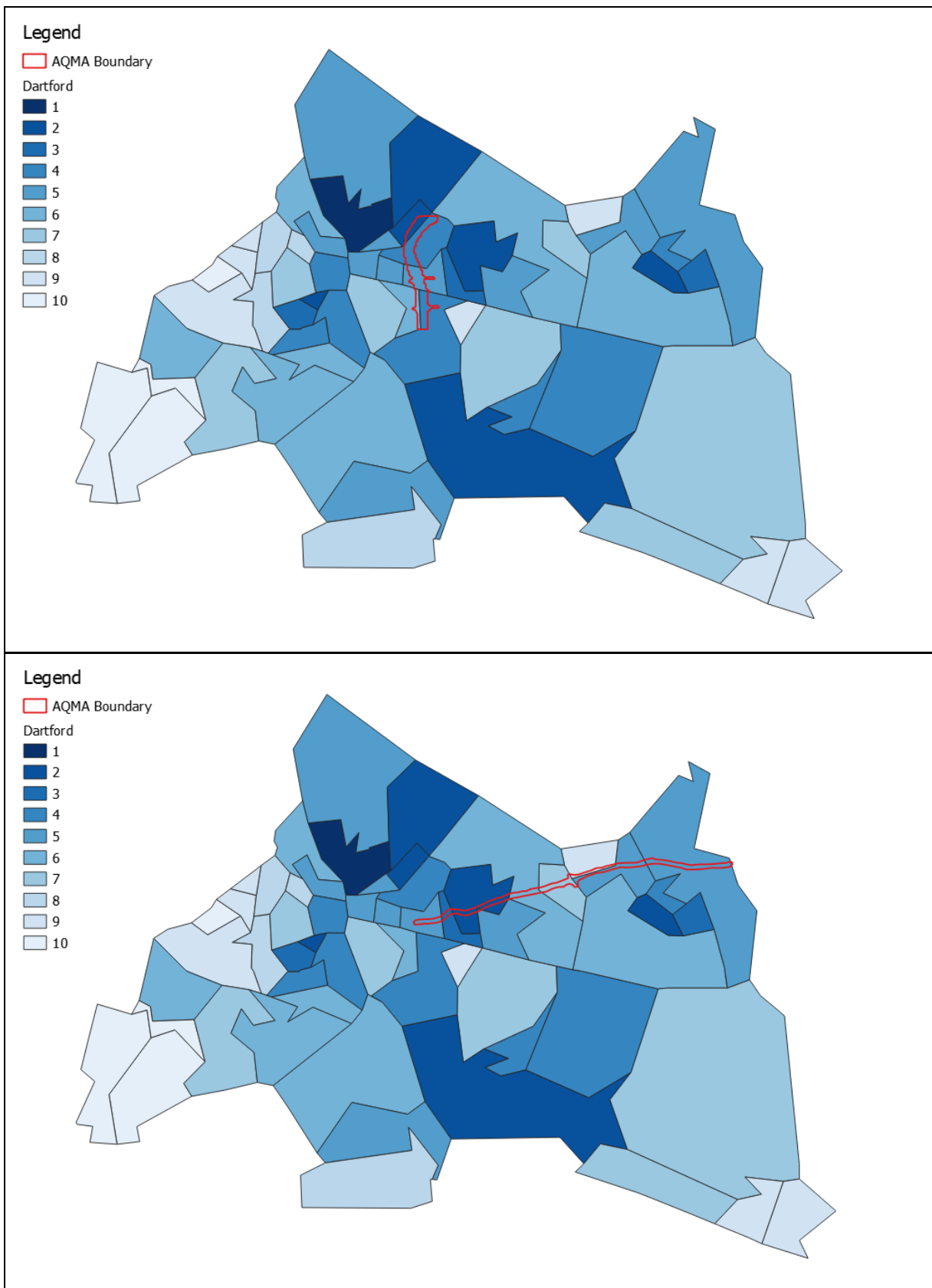
2.4 Disparity Analysis

In addition to the current air quality monitoring completed within Dartford, analysis has been undertaken with regard to population and disparity related to poor air quality conditions. Using Office for National Statistics (ONS) data⁸ on a scale of Lower-Layer Super Output Areas (LSOA), population density and disparity metrics are able to be presented for each AQMA. The Indices of Multiple Deprivation (IMD) is a dataset used to classify relative deprivation within an LSOA. This is completed through a number of different indicators leading to a rating between one and ten, with one being the most deprived and ten being the least deprived.

Figure 2.1 presents an overlay of IMD across Dartford within each specific LSOA. The AQMAs have been overlain, to identify the differing ratings or IMD that are relevant to each AQMA. In addition to IMD statistics, Table 2.4 presents the population for the LSOAs where AQMAs are present.

⁸ <https://www.ons.gov.uk/visualisations/dvc1371/#/E07000223>

Figure 2.1: Dartford IMD Rating



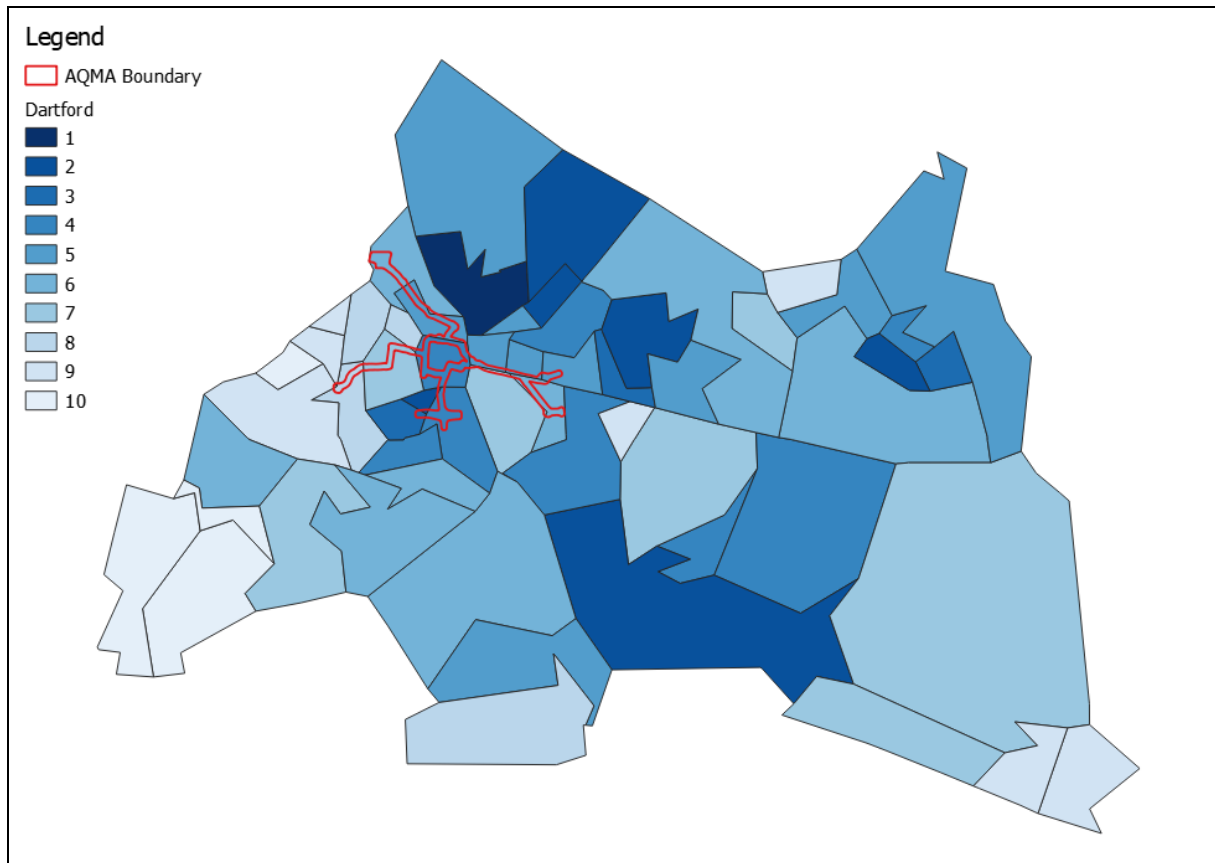


Table 2.4: AQMA Comparison

AQMA	Number of LSOAs	Population Within and Surrounding AQMA ⁹	Average IMD Rating Within AQMA	Highest Monitoring NO ₂ Concentration (2021)
AQMA 1	5	9,031	4.2	43.5µg/m ³
AQMA 2	9	22,825	5.2	39.3µg/m ³
AQMA 3	16	29,382	5.8	48.1µg/m ³
Outside AQMAs	31	78,424	6.2	33.3µg/m ³

Figure 2.1 displays the IMD rating for the LSOAs across Dartford, with these varying between ratings one to ten. Aside from a central LSOA the least deprived areas in terms of IMD are located to the southwest and southeast of the borough. There are pockets of high deprivation within the central areas, to the south and to the east of the borough. It can be seen that the average IMD rating across the LSOAs within each AQMA is lower than the average outside of the AQMAs. Additionally, the average across all LSOAs within Dartford is 5.8. Within each AQMA the average IMD rating is either equal or below this borough average.

Compared to the total population of Dartford (208,496), over 60,000 people or 28.8%

⁹ Population has been calculated by totalling the population within each LSOA where the AQMA boundary falls.

of the population within Dartford are living within, or close to, areas of poor air quality.

This analysis has been utilised, alongside the ongoing air quality monitoring and specific modelling completed to inform this AQAP, to design measures specific to the issues relevant to Dartford. The impact of air pollution within Dartford is not solely related to achieving, and maintaining, pollutant concentrations below the AQOs. Additionally, the implementation of the AQAP is aimed to reduce the burden that poor air quality can have upon human health and the environment, both natural and anthropogenic.

3 Dartford Borough Council's Air Quality Priorities

This chapter presents the main drivers and the approach taken by Dartford Borough Council for the development and subsequent selection of measures that have been included within this AQAP. Included within this section of the AQAP are descriptions of the existing strategies and policies that relate to air quality within the borough.

A source apportionment study has been completed across the borough, focusing on the three current AQMAs. The source apportionment study has allowed the most significant sources of oxides of nitrogen (NO_x) vehicle contributors to be identified. Vehicular emission sources of NO₂ are dominated by NO_x emissions. NO_x is chemically unstable and rapidly oxidises to form NO₂. Therefore reducing the emissions of NO_x, reduces concentrations of NO₂.

In conjunction, with the strategies and policies that are currently in place, the conclusions of this apportionment exercise have been used to identify and prioritise the AQAP measures presented within Section 5.

3.1 Public Health Context

There is increasing scientific evidence that poor ambient air quality has a significant negative impact on health. Research shows that the most common air pollutants of concern, NO₂, PM₁₀ 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. The Committee on the Medical Effects of Air Pollution (COMEAP)¹⁰ provides advice to Government on the setting of air quality standards, and increasingly has sought to consolidate evidence on the health burden and impacts of various pollutants, both in single occurrence and pollutants in combination.

Exposure to air pollutants increases the risk of respiratory infections through the pollutants interaction with the immune system¹¹, and may lead to reduced lung function. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also

¹⁰ <https://www.gov.uk/government/collections/comeap-reports>

¹¹ Marilena Kampa and Elias Castanas, Human Health Effects of Air Pollution, June 2007

often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{12,13}. The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages¹⁴, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017¹⁵.

In December 2020, the first case of air pollution being ruled as the cause of death was recorded for nine-year old, Ella Kissi-Debrah as a result of failure to reduce pollution levels to legal limits within the London Borough of Lewisham. Within the coroner's report¹⁶ the need for greater awareness was detailed, with regard to personal exposure to air pollution was required, at both national and Local Authority level.

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 appropriate action to reduce air pollution exposure and to not impact upon, and improve the health of all within Dartford.

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 Directions of Public Health" document published in March 2017¹⁷ 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.

There is an increasing focus on fine particulate matter (PM_{2.5}), for which evidence continues to show that there is no real safe threshold. The Public Health Outcomes Framework data tool compiled by Public Health England quantifies the mortality burden of PM_{2.5} within England on a County and Local Authority scale. The 2019

¹² Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

¹³ Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

¹⁴ Defra. Air quality appraisal: damage cost guidance, July 2020

¹⁵ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

¹⁶ <https://www.judiciary.uk/publications/ella-kissi-debrah/>

¹⁷ https://www.local.gov.uk/sites/default/files/documents/6.3091_DEFRA_AirQualityGuide_9web_0.pdf

fraction of mortality attributable to PM_{2.5} pollution in Dartford is 6.3%, which is above the national average of 5.1%. 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 NO₂, so the true figure is possibly even higher. In 2018 the Kent Public Health Observatory have utilised age-standardised premature mortality rates per 100,000 within Dartford (five years of mortality data used, 2012-2016) to present the number of premature deaths attributable to PM_{2.5}¹⁸. A value of 19.4 deaths per 100,000 has been calculated to be attributable to PM_{2.5} concentrations within Dartford.

Currently, as per LAQM guidance, English Local Authorities are required to work towards reducing emissions/concentrations of PM_{2.5} rather than report against a specific AQO, as with NO₂ and PM₁₀. Notwithstanding, it is expected that a number of the measures implemented as part of this action plan have co-benefits in additionally reducing emissions and resulting concentrations of PM_{2.5}.

3.1.1 Kent Wellbeing Strategy

The Kent Joint Health and Wellbeing Strategy¹⁹ outlines how, through cohesive working, people's health can be improved, and health inequalities reduced. The strategy has been extended through 2021 and continues to be relevant and timely with regard to the priorities outlined by Kent and Medway Joint Health and Wellbeing Board.

Five core outcomes are defined within the Strategy, and these are being delivered through focusing on a number of key priorities:

- Tackle key health issues where Kent is performing worse than the England average;
- Tackle health inequalities;
- Tackle the gaps in provision;
- Transform services to improve outcomes, patient experience and value for money.

3.2 Planning and Policy Context

This AQAP outlines Dartford's plan to effectively tackle air quality issues within its

¹⁸ https://www.kpho.org.uk/_data/assets/pdf_file/0004/80617/Air-Quality.pdf

¹⁹ <https://www.kent.gov.uk/about-the-council/strategies-and-policies/health-policies/joint-health-and-wellbeing-strategy>

control. It is recognised there are numerous existing, and forthcoming, policies and strategies adopted at a local, regional and national level that can exert significant effects, both positive and negative, upon air quality conditions across Dartford. It is important that these plans and strategies are identified and taken into consideration at an early stage of the development of the AQAP. These will aid the establishment of the context in which specific options for improving air quality can be implemented.

The most relevant policies and strategic documents, both local and national are detailed below.

3.2.1 Local Policy

Dartford Local Plan

Dartford Borough Council submitted a new Dartford Local Plan for independent examination in December 2021²⁰. The final hearing for the Local Plan is due to be completed by the end of 2022, following which the Local Plan will be adopted. Once adopted, the plan will replace the existing adopted Core Strategy and Development Policies Plan. It will guide key planning and infrastructure decisions by setting out the location, type and extent of new development to 2037, and includes all the key policies to inform planning applications.

The plan sets out the vision of sustainable development within Dartford, with the wellbeing of communities benefitting from investment and planned development. Improving health and wellbeing is a strategic objective of the plan, with the improvement of air quality identified through the reduction of the need to travel by private vehicle. The control and improvement of air quality is detailed within a number of strategic policies and development management policies to ensure that air quality is taken as a material consideration for future development proposal. It is expected that all developments across Dartford are to minimise pollution. Where impact assessment shows a significant level of impact, mitigation will be required. Mitigation is to be considered at the design phase, with an emphasis upon sustainable or low pollution features and the promotion of electric vehicle use.

Developing on the Parking Standards Supplementary Planning Guidance the provision of Electric Vehicle (EV) charging points is to be provided for both residential

²⁰ <https://www.dartford.gov.uk/by-category/environment-and-planning2/new-planning-homepage/planning-policy/new-local-plan>

and commercial developments. The continual expansion of the EV charging network within Dartford will not only bring local air pollution benefits, but also falls in line with the current Climate Change Strategy²¹.

There are estimated to be 15,800 new homes to be built within Dartford within the plan period up to 2037. This has been predicted based upon population growth rates, with Dartford currently having the third highest growth rate in England outside of London. This rapid growth will bring a number of challenges in terms of air quality impacts and within the wider environment. The overall impact of this level of growth cannot be quantified simply. The measures that are to be implemented through this AQAP have taken account of these levels of growth in terms of population and development and are to safeguard current and future populations within Dartford.

Kent Local Transport Plan

The Kent Local Transport Plan 4, adopted in 2016, with the associated Strategic Environmental Assessment²², sets out the long-term transport strategy across the country, inclusive of Dartford. Five overarching policies are detailed that are targeted at delivering specific outcomes, with direct relevance to air quality identified within the following outcome:

Outcome 5: Better health and wellbeing

- *Policy: Promote active travel choices for all members of the community to encourage good health and wellbeing, and implement measures to improve air quality.*

The transport priorities within Dartford are presented, with a number of the priorities relevant to the road links within the three AQMAs, i.e., the A282, A226 and within Dartford Town Centre. A number of the priorities will align with the measures developed as part of this AQAP. The development of sustainable transport and active travel, aside from reducing the number of vehicles on the roads, will lead to reductions in air pollution concentrations through both educational and infrastructure aspects.

²¹ <https://www.dartford.gov.uk/by-category/environment-and-planning2/local-authority-carbon-management-programme>

²² <https://www.kent.gov.uk/about-the-council/strategies-and-policies/transport-and-highways-policies/local-transport-plan>

Works have begun on the Kent Local Transport Plan 5, which when completed would supersede the current plan. Due to the high level of cause and effect cross-over between transport and air quality within Dartford, and across Kent, Dartford Council will engage and consult with KCC to aid the development of this updated plan.

The Dartford Sustainable Transport Strategy

The strategy released in 2021, A Sustainable Transport Strategy for Dartford (DSTS)²³ outlines the actions being taken by Dartford to encourage sustainable travel. A summary with regard to the current air quality conditions within Dartford is presented. This is both in terms of the three AQMAs and the identification that traffic sources are the principal source of air pollution within the borough. One of the overall aims of the DSTS is to reduce traffic congestion and emissions, leading to improved air quality.

Growth within the borough will be accompanied with an increase in the desire to travel. A greater emphasis on sustainable travel, supported by infrastructure improvements, seeks to achieve changes in travel behaviour. This will have benefits for people's health and wellbeing, reducing air pollution concentrations and promoting more active lifestyles.

The DSTS is an informal document that accompanies the new Dartford Local Plan, aimed at minimising the transport impacts of planned development. This AQAP, and the measures proposed within it, will play a key role in further developing the DSTS.

Dartford Town Centre Framework: Supplementary Planning Document

An SPD for Dartford Town Centre was adopted in 2018²⁴. It is recognised within the SPD that the ring road encompassing Dartford Town Centre has been declared as an AQMA as a result of heavy road demand. The ring road is identified as a barrier to walking and cycling within Dartford, and also that traffic demand is exacerbated when there are problems on either the A2 or A282.

The objective relating to "Movement" is directly linked to improving air pollution concentrations within Dartford Town Centre. Through the Framework, the aim is to

²³ <https://www.dartford.gov.uk/downloads/file/1382/draft-sustainable-transport-strategy-v6-13-september-2021>

²⁴ <https://www.dartford.gov.uk/by-category/environment-and-planning2/new-planning-homepage/planning-policy/supplementary-planning>

improve access into the town centre by alternative, more sustainable forms of transport.

Kent Design Guide

The Kent Design Initiative has produced a Design Guide²⁵ that aims to drive the positive design of buildings within Kent. Good design adds environmental value to a development and should be seen as a fundamental requirement. Guidance is provided with regard to the environmentally sustainable design of a development, but also for the sustainable construction of a development.

3.2.2 National Policy

Clean Air Strategy 2019

The Clean Air Strategy²⁶ 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 declared within Dartford) 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.

Air quality plan for NO₂ in UK

Published in July 2017, the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)²⁷ is the UK governments plan for bringing concentrations of NO₂ within statutory limits within the shortest possible time. LAQM is the statutory process by which Local Authorities monitor, assess and take action to improve local air quality. The UK has a requirement to report upon pollutant concentrations set by the Air Quality Standards Regulations²⁸ across a specific number of zones across the UK.

The plan was published due to the identification that the most immediate air quality challenge within the UK is tackling the issue of NO₂ concentrations close to roads,

²⁵ <https://www.kent.gov.uk/about-the-council/strategies-and-policies/regeneration-policies/kent-design-guide>

²⁶ Department for Environment, Food and Rural Affairs (2019), Clean Air Strategy

²⁷ Department for Environment, Food and Rural Affairs, Department for Transport (2017), UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations (Detailed Plan)

²⁸ UK Government (2010), The Air Quality Standards Regulations

especially within urbanised areas. The plan identifies a number of Local Authorities that were required to complete feasibility studies to define NO₂ concentrations on road links identified by the national Pollutant Climate Mapping (PCM) model as being in exceedance of the NO₂ annual mean objective.

Dartford was not one of the authorities identified due to the A282 being part of the SRN and therefore not managed by either Dartford or KCC. However, 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 NO₂ concentrations.

EV Building Regulations

In December 2021 new Building Regulations were introduced in England requiring new homes and specific buildings, as well as those undergoing major renovation, to install EV charging points²⁹.

- Every new home with on-site parking is to have an electric vehicle charge point;
- Residential buildings undergoing major renovation, which will have more than 10 parking spaces after the renovation is complete, are to have at least one electric vehicle charge point for each dwelling with associated parking and cable routes in all spaces without charge points;
- All new non-residential buildings with more than 10 parking spaces are to have a minimum of one charge point and cable routes for one in five of the total number of spaces; and
- All non-residential buildings undergoing a major renovation which will have more than 10 parking spaces after the renovation is complete are to have a minimum of one charge point and cable routes for one in five spaces.

3.3 Source Apportionment

Source apportionment is the process by which different pollutant sources are quantified in relation to their contribution to overall pollutant concentrations. The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within the Dartford area.

²⁹ <https://www.gov.uk/government/publications/infrastructure-for-charging-electric-vehicles-approved-document-s>

The source apportionment process has been completed in order to:

- Quantify the proportions of oxides of nitrogen (NO_x) that are attributable to both background emissions and to local road emissions;
- Determine the relative contributions from different vehicle types (cars, Heavy Good Vehicles (HGVs), Light Goods Vehicles (LGVs), buses and coaches, and motorcycles); and
- Identify whether action plan measures would need to be on a local / regional / national scale to have a significant impact upon reducing NO_x emissions within the existing AQMA areas.

Relevant to the maximum NO_x and PM₁₀ concentrations within the AQMAs the key findings following the source apportionment exercise were as follows:

- The main source of NO_x within the AQMAs was identified to be from vehicle sources;
 - AQMA 1 – Diesel HGVs, LGVs and cars each contribute between 22.4-26.6% of total emissions;
 - AQMA 2 – Diesel cars contribute the greatest of all vehicle contributions, 24.4%;
 - AQMA 3 – Diesel cars contribute the greatest of all vehicle contributions, 32.5%;
- It can be seen that diesel cars contribute a greater proportion of NO_x emissions within AQMA 2 and AQMA 3, whereas within AQMA 1 a significant contribution is additionally from HGVs and LGVs;
- Within AQMA 1 the predominant source of PM₁₀ was identified to be from background sources; and
- Of the total road PM₁₀ emissions, the majority were from HGVs.

A presentation of the source apportionment completed for each AQMA is presented in Appendix B.

As with the majority of road-based AQMAs within the UK, diesel vehicles are significant contributors to total NO_x concentration, i.e., HGVs, diesel cars and diesel LGVs. There are a number of subtle differences between each AQMA with HGVs

more prevalent within AQMA 1, due to the A282 being part of the SRN and an important freight route across the River Thames, and buses/coaches more prevalent within AQMA 3.

The measures that have been developed and are to be implemented within Dartford are primarily to reduce transport emissions. There will be an indirect positive impact upon background NO_x, NO₂ and PM₁₀ concentrations, but it should be noted that there are proportions of background pollutant concentration that Dartford will not be able to significantly reduce.

3.4 Required Reduction in Emissions

In line with the methodology presented in LAQM guidance, calculations have been carried out to determine the necessary reduction in road NO_x required to bring AQMA 1 and AQMA 3 into compliance with the annual mean NO₂ AQO. These focus on the reductions required at the modelled receptor with the highest predicted NO₂ annual mean concentration. It is important to understand that although reducing NO_x emissions from vehicles will in turn reduce NO₂ concentrations, there is a non-linear relationship between NO_x and NO₂ concentrations and therefore a greater relative reduction in NO_x may be required.

Table 3.1 presents the calculations completed for both AQMA 1 and AQMA 3. The required reduction in road NO_x concentration, based upon the dispersion modelling completed, is 79.7% in AQMA 1 and 47.3% in AQMA 3. The calculations have been based upon the worst-case modelled receptor to ensure compliance at all modelled receptor locations. It should be noted that the simplified calculation does not take into account any indirect NO_x/NO₂ reductions within the background concentrations relevant within Dartford.

It can be seen from the results that there is a high level of reduction required for Dartford to become compliant with the NO₂ annual mean AQO, especially within AQMA 1. The complexity of AQMA 1 is that the A282, which passes through the AQMA, is part of the SRN and managed by NH. Therefore, a high level of co-operative working will be required to ensure reductions in pollutant concentrations can be made. As detailed within the measures table, Table 5.1, Dartford will continue to work with NH with regards to the assessment of a Lower Thames Crossing to ensure that any impacts, both positive and/or negative, from the scheme are correctly

quantified. This is not only relevant to Dartford but also to the surrounding area, with the scheme impacting upon number of Local Authority areas.

Table 3.1: Required NO_x Reductions

Metric	AQMA 1	AQMA 3
Worst-Case Modelled Relevant Exposure NO ₂ Concentration (µg/m ³)	64.5	55.1
Equivalent NO _x Concentration (µg/m ³)	27.0	20.5
Background NO _x (µg/m ³)	29.6	28.9
Background NO ₂ (µg/m ³)	19.9	19.6
Road NO _x (µg/m ³)	108.6	82.5
Road NO _x (µg/m ³) - Required (to achieve NO ₂ compliance)	22.1	43.5
Required Road NO _x Reduction (µg/m ³)	86.6	39.0
Required Road NO _x % Reduction	79.7%	47.3%

3.5 Key Priorities

Based on the information presented throughout Section 3, and the conclusions drawn from this, there are a number of separate areas of action which can be defined.

3.5.1 Priority 1: Public Health and Wellbeing

As detailed within Section 3.1, the impact of air pollution on public health is detrimental, therefore improving air quality within the borough is a key priority. The main sources of air pollution in areas of public exposure within the borough are from vehicle emissions. Aside from restricting vehicle usage through measures such as a Clean Air Zone (CAZ), the most effective way to achieve a reduction in vehicle numbers (and hence, emissions) is to change the attitudes / behaviour of the population towards travel.

Dartford Borough Council are responsible for the encouragement and facilitation of these changes through education and awareness, as well as through schemes which incentivise change. Improving air pollution to ensure the health of the public is maintained requires a wide-reaching perspective, both on a local and national scale. Therefore, the development of measures that are not specific to the existing AQMAs, but instead aim to have a wider impact across the borough, are also very important for inclusion within the AQAP.

3.5.2 Priority 2: Transport

The main source of air pollution that has caused the declaration of the three AQMAs within Dartford is associated with road transport emissions. Therefore, reducing transport emissions, within each AQMA and across Dartford, through the measures contained within this AQAP is a key priority. The approach taken focuses on areas where Dartford has direct control (e.g., licensing, parking, public transport and Council procurement), or areas where measures can be implemented via existing and new partnerships with KCC, such as through the Bus Service Implementation Plan (BSIP), or others as appropriate.

Active travel is key to reducing the reliance on private car usage. Through the implementation of the AQAP Dartford are to work to increase the number of active travel journeys undertaken by residents and visitors. This will be realised through improvements in walking and cycling infrastructure alongside behavioural change programmes.

3.5.3 Priority 3: Air Quality Partnerships

Dartford Borough Council is a two-tiered Local Authority and therefore is not in direct control of the highways within the borough. In addition, there are a number of SRN road links directly impacting the AQMAs within the borough. Therefore, strong links between Dartford, KCC and NH are required to ensure all air quality partners and stakeholders are working towards a common goal of reducing air pollution from transport sources.

KCC have been involved within the development of this AQAP and remain as stakeholders with actions assigned across various measures as detailed within Table 5.1. NH have provided access to NO₂ monitoring data at two sites close to the A282 and will be consulted upon prior to the completed of this AQAP. A strong link with NH is essential for the development of measures within AQMA 1. Any development, or actions undertaken by NH will impact upon the pollutant concentrations at receptors close to the A282 within AQMA 1.

3.5.4 Priority 4: Planning and Infrastructure

The New Local Plan details the policies that set out the air quality considerations that will be applied by Dartford when considering all development proposals. Dartford will work with developers and partner organisations to ensure the delivery of

infrastructure, services and community facilities necessary to develop and maintain sustainable communities, not just in terms of air quality but all relevant environmental aspects. Planning obligations secured through Section 106 agreements and the Community Infrastructure Levy (CIL) are to be sought through developments. This allows funding to be secured for the future development and implementation of mitigation measures.

A number of Supplementary Planning Documents (SPDs) are currently used within Dartford. The Parking Standards SPD requires developers to incorporate EV charging into the design. It also encourages the development to be future-proofed to allow the addition of charging points at a later date. Along with recent requirements for EV charging provision under Building Regulations, this SPD drives the continual development of EV charging structure across the borough.

3.5.5 Priority 5: Policy Guidance

The existing strategies and policies adopted by Dartford and by KCC are key mechanisms for reducing emissions across the borough. It is therefore considered a priority to utilise these and introduce measures that share benefits with other policies and strategies as key mechanisms to reduce emissions from road transport.

A number of relevant and related policy documents are already in place. For example, the Sustainable Transport Strategy for Dartford, the Kent Local Transport Plan 4, the Kent and Medway Energy and Low Emissions Strategy³⁰. These provide guidance within the borough and county, encouraging a shift to low emission vehicles through a modal shift away from reliance on private car usage to increase usage of alternative modes of transport such as public transport and active travel.

For effective reductions in vehicle emissions to be realised, in addition to the implementation of the measures outlined within the AQAP, future revisions of Transport Plans, Freight Strategies, Climate Change Strategies, Cycle Strategies etc., will be completed with potential air quality impacts taken into account.

3.5.6 Priority 6: Air Quality Monitoring

The air quality monitoring network currently operational within Dartford utilises both automatic and passive monitoring techniques. There are three automatic sites that

³⁰ <https://www.kent.gov.uk/about-the-council/strategies-and-policies/environment-waste-and-planning-policies/environmental-policies/kent-and-medway-energy-and-low-emissions-strategy>

monitor concentrations of both NO₂ and PM₁₀, and a network of over 50 locations where annual mean NO₂ concentration is monitored using passive diffusion tubes. Having an established monitoring network is essential to identify long-term pollution trends, locations in exceedance or close to exceedance of the relevant AQOs, to quantify the impact of mitigation measures, and as an evidence base for when an AQMA is to be revoked.

In addition to the monitoring completed by Dartford there are a number of monitoring stations operated by NH on the roads within Dartford that make up the SRN. Dartford are continually engaging with NH to ascertain the monitoring data from these sites and will continue to do so. Specifically, monitoring completed on the A282 within AQMA 1 will be beneficial to verify NO₂ monitoring completed by Dartford and to provide PM₁₀ data.

Although not a prevention measure, the monitoring of both NO₂ and PM₁₀ across the borough is important to assess current concentrations with relation to AQOs and also the impact of AQAP measures. In-line with LAQM.TG(16), the monitoring network within Dartford is constantly reviewed to ensure the specific locations are of relevance. Real-time automatic monitoring data from the three automatic sites is available from a number of online sources³¹. Full details of all monitoring completed within Dartford is contained within the ASR that is completed every year. These reports are available through the Dartford Borough Council website³².

³¹ <https://www.londonair.org.uk> and <https://kentair.org.uk/>

³² <https://www.dartford.gov.uk/by-category/environment-and-planning2/Environmental-Health-Homepage/pollution/air-quality>

4 Development and Implementation of the AQAP

4.1 Steering Group

A steering group was established at the start of the AQAP update process to drive forward the development of the new AQAP. The core aim of the steering group is to identify measures for inclusion within the AQAP that would be effective in terms of reducing pollutant concentrations. The feasibility of any measures, in terms of implementation and delivery, is also taken into account.

The steering group is mainly composed of Council officers from services with an interest, or a potential impact on air quality. Members include officers from Environmental Health, Planning Services, and Housing and Public Protection. In addition, there are representatives from KCC in terms of Public Transport and Highways, Transportation and Waste, and an external consultant Bureau Veritas. The officers have and continue to provide guidance in their respective areas of expertise to ensure selection and continual evaluation of the most appropriate measures. The Environmental Health team have taken the lead responsibility for the production, and any subsequent updates of the plan.

The first steering group meeting was held in August 2021 with a subsequent meeting in November 2021. The meetings included presentations and agendas covering an overview of the action planning process, the identification of the existing issues, with an assessment of the existing AQMAs and source apportionment exercise to inform all officers. This was followed by a period where possible action measures were discussed to define those contained within the consultation draft of the AQAP. Following the completion of consultation, the measures included within this final AQAP have been confirmed.

Following the adoption of the AQAP the steering group will continue to meet to monitor the progress of the implementation stage of the AQAP. These meetings will occur every quarter. All relevant officers from both Dartford, KCC and all air quality partners will attend these meetings. The continuation of the steering group is essential for firstly the completion, and secondly the ongoing assessment of the AQAP. Overall governance will remain with Dartford, within the Environmental Health team, with all updates detailed within the ASR to be completed each year.

4.1 Forthcoming Guidance

The AQAP has taken into account of all guidance, through both Local Policy and National Policy, that has currently been adopted at a national, county, and a borough level. It is acknowledged that the landscape of air quality policy and guidance is consistently changing. Due to the adopted action plan being reviewed on an annual basis, any positive changes to the plan can be made following the release/adoption of relevant forthcoming guidance/policy.

A summary of relevant forthcoming releases pertaining to air quality are detailed below.

LAQM Designation of Relevant Public Authorities

A new power for the Secretary of State is to be able to designate Relevant Public Authorities (RPAs) who may then be required to act as Air Quality Partners (AQPs) within the LAQM Framework. AQPs are required to co-operate with Local Authorities to reduce pollution levels where there are exceedances, or likely exceedances, of LAQM pollution limits. RPAs can be designated and become AQPs under the amended framework, where the authority carries out duties of a public nature that impact upon air quality. This new framework will result in relevant authorities at local level taking effective, collaborative action to deliver air quality standards and objectives.

Following a consultation completed in 2022 NH are to become an RPA. After the laying of the Statutory Instrument NH will be required to collaborate with Local Authorities to improve air quality; becoming an 'air quality partner' where locally relevant. Specific guidance on working with NH is to be published once NH are legally designated. This new designation will prove invaluable for collaborations between Dartford and NH to allow the development of current, and future schemes, working towards improving air quality within AQMA 1 and across the entire borough.

Environmental Targets

Following the adoption of the Environment Act 2021 there is a requirement for the government to set a number of long-term targets, including national targets for fine particulate matter (PM_{2.5}).

The proposed PM_{2.5} targets are as follows:

- Annual Mean Concentration Target – a target of 10µg/m³ to be met across England by 2040; and
- Population Exposure Reduction Target – a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

The assessment of the adopted targets is to be completed at a national level through the Compliance Assessment required by The UK’s Air Quality Standards Regulations³³. The consultation does not detail any update to the current Air Quality Objectives within LAQM as presented within Table 1.1. The role for Local Authorities in helping to meet these targets is currently being explored, as part of the Air Quality Strategy review. A further consultation will follow in late 2022, before it is finalised, and a revised National Air Quality Strategy is due to be published in 2023.

4.2 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 requires Local Authorities to consult the bodies listed in Table 4.1.

Table 4.1: Consultation Undertaken

Yes/No	Consultee
Yes	The Secretary of State, Defra
Yes	Dartford Borough Council
Yes	Kent County Council
Yes	National Highways
Yes	Neighbouring Local Authorities
Yes	Local Residents
Yes	Bodies representing local business interests and other organisations as appropriate

In addition to contacting the above a public consultation on the draft AQAP was completed in summer 2022 via an online questionnaire. The questionnaire consisted of a number of questions relating to air quality within Dartford across a number of topics.

³³ Air Quality Standards (England) Regulations 2010, available: <https://www.legislation.gov.uk/ukSI/2010/1001/contents/made>

4.3 Consultation Outcomes

There were 27 responses received to the public consultation of the draft AQAP. A key output from the consultation was the lack of awareness of the current AQMAs within Dartford, and therefore potentially the wider impacts of air quality across the borough. This is an important identification as it shows that as a Council Dartford must develop a number of measures based around sharing information and education.

A common theme in the responses received was the identification of the Dartford Crossing, the A282, as the principal source of vehicle emissions within Dartford. The health and well-being of residents living close to the A282 was continually challenged when suggestions were made with regard to measures. Dartford is committed to working with NH, KCC and surrounding Local Authorities to ensure that any changes made to the A282, including the Lower Thames Crossing, are assessed in terms of air quality and all other environmental aspects.

An additional recurring theme was relating to cycle; lack of promotion, limited infrastructure and unsafe routes. Active travel, including both walking and cycling, is at the core of this AQAP being present in Priority 1 and Priority 2. A number of measures relating to active travel are to be implemented to enhance the availability of walking and cycling routes within Dartford. Not only will this have benefits in terms of air quality, but it will also have a number of additional benefits such as increased fitness and well-being.

The questions contained within the consultation, and an analysis of the consultation responses are presented in Appendix C.

5 AQAP Measures

Following consultation the measures that are to be taken forward by Dartford are presented in Table 5.1. The measures have been developed to improve air quality, both directly and indirectly, within the three existing AQMAs and across the wider borough. LAQM guidance has been followed to ensure that the AQAP is adaptable to every local situation and most importantly are seen as part of an integrated package of measures. This is key for meaningful links to be established with other key policy areas.

The measures presented in Table 5.1 have been developed following a number of steering group meetings whereby a number of Council representatives have put forward and discussed a number of ideas. Evaluation of all possible measures was initially undertaken by the Environmental Health team and other officers within the steering group. Initial decisions regarding measures have been taken with consideration of local knowledge, availability of funding, the source apportionment results and existing Council policies.

The measures are considered the most effective, feasible and cost-effective to pursue in terms of potential air quality improvements within the AQMAs and the wider borough. Road traffic has been identified as a principal source of both NO₂ and PM₁₀ concentrations within the AQMAs. Therefore, a number of measures presented focus on the development and promotion of low/zero emission transport and traffic management improvements. In addition, a number of softer measures are based around education, information and improved community awareness.

The progress of the implementation of each measure, as per LAQM. guidance will be reviewed annually, with details provided within the annually completed ASR. The AQAP Steering Group is to meet quarterly to continual drive implementation of the AQAP. With actions assigned to ensure that momentum is not lost following adoption.

5.1 Cost Benefit Analysis

In addition to specific quantification completed for each measure through an estimation of pollution concentration reduction, a further cost benefit analysis has been completed. This is to identify a hierarchy whereby, as per LAQM guidance, the top three to five measures that provide the most significant impact on emissions and

rank high on the cost benefit analysis can be identified. Dartford will remain focused on the implementation of measures that are the most targeted on the emission sources leading to the current exceedance of AQOs that are experienced within the borough. Three impact metrics have been used within the cost benefit analysis:

- Air Quality Impact: The estimated impact upon pollutant concentrations, based where possible on modelled quantification.
- Expected Cost: The estimated cost of implementation of the measure, based upon the cost brackets utilised within the annual ASR.
- Wider Benefits: Benefits that are predicted from the measure outside of air quality. Those that have been taken into account have been public well-being and health, climate change and congestion.

Full results of the cost benefit analysis and the methodology matrix used to assign cost benefit scores between 0 and 15 between three priority categories to each of the measures is presented in Appendix D.

Following the completion of the cost benefit analysis the highest ranked measures were Measures 1, 3, 5 and 10:

- 1. Dartford Town Centre – Urban Traffic Management Control (UTMC);
- 3. Clean Bus Corridors;
- 5. Increase of Electric Buses; and
- 10. Mobility as a Service (MaaS) to be developed within Dartford Borough Council.

Each of these measures had a score of 13 and are large-scale transport initiatives that involve a shift in traffic management and/or sustainable transport.

Where possible, these measures are to be given the highest priority with regard to implementation. But with the implementation of the softer measures to be completed alongside these to allow a holistic approach both from the top-down and also the bottom-up through education and information provision.

Table 5.1: Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Lead Authority	Estimated Cost	Planning Phase	Implementation Phase	Key Performance Indicator	Estimated Pollution Reduction	Estimated Completion Date	Comments
Transport Initiatives											
1	Dartford Town Centre – Urban Traffic Management Control (UTMC)	Traffic Management	UTC, Congestion management, traffic reduction	KCC	£1 million – £10 million	2022/2023	2023-2025	Reduction of NO ₂ Concentration	Not Modelled: Estimated to be between 1-5µg/m ³ within AQMA 2&3	2023	Development of UTMC within the Town Centre to increase the prioritising capacity and right of way for more sustainable travel options, e.g. bus, cycle, pedestrian.
2	Dartford Town Centre – Sustainable Transport Strategy Improvements	Traffic Management	UTC, Congestion management, traffic reduction	DBC	£500k - £1 million	2022/2023	2023-2025	Reduction of NO ₂ Concentration	Not Modelled: Estimated to be between 1-5µg/m ³ within AQMA 2&3	2025	Improvements to Dartford Town Centre to be completed in line with the Dartford Borough Council Sustainable Transport Strategy. Proposal for four Phases of improvements to be confirmed.
3	Clean Bus Corridors	Promoting Low Emission Transport	Other	KCC/DBC	£1 million – £10 million	2022/2023	Subject to Assignment of Funding	Types of Buses Reduction of NO ₂ Concentration	Modelled: Up to 1.5µg/m ³ reduction on A226	Subject to Assignment of Funding	The development of specific corridors whereby only specific bus types are able to travel, building on the success of the existing Fastrack Bus Rapid Transit (BRT) scheme. KCC's Bus Service Implementation Plan (BSIP) has requested funding for zero tailpipe emission buses for a bus corridor on the A226 at Homes Gardens.
4	Clean Refuse Collection Corridors	Promoting Low Emission Transport	Other	KCC/DBC	£100k - £500k	2023	Subject to Funding	Type of Vehicle Reduction of NO ₂ Concentration	Modelled: Up to 1.9µg/m ³ reduction within AQMA 2&3	Subject to Funding	Improving the efficiency of current routes of refuse collection. To be assessed both as routing and vehicle type/efficiency.
5	Increase of Electric Buses	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	KCC/DBC	£1 million – £10 million	2021-2023	Ongoing	Number of Buses Reduction of NO ₂ Concentration	Modelled: Up to 2.5µg/m ³ reduction within AQMA 2&3	2024	Expanding the fleet of fully electric buses, both within Dartford and across Kent. The Fastrack BRT network is to be serviced by 28 fully electric buses by 2023, with associated EV charging infrastructure implemented.
6	Promoting low/zero emission vehicles – Electric LGVs	Promoting Low Emission Transport	Other	KCC/DBC	< £10k	2023	2023/2024	Number of LGVs Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Promotion of existing and future schemes relating to the availability and funding of Electric LGV. An existing example being Kent REVS up for Cleaner Air.
7	Promoting low/zero emission vehicles – Private Transport Sector	Promoting Low Emission Transport	Other	KCC/DBC	£50k - £100k	Ongoing	Ongoing	Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Continuing work with taxi providers and school transport providers to promote switch to low emission vehicles.
8	Promoting low/zero emission vehicles – Electric Motorbikes	Promoting Low Emission Transport	Other	KCC/DBC	< £10k	2023	2023/2024	Number of Motorbikes Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Promotion of existing and future schemes relating to the availability and funding of electric motorbikes.
9	Promoting low/zero emission vehicles – Improving Efficiency of River Freight	Promoting Low Emission Transport	Other	KCC/DBC/Cross River Partnership	£50k - £100k	2023	2023/2024	Vehicle Numbers Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Implementation of a river freight pilot scheme within Dartford. To be completed in conjunction with a newly launched river freight pilot that is being implemented by the Cross River Partnership.
10	Mobility as a Service (MaaS) to be developed within Dartford Borough Council	Traffic Management	Other	KCC	£1 million – £10 million	Ongoing	2023 (September Estimated Launch Date)	Reduction of NO ₂ Concentration	Not Modelled: Estimated to be between 1-5µg/m ³	Ongoing	New service aimed to join transport initiatives together, allowing travel with ease. Both digital multimodal integration with the use of MaaS multimodal technology platform and physical integration of physical multimodal mobility hubs. MaaS promotes sustainable living, encouraging a modal shift to public transport and active travel thus reducing transport emissions. Geographical implementation of MaaS dependent on funding. The ambition is to expand MaaS scheme that will holistically join up transport across Kent & Medway over time. Dartford to provide support for continual development and implementation of MaaS across the borough.
Planning and Infrastructure											

Measure No.	Measure	Category	Classification	Lead Authority	Estimated Cost	Planning Phase	Implementation Phase	Key Performance Indicator	Estimated Pollution Reduction	Estimated Completion Date	Comments
11	Development of a Supplementary Planning Document (SPD) with measures to tackle air pollution and improve air quality.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	DBC	< £10k	2023	2023-2024	Number of Applications	Not Modelled: Would be specific to application (scale, location etc.). Estimated to be between 1-5µg/m ³	Ongoing	To align all relevant planning documents relating to AQ. Aim to ensure consistency across proposed development in terms AQ, both within the assessment of, and mitigation where impacts are predicted.
12	Development of EV Charging Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	DBC/KCC	£500k - £1 million	Ongoing	Ongoing	Number of Charging Points Reduction of NO ₂ Concentration	Not Modelled: Depending on scale of expansion, estimated to be between 1-5µg/m ³	Ongoing	Developing the existing EV charging network within Dartford and across Kent. Introduction of new Building Regulations to expand residential charging points; all new build homes must have EV charging facilities for each associated parking space that is equal to the total number of dwellings.
13	Borough Wide Tree/Vegetation Planting Initiative	Other	Other	DBC	£10k - £50k	2023	2023/2024	Number of Trees Planted	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Although the planting of trees across the borough will not significantly impact NO ₂ or PM ₁₀ concentrations, there are wider benefits to be realised in terms of more aesthetic environments and visual screens of pollution sources.
Sustainable Active Travel											
14	Promoting low/zero emission vehicles. Provision of eCargo bikes and cycling/e-cycling rental schemes.	Promoting Low Emission Transport	Other	DBC	< £10k	2023	2023/2024	Usage / Ownership Statistics Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Gauging the feasibility of rental schemes within the Dartford area. Working with Ebbsfleet to potentially extend their existing scheme to within and across Dartford. Additionally, promotion of existing and future schemes relating to the availability and funding of eCargo bikes.
15	Improvement of cycling and pedestrian routes – Dartford Riverside Scheme	Transport Planning and Infrastructure	Cycle network	DBC/KCC	£500k - £1 million	2022-2024	TBC	Usage Statistics Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	TBC	Potential for a walking/cycling bridge across the River Darent plus improving paths along the Thames Embankment and the Dartford Marshes.
16	Improvement of cycling and pedestrian routes – Dartford Town Centre	Transport Planning and Infrastructure	Cycle network	DBC/KCC	£100k - £500k	2023/2024	Subject to Funding	Usage Statistics Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Subject to Funding	Enhancing the accessibility of Dartford Town Centre to both cyclists and pedestrians. Developing multi-modal transport hubs that combine a number of sustainable transport modes at a single location. E.g., utilising Fastrack bus stations with cycling hubs to allow sustainable transport for the full duration of a journey.
17	Increase in cycle parking across Dartford Borough Council	Transport Planning and Infrastructure	Cycle network	DBC/KCC	£50k - £100k	2023	Subject to Funding	Number of Parking Spaces Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Subject to Funding	Expanding the number of cycling parking spaces within the borough. Existing infrastructure to be assessed and new locations to be developed following identification, demand and feasibility.
18	Car Clubs: Promotion of existing car clubs	Alternatives to private vehicle use	Car Clubs	DBC	< £10k	2023	2023	Usage Statistics Reduction of NO ₂ Concentration	Not Modelled: Estimated to be between 1-5µg/m ³	Ongoing	Promoting the success of existing car clubs and extending their reach to ensure they are widely publicised and fully utilised. Combined with assessing the potential for new locations within the borough.
19	Car Clubs: Introduction of electric car clubs	Alternatives to private vehicle use	Car Clubs	DBC	£50k - £100k	2023/2024	Subject to Funding	Usage Statistics / Number of Electric Vehicles Reduction of NO ₂ Concentration	Not Modelled: Estimated to be between 1-5µg/m ³	Subject to Funding	Building on the success of measure 15 by assessing the feasibility of developing existing car clubs to incorporate electric vehicles into their fleets.
Behavioural Change Campaigns											
20	Develop and enforce a borough wide anti-idling campaign	Traffic Management	Anti-idling enforcement	DBC	< £10k	2023	2023	Number of Fines Issued Reduction of NO ₂ Concentration	Not Modelled: Estimated to be less than 1µg/m ³	Ongoing	Borough-wide anti idling enforcement at taxi ranks, bus stops, and outside schools etc. Social Media an option with posting to encourage behavioural change. Option for a school case study to be chosen in the development of the Dartford strategy.
21	Provision of bikeability across Dartford Borough Council	Promoting Low Emission Transport	Other	DBC	£50k - £100k	2023	Subject to Funding	Number of Sessions Provided	Not Modelled: Estimated to be less than 1µg/m ³	Subject to Funding	The promotion of bikeability training within schools and youth enterprises - https://bikeability.org.uk/

Measure No.	Measure	Category	Classification	Lead Authority	Estimated Cost	Planning Phase	Implementation Phase	Key Performance Indicator	Estimated Pollution Reduction	Estimated Completion Date	Comments
22	School Educational Campaign	Public Information	Other	DBC/KCC	< £10k	2023	2023/2024	Number of Schools Attended / Sessions Provided	N/A	Ongoing	A packaged educational resource to be developed and provided to schools within the borough, to include: - Health impacts of air quality. - Conditions close to the school - Promotion of sustainable travel
23	Dartford Borough Council – Website Air Quality Information Presentation	Public Information	Via the Internet	DBC	£50k - £100k	2023	Subject to Funding	Usage Statistics and Potential Downloads	N/A	Subject to Funding	Development of specific air quality information provided on the Council's website- https://www.dartford.gov.uk/environmental-services-1/air-quality
24	Additional Air Quality Monitoring	Public Information	Other	DBC	£50k - £100k	2022	Ongoing	N/A	N/A	Ongoing	Potential for supplementing the existing monitoring completed by Dartford and NH on the A282 and across the borough. NH monitoring completed on the A282 to be ascertained and analysed within yearly ASRs. New PM analyser is to be located close to residential exposure at the revoked Bean Interchange AQMA to assess the potential impact of upgrade works. Additional monitoring allows for greater understanding of diurnal and annual trends of NO ₂ and PM ₁₀ concentrations.
Measures Specific the A282											
25	Lower Thames Crossing	Traffic Management	Strategic highway improvements	NH/KCC/DBC	> £10 million	Ongoing	TBC	Reduction in NO ₂ and PM ₁₀ concentrations	NH Assessment: Perceptible Decrease	TBC	Early estimates are for an opening year of 2029/30 for the proposed Lower Thames Crossing, https://nationalhighways.co.uk/our-work/lower-thames-crossing/ Dartford to provide support where relevant and to assess the quantification of impact upon existing air quality within the borough and surrounding area.
26	Junction 1a Improvements	Traffic Management	Strategic highway improvements	NH/KCC/DBC	> £10 million	2021	2022/2023	Reduction in NO ₂ and PM ₁₀ concentrations	NH Assessment: Perceptible Decrease	2023	Improvements to the existing Junction 1a. Ensuring that any further developments are aligned with the current capacity, and potential expansion of capacity of this junction.

Appendix A: Dartford Borough Council Maps

Figure A.1: AQMA 1, Modelled Roads and Monitoring Locations

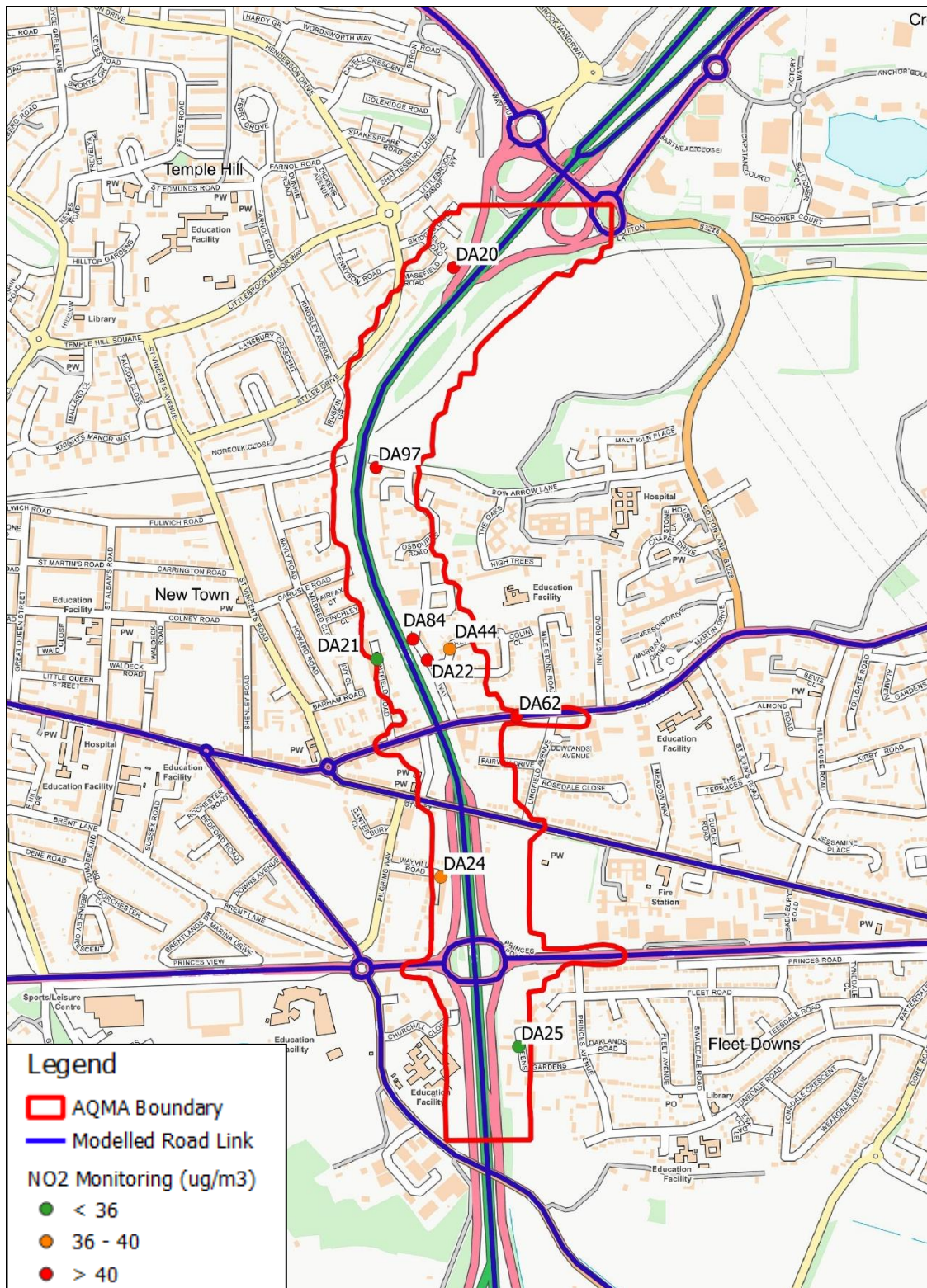


Figure A.2: AQMA 1, Modelled Roads and Modelled Receptors

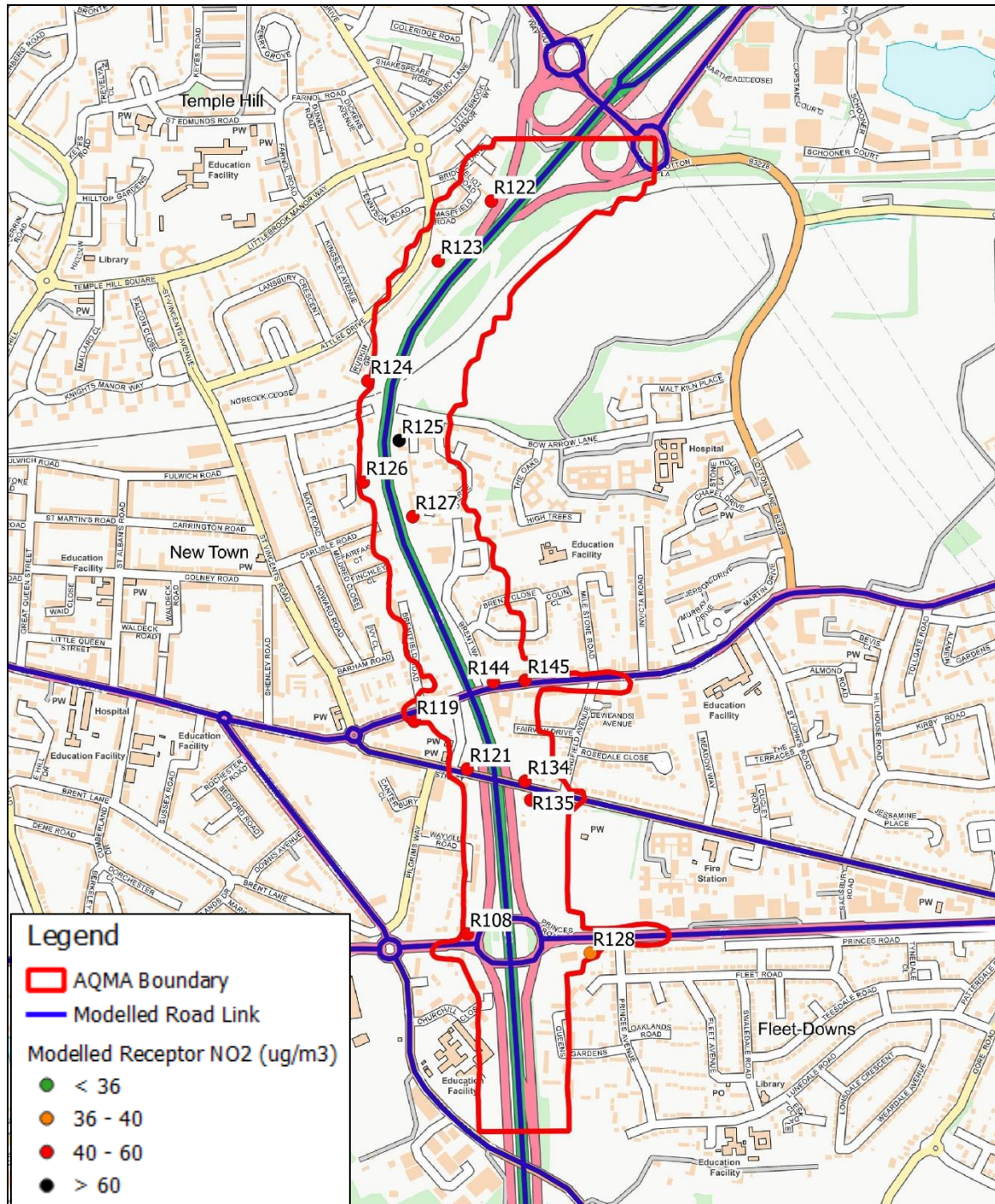


Figure A.3: AQMA 2, Modelled Roads and Monitoring Locations

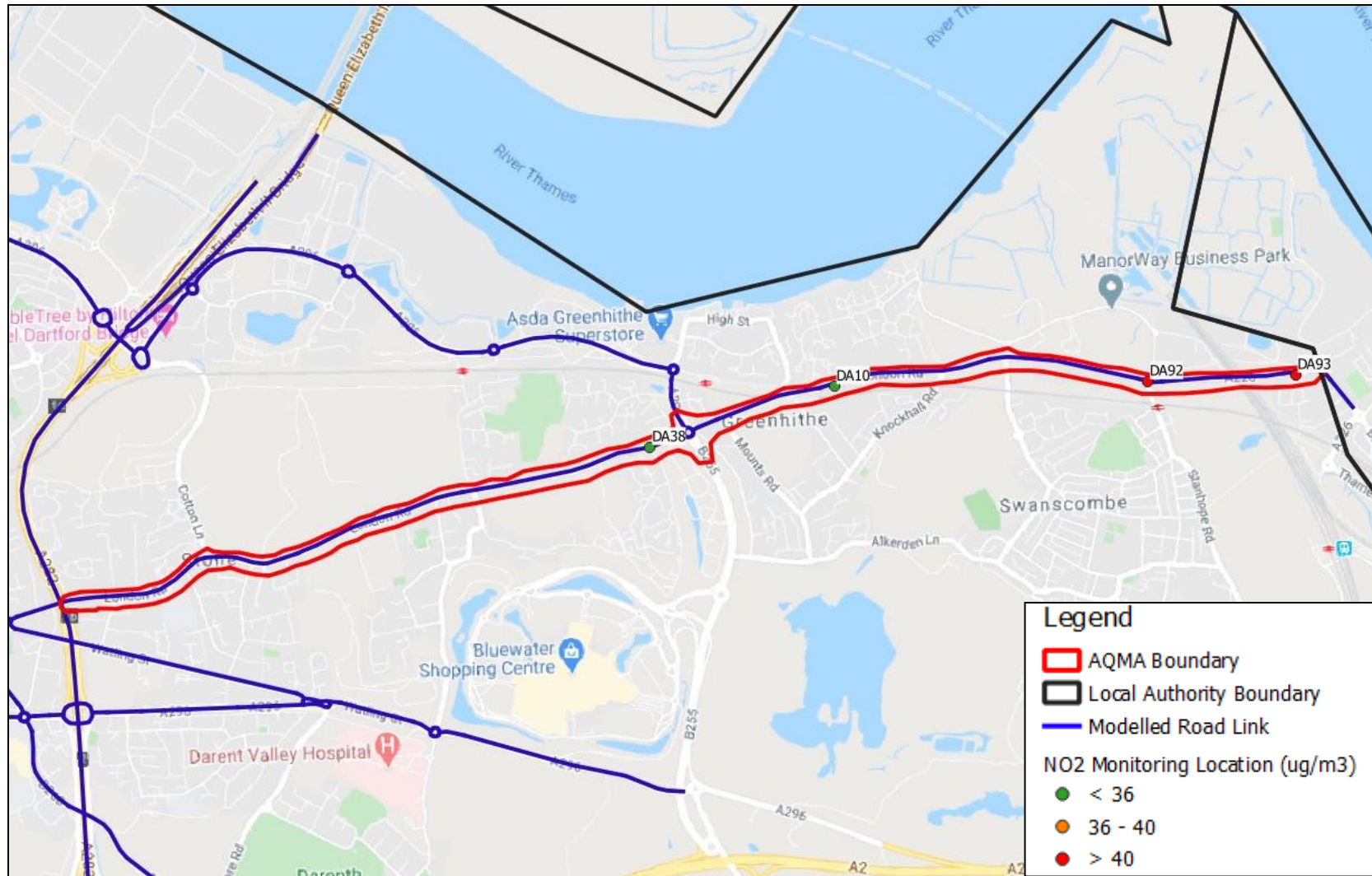


Figure A.4: AQMA 2, Modelled Roads and Modelled Receptors

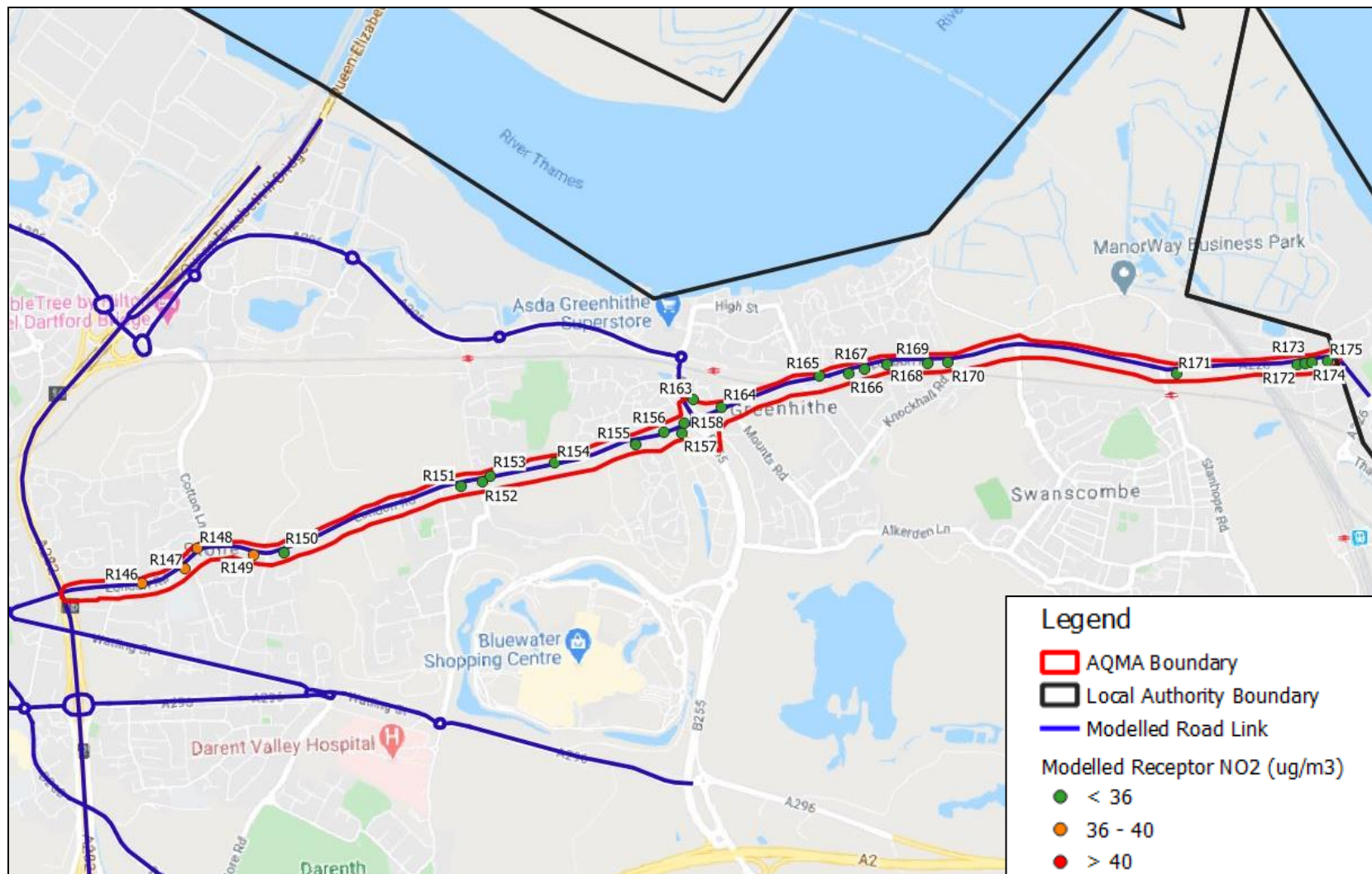


Figure A.5: AQMA 3, Modelled Roads and Monitoring Locations

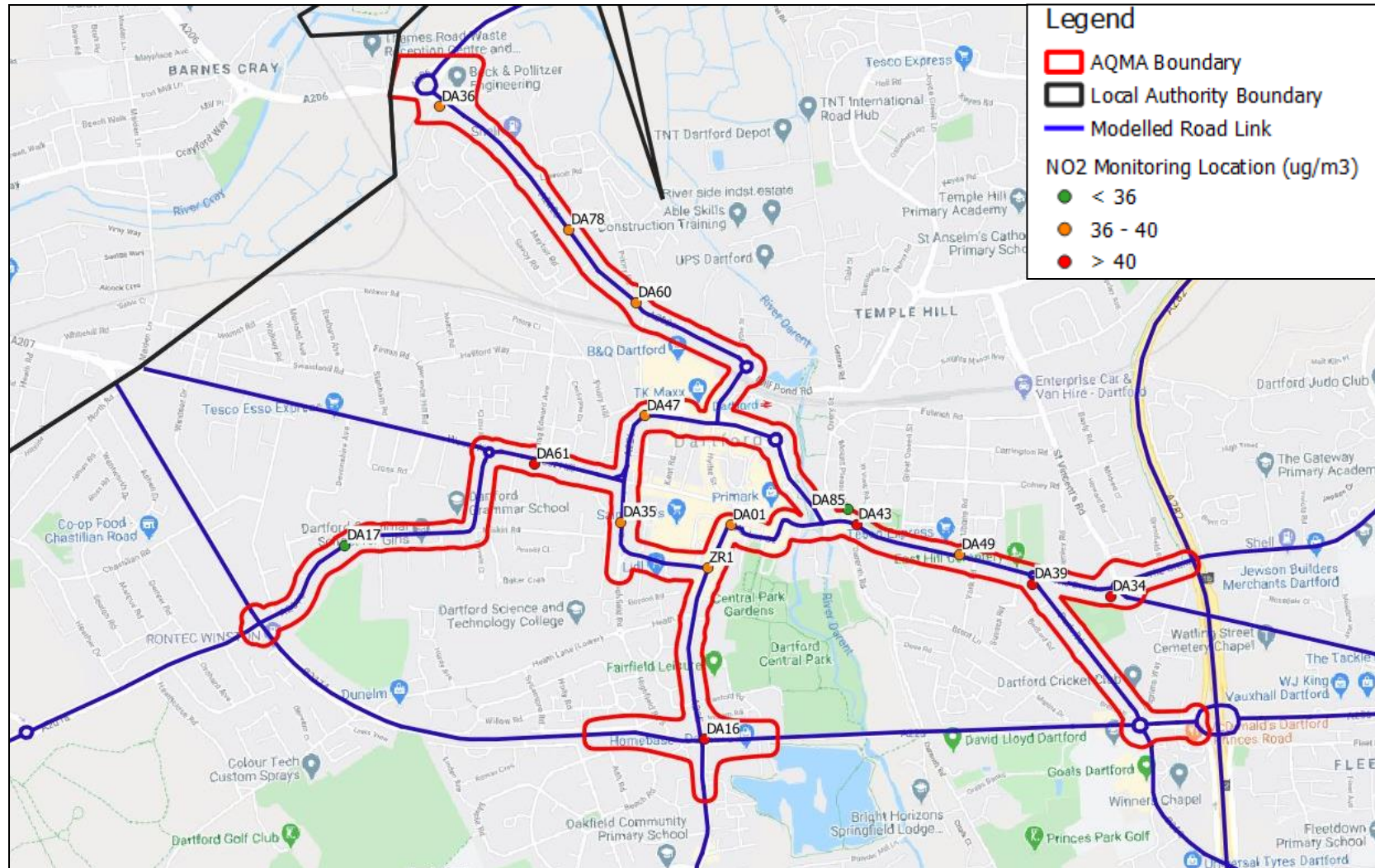
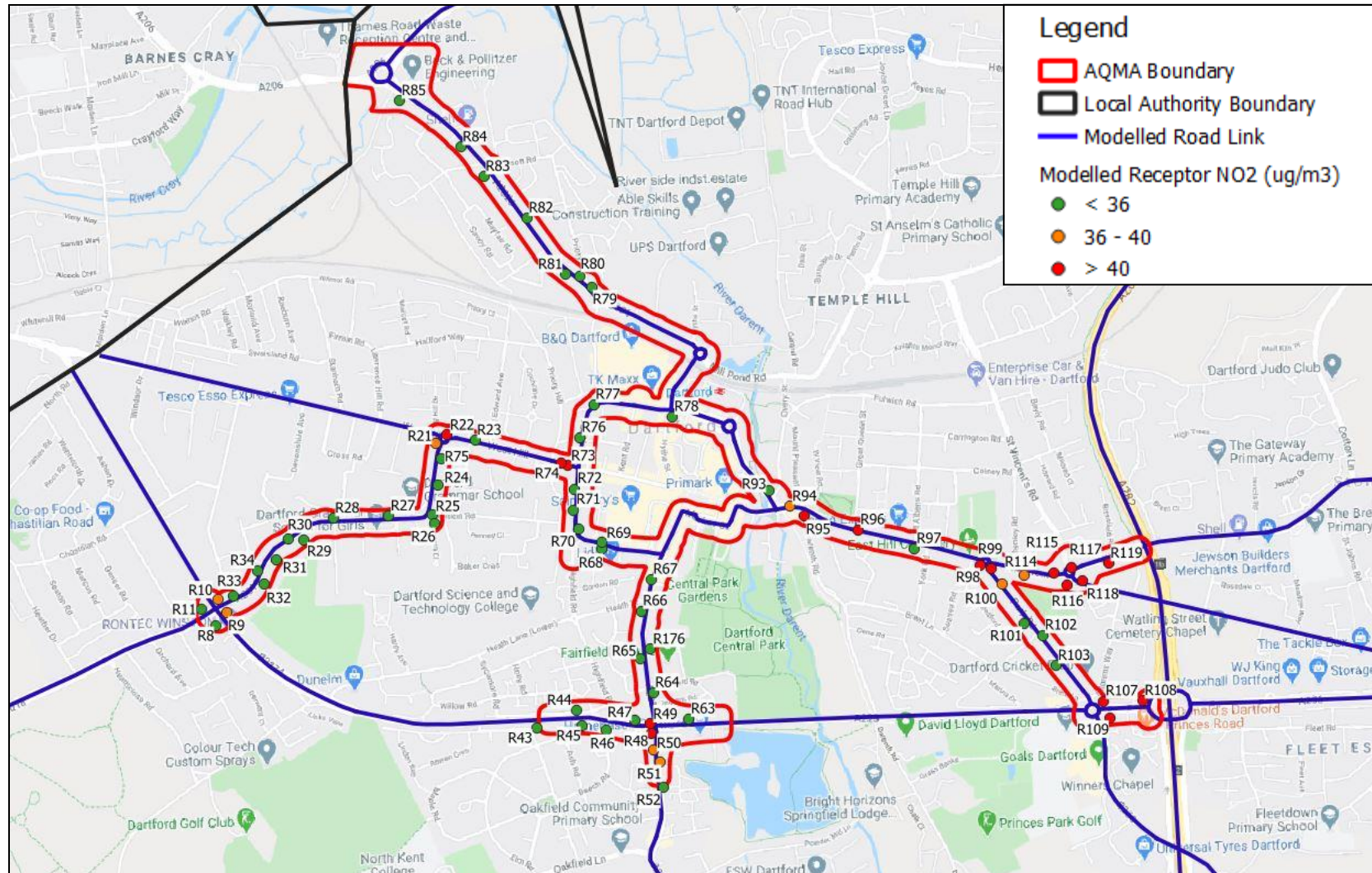


Figure A.6: AQMA 3, Modelled Roads and Modelled Receptors



Appendix B: Source Apportionment Results

Figure B.1: NO_x Source Apportionment Results: AQMA 1

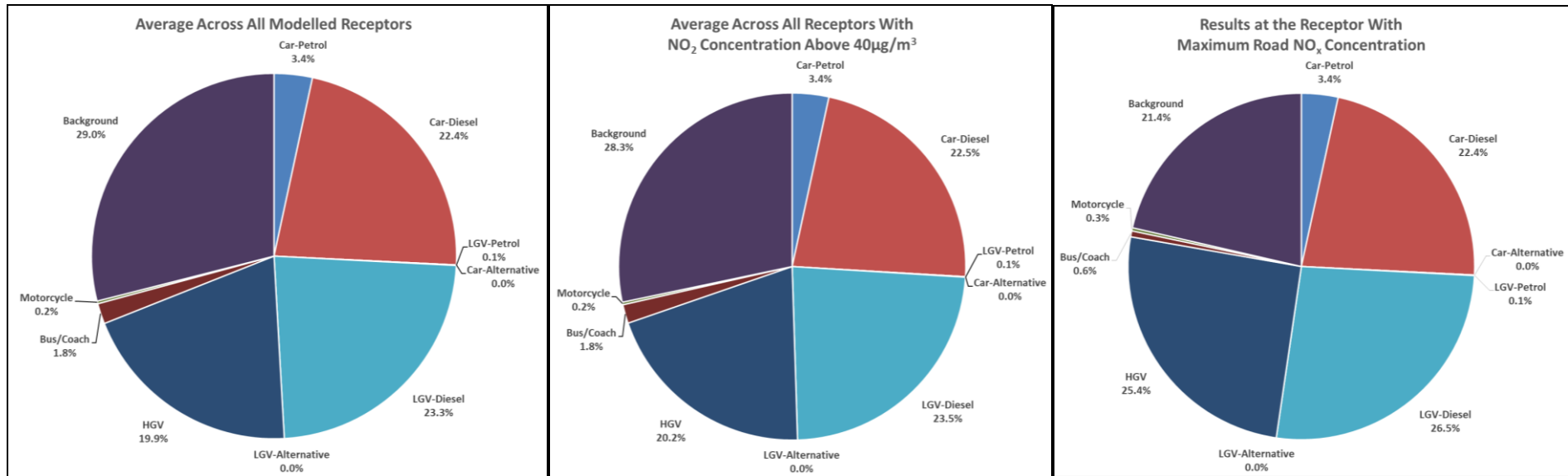


Figure B.2: PM₁₀ Source Apportionment Results: AQMA 1

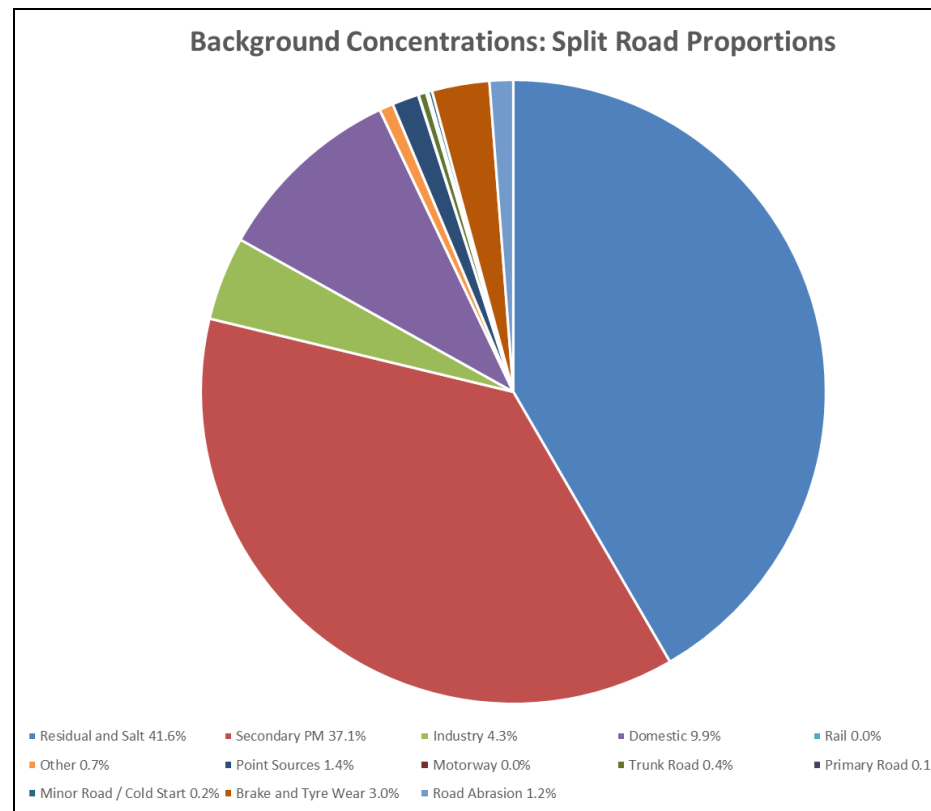
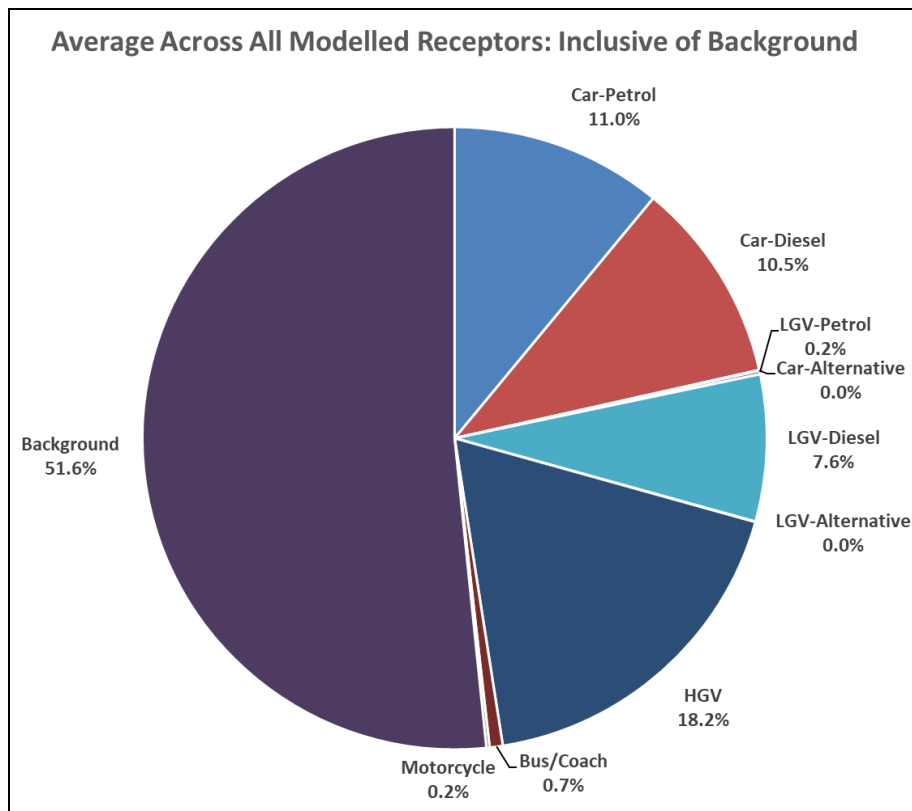


Figure B.3: NO_x Source Apportionment Results: AQMA 2

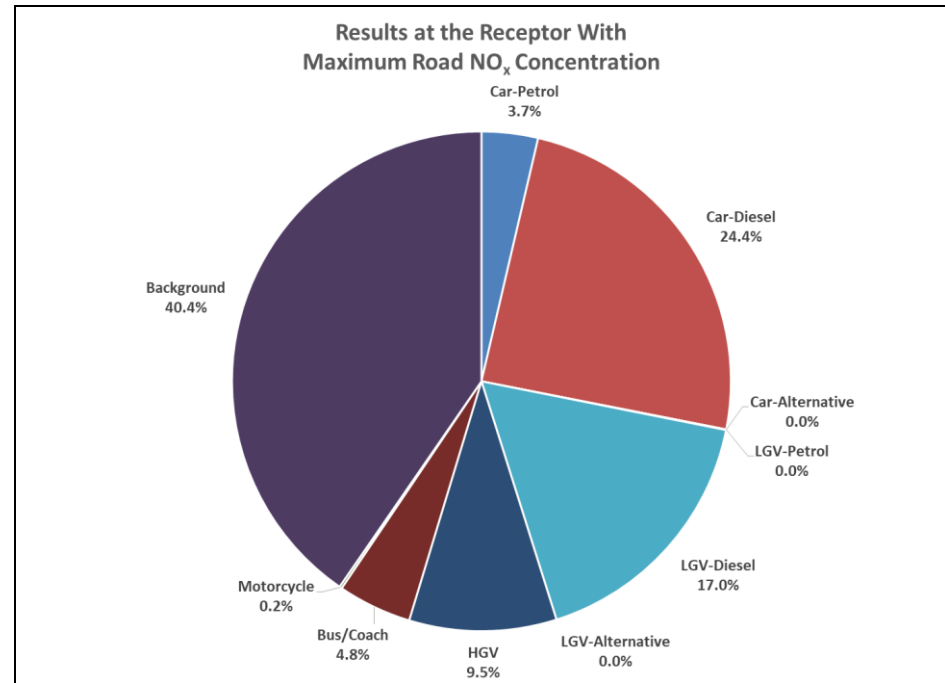
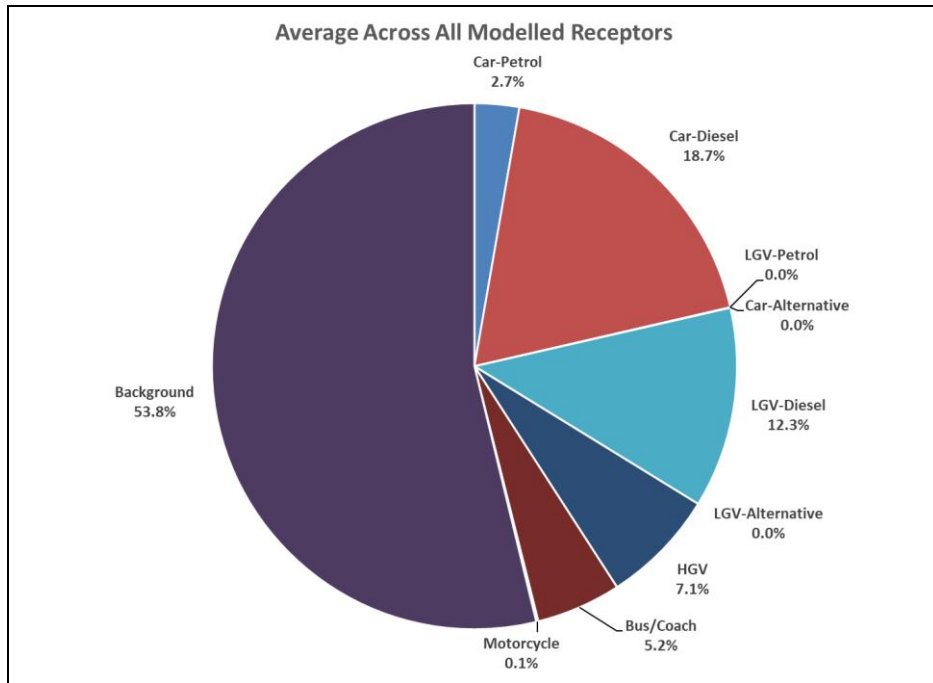
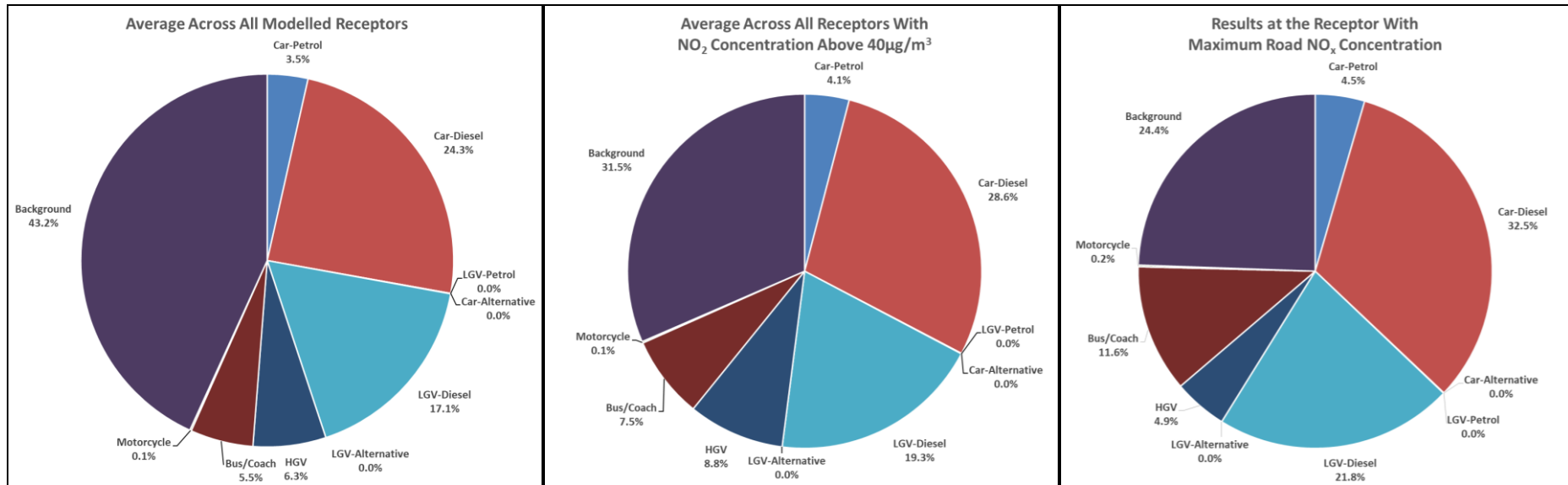


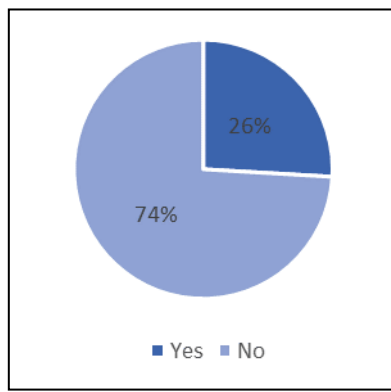
Figure B.4: NO_x Source Apportionment Results: AQMA 3



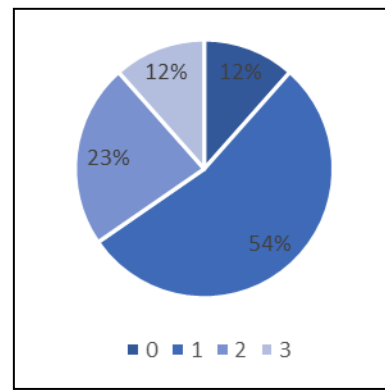
Appendix C: Response to Consultation

A number of the questions included within the public consultation were completed using free text, of which were collated and used to review the draft AQAP measures. Responses from those questions that are quantifiable are presented within the charts below. As per the free text responses these were used to identify if any further measures should be included in the final AQAP and where emphasis should be placed in terms of measure implementation.

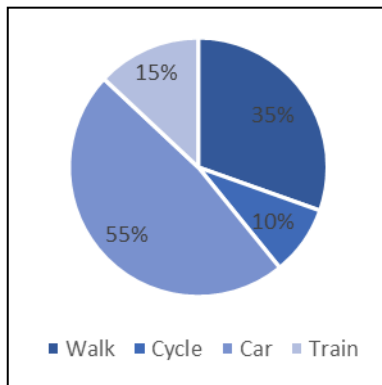
Were you aware that Dartford Borough Council has AQMAs?



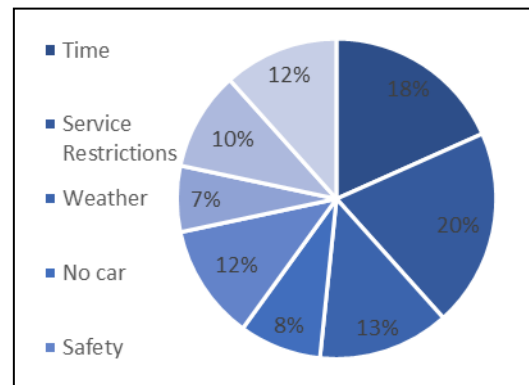
How many vehicles are used by your household?



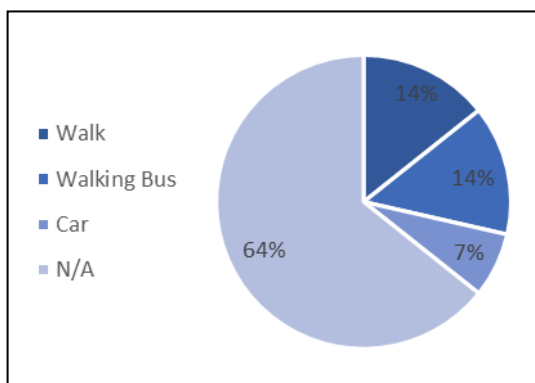
How do you get to work?



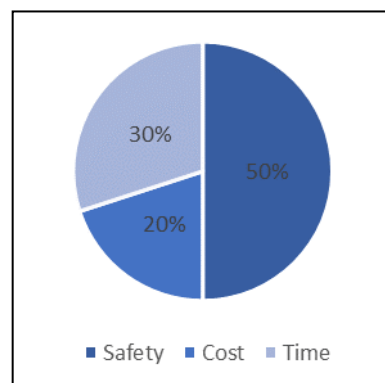
What influences your method of work travel?



How do your children travel to school?

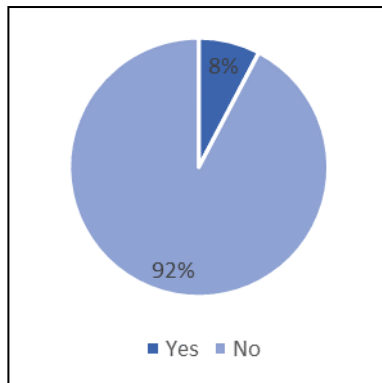


What influences the method of school travel?

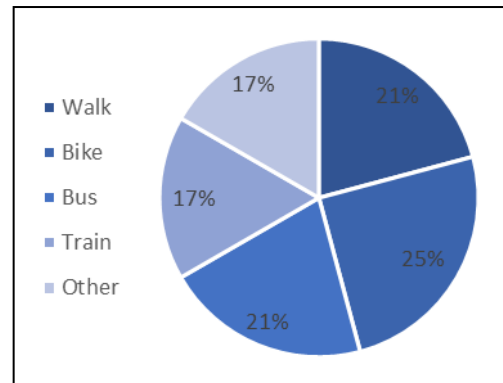


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Does the Council promote and raise enough awareness of alternative forms of travel in the borough?



What mode of transport should the Council be promoting more?



Appendix D: Cost Benefit Analysis

Table D.1: Cost Benefit Analysis Matrix

Score	Air Quality Impact (2 x Score)	Expected Cost (1 x Score)	Wider Benefits (2 x Score)
0	Negligible Benefit not quantifiable or potentially a negative impact	Negligible Funding included within existing budget	Negligible No wider benefits predicted
1	Low Concentration reduction of < 1µg/m ³	Low < £100,000	Low Some wider benefits predicted
2	Medium Concentration reduction of > 1 µg/m ³ and < 5µg/m ³	Medium > £100,000 and < £1,000,000	Medium A representative number of wider benefits predicted
3	High Concentration reduction > 5µg/m ³	High > £1,000,000	High A high level of wider benefits predicted

A higher scoring rating (2 x Score) has been applied to both Air Quality Impact and Wider Benefits as the aim of the AQAP is to improve air quality and wider well-being within Dartford.

Low Priority Measures – <5
 Medium Priority Measures – 5-10
 High Priority Measures - >10

Table D.2: Cost Benefit Analysis of AQAP Measures

Measure	Estimated Pollution Reduction	Cost Benefits Analysis Score	Priority
Dartford Town Centre – Urban Traffic Management Control (UTMC)	Medium	13	High
Dartford Town Centre – Sustainable Transport Strategy Improvements	Medium	10	Medium
Clean Bus Corridors	Medium	13	High
Clean Refuse Collection Corridors	Medium	10	Medium
Increase of Electric Buses	Medium	13	High
Promoting low/zero emission vehicles – Electric LGVs	Low	5	Medium
Promoting low/zero emission vehicles – Private Transport Sector	Low	7	Medium
Promoting low/zero emission vehicles – Electric Motorbikes	Low	5	Medium
Promoting low/zero emission vehicles – Improving Efficiency of River Freight	Low	5	Medium
Mobility as a Service (MaaS) to be developed within Dartford Borough Council	Medium	13	High
Development of an Air Quality Supplementary Planning Guidance (SPG)	Medium	7	Medium
Development of EV Charging Infrastructure	Medium	10	Medium
Borough Wide	Negligible	7	Medium

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Tree/Vegetation Planting Initiative			
Promoting low/zero emission vehicles. Provision of eCargo bikes and cycling/e-cycling rental schemes.	Low	5	Medium
Improvement of cycling and pedestrian routes – Dartford Riverside Scheme	Low	10	Medium
Improvement of cycling and pedestrian routes – Dartford Town Centre	Low	10	Medium
Increase in cycle parking across Dartford Borough Council	Low	9	Medium
Car Clubs:	Medium	9	Medium
Promotion of existing car clubs	Medium	9	Medium
Develop and enforce a borough wide anti-idling campaign	Low	7	Medium
Provision of bikeability across Dartford Borough Council	Low	9	Medium
School Educational Campaign	Negligible	7	Medium
Dartford Borough Council – Website Air Quality Information Presentation	Negligible	3	Low
Additional Air Quality Monitoring	Negligible	3	Low
Measures 25 and 26 relating to AQMA 1 are related to actions being taken by National Highways therefore cannot be accurately quantified using the simple cost benefit approach employed within this AQAP.			

Appendix E: Reasons for Not Pursuing Action Plan Measures

Table E.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)
Policy Guidance and Development Control	Commitment to install electric charging points and low NOx boilers	Incorporated into a wider measure. Measure 11 - Development of an Air Quality Supplementary Planning Guidance (SPG).
	Tighter planning restrictions in AQMAs, or close to AQMAs	
Promoting Travel Alternatives	Completion of travel plans relevant to areas of development	Travel plans are already a condition for a range of developments.
Promoting Travel Alternatives	Increase in cycle parking at train stations	Incorporated into a wider measure. Measure 17 - Increase in cycle parking across Dartford Borough Council.
Promoting Travel Alternatives	Lane closures for increased capacity of cycling space, permanent or temporary	Incorporated into a wider measure. Measure 1 - Dartford Town Centre – Urban Traffic Management Control (UTMC), and Measure 2 - Dartford Town Centre – Sustainable Transport Strategy Improvements.
Vehicle Fleet Efficiency	HGV/LGV recognition schemes, ECO Stars	A high number of HGVs pass through the borough. A recognition scheme would to be operated for the source of HGVs (where they operate out of), and the majority are would not be based within Dartford.
Promoting Travel Alternatives	Walking to school incentives/encouragement	Incorporated into a wider measure. Measure 22 - School Educational Campaign
Promoting Low Emission Transport	Procuring low emission vehicles for council-owned fleets	Fleet of vehicles utilised by Dartford Borough Council is small, additionally the upgrading of the Council fleet was already in progress.
Promoting Travel Alternatives	Cycle-to-work schemes	Majority are completed by companies in-house therefore have concentrated on the improvement of cycling infrastructure to promote cycling.
Other	Encourage Home Working	Behavioural shift has occurred within Dartford Borough Council, KCC and the majority of businesses within Dartford.
Promoting Low Emission Transport	Park and Ride Schemes	Bus routes already in place for 'out of town' shopping areas, wouldn't be relevant/required for Dartford Town Centre.

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
AQO	Air Quality Objective
AQP	Air Quality Partner
ASR	Air quality Annual Status Report
BRT	Bus Rapid Transit
BSIP	Bus Service Improvement Plan
CAZ	Clean Air Zone
Concentrations	The amount of a pollutant in the atmosphere within a specific volume, e.g. $\mu\text{g}/\text{m}^3$
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
Emissions	The amount of a pollutant released into the atmosphere from a specific source during a specific time period, e.g. $\text{g}/\text{km}/\text{s}$
KCC	Kent County Council
MaaS	Mobility as a Service
LAQM	Local Air Quality Management
NH	National Highways
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of $10\mu\text{m}$ or less
$\text{PM}_{2.5}$	Airborne particulate matter with an aerodynamic diameter of $2.5\mu\text{m}$ or less
RPA	Relevant Public Authority
SPD	Supplementary Planning Document
SRN	Strategic Road Network

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UKHSA	UK Health Security Agency
UTMC	Urban Traffic Management Control